PUBLIC SPACE COMBINATIONS

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Declaration

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Dysfunctional public spaces are regularly encountered in the everyday experience of Australian cities. Such places are typically understood to be ‘public space’, by virtue of being publicly owned and in principle publicly accessible, but are not fulfilling the concomitant expectation that they function as public domains—that is, as forums for public social activity. Often, a major cause of the dysfunction is to be found in the presence of competing needs from another urban activity that overwhelm and marginalise the requirements for the successful functioning of the public space in question. In these situations, the normative methods of developing public space, governed by regulatory planning instruments, seem largely ineffective in advancing the needs of the public space.

This study investigates design strategies for enabling these types of contested public spaces to better fulfil their potential and desired social purposes. The investigation is undertaken through speculative urban design projects in three Australian cities—Melbourne, Sydney and the Gold Coast—on sites where the ability of a public space to foster public social activity is unrealised or under threat. A strategy of combined development is proposed, where the development impetus for a competing urban activity (such as commercial, industrial or environmental infrastructure) is leveraged for the simultaneous development of public space improvements. In contrast to conventional mixed-use development, where a number of different programs may operate essentially independently within the one spatial framework, this research investigates how public space might be physically, operationally and experientially combined with other urban activities in the one development in order to produce better public domain outcomes. By demonstrating how the direct engagement with urban development forces—through the leveraging of development impetus—can be an effective strategy for creating new opportunities for public space, this research extends the discourse of contemporary landscape architectural design practice.
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INTRODUCTION
There are many instances in Australian cities where public spaces can currently be observed to be dysfunctional. Places in our urban environments that are conventionally understood to be ‘public space’—typically by virtue of being publicly owned—and generally expected to function as forums for public social activity, but are for some reason not meeting those expectations. For example, a suburban civic centre that is routinely devoid of people and activity because everyone is inside the nearby shopping mall. Or a public foreshore that is being built out by industrial development. Or an urban beach that is completely overshadowed by residential towers. Or public waterfronts that are inaccessible because their edges have been privatised by residential development. In situations such as these, the normative methods of developing public space—governed by planning instruments that regard public spaces as inherently singular and separate urban entities—seem largely ineffective in counteracting the fierce competition presented by other urban activities. This has led, at least in part, to the marginalisation of these public spaces’ ability to function as places that foster public social activity.

My research aims to investigate, through design, strategies for enabling contested public spaces such as these to better fulfil their potential and desired social purposes. Specifically, my proposition is to combine the development of such public spaces with that of other urban activities, in order to initiate spatial and operational changes that generate new opportunities for social activity to occur in the newly created urban environments. In contrast to conventional ‘mixed use’ development, where a number of different programs may operate essentially independently within the one spatial framework, my research investigates how public space might be physically, operationally and experientially combined with other urban activities, and examines how these types of combinations could engender better functioning public spaces.

Integral to this study is the investigation of how such combined developments might be initiated. Through the design projects, I put forward a strategy of leveraging as a means to initiate combined development—whereby impetus for the development of a particular use for a site is appropriated for the simultaneous development of a new public space situation that is conducive to social interaction. So that, for example, both an industrial port and a public beach can co-exist at a suburban foreshore as a direct result of developing the port. Or so that a shopping centre can operate, and be experienced, simultaneously as a civic centre as a result of its redevelopment.
This strategy of deliberately engaging with urban development impetuses as the primary means to create new public spaces is a significant extension to the conventional landscape architectural conception of the relationship between urban public spaces and their contexts, which is characterised by ideas of opposition and separateness. Instead of seeing urban development as something to be ameliorated or resisted by public space (if indeed that is possible), my research considers how it might be exploited to create better outcomes for the public domain in situations where it might otherwise be dysfunctional as a result of competing interests.

Regarding ‘public space’

The concept of—indeed, the very term—‘public space’ is highly contested, being heavily loaded with social expectations and prejudices. As such, it is useful here to preface the discussion of my research with a brief overview of the primary discourses surrounding public space and a clarification of how my work relates to key concepts arising from these discourses. Public space is the subject of complex and varied discourses that span multiple fields, including (but not limited to) sociology, cultural geography, political theory, planning, urban theory and landscape architecture. When discussing the spaces of urban experience in a cursory way, ‘public space’ has become shorthand for ‘streets, parks and plazas’. However, the discourses of public space debate a wide range of meanings for ‘public’, ‘space’ and ‘public space’. Consideration of ‘public’ strictly on the basis of public (state) ownership immediately expands the commonplace definition of ‘public space’ to encompass the spaces of transport infrastructure, such as highways and railways, as well as institutions, such as government, health and education. The issue of ownership is, however, only one dimension of the notion of ‘public space’. Indeed, it is the function of public space that dominates the conception of its public-ness. The sociologist Evelyn Ruppert explains that the ‘public’ of public space is largely defined in the literature ‘in terms of those activities and practices that can be conducted there’¹, which are discussed in terms of two largely distinct types of ‘collective or public activities’: the social and the political. Current discussion of the political dimension of public space is strongly influenced by the philosopher Jürgen Habermas’ ideal conception of the ‘public sphere’² as the arena where democratic civil society is formed through deliberation and debate, in a space that is universally open and accessible to all social groups³. In this large and complex political discourse, the ‘space’ that is public is largely non-physical, being generally understood to encompass the gamut of social institutions that mediate ‘between civil society and the state’⁴, including: television, print media, the internet and government.

This dematerialisation of ‘public space’ occurs as a result of the focus on its performative values, its function—not just in the political arena but also the social one. Although the many public space discourses promote a range of different values, the cultural geographers Maarten Hajer and Arnold Reijndorp note that they ‘converge in an apparent consensus about the importance of the [sic] public space as a space for encounters⁵. The proliferation of electronic communication technologies (particularly the internet) means that these encounters need not, and often do not, occur within physical space—leading to an expansion of the social conception of ‘public space’ into virtual space. Furthermore, the emphasis on the social performative value of public space not only frees it conceptually from the experience of physical space, but also broadens the range of physical spaces that are considered as ‘public’. There are many examples of non-publicly owned urban spaces where social encounters can and do occur, including: shopping malls, museums, sports stadia, parking lots and cinemas. These types of privately

owned or managed ‘collective spaces’ are part of what is often described in the literature as the ‘public domain’, which Hajer and Reijndorp define as ‘those places where an exchange between different social groups is possible and also actually occurs’. They describe ‘exchange’ as a ‘concrete, physical experience of the presence of others, of other cultural manifestations, and of the confrontation with different meanings associated with the same physical space’. They also emphasise the importance of a ‘shared experience by people from different backgrounds or dissimilar interests’ in their conception of ‘public domain’, a performative definition that encompasses both publicly and privately owned and managed urban spaces.

Research focus: the public domain functionality of urban public spaces

It is clear that in its broadest sense, the conception of ‘public space’ is multivariate, divergent and highly semantic. ‘Public’, ‘space’ and ‘public space’ become fluid terms; their meaning and value shifting in relation to the particular discourse or discourses one engages with. The diversity of possible meanings makes it impossible to proffer a definitive conception of ‘public space’, and renders any attempt to simultaneously engage with all possible conceptions meaningless and futile. It is not the intention of my research to enter into the debate over what is or is not ‘public space’, how ‘public space’ should be defined, or what its role is or should be in a contemporary pluralist urban society. As a practising landscape architect, operating within a field that is largely concerned with the synthesis of the social with the spatial (often mediated by the ecological), I am interested in the intersection of ‘public space’, as a physical entity, with the ‘public domain’, as a social construct. In their discussion of the relationship between ‘public space’ and ‘public domain’, Hajer and Reijndorp note that ‘not every public space is a public domain’—a condition that can be encountered in many places in the everyday experience of many cities. It is precisely these types of spaces that my design research seeks to address—those urban public spaces whose ‘public domain’ function is in some way compromised.

In this study, I use the term ‘public space’ in its most basic sense to mean physical urban spaces that are publicly owned property. As a subset of all such possible ‘public spaces’, I am particularly interested in those that are conventionally expected, or desired, to function as ‘public domain’, as defined by Hajer and Reijndorp. In essence, the specific types of places that my research investigates are publicly owned urban spaces where exchange is possible, but does not occur or is under imminent threat. The aim of the research is to develop design strategies and make physical design propositions that introduce or increase public domain functionality in these types of places. In doing so, it extends Hajer and Reijndorp’s work, which (like much of the social discourses of public space) carefully observes and analyses existing urban spaces that function as ‘public domains’, but does not propose how new ones might be created.

A case study approach

My research has been undertaken through speculative design investigations in three Australian cities—Melbourne, Sydney and the Gold Coast. Four case studies are presented: Broadmeadows, Botany, Surfers Paradise and Broadbeach Waters; all examine sites where existing public spaces have been observed to be dysfunctional public domains. At Broadmeadows in Melbourne, the footpaths, squares and civic plaza of the suburb’s civic centre are routinely empty of people. At Botany, the suburb’s foreshore beach is being built out by the expansion of Sydney’s industrial container port. At Surfers Paradise, the Gold Coast’s most iconic beach is completely overshadowed every afternoon.
by neighbouring residential towers. At Broadbeach Waters, also on the Gold Coast, the suburb’s primary public spaces—its canals—are largely inaccessible unless one lives directly on a canal waterfront. At each site, the subject of the design investigation is publicly owned urban space that has the ability to function as public domain, but is currently not doing so—as in the case of the Broadmeadows civic centre and Broadbeach Waters’ canals; or whose current public domain function is being compromised—as in the case of Surfers Paradise beach and Botany’s foreshore beach. The research endeavours to formulate design strategies for reconnecting these underperforming public spaces with their potential as public domains—that is, their ability to facilitate social exchange.

The approach to engaging with the highly varied urban situations presented by the four different case study sites takes its starting point from the ‘flat’ observational method that is articulated by Momoyo Kaijima, Junzo Kuroda and Yoshiharu Tsukamoto in their book Made in Tokyo. Kaijima, Kuroda and Tsukamoto contend that when faced with an urban condition that is an agglomeration of endlessly variable parts, such as the city of Tokyo, investigative approaches based on urban theory or conceptual models obscure the specific experience of each particular situation, reducing it to stereotype. Instead, they adopt a ‘flat’ method, devoid of preconditioned meanings or categories, that focuses on the way in which the particular physical components of each subject of investigation (in their case, cross-categorical hybrid buildings) relates directly to use. From their detailed and non-judgemental investigation of the particular, they then build up a systematic understanding of how these objects operate in their given urban context. This ‘flat’ approach is appropriate to my investigations because the focus on the specificity of each situation avoids the potential collapse into generic
or preconceived notions of ‘public space’—what it is or is not, what it should look like, where it should be, what activities should be occurring in it. For each of the four case studies, the particular characteristics of the subject public spaces are examined to determine, in their specific urban contexts, what makes them potential public domains and what the barriers are to the fulfilment of that potential. These observations then form the basis for physical design propositions that directly aim to promote an increase in the public domain function, the possibility of exchange, in each particular place.

The attempts to improve public domain functionality in these places are not motivated by idealistic notions that every public space should also be a public domain. Rather, they directly respond to aspirations for improved public domain function that are evident, both explicitly and implicitly, in policy documents and other published material that relate to each particular study location. For example, at Broadmeadows, strategic planning documents articulate the ‘need for a high quality public realm to encourage more people in into public spaces and streets’; while the Gold Coast City Landscape Strategy recognises that canals such as those found at Broadbeach Waters ‘have limited accessibility for Gold Coast residents … [because their] … edges are primarily privatised’, and expresses a desire for them to ‘become more usable and accessible open space’. However, these calls for improvement do not offer any tangible strategies for changing the physical and operational relationships that exist between the subject public spaces and their particular urban contexts. Furthermore, the existing planning instruments that are primarily responsible for the development of public space in each place are unable or unlikely to affect such changes. As such, a key question is how to initiate change that increases the possibility of social exchange at each of the four project locations.

**Combined development: leveraging to initiate change**

Through the research, the strategy I propose for improving the public domain performance of the public spaces encountered involves developing (or redeveloping) them in combination with other urban activities—ones that have a clear impetus for impending development in each particular place. Instead of proposing a planning solution as the mechanism for initiating and shaping changes to these underperforming public spaces, my strategy of combinatory development leverages the existing and imminent development impetuses that are evident in each place to initiate public domain change. The tactic of directly engaging with the urban development forces acting in each place is a direct response to the challenges to public domain functionality identified through the case studies. For although the specific nature of the public domain dysfunction differed in each case—depending on the particular characteristics of the
public spaces and their relationship to their particular urban contexts—a common factor was identified: some other urban activity was comprehensively outcompeting the public spaces’ requirements for successful public domain performance. At Broadmeadows, for example, the conventionally understood public spaces of the suburb’s civic centre—its footpaths and civic plaza—have been outcompeted by the adjacent shopping mall’s ability to attract people and generate social activity. While at the Botany foreshore, the existing public beach has been spatially outcompeted by the adjacent industrial port’s expansion plans. Furthermore, at both Broadmeadows and Botany, the competing activity also possesses a strong (economic) development impetus that contributes to its ability to marginalise the public domain function of the contested public spaces. As such, the strategy of deliberately combining the development of the underperforming public spaces with that of the competing activity, leveraging the pre-existing development impetus of the competing activity to initiate the change, is a pragmatic and opportunistic response to the realities of the given urban situations.

Fundamental to the proposition of ‘combined development’ is that changes to the physical characteristics and arrangement of the public spaces, and to how they operate in relation to their immediate urban contexts, are made simultaneously through the development of another urban activity. The Broadbeach Waters project, for example, investigates how the development of new canal connections that improve the environmental quality of the waterways could simultaneously increase public access between the streets and the canal waterfronts, and also improve the public recreational and transport functionality of the canal network itself. The projects examine how the condition of simultaneity might directly generate opportunities for new types of public space in each particular urban context. For example, at Botany the development of the new (reconfigured) container terminal simultaneously provides the opportunity to create a new public beach.

Furthermore, in each of the four case studies, the proposed design interventions aim to increase the opportunities for social exchange to occur by endeavouring to maximise the points of contact, the friction, between different activities in each place as a direct result of their combined development. This is something that planning solutions, which typically treat public space as spatially and operationally distinct from other activities, do not easily allow. At Broadmeadows, for example, the civic centre and shopping centre are physically, operationally and experientially conflated to maximise the interaction between the two formerly distinct activities. It is through the maximisation of contact between different activities that the projects aim to engender some of Hajer and Reijndorp’s key qualities of ‘good’ public space (ones that successfully function as public domains)—the possibility of shared experiences between people with dissimilar interests, the encountering of different values or conceptions of the same physical space.

The study

My thesis is that combined development can enable improvements to public domain functionality to be created in situations where it is highly contested, currently not occurring, or under imminent threat. Through the design projects, I examine ‘combination’ as both the strategic action that initiates change to the existing situation, and the physical and operation outcome of that action—the new urban environment that is created. The widely varying characteristics of public domain dysfunction presented by the sites of the four case studies have enabled a targeted design investigation of different modes and methods
of combining. The proposition of physical design interventions for each particular place has involved:

- Identification of the particular way or ways that the public space has become marginalised. For example, has it occurred through lack of physical access? Is the public space being physically built out by another development? Is there an absence of public social activity in the space? If so, why?

- Identification of the particular components of the existing urban situation that could be combined with the public space in order to improve its public domain functionality. These include (but are not limited to): physical space, structure, program or ecological processes.

- Examination of how the operational characteristics or requirements of the activities to be combined in the development affect the possible modes of combining. For example, what are the possibilities for combing an activity that is compatible, spatially and operationally, with the subject public space? Conversely, what are the possibilities when the operational requirements of ‘other’ activity are hostile to public activity?

- Investigation of what new urban situations and experiences could be created directly as a result of combining, and an examination of how they might engender better public domain functionality at that specific place.

Integral to the exploration of modes and methods of combined development is the investigation of development impetus and how it might be leveraged to initiate public domain change. This has involved the identification of what the development impetuses might be at each place, and the analysis of how impetus for a particular type of development might be appropriated to create an opportunity for the simultaneous development of public space. It is the investigation of development impetus that provides the framework for structuring my study.

The case studies provide extreme examples of the potential variables for leveraging development impetus. In some instances, the development impetus may be obvious and directly compatible with public social interaction; such is the case at Broadmeadows, where the study of a combined retail and civic space is undertaken. In other instances, the development impetus might be compelling, but seemingly antithetical to public interaction; this is the case at the Botany, where the combination of the industrial activity of Port Botany with public recreational use of the foreshore is considered. Furthermore, there are situations where development impetus might not be immediately available, or appear to be non-existent, at the site of the dysfunctional public space; such situations are encountered at the Gold Coast, the location of the case studies at Surfers Paradise and Broadbeach Waters. In these circumstances, it is necessary to either find development impetus elsewhere, or deliberately create development impetus (for example, creating a financial incentive to provide development impetus for residential redevelopment), in order for there to be any prospect of improvement to public domain functionality through combined development. This study of leveraging combined development, ranging from the obvious and compatible through to the seemingly absent and incompatible, has been undertaken through design investigations at the four project locations, as outlined below.

Structure of this document

The design project at Broadmeadows, discussed in Chapter Two of this document, investigates conflation as the mode of combining the suburb’s civic centre
and shopping centre. This project attempts to physically and operationally combine two compatible uses—the civic with the retail—to create a new urban situation that can be experienced simultaneously as both civic centre and shopping centre. Impetus for the development of the civic/shopping centre relies on strategic planning initiatives at both metropolitan and local levels of government, which have already begun to affect considerable urban change to the suburb’s town centre, and on plans for further commercial development of the shopping centre.

At Broadmeadows, conflation is possible because the activities being combined—civic and retail—are spatially and operationally compatible. The converse situation is encountered at the Botany foreshore, discussed in Chapter Three, where the operational requirements of the industrial port and public beach necessitate their spatial separation. This project investigates how the continued co-existence of these two seemingly incompatible activities might be enabled through their combined development at the highly contested foreshore. The project leverages the NSW State Government’s plans to expand Port Botany’s container handling facilities, the very development that is threatening the public domain function of the foreshore beach, to initiate the combined development. Although the port and the beach remain spatially distinct from one another, the project examines how a combined experience could be created through the promotion of extreme adjacency between the industrial and public recreational activities.

At both Broadmeadows and Botany, change is made possible by the presence of strong impetuses for development that can be leveraged to initiate the combined development of the public spaces. Additionally, both situations are characterised by a clearly oppositional relationship between the underperforming public spaces and the activity with development impetus. However, this might not always be the case. How might a combined development be initiated when the activity that is outcompeting the public space does not have impetus for imminent development? Or where a need for change is not obviously urgent, but latent? Or where the current situation is static, with no immediately apparent impetus of development? These types of situations are confronted in the two Gold Coast projects, located at Surfers Paradise and Broadbeach Waters, which enable a more detailed and critical investigation of leverage as a strategy for initiating combined development.

Chapter Four discusses the situation at Surfers Paradise, where the problem of the shadows on the iconic beach is well recognised, and there is a clear impetus for private residential development of the beachfront (the very cause of the problem), but there is no sense of urgency for change to the status quo. Instead, it is the ongoing need for infrastructure that mitigates the devastating impacts of storms and floods that provides the most compelling opportunity for change. This project investigates how this need might be leveraged to catalyse development that augments the public domain function of the beach. The strategy of leveraging development impetus to initiate combining is expanded through this project. For although the public domain dysfunction arises from the contestation between the beach and the shadow-casting residential towers, the development impetus that is required to initiate change is found in an external factor—the urgent need for environmental infrastructure.

The Surfers Paradise project functions as a prelude to the final project at Broadbeach Waters, discussed in Chapter Five, which further investigates how the ongoing need for environmental infrastructure at the Gold Coast might provide opportunities for developments that simultaneously improve the public domain. This
Project synthesises and extends many of the techniques and strategies learned in the three previous case studies to address a situation where there is no immediately obvious impetus for development. Characteristic of many suburban situations, the physical fabric of the Broadbeach Waters canal estates has remained largely static since its initial development. In response, this project investigates leveraging as a strategy for creating development impetus in a situation where it is not immediately available, with the intention of then exploiting that impetus to create opportunities for developing new public spaces. This is a critical extension to the idea of leveraging; the previous three projects leveraged pre-existing impetuses for imminent development, while at Broadbeach Waters, the necessary development impetus is deliberately created.

The Broadbeach Waters project investigates how three interdependent components—the need for environmental infrastructure, the aspiration for greater public domain accessibility and the potential for lucrative property development—could be combined to create a more compelling incentive for initiating development. This final project also extends the design work into a more detailed and critical exploration of the physical and conceptual possibilities of combining. A series of locally specific interventions is proposed for the canal suburb—new physical connections within the disjointed canal network that aim to simultaneously improve the environmental quality of the canals, increase public accessibility to and within the canal waterways, and create financial incentives for residential redevelopment within the static suburban fabric. Through physical design propositions at the site of each of the new canal connections, the project also examines how new forms of public space might be created as a direct result of considering simultaneity as a core objective of combined development. This is done by actively engaging with the physical requirements of making the canal connections in each particular place to simultaneously shape the new public waterfront experiences. Furthermore, by conceptualising the canals as simultaneously public space and hydrological infrastructure, the project also examines how the individual interventions could operate together to affect changes to hydrological systems, pedestrian movement, navigation patterns, and urban density at a range of scales.

The level of design resolution varies across the four case studies, depending on the detail required to verify the feasibility and robustness of the combined development approach in each particular place. It is not the intention of this study to present highly detailed physical design proposals. The design development for each of the four projects is taken to the level required to indicate the how the physical proposition might improve public domain functionality in that specific location. At Broadmeadows, this has involved reasonably detailed explorations of how the physical spaces proposed might be experienced simultaneously as a civic/shopping centre. The Botany Foreshore project is more strategic, as it examines how the physical requirements of the port operations might be reconfigured to simultaneously create new public recreational opportunities at the foreshore. The Surfers Paradise examines how infrastructural operations might create new public space; parts of the project remain schematic as it serves as a testing ground for ideas examined in greater detail through the Broadbeach Waters project. As the culminating project of this study, the Broadbeach Waters project examines the possibilities of combined development both as urban strategy and as physical spatial experience.

Situating the work

As this study investigates the potential of combined development as a strategy in relation to the particular characteristics of the urban situations presented by
the four project locations, different areas of landscape architectural design discourse are relevant to what is learned through each project. As such, instead of providing a separate literature and project review chapter that must attempt to cover the range of topics encountered out of context, each project chapter will discuss its research outcomes in relation to the particular aspect of landscape architectural design discourse that is directly relevant to that individual project. Chapter Two discusses the issues of public space and private ownership and control that are highlighted by the conflation of the civic and shopping centres at Broadmeadows. Chapter Three discusses how designing for the co-existence of industrial and public recreational activities at the Botany foreshore extends the current landscape architectural design discourse on (post) industrial landscapes. Chapter Four discusses what might constitute an ‘infrastructural experience’ of a public landscape, while Chapter Five discusses the potential infrastructural operations to affect significant urban change.

It is in Chapter Six, the discussion and conclusion for this document, that the overarching research outcomes of the case studies will be situated in the broader context of the landscape architectural discourses on public space and urbanism. This chapter will discuss how direct engagement with the forces of urban development—through the leveraging of development impetus—as a deliberate strategy for creating opportunities for public domain improvement, is a significant departure from more conventional landscape architectural approaches to the design of public spaces. It discusses how landscape architectural design practices of making public space predominantly conceptualise the relationship between public spaces and their urban contexts to be independent and oppositional, which can be unnecessarily limiting. By proposing a non-oppositional approach that actively engages with the development of other urban activities to directly affect positive outcomes for public spaces, my research into public space combinations contributes to the discourse of contemporary landscape architectural design practice.
NOTES


Ruppert, p.274., contends:
‘Any discussion of the role of public space in the practice of politics often involves a discussion of the “public sphere” as articulated by Jürgen Habermas’.

3 Ruppert., ibid.


7 Hajer & Reijndorp, p11.

8 ibid., p12.

9 ibid., p11.

10 ibid.

11 While ‘public space’ can obviously be located in non-urban areas—in rural settings and National Parks, for example—my research is focused on the urban experience. Neil Smith and Setha Low note that ‘stretching back to Greek antiquity and onward, public space is almost by definition urban space, and in many current treatments of public space the urban remains the privileged scale of analysis and cities the privileged site’.


14 Gold Coast City Council 2000, Gold Coast City Landscape Strategy: Part 1—Landscape character: guiding the image of the city, prepared by John Mongard Landscape Architects, in conjunction with Urban Design, Cultural Heritage and Landscape Unit, Gold Coast City Council, Gold Coast, p59.
On a typical day in Broadmeadows’ town centre, the public spaces of its civic centre are largely empty. Instead, it is within the adjacent shopping centre that the social activity of the town centre primarily occurs—where people meet, eat and drink (in the food court), promenade (between shops), and engage in cultural pursuits (go to the movies). Broadmeadows’ shopping centre dominates the town centre through its size, is disengaged from its surroundings by its internalised configuration and further insulated by its expansive apron of car parking. The civic centre’s public spaces—its footpaths and civic plaza—have been very effectively outcompeted by the shopping centre’s ability to attract and generate social activity. This ability, coupled with its physical disengagement, has enabled the shopping centre to comprehensively marginalise the civic centre’s capacity to function successfully as a public domain. The problem, in terms of Hajer and Reijndorp’s definition of ‘public domain’\(^2\), is that although social exchange is possible in the public spaces of Broadmeadows’ civic centre, it does not readily occur.

Broadmeadows is a suburb in north-west Melbourne that is currently undergoing enormous and rapid urban change. This change has been driven by the economic growth of the region and by strategic planning instruments, at local and metropolitan levels, that aim to develop Broadmeadows into a major administrative, commercial and cultural centre. A common feature of these planning strategies and policies is the consideration of an ‘active public domain’ to be an essential factor in the success of Broadmeadows’ transformation. However, as will be discussed, the approach to public domain development in the town centre is conventional and largely cosmetic—consisting primarily of ‘streetscape improvements’ that retain the existing physical and operational disassociation of the civic centre and shopping centre. As such, it is unlikely that these planning provisions will enable the civic centre to begin outcompeting the shopping centre as the town centre’s primary public domain. This is what I set out to confront in my project.

This project investigates how the public domain performance of Broadmeadows’ civic centre might be improved by physically and operationally combining it with the shopping centre. Instead of trying to ‘activate’ the civic centre’s existing public spaces, the project proposes to change where the civic realm of the town centre occurs—to occupy the same physical space of the socially active shopping centre. In doing so, the shopping centre’s current insularity is broken down, and its ability to attract and generate social activity is appropriated for the benefit of the civic centre. By examining how the physical, operational and experiential conflation of the civic centre with the shopping centre could be achieved, this project provides an opportunity to investigate a range of strategies for combining.

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*The relationship between shopping and the city has … inverted from shopping as a component of the city to shopping as a prerequisite to urbanity. Rather than shopping (as an activity) taking place in the city (as a place), the city (as an idea) is taking place within shopping (as a place).*

——John McMorrough, ‘City of Shopping’\(^1\)
A suburban centre situated 15km north-west of Melbourne’s central business district, Broadmeadows lies at the cusp of the cul-de-sac and the grid—at the transition between the post-WWII outer suburbs and Melbourne’s older, inner suburbs. Situated on the western side of the suburb’s railway station, Broadmeadows’ town centre is comprised of a shopping centre and civic centre located on either side of its Main Street. Within walking distance of the station and town centre are a large Health Centre, Kangan-Batman TAFE (a tertiary education institution), a number of schools, and the Broadmeadows Town Park. The civic centre comprises a Town Hall and Council office building, library, police station and courthouse. Broadmeadows’ new Civic Plaza forms the forecourt to the public library (the Hume Global Learning Centre), while the police station and courthouse also have smaller public forecourt spaces. Situated opposite the library and Council office building on Main Street, Broadmeadows’ shopping centre is a monolithic internalised building surrounded by a sea of open-air car parking. It is a typical suburban shopping centre, with a retail mix comprising supermarkets, discount department stores (Target, Bi-Lo), specialty shops, foodcourt and cinema. A number of big-box retailers, such as Bunnings Hardware and Harvey Norman, are located immediately north of the main shopping centre building. The shopping centre is by no means a ‘mega-mall’ or ‘destination’ shopping centre such as Melbourne’s Chadstone. Nonetheless, 2005 sales figures showed that Broadmeadows’ typical suburban shopping centre attracts large numbers of visitors, generating annual traffic of 8.2 million and sales of $230 million, drawn from a wide catchment of both local and regional populations. Broadmeadows’ civic centre, by comparison, pales into insignificance.

Broadmeadows is rapidly changing…

What makes Broadmeadows interesting is that it is currently experiencing rapid urban change. The development impetus is very clear, driven by the dual forces of economic growth and planning policy. Broadmeadows is part of the Hume Growth Area, a strategically positioned major transport hub in north-west Melbourne that incorporates key metropolitan and interstate road and rail infrastructure, as well as Melbourne International Airport. The Victorian Growth Areas Authority estimates that, at present, Hume provides nearly one quarter of all jobs in northwest Melbourne. Hume is also the fourth fastest growing municipality in Australia, and by 2030, the...
Hume growth area is expected to generate up to 95,000 new jobs and around 20,000 new households; and Broadmeadows is identified as the key employment, entertainment and services centre for both the Growth Area and the broader region. Current strategic planning by both the Victorian state government and the local council aims to transform Broadmeadows into a dense, mixed-use, town centre through principles of transit-oriented development. There are a number of factors that make Broadmeadows an attractive location for urban consolidation: it is a major stop on the metropolitan train network, it has higher education and health institutions close to the train station, and its shopping centre is a successful magnet for regional retail activity. Under the Victorian Government’s metropolitan strategic plan, Melbourne 2030, Broadmeadows was nominated as one of twenty-five ‘Principal Activity Centres’ in the Melbourne metropolitan area. It was also designated a ‘Transit City’ in the associated Transit Cities Program, an implementation mechanism of Melbourne 2030 that focuses on urban renewal through transit-oriented development. Hume City Council adopted the state government’s planning strategy for Broadmeadows and further articulated its development aims in its 2004 Broadmeadows Transit City Masterplan, which guides the redevelopment of the town centre as a ‘compact core … with medium-rise buildings accommodating a mix of housing, government services, retail, office and entertainment’. Parts of the Broadmeadows Transit City Masterplan have already been realised, with Council recently completing the development of the Hume Global Learning Centre (library) in 2003, the Hume City Council Offices building in 2007, and the Broadmeadows Civic Plaza, also in 2007. In late 2008, the Victorian Government designated Broadmeadows as one of six new ‘Central Activity Districts’, to be developed as centres with ‘CBD-like functions’, and committed an additional $80.3 million to developing Broadmeadows as the ‘capital of Melbourne’s north’. 
One of the oldest suburban areas in Hume, Broadmeadows was initially developed in the 1950’s as social housing. Council’s *Better Living in Dallas and Broadmeadows* report explains that, despite the then Housing Commission’s high ambitions for the suburb, implementation problems led to a ‘severe lack of community services and facilities’, which in turn created ‘a range of social problems [that have] adversely affected the area’s public image’\(^{15}\). One of Council’s key strategies for attracting new residents and commercial investment to Broadmeadows is to reinvent its public image through its architecture and civic spaces. To this end, Hume Council undertook the development of the Global Learning Centre, Council office building and Civic Plaza as demonstration projects; and in 2006, held a widely publicised national architectural and urban design ideas competition, *Proposition 3047, for Broadmeadows’ town centre*\(^{16}\). Council’s strategy for raising Broadmeadows’ public profile through the promotion of architectural set pieces is implicit in the *Broadmeadows Transit City Masterplan*, evident in the architectural expression of the Global Learning Centre and Council office building, and clearly articulated in the *Broadmeadows Transit City Local Policy*, which encourages ‘architectural statements’ to give Broadmeadows a ‘viable and progressive image’\(^{17}\).

The other key component of the strategy for reinventing Broadmeadows’ public image is the development of an ‘active’ and ‘high quality’ public domain—an objective that is reiterated throughout Council’s planning documents for Broadmeadows. For example, *Better Living in Dallas and Broadmeadows* articulates the ‘need for a high quality public realm to encourage more people into public spaces and streets, resulting in more community interaction, greater public safety, improved health, more pride and increased property prices’\(^{18}\). The *Broadmeadows Transit City Masterplan* similarly focuses on the appearance and amenity of the town centre’s public spaces, not only for social reasons, but also for their contributory role in attracting residential and business investment. However, while the architectural strategy has been to promote a point of difference to Broadmeadows’ town centre through its new buildings, the landscape architectural strategy articulated in the planning documents has been less ambitious. The public domain works described in the *Masterplan* are primarily cosmetic ‘streetscape improvements’ such as paving, lighting and tree planting, in addition to the development of the Civic Plaza. While these
are perfectly reasonable provisions, it is unclear how such a conventional response would be able to counteract the shopping centre's dominance as the principal attractor and generator of social activity in the town centre. The Masterplan adopts the conventional position that the provision of public spaces (albeit of 'high quality') will, in itself, generate an active public domain. The existing situation in Broadmeadows suggests that this will not be the case. The overwhelming success of the shopping centre has already comprehensively marginalised the civic centre's function as a public domain. The public space improvements described in the Masterplan will not change the physical relationship between the civic centre and shopping centre, so the relationship is also unlikely to change operationally in any substantive way. It is clear that the fundamental public domain issue in Broadmeadows is not the lack of public space, but the lack of public activity in those public spaces.

Undertaken in 2006, my Broadmeadows project also coincided with the Proposition 3047 design competition. At that time, the Global Learning Centre had been completed, the Council office building was under construction, and construction had yet to commence on the Civic Plaza. The starting points for my project were the *Broadmeadows Transit City Masterplan* and the *Proposition 3047* brief. Both addressed the insularity of the shopping centre by advocating an expansion of the shopping centre southwards, towards the civic centre. ‘Active street frontages’ were prescribed for the suggested extension, as a means to better integrate the shopping centre with the civic centre. While this knitting together at the edges is a perfectly reasonable response, the bulk of the shopping centre would still continue to function as a separate, insular, environment. Also in 2006, the shopping centre embarked on a $30 million expansion project that included a new parking structure at its southern side, further consolidating its physical separation from the civic centre. The expansion also included a new entertainment and ‘youth fashion’ precinct; however this is located at the northern end of the shopping centre, the existing part of which separates this new high activity area from the civic centre. It was clear that neither the proposals for the civic centre nor the shopping centre's expansion would fundamentally change the current condition in Broadmeadows' underperforming civic public domain.
My project proposes to increase the civic centre’s ability to function as a place where social exchange actually occurs by conflating it with the shopping centre—so that the civic and retail activities of Broadmeadows’ town centre occur simultaneously within the same physical space. This proposition comes from the view that, in the presence of the shopping centre’s overwhelming attractive power, resistance is futile. Instead of trying to outcompete the shopping centre, my project proposes a strategic capitulation that seeks to appropriate the shopping centre’s social activity for the benefit of the civic realm. The new civic/shopping centre is created by combining the development of the civic centre with a redevelopment of the shopping centre, which offers opportunities for investigating design tactics for achieving physical, operational and experiential combination.

In proposing to combine the civic centre with the shopping centre, the benefit for the former is clear. The shopping centre’s ability to attract constituents and generate activity would inject much-needed public life to the civic centre. The benefit to the shopping centre is perhaps less clear. Its disengagement from the civic centre does not hinder its success—indeed, its insularity can be regarded as advantageous, given that predictability and control are fundamental goals of shopping centre management. Nonetheless, the physical engagement of shopping centres with surrounding urban fabric is not without precedent; two examples can be found in Melbourne’s central business district—Melbourne Central and QV. Melbourne Central, an existing shopping centre, had its internal circulation opened up during redevelopment to physically connect with the surrounding public streets and laneways; while QV is a new development that includes ground level ‘laneways’ that connect with the surrounding public streets. While both shopping centres are clearly defined territories within the city, their autonomy has been deliberately eroded through this physical connection with external pedestrian circulation—indicating that there is commercial benefit to be gained from engaging with the world outside the shopping centre. Consequently, the premise at Broadmeadows is that combining the shopping centre with the civic centre can be to the mutual benefit of both parties—retail activity generates public activity in the civic realm, while the addition of civic programs increases incidental traffic, and hence potential consumer activity, in the retail realm.
PHYSICAL COMBINATION—PEDESTRIAN CIRCULATION

Examination of the *Broadmeadows Transit City Masterplan* also provided clues for a method to physically combine the civic centre and shopping centre. The Masterplan compares Broadmeadows’ street pattern to that of Melbourne’s central business district and identifies Broadmeadows’ large suburban blocks, and the absence of a ‘fine grained’ pattern of streets and laneways, as key physical obstacles to both development opportunity (through the scarcity of frontages) and pedestrian activity. However, closer inspection of the shopping centre’s internal circulation reveals a street-like logic in the organisation of its circulation spaces that is very similar in scale and arrangement to the streets and laneways of central Melbourne.

Circulation became the means by which the conflation of the civic centre with the shopping centre could be physically achieved. Presuming that both the planned civic centre development and shopping centre redevelopment are combined as one development move, the shopping centre’s existing internal circulation ‘streets’ are extended as public streets across the entire town centre, dissecting the large suburban blocks. The shopping centre is then pulled apart to create a new zone of development opportunity that encompasses the entire town centre. The existing large tenancies are retained as activity magnets, while the intermediate space, formerly occupied by
smaller retail tenancies, can now be redeveloped—a means by which the Masterplan’s objective of increased development density could be achieved.

Adopting the position that pedestrian activity is conducive to public social interaction, my strategy at Broadmeadows is for pedestrian space, rather than building form, to be the primary means of physically organising the civic/shopping centre. The objective for the new pedestrian spaces is to maximise connectivity and permeability—one that is shared by the conventional logic of shopping centre circulation. The intention in shopping centres is to maximise foot traffic, and consequently exposure, to retail offerings; this neatly coincides with the desire to increase chance encounters and social interaction in public spaces. Analysis of the existing circulation pattern in Broadmeadows’ shopping centre also reveals a variety of experiences and a hierarchy to the network, which ties together the major retailers while generating traffic to the minor ones. This pattern is reorganised to fit the linear configuration of the new development zone, and rationalised to provide developable parcels and a range of retail spaces. The new pattern provides a pedestrian mall that parallels the two new streets, as well as a variety of arcades and laneways. The pedestrian mall recalls, at a larger scale, the experience at the two local shopping centres in the Broadmeadows district—Dobell Place and Olsen Place—which are both organised as outdoor pedestrian spaces. The new arcades and laneways assume a range of scales and configurations to maximise the variety and surface area of retail frontages provided, while at the same time generating a multitude of different spatial experiences. While the new circulation pattern is controlled at ground level, with the express purpose of maximising pedestrian connectivity, the final form of the buildings in the civic/shopping centre remains undetermined. The circulation framework establishes the building plates, but the ultimate height of each building would be governed by development pressure.
ABOVE:
Local suburban shopping spaces in the Broadmeadows area

LEFT:
Shopping centre circulation pattern reconfigured to fit new development zone in civic/shopping centre

pedestrian circulation spaces inside existing shopping centre

reconfigured pedestrian circulation pattern applied to development zone
Building floor plates open and close to create a variety of laneway and arcade spaces within the new development zone.

maximum permeability and connectivity within pedestrian spaces

pedestrian spaces shape building footprints in new development zone
OPERATIONAL COMBINATION—PROGRAMATIC SHUFFLE

The system of operation within the newly established spatial framework of the civic/shopping centre also draws its cues from the logic of shopping centre organisation. Despite myriad manifestations, shopping centres are consistently organised according to the principle of activity magnets. Large retail tenancies, which attract large numbers of visitors, are located at the extremities of a shopping centre, generating maximum foot traffic to the smaller retail tenancies in between. At Broadmeadows, this logic is applied at the urban scale to the civic/shopping centre. In this scenario, the major activity generators could be retail, civic, administrative, or entertainment activities. The specific program of each magnet is unimportant to the system—what matters is that major activity generators are present in the system. Consequently, the magnets are interchangeable, as their individual locations are not determined by their particular programmatic designation. This combinatory system of operation establishes a locational indeterminacy that enables the civic and retail activities to be redistributed across the entirety of the new development, into which other activities could also be consolidated. For example, the big-box retailers could potentially move into the civic/shopping centre, thereby freeing up the outlying site they currently occupy for residential development. The locational fluidity of programs in plan could also operate in section. The vertical combination of functions could be as conventional as retail tenancies at ground level with offices above; however, the flexibility of the system allows for more unconventional combinations to occur, and also enables the car parking to be embedded at different levels within the new civic/shopping centre.

Activity magnets

LEFT, FROM TOP:
¬ Chadstone Shopping Centre
¬ Salamander Bay Shopping Centre
¬ Broadmeadows Shopping Centre
29: 

- **conflict: broad meadows**
- **retail magnets**
- **urban magnets**
- **programmatic shuffle**
- **consolidation**
EXPERIENTIAL COMBINATION—MONTAGED FRAGMENTS

The new spatial framework and operating system of the civic/shopping centre enable it to be experienced simultaneously as a regional destination and a local place—the distinction occurs in the perception of the user, based on their particular needs at each visit. The everyday, local experience is straightforward and walkable. As a regional destination, a variety of experiences is available through the laneways, arcades, streets and mall. The range of experiential qualities that might occur in the civic/shopping centre has been explored through the idea of montage, where a composite whole is created from fragments. In this case, the fragments comprise existing laneway types and pedestrian interface conditions observed in Melbourne and Sydney. These found conditions were combined in section to explore the range of possibilities and opportunities afforded by different adjacencies, and the new composite relationships were then reinterpreted spatially in model form.
vehicular arrival experience

existing car parking
shopping centre + council + commuter
87,930m²

car parking redistributed
108,700m²

Broadmeadows Shopping Centre carpark

transfer to pedestrian mode
Perhaps the single most isolating factor in the present situation at Broadmeadows is the large expanse of surface-level car parking that insulates the shopping centre from its surroundings. The creation of the civic/shopping centre enables the reclamation of these existing parking areas by consolidating them into new structures. The locational fluidity provided in the civic/shopping centre’s operating system allows for car parking to be redistributed and embedded anywhere within the spatial framework: at street level, above street level or at basement level. Car parking could also occupy entire buildings or be combined with other programs within a building.

While the consolidation of parking into structures seems a logical response to the current situation, it should be recognised that the single-function parking structure is no less isolating that the sea of car parking. The urban critic Marco D’Eramo observes that parking structures ‘interrupt the urban fabric, creating a terrain vague that breaks up the social network’\(^2\), and the same can be said of the expanse of parking that surrounds Broadmeadows’ current shopping centre. Due to their size and singular function, multi-storey parking structures create ‘black holes’\(^2\) in the urban fabric, while surface level carparks create typically islands in the suburban fabric. However, car parking also functions as an attractor in suburban situations—one consequence of suburbanisation is the dependence on the private motor car as the primary means of travel; accordingly, the carpark is vital to the successful functioning of any suburban centre. The sea of car parking that surrounds the typical suburban shopping centre may be a consequence of cheap available land, but it also serves as a magnet that attracts customers to the shopping centre. Furthermore, the point of arrival for the majority of people entering the civic/shopping centre will be a carpark. Beyond the utilitarian role of storing cars, the carpark therefore assumes a civic role as threshold to the pedestrian public domain. My project investigates how car parking could be a connective, rather than divisive, experience in the civic/shopping centre by examining two different types of parking situations: the redevelopment of the existing shopping centre’s underground carpark, and the development of a new, multi-level parking station.

### CAR PARKING: A CONNECTIVE EXPERIENCE

<table>
<thead>
<tr>
<th>Carpark Type</th>
<th>Footprint</th>
<th>Levels</th>
<th>Total Area</th>
<th>Approx. Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Underground</td>
<td>3,834 sqm</td>
<td>3</td>
<td>11,496 sqm</td>
<td>404 car spaces</td>
</tr>
<tr>
<td>New Multi-level</td>
<td>4,132 sqm</td>
<td>2</td>
<td>8,264 sqm</td>
<td>281 car spaces</td>
</tr>
<tr>
<td>Refreshment</td>
<td>4,055 sqm</td>
<td>6</td>
<td>24,330 sqm</td>
<td>811 car spaces</td>
</tr>
</tbody>
</table>

---

1. 1,765 sqm footprint
   3 levels + basement
   Total 7,560 sqm
   Approx. 235 car spaces

2. 4,132 sqm footprint
   Basement carpark
   Approx. 138 car spaces

3. 5,122 sqm footprint
   2 levels + basement
   Total 15,366 sqm
   Approx. 512 car spaces

4. 8,000 sqm footprint
   Existing basement carpark
   Approx. 267 car spaces

5. 3,483 sqm footprint
   Basement carpark
   Approx. 116 car spaces

6. 5,366 sqm footprint
   Basement + 3 levels
   Total 21,544 sqm
   Approx. 718 car spaces

7. 3,473 sqm footprint
   Basement carpark
   Approx. 116 car spaces

8. 3,834 sqm footprint
   2 levels
   Total 7,668 sqm
   Approx. 255 car spaces

9. 1,295 sqm footprint
   3 levels
   Total 3,885 sqm
   Approx. 130 car spaces

10. 2,005 sqm footprint
    3 levels + basement
    Total 8,020 sqm
    Approx. 267 car spaces

11. 1,734 sqm footprint
    Basement carpark
    Approx. 60 car spaces

12. 4,055 sqm footprint
    6 levels (2 basement)
    Total 24,330 sqm
    Approx. 811 car spaces
Plan of basement carpark & supermarket, showing link to parking station

Basement carpark and supermarket at civic/shopping centre

Basement carpark & produce market at Broadway Shopping Centre, Sydney.
Basement carpark

By virtue of being subterranean, basement carparks are normally considered to be singular territories. However, the insertion of other programs into carparks is not unusual, although they are typically car-related activities such as car wash and car hire. The location of a fresh-produce market in the basement carpark of Broadway Shopping Centre, a multi-storey urban shopping centre in Sydney, provides an example of a more unusual, but nonetheless successful, programmatic combination. At Broadmeadows, the existing basement carpark is expanded to increase the parking area by more than a third (from 8,000m² to 11,000m²) and incorporate the relocation of one of the shopping centre's two supermarkets. Situated at the bottom of the existing travelators that connect with the ground level, the supermarket capitalises on the large volume of passing traffic afforded by its position at the threshold between the carpark and the civic/shopping centre. The combination of underground carpark and supermarket not only creates a new threshold experience between the carpark and civic/shopping centre, it also provides two separate experiences of doing the grocery shopping: drive-in, drive-out access to the supermarket without necessarily having to visit the rest of the town centre, and the opportunity to easily pick up groceries on the way home from other activities in the civic/shopping centre.
G  internal (civic/shopping) street level

+1 Pascoe Vale Road (main road) level

+2 bridge link to retail/commercial

parking station link to retail/commercial building

small retail tenancies at parking station, civic/shopping centre

parking station study model
light penetrates deep floor plates

small retail interface to parking station, Hardware Lane, Melbourne.
Parking structure

A sizeable gap between two extant large shopping centre tenancies provides an opportunity to insert a new multi-storey carpark as infill development. The position of the new parking structure means that it will become a new threshold between the motorist experience on the main road, and the pedestrian experience at the civic/shopping centre’s internal street. At the main road, the parking structure is required to perform as an attractor for the civic/shopping centre, while at the internal street a pedestrian-amenable interface is necessary to counteract the ‘black hole’ effect that D’Eramo describes. The approach at the internal street, inspired by the example found at a multi-storey carpark in central Melbourne, is to insert small retail tenancies at the footpath edge of the carpark. The small tenancy spaces do not unduly encroach into the available parking area and their size is ideally suited to small businesses, such as dry cleaners, florists and shoe repairers, who benefit from the increased exposure to passing trade that is afforded by their threshold position.

For the sake of efficiency, parking structures typically have deep floor plates and low ceilings, resulting in dark, oppressive spaces—the common entry experience to large urban complexes. In order to create a more inviting threshold to the town centre, I investigated ways of having natural light penetrate the deep carpark structure while still maximising the number of parking spaces. The solution was to provide continuous folded planes of parking ramps that break up the typical deep floor plates, while also functioning simultaneously as circulation space and car storage space. Additional light is introduced by cutting holes vertically through all levels of the parking structure, into which planting is introduced to create a combined carpark ‘park’ experience that addresses the civic role of the carpark as threshold to the civic/shopping centre. The carpark/park planting is reinforced with planting at the interface between the carpark and the main road, accentuating the arrival experience and satisfying the need for the carpark to serve as a visual attractor on the main road. Additionally, the basement level of the new parking structure would connect to the expanded existing basement carpark. Car parking assumes the role of circulation infrastructure—creating an alternate, subterranean, vehicular cross connection through Broadmeadows’ civic/shopping centre.
As John McMorrough explains in his essay ‘City of Shopping’, the compatibility between urban civic and retail activities has a ‘firmly established historic lineage that stretches back to the ancient Greek agora, where the notion of Western public life emerged alongside the marketplace’. Much has been written about the urban dimension of retail activity, with notable recent contributions being ‘The architecture of consumption’ chapter in Deyan Sudjic’s *The 100 mile city*, which examines the interrelationship between retail activity and urban form; and the *Harvard Design School guide to shopping*, which argues that consumer activity has infiltrated urban life to such an extent that retail experience can no longer be differentiated from urban experience. While this project is not so much concerned with extending the interpretation of retail spaces as urban experience, in conflating the civic and retail activities of Broadmeadows’ town centre, the civic/shopping centre becomes a deliberate manifestation of what both Sudjic and the *Harvard Design School guide to shopping* contend is the prevailing urban phenomenon of our times—that shopping is perhaps the one true public activity that remains in contemporary cities.

While the principal objective of the civic/shopping centre project was to examine design methods for combining, it also raises difficult, and unresolved, questions about the nature and values of urban public space. Does Hajer and Reijndorp’s definition of the ‘public domain’ as ‘those places where an exchange between different social groups is possible and also actually occurs’ negate the need to change the existing situation at Broadmeadows’ civic centre—given that the shopping centre is already functioning as a de facto, readymade, public domain? The problem at Broadmeadows’s town centre is not the absence of social activity or exchange, but that the social activity that does occur is not a visible part of the town centre. While the proposition of a civic/shopping centre conflation fulfils Council’s desire for a visibly ‘active public domain’ in the town centre, does this public activity have to occur on publicly owned land? Could the entire town centre be sold to private interests to develop and manage, with civic programs becoming tenants of the new civic/shopping centre? This is not an entirely improbable scenario, given that privately owned and operated town centres already exist in Australia—examples include Robina Town Centre at the Gold Coast, and New Rouse Hill in Sydney, both of which are built on the urban fringe of their respective cities. Furthermore, many large suburban shopping centres—such as
Warringah Mall in Sydney and Erina Fair at Gosford—routinely incorporate municipal services such as libraries, community centres and childcare centres.

Hajer and Reijndorp’s research distinguishes public domain from public space—a distinction between public function and public ownership—and they contend that the former need not, and often does not, to coincide with the latter. However, the existence of privately owned public domains should not negate the need for public space. While researching shopping spaces for this project, I was instructed by security guards to stop taking photos of the ‘public square’ at Melbourne’s QV, just as I was at more obviously controlled shopping centre environments such as Melbourne Central and Westfield Bondi in Sydney. The uneasy relationship between public and private interests in the management of privately owned public domains is highlighted at Sydney’s New Rouse Hill Town Centre, which is marketed as the ‘heart of [the] community’, featuring a ‘mix of old-fashioned main street shopping’ combined with a library and other community facilities. According to the GPT property group, which developed and owns the New Rouse Hill Town Centre, private ownership ‘ensure[s] that 99 percent of the people using the space are kept safe and unaffected by people who shouldn’t be there’. The phenomenon of shopping centres functioning as ‘town centres’, whether by default or design, has a much longer history in the United States—as have the concomitant issues relating to the regulation and control of public behaviour and activities in those privately owned public domains. In highly suburbanised New Jersey, the state Supreme Court ruled in 1994 that privately owned shopping malls could not prohibit the distribution of political protest material on their premises, because they had supplanted the parks, squares, streets and ‘downtown’ business districts that were traditionally the home of free speech. So, while private ownership may not necessarily negate civic function, government regulation is required to ensure that public activity prevails. Of course, the converse situation can be found in the proliferation of highly regulated urban public spaces—such as the Darling Harbour ‘waterfront entertainment precinct’ in Sydney, or indeed much of Sydney’s CBD, which is constantly monitored by CCTV cameras—that demonstrate that public ownership does not automatically mean unrestricted freedom.

As previously noted, the interrelationship between public space and ideals of social liberty is the subject of a very large discourse that spans multiple disciplines, including political theory, cultural geography, urban theory,
conflict: broadmeadows

legal theory and philosophy. While it is not the intention of this study to directly engage with this complex discourse, the proposition of a civic/shopping centre does raise the fundamental question of whether public and private interests can operate successfully in a combined development. This is what my design projects seek to elucidate. The relationship between public and private interests is of primary concern when considering combining as a means of developing public space. The civic/shopping centre raises issues concerning the effects of ownership and development control on public domain functioning. Successful resolution of these issues most likely lies outside the realm of design—requiring an examination of regulatory regimes and the contractual structuring of public–private development partnerships, which is beyond the scope of this study. As such, the subsequent projects endeavour to investigate how combined development could be initiated while still retaining responsibility and control in the public sector.

The existing situation at Broadmeadows illustrates that the mere provision of publicly owned and accessible space is not enough to generate public social activity, indicating that there must be core values, beyond public ownership, that make a space public. The Broadmeadows experience supports Hajer and Reijndorp’s contention that the ability to foster social activity, or exchange, should be considered a fundamental characteristic of successful public space. A key objective of this study is to investigate how social exchange could be encouraged by increasing the amount of contact between different urban activities in the one place. In this project, the civic/shopping centre maximises the physical contact between the civic and retail activities of Broadmeadows’ town centre because they now occur, and are experienced, as one and the same—within the same physical space, at the same time. A number of the design methods that were investigated for conflating retail activity with civic function in this project warrant further investigation, including the transposition of spatial patterns, intermixing and layering of programs, and aggregation of physical forms. These tactics recall the ideas of crossprogramming, transprogramming and disprogramming that Bernard Tschumi put forward in *Architecture and Disjunction* as methods for intentionally combining dissimilar or incompatible programs in the one building or spatial situation. Tschumi is interested in combining as a strategy for creating unfamiliar and unprecedented relationships between spaces and the ‘events’ that take place in them, with the principal aim of achieving an architecture that is authentic to how he regards the contemporary
urban experience—fragmented, disjunctive and, to use a more current term, ‘mashed-up’. While it is not the intention for my project work to examine the application of Tschumi’s ideas, his thinking on how to physically combine disparate activities is nonetheless instructive, particularly if the result of creating new urban experiences that combine unfamiliar activities or events is an increase in the possibility and occurrence of social exchange.

At Broadmeadows, the proposition of a civic/shopping centre illustrates the opportunistic power of combining—by conflating the two realms, the shopping centre’s overwhelming ability to attract and generate social activity is appropriated for the benefit of the civic centre, enabling it to realise its expected public domain function. In this project, the conflation of the two competing activities is plausible because both normally operate with a high level of public interaction and are spatially compatible. This, of course, is not always the case. What happens when the activities of a public space are seemingly incompatible with the opposing urban activity that is responsible for marginalising its public domain functionality? What is the value of combined development for improving public domain performance in such a situation? The next project, at the Botany foreshore in Sydney, examines these questions.
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Department of Planning and Community Development, 
ew/23201b02fd5c5baca256d48003ce94c83a095b12 
f1dce12a56d190009a00>, accessed 12 July 2009.

15 Hume City Council 2003, Better living in Dallas and 
Broadmeadows: an urban renewal plan for the Dallas-
Broadmeadows area, summary version, prepared by Peter 
Tesdorpf & Associates, Northwood Blyth & Associates & 
The report describes the socio-economic disadvantages in 
Broadmeadows across a range of criteria, including: mean 
household income (20% less than State average); high 
proportion of public housing (21% in Broadmeadows, 
compared to State-wide average of 4%); low car ownership (1 
in 8 households have no vehicle); high levels of unemployment 
and a high proportion of households on disability pensions 
(for which the report does not state actual figures).

16 The Proposition 3047 design competition was held by Council 
in association with the Victorian Government, Architecture 
Review (Australia) magazine and Gandell Retail Management 
(now known as Colonial First State Property Management).

17 Hume City Council 2006, Broadmeadows Transit City 
Local Policy, Hume City Council, Melbourne.

18 Hume City Council Better living in Dallas and Broadmeadows: 
an urban renewal plan for the Dallas-Broadmeadows area, p.2.

19 Melbourne Central initially designed by Kisho Kurokawa, 
Bates+Smart, McCutcheon and Hassel (1988); 

20 QV (2005) principally designed by B+N (urban planners 
and design architects of the basement, retail podium and 
public space; includes buildings designed by Denton Corker 
Marshall (QV3 office building for Andersens), Lyons (office 
building for BHP Billiton), McBride Charles Ryan (QV2 
apartment building), John Wardle Architects (QV1 apartment 
tower) and Kerstin Thompson Architects (car park).

21 Hume City Council Broadmeadows Transit City Masterplan, p4.

22 M D’Eramo 2003, ‘Critical mass (and beyond)’, 

23 ibid.

24 Multi-storey parking structure with small retail tenancies 
inserted at ground floor observed at corner of Hardware 
Lane and Bourke Street, in central Melbourne.

25 Quoted in: 
S T Leong 2001, ‘...And then there was shopping’.

26 McMorrough ‘City of Shopping’, p194.


29 Hajer & Reijndorp In search of new public domain: analysis and strategy, p11.

30 New Rouse Hill Town Centre designed by Rice Daubney, Allen Jack+Cottier, Group GSA in association with Civitas Urban Design and Planning. 
This project was completed in 2008, two years after my Broadmeadows project was undertaken.


32 Quoted by urban critic Elizabeth Farrelly in her column in the *Sydney Morning Herald*.


Tschumi describes his ideas of cross-/trans-/disprogramming as:

Crossprogramming: ‘using a spatial configuration for a program not intended for it, that is, using a church building for bowling’

Transprogramming: ‘combining two programs, regardless of their incompatibilities, together with their respective spatial configurations. Reference: planetarium + rollercoaster.’

Disprogramming: ‘combining two programs, whereby the required spatial configuration of program A contaminates program B and B’s possible configuration. The new program B may be extracted from the inherent contradictions contained in program A, and B’s required spatial configuration may be applied to A’.

**IMAGE REFERENCES**

(sources for published images in this chapter)

p22 Images from Broadmeadows Transit City Masterplan 
Hume City Council 2004, *Broadmeadows Transit City Masterplan*, prepared by Haskell Architects and Jones & Whitehead, for Hume City Council and the Victorian Department of Sustainability & Environment, Melbourne.
CO-EXISTENCE
BOTANY · FORESHORE
Activity at Foreshore Beach

Port Botany expansion
On the northern shore of Botany Bay in Sydney, sandwiched between one of Sydney Airport’s runways and one of Port Botany’s container terminals, and separated from the suburb of Botany’s residential areas by a busy industrial road, is a long public beach that has, despite these odds, managed to successfully function as a popular recreation space. This situation will be irrevocably altered by the expansion of Port Botany’s container terminal facilities, which is currently under construction. The configuration of the Port Botany expansion will reduce the usable length of Foreshore Beach by more than half, severely restrict public access to the water at the beach and create considerable adverse impacts to the fragile ecology of Penrhyn Estuary, which is situated between the port and the beach. The economic imperative of Sydney’s primary container port has very effectively outcompeted the recreational amenity of Foreshore Beach for space at Botany Bay’s highly contested waterfront. Located 10km south of Sydney’s central business district, Botany is one of the few remaining industrial suburbs close to the city centre. However, its proximity to central Sydney has also created an impetus for higher density residential redevelopment in Botany, as part of the larger current trend of industrial-to-residential redevelopment in Sydney’s inner south that is fuelled by metropolitan-wide population pressures. As such, the marginalisation of Foreshore Beach as a result of the Port Botany expansion not only disadvantages the existing users of the beach, but also the future residents of the fast-changing suburb of Botany.

At Broadmeadows, the public domain issue was that the social activity of the town centre was not occurring in its public spaces at the civic centre. At the Botany waterfront, there is no such dislocation between public space and public domain function—social activity is currently occurring at the public space of the beach. The problem is that Foreshore Beach’s continuing ability to foster this activity is to be severely curtailed. Undertaken in early 2007, just after the NSW State Government granted planning approval for the port expansion, this project accepts the need for the port development but questions the perceived incompatibility of the working port and recreational beach. Rather than accept the either/or situation, the project investigates design strategies for enabling the continued co-existence of both public recreation and industrial activities at Botany’s foreshore. Unlike the Broadmeadows project, where the operational compatibility of the civic and retail activities facilitated their conflation as a civic/shopping centre, the Botany project investigates how a combined development could be conceived for activities whose normal operational requirements necessitate their spatial segregation. This project considers how the need to expand the port facilities could be beneficial, rather than detrimental, to the recreational amenity of the public foreshore, through an examination of how new public domain experiences could be created in combination with the port expansion development. Furthermore, it investigates how the activities of the port and airport could contribute positively to the public domain experience of Botany’s foreshore.

——Watkin Tench, January 1788, on the arrival of the First Fleet at Botany Bay1.

1. ibac itse itie was scarcely more longed for by Ulysses than Botany Bay by the adventurers who had traversed so many thousand miles to take possession of it . . . To us it was a ‘great and important day’, though I hope the foundation, not the fall, of an Empire will be dated from it.

——Watkin Tench, January 1788, on the arrival of the First Fleet at Botany Bay.
1 Botany Bay National Park
2 Curwee Cove
3 Congwong Bay
4 Frenchmans Bay
5 Yarra Bay
6 Brotherson Dock
7 Foreshore Beach
8 Lady Robinsons Beach
9 Towra Beach
10 Silver Beach
The existing situation

Sydney is often referred to as the ‘harbour city’, due largely to the enduring iconic value of the spectacular natural setting of Sydney Harbour. Access to water, be it physical or visual, fuels the public imagination—as evidenced by ever-escalating property prices in the city’s affluent harbourside suburbs and ever-insistent demands for more publicly accessible waterfront. Located 10km south of Sydney Harbour, and clearly in want of its cachet, Botany Bay has long been characterised by the industrial activity that occupies its shores. The site of James Cook’s landing in 1770, Botany Bay is venerated as the birthplace of the Australian nation. Rejected in favour of Sydney Harbour by Arthur Phillip upon arrival with the First Fleet in 1788, the bay subsequently became the site of the Sydney’s most polluting industries in the nineteenth and early twentieth centuries. Botany Bay has since developed into one of the country’s most important transport centres, with both Sydney’s international airport and industrial port situated on its northern shore. Despite the entrenched industrial and infrastructural activities in the Botany region, Botany Bay is a highly valued recreational space in southern Sydney, both for sailing and other watersports in the bay itself, and the variety of beaches that line its shore—ranging from the more urban Lady Robinsons Beach at Brighton-Le-Sands to the undeveloped beaches at Botany Bay National Park and Towra Point.

The current situation at the suburb of Botany is an acute example of the conflict between industrial activity and public recreation at the waterfront. Botany’s public waterfront is at Foreshore Beach, situated between the port’s northern terminal and the airport’s parallel runway. Access to the beach is hindered by heavy industrial traffic along Foreshore Drive, which separates the suburb from the bay. The advent of the airport’s parallel runway in 1993 altered wave action in the vicinity of Foreshore Beach, causing severe erosion and shoreline instability along a section of the beach and foredune area. However, despite its unpromising location and difficult access, Foreshore Beach is a well-used recreational space. On my site visits, I observed people picnicking (mainly families), walking dogs, swimming, fishing and exercising at the beach, while the sheltered embayment between the port and airport was popular with recreational boats and jet-skis. The Foreshore Beach area was particularly popular at weekends, when the car and trailer parking area on Penrhyn Road would be full, and cars would routinely be parked all along the verge along Foreshore Drive adjacent to the beach. Factors that make Foreshore Beach attractive for the types of recreational pursuits observed include—its sheltered waters, which create a safe swimming environment; the
public boat ramp is likewise sheltered and therefore usable in most weather conditions; the length and ‘undeveloped’ character of the beach; and it is one of the few Sydney beaches where dogs are allowed. Furthermore, while the beach is bookended by the port terminal and airport runway, the vista from the beach currently encompasses a wide expanse of water with attractive views right across to Silver Beach on the southern shore of Botany Bay.

The problem is that late 2006, the Federal and NSW State Governments granted final approvals for the expansion of the container terminal facilities at Port Botany. The development comprises a new 63-hectare container terminal, extending perpendicularly from the port’s existing northern container terminal and landward toward Foreshore Beach. Associated works include a new public boat ramp with car and trailer parking, a new terminal access road and a new freight rail line, all of which will dissect the previously unbroken stretch of public beach. The scale, proximity and orientation of the new terminal will adversely affect the visual amenity of Foreshore Beach, dominating the immediate vista and interrupting the long views across Botany Bay.

The new terminal’s configuration will also enclose the adjacent Penrhyn Estuary and create a channel between the port and beach, where previously there was open water. Although public access would be retained along the entire length of beach, swimming would no longer be permitted in the estuary or new channel area, and instead would be restricted to a stretch of beach approximately 500m long (less than half of the existing beach), between the new terminal and the airport. Furthermore, fishing and recreational watercraft would be prohibited in the vicinity of Foreshore Beach, and the only boating access to be retained will be to the wider bay. Given that the primary recreational activities that currently occur at Foreshore Beach are swimming, picnicking, fishing and boating, the effect of the port expansion will be the acute marginalisation of Botany’s only foreshore public space.

Port Botany’s ability to so comprehensively outcompete the Foreshore Beach for space at Botany’s waterfront can be attributed to a number of factors—political favouring of the port’s economic importance above all other considerations; undervaluation of the recreational amenity of the beach due to its association with industry; and the perceived incompatibility of industrial activity and public recreation. While the latter is disproved by the large numbers of people that do use Foreshore Beach for both active and passive recreation, despite its proximity to the port, the first two factors have had a profound effect on the shaping of the situation at Botany’s foreshore.
THE ECONOMIC IMPERATIVE OF THE INDUSTRIAL PORT

Port Botany’s importance to the economy of Sydney is incontrovertible. The Metropolitan Strategy for Sydney locates Port Botany at the southern end of Sydney’s ‘Global Economic Corridor’, which is expected to generate 30 percent (or 150,000) of the projected new jobs in Sydney by 2031. Sydney’s principle port facilities—comprising Port Botany (containers and bulk liquids) and Sydney Harbour (dry bulk, general cargo, motor vehicles and passenger vessels)—are owned and managed by the Sydney Ports Corporation, a NSW State Owned Corporation. Sydney Ports’ figures show that its commercial ports are responsible for annual trade worth over $45 billion and contribute more that $2.5 billion to the NSW state economy. Furthermore, virtually all of NSW’s container trade (amounting to 30 percent of the national total) is shipped through Port Botany, which currently handles the second largest container volumes in the country and generates $1.5 billion in economic activity a year. Figures such as these, illustrating the economic significance of the port, are invariably proffered as justification for the predominance of the port’s operational requirements.

As one of the largest infrastructure projects in the country, the development assessment process for the Port Botany expansion was lengthy and complex, requiring both NSW State and Commonwealth Government approval. Under NSW planning legislation, the port expansion is classified as a ‘designated development’, necessitating particular scrutiny because of its nature or potential environmental impacts. As such, the submission of an Environmental Impact Statement (EIS) was required, in addition to the usual Development Application. The factors which affect the need for the port expansion, its operational and spatial requirements, and its economic, social and environmental impacts at both local and regional scales are complex and multifarious, resulting in a ten-volume EIS for the Port Botany Expansion. At the risk of oversimplification, the essence of Sydney Ports’ argument was that the container trade is vital to the State economy, and that the expansion of facilities at Port Botany is essential, due to the combination of: strong forecasted growth in containerised trade, insufficient capacity of the port’s existing facilities to meet the projected demand, and the need to develop new facilities that could accommodate the technical advancements in international shipping. Sydney Ports
stressed that to ‘do nothing’ was untenable option, as
the consequence of Port Botany not expanding would be
increasingly unacceptable congestion and inefficiency in
port operations, resulting in adverse economic outcomes,
including the loss of port custom to other states.
Conversely, Sydney Ports’ expansion of Port Botany was
expected to generate $16 billion for the state economy by
2025. Faced with the economic significance of container
trade, and the potentially dire economic consequences
of not meeting the projected demand for container port
facilities, the expansion of Port Botany seemed inevitable.

The seemingly incontrovertible economic logic behind
the port expansion was nonetheless challenged by local
councils, community groups, residents, and some political
parties, who were concerned that the socio-economic
and ecological impacts of the development were not
adequately addressed by the proposal. Consequently,
a Commission of Inquiry was held in 2005 to assess
all environmental aspects of the proposed Port Botany
expansion, and to investigate feasible potential alternatives
to Sydney Ports’ proposal. The Commission agreed
that the increasing demand in container trade had
to be met, and considered the targeted operational
capacity to be reasonable\(^{11}\). However, it considered
Sydney Ports’ assertion that its proposed expansion
would be the only feasible way to meet that target to be
unreasonable and found that with ‘moderate productivity
improvements’, the throughput capacity of the existing
port facilities could be increased substantially, such
that a ‘smaller and possibly staged’ development could
reasonably achieve the targeted throughput capacity\(^{12}\).

In determining the impacts of the development,
the Commission found that ‘major ecological and
recreational impacts on Penrhyn Estuary and Foreshore
Beach respectively would result from Sydney Ports
Corporation’s preferred option\(^{13}\). In the final analysis,
the Commission found Sydney Ports’ proposed
expansion to be an ‘unwarranted overdevelopment’\(^{14}\)
and recommended against its approval, preferring
instead for ‘a smaller expansion of container
handling facilities at Port Botany be approved’\(^{15}\).

In 1984, reflecting on the events surrounding the initial
development of Port Botany, Will Sanders wrote:
\(\text{The reality today, as twenty years ago, is that state-level policy structures are dominated by single-purpose service-providing authorities which operate as highly autonomous sectors. Inattention to the locationally specific and differential aspects of projects such as Port Botany remains as systemically rooted as then… One can only conclude that, if the development of Port Botany were to begin again today, it would proceed in much the same sectoral fashion.}\)

In 2006, Sanders’ assessment proved to be prescient when
the NSW Minister for Planning approved Sydney Ports’
proposal in its entirety, stating that ‘the Commission of
Inquiry is the opinion of one person and when it was
analysed, it was going to satisfy none of the objectives
- in other words we were going to do a whole lot of
development at the port to achieve very little operational
benefit … You would have been better off doing nothing.
Now, doing nothing is simply not an option’\(^{17}\).

\section*{The devaluing effect of entrenched industrial associations}

The approval of Sydney Ports’ preferred option for the
Port Botany expansion, despite the Commission of
Inquiry’s recommendation of a feasible alternative that
provided for a more reasonable balance of interests,
clearly illustrates the powerful ability of large-scale
development forces to overwhelm local considerations.
This is obviously not unique to the Port Botany
expansion, being a recurring characteristic of many
large-scale, primarily public-sector, often infrastructural,
projects that are justified by ‘the greater good’\(^{18}\). At
Botany, another contributing factor in the apparently
effortless marginalisation of the recreational values of Foreshore Beach is its association with industrial activity, which has an unfailingly compromising effect on the perceived worth of local social and environmental values. When discussing the potential impacts of the port expansion, the EIS emphasises that Foreshore Beach and Penrhyn Estuary are ‘marginal and somewhat compromised urban landscapes’, due to their proximity to the port and the high level of modification that has occurred as a result. The compromised nature of the existing situation is then used as the basis for advocating that the port expansion would ‘protect and enhance both the recreational amenity of the Foreshore Beach corridor and the ecological integrity of Penrhyn Estuary’—through the development of recreational facilities (a new boat launch, car park, amenities building, fish cleaning facilities, pedestrian/cycle path and viewing areas) and environmental restoration works in the estuary, beach and foredune areas. However, the environmental restoration works are not contingent upon the port development and the new recreational facilities are entirely mitigatory measures that aim to compensate for the loss to existing amenity. Sydney Ports’ development does not, in itself, directly benefit Foreshore Beach—rather, it will cause a considerable loss in the recreational amenity of the beach as a direct result of the size and spatial configuration of the new container terminal. It seems that very presence of a marginalising activity is considered to attenuate its own ongoing and increasing impacts.

**Botany is changing**

In the EIS, Sydney Ports acknowledged that ‘at the local level, the proposal would have social impacts on users of Foreshore Beach and Penrhyn Estuary, and on residents of the local Port Botany community’ and conceded that those impacts were ‘potentially adverse’. Nonetheless, Sydney Ports attempted to downplay those impacts, asserting that the ‘proposed development would not result in significant social disadvantage to people in the Randwick and Botany Local Government Areas due to their particular socio-demographic status’. Not only did this comment understandably attract considerable anger from the local community and councils, it also fails to recognise that the Botany area is rapidly changing. Sydney’s ‘Global Economic Corridor’, of which Port Botany is such an integral component, also coincides with what can be interpreted as a corridor of residential redevelopment that stretches from the central business district south to Botany Bay. The exodus of industry from the inner south to Sydney’s outer metropolitan areas has made vacant large former
LOCALITIES
1 Sydney CBD
2 Zetland
3 Alexandria
4 Mascot
5 Botany
6 Banksmeadow
7 Little Bay

POPULATION CHANGE 2001–2006
adapted from 'Population Change' map
Australian Bureau of Statistics 2008,
'Sydney—a social atlas'

AS2021 considers residential development to be 'unacceptable' in zones greater than ANEF25; Botany has recent residential development in areas up to ANEF30.
industrial areas, as well as many smaller, traditionally manufacturing sites. Metropolitan-wide housing pressures, proximity to the city centre, and recent improvements to road and rail infrastructure in Sydney’s south-east\(^{25}\) have made these former industrial sites highly desirable for residential development. The result has been the wholesale transformation of large areas of Sydney’s inner south from industrial to residential and commercial (primarily office space) use—the consequence of large-scale ‘urban precinct’ redevelopments such as Victoria Park and Green Square in Zetland, and the ACI site at Waterloo, as well as the cumulative effect of the redevelopment of numerous individual sites in former industrial suburbs such as Mascot and Alexandria.

Botany is situated the furthest from the city centre of all the industrial suburbs of Sydney’s inner south, and has yet to experience the scale of post-industrial residential redevelopment that has transformed the intervening suburbs of Alexandria, Zetland and Mascot. A contributing factor is that many industrial sites in Botany remain economically viable due to their proximity to the port and airport, and are primarily occupied by freight related businesses such as warehousing and distribution facilities. As such, there is less vacant land available for redevelopment for other uses. Furthermore, Botany has traditionally been perceived as less desirable residentially, due to noise impacts from the nearby airport and negative associations with heavy industry—especially the port and chemical manufacturing facilities in the neighbouring suburb of Banksmeadow. Despite these factors, Botany is becoming an increasingly desirable location for residential redevelopment, as the number of sites available for redevelopment closer to the city diminishes while housing pressure in Sydney increases. The amount of medium-density residential development in Botany has increased in recent years, and is particularly evident in the northern section of the suburb. This is reflected in the findings of the 2006 Census, which recorded a population increase of more than 10\% in the north of Botany between 2001 and 2006, in keeping with the population growth trend evident in the inner south’s corridor of industrial-to-residential redevelopment\(^{26}\). The trend of increasing residential development in Botany is likely to continue, as Council has begun to approve residential developments in aircraft-noise affected areas where it would normally be precluded\(^{27}\). Botany’s increasing residential population places additional demands on the suburb’s public recreational spaces, which in turn exacerbates the conflict at the waterfront between the industrial port and public beach. The reduced recreational amenity at Botany’s foreshore that will result from the port expansion affects no just the existing users of Foreshore Beach, but also the suburb’s future residents.
Undervaluation of the public foreshore

Industry has long been associated with Botany Bay. Throughout the nineteenth and early twentieth centuries, it was the site of Sydney's most polluting industries, which included: tanneries, a sewerage farm, soapworks, glueworks and the burning of live oysters for lime. In the 1930s the petroleum industry began to develop in the area, culminating in the establishment of the Boral oil refinery in Matraville in 1948, and the Caltex Oil Refinery at Kurnell in 1955. The stigma brought about by Botany Bay's strong industrial associations was compounded by the location of other 'undesirable' activities in the area, most notably the maximum-security prison at Long Bay and the former Coastal (Prince Henry) Hospital, a quarantine station for infectious diseases such as smallpox and the bubonic plague, at Little Bay. Furthermore, the development of Kingsford Smith (Sydney) Airport in the 1960's and Port Botany in the 1970's established Botany Bay as one of Australia's most important transport centres, significantly modifying its northern shore in the process. Despite the adverse effect that industrial associations had on the public perception of Botany Bay, the initial proposal to establish an industrial port at Botany in the 1970s was met with what the Sydney Morning Herald described as 'the biggest and most concerted resident protest movement that Sydney has ever seen'. Community opposition to the port development, supported by the unions, environmental groups, the bay's primary producers and even other government departments, was a contributing factor in the change of government at the 1976 NSW state elections. Nonetheless, the economic imperative of the port prevailed when the Botany Bay Port and Environment Inquiry, established by the victorious Labour government, recommended that the port development proceed. The current Port Botany footprint was completed in 1979.

While the challenge from local interests could not prevent the initial development of Port Botany, it did force the government to acknowledge that the port development would cause substantial adverse impacts to the local area. The intense public antagonism toward the initial port development
prompted the then Maritime Services Board to construct a 28-hectare public park at Botany, as compensation loss of public recreation space and the severing of the former physical and cultural connection between suburb and bay. Designed by Bruce Mackenzie, the construction of Sir Joseph Banks Park required the reclamation of 22ha of land, representing 10% of the total reclamation for the initial port development. This was a major act of reparation, commensurate with the perceived scale of loss. Compared to the creation of Sir Joseph Banks Park, the public domain works associated with the current port expansion are minor in scale. The port expansion will fundamentally alter the form of Foreshore Beach and the recreational activities it currently supports will be severely curtailed. The compensatory development of a new carpark and boat ramp will physically bisect the beach, further compromising its amenity. The other mitigatory landscape works are relatively minor in scale (a pedestrian/cycle path, viewing areas) or primarily cosmetic improvements, which cannot counteract the loss in visual amenity at the beach that is caused by the dominating presence of the new port terminal. Despite the fact that Foreshore Beach is currently well used by many people for a range of recreational activities, the presence of the port has exerted such a devaluing effect on its perceived worth as a public space that the severity of the loss caused by the port expansion is not adequately recognised. This time, the scale of the compensatory works does not seem to be proportionate to the loss to Botany’s public domain.
SYDNEY PORTS’ EXPANSION CONFIGURATION

KEY
A Foreshore Beach
B Penrhyn Estuary
C New container terminal
D New public carpark and boat ramps
E Ship turning basin
F Northern container terminal (existing)
G Southern container terminal (existing)
H Hydrocarbon storage terminal
I Bulk liquids berth
My project at the Botany foreshore aims to facilitate the continued co-existence of the beach and the port by proposing an alternative configuration for the Port Botany expansion. The conventional response when a development creates adverse impacts to existing public space is to offset the loss, often through compensatory public domain developments—as demonstrated by the creation of Sir Joseph Banks Park in response to the initial Port Botany development in the 1970s. The problem is that the mitigation measures that are currently proposed for the port expansion will not adequately compensate for the new loss to the public domain function of Botany’s foreshore. This is due only in part to the relatively minor scope of the proposed new landscape works. While the initial port development significantly modified Botany’s original shoreline, its configuration did allow for the creation of Foreshore Beach—which is similar in scale and form to the foreshore prior to the port development. This time, a compensatory approach cannot result in fair restitution, because the size and configuration of the new terminal reduces the length of open water at Foreshore Beach by more than half—a fundamental alteration of the form of the waterfront to the detriment of the beach’s recreational amenity.

In offering an alternative configuration for the port expansion, my project seeks to rebalance the values that shape Botany’s waterfront. The amenity of the beach becomes a determining factor that, like the operating requirements of the airport, influences the configuration of the new container terminal. Instead of the situation where the development of the port requires compensatory measures for the loss to the public domain, the approach here is to avoid loss altogether by combining the spatial needs of the port with those of the public beach. The perceived devaluing effect of industrial associations is also reconsidered, through an investigation of how the port expansion could enable the simultaneous development of a new public foreshore that engages with the experience of the neighbouring industrial activity.

PORT EXPANSION REQUIREMENTS

In order to propose an alternative configuration for the port expansion, it was necessary to gain an understanding of the spatial and operational requirements for the new container terminal. Chapters 4 and 6 of the EIS provide a thorough explanation, respectively, of the capacity requirements and port
ALTERNATIVE PORT EXPANSION CONFIGURATION

KEY
A Foreshore Beach
B Penrhyn Estuary
C New container terminal area
D Landward extension of dock
E New wharf beach
F New public carpark, boat ramps and airport lookout
G Ship turning basin
H Northern container terminal (existing)
I Southern container terminal (existing)
J Hydrocarbon storage terminal
K New bulk liquids berth
operations that affect the size and configuration of the proposed container terminal. To summarise, the target throughput capacity of 3.2 million TEU adopted by Sydney Ports necessitates an additional 1,700m of ‘operational wharf face’, which will provide five new berths, each with a nominal length of 340m. For each new berth, 12 hectares of additional terminal area are required for container handling and storage, resulting in a total of 60 hectares for the new container terminal. The configuration of the new container terminal is affected by both the port’s marine transport operations and its terminal operations. The new terminal’s marine transport operations, which are concerned with the safe navigation of vessels to and from the port, necessitate the construction of a new 232m wide navigation channel and berths for six additional tugs. There are three main components to the port’s terminal operations: wharf operations, involving the loading and unloading of containers from ships using cranes; yard operations, concerning the temporary storage of containers awaiting transport; and the road/rail interchange, where containers are exchanged between the terminal and either trucks or trains. At the wharf interface, nominally two quay cranes are required for each ship. Within the container yard, shipping containers are stored in stack blocks, aligned perpendicularly to the wharf. Each block is typically 150m wide, 150m long and 12m high, with 20m wide intermediate roadways between blocks. The new road exchange facilities would require a parking area for 50 trucks at the terminal gatehouse, 70 truck parking bays at a temporary holding area within the terminal, and 80 truck bays for the loading and unloading of containers at the interchange. Three new rail sidings, accommodating trains between 400m and 600m in length would be required at the rail interchange, where rail mounted gantries would be used to load and unload containers.

ALTERNATIVE PORT EXPANSION CONFIGURATION

My alternative proposal for the Port Botany expansion involves extending the existing wharf simultaneously inland—by cutting back into the wharf at the head of the dock—and out into the bay, by reclaming land at the ends of both existing container terminals. This arrangement reduces the amount of land reclamation near Foreshore Beach, allowing the existing form of the beach to be retained while also reducing impacts to the adjacent Penrhyn Estuary. Although my proposal reduces the additional land area provided at the northern terminal, when combined with the excavation of dock inland and the extension of the southern container terminal, it does provide the additional wharf face that is required for the five new berths. Furthermore, the new berths would be created on both sides of the dock, providing a more equitable increase in facilities for both the northern and southern port terminals, which are currently operated by two competing
stevedores (Patricks and P&O respectively). In addition to the excavation and land reclamation required to extend the dock, my arrangement also necessitates the reconfiguration of the road and rail connections between the two terminals, the repositioning of the bulk liquids berth, and the relocation of some ancillary services currently located at the proposed excavation area.

Feasibility of alternative configuration

Although this project was not intended to provide a detailed redesign of the port expansion, it was important to ascertain that my proposed general arrangement is feasible in principle. In 2004, Price Waterhouse Coopers conducted a detailed analysis of alternative port expansion configurations for the Sydney Ports Corporation. Although the eleven configurations that were considered to be potentially feasible options did not include the exact arrangement that I am proposing, the extension of both existing terminals and the extension of the dock inland were considered feasible in separate options. As such, it is assumed here that the combination of these strategies would also be feasible for the required port operations. Additionally, some assumptions about my alternative port arrangement can be extrapolated from Price Waterhouse Coopers’ assessment, namely: that it would not cause adverse impacts on the environment and ecology of Botany Bay as a whole, as all of the feasible options considered were determined to have ‘negligible impact’; and that its ecological impacts at the local level would be less than those of the Sydney Ports configuration due to its smaller footprint, which requires less dredging and land reclamation. A subsequent review of the Commission of Inquiry report revealed that the extension strategies contained in my alternative arrangement are also similar to the options considered feasible by the Commission. The Commission’s report provided a detailed assessment of the feasibility, benefits and shortcomings for each of the three extension strategies (being the landward extension of the existing wharf and the extension of the two container terminals into the bay), which is summarised at the end of this chapter.
Ecological advantages of alternative configuration

In retaining the existing form of Foreshore Beach, my alternative configuration for the port expansion also maintains the existing integrity of the adjacent Penrhyn Estuary. Situated between the northern container terminal and Foreshore Beach, Penrhyn Estuary formed as a direct result of the port’s construction in the 1970’s. While by no means pristine, the ecosystem that subsequently developed in the estuary’s protected waters is now the only remaining viable habitat for significant and threatened species of migratory and non-migratory shorebirds on the northern side of Botany Bay. Penrhyn Estuary is also the second-most important shorebird habitat in all of Botany Bay, after Towra Point at bay’s southern shore. Sydney Ports’ configuration of the new container terminal will create a channel between the port and the beach, constricting the flow of water between the estuary and the bay. Water quality in the estuary is currently affected by polluted stormwater discharge and is under threat from contaminated groundwater plumes that are currently advancing from Botany’s industrial area southward toward the bay. While these water quality issues are external to the port expansion, and measures are being undertaken to address them, Sydney Ports’ terminal configuration will significantly reduce tidal flushing of the estuary, which will exacerbate water quality problems and most likely result in further deterioration. Furthermore, Sydney Ports’ configuration will largely enclose the estuary, and the increased physical presence of the port could potentially create a ‘flyaway barrier’ that would deter migratory and non-migratory shorebirds from using the estuary as habitat. These potential problems are avoided by my alternative configuration, as the extension of the northern container terminal retains the open aspect of the embayment at Foreshore Beach. The Commission of Inquiry found a reduced footprint such as mine would have ‘little impact’ on the flushing of Penrhyn Estuary, and that such a proposal ‘would not adversely affect water quality or shorebird access in Penrhyn Estuary’.
KEY
A Foreshore Beach
B Penrhyn Estuary
C public wharf
D protective grayne
E new wharf beach
F new public boat ramps
G new airport lookout
H road/rail interchange
I truck holding area
J truck parking area

airport parallel runway
WHARF BEACH: INFRASTRUCTURE CREATES NEW PUBLIC SPACE

This project also investigates how the port expansion could provide an opportunity to simultaneously develop a new public space at Botany’s foreshore. In addition to the water quality issues, Penrhn Estuary is also currently affected by excessive sedimentation, which is compromising its ecologically important seagrass meadows. Refracted wave action from the airport’s parallel runway has caused extensive erosion to a section of Foreshore Beach, shifting large amounts of sand into the estuary. In Sydney Ports’ options analysis, all of the alternative configurations that did not involve enclosing the estuary included a protective groyne to safeguard the estuary from the further accretion of sand. My project uses this necessary infrastructure to increase the public domain functionality of the foreshore. It does so by proposing a groyne extending from the wharf northward into the embayment that, in the process of protecting the estuary, encourages the deposition of sand along the wharf to form a new public beach opposite Foreshore Beach. The wharf edge is deformed as a series of large platforms and terraces, breaking down the boundary between port structure and beach. Public pedestrian access between Foreshore Beach and the new wharf beach is integrated along the groyne, which would also provide views across the Penrhn Estuary. Public access to the estuary would be restricted, but the provision of controlled bird watching facilities would expand the recreational user base of Botany’s public foreshore. Instead of the reduction in the amount of public beach resulting from Sydney Ports’ proposal, the creation of the wharf beach—made possible by the port expansion—increases the beach area at Botany’s foreshore, addressing the needs of the expected increased population.
KEY
A Foreshore Beach
B Penrhyn Estuary
C protective groyne
D new wharf beach
E pedestrian bridge
F platforms/terraces
G estuary lookout and bird watching facilities
H boat trailer parking
I public boat ramps
J airport lookout
K Foreshore Drive
L truck parking area
M terminal gatehouse; administration and operations centre
N truck holding area
O road/rail interchange
P container storage area
Q container quay cranes
R tug berths
S tug berth administration office and workshop

parallel (third) runway
Combining the development of Botany’s public foreshore with the expansion of Port Botany’s terminal facilities also provides an opportunity to reconsider the perceived devaluing effect of industrial activity on the experience of the public domain. This project investigates how the industrial activity of the port could enhance the recreational activities that take place at the public foreshore, by intensifying the experience of the relationship between the port, public beach and recreational activity through their combined development. The entire northern edge of the northern container terminal is conceived as a public wharf, creating a situation of extreme adjacency between the public domain and industrial activity that nonetheless maintains the physical separation that is necessary for operational safety, while also providing an opportunity to examine the potential for a shared experience of the ‘other’.

The usual segregation of industry from other activities means that it is not commonly a part of the everyday urban experience. This state of ‘otherness’ creates a sense of fascination with ports and airports that motivates enthusiasts to regularly gravitate to the vantage points along Botany Bay where the spectacle of their activity can be seen. Molineaux Point is a particularly popular public lookout, being situated at the southern tip of the port’s hydrocarbon storage terminal, with views across the southern part of Botany Bay (refer drawings p60, p66). The extension of the northern container terminal into the bay provides an opportunity to create a new public lookout at its western tip, which will be the closest vantage point to the end of the airport’s parallel runway in all of Botany Bay. The new ‘wharf lookout’ would undoubtedly be popular with aeroplane enthusiasts—with uninterrupted views of the entire length of the runway, it would be the perfect place from which to view the airport activity. Integral to the experience of Molineaux Point is the long drive out along Prince of Wales Drive—sandwiched between the bay, which is held back by a huge concrete-armoured revetment wall, and the port, with its massive bulk liquids silos—which provides a memorable experience of the vastness and desolation of the industrial port. The drive out along the public wharf to the new lookout would similarly be accompanied by a close-up experience of the port. However, here the container terminal provides a dynamic experience, animated by the constant movement of containers, machinery and transport vehicles.
Currently, the most immediate public experience of the port’s activities is available along Penrhyn Road, which provides access to the existing public boat ramp. The container terminal’s road/rail interchange is situated parallel to Penrhyn Road, and is separated from the public by only a chain-link fence. The constant activity of the trucks and freight trains, with the enormous bright red rail-mounted gantries looming overhead, create a dramatic experience of the port for people accessing the boat ramp. In my alternative port configuration, the new road/rail interchange is similarly located at the public (northern) edge of the new section of the container terminal, in alignment with the existing interchange facilities. Concurrently, the public boat ramp and parking facilities would be expanded and relocated to the north-western end of the new public wharf. This location would minimise the impacts of recreational activity on the nearby Penrhyn Estuary, and draw recreational sailors, as well as the airport enthusiasts, along the entire length of the terminal’s road/rail interchange. The interaction between the port and the public is further intensified locating the port’s truck parking areas immediately adjacent to the public entry road, with views out over Penrhyn Estuary.

By maintaining the expression of Foreshore Beach as an embayment, with a long stretch of sand facing an expanse of open water, it remains part of the sequence of smaller bays along the shore of Botany Bay, each containing beaches with different levels of enclosure. However, its close association with industrial activity clearly distinguishes the experience at Foreshore Beach from that of Botany Bay’s other beaches. The extension of the port’s
northern container terminal partially encloses Foreshore Beach, creating an embayment that is defined on either side by the terminal and the airport runway, which provide an intervening scene of industrial and transport activity to the wider vista of the Botany Bay. The rhythm of planes landing and taking off, and the drama of the port’s cranes and gantries silhouetted against the open sky, is a defining characteristic of the experience of Foreshore Beach. At the new wharf beach, the proximity of the gantries creates a dramatic backdrop to the activities of the public beach, while along the public wharf, the extreme adjacency to the operations of the road–rail interchange provides a more immediate experience of the port. By combining the development of the public foreshore with the port expansion, the spectacle of the working industrial port becomes available to more people than just those whom actively seek it out. Instead, the port becomes enfolded as an integral, yet incidental, component of every visitor’s experience.
The incorporation of industrial landscapes into the public domain is undoubtedly one of the primary concerns of contemporary landscape architectural design discourse. The work of Latz + Partner at Duisburg-Nord Landscape Park (1991-94), a 200-hectare former iron and steel plant in Duisburg Germany, is particularly notable for its influence in the shaping of ideas about the role that landscape architecture can play in the environmental and social rehabilitation of the former industrial sites. Duisburg-Nord is, of course, by no means the first or only project of landscape architecture that has dealt with the ecological restoration of degraded landscapes for recreational use—Hargreaves Associates’ work with former landfill sites, particularly Byxbee Park in Palo Alto (1988-92); Field Operations’ Fresh Kills park at Staten Island (2001), also a former landfill; and Downsview Park in Toronto (2000)⁴¹, a former military air base, have all been highly influential in the different ways that they have integrated the technical requirements of environmental restoration with both the making of new public landscapes and the experience of those landscape spaces. Although Duisburg-Nord is also an exemplar of contaminated landscape restoration, arguably the greatest impact of Latz’s work has been in the way it engages with the physical legacy of industrial activity—the industrial buildings, machinery and infrastructure. While Richard Haag’s Gasworks Park in Seattle (1975) is a notable predecessor that similarly retains the physical artefacts of former industrial activity, Duisburg-Nord actively heightens the physical drama of the site’s industrial remnants by treating them as archaeological ruins. The romance of decay is celebrated through the deliberate contrast of ‘wild’ plantings against the disused blast furnaces to “[make] them appear like craggy mountains glimpsed through a forest”⁴² and the transformation of empty ore bunkers into cloistered gardens. The physical presence of industry is the defining landscape experience of the park, and the social value of the industrial artefacts is further reconsidered through their appropriation for recreational purposes—such as rock climbing on the blast furnace walls and scuba diving in the gas tanks. The influence of Latz’s industrial archaeological approach is evident in the way that former industrial sites in Sydney Harbour—such as BP Park, Ballast Point Park, and Cockatoo Island—have been repurposed as public spaces in recent years. BP Park in Waverton (2005), a former BP oil refinery, and Ballast Point Park in Birchgrove (2009), a former Caltex fuel depot, have both been completely remade into public parks, with some physical remnants of their former industrial uses incorporated into the new landscape experience⁴³. At Cockatoo Island, formerly one of Australia’s largest
shipyards, most of the physical remnants of its maritime industrial activity—buildings, docks, machinery—have been retained as an ‘urban heritage park’.

A significant characteristic of the prevailing landscape architectural design discourse on industrial landscapes is the notion of reclamation—formerly ‘off-limits’ territory is reclaimed for public use. These projects are exercises in adaptive reuse, the insertion of a new programme into a spatial configuration that was not originally intended for it—Tschumi’s concept of ‘crossprogramming’—although this is much more the case at Duisburg-Nord and Cockatoo Island because much of the physical fabric of their former industrial activities has been retained. What differentiates my Botany project is that the industrial and public recreational uses of the foreshore are contemporaneous—the experience of the relationship between the two seemingly incompatible activities is simultaneous rather than successional. While the ‘industrial’ public parks at Sydney Harbour are concerned with conserving and making publicly accessible the heritage of Sydney’s ‘working harbour’, the Botany foreshore provides a public experience of a currently working harbour. At Duisburg-Nord, the physical presence of the dramatic scale and otherworldliness of the industrial structures, and the physical interaction with those artefacts through their adaptive reuse for recreational pursuits, create powerfully engaging experiences that radically redefine the cultural value of remnant industry in the experience of a public landscape. At the Botany foreshore, the public domain experience of the scale and unfamiliarity of the industrial landscape is further intensified by the activity of the working port—however, here the dramatic industrial experience is dynamic rather than static.

**Simultaneity**

What the Botany Foreshore project makes clear is that the condition of simultaneity is a defining attribute of combining as a strategy for improving public domain functionality. At Broadmeadows, the civic/shopping centre conflation enables the town centre’s primary activities to be experienced in the same place, at the same time. At the Botany foreshore, even though the industrial port and the public waterfront spaces remain physically separate, the simultaneous experience of industrial and public recreational activities is nonetheless made possible through the promotion of extreme adjacency in the spatial relationship. It is the close proximity of the activities of the port and airport to the public wharf and beach that increases the possibility...
of exchange—by enabling birdwatchers, aviation enthusiasts, recreational sailors, truck drivers and beachgoers to all have a shared experience of the foreshore. Furthermore, by purposefully engaging with the physical presence and activity of the port and airport to intensify the recreational activities at the foreshore, the project endeavours to initiate a revaluation of the relationship between industrial activity and public recreation at Botany’s foreshore, and of its perceived worth as a public domain.

Critically, it is the simultaneous development of the public foreshore with the industrial port that enables the new public domain experience to be created. Instead of relying on a planning or policy directive to initiate change, improvement to the public domain functionality of the public foreshore is made possible by combining its development with that of the port expansion, which possesses a compelling (economic) impetus for imminent change. This tactic illustrates how combined development is premised on the idea of leverage as a mechanism for initiating change. Leveraging, as defined by the *Oxford English Dictionary*, is to ‘speculate financially on borrowed capital expecting profits made to be greater than the interest payable’—or, put simply, to borrow money to make money. At the Botany foreshore, the development impetus for the port expansion is leveraged to initiate the development of public recreation space. At both Botany and Broadmeadows, there are clear and compelling development impetuses, and change is imminent; consequently, the leveraging of the development impetus for the Port Botany expansion, or the impetus for development in Broadmeadows’ town centre, is opportunistic. Furthermore, the development impetuses directly affect the sites of the dysfunctional public domains in both cases. What happens where there is a clearly underperforming public space, but development impetus is not immediately apparent or available to be leveraged? How can combined development that improves public domain functionality be initiated in such a situation? These questions are confronted in the next project, located at Surfers Paradise on the Gold Coast, which extends the examination of leverage as a strategy for initiating development.
A review of the report of the Commission of Inquiry revealed that the extension strategies contained in my alternative arrangement for the port expansion are similar to the options considered by the Commission. The Commission’s report also provided a detailed assessment of the feasibility, benefits and shortcomings for each of the three extension strategies contained in my proposal, the salient points of which are summarised at below.

**Landward extension of the existing wharf**

The extension of the wharf landward has the potential to provide two additional berths, one on either side of the required excavation. The major issue relating to the excavation is the potential effects on groundwater in the Botany district, and the increase in the discharge of groundwater and contaminants into the Bay. However, the Commission found that, based on the preliminary evidence available, there are no environmental concerns that are fatal to the excavation proposed. The other major issue related to the excavation is its impacts on existing port services. The excavation would reduce the amount of available land at Port Botany, and require the relocation of the existing inter-terminal road and rail line to the southern dock, as well as other ancillary port facilities. Nonetheless, the Commission did not consider these factors to be prohibitive, and considered that ‘there is justification to rationalise the layout and land uses of the Port area given that land is at a premium at Port Botany’. Overall, the Commission found the excavation of the dock inland to be environmentally and physically feasible.

**Westward extension of the southern container terminal**

The westward expansion of the southern container terminal (Brotherson Dock South) is feasible because it fits within the footprint of Sydney Ports’ preferred configuration. By excluding the section of new terminal area that is proposed to extend toward Foreshore Beach, the existing form of the beach is preserved and the recreational amenity of the beach is retained along its entire length. The smaller footprint has additional environmental advantages—it requires less land reclamation, and the reclamation that is required will occur further away from the ecologically significant seagrass meadows that exist along Foreshore Beach. Furthermore, a new navigation channel is not required, resulting in less dredging and consequently less disturbance to the bay floor, its sediments and aquatic ecology.
NOTES

1 W Trench 1961, Sydney’s first four years: being a reprint of A narrative of the expedition to Botany Bay and A complete account of the settlement at Port Jackson, Angus and Robertson, in association with the Royal Australian Historical Society, Sydney.

2 The complex cultural issues surrounding ‘discovery’ and the subsequent settlement of this country are, of course, the subject of a very large historical, social and political discourse; however, it is not focus of my research.

Also popularly known as the ‘third runway’.


5 Department of Planning 2005, Metropolitan Strategy for Sydney, NSW Department of Planning, Sydney, p15.


11 Cargo capacity is measured in ‘twenty foot equivalent units’, or TEU, where 1TEU = 1 twenty-foot container. The Commission of Inquiry report states that the throughput capacity of Port Botany in 2005 was 1.37 million TEU. Sydney Ports’ targeted throughput capacity for Port Botany is 3.2 million TEU by 2025.


12 ibid., p.ii.

13 ibid., p.iv.

14 ibid., p.ii.

15 ibid., p.iv.


18 This type of situation is perhaps most commonly represented by motorway developments. Furthermore, the NSW State Government’s highly controversial water desalination plant under construction at Kurnell, at the southern end of Botany Bay, was justified on the same grounds in 2007, during a period of severe drought.


20 Sydney Ports Corporation Port Botany Expansion: environmental impact statement, pp7-0.

21 As Randwick Council noted in its submission to the Commission of Inquiry, Sydney Ports’ assessment of their proposal’s impacts was ‘predicated on the unsatisfactory assumption that the cumulative impacts on the existing residential area are acceptable as the area is already subjected to, and the residents already tolerate, a substantial amount of industrial land use’.

Office of the Commissioners of Inquiry for the Environment and Planning, p149.

22 ibid., p148.


24 Office of the Commissioners of Inquiry for the Environment and Planning, p150.

25 In particular the development of the Eastern Distributor motorway and the Airport Link rail line, both completed in 2000.


27 The Australian Standard 2021-2000 (Acoustics—Aircraft noise intrusion—Building siting and construction) considers residential development to be ‘unacceptable’ in ANEF (Australian Noise Exposure Forecast) zones greater than 25—which covers most of Botany. In recent years, Botany Council has, at its discretion,
approved medium-density residential developments in areas of greater than 25 ANEF in Botany.

Interview and email correspondence with Mr T Taylor (acoustic engineer).


29 Sydney Morning Herald, 2 January 1976, quoted in Sanders, p142.

The political events surrounding the initial Port Botany development are discussed in detail by both Sanders and McShane.

30 Also known as the Simblist Inquiry.

31 Sydney Ports Corporation Port Botany Expansion: environmental impact statement.


34 Towra Point hosts 31 of the 66 species presently listed in the Japan-Australia Migratory Birds Agreement, as well as species listed in the China-Australia Migratory Birds Agreement. It is listed as a Ramsar Site under the Convention on Wetlands of International Importance (Ramsar Convention) and is the largest remaining large wetland in the Sydney region, and the second largest in NSW.


37 ibid., p95.

38 ibid., p218.

39 ibid., pp.ii-iii.

40 Sydney Ports Corporation Analysis of Potentially Feasible Options: Expanding container terminal facilities at Port Botany.

41 Principally authored by Bruce Mau Design and Rem Koolhaas/OMA as the Downsview Park Competition winning scheme Tree City in 2000. Principally authored by Bruce Mau Design, in collaboration with PMA Landscape Architects, Oleson Worland Architects and SNC Lavalin Engineers, in the subsequent implementation of the scheme.
IMAGE REFERENCES

(sources for published images in this chapter)

p48 Photomontage of Port Botany expansion as proposed by Sydney Ports.

p52 Photomontage showing impact of Port Botany expansion

p54 B: 1974 ultimate shoreline proposed by Maritime Services Board
Adapted from Plan no.K8905, held at Bowen Library, Randwick City Council
C: 1995 port expansion shoreline proposed by Maritime Services Board
Adapted from Fig. 5.3, Port Botany EIS

Adapted from:

p58 1791 or 1792 map by J. Walker showing Botany Bay
(extract from ‘A map of the hitherto explored country contiguous to Port Jackson, laid down from actual survey’).

1965 and 1985 aerial photographs of Botany Bay

p59 Botany foreshore beach before port development (no date)

Botany foreshore beach after Port Botany expansion (photomontage)

Sir Joseph banks Park under construction, 1980
Mackenzie, op. cit. p.302

1970 aerial photo showing proposed new shoreline and park
Mackenzie, ibid. p.301

p64 Potential Option 2 assessed by Price Waterhouse Coopers, showing extension of existing terminals into Botany.
Potential Option 8 assessed by Price Waterhouse Coopers, showing landward extension of dock.

p72 Duisburg-Nord Landscape Park

p73 Lighting installation at Duisburg-Nord
Lighting design by Jonathan Park
CATALYTIC
SURFERS·PARADISE
'Here, surely, was the city of the future ... the future was bright, full of light and absurdity and a message that here on earth man was building paradise: Paradise Sands, Paradise Gardens, Paradise Island, Paradise, Paradise, Paradise…' 

—Brendan Shanahan, *The Secret Life of the Gold Coast*

In the early afternoon at Surfers Paradise on the Gold Coast, shadows cast by residential towers begin to appear on the beach. By mid-afternoon the sand is completely shaded, and by late afternoon, the shadows have stretched far out into the ocean. Built to capture the view at one of the most iconic of Australian beaches, the towers at Surfers Paradise have themselves become one of the defining symbols of the Gold Coast. The irony of their existence is that for half of each day, Surfers Paradise beach has surf and sand, but no sun.

The Gold Coast is the fastest growing urban area in the country, unique in the Australian context because its development has been driven primarily by tourism and migration. It is, both literally and metaphorically, a consciously manufactured city. Over the past sixty years, the Gold Coast has developed from a collection of small coastal settlements into the country’s sixth-largest urban centre. This rapid development has capitalised heavily on the city’s attractions—the first and foremost being the natural attraction of the beach, which has subsequently been supplemented by built attractions such as the theme parks and the casino. The relentlessly enthusiastic marketing of the Gold Coast as a hedonistic, fantasy holiday destination has ensured a steady influx of both holiday-makers and new residents, fuelling continued urban development. The resident population of the Gold Coast has doubled every decade over the last fifty years and, along with the Sunshine Coast to the north of Brisbane, it offers more holiday accommodation than anywhere else in Australia. At any one time, tourists comprise up to 20% of the Gold Coast’s population.

The Gold Coast is also characterised by its relationship to water, both natural and modified. Proximity to water is a valuable commodity for a city whose economic base is tourism—a relationship that is clearly evident in the stretch of residential towers built along the 42km beachfront, and the proliferation of residential canal and lake estates inland from the coast. However, water is an obstacle to urban development as well as the attraction that is its underlying driver. Situated on an open coastal floodplain, the dynamism of the Gold Coast’s urban form, constantly changing through development, is matched by the dynamism of its natural environment, driven by the inexorable cycles of coastal and riverine processes. Severe storms and floods are natural functions of coastal ecology, and their often-catastrophic effects are an unavoidable consequence of developing in this environment. The devastation caused by previous coastal storms...
and floods on the Gold Coast has necessitated the ongoing development of infrastructure to combat the environmental consequences of urban development. The Gold Coast, then, is a city of extreme oppositions—shaped by the dual forces of unfettered urban development and unstoppable landscape processes. A victim of its own success/excess, there is often a great contrast between aspiration and lived reality on the Gold Coast.

The beach is without doubt the principal public space at Surfers Paradise, and the deep shadows cast over it every afternoon clearly reduce its recreational amenity. The issue of the shadows on the beach is widely recognised—being part of Surfers Paradise folklore—but it is also generally accepted, perhaps in resignation to the Gold Coast’s dominant culture of private development. Unlike the situation encountered at Broadmeadows and the Botany foreshore—where there was a strong impetus for development and a clear desire for change—the problem at Surfers Paradise is that while there is impetus for private residential development at the beachfront, there is no sense of urgency to compel change to the status quo. As such, the focus for my project at Surfers Paradise is to investigate how development that augments the public domain function of the beach might be initiated. At the Gold Coast, the conflict between urban development and landscape processes, such as coastal storms and floods, can result in catastrophic property impacts and measurably adverse effects on the tourist economy. Consequently, the development of infrastructure to mediate the relationship is highly prioritised. It is this urgent and ongoing need for environmental infrastructure that my project examines as leverage to catalyse new public space development at Surfers Paradise.
As a direct result of having developed to service a tourism-based economy, the Gold Coast is a city that has neither a traditional urban ‘centre’ nor traditional civic spaces. The beach is undoubtedly the Gold Coast’s preeminent tourist attraction, and the form and pattern of development along the entire length of the Gold Coast has been driven by the desire for physical and visual access to the beach. The ‘centre’ of the Gold Coast, then, is the beach—and the residential towers that front the beach, vying for that all-important ocean view, are a clear expression of its economic and cultural importance. Furthermore, the beach itself is the Gold Coast’s preeminent public space, its main forum of public activity—as the sociologist Colin Symes explains, ‘the beach represents the Gold Coast’s agora, piazza, city square, where its residents exercise their bodies rather than their minds, and where the social encounters occur’.

The beach is also a place of acute conflict between public and private interests, particularly at those places along the coast where residential development directly fronts the beach. The illegal extension of private property onto the dunes is a perennial problem on the Gold Coast. In 1999 Council estimated that more than half of the private properties on the Gold Coast’s ocean beachfront encroached onto public land; and in 2007, properties at Main Beach were found to have encroached up to five metres into the dunes, creating entire ‘back yards’ on state-owned property. Council and the Queensland State Government’s notices to remove the illegal structures and gardens have been met with the property owners’ accusations of victimisation and electioneering on the one hand, and enthusiastic support from community groups on the other. In a place where the attitude toward development is famously laissez-faire, the beachfront is the final frontier and ultimate testing ground between private development and the public domain.

More so than anywhere else on the Gold Coast, Surfers Paradise embodies the nexus between the beach, tourism, and urban development. While not a civic centre in the traditional sense, Surfers Paradise is considered the ‘heart’ of the Gold Coast because it is the tourism focus of the city; and as its primary mass tourist destination, ‘Surfers’ is central to the popular image of the Gold Coast. Surfers Paradise also has the greatest density of the Gold Coast’s other dominant symbol—high-rise residential development, much of which comprises holiday apartments. As Grahame Griffin notes, high-rise developments are ‘part the fabric and fantasy of the Gold Coast’.

THE EXISTING SITUATION

THE BEACH: A CONTESTED PUBLIC DOMAIN
integral to both its promotional image and its self-image. For much of Surfers Paradise, a two-lane road separates the beachfront towers from the beach proper, and an esplanade provides a continuous public edge to the beach. However, 350m south of Cavill Avenue, the ‘main street’ at Surfers Paradise, the esplanade abruptly terminates and the towers are built directly on the beachfront, a situation that continues for another 1.5km south to Broadbeach. Although the beach itself is public, visual and physical access to it is limited by the absolute beachfront position of the towers, which creates a section of privatised beachfront that separates Surfers Paradise from Broadbeach. However, the conflict between private residential development and the beach’s public recreational values is perhaps best exemplified by the long shadows that all the towers along the beachfront cast over the beach every afternoon. The Surfers Paradise beachfront is clearly a place of intense contestation between the two supreme symbols of the Gold Coast—the beachfront residential towers and the public space of the beach itself.

GOLD COAST IMAGE AND URBANISM

Tourism is the mainstay of the Gold Coast’s economy, even more so than building development\(^1\), and central to the Gold Coast’s continued economic viability is its ability to attract both visitors and investment capital.

The heavily promoted image of the Gold Coast centres on its natural attractions—sun, sand, surf; its built attractions—theme parks, casino, resorts; its event attractions—the annual Gold Coast ‘Indy’ car race and ‘Schoolies’ week; and the attraction of its ‘relaxed’ lifestyle. The marketing of the Gold Coast’s tourism and ‘lifestyle’ attractions has been so successful that they have become archetypal images that have pervaded the national consciousness, although Gold Coast’s public image of escapism, hedonism, and rampant urban
development has inevitably attracted criticisms of vulgarity and superficiality. The architect Robin Boyd’s description of Surfers Paradise in the Melbourne newspaper *The Age* (28 Dec 1957) is an often-cited example\(^\text{12}\), wherein he wrote: ‘Here is a fibro-cement paradise under a rainbow of plastic paint. It is any Australian country town plus optimism’. Such criticisms are invariably decried as elitism, envy, ‘urban chauvinism’ and ‘anti-Queensland’ attitudes from moralistic ‘southerners’\(^\text{13}\). However, as Grahame Griffin explains, ‘the Gold Coast isn’t an easily definable place with a singular identity, even though it may appear to lend itself to easy typecasting’\(^\text{14}\).

The discourse on Gold Coast urbanism, while not particularly extensive, can be loosely described in two categories—historic accounts\(^\text{15}\) and cultural examinations\(^\text{16}\), although in some cases they overlap. Overwhelmingly, the focus is on the impact that tourism and migration has had on the urban development of the Gold Coast; for some this is the primary intention\(^\text{17}\), while for others it is a way to counter perceptions of the Gold Coast as artificial and insubstantial, to validate it as a ‘real’ city on its own terms\(^\text{18}\). There has also been a trend in recent literature toward an alignment with cultural and urban theory, particularly in relation to the urbanism of consumer-based economies. For example, Philip Goad asserts that ‘the urban focus of the [Gold Coast], Surfers Paradise, together with its global counterparts Las Vegas Nevada; Waikiki Beach, Hawaii; and especially Miami Beach in Florida have now developed their own distinctive urbanism and their own distinctive architectural traditions’\(^\text{19}\). Admittedly influenced by Venturi, Scott-Brown and Izenour’s *Learning from Las Vegas*, Goad, Symes, Jones\(^\text{20}\) and others seek to recast the Gold Coast as ‘Australia’s only post-modern city’\(^\text{21}\)—a hyper-real place that, unconstrained by history, has developed its own urban form and iconography in service purely to its consumption. It is not the purpose of my project to contribute directly to this discourse. Historical and cultural readings of the Gold Coast necessarily focus on its image, being inextricable from the relationship between tourism and urban development. However, this focus often obscures the complex negotiations between the urban development, public recreation and ecological forces that shape the Gold Coast environment. It is these negotiations that I wish to examine as a means to initiate development that can augment the public domain of Surfers Paradise.
Urban Development vs Landscape Processes—
The Need for Infrastructure

The oceanfront location of Surfers Paradise’s residential towers, their very reason for being, has placed them in direct conflict with the environmental processes of a highly dynamic open coastal beach—erosion/accretion and longshore drift in particular—causing devastating impacts to both oceanfront properties and the beach itself. Erosion/accretion is the natural process by which sand is continually redistributed on and off shore by wave action at a coastal beach. The process involves periodic coastal storms, which can erode large amounts of sand from the beach to form protective sand bars offshore. The sand is then gradually returned to the beach by smaller wave action during calm periods. The high average wave energy at the Gold Coast also causes longshore drift—the constant transportation of sand, like a continuous river, travelling north at an average rate of 500,000 cubic metres annually. Longshore drift is accelerated during major coastal storms or cyclones, when waves up to 13 metres high have been recorded off the Gold Coast, causing sand to be eroded at a rate of up to 400 cubic metres per linear metre of beach. Although the Gold Coast’s beach ecosystem is in a constant state of flux, causing large local variations to the form of the coastline, overall the system naturally exists in a state of dynamic equilibrium.

Within an open coastal system, dunes act as long-term sand stores that are eroded during major storms, protecting areas further inland. Problems arise when urban development occurs in the natural zone of erosion and accretion—as is the case at the Gold Coast, where the coastal development strip has been built directly on the foredune of the beach. The most immediately apparent conflict occurs during major storm events. The Gold Coast suffered severe beach erosion during the major storms of 1936, 1954, 1967 and 1974; during those storms, the erosion scarp extended landward and undermined many oceanfront properties. In response,
protective walls were constructed in ad hoc fashion along the scarps. After the 1974 storms, these walls were formalised as the Foreshore Seawall, a continuous line of boulder walls situated generally parallel to the foredune alignment. During calm periods, the Foreshore Seawall is buried by sand; but during severe storms, when large volumes of sand are eroded in one event, the seawall can become exposed—as was the case during the coastal storms that devastated South-East Queensland in late May of this year.

Problems also arise when foreshore development interrupts longshore drift, and although the effects are not immediately obvious because they occur over a gradual period of time, they are nonetheless devastating in the long term. For instance, the extension of the breakwaters at the Tweed River in 1964 trapped large volumes of sand at Letitia Beach, immediately south of the Gold Coast in NSW. The interruption to longshore drift prevented the natural replenishment of sand at the southern Gold Coast beaches, causing severe erosion that has necessitated major engineering works to mitigate the damage—including the construction of groynes to trap sand at the beaches, and extensive and ongoing sand replenishment to counteract the effects of accelerated erosion. Despite these mitigation works, the beaches had still not fully recovered by the early 1990s and in 2001, after much negotiation between the states of NSW and Queensland, a permanent sand bypassing system was constructed at the Tweed River. Today, sand trapped at Letitia Beach is pumped from a 450m long sand collection jetty, under the Tweed River, and discharged at four sand pipeline outlets north of the river to artificially reinstate the longshore movement of sand.

Severe beach erosion can also be caused by the location of structures within the active coastal zone. Although seawalls protect oceanfront properties from destruction during major storm events, they can also have the unfortunate side effect of stopping or redirecting the natural flow of sand within the coastal system. At the northern Gold Coast beaches, including Surfers Paradise, the Foreshore Seawall has accelerated the erosion of sand during storms, and retarded its subsequent accretion—causing the beach to recede. In the mid-1990s, it became clear that the amount of sand seaward of the Foreshore Seawall was insufficient to withstand erosion by a 1 in 50 year storm; in order to increase the storm buffer, a massive 'beach nourishment' project was undertaken by Council. Beginning in 1999, the nourishment project involved the importation of 1.1 million cubic metres of sand, which...
was dredged from the Broadwater and placed on the 2km stretch of beach between Main Beach and Surfers Paradise. The additional sand widened the beach by an average of 50 metres, doubling its previous width. Ongoing nourishment of 60,000 cubic metres is required annually to maintain the buffer volume. Concurrent with the beach nourishment, an artificial reef was constructed offshore at Narrowneck, north of Surfers Paradise, to prevent the loss of the sand buffer through longshore drift, and to create a new surf break.

Of course, the erosion of sand from the Gold Coast’s beaches—whether immediately during major storm events, or gradually due to development within the active coastal zone—affects the recreational amenity of the beach as a public space and its potency as a tourist attraction. The development of infrastructure that mediates between urban development and coastal environmental processes is motivated, at least in part, by the need to protect the Gold Coast’s tourism economy. The loss of sand at the beaches has measurably adverse effects on the Gold Coast economy. In 1967, a succession of cyclones caused the worst known erosion of the Gold Coast beaches—the entire beach was lost in some places and natural recovery took until 1971. As a consequence, there was a major decline in the number of visitors to the Gold Coast, prompting a massive tourism campaign to save the Gold Coast economy. The economic impact of the 1967 erosion, when translated into 2001 economic terms, would have cost 13% of tourism dollars, or $305 million. Infrastructure works such as beach nourishment, sand bypassing, and groyne and reef construction endeavour to control the beaches in a somewhat predictable state, and to mitigate against potentially heavy economic losses at the next major erosion event. The threat of major beach erosion is ever present, as the cycle of coastal storms is inexorable—on average, the Gold Coast is affected by 1.5 cyclones each year. The only uncertainty is in when the next major event will occur.

While its 42km stretch of ocean beach is the Gold Coast’s supreme natural attraction, the impact of urban development within the active coastal zone means that its existence is heavily manipulated by infrastructure. Furthermore, the importance of the beach to the Gold Coast’s tourism economy means that the impetus for infrastructure is powerful, and the constant flux and degree of unpredictability in the coastal environmental system means that the need for infrastructure is ongoing. My project examines how the impetus for the development of environmental infrastructure might be leveraged to initiate the combined development of new public spaces at Surfers Paradise.
CATALYTIC COMBINING: INFRASTRUCTURE DEVELOPMENT INITIATES PUBLIC DOMAIN CHANGE
The initial site of investigation is the southern end of the Surfers Paradise Esplanade, where an absolute beachfront residential tower abruptly terminates the public edge to the beach. The site clearly illustrates the conflict between the popular conception of the beach as an egalitarian public space and the valorisation of unrestrained development. Here, the aim of my project is to intensify the public quality of the interface between esplanade, beach and apartment building by physically engaging with the protective infrastructures of the beach—the Foreshore Seawall and the dunes. The primary intervention is the insertion of a public institution, in the form of a swimming pool, into the space between esplanade and beach.

The public swimming pool assumes the role of civic institution in Australian culture, one that is also consistent with the culture of leisure and recreation at the Surfers Paradise beachfront. The combination of public pool with public beach may at first seem redundant, but is actually not uncommon. Many ocean beaches in Sydney also have a pool that provides a calmer swimming environment than the surf. They are typically built as formalised rock pools and most have unrestricted public access. Some pools—like Wylies Baths at Coogee Beach—have become Sydney institutions, popular with swimmers from across the city as well as the local population. A more pertinent
example for Surfers Paradise is Icebergs pool at the southern end of Bondi Beach, which has achieved an iconic status that is inextricable from its location at Sydney’s most famous beach. Recognised more by Sydneysiders than the general tourist, Icebergs reclaims the tourist icon of Bondi for its local constituents. The pool serves a different function to the beach—it is where one swims laps for exercise, where children learn to swim, where one goes if the surf is too rough. Like the beach, the pool is also a place for social encounters—whether incidental, organised or event-managed.

The siting of a public pool at the southern end of the esplanade claims as civic territory the last point of public access to the beach at Surfers Paradise. The esplanade becomes the forecourt to the pool complex, a civic plaza at the point where the beachfront becomes privatised. The existing apartment building that terminates the esplanade could then redevelop to capitalise on its dual frontage with beach and civic space. The pool structure is conceived as a thickening of the Foreshore Seawall, pushing out into the dune. An extension of the esplanade in periods of calm weather, the combined pool structure/seawall becomes exposed after a major storm, revealing the tension between the built environment and natural coastal processes that is inherent in its location.

The problem is that there is little real development impetus for such an intervention at Surfers Paradise. The seawall and dune are already in place, so the combining is retrospective. It relies on a decision from a public authority (Council or the State Government) that a public institution is required in this location, on its own merits. The likelihood, although not impossible, is not high as there is little impetus for change at the beachfront. Instead, Council’s plans for public space development at Surfers Paradise are focused on the creation of a network of spaces, particularly on the riverfront.

Furthermore, the effect of combining public space with infrastructure in this project seems more revelatory than transformative. While the civic pool intensifies the public quality of the esplanade space, and reveals the tension between coastal processes and urban development in this particular location, it does not fundamentally change the relationship between urban development and the public beach. As such, this project was not developed beyond the schematic design stage. Instead, further design work was undertaken to investigate how leveraging the need for environmental infrastructure might provide the opportunity to directly address the public domain dysfunction of the shaded beach.
As Brendan Shanahan observes: ‘walking from Surfers Paradise to Broadbeach one is continually reminded that as an instrument of urban planning the skyscraper makes a very good beach shade and wind tunnel’\textsuperscript{30}. The shadows on the beach are part of Surfers Paradise mythology—even travel guides advise tourists to get to the beach before the shadows arrive\textsuperscript{31}. The shaded beach is resignedly accepted as an unappealing, yet inescapable, consequence of the Gold Coast’s development culture. Short of demolishing the towers, the shadows are here to stay. As the civic pool project illustrated, there is no immediately available development impetus at the ocean beachfront that can be utilised to initiate a public space development. However, there is impetus for change at the western edge of Surfers Paradise, at the shore of the Nerang River. Being situated on a large coastal floodplain, the Gold Coast is also vulnerable to the potentially devastating effects of flooding during major storm events. As part of its flood mitigation strategy, Council has planned to redevelop some of the bridges on the Nerang River to improve the passage of floodwater during major storms\textsuperscript{32}. The Chevron Island Bridge is one of the bridges identified for potential redevelopment, as it is currently supported on many piers, which can cause water to build up upstream during peak river flows. My second Surfers Paradise project investigates how the impetus for the redevelopment of the Chevron Island Bridge could be leveraged to initiate the combined development of a new public space. This project aims to counteract the effect of the shadows on Surfers Paradise’s public domain by proposing a new beach at the Nerang River shore which, facing west, receives the afternoon sun.

The creation of a ‘city beach’ does, of course, have notable precursors in Queensland—in particular, Kodak Beach in Brisbane and the Cairns Esplanade Lagoon. Completed in 1992 as part of the Southbank ‘entertainment precinct’ on the Brisbane River\textsuperscript{33}, Kodak Beach is a consciously themed environment that aims to replicate an ocean beach (Brisbane has none), complete with lifeguard tower and mini surf carnivals. As John Macarthur argues in his influential essay, \textit{On Kodak Beach}, the phenomenon of the ‘imagineered’ public space, such as Kodak Beach or indeed much of Southbank, challenges our conceptions of ‘reality’ in the physical environment\textsuperscript{34}. What many cultural commentators find unsettling about Kodak Beach is not that a themed environment can operate as a public domain (although there is plenty of literature on the topic), but that here, the public domain has been deliberately fashioned as a theme park. While this is not the
PM BEACH
3.30pm Dec 21

A new wharf structure/groyne
(thickened public edge)
B pool centre building
C public olympic pool
D PM beach
E new tour boat jetty
F new pontoon for ferries
and tour boats
G kiosk/ferry administration
H existing tennis court wharf
intention for my project, such a strategy would not be entirely out of place on the Gold Coast, with its ethos of fantasy and escapism. Unlike Kodak Beach, the Cairns Lagoon\textsuperscript{35} does not attempt to be a facsimile, although it too is a constructed environment. Completed in 2003, the rationale for the Cairns Lagoon was to create a tourist attraction, as the city’s waterfront naturally consists of mudflats rather than sandy beach. Set within a four hectare public park, the lagoon is a 4,800m\textsuperscript{2} swimming pool featuring a wide sandy ‘beach’ edge and salt water pumped from the nearby ocean. With unrestricted public access, the lagoon has become integral to the city’s public domain, frequented by local residents as much as tourists because it provides for year-round swimming at a beach free from the ‘stingers’, such as the deadly box jellyfish, that plague Northern Queensland beaches between October and April.

What is particularly instructive about Kodak Beach and the Cairns Lagoon is that they are both landscapes that have been manufactured to overcome the environmental limitations to the tourism economies of their respective cities. At Surfers Paradise, the development of a new beach on the Nerang River would also replicate the situation found at the many existing riverfront parks that have beach edges. While most of those beaches are small sandy areas at the river’s edge of a park, others—particularly Budds Beach—are significant public spaces in their own right. Formed naturally by the localised deposition of river sand, Budds Beach is situated in northern Surfers Paradise (refer location plan on p91). Part of an older, low-scale residential area that has escaped high-rise development, Budds Beach has historically been a centre for boating, fishing and still-water swimming\textsuperscript{36}, and is full of activity in the afternoons when the nearby ocean beach is all but deserted.

The site for the PM Beach project is the Nerang Riverfront between Elkhorn Avenue and Cavill Avenue, the two primary east-west thoroughfares in
Surfers Paradise. Between Elkhorn Avenue and Cavill Avenue, the river curves to the east, creating the shortest distance from the river to the ocean beach in central Surfers Paradise. Appel Park, a reasonably large public park, is situated on the river partway between these two streets, while high-rise buildings border the remainder of the riverfront site. The redevelopment of the Chevron Island Bridge, situated at Elkhorn Avenue, also provides an opportunity to redevelop the riverfront to its south, where Council’s desire for public riverfront amenity has come into conflict with private development interests. Redevelopment of the Surfers Paradise riverfront to increase public use is consistent with the planning objectives that Council has articulated in the *Gold Coast Planning Scheme*, ‘Heart of the City’ strategy and ‘Surfers Riverwalk’ program. At the project site, hotels and holiday apartment towers are built right to the river’s edge, and the scale of those buildings overwhelms the narrow wharf and pontoons that constitute the existing public walkway at their base. The public walkway terminates just south of the Chevron Island Bridge, leaving the section of riverfront between the bridge and Budds Beach to the north completely privatised. South of the bridge, privatisation of the riverfront also occurs at Appel Park, which is separated from the river’s edge by jetties servicing private tour boat operators.

This project proposes a thickening of the public edge between the towers and the river, to be developed in combination with the Chevron Island Bridge redevelopment. The existing public wharf at the base of the towers is widened and a swimming pool is inserted into the new wharf. Tactically, this is similar to the civic pool proposition at the ocean beach esplanade—here, the civic function of the pool is used to intensify public activity on the highly contested riverfront. The new public wharf becomes part of the suite of riverfront structures—tying together the new Chevron Island Bridge and an existing private wharf at the apartment tower immediately to its north. Elevated
from the river, the existing wharf forms the recreation space (tennis courts) for the apartment tower and is a prominent feature of the riverfront—particularly from the Chevron Island Bridge, a key link between Surfers Paradise and the suburbs to the west. The new wharf pool would also be clearly visible from the bridge, on the eastward journey from the hinterland to the coast. Public pedestrian access from the bridge and Elkhorn Avenue to the public wharf is integrated with a new pool centre building. In addition to providing the usual changing facilities and gym, the pool centre could also incorporate commercial uses such as a restaurant or bar, which capitalise on its scenic riverfront location.

The creation of the new riverfront beach is enabled by the strategic positioning of the pool structure to facilitate the deposition of river sand upstream. The pool becomes infrastructure, much like the groynes that trap the sand at the southern Gold Coast beaches. Here, sand would accrete on the southern (upstream) side of the pool to form a new public beach on the shore of the Nerang River. Appel Park regains its public riverfront with
the relocation of the existing tour boat operators to new facilities near Cavill Avenue and the Chevron Island Bridge, enabling the beach to extend along the park's entire river frontage, to the mutual benefit of both park and beach. The beach provides physical access to the river from the park—thereby increasing its amenity as a public space—while the park increases the public visibility of the beach from the city, drawing more people to the river's edge. The wharf, pool, beach and park become part of a sequence of public riverfront spaces at Surfers Paradise—from Lionel Perry Park in the south, to Budds Beach in the north. However, while Lionel Perry Park and Budds Beach currently function more as 'neighbourhood' beaches, the location of the new beach makes it very much a 'city beach'—an extension of Surfers Paradise's activity core to the river's edge. Furthermore, the activity generated at the new public riverfront could potentially stimulate the extension of commercial and retail development along Cavill Avenue to the river, following the diurnal migration of beachgoers from the ocean beach in the morning, to the river beach in the afternoon.

PM Beach accretes upstream of pool/groyne, extending across the river frontage at Appel Park
The experience of infrastructure

Part of the rationale for combinatory development as a strategy for improving public domain functionality at Broadmeadows and Botany is that the possibility of social exchange is increased through combining retail and industrial activities into the experience of the new public spaces. At Surfers Paradise, the strategy of combining the development of public space with infrastructure requires consideration of what might constitute an ‘infrastructural’ experience, and how it might enhance the public domain experience at the beachfront and the riverfront. The issue with identifying an infrastructural experience is that, unlike shopping or industry, infrastructure is not an activity and it is not generally characterised by human participation. Instead, infrastructure is an instrument, a tool, that is characterised by the (urban) function that it performs. One can do shopping, but infrastructure does things. Michael Van Valkenburgh’s Allegheny Riverfront Park (1994–2001) endeavours to provide an ‘infrastructural’ experience by engaging with the formal expression of the neighbouring highway. The park’s infrastructural context is referenced in the scale and form of the ramps that physically connect the lower, riverfront, section of the park with its upper, ‘city’ section. However, although the long ‘scissoring’ ramp spaces are a defining characteristic of the Allegheny Riverfront Park, arguably its most dramatic landscape experience occurs when it is inundated by the river. At the Gold Coast, the function that environmental infrastructure performs is the mediation between urban development and the dramatic natural processes of the coastal landscape. As such, my Surfers Paradise projects consider the ‘infrastructural experience’ as a landscape process that can be revealed or integrated as part of the new public spaces that are developed. As Carlo Scarpa’s reworking of the Fondazione Querini Stampalia so poetically demonstrates, the spatial integration of environmental processes can produce powerfully engaging experiences of landscape phenomena. In accommodating the aqua alta, the highest tide, the entrance hall at Querini Stampalia combines the defining experience of the Venetian landscape—fluctuating water levels—with the interior experience of the building. Flux is similarly registered at Alday, Jover and Sancho’s Gállego River Park (1999–2001), where the park’s recreation spaces are designed to be periodically occupied by flood water, integrating the environmental process of the river with the spatial experience of the park. At the Gold Coast’s ocean beach, the defining landscape process is perhaps the constant movement of sand. The
integration of the pool structure with the Foreshore Seawall at the Surfers Paradise beachfront enables the dramatic process of coastal storm erosion to be combined with the experience of the public esplanade and civic pool. Situated at the interface between the beach and the city, the pool becomes the datum against which the fluctuating coastal environment can be experienced. The Nerang riverfront project likewise registers the movement of sand, but here the performative nature of infrastructure is engaged to make the new public space of the beach—the pool acts as infrastructure that interrupts with transport of sand in the river and facilitates its deposition.

**Extending the strategic potential of leveraging**

By engaging with the development of environmental infrastructure, the Surfers Paradise projects clarify and conceptually extend the strategy of leveraging as a mechanism for initiating combined development. This has been necessitated by the nature of the relationship between the development forces operating at the Surfers Paradise beachfront, and the manner in which the recreational amenity of the beach has become marginalised. At both Broadmeadows and Botany, there is clear impetus for imminent development that directly affects the underperforming public spaces being investigated. At Broadmeadows, the shopping centre expansion and the Council-initiated town centre redevelopment both directly affect the public spaces of the civic centre; at Botany, the port expansion directly affects Foreshore Beach. Furthermore, in both places—but Botany in particular—the development impetus belongs to an activity that has contributed directly to the public domain dysfunction identified. Consequently, the leveraging of development impetus in both previous projects was relatively straightforward. In contrast, there is an absence of any real impetus at the Surfers Paradise beachfront for development that will disrupt the status quo. Employing combined development to improve the public domain at Surfers Paradise has required finding development impetus that can be leveraged. The Civic Pool project clarifies the critical importance of having strong development impetus in order for change to be initiated. Even though the project could conceivably increase the public recreational amenity of the beachfront, it is unlikely that it would proceed because a policy directive is required to initiate public development in this location, and at present there is no clear impetus for change. Conversely, the PM Beach project is enabled by the presence of strong development impetus at the Nerang riverfront. This
project demonstrates the opportunistic potential of leveraging—the Chevron Island Bridge redevelopment, which has pre-existing impetus for change, is leveraged to catalyse development that increases the public recreational amenity of the riverfront and improves the overall public domain of Surfers Paradise. Even though it is high-rise residential development that has outcompeted the recreational amenity of the ocean beach, the impetus for change is provided by a third factor—infrastructure.

The PM Beach project also begins to suggest how a combined development might have flow-on urban effects. The new public riverfront created by the beach, wharf and pool changes the ‘attraction’ for the existing riverfront towers, which could potentially redevelop to address the new river frontage—eventually resulting in a more ‘active’ commercial edge of cafes and restaurants that is in line with Council’s vision\(^4\). Furthermore, the new riverfront could also potentially stimulate the growth of existing commercial and retail activity along Cavill Avenue toward the river. If the ultimate goal of leveraging is to affect a positive return on investment in order to justify the initial borrowing of capital, then perhaps the ability of a combined development to affect further urban change could be one way that the appropriation of development impetus could be justified. The potential for combinatory development to directly affect wider urban changes is examined further in my final project, located at the Broadbeach Waters canal estates on the Gold Coast. This project continues to examine the conflicting relationship between urban development and the environmental processes of the Gold Coast landscape, and also extends the investigation of leveraging as a mechanism for initiating combined development—by considering how development impetus could be created, rather than opportunistically appropriated.
NOTES

2. With an annual average growth rate of 5.4% from 1996 to 2006, the Gold Coast is currently the fastest growing urban area in Australia.
3. Ibid.
16. Goad ‘All that glitters can sometimes become Gold’. Symes ‘Strange alchemy: the Gold Coast as cultural phenomenon’.

References

18. Burchill *Passion, power & prejudice*.
20. Goad ‘All that glitters can sometimes become Gold’, p37.
25. The Tweed river breakwaters depleted the of sand supply to the Gold Coast beaches by up to 10 million cubic metres, resulting in severe erosion at the southern Gold Coast beaches of Rainbow Bay, Coolangatta.
Gold Coast eguide: <www.goldcoasteguide.com/surfersparadise.php>

32 Gold Coast City Council 2003, *Nerang River Flood Mitigation*, bulletin, Gold Coast City Council, Gold Coast.

33 Designed by Media 5 (subsequently Desmond Brooks International).


35 Designed by Tract Consultants (principal designers), with Cox Rayner Architects.


41 Gold Coast City Council *Gold Coast Planning Scheme*. Part 6, Division 2: Local Area Plans—Surfers Paradise, p5.

**IMAGE REFERENCES**

(Source for published images in this chapter)

p89 Erosion at Mermaid Beach, 1967.

Erosion at Palm Beach, 2009.
photo: Scott Fletcher

Foreshore seawall exposed at Palm Beach after storm erosion, May 2009.
photo: Scott Fletcher, ibid.

photo: Scott Fletcher, ibid.

photo: Scott Fletcher, ibid.

Surfers Paradise beach before nourishment; Dec 22, 1999
source: Water Research Laboratory, ibid.

Surfers Paradise beach doubled in width after nourishment; Dec 22, 2000
source: Water Research Laboratory, ibid.

p94 Cairns Esplanade Lagoon
photo: John Gollings

p100 Tide enters the interior of the Fondazione Querini Stampalia

Allegheny Riverfront Park

Allegheny Riverfront Park completely submerged during flood, September 2004
A Berrizbeitia & L Pollak, op. cit. p177.

p101 Effect of flood inundation at Gállego River Park
INTERDEPENDENT
BROADBEACH · WATERS
Flying in over the Gold Coast, the immediate impression of the city is of the prevalence of water in the urban landscape. The wide, flat river floodplain on which the Gold Coast is built has been extensively dissected by canal development, the intricate patterns of the waterways creating a tapestry-like appearance that is quite unlike any other Australian city. On the ground, the experience of the Gold Coast’s residential canal estates tells a polar opposite story—the overwhelming impression is that of typical anonymous suburbia. The surrounding water is almost imperceptible because the canals are insulated from the streets by a largely impenetrable layer of residential properties. Although the canal waterways are public property, and comprise the majority of the public space in the canal suburbs, physical and visual access to the water is highly privatised.

This second Gold Coast project investigates how combined development could be initiated to improve the public domain functionality of the canal waterways. This project focuses on the suburb of Broadbeach Waters, which is part of the Gold Coast’s most highly concentrated zone of canal development and incorporates its oldest canal estates—Rio Vista and Miami Keys. The general lack of public access to the water is only one aspect of the canals’ underperformance as public recreational spaces. The speculative, piecemeal fashion in which the Gold Coast’s canal estates were initially developed has resulted in a persistent discontinuity in the canal network that impedes boat navigation. The discontinuity of the canals has also created considerable water quality problems that, in addition to the adverse ecological impacts, have made the water unsafe for swimming. Although the Gold Coast’s canals have the appearance of being an alternative circulation system to the road network, and are promoted to residents as an invaluable public recreational resource, the lived reality at Broadbeach Waters is that they form a highly dysfunctional public domain—the canals are difficult to get to (unless you live directly on a canal frontage), difficult to get around on, with water that is potentially dangerous to be in.

The problem with initiating change to Broadbeach Waters’ canals is that, like the situation encountered at the Surfers Paradise beachfront, there is no immediately available development impetus to be appropriated. Like many suburban situations, the predominant land use at Broadbeach Waters is detached housing, and being an established suburb, there exists a general sense of developmental inertia. As such, a key task in initiating change...
at Broadbeach Waters is to find some development impetus that can be leveraged. The Surfers Paradise experience revealed that the relationship between urban development and coastal processes at the Gold Coast requires substantial mediation through environmental infrastructure. At Broadbeach Waters, the conflict between canal development and riverine environmental processes is investigated to determine how the impetus for environmental infrastructure that mediates the relationship might be leveraged to simultaneously improve the public domain functionality of the canals. The significant modification the Gold Coast’s river systems through canal development has led to numerous environmental problems, including the deterioration of water quality both locally within the canals and downstream regionally. However, the flood impact of periodic storms is perhaps where the conflict between urban development and environmental processes within the canal estates is most dramatically felt. The devastating effects of previous floods on residential properties at the Gold Coast has motivated the public development of significant environmental infrastructure, including flood channels and a major dam, to mitigate the potential damage from future storm events. Unfortunately, there have been no public plans to develop environmental infrastructure at the Broadbeach Waters canals, or any other canal estates at the Gold Coast.

This project at Broadbeach Waters extends the previous design work into a more detailed and critical exploration of the physical and conceptual possibilities of combining. Unlike the opportunistic combinations investigated at Broadmeadows, Botany and Surfers Paradise, which leveraged existing development impetuses for the simultaneous development of new public spaces, the prevailing developmental inertia at Broadbeach Waters necessitates the creation of development impetus to initiate combined development. My intuitive strategy for instigating change at Broadbeach Waters is to propose an environmental infrastructure project that combines improvements to the public domain functionality of the canals. By considering the canals themselves as infrastructure, the proposition is to physically connect the disparate canals at Broadbeach Waters into a unified network, thereby creating a public landscape of aquatic infrastructure that facilitates tidal flushing, stormwater dispersal and flood storage—an urban floodplain. The cutting of the new water connections through existing properties and road reserves provides an opportunity to simultaneously create new visual and physical connections between the streets and the canals, as well as an opportunity to examine the possibilities for new public waterfront experiences. The difficulty of initiating such a project at Broadbeach Waters is that although there is a desire for improved public domain functionality expressed in Council’s planning strategies\(^4\), and a latent need for improved environmental quality, individually neither of these objectives has been able to overcome the overriding developmental inertia that exists in the suburb. Additional development impetus is required, and this is found in the underlying need for residential redevelopment at Broadbeach Waters, which is being driven by the pressures of regional urban growth and generational change. Making the new canal connections disrupts the typically static suburban fabric of the canal estates, creating opportunities for residential redevelopment associated with the joins. It is by combining the latent impetuses for environmental, public domain and residential change at Broadbeach Waters that the Urban Floodplain is made possible.

This chapter discusses the Broadbeach Waters project in two parts. It begins with an examination of the specific ways in which Broadbeach Waters’ canals have become largely privatised public spaces and an investigation of the development forces that are latent in the suburb. In particular, the different ways in which canal development has come into conflict with the environmental processes of the Nerang River are investigated to inform an environmental infrastructure proposition that aims to simultaneously affect changes to the way the canals operate as public domain spaces. In the second part of this chapter, a number of strategic locations are identified for the infrastructural canal cuts, and a series of locally specific interventions is proposed in order to examine in detail the possibilities for simultaneously improving canal water quality, increasing the public accessibility and recreational amenity of the canal waterways, and stimulating residential redevelopment. By actively engaging with the physical requirements of making the canal incisions to simultaneously make new public canal waterfronts, the projects also examine how new public domain experiences at Broadbeach Waters could be conceived in the tradition of Gold Coast city-making—the manipulation of water and land.
1. FINDING LEVERAGE
Canal estates at the Gold Coast were initially developed as a response to the enormous demand for waterfront residential development during the post-WWII development boom\(^5\). The problem was that the availability of land at the coastal edge was severely limited by the proximity of the Nerang River’s extensive wetlands, with their ever-present danger of flooding. Two responses to the coastal land shortage were devised—high-rise development, which increased the residential density of the coastal strip, and the creation of new land through drainage schemes that have significantly modified the Nerang River. Sand was pumped from the river to stabilise and reconstruct its shifting sand shoals, creating residential estates such as Chevron Island, Paradise Waters and the Isle of Capri. In 1957, a flood bypass channel was cut between the Nerang River and Little Tallebudgera Creek, and the resulting fill was used to raise the newly created island above the flood level. This became the Florida Gardens estate, the first residential canal development in Queensland\(^6\). It was an immediate success, and in 1958, the Gold Coast’s first proper canal estates, Miami Keys and Rio Vista, were created nearby. By reclaiming wetlands on the Nerang River, developers could manufacture absolute waterfront residential allotments, creating value where previously there was perceived to be none. The enduring attraction of this idea can be seen in the subsequent proliferation of speculative canal development on the Gold Coast, inspiring the now-familiar refrain: ‘more
Canals have been developed on all of the Gold Coast’s primary natural waterways—the Coomera River, Nerang River, Tallebudgera Creek and Currumbin Creek—although the greatest density of canals is found on the Nerang River, the Gold Coast’s largest and most complex river system. My project focuses on the suburb of Broadbeach Waters, an area of canal development on the southern side of the Nerang River that includes the initial canal estate developments of Miami Keys and Rio Vista.

While canal development has arguably transformed the Gold Coast landscape more than any other form of development, the historical, urban and cultural discourses on the Gold Coast focus overwhelmingly on the supreme symbol of the Gold Coast as a city—its coastal high-rise strip. However, as Michael Jones contends, it is the extensive canal developments that truly distinguish the Gold Coast from other Australia cities. The Gold Coast Urban Heritage and Character Study describes the canal estates as a ‘dominant and unique aspect of the character of the city’, but does not offer any detailed examination of what makes canal development unique in the urban and cultural context of the Gold Coast. Along the coastal strip, the study analyses the varying qualities of topography and development type, and eleven distinct ‘local character’ areas are identified. The canal estates, however, are considered one homogeneous ‘character area’, with no examination of the local characteristics that differentiate one canal suburb from another. The Gold Coast City Landscape Strategy similarly focuses on the general characteristics that contribute to the overall urban and landscape character of the canal estates, although it does note that individual areas do have unique characteristics. However, my site investigations have revealed that the canal estates do differ greatly in character—subdivision pattern, canal morphology, age of the development and affluence of the neighbourhood all contribute to distinguish one canal estate from another. Nonetheless, what the all the canal estates have in common is that they offer an enhanced version of suburbia, one that has the added appeal of absolute waterfront access from one’s home to the public waterways of the canals and by extension, to the river and the ocean beyond.
street experience of canal estate

canal experience of canal estate
Along with the coastal strip, the Gold Coast’s canal estates are central to the popular conception and promotional image of the city. Although the focus is undoubtedly on the beach and Surfers Paradise, travel guides invariably describe the extensive canal system as a unique and distinguishing feature of the Gold Coast. My first trip to the Gold Coast was in 2007, a study visit with my fellow students from the Urban Architecture Laboratory at RMIT. Investigating the canals was definitely very high on the list of things that we had to do while on the Gold Coast. This proved to be much more difficult than I had anticipated. For three days, we drove around the Gold Coast, covering the entire length of the city from Hope Island in the north to Coolangatta and Tweed Heads in the south. While the beachfront strip was immediately accessible and easy to comprehend, the canals proved to be frustratingly elusive. We could identify the location of the canal estates easily enough from the street directory, but once we were actually within a canal suburb, the actual canals were almost impossible to find. All the houses were in the way. Although we knew we were surrounded by water, the experience, for all intents and purposes, was that of any nondescript suburb. This situation was repeated all along the Gold Coast, and we quickly realised that the only points of contact to be had with the canals were at road bridge crossings or at waterfront parks, neither of which were particularly numerous. I began to target the small patches of green in the street directory, navigating to those that could provide us with access to a canal waterfront. We stopped at every bridge we came across, in an attempt to see more of that elusive water. We left the Gold Coast having had only brief glimpses of the canals—our experience was a fragmented snapshot that did not nearly approach comprehension.
On my next visit to the Gold Coast, I was determined to gain a better understanding of the landscape experience of the canal estates, so I hired a boat at Southport and set off down the Nerang River to explore the canals. The experience from the water revealed that the Gold Coast’s primary canal zone is not a homogeneous territory, but is in fact differentiated by the size of the canals, the configuration of the canal networks, and the scale and grandeur of the houses and boats in each particular location. Paradise Waters, with its simple layout, wide canals and direct access to the Nerang River, is clearly an affluent enclave. The boats moored on its canals are generally large and expensive-looking—as are the houses themselves, many which are of recent provenance even though Paradise Waters is one of the Gold Coast’s older canal developments. At Broadbeach Waters, the canal-front houses are generally older and more modest in scale and appearance—some are even a bit dilapidated—although I did observe also examples of recent redevelopment. The parts of Sorrento that I visited were, by comparison, generally closer in character to the grandeur of Paradise Waters than the more unassuming Broadbeach Waters. What I learned from the site investigations was that the experience of the Gold Coast’s canals is overwhelmingly characterised by disconnection—the public territories of the streets and canals are largely unconnected and the canal network as a whole is discontinuous.
Discontinuity

Through exploring the canals by boat, it became very clear that the waterways at Broadbeach Waters are extremely convoluted; furthermore, it is impossible to completely traverse by boat because the canal network is discontinuous, which makes the labyrinthine pattern even more complicated to negotiate. While the arrangement of the canals initially appears to be a unified system that mirrors the street pattern, it is in fact composed of a series of entirely separate canal developments. The initial canal developments at Broadbeach Waters—Florida Gardens, Rio Vista and Miami Keys—were completely distinct from one another, and although the canal systems have been extended over time, they remain unconnected.

The January 1959 edition of Architecture in Australia—which was entirely dedicated to examining the emerging urban phenomenon of the Gold Coast—included an essay by Dr Karl Langer, the designer of the Miami Keys and Rio Vista canal estates. In his essay, Langer explained that he derived the layout for the canal estates from Radburn, the American town designed along Garden City principles by Clarence Stein and Henry Wright in 1929 that subsequently became highly influential as a masterplanned development. The key difference at Miami Keys and Rio Vista was that Langer substituted canals for the central parks and public walkways of the Radburn model\(^1\). At Radburn, the open spaces were designed as an alternate pedestrian circulation system that is completely separate from the road network. However, my experience of navigating the canals at Broadbeach Waters by boat reveals that, with their present discontinuous arrangement, they do not function as an alternate circulation system. This assessment is supported by the observation put forward in the Gold Coast Urban Heritage & Character Study that ‘while many residents of the canal estates keep boats moored at the water frontage, the canals are not primarily a transportation or communication infrastructure, but part of the recreational system or open space at the [Gold] Coast’\(^2\).
Insulation

Although the Gold Coast’s canals are publicly owned and comprise the majority of the public open space within the canal estates, *Gold Coast City Landscape Strategy* notes that they ‘have limited accessibility for Gold Coast residents’, because their ‘edges are primarily privatised’¹³. This corroborates the experience from my first trip to the Gold Coast, when our search for access to the canals was consistently thwarted by the lack of connectivity between the public streets and the public waterways within the canal estates. On my next visit, I spent a few days walking through the entire Broadbeach Waters suburb, which confirmed that the private houses form an almost impenetrable layer of insulation between the canals and the streets. This insulation is a direct consequence of the normal configuration for the typical canal estate residential lot, which has frontages on both canal and street. The layout of the canals for the original Rio Vista and Miami Keys developments was configured to maximise the amount of water frontage—hence the grid pattern of long dead-end canals—while the alternating arrangement of canals and streets provides the ideal dual frontage to every residential lot. The result is that there are no public connections between the streets and the canals within these original canal subdivisions. Subsequent expansion of the canal estates at Broadbeach Waters generally followed the same ruthless efficiency of the ideal pattern, although a number of anomalies did emerge as a result of the piecemeal nature of the later developments, including small gaps in the allotment pattern that form slivers of public connection between the streets and the canals. Furthermore, although insulation of the canals from the streets remained the prevailing condition, concessions to a connected public domain were made in the development of a number of waterfront parks. My site investigations at Broadbeach Waters, as well other canal estates on the Gold Coast, have revealed that while the segregation of public canals from public streets is pervasive, it is not absolute. Penetrations in the insulating layer of private houses, though infrequent, do exist. Points of contact between the terrestrial and aquatic public domains are found where they overlap at the road bridge crossings, which provide visual connection to the water, and at the waterfront parks, where their adjacency provides the possibility of visual and physical access to the canals.
NEED FOR CHANGE

Council’s future vision for the canal estates, as articulated in the *Gold Coast City Landscape Strategy*, is that ‘the canals become more usable and accessible open space, and are possibly used as low level transport corridors for increased passive recreation’\(^{14}\). Implicit in this statement is a recognition of the current underperformance of the canal estates’ public domain. In support of the vision, the *Landscape Strategy* has also identified a number of objectives to be achieved—increased visual access to the water, increased physical connections from streets to canals, and accessible and walkable canal edges. As my site investigations had identified, these are precisely the qualities that are currently lacking at Broadbeach Waters. However, although Council’s *Landscape Strategy* puts forward a policy vision and objectives for the canal estates, it makes no provisions for their realisation. This is what my project endeavours to address.

Examination of the public domain issues at Broadbeach Waters has revealed that the lack of connectivity and permeability is ingrained within the physical structure and organisation of the canal estates themselves. The topology of the Broadbeach Waters canal estates—a direct result of the desire to maximise the ideal dual-frontage residential lot and the subsequent piecemeal expansion of the canal developments—has marginalised the ability of the suburb’s primary public spaces, its canals, to function effectively as a public domain. The two primary issues are limited public access, both visual and physical, to the canals and discontinuity within the canal network itself. The largely continuous insulating layer of private houses impedes public access to the canals, while the discontinuity of the canals frustrates their potential to operate effectively as a system of public recreational waterways. Improvement to the functionality of Broadbeach Waters’ public domain would require radical intervention to the physical structure of the canal estates—namely, the introduction of physical connections between the streets and the canals, and between the canals themselves. This would require cutting through private properties and road corridors, and it is unlikely that improved public amenity alone will provide the necessary impetus to disrupt the status quo. More development impetus is needed. The physically entrenched disconnection that defines the public domain experience at Broadbeach Waters is also a key characteristic of other canal estates on the Gold Coast, particularly those connected to the Nerang River. The discontinuity of the canals has also been responsible for significant environmental problems at the Gold Coast, and the need to mitigate those problems could potentially generate a more compelling impetus for change.

\(^{14}\) Implicit in this statement...
Canal developments in Australia have become increasingly contentious because of their generally adverse environmental impacts, including but not limited to: extensive habitat loss; reduction in ecosystem viability; degradation of water quality; increased pollution of waterways due to urban stormwater runoff; increased erosion and sedimentation; and disturbance of acid sulfate soils. The cumulative environmental problems associated with canal estates have prompted increasing regulatory control over their development. In 1997, NSW introduced the *State Environmental Planning Policy No.50*—legislation that expressly prohibits canal development, ‘to ensure that the environment is not adversely affected by the creation of new developments of this kind’\(^\text{15}\). In Victoria, further residential canal development is also prohibited, under the provisions of the *Victorian Coastal Strategy 2008*, in order to ‘ensure the protection of coastal and estuarine environments’\(^\text{16}\).

Nonetheless, the potential for substantial financial gain resulting from residential canal developments means that they are still being proposed in many other parts of the country, although they are often controversial. For example, in Tasmania, the only Australian state presently without residential canal estates, the Lauderdale Quay development currently proposed for Ralphs Bay has attracted considerable community and political opposition.

In Queensland, canal development is controlled by the *Coastal Protection and Management Act 1995*, which does not prohibit new residential canal developments, but does establish environmental guidelines for the assessment of development proposals. Most of the Gold Coast’s canal estates are associated with the Nerang River and were developed during the property booms of the 1950s and 1970s. During that period, the primary legislative control over canal development was the Queensland *Canals Act 1958*, the primary aim of which was to enable the legal transfer of the canal waterways into State ownership. There were no environmental controls to govern the development of residential canal estates such as those at Broadbeach Waters. Johnson and Williams explain that ‘little or no thought was given to water quality considerations in any of the canals designed up until the mid 1970s’\(^\text{17}\). It was in the mid-1970s that the adverse environmental effects of canal development downstream in the water catchment, particularly erosion, became obvious on the Nerang River. The existing canal estates had increased tidal velocities in the Nerang estuary to such an extent that extensive scouring was occurring downstream, and hydrodynamic studies showed that additional canal developments would only exacerbate the
problem. Consequently, in 1977 the Queensland Government prohibited additional canal development off the Nerang River and its tributaries18. Furthermore, the now-obvious adverse environmental effects of canal development led to the introduction of environmental assessment requirements in the planning approvals process for canal developments at the Gold Coast. Nonetheless, further development of artificial waterways on the Nerang River floodplain is currently permitted, as long as they are not directly connected to tidal waters, which has resulted in the proliferation of extensive lake developments such as Clear Island Waters, Robina Waters, Burleigh Waters and, most recently, Emerald Lakes.

From the aerial view of the Gold Coast, it is immediately apparent that the lower reaches of the Nerang River have been significantly modified by canal development. In 2007, the Ecosystem Health Monitoring Program (EHMP), which monitors all the of major river systems in South East Queensland, determined that only five percent of the Nerang River estuary—which extends from the Broadwater to Nerang—has remained unmodified19. The majority of the Nerang River’s riparian habitat has been heavily modified for urban uses and much of the river’s intertidal zone has been modified by extensive canal development—leading the EHMP to classify the Nerang estuary as the most extensively modified in all of South East Queensland20. Furthermore seventy-eight percent of Queensland’s canal estates are located at the Gold Coast21—representing the greatest concentration of canal development in Australia—and the majority of those are situated on the Nerang River. The extensive modification of the Nerang River’s floodplain, especially through canal development, has caused considerable ongoing conflicts between urban development and the hydraulic ecological processes of the river, which have necessitated the ongoing development of infrastructure to mitigate the significant environmental impacts of flooding and low water quality. I am interested in how the environmental problems associated with canal development have created an impetus for environmental infrastructure and in how this impetus might be leveraged for the combined development of a better performing public domain at Broadbeach Waters.

Engaging with the hydraulic processes of the Nerang River system, including its canals, requires a level of technical understanding that is not part of my expertise. While my review of literature and policy was useful, I also sought the input of Dr Ron Cox—a recognised authority in coastal zone engineering and Associate Professor of civil and environmental engineering at the Water Research Laboratory, UNSW—who provided overview advice on the hydraulic functioning of the Gold Coast’s canal estates and the potential implications of my proposition on the river system. Although is not the intention of this project to demonstrate the application of civil and coastal engineering to the problem of the Gold Coast’s canal estates, the general principles have been taken into account in the design decisions.
FLOOD PROCESSES OF THE NERANG RIVER

One of the most dramatic environmental issues arising from the Nerang River’s canal developments is their impact on the river’s flood processes, and the concomitant impact of flooding on properties in the canal estates. Covering approximately one-third of the city’s area, the Nerang River catchment is the Gold Coast’s largest and most complex river system. The river originates in the McPherson Range, which receives the highest rainfall in South East Queensland. Consequently, large volumes of water flow from the Nerang’s upper catchment, causing frequent flooding downstream on the coastal floodplain. The severity of flooding is exacerbated by the near-total loss of the Nerang River’s once-extensive estuarine wetlands to urban development, which has significantly decreased the flood storage capacity of the landscape, causing flood levels to rise as a consequence. The proliferation of impervious ground surfaces has also significantly increased the volume and velocity of stormwater run-off, which causes substantial flash-flooding and erosion. Furthermore, Dr Ron Cox explains that the canals’ contorted shapes, numerous dead ends, and long distance from the Nerang River’s only outlet at the Broadwater have also effected higher flood levels.

Property impacts of flooding and the need for infrastructural mitigation

Since it began keeping records for the Nerang River in 1920, the Bureau of Meteorology has recorded six floods that it categorises as moderate to major—in 1931, 1947, 1954, 1967 and two in 1974. The major flood events that occurred after the advent of canal development on the Nerang River in 1957 caused substantial inundation of the canal estates. Since the last major flood in 1974, Council has undertaken several infrastructure projects to mitigate the urban effects of flooding on the Gold Coast, including the Hinze Dam, the Gold Coast Seaway, and the Benowa Flood Channel. Commissioned in 1977, Hinze Dam is the major water supply for the Gold Coast; by storing water in the upper catchment of the Nerang River, the dam has significantly reduced the severity of flooding downstream on the floodplain. However, the Bureau of Meteorology notes that ‘a re-occurrence of rainfalls similar to, or higher than, those in 1974 would still cause flooding’, and Council has estimated that the next 1-in-100 year flood event would inundate 4,100 properties across seventeen suburbs and potentially result in $147 million in property damage. In late May of this year, a series of storms devastated the South East Queensland and northern NSW coasts, causing the most extensive flooding since the 1974 floods and prompting the declaration of a natural disaster zone in South East Queensland. However, the Bureau of Meteorology has not categorised the May 2009 flooding at the Gold Coast as ‘major’. The history of flooding on the Gold Coast demonstrates that the uncertainty is not if another major flood will occur, but when it will occur. Additional flood mitigation projects proposed by Council to mitigate against potential future damage include: raising the dam wall at Hinze Dam to reduce peak flood levels downstream; lowering the weirs in the Benowa Flood Channel to increase its capacity; redevelopment...
of the Via Roma and Chevron Island bridges to reduce the number of bridge piers obstructing the passage of floodwater in the Nerang River; and dredging of the Nerang River from the Florida Gardens canal to the Gold Coast Bridge, to increase the flood capacity of the river.

CLIMATE CHANGE AND SEA LEVEL RISE

The issue of flooding does, of course, raise the topic of climate and sea level rise. The Intergovernmental Panel on Climate Change (IPCC), considered to be the leading scientific authority on the issue of climate change, has concluded that ‘warming of the climate system is unequivocal’ and that ‘most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [greenhouse gas] concentrations’. Additionally, the IPCC has found that ‘discernible human influences’ extend to other aspects of climate, and have ‘very likely contributed to sea level rise during the latter half of the 20th century’. Global warming contributes to sea level rise through melting of glaciers and polar ice sheets, and thermal expansion of the oceans. Although global mean sea levels have been rising since the early 1800s, the rate of sea level rise has increased over the past few decades. Furthermore, even if greenhouse gas production were to cease immediately, global sea levels will continue to rise because oceans warm very slowly, creating a time differential between the emission of greenhouse gases and their effect on ocean temperature. In 1998, the CSIRO undertook a study to examine the potential changes to sea level at the open ocean edge of the Gold Coast. The study estimated that by 2030, sea level rise in the Gold Coast region would be between 2–34cm, with a central estimate of 11cm; by 2050, the estimated range was between 3–58cm, with a central estimate of 18cm. The study noted that although the central estimates are far more probable than the extremes, the adverse impacts from the higher estimates could be disproportionately higher.

The most immediately obvious impacts of sea level rise at the Gold Coast would be shoreline retreat at the coastal edge, and possible inundation of low lying areas. However, my project does not directly engage with these scenarios, as doing so would require a level of investigation that is beyond the scope of my study’s primary focus on improving public domain functionality through combinatory public space developments. As previously noted, flooding is an ever-present risk on the Gold Coast because the city is situated on a low-lying coastal floodplain. Sixty percent of the Gold Coast is built on floodplain, and while much of the city is already classified as ‘flood prone’, this has not deterred development. Council’s flood mitigation projects and flood planning strategies already allow for a 27cm rise in sea level, in accordance with advice from the CSIRO. At the Gold Coast, the long-term potential risk of inundation due to sea level rise must be reconciled with the impetus for urban development, driven to short-to-medium population pressures.

While this project does not directly focus on the proximate impacts of climate-driven sea level rise (shoreline retreat and coastal inundation) on the Gold Coast, it does engage with the possible ultimate effect of increased coastal floods. The CSIRO explains that climate change would lead to changes in the frequency and intensity of severe storms, and that increases in sea level would lead to changes in wave and water height (storm surges) experienced during severe storms. The combination of these factors would increase the risk of coastal flooding. On both the east and west coasts of Australia, there has been a measured increase in the frequency of coastal flooding events throughout the twentieth century; should this trend continue, the CSIRO estimates that former one-in-fifty year flood levels will become one-in-ten year occurrences by 2100. It is the impetus for infrastructure driven by the adverse impacts of these types of intermittent events, rather than the changing ambient condition, that I am examining as leverage for the combined development of public space.
WATER QUALITY ISSUES ASSOCIATED WITH CANAL DEVELOPMENT

While the flood impacts of canal development are dramatic and have the potential to cause significant damage in single events, the Gold Coast’s canals have also created substantial ongoing environmental problems, many of which are related to water quality.

Of all the considerable environmental problems of canal development, water quality has perhaps the most widespread impacts—the decline in water quality has adversely affected habitat viability both locally and downstream, as well as the public recreational amenity of the waterways. Stormwater runoff from urban areas on the Nerang River’s floodplain can reduce water quality in the river though the introduction of high concentrations of nutrients and other contaminants from residential gardens, parks and roads. The problem is exacerbated by the restriction of tidal flushing that has been caused by the contorted and discontinuous forms of the canal waterways that are connected to the river. The result has been measurably deleterious effects on water quality. The Queensland Environmental Protection Agency (EPA) contends that canal development at the Gold Coast has had a ‘cumulative and direct’ adverse impact on habitat downstream, causing a three percent loss of mangroves in Moreton Bay42. Furthermore, the EPA has assessed the water quality in the Nerang River itself and has determined that, against a range of environmental indicators, the estuarine water quality of the river is moderately impacted43. This rating was primarily due to the level of dissolved oxygen recorded at its estuarine monitoring site (on the Nerang River near the Rio Vista canal estate), which did not meet the required ANZECC (1992) water quality guidelines for the protection of aquatic ecosystems and primary contact recreational waters. In 2002, the Health of the Gold Coast Waterways study, which likewise assessed water quality against a range of environmental indicators, also found concentrations of dissolved oxygen to be below the ANZECC (1992) guidelines at a similarly located monitoring site on the Nerang River44. Nonetheless, overall the study considered the section of the Nerang River downstream of Hinze Dam to be ‘generally good’45.
However, Johnson and Williams point out that even though no severe water quality problems have resulted from canal development at the Gold Coast, it cannot be assumed that water quality is consistently excellent—and that in fact, ‘water quality in a number of canals could be considered to be quite poor’46. While the EPA47, Council48 and EHMP49 have published water quality results for the Nerang River as part of their monitoring programs, none of these have included assessment of the water quality within the canal estates themselves. Nevertheless, it is generally accepted that long, contorted, canals with dead ends—such as those found at Broadbeach Waters—exhibit a greatly reduced tidal range when compared to that which is available in a natural estuary50. Tidal range, which decreases as the distance to the tidal inlet increases, is an important factor in tidal flushing—one of the key processes that contribute to good water quality in the canal estates. The tidal inlet for the Nerang River catchment is at the southern end of the Broadwater—which is located approximately 7km from the where the Rio Vista canals connect with the Nerang River, and 8km from where the Miami Keys canals connect with Little Tallebudgera Creek. The one published water quality study that I have reviewed which did include the Broadbeach Waters canals was undertaken by Phillip Crosser; this study found that sedimentation levels in the canals increased as their distance from the water inlet increased, and that sedimentation was highest at dead-end locations51. As there is an inverse relationship between sedimentation and tidal velocity, this indicates that tidal flushing decreases within a canal system as the distance from the water inlet increases. Furthermore, Crosser notes that the tidal prism (the amount of water moving past a fixed point during each tide) at dead-ends is effectively zero, irrespective of distance, hence the maximal sedimentation recorded at those locations52. A primary indicator of waterway health is the concentration of dissolved oxygen, which is facilitated by the mixing action of water movement. Crosser’s study also found that a deterioration in the quality of the dissolved oxygen environment was evident with increasing distance from the source waters53, and that once again this was especially so at dead-end sites within the canal network.
RECREATIONAL IMPACTS OF ENVIRONMENTAL PROBLEMS

The environmental problems associated with canal development also have adverse impacts for the canals as recreational public space. In my survey of water quality studies for the Nerang River catchment, I did not find any that directly monitored the water quality in the Broadbeach Waters canal estates to determine their suitability for recreational use. As such, it is not possible to say whether the water quality of the canals, while generally recognised to be sub-optimal, is unsafe for swimming. However, given the poor flushing regime of the canal network, it is reasonable to assume that swimming in the canals should at least be avoided after a period of rain, as the influx of urban stormwater would introduce some pollutants. Nonetheless, there are no official warnings against swimming in the canals due to water quality issues. However, both Council and the Queensland Government have issued warnings against swimming in the canals due to shark infestation of the waterways.

One unforeseen environmental consequence of canal development on the Gold Coast is that the artificial waterways have become a preferred habitat for the bull shark. The natural habitat of the bull shark is extensive—ranging from coastal marine and estuarine to freshwater. The species, which grows to 3.4m in length, is considered to be very dangerous to humans because of its aggressive nature and preference shallow murky water, such as that found in the canal estates, where the splashing of swimmers could be mistaken for fish. The size of the shark population in the Gold Coast’s waterways is unclear, although the Queensland Department of Primary Industries and Fisheries (DPI&F) estimates that there are ‘hundreds’, and the local press regularly carry stories about the profusion of sharks in the Gold Coast’s canal networks, as well as accounts of locals ‘shark hunting’ in the canals for sport. It is clear that the inadvertent creation of shark habitat has considerably diminished the recreational value of the Gold Coast’s waterways. The fear is not unwarranted as shark attacks do occasionally occur in the Gold Coast’s artificial waterways, including two recent fatalities in 2002 and 2003. The obstacles to resolving the issue seem insurmountable, as the bull shark has the ability to survive in a wide range of habitats and the Gold Coast’s artificial waterways are extensive and convoluted. The DPI&F has determined that extending its shark safety program into the Gold Coast’s canal systems would be logistically problematic, potentially ineffectual and prohibitively expensive. As such, swimmers are advised to keep out of the water in the canals.
INFRASTRUCTURE CREATES CHANGE

It is clear that both the public domain dysfunctions and the environmental problems associated with canal development are entrenched in the physical composition of the Nerang River’s canal estates. This is particularly evident at Broadbeach Waters, where the cul-de-sac pattern of the canals—favoured for maximising water frontage—has created innumerable dead ends, and the piecemeal expansion of the original canal estates has created long, contorted canal forms and a persistent discontinuity within the canal network. Given that discontinuity in the Broadbeach Waters canal network has resulted in both poor water quality in the canals and their underperformance as public recreation spaces, my proposal to connect the canals to improve their public amenity would also simultaneously improve their water quality. The canals become infrastructure that facilitates tidal flushing and stormwater dispersal. Furthermore, the additional canal connections could also increase the flood storage capacity of the Broadbeach Waters canal network, which could potentially assist in flood mitigation. As such, by connecting the dead ends to eliminate discontinuity in the canal network, an urban floodplain is created.

The potential for creating benefits to both environmental quality and public domain functionally through the canal joins is made possible by considering the canals as simultaneously infrastructure and public space. However, while the combined benefits that are offered by the Urban Floodplain proposition are appealing, it is uncertain if they would generate enough development impetus for the radical physical intervention required to connect the canals. As previously discussed, while Council has recognised the need for improved public amenity in the canal estates, it has made no plans for initiating change. The problem with leveraging the need for environmental change is that poor water quality is an ambient condition that, unlike flood or shark attack, does not pose an appreciable threat of imminent catastrophe. As such, even though the water quality within the canals is recognised to be sub-optimal and possibly even ‘quite poor’, it appears to be tolerated as an undesirable, yet inescapable, outcome of canal development. A case could be made for the need to improve the water quality in the Gold Coast’s older canal estates, such as those at Broadbeach Waters, so that they are more consistent with current environmental standards—a retrofit project, given that the canals were developed without planning control and before the cumulative adverse effects of floodplain development became apparent. Nonetheless, the need to improve the water quality of the canals, even when combined with the desire for improved public domain functionality, may not be compelling enough to galvanise change. Additional impetus is needed.
The interrelationship between real estate development and topography is key to understanding the urban form of the Gold Coast. The combination of topographical limitations and social expectations has led to the city’s development as a series of largely homogeneous ‘strips’ parallel to the coast. The thin, dense strip of high-rise development that stretches along the entire length of the Gold Coast’s ocean frontage is a physical expression of the desire for maximum proximity to the beach. Behind the coastal strip, the wetlands that previously limited urban development on the Gold Coast have been drained and transformed into a strip of canal development that incorporates all of the Gold Coast’s primary waterways, although the greatest density of canals is located on the Nerang River. West again is a large strip of primarily conventional suburban development on the Gold Coast’s wide, flat floodplains. It also includes large residential lake developments that are a function of the prohibition of further canal development of the Nerang River, the need to accommodate site drainage on floodplain developments, and the significant real estate value of water. This strip is also the location of the Gold Coast’s newest residential areas, and is limited only by the topographically challenging foothills of the McPherson Range, which forms the final ‘strip’—the Gold Coast’s rural hinterland.

The difficulty in trying to improve the current situation in canal estates such as those at Broadbeach Waters is that, like more conventional suburban development, they are notoriously resistant to change. Detached houses comprise 84.4% of the dwellings in Broadbeach Waters and although I did observe some isolated instances of recent redevelopment, in general the houses appear to be locally homogeneous. The 2006 Census found the median age of Broadbeach Waters’ residents to be 43 years, and 33.6% of residents to be over the age of 55. Furthermore, the resident population of Broadbeach Waters decreased by 2% between 2001 and 2006, while the neighbouring suburbs of Benowa and Bundall had population growth rates of 15% and 3% respectively over the same period. The sense of developmental inertia at Broadbeach Waters starkly contrasts with the development culture that prevails on the constantly redeveloping coastal strip. Forbes and Spearritt note that some sites on the Gold Coast have been redeveloped every decade over the last fifty years, and Colin Symes describes the Gold Coast as a ‘disposable city which destroys its past through development … an environment that is always renewing and reproducing itself.’ This level of dynamism is conspicuously absent within the Broadbeach Waters canal estates.
Examination of the public domain and environmental issues at Broadbeach Waters has revealed that they stem from the topology of the canal estates, which is a physical expression of the primary aim of canal development—the maximisation of private water frontage. The issue is that although there are recognised problems with public domain functionality and environmental quality within the canal estates, they are not so dire as to demand urgent action—they are background conditions that are tolerated, however begrudgingly, as the status quo. The problem of discontinuity—both within the canal network, and between the canals and streets—is so deeply ingrained within the physical structure of the canal estates that any change would require radical intervention, the possibility of which seems to be stymied by the prevailing developmental inertia of their suburban disposition. However, as its development history has unequivocally shown, the one factor that unfailingly generates impetus for change at the Gold Coast is the potential for real estate profit. And while the canal estates have not traditionally participated in the cycles of development that have constantly renewed the coastal strip, there is growing impetus for change.

The pressure for urban growth on the Gold Coast is acute and shows little sign of easing. With an annual average growth rate of 5.4% from 1996 to 2006, the Gold Coast is currently the fastest growing urban area in Australia. Its counterpart to the north of Brisbane, the Sunshine Coast, is the second fastest growing urban area in the country, with an annual average growth rate of 4.3% over the same period. Furthermore, the rate of growth for both these areas is increasing. Together with Brisbane, Australia’s third-largest urban area, they form the South East Queensland conurbation—which stretches two hundred kilometres along the coast from Coolangatta on NSW state border to Noosa on the Sunshine Coast. The South East Queensland Regional Plan estimates that...
the population of South East Queensland will grow from 2.7 million in 2006 to 3.7 million by 2026. The population of the Gold Coast is expected to grow from 475,500 to 719,000 in the same period. The Regional Plan also establishes clear limits to urban expansion on the Gold Coast and recognises that the amount of developable greenfield sites is decreasing within the designated urban footprint. Of the estimated 136,500 new dwellings that are required to accommodate the Gold Coast’s population growth by 2026, the Regional Plan has set a target for 65,000, or 48%, of those to be provided through infill and redevelopment.

The Australian Bureau of Statistics’ analysis of regional population growth shows that the areas of highest growth on the Gold Coast are the new and expanding housing estates at the urban fringe. This indicates that there will be increasing pressure for infill or redevelopment of existing urban areas as the availability of greenfield sites in the suburban strip diminishes. At an older suburb like Broadbeach Waters, which has remained largely static since its inception, generational change provides an opportunity for increasing urban density through development. The disruption to the suburb’s existing fabric that would ensue from joining the canals for public domain and environmental benefits could become the necessary catalyst for property redevelopment in the canal estates. The canal incisions create new waterfronts—sites adjacent to the cuts that were previously landlocked suddenly acquire water frontages, while sites that previously had water frontage gain additional water frontage.

The relationship between real estate value and waterfront position is clearly evident in the property sale prices achieved at Broadbeach Waters, which I spatially mapped for the nine-month period between May 2007 and March 2008. Although the mapping does not take into
account specific property characteristics that would affect the sale price (size and condition of house, number of bedrooms, bathrooms, car spaces etc), it does show that there are general correlations between sale price and position within the canal network. Without fail, properties with a canal frontage sold for more than landlocked properties on the same street. Distance from the river also affected property prices—the most expensive waterfront properties were located directly on the Nerang River, and the least expensive waterfront properties were toward the centre of the canal zone, at the greatest distance from the Nerang River and Little Tallebudgera Creek. Furthermore, properties with a promontory position—particularly those with wrap-around water frontage—were more valuable than properties along a canal, while properties at the end of a canal were generally less expensive again. The amount of water frontage also affects sale prices, with properties on battle-axe blocks consistently selling for less than full waterfront properties in the same street.

What can be extrapolated from these observations is that water frontage will always add value, and that the scenic and recreational amenity of a property’s waterfront position affects its value relative to other waterfront properties.

By creating new waterfronts, the cutting of canal connections affects increases in adjacent property values, which in turn encourages redevelopment takes advantage of the new waterfront condition. These new developments provide an opportunity to increase the density of the suburb, in accordance with the South East Queensland Regional Plan’s objective for redevelopment or infill in existing urban areas76. By adding the prospect of real estate profit to the combination of public space and environmental infrastructure development, the impetus for change at Broadbeach Waters’ canal estates becomes much more compelling. Unlike the previous projects at Broadmeadows, Botany and Surfers Paradise, which investigated combining public space with one other type of development, the project at Broadbeach Waters examines the possibility of combining with three interdependent variables—public space, environmental infrastructure and residential redevelopment.
2. INTERDEPENDENT COMBINING
The Urban Floodplain is conceived as an infrastructure project at Broadbeach Waters that, in the process of improving the environmental quality of the canals, simultaneously improves the functionality of the public domain and stimulates real estate development. The new canal connections are considered as infrastructure that facilitates the flow of water through the canal network; by removing the existing blockages, the environmental quality of the canals is improved. The infrastructural joining of the canals to form the Urban Floodplain would also enable Council’s vision for the canals to become ‘more usable and accessible open space’ that can be ‘used as low level transport corridors for increased passive recreation’ to be achieved. Improving the flow of water would simultaneously improve the navigability of the canal network, increasing their transport and recreational amenity. As such, the canal connections are conceived as simultaneously infrastructure and public space. New physical and visual connections between the public domain of the streets and the public domain of the canals are also made possible by the act of cutting the new canal connections, which disrupts the insulating layer of private houses and exposes the previously hidden territory of the canals’ public waterfront. Cutting the new canal connections also creates new waterfront conditions that change existing property values, stimulating residential redevelopment.

The primary physical objective of the Urban Floodplain project is to connect fragmented territories of water, and given that discontinuity is widespread throughout the Broadbeach Waters canal network, there appears at first to be an endless range of possible configurations for joining the canals. However, the plausibility of joining every canal is remote as the cost of property acquisition and construction would be substantial. Furthermore, the Nerang River’s hydraulic processes place serious limitations to the amount of additional water that can be connected to the canal system. Canal development connected to the estuarine section of a river significantly increases the tidal prism—the volume of water that must flow through the estuary during each tide. The increased tidal prism causes tidal velocities downstream of the canal development to increase in order to accommodate the flow of the larger volume of water. By the mid 1970s, the cumulative effect of unregulated canal development on tidal velocities in the Nerang River estuary had caused significant erosion to the river’s bed and banks, destabilised riverfront retaining walls, caused navigational problems and threatened to undermine the bridge at Little Tallebudgera.
Creek. As previously discussed, these problems led to the prohibition of further canal development off the Nerang River and its tributaries. Joining the canals to create an urban floodplain at Broadbeach Waters would increase the amount of water connected to the river, with potentially deleterious consequences. Dr Ron Cox advised that a five percent increase in the surface area of the water connected to the Nerang River would adversely affect the tidal prism, and that it would be prudent to limit any increases to 2–3 percent. This puts a clear restriction on the number of joins possible before the environmental effect of the Urban Floodplain becomes adverse rather than beneficial. Even if there were no financial constraints to joining every dead-end canal, the environmental limitations demand a targeted approach.

As the acceptable number of canal connections is limited, the possibilities for maximum combined benefit to water quality, public domain functionality and property redevelopment must be examined for any potential join site. In selecting project sites for my detailed physical investigations, I identified a minimum number of joins required to create a unified canal network and then made specific site choices that took into account variables associated with maximising the potential benefits for the three core objectives. The particular factors that affected the choice of each site varied, but the general considerations that influenced the overall site selection included:

- Connecting catchments
  In order to maximise changes to water flow, each site joins two currently unconnected water systems.

- Targeting dead ends
  Phillip Crosser’s study indicates that the potential water quality benefit of joining the canals would be maximised by targeting the dead-end sites within the canal network. Crosser found that tidal flushing within the Broadbeach Waters canal network is essentially non-existent at the dead-end sites, regardless of their distance from the river. In his opinion, ‘dead-ends should be avoided in order to maintain good water quality.’

- Reducing travel distance to river
  The site selections took into account the possibility of creating shorter routes to the Nerang River and Little Tallebudgera Creek, as this could potentially improve tidal flushing, recreational amenity of the canal waterways and property prices.

- Targeting landlocked sites
  Cutting through landlocked sites affects the greatest change in canal water frontage, which maximises the potential increase in property value while also creating new opportunities for publicly accessible waterfront.

My choice of sites for detailed investigation also includes a range of cut sizes, which enables an exploration of different scales of change. Of course, other sites could have been chosen that could equally achieve the same overall aim of creating a unified canal network, and the specific characteristics of those sites would provide different opportunities for improving public domain functionality and creating redevelopment potential. However, the purpose of my design investigations at the site scale is not to provide a definitive ‘project’ for the Urban Floodplain, but to investigate design strategies for physically combining environmental improvement, public domain functionality and residential change in the one development.

My approach to designing the infrastructure joins considers each project as an autonomous development that could be undertaken independently of the others. This creates maximum flexibility, allowing the Urban Floodplain to be realised incrementally and the joins to
be implemented in any order. Although the fundamental aim of each project is to examine how the three core objectives could be combined within a specific situation, the projects have been undertaken in pairs, and each has a slightly different focus. The first two projects (sites 01 & 04) were chosen as initial incursions from the Nerang River into canal territory. The sites for both projects enable the creation of direct river access for some of the most insular parts of Broadbeach Waters—one connects a lake to the river; the other connects the river to the heart of the suburb’s canal zone—and as such, they offer the some of the greatest potential to catalyse change in property values. A developer-oriented approach has been adopted, with the purpose of examining how leveraging the potential for real estate gain could initiate development that simultaneously improves the water quality and the public domain functionality at each particular site. The sites for the next pair of projects (sites 02 & 03) are located deeper within the canal territory and both interrupt major roads, which necessitates substantial bridging to reinstate the road network. These two projects investigate how actively engaging with the physical requirements of making the water and land connections to simultaneously make the new public canal waterfronts could create new public domain experiences. Design exploration was done primarily through physical models, which facilitated investigation of the spatial possibilities of cutting and connecting. The final two sites (05 & 06) are located very close to one another at the very heart of Broadbeach Waters. This pair of sites has been investigated as a combined project that expressly examines how the new public waterfront conditions and redevelopment potential created by the canal connections might begin to influence and restructure an entire local precinct.
This project connects the one lake at Broadbeach Waters directly to the Nerang River. Aerial photos show the water in the lake to be excessively green in comparison to the surrounding river and canals, indicating that it is currently vulnerable to eutrophication. Connecting the lake to the river provides immediate benefits to water quality in the lake as it would become subject to tidal flushing. The cut also immediately increases the value of all the properties on the current lakefront, as it enables direct boat access to the river. Recent property sale prices illustrate that the lakefront properties are, as expected, significantly less valuable than the riverfront properties on the same street (refer plan, opposite). However, because they lack access to the river, the lakefront properties are also generally less valuable than similarly positioned canal-front properties at Broadbeach Waters (refer property sales map, p.132). Furthermore, the example of Paradise Waters—an affluent canal estate at Surfers Paradise with direct river access—shows that the recreational amenity of direct access to the river is extremely valuable. As such, the addition of direct river access to an already desirable lake address will undoubtedly result in increased property prices. The improvement to water quality only adds to the public recreational advantages of the cut. The collective increase in property value for the lakefront properties would, at the very least, stimulate redevelopment interest, which could be intensified with Council rezoning for medium density development.
The site for the cut includes two vacant lots on the riverfront, two houses on the lakefront and the residential street in between. As the street currently ends in a cul-de-sac immediately west of the cut site, there is no need to bridge the new water; instead, the cul-de-sac is shifted to the eastern side of the cut, and the cost of building a bridge is avoided. Nonetheless, the cost of property acquisition would be substantial as the riverfront properties, despite being vacant, would be very valuable. A public space trade-off could be utilised to offset the cost of property acquisition. On the lakefront, there is an approximately 2,200 square metre public park that is currently extremely underutilised; comprising turf and a few very small trees, the park appears to be one the ‘generally left over [public spaces] with no clear function and little visual amenity’ identified in the Gold Coast City Landscape Strategy. This park could be rezoned and sold for medium density residential development, with the loss to public space on land helping to pay for the gain to public space on the water.

The development of public boat ramps and a public wharf would enable the cut to provide public recreational access to the river and lake. These facilities would be developed on both sides of the cut, providing a public terminus to the two cul-de-sac streets. A new small marina in the lake could also be developed publicly, with the moorings rented out to provide an ongoing income stream to help offset the overall costs of the public infrastructure. While the initial infrastructural incision provides considerable recreational and real estate benefits for the lakeside properties, the combined development of public facilities also benefits the nearby landlocked properties that do not currently have access to the river. Publicly access to the water is important at Broadbeach Waters because the canals themselves form the majority of the public space in the suburb. As not every property in the suburb has direct water frontage, increasing public access to the water improves the equitability of the public domain.
This project connects the end of a short canal branch off the Nerang River to a long dead-end canal spine, which is an extension of one of the original Rio Vista canals. In creating a shorter route to the river, the cut improves tidal flushing—and hence water quality—in the long canal. Although positioning the cut at the very end of the two canal systems would arguably yield a greater improvement to water quality, this particular site was chosen specifically for its proximity to the two largest parks at Broadbeach Waters, which provides an opportunity to simultaneously connect the public parks while connecting the public canals. Furthermore, the cut would substantially increase the value of the adjacent properties to its northeast, as they would now have water frontage in addition to their parkside position. The properties adjacent to the other three quadrants of the cut would also benefit, as the length of their water frontages would increase. All of the affected properties could potentially become sites for medium density redevelopment to capitalise on their increased value. In particular, the properties between the park and the cut could be amalgamated and rezoned for higher density multi-unit development, which would increase the already strong development potential created by the proximity to both parkland and waterfront. As the new canal connection cuts through an arterial road (Bermuda Street), a bridge is needed to reinstate the road network. Development consent for the higher density residential redevelopment could be structured in such a way that the developer contributes to the cost of the bridge or the associated development of the new public waterfront.

The position of this cut also provides considerable opportunities for creating new public domain connections. The new bridge would significantly improve visual access to the public domain; as it is situated on an arterial road, it would provide a large number of motorists and pedestrians with immediate views of the canals as well as Moana Park to the east. Furthermore, the entire canal edge at the northern side of the cut would be developed as a public wharf, with a new pedestrian bridge connecting to Moana Park—a large public park on the eastern side of the Rio Vista canal. The new public wharf would be a significant
Int 000
depend 000: 0ound 000
water 000
Moana
Park
Bill
Compton
Park
Albert
Park
addition to the public domain of Broadbeach Waters, as it would link the suburb’s two largest public park spaces—Albert and Bill Crompton Parks, and Moana Park. Combined, Albert Park and Bill Crompton Park (both situated to the north of the cut) comprise one of the largest public open spaces in the region and provide a range of recreational facilities, including: sports fields, tennis courts, bike tracks, children’s play areas and passive recreation spaces. Although it has a large lake, Albert Park is essentially landlocked, and although Bill Compton Park has a long canal frontage, physical and visual access to the water is impeded by a continuous edge of mangroves. To the east of the cut, Moana Park includes the Surfers Paradise Lawn Bowls Club as well as a large open field; the park’s substantial canal waterfront and proximity to the neighbourhood shops add to its importance as a local public space. By connecting these two parks with the new public wharf along the cut, a continuous public open space with a regional catchment of users is created. The public wharf also introduces a new type of public waterfront to the canal suburb, and capitalises on its highly desirable proximity to the Nerang River to generate a greater intensity of public recreational use.
the existing situation
This project connects the same lake that was encountered at site 01 to one of the short canal branches at the end of the Miami Keys extension. The current situation is extremely segregated—the water is discontinuous and completely insulated from the streets by private houses, an arterial road divides the neighbourhood into two separate enclaves, and the road is heavily insulated by sound walls, which also impede pedestrian movement. The new canal connection cuts perpendicularly across the arterial road (Bermuda Street) that bisects the neighbourhood, as well as two parallel residential streets (Doonbur Drive and Tannah Court) situated on either side of the arterial road. As such, substantial bridging is required to reinstate the road network. By cutting through the barrier of the arterial road, the canal connection has the potential to become an agent of repair—not just for the canal network, but also for the neighbourhood public domain with the development of a new pedestrian connection along the cut. By focussing on the physical requirements of cutting the new canal connection and bridging the new water to simultaneously create new boat and pedestrian linkages, this project investigates what new public domain experiences could be created at the public canal frontage.
The new canal connection provides recreational boat access from the lake to Little Tallebudgera Creek, through the Miami Keys canal system. Furthermore, when combined with the join at site 01, this project creates continuous boat access between the river and the creek. The combination of the two projects would also improve water quality at the end of the Miami Keys canal extension, as the cuts through to the lake provide a much shorter and more direct route from the canals to the river, which would assist tidal flushing.

Continuity in the road network is reinstated by the development of bridges at Bermuda Street and Doonbur Drive; bridging would not be required at Tannah Court as it currently terminates at the cut site. Because Bermuda Street has a very wide median, two bridges are proposed—one for each carriageway—to avoid building unnecessary structure. The provision of two narrower bridges, with a gap at the median in between, would allow more light through to the water below and produce a finer grain of infrastructure crossing the canal. The two Bermuda Street bridges would also be of a similar scale to the local road bridge at Doonbur Drive, creating a family of structures over the cut.

Providing boat and pedestrian access along the canal under the new bridges necessitates manipulation of the existing ground levels. My site observations
indicate that the ground level at the canal-front houses is typically about three metres above the water level in the canals at high tide. This is generally consistent with orthophoto map levels for Broadbeach Waters and tide levels published by Maritime Safety Queensland. Assuming that the adjacent road levels would be similar, and allowing for a typical structural depth of one metre for road bridges, the clearance under the bridges would only be two metres at high tide, which is extremely low. Consequently, the road level on the bridges is raised two metres above the existing road levels—this provides four metres’ clearance for boats at high tide, and three metres’ clearance for pedestrians at a new walkway that is set one metre above the high tide level. As a consequence of raising the bridge levels over the cut, the adjoining road levels at either side of the cut would need to gradually ramp up on approach to the bridges. The folding of the ground up to meet the required bridge levels would also necessitate either long tapering retaining walls or embankments where the roads lift off the existing ground. The provision of public pedestrian access along the southern edge of the cut would connect the two residential enclaves that are currently separated by Bermuda Street. As the existing ground level is generally three metres above the water level at high tide, the ground would need to be folded down to enable pedestrian access to the waterfront.

The simultaneous folding of the ground up and down generates a variety of possible spatial experiences. At Bermuda Street, the medians between the bridge approach ramps are folded down to the waterfront on either side of the cut, elongating the elevated experience of the road and emphasising the moment of bridging the water. The medians are folded right down into the canal to create ramped channels that are inundated by the tide, which over time may be colonised by mangroves. On the southern side of the cut, where pedestrian access is provided under the Bermuda Street bridges, a low bridge in the pedestrian walkway would facilitate the inundation of the median channel. At either side of Bermuda Street, the ground would fold down to meet the waterfront pedestrian walkway. On the eastern side, an existing nondescript ‘park’ space between Bermuda Street and Doonbur Drive is given new purpose, redeveloped to provide physical access to the waterfront and the pedestrian walkway under the bridges. As the western side is more constricted, a wide pedestrian walkway would ramp down to the waterfront, between the bridge approach and residential property.
Materiality of the cut

The cutting of the canal connection also provides an opportunity to examine the materiality of the water’s edge. In the canal estates, waterway edges are generally hard or soft. While retaining walls are employed where space is at a premium, grassed embankments are the more common canal edge—providing a gradual transition to the water, with a small sandy beach typically forming at the water’s edge. Other edge treatments that are commonly used in waterfront construction include gabions, sheet piling and riprap (loose stone shoreline armour). The detailing of the cut edge could introduce a different material language to Broadbeach Waters’ canals, one that expresses the infrastructural nature of the cut.

On the northern side of the cut, the proximity of Tannah Court to the edge of the cut necessitates the preservation of the existing ground levels. As such, although public access is provided to the canal edge, pedestrian access under the bridges is not provided. To maximise the amount of public waterfront space, a ‘hard’ canal edge is employed. Exposed sheet metal piling would retain the edge, revealing the method of cutting—sheet piling is typically driven into the ground at the line of cut, and excavation occurs in front of the sheet. The ribbed surface of the sheet piles, and the surface rust of the metal, introduces a different textural quality to the canal edge that contrasts with the usual grass and sand.

On the southern side of the cut, the pedestrian walkway under the bridge would be elevated one metre above the high tide level by a gabion retaining wall. At either end of the walkway, the canal edge would remain as sandy beach. To the west of Bermuda Street, the cut slices through existing lakefront properties at an angle, creating awkward triangular remnants. While the larger remnants are amalgamated to create a parcel for medium density development that addresses the new waterfront, a small fragment is given over to the public domain, to form a small neighbourhood beach.
existing situation at Bermuda Street

view from under bridge toward new 'remnant' beach
immediately west of the pedestrian walkway, providing additional canal-front passive recreation space for residents of the nearby landlocked properties.

**Neighbourhood functionality**

By exposing the currently privatised canal waterfront, the cut also creates the potential for a more physically integrated public domain by reconfiguring pedestrian movement in the neighbourhood. The existing pedestrian network, fractured by the arterial road, becomes unified through new connections over and under the bridges, and along the canal waterfront. In addition to the benefits of general pedestrian connectivity, the new waterfront walkway also facilitates access to the bus stops on either side of Bermuda Street, which are currently difficult to access due to the lack of nearby pedestrian crossings. The new public waterfront and pedestrian connections also make sense of the existing small public ‘parks’, which at present are essentially left-over spaces with little obvious purpose.

Although the new public waterfront would be visible to the large number of people travelling across the bridges, it would serve a primarily local user base. Instead of relying solely on the attractiveness of their waterfront location to generate activity, the integration of the park and beach with the new pedestrian network enables those spaces to become part of the everyday neighbourhood experience. By facilitating the creation of a pedestrian network that is independent of the road network, and a continuous public domain that unites the canal waterfront with the streets on both sides of the arterial road, the infrastructural cut becomes an instrument for overcoming neighbourhood dysfunction.
This project connects the end of the Rio Vista canal extension to the end of the Miami Keys canal extension, in the very heart of Broadbeach Waters’ canal territory. The cut slices through a main road and a parallel local street; in doing so it exposes previously landlocked properties to a newly created waterfront, which dramatically increases their real estate value. Properties adjacent to the cut that already have canal frontage would likewise experience an increase in value, as the cut would provide an additional waterfront. As with the previous join projects, the strategy would be to rezone the affected waterfront properties for medium density development to capitalise on their newly increased value and generate redevelopment impetus.

This cut also necessitates the development of new bridges to reinstate continuity in the road network. The main road (Rudd Street) currently has a wide median that separates the two carriageways. On the southern side of the street, the properties are set approximately two metres above street level, with steep driveways up to the houses. The advantage here is that lifting the road up to the required bridge level would bring it closer to the existing house levels, with no need for roadside retaining walls or embankments. The northern (eastbound) carriageway on Rudd Street is brought toward the southern carriageway, tapering the median to a minimal strip at the bridge approach. This enables both carriageways to be accommodated on a single bridge, with no wasted structure. A smaller bridge is required to reconnect the local street (Rosemont Avenue), which is situated parallel to Rudd Avenue. The road levels at both Rosemont Avenue and the northern carriageway at Rudd Street would need to be raised on either side of the cut to meet their respective bridges. This would create a subtle canyon effect between the two roads, lifting up to approximately two metres at the water’s edge. The slightly elevated roadways would also affect driveway access to adjacent properties; although the driveways could be reconfigured to meet the new condition, a better outcome would be for the affected properties to be redeveloped to capitalise on their improved waterfront situations while also responding to the changed roadway levels. Access to from Rudd Street to Rosemont Avenue is currently...
Roosemont Avenue
Canal Beach
New Park
Holland Court
New road connection
Rudd Street
via a small connecting road, which would be subsumed by the new canal connection. Instead of rebuilding the road, connectivity is restored through a short extension of Rosemont Avenue, which would connect it to the existing cul-de-sac end of the adjacent Holland Court.

Site observations of public space usage at the Gold Coast indicate that, at the public spaces that are well used, a key contributing factor is a publicly accessible waterfront. To my knowledge, there have been no published studies of public space usage at the Gold Coast. The literature on Gold Coast urbanism typically only mentions public space usage in the observation that the beach is the primary public space of the city, and in general discussions of the importance of the beach to Australian culture and identity. The primary focus of public activity at the Gold Coast is undoubtedly the ocean beach; however, behind the beach is a series of public parks along the Nerang River frontage between Main Beach and Broadbeach where I observed a reasonable amount of public usage each time I visited. The activities engaged in depended on the particular qualities of each park, but typically included: promenading, dog walking, jogging and bike riding along the riverfront; and picnicking, informal sports and other passive recreation within the parks themselves. Those parks that provided physical access to the water, especially in the form of a beach, seemed most popular as they allow people to wade, swim and fish at the edge of the river.

The reconfiguration of the roads at the cut enables a new public park with absolute waterfront access to be created in the space between Rudd Street and Rosemont Avenue, incorporating the existing leftover ‘park’ space at the end of Holland Court. Where the roads ramp up to meet the bridges, the park would fold down to the water to form a wide sandy beach, which could be artificially extended back up the ramped space. The new beach is essentially an extremely enlarged and publicly accessible version of the small beach edge that is typically found along the canal waterfronts. The recreational amenity of the new beach could be further increased with the installation of shark control nets at either end of the cut, creating a section of canal that is safe for swimming. Although the shark control equipment would not affect the flow of water through the canal network, the trade-off for swimming amenity would be the prevention of boat movement through the new canal connection. The cut would become a large swimming enclosure, with a sandy beach at one edge and a concrete platform edge opposite. The beach introduces an entirely new type of public space for the canal estates, an addition to the taxonomy of waterfront recreation spaces at the Gold Coast—ocean beach, river beach... canal beach.
existing apartments at Holland Court

existing canal, north of Rosemont Ave

Rudd Street
The next two sites are located in the very centre of the canal territory, at the intersection of two main roads (Rio Vista Boulevard and T.E. Peters Drive) and just south of the local shops. Together, the two cuts unite three separate canal systems. Site 05 connects the end of a long canal branch in the Rio Vista extension to the end of the longest canal branch in the original Miami Keys development. Site 06 connects the end of the same Miami Keys canal to the end of a branch extension of the Florida Gardens canal. Although they could be developed separately and can operate independently of one another, the proximity of the two sites allows them to be combined as one project. The advantages of combining the two cuts as one development include reduced construction impacts on the local community and reduced overall construction costs. Furthermore, the intervention of two simultaneous cuts affects a large area in the heart of the suburb, providing an opportunity to examine how an entire local precinct might be transformed through the combination of environmental infrastructure and public space development.

The new canal connection at site 05 cuts through the triangular intersection of Holland Court with Rio Vista Boulevard, and exposes previously landlocked properties to a large new waterfront. The cut also necessitates a new bridge to reconnect Rio Vista Boulevard, and the reconfiguration of its intersection with Holland Court. On the southern side of the cut, the configuration of the existing lot pattern relative to the cut has again resulted in a collection of awkwardly shaped remnants. Holland Court is extended through this remnant space to form a new intersection with Rio Vista Boulevard; the alignment of the road extension maximises the amount of space between itself and the canal edge, enabling the formation of a new public waterfront park. A series of terraces step down the space between the street and the canal, terminating in a ‘hard’ edge to the water that maximises the limited park space. The recreational amenity of the park is further increased through the provision of a public boat ramp, which would provide public access to the water for the large number of residents in the landlocked apartment buildings and townhouses between Holland Court and Rio Vista Boulevard.

On the northern side of the cut, a large sandy beach is created in the elbow shaped remnant space, presenting a ‘soft’ edge to the canal. Situated close to both the local shops and Moana Park, the beach makes an important new contribution to the public domain at the centre of Broadbeach Waters. Forming a wide wedge shape as it gradually ramps back up to Rio Vista Boulevard, the
Rio Vista Boulevard
public
boat ramp
Moana Park
local
shops
public sliver
•05
•06
Holland Cour
t extension
public space 'sliver'
view from 'sliver', across beach and canal, toward public boat ramp
beach would be clearly visible and easily accessible from the local shops. Along the canal-front, the new beach becomes a generous extension to the narrow beach edge that comprises the canal’s currently privatised public waterfront. It also gives retrospective meaning to the sliver of public space that leads from the street to the water—a former anomaly, the public sliver between two houses now connects the beach to Moana Park. Combined, the new beach and the waterfront park opposite provide for a range of public recreation uses at either side of the infrastructural cut. The proximity of the local shops to the new public waterfront, and the high visibility from Rio Vista Boulevard—the main road through the suburb—broadens the catchment of potential users for both beach and park.

The new canal connection at site 06 extends a long, narrow canal at Miami Keys to connect with a short, wide canal branch extension of the Florida Gardens canal. The cut slices through T.E. Peters Drive, the main road that connects Broadbeach Waters to Broadbeach, a major commercial and retail centre on the coastal strip. The cut is situated just before the intersection of T.E. Peters Drive with Rio Vista Boulevard, the main road through the centre of Broadbeach Waters. As such, the bridge required to reconnect T.E. Peters Drive, combined with the Rio Vista Boulevard bridge at site 05, places a much greater visual emphasis on the intersection as the entry point to the suburb centre. By eliminating the ‘dead end’ at the Miami Keys canal, the cut radically changes the waterfront situation of the adjacent properties. ‘Battleaxe’ properties that previously only had constrained access to the water suddenly have long waterfronts along the cut. The combined effect of the two cuts creates a small, isolated group of properties at the southwest corner of the main road intersection; amalgamation of these properties would create a development site with a highly desirable corner position at both street and canal frontages. The amalgamation of all the properties with changed waterfront conditions resulting from the cuts would create a series of attractive development sites at the very centre of Broadbeach Waters. Medium-density residential redevelopment of these sites would capitalise on their prominent location at the intersection of the suburb’s two main roads and proximity to the local shops, as well as their valuable new waterfronts. In contrast to site 05, the narrowness of the Miami Keys canal makes ‘hard’ waterfront edges more space efficient, creating a more urban character to the cut when combined with the new apartment buildings. The two new corner developments at the intersection could also incorporate retail or office spaces appropriate to a suburb centre.

Combined, the two cuts at sites 05 and 06 transform the centre of Broadbeach Waters, generating a greater variety public spaces and intensity of urban development. A new higher-density suburb centre, an extension of the existing activity of the local shops, could begin to develop around the intersection of the suburb’s two main roads. By enabling visual and physical connections to the water, the cuts also introduce a locational specificity to the public domain in the centre of Broadbeach Waters. Instead of appearing to be any anonymous suburban centre, the local centre at Broadbeach Waters becomes very obviously a canal suburb centre.
DISCUSSION

By considering the canal connections separately, the individual join projects have examined how the combined development of public space with environmental infrastructure can affect considerable change at the local scale. The projects also demonstrate that the three interdependent objectives of the Urban Floodplain can be achieved with varying degrees of public or private development input, and show that even when there is a greater emphasis on one component of the combined development, the associated objectives can still be realised. Furthermore, although the immediate impact of each project is primarily localised at the site of the cut, when considered in combination, the projects have the ability to affect change at the suburb and metropolitan scales. The cumulative effect of the infrastructural cuts—with their associated public domain and residential redevelopment outcomes—is the emergence of an integrated system of public waterways, a network of public spaces that is specific to the particular conditions of a canal suburb, and much-needed generational change in the residential fabric of the suburb.

By enabling the water to flow through a unified system, the cuts improve tidal flushing, stormwater dispersal, and the flood storage capacity of Broadbeach Waters’ canals. Improved flushing should also have a positive overall effect on water quality throughout the entire canal network; however it is difficult to quantify the potential improvements without undertaking a comprehensive water quality study, which is beyond the scope of my study and research field. Nonetheless, Dr Ron Cox advised that it reasonable to assume that removing dead ends and increasing connectivity will result in—at the very least—localised improvements to water quality at Broadbeach Waters. The creation of a unified canal system not only provides environmental benefits, it also simultaneously provides public domain benefits, by improving the ability of the canals to function as a network of public waterways. Combined, the cuts facilitate continuous movement through Broadbeach Waters’ canals by boat, enabling them to potentially be used as an alternative, low level, mode of transport. Over time, another layer of infrastructure such as ferry stops and water taxi berths could develop to support the use of the canals as transport conduits.

By penetrating the insulating layer of private houses, the infrastructural cuts visually and physically increase connectivity between the suburb’s public streets and the previously hidden public waterfront of the canals. By exposing this currently privatised territory, the cuts enable the development of new types of public spaces that increase the public recreational amenity of the canal frontage, initiating a more equitable public domain. The new public waterfronts also have the potential to activate currently underutilised public spaces—for instance, ‘left-over’ parks and slivers of laneway space are given new purpose in connecting the streets to the...
new public waterfront spaces. Also, the canals’ largely continuous beach edges, which exist between the residential property boundaries and the water, become much more easily accessible through the new public waterfronts at the cuts. Increased visibility and physical accessibility promote the canals’ beach edges as a legitimate part of the suburb’s public domain, encouraging their potential use as a secondary network of neighbourhood pedestrian spaces. A new public domain could emerge at Broadbeach Waters that incorporates new waterfront recreational spaces, existing parks, laneway slivers, canal beach edges and the canal waterways—integrating land to water.

When considered in terms of Hajer and Reijndorp’s performative definition of the public domain as those places where social exchange is possible, it is clear that the cuts directly improve the public domain function of the canals—because they make the water more accessible to a wider range of people, not just those who live on the waterfront. The greater variety of public waterfront experiences created by the cuts—beach, wharf, promenade, boat ramp, ferry stop—attracts a greater number of people to the canals for a wider range of purposes, increasing the possibility of social exchange at those public waterfront spaces. Similarly, the public domain function of the canal waterways themselves is improved by the cuts, as a greater variety of people will now have access to them for both recreational activities and, potentially, public transport use. Furthermore, the cuts facilitate the creation of new pedestrian circulation networks that utilise the canal waterfronts, making the possibility of social exchange a part of the everyday experience of the canal suburb.

Finally, by disrupting the currently static residential fabric of the canal suburb, the infrastructural cuts encourage localised residential redevelopment. Changed waterfront conditions and Council rezoning could initiate higher density development, and the concentrations of greater density throughout the suburb could begin to stimulate further redevelopment that is not directly associated with the infrastructural cuts. The generational change at Broadbeach Waters could also bring different expectations of environmental quality and public amenity to the canal suburb, potentially catalysing further changes. By initiating suburban change, the Urban Floodplain enables Broadbeach Waters to accommodate some of the urban growth that is expected in South East Queensland’s 200km city, in accordance with the South East Queensland Regional Plan’s objectives for infill or redevelopment at the Gold Coast’s existing urban areas.
Infrastructure enables urban change

The Urban Floodplain considers the canal network as infrastructure—by enacting a series of cuts to remove blockages in the existing system, fragmented territories of water and land are stitched together. The outcome of the infrastructural incisions is the catalysis of generational change in the canal suburb, through the stimulation of residential redevelopment, improvement to water quality and increased public recreational amenity and connectivity. The powerful ability of infrastructure development to affect radical change to existing urban fabrics has clear historical precedents and continues to be repeatedly demonstrated in cities today, particularly in road development; however, arguably the principal examples remain the transformations of Paris in the mid-nineteenth century and of New York in the early to mid twentieth century. Georges-Eugène Haussmann’s restructuring of Paris for Napoleon III (1853–68) carved avenues and boulevards through the old city and its slum districts to facilitate the deployment of troops and control of civilians. Haussmann’s project was motivated by a need to respond to the increasingly adverse effects of industrial urbanisation—overcrowding, poor sanitation, civilian unrest—which were particularly nineteenth century concerns. Robert Moses’ transformation of New York through expressway developments was similarly motivated by a need to alleviate congestion and facilitate movement, although his was a particularly twentieth century consideration—the flow of motor vehicles. The Urban Floodplain is likewise motivated by facilitating flow—the ecological flow of water, which could be regarded as a particularly twenty-first century concern, given that the environmental impacts of urbanisation have achieved widespread populist attention.

Of course, the urban environmental infrastructure project has its canonical landscape architectural examples in the urban drainage projects within Frederick Law Olmsted’s Boston Park System (1878–1896)—the Back Bay Fens and Muddy River Improvement (including Leverett Park). Both projects were ‘sanitary improvements’ that were simultaneously conceived as public recreation spaces, and the naturalistic appearance of the waterways belie their completely constructed nature. The Back Bay Fens were constructed as a stormwater storage basin to alleviate the flooding of Stony Brook, while the Muddy River was completely realigned and reconstructed to alleviate the stagnation and sewerage overload caused by reduced tidal flow resulting from the previous filling of Back Bay.

What differentiates the Urban Floodplain is that Haussmann, Moses and Olmsted’s projects were achieved through large-scale operations and, particularly in Paris and New York, the scale of the infrastructural incisions caused widespread physical disruption to the existing urban fabric—which, in the case of Moses, eventually provoked considerable community opposition. At Broadbeach Waters, the infrastructure is enacted as a series of discrete, localised interventions that nonetheless specifically aim to affect change to urban scale systems. This sort of incremental, small-scale approach may not have the clear physical drama of the urban gesture that often accompanies infrastructure development, particularly roads, but can nonetheless affect significant urban changes. This has been demonstrated by the much-documented and admired Barcelona approach to urban public spaces of the 1980s and 1990s. While significant large urban parks and regional open spaces were developed in that time, Joan Busquets contends that it was the creation and renovation of over 150...
neighbourhood parks and squares that ‘represent[s] a thoroughgoing rehabilitation of Barcelona’s urban space’\textsuperscript{89}. Oriol Bohigas, director of planning at Barcelona City Council in the early 1980s, explains the approach taken: ‘…we will proceed directly with public spaces with two goals: to make space of quality and at the same time create a focus that can generate spontaneous transformations. It is evident that when a public space is built or rebuilt… this is a focussed intervention, the motor of the regeneration of the environment, stimulated by the users themselves’\textsuperscript{90}.

**Simultaneous scalar operations**

The transformation of Barcelona’s public domain through small, discrete projects exemplifies the power of the simultaneous scalar operation—even though the intervention is at the site scale, the ultimate effect is at the urban scale. Furthermore, the Barcelona example highlights the representational difficulties inherent in such an approach. While the physical spatial transformation at each park or square can be clearly described through drawings, photographs or models, the combined urban effect of these changes does not lend itself to be depicted spatially—precisely because it is not conceived as a physical gesture. The disassociation between scales of operation and effect is also inherent in the Urban Floodplain project—although not to the same degree as the Barcelona example, as shift to the urban scale is not as extreme—which has posed similar representational challenges. Although the physical operation was at the site of each cut, and each project endeavoured to make tangible changes to the physical environment at each site, the ultimate goal was to affect system-wide changes. It is the causal relationship between the small physical operation and the large, urban, and not necessarily physical, outcome that has proven so difficult to convey graphically. While it is not the aim of my research to examine issues of representation, the experience of doing the Urban Floodplain project raises questions that warrant further design investigation—in particular, how the simultaneous design operation across two (or more) scales might be described simultaneously through the one representational device.

Ultimately, what has been learned from the Urban Floodplain project is the strategic potential of leveraging—that by actively engaging with urban development forces, be they latent or overt, change can be initiated. This project conceptually extends leveraging beyond the opportunistic appropriation of pre-existing development impetus that was employed in the previous projects to the active creation of development impetus. In doing so, the project also demonstrates the power of combined development. Individually, none of the objectives of improved water quality, better functioning public domain or suburban residential change is likely to overcome the developmental inertia that pervades Broadbeach Waters; combined, they provide enough potential ‘gain’ to compel development that could ultimately result in the transformation of the entire suburb.

2. In 2006, 84.4% of dwellings in Broadbeach Waters were detached houses, compared to the national average of 74.8%.


4. Gold Coast City Council 2000, *Gold Coast City Landscape Strategy: Part 1—Landscape character: guiding the image of the city*, prepared by John Mongard Landscape Architects, in conjunction with Urban Design, Cultural Heritage and Landscape Unit, Gold Coast City Council, Gold Coast.

5. The lifting of wartime building restrictions in 1952 saw the consolidation of the Gold Coast’s formerly small beachside resorts into a continuous strip of development. By the 1960s, the Gold Coast (along with the Sunshine Coast) was experiencing Australia’s biggest coastal land boom. Spearritt writes: ‘never before had relatively cheap coastal blocks of land been so numerous, and so aggressively marketed to Queenslanders and investors from the southern states’.


7. Spearritt ‘The 200km City: from Noosa to the Tweed’.


10. Gold Coast City Council *Gold Coast City Landscape Strategy*.

31 Bureau of Meteorology Flood warning system for the Nerang River.

32 Gold Coast City Council Nerang River Flood Mitigation.


34 ibid., p.5.

35 ibid., p.6.


37 CSIRO 1998, Global warming and sea level rise on the Gold Coast, prepared by KJE Walsh, DR Jackett, TJ McDougall, & AB Pittock, for Gold Coast City Council, CSIRO, Canberra, p.3.

38 ibid.

39 Gold Coast City Council Nerang River Flood Mitigation.

40 CSIRO Climate change and sea level rise.

41 ibid.


44 Gold Coast City Council Health of the Gold Coast Waterways, p.92.

45 ibid., p.iii.

46 Johnson & Williams ‘Canal and Saline Lake Residential Developments in Queensland’, p.497.

47 Environmental Protection Agency Queensland Waterways: Gold Coast water quality - Nerang River, Tallebudgera, Carrumbin and Coombabah Creeks.

48 Gold Coast City Council Health of the Gold Coast Waterways.


50 Johnson & Williams ‘Canal and Saline Lake Residential Developments in Queensland’.


52 C Crosser ‘Water quality, sediments and the macroinvertebrate community of residential canal estates in South-East Queensland, Australia: a multivariate analysis’.

53 ibid., p.1095.

54 Department of Primary Industries and Fishing 2006b, Shark Control Program, Queensland Department of Primary Industries and Fishing website, <www2.dpi.qld.gov.au/fishweb/11824.html>.


57 ibid.

58 Department of Primary Industries and Fishing 2006a, A report on the Queensland Shark Safety Program, Queensland Department of Primary Industries and Fisheries.

59 ibid., p.17.

60 However, there are systemic limitations to the number of new canal connections, which will be discussed presently.

61 Johnson & Williams ‘Canal and Saline Lake Residential Developments in Queensland’, p.497.

62 Australian Bureau of Statistics Census of population and housing.

63 ibid.

64 ibid.


67 C Symes 1997, ‘Strange alchemy: the Gold Coast as cultural phenomenon’, in Gold Coast City Council...
One of the principal aims for the reconstruction that
83 Sigfried Giedion describes Napoleon III's plan for
84 reconstructing Paris as a trench defense system with an
85 internal foe in mind, as 'wide, unbroken lines of streets were
86 the best means of controlling incipient riots' (p.740).
87 One of the principal aims for the reconstruction that
88 Haussmann communicated to the city council was 'to
89 assure the public peace by the creation of large boulevards
90 which will permit the circulation not only of air and light
91 but also of troops. Thus by ingenious combination the lot
92 of the people will be improved, and they will be rendered
93 less disposed to revolt' (cited by Giedion, p.746).
94

84 There have been many historical and urban studies of
85 Haussmann's transformation of Paris. In particular, David
86 Pinkney's *Napoleon III and the Rebuilding of Paris* provides an
87 in-depth examination of the 'complex story of architecture
88 and engineering, slum clearance and sanitation, emigration
89 and urban growth, legal problems of expropriation and
90 human problems of high rents and evictions, public finance
91 and high politics, dedicated men and profiteers' (p.4).
92 D H Pinkney 1958, *Napoleon III and the rebuilding
94
95 Robert Moses' public works transformation of New
96 York, not only through road infrastructure, but also
97 public housing and public recreational spaces such
98 as beaches, parks and pools, is documented in detail
99 by Hilary Ballon and Kenneth T. Jackson:
100 H Ballon & K T Jackson (eds.) 2007, *Robert
101 Moses and the modern city: the transformation of
103
104 The Muddy River section of the Emerald Necklace
105 (Boston Park System) is now known as 'The Riverway',
106 and Leverett Park was renamed Olmsted Park in 1900.
107 Cynthia Zaitzevsky provides a detailed historical account of
108 Olmsteds's Boston Park System:
109 C Zaitzevsky 1982, *Frederick Law Olmsted and
110 the Boston Park System*, The Belknap Press of
112
113 Ballon and Jackson explain that although Moses’ efforts in
114 reshaping New York were generally well received during the
115 1930s and 1940s, by the 1950s, the ‘physical destruction
116 and social displacement caused by three major postwar
117 building programs: interstate highways, urban renewal,
118 and public housing’ (p.65) had eroded public confidence.
119 The considerable opposition to Moses’ expressway plans
120 for Lower Manhattan, and criticism of the physical and
121 social urban impact of his work, is well documented—
122 most influentially by Jane Jacobs and Robert Caro.
125 R A Caro 1974, *The power broker: Robert Moses
126 and the fall of New York*, Knopf, New York.
127
city*, Nicolodi (Rovereto, Italy) & Harvard University
129 Graduate School of Design (Cambridge, Mass), p356.
130 O Bohigas 1985, *Reconstrucció de Barcelona*, Edicions 62,
131 Barcelona, p21.  
132 Translated and cited in:
133 N Benach 2004, ‘Public spaces in Barcelona
IMAGE REFERENCES

(Sources for published images in this chapter)

p110 Aerial view of the Gold Coast and the Nerang River, looking south, 4th February 1957; shows floodplain before canal development.
Image courtesy of the Gold Coast City Council Local Studies Library.
Image number: LS-LSP-CD001-IMG0090-MR

Image courtesy of the Gold Coast City Council Local Studies Library.
Image number: LS-LSP-CD001-IMG0038-MR

Aerial view looking north, with Miami Keys development in foreground, 8 August 1958.
Image courtesy of the Gold Coast City Council Local Studies Library.
Image number LS-LSP-CD001-IMG0036

Creating value from ‘useless’ land.

p115 Aerial view of the Gold Coast, looking north to the Broadwater, and the Nerang River, August 1966; shows Rio Vista and Miami Keys developments completed.
Image courtesy of the Gold Coast City Council Local Studies Library.
Image no: LS-LSP-CD001-IMG0091-MR-1

First stage of Rio Vista development complete, c 1959.

p121 Advertisement announcing the release of Miami Keys and Rio Vista estates, The Courier Mail, 23 Dec 1957.

Miami Keys inundated by flood water, January 1974.
photo: R. Anthony;
source: Gold Coast City Council 2003, Nerang River Flood Mitigation, bulletin, Gold Coast City Council, Gold Coast.

p122 Nerang River flood history:
data: Bureau of Meteorology, dated 10/06/08:


p130 Aerial view of Robina Town Centre (suburban strip), Nerang First National Real Estate, Gold Coast Aerial Photos, Nerang First National website, accessed 28/05/07.

p176 Demolitions for the Avenue de l’Opéra. The new Opera House is the background
(Photograph in the Bibliothèque Historique de la Ville de Paris, Paris)

The Avenue de l’Opéra viewed from the Place du Théâtre Français.
Photo: Bibliothèque Nationale, Paris

Napoleon III’s plan for Paris

Brochure cover showing Lower Manhattan Expressway (proposed), looking east from above the West Side Highway, ca. 1959. Rendering by Julian Michele. Courtesy MTA Bridge and Tunnels Special Archive.

Aerial view of the Brooklyn-Queens Expressway, looking north from Metropolitan Avenue toward the Kosciusko Bridge. September 17, 1950.
Source: H Ballon, & K T Jackson, ibid.

Olmsted’s plan for the Boston Park System, 1894.
‘Plan of portion of park system from Common to Franklin Park’

Barcelona Public Spaces map
Source: J Busquets 2005, Barcelona: the urban evolution of a compact city, Nicolodi (Rovereto, Italy) & Harvard University Graduate School of Design (Cambridge, Mass.).
DISCUSSION
& CONCLUSION


**Public space combinations**

When considered together, the case studies at Broadmeadows, Botany, Surfers Paradise and Broadbeach Waters have shown that a design strategy that combines the development of public space with that of other urban activities can enable underperforming public spaces to become better public domains. The projects have demonstrated, through their design investigations, that ‘combination’ can be conceptualised spatially, operationally and experientially, and that it can be achieved in different ways that respond directly to the particular characteristics of the public domain dysfunction in each case. For example, the Broadmeadows project conceived ‘combination’ as the physical, operational and experiential conflation of the two formerly distinct territories of the civic centre and the shopping centre—in effect, a maximal combination. Conversely, at the Botany Foreshore project, the port and the beach remain spatially and operationally distinct, and the combination of the two activities occurs in the simultaneous experience of them both at the foreshore. Here, physical combination is not even minimal—it is non-existent. Nonetheless, the new spatial configuration for the port expansion orchestrates an extreme adjacency between the port and the public foreshore that enfolds the physical presence of the port, and the dynamics of its industrial operations, into the experience of all the recreational activities at the public foreshore.

As a pair of projects, Broadmeadows and Botany illustrate that combined development is a nuanced strategy that requires a clear understanding of the particular spatial and operational requirements of the activities to be combined, as the nature of the relationship between the activities directly affects the possible mode of combining. At Broadmeadows, the civic and shopping activities of the town centre are normally understood to be spatially and operationally compatible—hence the possibility of maximal combining through conflation. At Botany, the activities of the industrial port and the public foreshore are normally understood to be incompatible, which is reflected in the history of extreme antagonism between the port and the foreshore beach. Additionally, the successful operation of both the port and the public foreshore depends on their spatial separation. As such, the mode of combination is conceptually extended beyond the relatively straightforward response at Broadmeadows to that of a temporal combination—where two typically successional activities co-exist. Furthermore, the intensification of the recreational experiences through the simultaneous experience of the port activities initiates a revaluation of the relationship between industry and Botany’s public foreshore, to the benefit of the public domain.

In all of the projects, the object of combining is ultimately to improve the ability of the dysfunctional public spaces to foster public life—that is, to improve public domain functionality in terms of increasing the possibility of social exchange, described by Hajer and Reijndorp as a ‘concrete, physical experience of the presence of others, of other cultural manifestations, and of the confrontation with different meanings associated with the same physical space’\(^1\). In each of the projects, the core objective of combined development has been to increase the potential for greater social exchange by creating new heterogeneous public space situations. At Broadmeadows, the conflation of the suburb’s civic centre with its shopping centre enables it to be experienced simultaneously as a local centre and regional destination that caters for a multitude of activities; its ‘meaning’ is determined by the particular needs of individual users at each visit. Consequently, the possibility of chance encounters and interaction with others with different agendas for the same space is increased as a direct result.

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**RESEARCH OUTCOMES**

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\(^{1}\) Hajer and Reijndorp.
of combining. Similarly, the possibility of encountering a ‘concrete, physical experience of the presence of others’ is actively pursued in the Botany project. Here, the combined development not only enables the co-existence of the industrial port and the foreshore beach, it also enables the creation of a new public edge of wharf and beach immediately adjacent to the port’s road/rail interchange. The variety of public recreational activities that is afforded by the location of the wharf and beach (such as birdwatching, plane spotting, sailing, fishing, jet-skiing, picnicking, swimming…) increases the range of potential users and, consequently, the possibility of social exchange. Furthermore, the extreme adjacency between the port and public waterfront enables the simultaneous experience of industrial and recreational activity in the one place, from the perspective of both the recreational user and the port worker. At Surfers Paradise, the creation of a public swimming pool and beach at the riverfront caters to the recreational needs of both local residents and tourists simultaneously; and at Broadbeach Waters, the increased public accessibility of the canals reduces the current homogeneity of their user base. The greater variety of public waterfront experiences enabled by the cuts attracts a larger number of people to the canals for a wider range of purposes, significantly increasing the possibility of social exchange at the public waterfront spaces and the on the canal waterways themselves. As a whole, the projects significantly extend Hajer and Reijndorp’s observational research into public spaces and public domain by speculating on how the experience of others, and of multiple meanings associated with the one place, might be physically created directly as a result of combined development. In doing so, my design research begins to contribute back to the wider discourses on urban public spaces, which—as previously discussed, and as exemplified by Hajer and Reijndorp’s ‘In search of new public domain’—are predominantly observational and analytical, rather than propositional.

What makes public space public?

The existing situation encountered at Broadmeadows—where the town centre’s public domain activity is currently occurring inside the privately owned and managed shopping centre, despite the provision of public space in the civic centre—suggests that there are core values, beyond public ownership, that make a space public. Researching combination as a means to improve the performance of dysfunctional public spaces has entailed an examination of the particular nature of the dysfunction at the four project locations, which in turn has clarified what some of the key requirements of ‘good’ public space might be. The Broadmeadows situation supports Hajer and Reijndorp’s belief that a ‘good’ public space is one where exchange is not only possible, but also actually occurs. Similarly, the public domain issue at Surfers Paradise’s ocean beach is that even though exchange is possible, it does not readily occur—at least not in the afternoons. Although the situation is better than that which is encountered at Broadmeadows, the partial dysfunction of Surfers Paradise beach is nonetheless a serious issue because it is the Gold Coast’s pre-eminent public space and a foundation of its tourism economy. While the Broadmeadows and Surfers Paradise examples illustrate that the actual occurrence of public social activity is a key characteristic of ‘good’ public space, the situation at Botany is a reminder that the physical provision of public space is also a fundamental concern. For although social recreational activity is currently possible and actually occurs at the Botany foreshore, its continuation is uncertain because the physical existence of the beach will be substantially diminished by the port expansion. Additionally, the particular dysfunction of the Broadbeach Waters canals highlights access as a key attribute of well-functioning public space, because although a large amount of public space exists in the canal estates—in the form of the canal waterfronts and the canals themselves—the possibility and actual occurrence
of social exchange is severely limited by the current lack of access. By focussing specifically on these publicly-owned urban spaces that are not functioning as public domains, or whose public domain function is under severe threat, my investigations have confirmed that core values which make space ‘public’, beyond legal ownership, should include: the possibility and occurrence of social activity or ‘exchange’; the provision or supply of space; and access to that space. This is not to suggest that these are the only defining values that make public space ‘public’, only that these are the ones that were encountered (through their absence or shortage) in the particular places investigated in this research. It is through the examination of how these conditions might be physically achieved in combination with other urban activities that the projects critically and conceptually extend the possibilities for the development and design of public space.

**Leveraging enables combined development**

In addition to investigating modes and methods of physically, operationally and experientially combining different activities with public space as a means to improve public domain functionality, a fundamental task of the research has been the investigation of how these combinations might be initiated. Examination of the specific regulatory and urban planning instruments that govern the making of public space in each of the four project locations has shown that the issue of public space dysfunction is recognised in each place. However, the responses have been either a sense of resignation to the situation, as in the cases of Surfers Paradise and Botany; or, in the cases of Broadmeadows and Broadbeach Waters, general policy objectives for improvement but no clear strategy or provisions for making any substantive changes to the existing situation. Public policies and planning instruments, which constitute the standard methods of initiating public space development, are clearly unable to affect the type of change required to improve the public domain performance of these dysfunctional public spaces. My investigations indicate that the change required involves a fundamental reconsideration of the physical and operational relationship between these public spaces and their contexts—something that planning, which considers public space to be singular and inherently separate, does not do.

By leveraging other urban development impetuses to initiate public space change, the projects extend the conventional practices of making public space. The projects have shown how actively engaging with the development of other urban activities can generate opportunities for fundamentally changing the way that underperforming public spaces operate in relation to their particular urban contexts. Furthermore, these changes are made directly through the simultaneous development of the public spaces with the ‘other’ component or components of the combination. At Botany, for example, the new wharf beach is created directly as a consequence of extending the container terminal. Importantly, the two Gold Coast projects—Surfers Paradise and Broadbeach Waters—have demonstrated how the leveraging of development impetus can be a useful strategy for initiating change in situations where the opportunity for imminent change is not immediately apparent at the site of the public domain dysfunction. The PM Beach project at Surfers Paradise illustrates how leveraging can be opportunistic, by appropriating the development impetus for environmental infrastructure at the Nerang River to catalyse the development of a new beach and public waterfront spaces that address the dysfunction of the shaded ocean beach. However, it is the Urban Floodplain project at Broadbeach Waters that critically extends the conceptual possibilities of combining—by leveraging the potential for suburban redevelopment and private financial gain to **actively create**
the necessary development impetus to simultaneously initiate change to both the environmental quality and public use of the canal waterways, which would otherwise be neglected or ineffectively addressed.

**Infrastructure creates public space**

Although it was not an intended aim of this study, in the course of doing the research by design, the projects have also investigated infrastructure as an instrument for creating new public space situations. This has been done by engaging with the performative nature of infrastructure, particularly in relation to how it can interact with landscape processes. At the Botany Foreshore, the protective groyne’s environmental function of interrupting the flow of sand into the Penrhyn Estuary is employed to simultaneously create the new wharf beach. At Surfers Paradise, the proposition of a municipal pool at the Nerang River is conceived simultaneously as infrastructure that disrupts the transport of sand in the river to create the PM Beach. While at Broadbeach Waters, the function of the canals as public recreational space is purposefully conflated with their potential function as environmental infrastructure. As an infrastructural operation, the cutting of the new canal connections facilitates the flow of water through the canal network, with positive environmental effects. Again, the development of infrastructure creates public space, as the new canal connections themselves constitute additional public space in the canal network. Furthermore, the improved flow of water through the canal network simultaneously facilitates their public recreational and transport use. Importantly, the cutting of the canal connections not only creates new public space and better connectivity within the canal system; it also enables greater public access from the suburban streets to the predominantly privatised canals and their waterfronts. The Urban Floodplain conceptualises infrastructure as public space—not simply in the sense of public ownership, but operatively. It is what the new canal connections do that makes them ‘public’ spaces. The canal cuts function as spaces that make increased social exchange possible within the canal suburb—by improving connectivity within the canal network, and between the canals and the streets, they enable a greater variety and intensity of public activities to take place.

**Unexpected, yet significant outcomes**

Part of the process of researching by design is that sometimes unexpected and unintended outcomes emerge from the doing of the design projects, leading to insights that are not directly related to the specific questions or problems at hand. Even though it was not the purpose of my research to participate specifically in the wider discourse on industrial landscapes, one of the outcomes of investigating combinatory public space development at the Botany foreshore is a conceptual extension of how industrial activity might be engaged in the design of public landscapes. As discussed in the Botany Foreshore chapter, designing for the co-existence of the industrial port and a public foreshore that supports a wide variety of recreational pursuits contributes to the landscape architectural design discourse on industrial landscapes. From Haussmann and Alphand’s Parc des Buttes Chaumont of the 1860s to Field Operations’ current ‘Lifescape’ proposition for Fresh Kills at Staten Island, the discourse on industrial landscapes has been primarily defined by ideas of amelioration, rehabilitation and adaptive reuse. It is a discourse on post-industrial landscapes. By purposefully engaging with a currently working industrial port, the Botany Foreshore project conceptually extends the possibilities for the relationship between the industrial and public social uses of a landscape—from successional to simultaneous. Furthermore, the
project deliberately enfolds the experience of not just the physicality of the industrial artefacts, but also the experience of their actual performance, as an integral component of the recreational experiences of the foreshore. In doing so, it extends the conception of the industrial sublime that Peter Latz so influentially proffered as a landscape experience at Duisberg-Nord.

Similarly, although investigation of the idea of infrastructure as a landscape architectural operation was not the original intention of this study, the particular environmental and public domain issues presented at Botany and the two Gold Coast sites make infrastructure a useful agent for engaging with those issues. In their introduction to The mesh book: landscape/infrastructure, Julian Raxworthy and Jessica Blood urge landscape architects to ‘work infrastructurally’, noting that ‘appearing infrastructural is not the same as being infrastructural’. Through the process of examining, in a site-specific way, how the making of environmental infrastructure could be combined with the making of public space, the projects at Botany and the Gold Coast indicate how infrastructure might be engaged through landscape architectural design in a performative, rather than aesthetic, manner. Furthermore, the infrastructural operation of the Urban Floodplain demonstrates how such an approach has the potential to affect significant change simultaneously at site and urban scales.

As such, making a definitive drawing that describes the project—both the operation and the effect—is potentially an impossible challenge. This dilemma certainly warrants further detailed investigation, as the particular subject of another study. Nonetheless, in the context of this study, it is precisely this simultaneous scalar operation that indicates the potential for landscape architectural design practice to actively affect urban change.

SITUATING THE WORK

Public space and urbanism—a landscape architectural perspective

The previous chapters in this document have situated the outcomes of the individual project work in relation to landscape architectural discourses that are directly relevant to the particular issues encountered in each design project. Having now had the opportunity to reflect on the overall project outcomes of this study, it is possible at this point to situate what has been learned within the wider landscape architectural discourses on public space and urbanism, and to discuss how the research contributes to these discourses through the clarification of certain issues or the extension of existing practices. It is important to acknowledge that the idea of a combinatory public landscape is not new. The Back Bay Fens (designed 1878) and Riverway (Muddy River Improvement, 1890) sections of Frederick Law Olmsted’s Boston Park System remain the exemplars. In both of these projects, Olmsted simultaneously combined the making of urban drainage infrastructure—both the fens and the river were entirely reconstructed for ecological and aesthetic purposes—with the making of new public recreational space. The infrastructural nature of Olmsted’s work in Boston, particularly the Fens, has been the subject of important scholarly investigation—notably through the work of Anne Whiston Spirn and Kathy...
However, the foremost landscape architectural influence of the Boston parks is arguably in their physical articulation of Olmsted’s conception of the relationship between the public park and the city, which was clearly separate and oppositional. It is here that my research takes its point of departure—the projects adopt a deliberately non-oppositional approach that engages with the other urban activities in their contexts as a means to initiate better public domain functionality.

Separate and oppositional—the disciplinary legacy of C19th urban park ideals

Although landscape architecture has a strong disciplinary interest in the design of other types of urban public spaces—such as plazas, streets, and highways—the public park is generally regarded as the pinnacle of landscape architectural endeavour, perhaps because park design most clearly falls within the domain of landscape architecture. The landscape architectural design discourse on public space is dominated by the concept of the urban park and its relationship to the city—which has firm historical roots in nineteenth century responses to the problems of industrial urbanisation. For example, Haussmann’s urban reconstruction of Paris in the mid-1800s under Napoleon III also included the annexation and creation, with Jean-Charles Alphand, of large public parks such as the Bois de Boulogne (1853), the Bois de Vincennes (1860) and the Parc des Buttes Chaumont (1867). Furthermore, it is impossible to approach the topic of urban public parks without acknowledging the influence of Olmsted’s work in developing city parks and city park systems in the latter half of the nineteenth century. The authority of Olmsted’s canonical triumvirate of city park designs—Central Park in Manhattan (1858), Prospect Park in Brooklyn (1866), both with Calvert Vaux, and the Boston Park System, or Emerald Necklace (1878–1896)—has a very long reach, being inextricably bound to the emergence of landscape architecture as a professional discipline. These three projects remain the foundation of most landscape architectural discussions of urban public spaces and the benchmarks against which other urban parks are evaluated, as recently evidenced by the essays in the anthology Large parks.

Despite their incorporation of other urban functions such as drainage infrastructure, Olmsted’s parks were fundamentally designed in accordance with a clearly articulated urban and social agenda that regarded the primary purpose of these public spaces to be distinct from, and in opposition to, their urban contexts. Olmsted’s position features prominently in his writings and is physically manifest in the naturalistic and pastoral expression of the parks. He wrote:

‘a man’s eyes cannot be as much occupied as they are in large cities by artificial things … without a harmful effect, first on his mental and nervous system and ultimately on his entire constitutional organization. That relief from this evil is to be obtained through recreation is often said, without sufficient discrimination as to the nature of the recreation required. The several varieties of recreation to be obtained in churches, newspapers, theatres…[etc]…may serve to supply a mitigating influence. An influence is desirable, however, that, acting through the eye, shall be more than mitigative, that shall be antithetical, reversive, and antidotal. Such an influence is found in … the enjoyment of pleasing rural scenery’.

Olmsted considered urban parks to be ‘the most valuable of all possible forms of public spaces’; and reflecting on the social impact of Central Park and Prospect Park, he felt: ‘the more I have seen of them, the more highly I have been led to estimate their value as means of counteracting the evils of town life’.

Olmsted’s position was a direct response to the particular urban issues of the nineteenth century—the
unprecedented pollution, congestion and other adverse environmental and social effects of rapid industrial urbanisation. The urban and social impact of his parks at the time of their creation was undeniably revolutionary, and their philosophical impact on the discipline of landscape architecture is ongoing. For example, the eminent Australian landscape architect Bruce Mackenzie considers Sir Joseph Banks Park at Botany as his ‘most ambitious and inspired work’; conceived as ‘a miniature wilderness … from which the forms and spaces of a more conventional passive-informal parkland were to be extricated and confirmed’, the design of the park responded to Mackenzie’s assessment that the ‘local residential area, far removed from generous green spaces and the rural–natural expanse of countryside, seemed to cry out for help’.

The limitations of opposition
As previously discussed in the Botany Foreshore chapter, the creation of Sir Joseph Banks Park was an act of reparation by the NSW State Government for the significant impact of the initial 1970s development of Port Botany on the neighbouring residential suburb. The persistence of the conception of the urban park as being oppositional to other development is evident in Mackenzie’s writing about Sir Joseph Banks Park: ‘a physical reality of the recreational loss to residents brought about by the [port development] is that short of the very edge of the wash of the waves, there is nothing of merit left—Sydney’s urban industrial progress has been exceedingly unkind to Botany. It was and is to be hoped that the new park will measure as compensation, not only for the intrusion of the industrial port but also for the corrosive effects of 100 years of official and legalised fouling and crushing of the once-delightful Botany by the sea’.

I am by no means disputing the validity of Mackenzie’s approach to the urban situation he was responding to. However, in light of the current problems facing the continued existence of Foreshore Beach at Botany, it is clear that the tacit notion that the fundamental value of an urban public space lies in it being antithetical to, and independent of, other activities in its urban context can be unnecessarily limiting. Part of the reason that the existing public domain value of Foreshore Beach has been so easily ignored by Sydney Ports’ expansion of Port Botany is the perception that the beach lacks merit as a public space, which is a direct result of its industrial associations. Foreshore Beach is neither separate nor antithetical to the port. Furthermore, the reality of the present situation is that, given the economic and political impetus behind the port expansion, resistance is futile. Despite the concerted efforts of the region’s local councils, community groups and other political parties in opposing the port expansion—and the recommendations of the Commission of Inquiry—the port expansion as proposed by Sydney Ports was in many ways a foregone conclusion.

The value and potential of a non-oppositional approach
Through the case studies, I propose that adopting a deliberately non-oppositional approach to the relationship between public space and other urban activities generates new possibilities for creating public spaces in situations where it might not otherwise occur. I suggest that this can be done in two ways, which can be combined. Firstly, by focussing on the performative value of public spaces as public domains—places where social exchange is possible and actually occurs—rather than on how they should look or where they should be; and secondly, by directly engaging with the development of other urban activities, rather than attempting to resist them. As the Botany experience shows, the problem with the entrenched notions of independence and resistance is that when faced with competing demands between a public space and some other urban activity that has compelling
development impetus (often economic), the latter often prevails and the public space loses out. Furthermore, as the Gold Coast experiences demonstrate, even when there is a recognised need for better functioning public domain, opposition to urban development is not always seen as an urgent concern—such as in a suburban canal estate; nor is it necessarily desired, in a place like Surfers Paradise. The non-oppositional approach of combining development to affect better public domain outcomes is a pragmatic response to the actual urban conditions presented at each project site. It is through directly confronting the specific characteristics of these contemporary urban situations that my research begins to extend the default landscape architectural conception of the physical and operational relationship between public spaces and their urban contexts.

**The need to engage with contemporary urban conditions**

In his 1999 essay 'Afterword: what is public in landscape?', Alan Balfour reflects on the enduring influence of Olmsted's work on the landscape architectural conception of urban public space and the role of the discipline in the public arena. He writes:

"Central Park was and continues to be landscape architecture's supreme achievement and defines to this day the political and social potential of the discipline. Subsequently, in parks from New York and Boston to San Francisco, Olmsted's influence transcended landscape, enhancing and giving form to the very idea of civic life. He became, by many measures, the nineteenth century's most influential political and public artist. Yet this very success has created difficulties for the current-day practice of landscape architecture. With the demise of the public park as an essential complement to civic life, landscape architecture has lost the public context through which to demonstrate its worth…"¹⁶

While I am sure that many would question Balfour's assertion of the demise of the public park, his assessment nonetheless indicates that contemporary landscape architectural practices of making public space do need to directly respond to contemporary urban conditions. The discipline's deeply-held conception of the urban and social value of public space—that is, spatially, operationally and experientially independent and antithetical to their urban contexts—is firmly rooted in the response to the particular urban conditions of the nineteenth century industrial city.

In terms of their response to physical urban conditions, Central Park and Paley Park are arguably two of the most influential public spaces in landscape architectural design discourse. Both are situated in Manhattan, and despite being at opposite ends of the size scale and conceived over one hundred years apart—Central Park, designed by Olmsted and Vaux in 1858, is 51 New York City blocks long by 3 wide; while Paley Park, designed by Zion & Breen in 1967, occupies only one building lot—both were explicitly designed to be separate and oppositional to their urban context. The problem with the pervasiveness of this conception of the value and function of urban public space is that, sometimes, it is no longer inappropriate when dealing with the actual conditions presented by contemporary urban situations.

In his highly influential book, *The 100 mile city*, Deyan Sudjic observes:

"…in its present incarnation, the old centre is just another piece on the board, a counter that has perhaps the same weight as the airport, or medical centre or museum complex. They all swim in a soup of shopping malls, hypermarkets and warehouses, drive-in restaurants and anonymous industrial sheds, beltways and motorway boxes."¹⁷

If the conditions of the industrial city centre are no longer the defining urban experience of the contemporary city, then the fundamental values of urban public space, conceived in direct response to those conditions, also warrant reconsideration and extension from a
landscape architectural perspective. For what is the value in conceiving of public space as oppositional and antithetical to an urban condition that is vast, amorphous, interconnected and ever-changing? Is this even possible? Furthermore, how can the discipline of landscape architecture engage with this unprecedented urban phenomenon? This latter question is the current focus of significant landscape architectural design discourse.

**Landscape urbanism**

In recent years, landscape urbanism has emerged as a popular and influential discourse that advocates landscape architectural practices as effective means with which to engage with the urban conditions of the post-industrial city. In 2006, Charles Waldheim, one of landscape urbanism’s key proponents, described landscape urbanism as a ‘disciplinary realignment in which landscape replaces architecture’s historical role as the basic building block of urban design’.[18] This echoes Kenneth Frampton’s assertion, made eleven years earlier in his essay ‘Toward an urban landscape’, that ‘priority should now be accorded to landscape, rather than freestanding built form’[19] when engaging with contemporary urban conditions. Landscape urbanism is seen by its proponents to be instrumental in a recent disciplinary revitalisation of landscape architecture. In the 1999 anthology *Recovering Landscape*, which is concluded by Balfour’s essay discussed above, a range of landscape theorists considered how the discipline might be rejuvenated as a cultural practice after what editor James Corner describes as ‘years of relative neglect and indifference’.[20] In *Recovering Landscape*, Marc Trieg’s essay ‘Nature Recalled’[21] contends that the reason for this neglect was landscape architecture’s abandonment of formal and spatial design in favour of environmental stewardship as its fundamental concern, which is attributed to the enduring influence of Ian McHarg’s *Design with Nature*.[22] Trieg argues that McHarg’s emphasis on ecological process and landscape planning, the strong moral imperative with which he underscored his writings and lectures, and the well-documented force of his personality, inspired a whole generation of landscape architects to become analysts rather than creators of physical environments. In response, Trieg advocates a re-engagement with formal and spatial design, and a willingness to actively engage with the physical transformation of landscape, as the means by which landscape architecture could recover its disciplinary relevance. Concurrently, Stan Allen makes a similar argument in *Points + Lines*[23] for a renewed focus on instrumentality in architecture—as opposed to what he describes as postmodern architecture’s preoccupation with commentary and critique—as a means for that discipline to recover from its marginalisation in city-making. Allen also advocates ‘a practice engaged in time and process—a practice not devoted to the production of autonomous objects, but rather to the production of directed fields in which program, event and activity can play themselves out’.[24] Seven years later, *The Landscape Urbanism Reader*[25] proclaims the triumphant return of landscape architecture through a synthesis of ecology and urbanism, and Stan Allen is cited as a key advocate of the new discipline of landscape urbanism.[26]

One of the common critiques of landscape urbanism is that it has yet to be convincingly demonstrated through design practice. While Waldheim asserts that ‘landscape has become the lens through which the contemporary city is represented and the medium through which it is constructed’,[27] much of the discourse is concerned with the former claim, focussing on the representation and interpretation of urban conditions and systems through landscape/ecological analogy. For example, Alex Wall writes:

‘the urban surface is similar to a dynamic agricultural field, assuming different functions, geometries, distributive
arrangements and appearances as changing circumstance demands… if the goal of designing the urban surface is to increase its capacity to support and diversify activities in time—even activities that cannot be determined in advance—then a primary design strategy is to extend its continuity while diversifying its range of services. This is less design as passive ameliorant and more as active accelerant, staging and setting up new conditions for uncertain futures.²⁸

This passage also illustrates a key characteristic of landscape urbanism theory—the focus on formulating an operative rather than formal design method that is concerned with indeterminacy, adaptation, diversification and temporal change. However, as Nina-Marie Lister observes in her essay in Large parks, "how might an adaptive, systems-based, ecological design approach be applied to urban and urbanising ecosystems, or cultural-natural landscapes that characterise this confluence? … progress has been slow outside of major design competitions; there has been little substantive exploration of adaptive design, in practice or in empirically supported theory.²⁹ There are very few projects that demonstrate how the methods of landscape urbanism might be actively employed to affect change to actual urban conditions; and the two projects that are often cited as examples of landscape urbanism in practice—Fresh Kills at Staten Island and Downsview Park in Toronto—are yet to be fully realised.³²

A key point of difference between my research and the projects of landscape urbanism (thus far) is the temporal dimension. While my projects investigate the contemporaneous combination of public space with other urban activities, the projects of landscape urbanism are characterised by successional relationships: Fresh Kills is concerned with the remediation of a former landfill site, and its transformation into a public park over 30 years; while Downsview Park is concerned with the transformation of a former military base into public parkland. Both projects are part of the lineage of landscape architectural practice that is concerned with the adaptive reuse of former industrial sites—what distinguishes them is their examination of an ‘open systems’ approach to the methods of physically and programmatically transforming a site. Furthermore, while both Fresh Kills and Downsview Park have been understandably influential in their approach to landscape transformation, as far as I understand them, neither project directly demonstrates how—to paraphrase Waldheim—landscape can be the medium through which the contemporary city is constructed.

For these two projects, which are routinely proffered in the discourse as exemplars of landscape urbanism practice, to not demonstrate one of landscape urbanism’s fundamental claims is problematic. This is not to suggest a failure in the execution of design intent or strategy, for neither project appears to have been designed with the expressed intention of directly affecting wider urban changes. Instead, both have focussed on ecological and programmatic change within their actual project sites. However, it would be a mistake to assume that, because they are parks, they are intrinsically unsuited to being agents of urban change. There is nothing inherently limiting about the park as an urban operation. Again, Central Park provides the exemplar in its direct, continuing, effect on adjacent real estate prices, and hence urban development in Manhattan. Furthermore, Olmsted recognised this potential for urban parks to directly affect urban development and used it to argue for the public cost of land acquisition and construction of further park projects.³³ Despite the social ideals that drove the physical expression of Olmsted’s parks as independent and antithetical to their urban contexts, Central Park in particular demonstrates that parks can be deliberately conceived as agents of urban change.
In this sense, Olmsted's work can be regarded as true exemplars of landscape urbanism in practice.

Reciprocity
My study does not purport to be a critique of the methods of landscape urbanism nor a demonstration of their application. Neither was this the intention. Nonetheless, the design projects do take their starting point in an acknowledgement that contemporary urban conditions are shaped by dynamic and interconnected economic, political, social and ecological forces. It is by actively engaging with these forces of urban development in order to affect change to dysfunctional public spaces that my projects suggest how landscape architectural practices could operate directly in response to the specific characteristics of contemporary urban conditions.

Furthermore, the simultaneous scalar operations of the Urban Floodplain project at Broadbeach Waters indicate that the design practices of landscape architecture are fundamentally suited to dealing with those conditions. Inherent in landscape architectural practice is the understanding of the reciprocal relationship between a site and the ecological systems it is connected to, and that physical changes made at the site have the capacity to affect the entire system. In this sense, the performative outcome of a landscape architectural project is not limited to the cadastral boundaries of its physical site. Conversely, while the design focus of a landscape architectural project may be at the scale of the overall system, the physical operations required to achieve the design outcome can only be made at individual sites. The Urban Floodplain project employs this logic to simultaneously affect changes to hydrological, social (public domain) and urban (development) systems through site scale interventions. Critically, it is through this purposeful operation at simultaneous scales that this research indicates how landscape architectural design practice could be a medium through which the contemporary city is constructed.

In his conclusion to *The 100 mile city*—after systematically demonstrating how the contemporary city is shaped by capital, and not the traditional instruments of planning or architectural projects—Deyan Sudjic observes:

“The only plausible strategy is to attempt to harness the dynamics of development to move things in the direction that you want. For the planner or the architect [or landscape architect] to ignore the currents that are shaping the city is clearly futile.”

The current situations at Broadmeadows, Botany, Surfers Paradise and Broadbeach Waters clearly illustrate the futility of attempting to resist the development forces that operate in those places. By adopting a pragmatic, non-oppositional approach to the realities of their urban situations, my projects demonstrate how harnessing the dynamics of development—through the leveraging of development impetus—can enable public spaces that function as public domains to be created in circumstances where they might not otherwise occur. In doing so, my research indicates how landscape architectural design practice can operate as an active agent for initiating change to contemporary urban situations.
NOTES

6 Kathy Poole’s research into the infrastructural nature of the Back Bay Fens is published as an interactive website through the University of Virginia:
   K Poole & University of Virginia 2002, Evolutionary infrastructure, "www2.iath.virginia.edu/backbay/fensite/html/header/home.html".
   Poole also provides an account as part of an essay for The mesh book:
7 The term ‘Emerald Necklace’ describes the entire Boston Park System, conceived by Olmsted to include the parks he designed—Franklin Park, the Arnold Arboretum, Jamaica Pond Park, OLMSTED Park (originally Leverett Park), the Riverway (Muddy River), and Back Bay Fens—and the older Commonwealth Avenue Mall, Public Garden and Boston Common. This is clearly shown in Olmsted’s 1894 plan of the Boston Park System, entitled ‘Plan of portion of park system from Common to Franklin Park’ (refer discussion of Broadbeach Waters for plan).
11 ibid., p75.
14 ibid.
15 ibid., p.301.
24 ibid., p52.
In the introduction to his essay 'Landscape as urbanism', Waldheim identifies Stan Allen as an advocate of the ‘newfound relevance of landscape in describing the temporal mutability and horizontal extensivity of the contemporary city’ and includes the following quote by Allen:

‘Increasingly, landscape is emerging as a model for urbanism. Landscape has traditionally been defined as the art of organising horizontal surfaces… By paying close attention to these surface conditions—not only configuration, but also materiality and performance—designers can activate space and produce urban effects without the weighty apparatus of traditional space making’.


Waldheim (ed.) The Landscape Urbanism Reader, p15.


Bruce Mau Design and Rem Koolhaas/OMA, ‘Tree City’, winning proposal for Downsview Park Competition (2000); principally authored by Bruce Mau Design, in collaboration with PMA Landscape Architects, Oleson Worland Architects and SNC Lavalin Engineers, in the subsequent implementation of the scheme.

The first section of The High Line, designed by James Corner/Field Operations and Diller Scofidio + Renfro, has recently been completed (June 2009). However, although The High Line has sometimes been referred to as a project of landscape urbanism, unlike Downsview Park or Fresh Kills, it does not actively employ an ‘open systems’ approach to making the new landscape. The categorisation appears to focus on the programmatic succession associated with the project—from disused rail line to public park; and the ecological succession, through the emergence of a ruderal landscape, that had begun to take place—in the absence of any design intervention.

Regarding the urban agency of Central Park, Olmsted wrote: ‘Land immediately about the Park, the forntage being seven miles in length, instead of taking the course anticipated by those opposed to the policy of the Commission, has advanced in value at the rate of two hundred percent per annum. The cost of forming the Park, owing to the necessity of overcoming the special difficulties of the locality by extraordinary expedients, has been very great; …it is universally admitted, however, that the cost, including that of the original off-hand common-sense blunders, has been long since much more than compensated by the additional capital drawn to the city through the influence of the Park’ Olmsted ‘Public Parks and the Enlargement of Towns’, p97.

Sudijc The 100 mile city, p338.
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