FORGOTTEN INTEGRATION: AN INVESTIGATION INTO THE INTEGRATION OF POST-OLYMPIC PARKS

BY

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A thesis submitted to the Victoria University of Wellington in partial fulfilment of the requirements for the degree of Master of Landscape Architecture

Victoria University of Wellington
2016
ACKNOWLEDGEMENTS

This thesis would not have been possible without the guidance of several individuals who, in one way or another, contributed and extended their valuable assistance towards the preparation and completion of this study. Firstly, I would like to acknowledge my supervisors - Chris McDonald and Bruno Marques - whose guidance, encouragement, knowledge and patience have provided a strong influence with respect to my work.

To my many colleagues and close friends; your support, thoughts and energy have contributed immensely to the completion of my work - thank you all so much. The completion of my thesis was also made easier by the Victoria University Staff at the Te Are campus in Wellington who have provided the support and indispensable facilities that I required.

It is with great thanks that I acknowledge my family - my sister Jasmin, brothers Micheal and Daniel, and grandparents Nina, Elf, Kath and David - whose irrevocable love and support have not gone unnoticed. A special mention to my parents, Bruce and Katrina Warren, who have put up with the late night phone calls and who always been there when I needed. Their support and encouragement throughout the entirety of my studies was a privilege that I was grateful for and as such, I am forever in your debt. Lastly, I would like to thank my partner, Chantel, whose unwavering support and advice have helped me reach the end.

Thank you.
The Summer Olympics occur every four years, capturing the hearts of the world for a finite period of time. During this time, the eyes of the world are set on the host city of whom provide a facility and an infrastructure to accommodate not only the athletes, but the millions of spectators that attend the events and the memorable moments that ensue.

While the Summer Olympics and its park are focused heavily upon during the games, integration of the site into the host city has become largely forgotten post-Olympics. Ultimately, these once vast locations have now become deserted and dystopia environments within the host city. This thesis addresses the problem of integrating Olympic parks back into the context of the host city by enabling new and diverse spaces. The work of Charles Waldheim, Rem Koolhaas, Alex Wall, Tricia Cusack and Dennis Saunders are employed over five main ideas: wetland urbanism, urban grid, edge extension, fragmented distribution and landscape occupation.

Strategic integration of post-Olympic Sites into the existing host city can arguably be done so by creating a multi-programmatic system that adapts and transforms to respond to the dynamic needs of both the Olympic Site and the local urban context of the surrounding city.

This thesis considers the task of integrating the Sydney Olympic Park back into Sydney's context, transforming its current form into a state of integration with the host city that is successful. The thesis produces a design, based on five key design principles which have been created through conclusions of research: wetlands, extension, grid, distribution and occupation.
LOCATION

FIG 0.1 LOCATION OF SITE

AUSTRALIA

NEW SOUTH WALES
# 6 Precedent Study

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THE INTRODUCTION PROVIDES
AN OVERVIEW OF THE THESIS,
INCLUDING STRUCTURE,
DESIGN INTENTION, SCOPE AND
METHODOLOGY
INTRODUCTION
Parks of Olympic Games are designed at a global scale, giving the host city the tools to showcase itself to the world. Post Olympics, several integration and pragmatic issues arise - typically social, environmental and economical - with many local amenities unable to integrate within the new Olympic Space and local context surrounding.

The site of this argument is Sydney's Olympic Park in Sydney, Australia as it provides many of the restraints for integration. Sydney Olympic Park is in close proximity to Sydney's major suburbs and natural features including Parramatta River and the suburb of Parramatta. However, the problem of typical Olympic Parks - parkland, urban block size, and patterns of use - create barriers for successful integration into the host city. Sydney Olympic Park was very much a success during the games, but the city's inability to integrate this space on a social, cultural, economic and urban level makes the Olympic Park a significant problem. The thesis re-designs parts of Sydney Olympic Park to integrate within the local context, creating a landscape strategy through the aforementioned five key principles.

1.2 SCOPE

The physical context for this research is Sydney; however conclusions can be extracted for host cities of Olympic games across the world. A limitation to this research is that there is no consideration of economic or planning restrictions that such a project may require. This is a theoretical and purely speculative exercise based on assumptions of integrative conditions and requirements over an extended period of time.
Recognising the compositional imperatives important to urban landscape architecture, this thesis researches the redesign of an Olympic Park by responding to the site’s problem of integration. It can act as an environmental scaffold upon which development can gradually unfold, despite the unpredictability that comes with urban development.

The thesis considers five principles and works on varying levels to create connections between the context and the Olympic Park to achieve maximal integration. Wetlands, extensions, grid, distribution and occupation are the fundamental elements that envelop the overall scheme of this thesis and its design.

1.3 INTENTION

The methodology for this thesis is based upon setting up a series of research and design based steps that test the overall argument presented by this thesis. Specifically, the layout of each chapter consists of an extraction of criteria that helps to provide an overall solution with a series of strict rules to abide by.

A combination of “visions” and “illustrations” that span several research phases and activities: case studies, figure/ground plans, photography, and landscape mapping have been used consistently throughout this thesis. Concluding each chapter is an informed design conclusion based upon the information provided in that chapter.
1.5 STRUCTURE

This thesis is structured upon a chapter basis; each chapter is used to gain and test the necessary knowledge and design intent to address the issue of the thesis question. Breaking the thesis into four key sections:

PART A: BACKGROUND

Chapter 2 _ Literature Background
This thesis begins with a review of literature and theory specifically focused upon the major themes: grid, fragmentation distribution, urban wetlands, extension through edges and landscape occupation.

PART B: MASTER PLAN

Chapter 3 _ Olympic Analysis
The Olympic Park case studies display several strengths and weaknesses that have been encountered with post-Olympic integration into the host city. It explores and draws analysis from four Olympic Parks within the most recent thirty year, comparing several layers to gain a better understanding and hence drawing relevant conclusions.

Chapter 4 _ Site Analysis
The site analysis discusses the location in Sydney, examining the site and immediate surroundings and giving insight into new adjustments that could be made.

Chapter 5 _ Master-plan
The design chapter reflects and responds to several of the problems addressed in this thesis at a master-plan scale, particularly in relation to integration using the five principles.
PART C: DETAILED DESIGN

Chapter 6 _ Case Studies
This chapter examines four case studies including waterfronts, urban wetlands, and urban district. These various case studies deal with several issues relative to this thesis and in particular, to the issue of integration within an environment.

Chapter 7 _ Detail Analysis
The site analysis discusses detailed location of the site within the Olympic Park. It examines the immediate site and gives insight into new adjustments that could be made.

Chapter 8 _ Detail Design
The design chapter reflects upon a detailed site within the Olympic park and uses the five principles to integrate spaces together.

PART D: CONCLUSION

Chapter 9 _ Conclusion
The conclusion chapter begins by addressing the initial problem, why it has been arisen and what the anticipated goals of the research are. It discusses the limitations and constraints that have become drivers for the design and how the design resolves these issues through application.
The literature review explores the theory behind the thesis and elaborates upon the five principles: wetlands, grid, extension, distribution and occupation.
TWO

LITERATURE REVIEW

Part a
2.1 WETLAND URBANISM

Traditionally, the landscapes that ensured human survival were closely related to "living with water", which tied urbanisation patterns closely to the underlying hydrological conditions, particularly true of colonial port cities like Sydney. With the increasing concentration of human activity and settlement, during development of pre-industrial cities and urban landscapes, the water systems had to perform even greater functions. During the industrial phase, waterfronts became home to commercial and "dirty" industries and were the least attractive feature of the city. This has changed with the post-industrial phase, waterfronts are now highly valued amenities and, therefore, attractive to intensified development.

Water systems have created synergy with other important urban functions such as transport, and serve as an open space network for social needs, supplying water for domestic and industrial use as well as creating a system for storm water retention, irrigation and waste water disposal. With water systems providing such diverse uses, the conservation or regeneration of urban wetland habitats is challenging. Within this multitude, waterfronts and water features become valued for a wider variety of purposes and competition among different uses has created a risk for survival of wetland habitats. As a consequence, wetland habitats have attracted more attention and are valued in their own right as an urban amenity.

In the study 'Managing urban wetlands for multiple use: research, restoration, and recreation' by Joy Zedler and Mark Leach, the importance of the three R's is described in the context of urban wetlands: recreation, restoration and research, that are compatible uses which must coexist. Recreation is vital for generating public support of habitat protection - a top priority for growing communities with continual pressure to modify wetlands. The wetlands must be accessible for passive recreation, which includes low-impact activities and bird-watching. With that being said, the public is more likely to enjoy a wetland that is attractive rather than one that appears trashed and rundown. Restoration of urban wetlands is a crucial step in creating attractive spaces for the public.

Urban wetlands provide a more attractive scene for the public and the opportunity for research allows a higher volume of people to use the space. However, the main amenity the wetlands provide is connection to water - primordial for human survival. Urban wetlands provide a significant tool for post-Olympic sites by introducing functions that will sustain biodiversity, provide hydrologic services and improve water quality. Urban wetlands also deliver restored habitats to improve ecosystem functions and increase public appreciation of the spaces.

2 Ibid; page 58
2.2 URBAN GRID

Urban design has been practiced throughout history, although contemporary professional use of the term ‘urban design’ dates only from the mid-20th century. Prior to the 18th century, the population of most cities numbered approximately two to three thousand with 85-90% of the population living in agricultural areas. During and after the industrial revolution, cities expanded to population sizes of 10-20,000 with larger cities having between 50-150,000 inhabitants. With such an expansion, infrastructure has to develop to match.³

Urban design has greatly shaped the identity of major cities and also different design periods such as the Romanticism/Imperial periods and the more modern and contemporary. Urban Design has seen the line, square and rectangle in various forms throughout time and has been used a way to assemble urban space, architecture and landscape area.

Urban design introduced the orthogonal grid, two or more sets of parallel lines overlaid at right angles to form a matrix of lines. The grid has been used as an organisational framework in art during many stylistic periods from the Renaissance to the more modern explorations of Piet Mondrian, Frank Stella, Sol LeWitt and others.⁴ The grid is good for cities because it suits infrastructure and allows for diversity in future growth of society. It delivers structure and direction that an infrastructure needs in order to address future requirements a society needs from its city. Rem Koolhaas has extensively studied the grid form as he wrote ‘Delirious New York: a retroactive Manifesto for Manhattan’ in 1978. In this, he outlines many ideas complementing the grid system design, suggesting it is an interpretation of Manhattan that gives consistency and coherence, an interpretation that intends to establish Manhattan as the product of unformulated theory. Koolhaas pushes forward a new program named Manhattanism, a world totally fabricated by man, i.e. to live in fantasy. He describes Manhattan as having a rigid pattern on a mesh of streets known as the grid, allowing for endless amounts of vertical space. He argues that Manhattan’s grid system creates direction, structure and order in a city that is totally chaotic, and explores the idea of a culture of congestion.⁵

Koolhaas suggests that the grid plays vital importance to urbanisation. Each single block within the grid is the maximum unit of urbanistic ego and therein makes every architectural intention obvious within the limitations of each block. Koolhaas was right in saying this, as the radial system has no boundaries and no structure, certain buildings towers over other buildings. The grid, however, has structure, focus and limitations that benefit the infrastructure and a dense city.

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2.3 EDGE EXTENSION

The urban complexities of host cities cannot be fully understood through fixed illustrative models or as a single programmatic object. Alejandro Zaera describes edge in ‘Order out of Chaos: The Material of Advanced Capitalism’, the city is a dynamic phenomenon that continually manifests emerging edges between multiple systems. Edges between systems join, extend, confirm and control our perception of reality. The extension of an edge creates the most interesting spaces to design. Edges are places of flux, transformation, adventure, creativity and disaster. They are the liminal space; like a river, they are continually changing; they are the residual land. As Tricia Cusack argues in ‘Art and Identity at the Water’s Edge’, areas such as beaches bring together

“A gathering of strangers divorced from their habitual spaces and occupations to share similar activities, with the consequent potential of a recasting of identities.”

This proposes that by designing edges that allow movement, there is a potential to change how we perceive the comparison of functions between existing urban context and the reality of an Olympic Site. There is a possibility to create extensions from our perception, so that host cities and Olympic Sites can be integrated to share activities.

Such extending conditions allow for multiple types of interaction to occur so that different layers can be integrated and collided with each other, revealing different moments in a host city’s historical, physical and functional conditions. Using pre-existing urban structures as a base for extension and reworking the current disparate elements of our environment, a new fluidity can be brought to the city. Designing extensions between the Olympic site and the existing host city, as Alex Wall in “Programming the Urban Surface” states, creates more adaptive, more fluid and more capable host cities that can accommodate changing demands and unforeseen circumstances. Programming of surfaces and edges provides the best opportunity to redirect and dedicate towards the reintegration between Olympic Sites and host cities.

7 Cusack, “Art and Identity at the Water’s Edge (2012)”: pg. 5.
9 Wall, Alex “Programming the Urban Surface (1998)”: pg. 246.
2.4 FRAGMENTED DISTRIBUTION

When humans occupy landscape, they convert portions of the space to agriculture and urban development, and modify distributed areas to varying degrees by altering its natural character. This consequently creates landscapes that are fragmented. Fragmentation is a concept used for ecological understanding and has been a significant topic in the biosciences and resource management since the late 1990s.  

It is suggested that fragmentation distribution exists at macro and micro scales, but the challenge is the ability to apply fragmentation discretely as a concept over all scales. Of course, the impact of fragmentation is only valuable when considered against urban and natural landscapes, in which one pits the fragmenting behaviours of humans against those of the natural realm. It can be understood from the habitual perspective and also how we, as humans, engage and interact with these fragmented landscapes and distribution through connectivity and the edge.

In “Habitat Fragmentation and Landscape Change” by Andrew Bennett and Denis Saunders, it is argued that landscape connectivity depends not only on the spatial distribution of habitats (habitats being the varying environment) across a landscape, but also on the scale at which we interact with landscape pattern. Variation in habitat quality, differences in shape and size and disparity in isolation among habitation leads to spatial variation in landscape connectivity over a distributed area. These indicators are useful for comparison towards the movement of humans at a large scale and the overall activity, however they do not provide insight into the local connectivity structure of landscapes.

To fully understand the spatial structure of landscapes and its fragmentation, it is necessary to consider connectivity measures associated with local suburbs or the host city. Just as overall measures of landscape connectivity are scale dependent, local measures of connectivity using various edge types are likely to change with scale and distribution.

2.5 LANDSCAPE OCCUPATION

The term ‘Landscape Urbanism’ typically refers to the significance and emergence privileging landscape architecture in the formulation of cities. Traditionally, transportation planners have dominated design of such infrastructure at the expense of integrated landscape and high-quality edge conditions. Landscape urbanism suggests that where architecture has a tendency to be static, landscape architecture is a medium that understands systems, temporal change and complex relationships. This allows landscape architecture to have an increased role in the design of cities to create better and more attractive occupational spaces.

James Corner, in his book “Terra Fluxus,” argues that landscape urbanism is the result of several design professions merging together to create a ‘hybrid practice’ better equipped to positively affect the city. He suggests that landscape architecture is the profession central to the hybrid practice, reflected in the name ‘landscape urbanism’. Charles Waldheim supports this concept in his book “Landscape as Urbanism”, pushed further when he suggests that landscape urbanism is the lens through which we interpret the occupation of a city.

“Landscape first existed as a genre of painting, a way of seeing, before it became actively engaged in either designing built environments or recording natural ones.”

Landscape architecture’s core principles for understanding sites and systems means that it is the right discipline for leading large-scale urban projects. This theory explains in specifics how a project is approached and how it becomes a way of viewing the city, albeit how that theory transfers into physical space isn’t as clear. The theory gives the occupation of cities and spaces a means to allow theoretical views to become designed spaces. It allows an understanding of what is being produced and how that can be manipulated.

16 Ibid. pg 15.
2.6 CONCLUSION

This thesis proposes that the use of landscape urbanism and more specifically, the tools and theories discussed, are a potential solution to the predicament between the distinguished Olympic Park and the urban context of the host city. Drawing upon wetland urbanism, urban grid, edge extension, fragmented distribution and landscape occupation, there can be successful integration of multi-programmatic layers. This will be such that, adjusting through time, there is continued recognition of the needs of an expanding city in conjunction with a functioning Olympic Park centre that delivers successful integration.

A series of theoretical ‘design principles’, based upon the five main themes, can be derived from this analysis:

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<th>URBAN GRID</th>
<th>EDGE EXTENSION</th>
<th>FRAGMENTED DISTRIBUTION</th>
<th>LANDSCAPE OCCUPATION</th>
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<tr>
<td>Situate the site so as to ensure close proximity with the context of the host city to better integrate the two together.</td>
<td>Use smaller developments to break up the large spaces that can occur within an Olympic park post-Olympics.</td>
<td>Provide attractive areas that private sponsorship might help fund and fill space within the redevelopment to make it more vibrant</td>
<td>Consider the wider context of transport infrastructure, ensuring no dead ends to railway and vehicle access.</td>
<td>Create networks of landscape spaces that create connectivity to fragmented amenities.</td>
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This thesis next investigates the implications of these arguments on existing design projects, both built and un-built, to understand how Olympic Parks can become more integrated, flexible and adaptive to their contextual surroundings. This has been undertaken by examining selected theoretical and physical case studies that address particular aspects of the research question.
THE OLYMPIC ANALYSIS REVIEWS FOUR RECENT OLYMPIC PARKS, COMPARING THEIR URBAN STRUCTURE AND INTEGRATION ACROSS FIVE MAPPING EXERCISES.
THREE

OLYMPIC ANALYSIS

Part b
3.1 OLYMPIC LEGACY

The term ‘legacy’, at its simplest level, can be viewed as “something that exists as a result of a previous event or time” (Collins Pocket Dictionary, 1995). This forms the basis of the term ‘Olympic legacy’, which refers to anything that has been left behind after the Games (e.g. sports facilities) or comes out of hosting the Games (e.g. an increase in tourist number).

The biggest reason the term ‘legacy’ comes under question in Olympic circles is because, as Chappelet suggests, the term ‘legacy’ has a positive stigma. The issue here is that every Olympic Games have associations with some negative aspects, so it is not just to use the term ‘legacy’ as it implies that only benefits will come from the Games. ‘Legacy’ can be divided into two extremely broad categories: hard ‘legacies’ and soft ‘legacies’.

Hard ‘legacies’ are, for example, the use of a stadium after the Games have finished. This is classified so because the stadium can be directly linked to the Olympics as it was built for the Games. This is compared to soft ‘legacies’ which, for example, is the increased tourism number within the host city. The International Olympic Committee has divided all different types of ‘legacies’ into five broad categories. These categories are:

19 Ibid: pg.78
ECONOMIC LEGACY
Olympic Games are global events which provide a host city with economic advantage. Economic Legacies explore how the Games can financially benefit not only the host city, but the larger nation as well.

URBAN LEGACY
Urban Legacies look at what happens to Olympic venues and precincts post-Games, while also considering improvements and urban projects that are undertaken for the Games.

SOCIAL LEGACY
Culture and education are considered important social legacies, promoting many agendas such as respect for ethical principles, human dignity, mutual understanding, solidarity and fair play.

SPORT LEGACY
Sports legacies refer to the way in which the Games alter sports delivery and the sporting culture of the host city.

ENVIRONMENTAL LEGACY
Environmental Legacy concerns the ability of a host city to maintain it’s natural element. It also discusses the introduction of new sustainable systems into the host city to retain positive environments.
3.2 CENTENNIAL OLYMPIC PARK - ATLANTA 1996

Centennial Olympic Park was the centre fold for the 1996 Atlanta Games, where much of the Games succeeded in highlighting the existing social and economic disparities evident within this traditional southern city. The Olympic Park is located in downtown Atlanta at the former railroad yards, which take advantage of an existing convention centre. The city also took advantage of one existing and five renovated venues. In preparation sites for new construction, the city demolished a significant number of public housing units.

Before the Olympic Games, the land of Centennial Olympic Park was formerly vacant lots and abandoned or run-down industrial buildings, now regenerated into a popular downtown park. Major issues during the Olympics were transportation and security. Atlanta's large fleet of buses was manned by untrained drivers, causing buses to get lost on the way to the stadiums and massive traffic congestion which delayed both visitors and athletes in their arrival to events.

Fulton County Stadium was destroyed to make way for a large car-park while Centennial Stadium has been converted into Turner Field to accommodate baseball needs. After the Olympics, private development began around Olympic Park, however there was a lengthy delay before the city put together a cohesive post-Olympic plan. The Athletes Villages were turned into dormitories for the Georgia State University and proposed developments have included the National Centre for Civil and Human Rights, while the Park will be turned into a museum district. The majority of the area is filled with hospitality and tourist industries mixed in with housing developments.

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<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
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<td>• The financial success thanks to corporate sponsorship allows for revitalisation of the park and meant surrounding area now serve as a hub for Atlanta's tourism district.</td>
<td>• The legacy of Atlanta will be the transportation mishaps, minimum housing capacity and community investments post-Olympics</td>
</tr>
<tr>
<td>• Spent very little money on investments with long-term benefits</td>
<td>• Spent very little money on investments with long-term benefits</td>
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22 Ibid: pg 15
23 Ibid: pg 15
3.3 ATHENS OLYMPIC SPORTS COMPLEX - ATHENS 2004

Athens Olympic Sports Complex served as the Olympic Park for the 2004 Summer Olympics. Their bid to host the modern Olympic Games was controversial from the start, and has been remembered largely as a financial failure. A large portion of the cost was spent on infrastructure with eight new subway lines that connected the central business district to suburban areas, a tram network, commuter rail and a new motorway. The location of the Olympic Park’s venues and other facilities were clustered in decentralized locations that took advantage of the expanded subway system. However, most of these venues have since fallen into an area of dystopian environments. Many of the permanent facilities built for the Games were created for sports that are unpopular amongst local residents - ultimately, the government has failed to encourage sports teams to reuse these spaces. Venues that were created for beach volleyball, baseball and softball all remain completely unused.

The Athletes Village was originally intended to provide affordable housing units for the surrounding community and many units were pre-sold for immediate occupation after the Games. However, the program was largely unsuccessful because the Village is so far from the city core and minimal public transport is provided. Athanasios Alevras, former deputy minister of culture, stated “We had some very good plans. The idea was to build sites that could be then converted to benefit the lives of Atheneans afterwards ... We promised infrastructure and facilities that weren’t delivered ... Basically, it’s a disaster.

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<th>STRENGTHS</th>
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<tr>
<td>Investments in the subway and highway infrastructure which have linked suburban populations to the metropolitan core.</td>
<td>Overextended financial resources which has been emphasized through the global financial crisis.</td>
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<td></td>
<td>More emphasis could have been placed on creating a successful affordable housing program using the Athletes Village, especially considering the need for affordable units following the debt crisis.</td>
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<tr>
<td></td>
<td>The highway system mounts fears because it was built on steep slopes and ecologically sensitive areas, which will only encourage sprawling development in areas that should have be maintained for wildlife and greenbelt.</td>
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<tr>
<td></td>
<td>Athens should have considered using temporary venues to host some sports instead of building permanent structures that have been impossible to re-purpose or maintain, due to the lack of interest by the local residents.</td>
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3.4 **Olympic Green - Beijing 2008**

Olympic Green was the Olympic Park for the 2008 Summer Olympic Games. It is a basic rectangular shape with a central axis and a broadly curving canal flowing south from the constructed pond at the southern end of Forest Park. The southern end also features the main venues and the western side houses the Beijing Convention Centre. Open green spaces are placed methodically to either side of the central axis. The southern end is currently experiencing massive mixed-use redevelopment. To the west and east of the Green lie mega blocks that typify the rest of the city’s layout, most exceeding 400 meters laterally. The Olympic Green was strategically situated in the northern region of Beijing to take advantage of its public infrastructure and proximity to the North-South Cultural Axis - a symbol embodying Beijing’s cultural heritage and prominence.

Apart from the subway, the site is accessible by car both laterally and longitudinally. Access into the Green itself is limited by checkpoints, consequently creating barren, fenced and ignored edges along the east and west sides of the Green. Walls and large streets prevent surrounding residents from seeing inside the Green from street level, giving this very public space a private ambiance. The site plan implemented at the Olympic Green for the 2008 Summer Games left a substantial portion of the space un-programmed, to be developed in the future. The Beijing City Planning Commission has since developed a new master plan for the Green in an attempt to fill and activate the empty spaces. After Beijing’s investments in the Forest Park recycling system, there is no acknowledgement of or relation of the Green to that key infrastructure nor the legacy of the 2008 Summer Olympic Games.

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**FIG 3.16 STRENGTHS AND WEAKNESS OF BEIJING 2008**

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<thead>
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<th>STRENGTHS</th>
<th>WEAKNESSES</th>
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<tr>
<td>- The strategic placement of Olympic Green takes advantage of the public infrastructure and the north-south cultural axis, which envelopes the axis in the North. In doing so, this lends a significance that stretches beyond Beijing’s Olympic Park legacy.</td>
<td>- Several of the spaces are un-programmed at Olympic Green, creating vast and empty areas and other spaces have no connection of the green to the key infrastructure.</td>
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<tr>
<td>- Large mixed-use development is also a strong point at the southern end of Olympic Green.</td>
<td>- Currently there is no proposal for reuse of some of the iconic venues (i.e. Birds Nest), creating a problem with asserting Olympic Green as a public asset.</td>
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<tr>
<td></td>
<td>- The large city blocks of Olympic Green make it impenetrable by pedestrians and vehicles alike and many areas in Olympic Green are fenced off to the public. The Olympic Green and adjacent housing areas don’t respond to the transit within this area.</td>
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3.5 QUEENS ELIZABETH OLYMPIC PARK - LONDON 2012

London hosted the Summer Olympics in 2012 at Queens Elizabeth Olympic Park in East London. These Olympics demonstrated how a host city can use large-scale investment and planning to achieve urban regeneration. Formerly an industrial settlement experiencing decades of disinvestment and high unemployment, East London has utilised the location for its intersection of five major transit lines connecting it to Greater London. The site had already been designated as an area for urban regeneration, and London Organising Committee of the Olympic Games (LOCOG) felt that Olympic infrastructure development would catalyse future investment. Many infrastructure upgrades occurred, including the expansion of the North East London Rail Line and the Docklands Light Railway, as well as the new Olympic Javelin service. Unlike previous Olympics, the LOCOG identified environmental sustainability, local economic development and long-term planning as top priorities for the Olympic Park. A three phase plan was created: “Games Mode”, “Transformation” and “Legacy.”

Some venues, including the main stadium and aquatics centre, were designed so that seating capacity could be reduced post-Games. Others venues, such as the basketball arena, were temporary venues that were removed completely after the Games. Three months before the opening ceremony, the Legacy Development Authority (LDA) was formally established to manage the Olympic Park’s transformation after the Games. This process included reducing permanent venues and removing temporary venues, thus increasing the park’s connections to surrounding neighbourhoods, and converting the athletes’ village to market-rate and affordable housing. LOCOG elevated local needs above short-term considerations for the Olympic Games and also recognised early on the risk of extra capacity in certain venues, planning ahead for their reduction or removal. London has shown, through targeted programs and careful long-term planning, that the Olympic Games can be an environmentally sustainable event.

FIG 3.23 STRENGTHS AND WEAKNESS OF LONDON 2012

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- A predominant strength was using the location as a means of intersecting the five major transit lines with Greater London.</td>
<td>- The state of the landscape design is a weakness, with its vast pedestrian concourses and planting, organised into strips besides pedestrians highways.</td>
</tr>
<tr>
<td>- The three plan approach that was developed successfully satisfied the region’s needs after the Games and made the transition to the post-Olympic state a lot smoother.</td>
<td></td>
</tr>
<tr>
<td>- The use of temporary venues has created better connection to surrounding suburbs and the reduction of larger venue capacities allows for fuller stadiums during use and only when required.</td>
<td></td>
</tr>
<tr>
<td>- Ecological context is provided with the position of the Thames River Gateway and the London Greenbelt.</td>
<td></td>
</tr>
</tbody>
</table>

3.6 SIZE

Olympic Parks have become large multi discipline complexes that span huge areas within the host city. They are more than the sports that are played during the time of the Summer Olympics. As the global setting of the Olympic Games have grown, so have the Olympic Sites.

Since Atlanta in 1996, which was 85 Hectares, the size of these Olympic Parks have grown hugely, with Beijing becoming the largest in 2008 with a size of 1095 Hectares. While Athens in 2004 was only 95 Hectares and London was 226 Hectares, the size of the parks is on the rise.

It must be considered that these Olympic arenas are more than just parks, but are also districts in the context of the host city.
3.7 CONTEXT

The context of an Olympic Park is very important to its integration post-Olympic Games. While many examples adapted to the immediate context of the host city, many of these parks struggled to bring a more integrated human experience.

Beijing, while having large urban blocks, has no consideration for the human experience. Conversely, London has adapted the overall network to be not only vehicle driven but also pedestrian friendly. Atlanta and Athens both avoided creating a network through the park, instead keeping the Olympic Park as its own singular unit within the host city, which today has led to separation from the rest of the host city.
3.8 BUILT FORM

The overall composition of venues and buildings within the Olympic Park and around the host city has led to both successful and poor integration. The typologies of venue spatial form were driven by the host city. The typologies are:

1. Satellite Clustering
2. Periphery Clustering
3. Inner City Clustering - Poly
4. Inner City Clustering - Mono

Atlanta 1996 decided upon the satellite cluster in which the Olympic Park was outside the central area where the events were held. Athens 2004 decided to place the Olympic Park within the main cluster of venues, while other venues were predominantly in a straight line from the Park. Beijing 2008 chose to use the inner-city cluster approach by creating the Olympic Park around the venues and having clusters of venues situated around the central area of the host city. London 2012 also demonstrated an inner-city clustering but instead, focused on one site containing almost all of the venues, leading to a dense Olympic Park.
### 3.9 MOBILITY

Mobility is an important component in the integration of an Olympic Park, aiding the population in accessing these areas.

Atlanta has a large number of access roads running east to west and north to south, in addition to a few major routes within the park itself. Athens has remained the same, no development occurring within the Olympic Park and minimal access into the site. Beijing has a number of large routes running through the park that flow into the existing context of the host city. Lastly, London has integrated the complex context of the host city into the park, providing a number of key routes, while also having an internal system that matches that of the host city.

**FIG 3.35 COMPARISON OF MOBILITY OF STUDIED OLYMPIC PARKS**
3.10 OPEN SPACE

Landscaping within an Olympic Park is very important for integration into the host city, but also for the legacy of the Olympic Games.

Since 1996, Atlanta has developed several spaces that are very separated from each other, but that are positioned to create integration between one another.

Athens, since 2004, hasn’t produced any landscape spaces nor are any actually recognised within the park. The landscape space shown is one located directly adjacent to the park.

Beijing 2008 took a different approach, creating a maze of landscaped spaces north of the major stadium ‘Olympic Forest Park’, following on with the theme ‘Olympic Green’. Throughout the rest of the park are several spaces that have been designed to integrate between built environments.

London approached the post Olympics using the natural features of the site and designing landscape spaces along the rivers edge. This has created a soft edge for the river and allows connection of the river to the main Olympic Stadium.
Most of these Olympic Parks have struggled with integration into the host city, giving this study a clear understanding regarding the approaches used. Athens has seen no further development and has been perceived as a complete disaster, while London’s Olympic Park has illustrated an excellent example of creating a positive legacy and an even better integration within the context of London.

Atlanta has taken a completely different approach with the privatisation of the Olympic Games, its post-Olympic phase slow but a better fit for the city of Atlanta. Beijing has seen large urban plots and a minimal amount of programme applied to the site. This has led to a very empty space and, while the size of the spaces were successful during the Olympic Games, the large space is now regarded as a negative impact within the area. For preparation of a design for Sydney Olympic park, these analyses have given this thesis a good grounding for understanding the approaches used in previous Olympic games. The following criteria will be a helpful tool in the thesis’ approach to Sydney’s Olympic Park.

### 3.11 CONCLUSION

<table>
<thead>
<tr>
<th>SITES</th>
<th>CONTEXT</th>
<th>BUILT FORM</th>
<th>MOBILITY</th>
<th>OPEN SPACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the site to ensure close proximity with the host city to better integrate the two together.</td>
<td>Use smaller developments to break up the large spaces that can occur within an Olympic park post-Olympics.</td>
<td>Provide attractive areas that private sponsorship could help fund and fill space within the redevelopment to make it more vibrant.</td>
<td>Consider the wider context of the transport infrastructure, ensuring no dead ends to railway and vehicle access.</td>
<td>Create networks of landscape spaces that provide connectivity to fragmented amenities.</td>
</tr>
</tbody>
</table>

This set of design principles will be used to ensure the redevelopment of Sydney Olympic Park is strategised in such a way that enables integration and accessibility of the elements within the park. The legacy of the Olympic Games will still be maintained but integration with the wider context should still be provided and should allow both programs to run parallel with each other.
THE SITE ANALYSIS EXPLORES THE EXISTING SITE OF SYDNEY OLYMPIC PARK AND ITS IMMEDIATE SURROUNDINGS.
FOUR

SITE ANALYSIS

Part b
4.1 SITE

The site covers an area of approximately 640 hectares. During the Olympic games, the site played host to 15 of the 28 sports that were on show at the 2000 Olympic Games. Sydney Olympic Park (SOP) was also the location of the Olympic Athletes Village, which is located to the north east of the site. The site as it stands today remains predominantly a sports precinct, with a few other uses scattered throughout the site.\textsuperscript{37}

Sydney Olympic Park was originally part of the suburb of Homebush Bay, but was designated a suburb in its own right in 2009. The suburb of Newington is located on the western edge of the Olympic Park site and was the location of the Athlete’s Village during the Olympic Games. The suburb was heralded as the largest ecologically sustainable suburb on the planet at the time, with aspects such as solar-powered street lights. The village, upon completion, was released to the public and has since become a suburb of privately owned homes.\textsuperscript{38}

D’Archy Wentworth acquired 370 hectares of land between Powells Creek and Haslams Creek in 1810, of which he named ‘Homebush’ and started Australia’s first horse stud. In 1840 his son, Williams Charles Wentworth, constructed a new race course on the estate, which became the headquarters of Australian racing until 1859, when Randwick was established. This shows that from early days, Homebush has been associated with sports and oval-shaped venues surrounded by spectators. Unlike many of the earlier estates in Sydney, Homebush and Newington were not subdivided into smaller housing lots. Newington was bought by the government in 1882 to become an armaments depot while in 1907, the Homebush estate was resumed for the establishment of the State Abattoir. This established a new pattern across the landscape that has had a direct influence on the planning of the Olympic facilities.\(^{39}\)

More landscaping occurred during the 1950s, with reclamations and landfills occurring along the edge of Parramatta River. During the 1960s and 1970s, the site became a dumping ground for much of Sydney’s households and industrial waste. By the end of the 1980s, the site was looking for new uses; with the closure of the abattoir and the brickworks in 1988, the area carried a legacy of pollution and industrial waste. The site needed a project of grand scale that was large enough to remediate the site, as it is geographically located in the heart of Sydney.\(^{40}\)


\(^{40}\) Ibid. pg. 38
4.3 COMPETING WITH SYDNEY

The context of Sydney is threatening the viability of the Olympic Park. The stadiums at Sydney Olympic Park are in competition with pre-existing State government stadiums; all newly or extensively built which have been redeveloped in the last 20 years.

Sydney Olympic Stadium has a capacity of 84,000; this large stadium capacity is threatening due to the reality of sporting leagues, which only generate a relatively small attendance at games in Sydney. The stadiums listed below have smaller capacities, better suited for crowds at games, allowing the stadiums to look full. The location of these stadiums, however, creates a problem; the closer a stadium is to a large urban centre, the higher the public use. Sydney Olympic Park meanwhile, isn’t located near a large proclaimed centre.

STADIUMS + VENUES OF SYDNEY
1. Allianz Stadium – 45,000 Seats
2. Lidcombe Veldrome and Oval – 20,000 Seats
3. Moore Park Showground – 40,000 Seats
4. Olympic Sailing Shore Base, Rushcutters Bay
5. Parramatta Stadium – 21,500 Seats
6. Rosehill Events Centre – Capacity of 2,000
7. Sydney Exhibition Centre & Convention Centre – 30 rooms, maximal capacity 8,000
8. Sydney University Oval – 20,000 Seats
9. Sydney Football Stadium, Moore Park – 48,000 Seats
10. Sydney Olympic Park - Capacity of 84,000

4.4 SURROUNDING SUBURBS

Sydney Olympic Park is an official suburb of Sydney containing eleven neighbouring suburbs: Wentworth Point, Meadowbank, Ermington, Silverwater, Newington, Lidcombe North, Homebush West, Homebush, Concord West, Liberty Grove and Rhodes West.\(^2\)

The most populated suburb surrounding Sydney Olympic site is Ermington, across the Parramatta River with a population of 9,436, whilst on the other end of the spectrum is Liberty Grove, east of Sydney Olympic Park with a population of 2,055.

The land area of Sydney Olympic Park is 640 hectares and is matched only by the second largest suburb Ermington with a total of 429 hectares. Hand in hand with the smallest population, Liberty Grove has the lowest land area at a recorded 50 hectares.

The highest density is Rhodes West with a total of 66.22 persons per hectare, the second lowest density is Silverwater with 11.75 persons per hectares whilst Sydney Olympic Park has the lowest density measuring 0.10 persons per hectares.

<table>
<thead>
<tr>
<th>Suburb</th>
<th>Population</th>
<th>Land Area (Ha)</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wentworth Point</td>
<td>2,764</td>
<td>57</td>
<td>48.61</td>
</tr>
<tr>
<td>Meadowbank</td>
<td>5,139</td>
<td>123</td>
<td>41.95</td>
</tr>
<tr>
<td>Ermington</td>
<td>9,436</td>
<td>429</td>
<td>21.97</td>
</tr>
<tr>
<td>Silverwater</td>
<td>3,166</td>
<td>269</td>
<td>11.75</td>
</tr>
<tr>
<td>Newington</td>
<td>5,316</td>
<td>90</td>
<td>59.35</td>
</tr>
<tr>
<td>Lidcombe North</td>
<td>8,682</td>
<td>419</td>
<td>20.70</td>
</tr>
<tr>
<td>Homebush West</td>
<td>5,720</td>
<td>157</td>
<td>36.51</td>
</tr>
<tr>
<td>Homebush</td>
<td>6,479</td>
<td>213</td>
<td>30.44</td>
</tr>
<tr>
<td>Concord West</td>
<td>5,780</td>
<td>266</td>
<td>21.76</td>
</tr>
<tr>
<td>Liberty Grove</td>
<td>2,055</td>
<td>50</td>
<td>41.48</td>
</tr>
<tr>
<td>Rhodes West</td>
<td>5,295</td>
<td>80</td>
<td>66.22</td>
</tr>
<tr>
<td>Sydney Olympic Park</td>
<td>65</td>
<td>640</td>
<td>0.10</td>
</tr>
</tbody>
</table>

FIG 4.12 MAPS SHOWING PLACEMENT OF SUBURBS IN COMPARISON TO SYDNEY OLYMPIC PARK
4.5 FOOTPRINT

Following on from the surrounding suburbs, we explore the overall building footprint of the suburbs listed in 5.2.1. Wentworth Point consists of residential apartment buildings and an industrial area. Immediately south-west of the Olympic Park is found an industrial area that presents itself as barrier for access to the southern neighbouring suburbs.

West of the Olympic Site is Newington, originally the Olympic Village for the 2000 Summer Olympics, now a dense residential area. East of the Olympic Park is Bicentennial Park with more dense residential housing. Immediately south of the Olympic Park, over the M4, is a mixed use area comprising industrial, commercial and residential areas.

The footprint across Parramatta River is comprised of small residential plots with small town houses. Millennium Park, located north of the urban area of Sydney Olympic Park, creates a large barrier connecting the main hub of Sydney Olympic Park to the footprint across the river.

There is a lot of potential to expand the integration of the Olympic Park south of the site and use view shafts, orientation and connecting routes to the west, north and east.
FIG 4.13 3D MODEL OF BUILT FORM
4.6 MOBILITY

The mobility and access within the immediate context of Sydney Olympic Park consists of rail, vehicle and ferry services. This plays a vital role in connectivity between neighbouring suburbs and even onto the wider context of Sydney. For the Olympic games, the T7 was built and contained one station, located on a balloon loop. The line crosses over Parramatta Road and the M4 motorway using the former goods alignment, ending at Lidcombe station.43

Running south of Sydney Olympic Park edge is the M4, a major motorway connecting the inner suburbs of Sydney with the outer suburbs. It presents itself as a barrier for access into Sydney Olympic Park from the southern suburbs. Along with the M4, the A44 (Parramatta Road) runs directly parallel with the motorway, emphasizing the barrier that occurs, as there are only 3 exits near Sydney Olympic Park.44 Concord Road and Silverwater Road are two major roads close to Sydney Olympic Park that allow access and run north to south, providing access to the park at different locations.

Parramatta River is a vital infrastructure route for wider Sydney and the immediate context of Sydney Olympic Park. The river’s ferry services connect suburbs along the Parramatta River in Sydney with Circular Quay. A bus connection from the ferry terminal to Sydney Olympic Park station operates on weekdays and weekends. Sydney Olympic Park ferry wharf serves the Sydney Olympic Park precinct and is located on Belonging Road. The wharf was built in 1998 for the purpose of serving passengers for the Sydney 2000 Olympics. It now serves residents of Wentworth Point.45

Sydney bus services pass through Sydney Olympic Park. Five bus services operate, three major bus routes and one that runs during peak hours only.46

44 Western Motorway (M4) Ozroads: the Australian Roads Web.
46 Welcome to State Transit bus services in Buses. Web.
4.7 LEGACY

The legacy that Sydney Olympic Park has left is one that attempts to uphold the International Olympic Committees legacy elements, while the state’s objective is to make the park an economically self-sufficient business park. This has created a number of conflicts for a park that was created for large dwellings of people but is now a ghost town.

On top of this conflict, the local government has been faced with the difficult task of producing a mixed-use precinct, for which must be considered urban design guidelines and profit generation. To achieve the desired legacy, functionally interdependent CBD markets must be replicated by the Government Planning Agency to achieve an appropriate mix of functions (residential, educational, leisure, office, retail and etc.) and produce investment returns. This has been one of several challenges, given that residential and commercial property markets in particular are often not parallel. The implications of this have been multiple and certainly highlight a series of tensions. These include, but are not limited to, a lack of emphasis on affordable housing provisions, an over-reliance on car-based transit for park visitors and workers, a lack of a clear labour market strategy and conflicting public space uses. This has consequently led to an under used area that pays no respect to the legacy of the Olympic games nor to the legacy the park envisioned with its original design of sustainability.47

The legacy of three elements was derived from the original plan by Hargreaves Associates but has been essentially forgotten within the current site. In addition, considerable thought has not been given towards the overall legacy and integration of the Olympic Site into Sydney’s context. While the main focus of the legacy has fallen into the large Olympic Boulevard, expanding this area out into the edges of the site for better integration hasn’t been achieved.

THE RED LAYER
The large Olympic Boulevard, as the centre space, was a key design initiative. Capable of taking 300,000 people, perfect for the time during the Olympics, the area has since become a ghost area due to the low number of people dwelling in the area.

THE GREEN LAYER
Fingers of green were planned to spread throughout the urban centre of the site to bleed into the parkland surrounding. This was done because the intention was to not become a hub like the CBD or Parramatta. Consequently, this has created a very distant area from the host city context.

THE BLUE LAYER
The image of Sydney is one of water. Homebush Bay is set just off the harbour and runs along Parramatta River. Water was placed at both ends of the urban area to represent the low points of the site, with the urban area in between being the high point.
4.8 SITE LAYERS

The main urban area of Sydney Olympic Park is located south of the overall park. It is organised around an orthogonal grid with urban plots varying in size, depending on the programme within each plot. The movement within the Olympic Park is mainly that of vehicle access with some pedestrian areas located within the urban centre and paths throughout the parkland.

The site is broken up into seven areas: neighbourhood centre, mixed use, national parks and nature reserve, environmental management, public recreation and infrastructure. This zoning helps dedicate programs that occur and aids understanding of the site. The south area of the site is the main centre of the Olympic Park, while the northern, western and eastern areas consist of parkland and environmental programming.

There is a lot of potential to integrate the fringes of the urban centre and create a more integrated northern part of the site.
BUILDING FOOTPRINT
The main building footprint occurs within the zone of the mixed use area, with the M4 and the parkland creating isolation to the context.

PARKING
Parking is located around the site and its placement gives an opportunity for new programme. Overflow parking occurs in the centre of the site, which is rarely used.

PATHWAYS
The paths have no order, creating a lack of integration with the context and, therefore, requires redesigning to take use of the extension of the context routes.

PATH NETWORK
There are several paths and networks within the parkland and at the bottom area of Sydney Olympic Park. Minimal connection between north and south areas and no integration present.

TRAIN
Only one train route occurs in the park, built for the Olympic Games. Currently the site is a destination rather than part of a train route, leading to commuters bypassing the site.

ROAD NETWORK
The site’s large blocks create a disconnection for pedestrians, while Newington contains smaller blocks. This needs to be adjusted for ease of use within the site and making it more user friendly.
4.9 CLIMATE

The climate is temperate with warm, sometimes hot, summers and mild winters. Rainfall is spread evenly throughout the year, though is highest between March and June. Sydney, in general, does not experience extreme seasonal differences as the weather is moderated by proximity to the ocean. Summer highs average around 25–29 °C and winter highs average between 16–18 °C. Summers are either humid because of sea breezes or dry due to the heat from the outback. The area of Sydney is also prone to heat waves and drought, which have become more common in recent years due to global warming. Sydney has approximately 104 clear days annually.9

The sun sets in the east and rises in the west. The area surrounding Sydney Olympic Park is exposed to a lot of natural light due to the topography of Sydney, which doesn’t have any natural barriers blocking light.

4.10 CONCLUSION

This chapter has introduced a series of limitations, opportunities and constraints in relation to Sydney Olympic Park as the ideal location and environment for testing approaches and solutions to the research questions.

The design principles that arose from Literature Review and Olympic Analysis will bring the programs together to implement a set of design approaches to create an integrated Olympic Park for a host city. The final design experiment will then be evaluated from the principles, to determine whether or not the approach addresses the question this thesis asks. These analyses suggest a strategic set of ‘design principles’ that can be incorporated into the design study to reflect and respond to the current conditions within and around Sydney Olympic Park to reflect the legacy and integration of the park into its host city. The ‘design principles’ are:

| • Maintain historical links the park has with the city and how the local context can mediate any redevelopment of the park. | • Consider the pressure the stadiums and venues have within the park in competing against other stadiums within Sydney. Create other programmes in the site to attract people into the Olympic Park. | • Parramatta River presents itself as a significant component within Sydney in general, so utilising this within the design to be more responsive to the edge of the river is an opportunity. | • The immediate suburbs are already well populated, so the opportunity arises to create a central wetland park that creates connection and integration with each suburb. | • There is an opportunity to create more access into the park by pushing the built form of the context into the park. |

The investigation of Sydney Olympic Park has provided a series of definitive design criteria. These will combine with the previous design criteria to create a serious of objectives that will formulate the design in which to critique.
THIS CHAPTER IS THE MASTERPLAN THAT HAS BEEN INSPIRED BY THE PREVIOUS CHAPTERS.

IT BRINGS TOGETHER THE FIVE PRINCIPLES TO CREATE AN INTEGRATED DESIGN.
FIVE
MASTERPLAN

Part b
5.1 DESIGN OVERLAY

The smaller grid creates a better pedestrian approach, while the larger axis route working against the grid shows connection to the host context. Focusing all these routes towards the central space, the smaller grid breaks up the larger urban grid of the site that is currently in place.

1. BARCELONA PLAN OVERLAY

2. CITY OF CANBERRA PLAN

This provides an example of multiple available orientations with an additional surface water that compliments the Parramatta River and Haslams Creek. Extending the site over the river will provide space connection and integration to the Olympic Park.
3. VISIBLE CITY OVERLAY

This illustrates a more random distribution of lots and starts to work with the plots of the context and the site itself. Creating smaller plots near the Parramatta river creates a more dense environment. The orientation of the overlay follows the orientation of the urban centre for better integration with the edge and the overall state of the site.

4. AUROVILLE PLAN OVERLAY

A more direct focus on the central aspect which disperses out in a circular motion. Using a circular shape, repeated in the brick-pit and the stadiums, creates a stronger relationship between large areas. However, it only focuses on one space and doesn’t link with other important aspects. It fails to create a presence with the immediate context and develops large spaces at the edge of the site.
5.2 DESIGN TEST

SPORTS SCHEME

This conceptual scheme is based upon the sports legacy, developing a focus on the stadiums and the immediate edge. It investigates the overall composition of a network of narrow landscape buffers surrounding these places. It explores the waters edge of Parramatta River and Haslams Creek, and gives implications of development with Sydney Olympic Park and how it would be integrated within the immediate context.
The urban legacy scheme investigates the connection within the immediate context and develops a program that builds upon existing and newly developed connections. Along these connections, development of new commercial and residential typologies have the potential to occur. Extending the grid system further north towards Haslams Creek and creating Haslams Creek as a greater environment focal point also becomes a strong possibility.
SOCIAL SCHEME

The social legacy scheme investigates the connection pedestrians have within the site of which flows throughout the entire site. Development of built form occurs north of the current urban centre of the Olympic Park. It unveils the legacy of the red layer, explained in the site analysis, by expanding one network over the entire site, rather than a site that is fragmented.
ECONOMIC SCHEME

The economic legacy scheme investigates the situation of several business parks across the site of Olympic Park. Each business park is focused on the edge and pushes out the immediate edge of the parkland, creating a central area for each park. The overall intent is to bring in maximal revenue and provide Sydney with its first business park centre, home to nine business parks.
5.3 MASTERPLAN

The final design enables integration of post-Olympic sites back into the working structure of the host city. The design research investigates ways in which the Olympic site can have greater integration with the host city, such that both become more adaptive to one other.

The master-plan follows the structure of the five principles (the grid, wetlands, extension, distribution and occupation) to aid efficient integration with the surrounding context. Several small distribution spaces are located along the fringes of the site, enabling greater connections and simultaneously fostering extensions via a ‘push and pull’ approach. The grid system follows the existing grid of the internal urban structure, providing occupation with an additional development that extends the edges of existing urban areas.

Maintaining the natural character of the wetlands emphasizes the possibility of enhancing interaction and providing a level of natural integration. The master-plan seeks to solve the ongoing problem facing Sydney’s Olympic Park - creating an integration that brings the Olympic Park and the host city together.

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The strong focus on the connection between site and context is evident</td>
<td>• Detail hasn’t been considered that concerns the large scale and the</td>
</tr>
<tr>
<td>within this scheme and creates a structure that flows between the two areas</td>
<td>overall scope of the project</td>
</tr>
<tr>
<td>• Extension of the surrounding paths into the site provides access and</td>
<td></td>
</tr>
<tr>
<td>direct connection that will heighten the overall integration and blur the</td>
<td></td>
</tr>
<tr>
<td>edge between the two systems, creating one unified urban network.</td>
<td></td>
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</tbody>
</table>
5.4 PHASING

The layers of the master-plan are based upon the principles researched in the thesis: wetlands, extension, grid, distribution and occupation. Each one works inclusively with another to provide integration between the host city and the Olympic Park.

The design proposes development of an overriding master plan framework to enable the successful integration of post-Olympic sites into the context of the host city. The thesis proposes that this framework can be implemented in progressive stages. Phasing would occur over a 20 year period following the initial Olympic event and would pay attention to the nature of the design principles described in previous sections of this chapter.

WATER/WETLANDS

The wetland principle outlines the role of creating a water sensitive urban design solution that deals with providing new areas and opening space within the new occupation areas to create one unified site.

PHASE ONE: The introduction of a water sensitive urban design solution

Time Line: 5 years (2016-2021)

EXTENSION

Several external routes and paths can become pushed into the site to create new extensions that provide vital connections between the site and surrounding areas.

PHASE TWO: With the wetlands water system established, it is important to bring into the design the extension.

Time Line: 2 years (2020-2021)
GRID
The grid principle is seen only in the open green space and is the main connectivity path for this area. It outlines the urban orientation of the street patterns and brings it into the green space.

PHASE THREE: With wetlands and extension areas established, it is now important to implement the grid within the natural areas to provide links to areas.

Time Line: 2 years (2022-2023)

DISTRIBUTION
Distribution principle is a significant component and takes on the role of creating areas of importance within the open system, while still maintaining integration. It mimics the stadiums and Brick-pit and follows the grid system.

PHASE FOUR: The final phase provides distribution areas important to the overall attraction of the natural spaces.

Time Line: 2 years (2023-2024)

OCCUPATION
Providing new areas of living, working and leisure. Occupation strategically places new urban areas on the edge of existing ones and provides new areas where the land is previously less used.

PHASE FIVE: Occupation occurs throughout the entire phasing plan to help provide financial support and to provide the space with inhabitants.

Time Line: 5 years (2016-2021)
The immediate edge between wetlands and urban areas provide users with a very integrated experience. Extending the urban promenade into the wetlands creates small pockets of habitation that allow pedestrians to engage with the wetlands on a more intimate level. The edge of the urban area and the wetlands see the most visitor traffic at Sydney Olympic Park due to the various programmes that might occur: dining, exercise, tourism and education.

5.5 SECTIONS
EDGE BETWEEN WETLANDS AND URBAN AREAS.
Running throughout the wetland areas are a mixture of cycle lanes and pedestrian paths. The paths are constructed of wood and float above the wetlands, providing the user with an elevated experience that allows an interaction with the plants.

Extending the paving area using wood, making it float above the wetlands. This creates an extension of the promenade and allows users to engage with their surroundings.

FIG 5.32 SECTION OF URBAN EDGE WITH WETLANDS
CREATE CYCLE LANES CONNECTING SURROUNDING SUBURBS WITH THE OLYMPIC PARK. AN OPPORTUNITY EXISTS FOR A LOOP TRACK THAT SPANS THE ENTIRE EDGE OF THE PARK. THIS WOULD ALLOW FOR EXTENSION PATHS TO CROSS CONNECT AND CREATE DISTRIBUTION MOMENTS ALONG THE EDGE.

INTRODUCE ELEVATED PATHS THAT EXTEND INTO THE WETLAND AREAS. THIS WILL CREATE THE OPPORTUNITY FOR USERS TO CREATE ROUTES AND ENGAGE WITH THE WETLANDS. BOTH PEDESTRIANS AND CYCLISTS CAN TAKE ADVANTAGE OF THIS.

URBAN GATEWAY TO SYDNEY OLYMPIC PARK
Along the edge of Sydney Olympic Park are several gateways that extend into the surrounding suburbs. This provides the user with ways of connecting and engaging with the Olympic Park, while simultaneously creating more opportunity to use the site at a greater volume than what is currently being used.
WETLANDS AS A DESTINATION

Creating distributed points within the wetlands generates a destination. Providing areas that have seating and edges allow for users to engage with the immediate flora and fauna.

SITTING AT THESE DESTINATION POINTS PROVIDE REST AREAS AND A PLACE TO ENGAGE WITH THE SURROUNDINGS.

USE SITTING AND A 30 DEGREE ANGLE TO CREATE A BARRIER ON THE EDGE OF THESE DISTRIBUTED AREAS. THE ANGLE MAKES THE AREA APPEAR MORE OPEN WHILE STILL BEING COMPLETELY SURROUNDED IN WETLANDS.
WHERE THERE IS OPEN SURFACE WATER, PROVIDING AN EXTENSION OF THE PATH WILL CREATE ENGAGEMENT AND AN OPPORTUNITY TO ENJOY THE SURROUNDING WETLANDS. BEING COMPLETELY SURROUNDED IN THE WETLANDS TAKES THE USER AWAY FROM THE CITY, DESPITE STILL BEING AT SYDNEY OLYMPIC PARK.
5.6 PERSPECTIVES

EXTENDING THE EXISTING.
Not all edges can provide access, but by creating visual moments along the edge there will still remain a strong connection on a linear axis. These axis points are referred to as extensions of the site and can provide destination points for users, with the opportunity to create diverse programmes such as fishing, swimming and accessing the water taxis that run along Parramatta River.
BRINGING THE WETLANDS INTO THE URBAN AREAS.
While the wetlands occur within the parkland of Sydney Olympic Park, to truly create integration the wetlands need to be mitigated into the urban area. Following the masterplan, creating pockets of wetland areas that become fragmented into dense urban areas will ensure a beginning to the connection between urban area and the wetlands. A combination of the two allows for an extended edge that gives the user an engaging experience - they can see the natural wetlands as a part of their everyday lives.
THE PRECEDENT STUDY EXAMINES FOUR EXISTING DESIGNS, TAKING THE STRENGTHS AND WEAKNESSES. THE DESIGNS OCCUR AS FOLLOWS:

- PARK OF LUNA
- TIANJIN QIAOYUAN WETLAND PARK
- LA BARCELONETA
- THE EDGE PARK
SIX

PRECEDENT STUDY

Part C
Park of Luna in Heerhugowaard, Netherlands is an attractive recreational area with several activities and a naturally purified swimming lake as the central element. Designed by HOSPER, it has been in development for the past ten years, beginning with the master-plan and ending with implementation in 2003-2008. The landscape of Heerhugowaard has changed from traditional agrarian polder landscapes to a modern city landscape in which homes, recreation and nature development are integrated.

An area in the centre of the park is called The Stad van de Zon (the City of the Sun), a neighbourhood with 1,600 homes. It is surrounded by a ‘ring of open water’ which separates the residential area from the surrounding recreational areas and guarantees a ‘large amount of open space’. The banks of the open water are a major recreational area and contain two sides: the inner side is oriented towards the open water and the Stad van de Zon, the outer side, faces the surrounding landscape. The water system is unique: it is designed to store large volumes of water but also conserve water during the summer. This design devotes a lot of its attention to the quality of the water, accessibility and the ability to experience the system. Several structures have been incorporated into the design, such as a circulation pumping station, a natural purification plant, a dephosphatising pond, a bridge and a canoe crossing. The structures were designed to allow the public to experience the water to a maximum extent. The recreational area is made up of subareas which each have an individual character: the Druiplanden (urban character), Huygendijk wood (sheltered character) and Subplan 4 (transitional space).

### 6.1 PARK OF LUNA

**HOSPER, COMPLETED 2008**

Both Park of Luna and Sydney Olympic Park share the same scale of size. Clearly identifiable subareas within the plan break the site into several smaller sub-plans and the use of surface water provide smaller spaces, whilst not taking away from the large scale of the site.

- Park of Luna informs this thesis because it shows the successful design of a singular level.
- This case study is proof of the successful integration of surface water into a design, with urban clusters evident in several areas which create close integration between the different typologies.

- Park of Luna poses issues of space emptiness with vast open space that are not greatly dwelled upon.
- Though Park of Luna has created a successful urban development that works on a single level, its limitations arise through singular design output that provides little vertical movement.

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Tianjin Qiaoyuan Wetlands Park is located in the northern coastal city of Tianjin, China. The site was once a shooting range turned garbage dump and drainage sink for urban storm water. Due to swift urbanisation, the site was polluted, littered, deserted and surrounded with slums that had to be torn down before the wetlands design was commissioned. Densely populated at the south and east boundaries, the site is bounded on the west and north sides by a highway and an overpass. The design of this park is to provide a diversity of nature's services for the city and the surrounding urban residents including: contained and purified urban storm water; improvement of the saline-alkali soil through natural processes; recovery of the regional landscape with low maintenance native vegetation, providing opportunities for education about native landscapes and natural systems, storm water management, soil improvement, and landscape sustainability, all creating a cherished aesthetic experience. The regional landscape is flat and was once rich in wetlands and salt marshes, however these were mostly destroyed by decades of urban development and infrastructure construction.

Inspired by the adaptive vegetation communities that dotted the landscape in this region, the solution for this park was developed and named The Adaptation Palettes, designed to let the nature work. A simple landscape Regenerative Design strategy was created, which included digging out twenty-one ponds varying in size and depth. The design also allowed for diverse habitats to be created and seeds of mixed plant species sown to start vegetation, encouraging other native species to grow wherever suitable. Through seasons’ evolution, patches of unique vegetation established in correspondence with the individual wet or dry ponds. Seasonal changes in plant species occurred and there began integration with the beauty of the "messy" native landscape. It is a successful park that changes its landscape seasonally, is constantly visited by the community and needs very little maintenance.

**FIG 6.9 STRENGTHS AND WEAKNESSES OF TIANJIN QIAOYUAN WETLAND PARK**

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The successful regeneration of the once garbage dump and drainage sink.</td>
<td>- Tianjin Qiaoyuan Wetland Park provides minimal expansion and integration into the immediate context.</td>
</tr>
<tr>
<td>- Tianjin Qiaoyuan Wetland Park has created an adaptive vegetation park which has managed to improve the saline-alkali soils with its natural design process.</td>
<td>- Only four major entrances into the park exist.</td>
</tr>
<tr>
<td>- The use of the smaller ponds to create several experiential spaces makes use of the planting scheme to influence the feeling of each area.</td>
<td></td>
</tr>
</tbody>
</table>

FIG 6.10 THE SITE BEFORE THE REDEVELOPMENT

FIG 6.11 SMALL PONDS WITHIN THE LARGER SITE

FIG 6.12 TIANJIN QIAOYUAN WETLAND PARK DETAIL PLAN

FIG 6.13 SECTIONS OF EXPLORATION OF DESIGN

FIG 6.14 PLAN OF SITE BEFORE CONSTRUCTION

FIG 6.15 OVERALL SITE OF TIANJIN QIAOYUAN WETLAND PARK
6.3 LA BARCELONETA

La Barceloneta is an urban district located in Barcelona, Spain. During the 18th century, Barcelona was in a period of economic and demographic growth and was in strong need of expansion. Barceloneta was built on a peninsula outside the original city wall of Barcelona and was surrounded by sea on the other side. It filled up quickly and originally comprised of one or two story buildings that were later increased to five stories. Barceloneta became the densest area of the Catalan capital.\(^6\)

Barceloneta is located next to the medieval city centre and has always appeared slightly isolated because of obstacles, initially city walls but later industrial areas and recently a highway, that separates the neighbourhood from the centre. During the Olympics of 1992, the city turned towards the sea and the edges of Barceloneta were transformed. The highway (Ronda Del Litoral) was tunnelled and the above space was turned into an attractive public space, making Barceloneta more accessible.\(^44\) This allowed Barceloneta to become better connected with the city centre and, because of the strongly rising number of tourists, the neighbourhood became a target for real estate investors and development companies. Southward of Barceloneta is Platja de Barceloneta, located along the seas edge, creating large opens spaces which were upgraded during the 1992 Olympic Games.\(^6\) East of the neighbourhood, the park (Passeig de Joan de Borbo) has also been upgraded to create transitional spaces to the mariner and the public edge, while allowing transition to La Ramblas. Barceloneta was designed based on a linear formation and has parallel streets that create hierarchy.

**FIG 6.16 STRENGTHS AND WEAKNESSES OF LA BARCELONETA**

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The approach to the parallel streets creates strong visual view shafts and strong promenades for pedestrians.</td>
<td>• The linear building approach has created limitations with development.</td>
</tr>
<tr>
<td>• The proximity to the central city and the upgrades to the edge of La Barceloneta have created a vibrant space to dwell within.</td>
<td>• A singular axis focuses on the ends of the neighbourhood rather than the entire edge around La Barceloneta.</td>
</tr>
<tr>
<td>• The increase in the height of the buildings creates more a dense neighbourhood.</td>
<td>• The long building façades can create barriers for flow between context and the internal neighbourhood.</td>
</tr>
<tr>
<td>• Smaller laneways and a more pedestrian focused public space provides a vibrant neighbourhood adjacent to major attractions.</td>
<td></td>
</tr>
</tbody>
</table>


\(^{46}\) Ibid: pg. 1326
6.4 THE EDGE PARK  W-ARCHITECTURE, COMPLETED 2011

The Edge Park, designed by W-Architecture, is a landscape waterfront park that was completed in 2011. Also known as the Williamsburg Waterfront, it is dominated by industry and its relics for over a century, making it largely off limits to the public. This was until recently when new zoning changed the public interface with the water's edge, increasing density and emphasizing waterfront access. The Edge Park design brings people to the river and links the ecosystem with the fabric of the community. The new residential tower and the public waterfront park create a challenge in ensuring that the towers act not as symbolic fences blocking public access and views of the East River and Manhattan, but as gateways to the river with corridors providing visual connection to the iconic skyline.

The design unites both sides of the river, using the piers to reorient views across, especially directed toward the Empire State Building. The design emphasizes the confrontation of forces at the water edge and attempts to encourage public use. The city grid and the river’s ecosystem converge to become a pedestrian green-way and piers reach gently into the water from deep within the park. This blurring of the boundaries between land and water extends the waterfront benefits inland to the community.

FIG 6.23 STRENGTHS AND WEAKNESSES OF THE EDGE PARK

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The extension of the current road through to the water’s edge with pedestrian access creates vibrant and cohesive atmospheres and easy access.</td>
<td>• The buildings can prevent integration and provide a barrier to the inner city.</td>
</tr>
<tr>
<td>• The axis to the other side of the river creates connection and integration to the urban context and allows for a relationship to occur.</td>
<td>• The views across the river may seem unconnected as there is only a visual connection.</td>
</tr>
<tr>
<td>• The simple use of planting and materiality allows for a simple design and the revitalisation of the old industrial area creates a positive experience.</td>
<td>• The planting stops on the edge of the park and doesn’t flow through into the city’s grid, which can be seen as a harsh edge and an absence of integration with the city’s public space.</td>
</tr>
</tbody>
</table>

6.5 CONCLUSION

The five case studies have shown approaches to important aspects of the research question. Each case study has weaknesses but also provides successful attributes that can help integrate Olympic Parks with their host cities.

All of the case studies seek solutions to obstacles by creating a relationship between the context, community, culture and the landscape environment. Opportunities for the design of this thesis can be derived from this case study analysis, extracted from the way in which these case studies deal with multiple environmental, urban and ecological problems.

This case study analysis continues to provide a set of strategic design principles that can be incorporated into the design study. These design principles have been created from the case studies:

<table>
<thead>
<tr>
<th>PARK OF LUNA</th>
<th>TIANJIN QIOYUAN WETLAND PARK</th>
<th>LA BARCENONETA</th>
<th>THE EDGE PARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Use wetlands and surface water to dedicate the overall concept of the design.</td>
<td>• Introduce more commercial and residential enterprises to revitalise areas within the Olympic Park that aren’t well integrated with the host city.</td>
<td>• Design new urban blocks that are on linear formation with parallel streets to create hierarchy.</td>
<td>• Use linear paths to extend the spaces within the site to important amenities to create a more coherent Olympic Park system.</td>
</tr>
<tr>
<td>• Don’t over populate the natural environment with the Olympic Park, to avoid the appearance of becoming over bearing, intense and lacking in integration with the context.</td>
<td>• Introduce subspaces surrounding network paths that create more integrated areas, joining the existing context of the host city.</td>
<td>• Use orientation of buildings and streets to create direction and to mitigate the site into the host city to build better integration.</td>
<td>• Extend existing routes surrounding the Olympic Park to create better integration into the park.</td>
</tr>
</tbody>
</table>

Building on the design principles from previous chapters, these additional design principles will be used to test the final design research to ensure the design for Sydney Olympic Park is integrated with the urban context of the host city.
THIS CHAPTER BRINGS TOGETHER SEVERAL IDEAS EXPLORED WITHIN PREVIOUS CHAPTERS. THE DETAILED DESIGN IS INSPIRED BY THE FIVE PRINCIPLES DISCUSSED THROUGHOUT THIS: WETLANDS, GRID, EXTENSION, OCCUPATION AND DISTRIBUTION.
SEVEN

DETAILED ANALYSIS

PART C
The site covers an area of approximately 10 hectares, situated north of the convention area of Sydney Olympic Park and the main urban hub.

Haslams Creek is north of the detailed site perimeter, running from east to west. The site runs as a flood bank for the main urban hub and consists of parkland with several paths for cycling and walking.
FIG 7.2 SITE PERIMETER
Contrasted with the surfaced water that dominates Haslams creek, the site largely consists of open land, allocated for vegetation.

The overall structure of the site consists of transitional spaces with no destination in sight. Much of space zoning is dependant on physical structure - several spaces are heavy with vegetation but have transitional programming, whilst other large open spaces create a more static programme.

The space is located at the end of the Sydney Olympic Park convention area, thus creating great opportunity to present an extension that integrates with the natural features of the wetlands and Haslams creek.
FIG 7.6 ZONING OF THE SITE
7.3 MOBILITY

The mobility of the site is very accessible. There are four major typologies of mobility: pedestrian, bike, vehicle and bus. Within the site, there are two major routes for pedestrians and bikes, however there are no routes for vehicles and buses. Pedestrian access enters the site at the east and west of the site and links major roads and routes, including Kevin Combs Ave., Australian Ave. and Holker Busway.

Surrounding the site are several typologies of mobility. Running parallel to the site near the urban centre is Kevin Combs Ave. This links Olympic Boulevard with Australian Ave which itself turns into a bus-only route. Holker Busway travels over Haslams Creek. This has caused limited access for vehicles and ultimately has caused Sydney Olympic Park to become not a thoroughfare but a destination.
7.4 TOPOGRAPHY

The topography of the site consists of a flood bank for the main urban hub of Sydney Olympic Park. The maximum height of the flood bank from the road extends 8 metres, compared to that of 11 metres towards the river.

This topography has created a significant barrier for the integration and extension of the urban convention centre of Sydney Olympic Park towards Haslams creek. This barrier, adjacent to the urban edge, provides no access along major grid routes from the urban area, creating a very isolated park space and causing a lack of integration.
7.5 ACCESS

Access to the site is currently very limited. Fig 7.6 depicts two major access areas, each one with two access points. These areas are contained to the east and west of the site. There is no vehicle access.

Haslams creek provides a significant barrier in which no access is found to the site from the north. The flood bank has created a physical barrier that disrupts integration and extension of the urban hub to the natural edge of Haslams creek.
7.6 CONCLUSION

The selected site for the detailed design consists of a flood bank that is used primarily as a transitional space. Through analysis, it is evident that this site provides an opportunity for development due to its close proximity to the urban hub, its ability to integrate with Haslams creek and its mobile surrounding.

While the site is steep in topography, this provides a vital elevation change that the Sydney Olympic park currently doesn't provide. This will create a sense of excitement. Overall, this area has potential for growth as a space that integrates between the natural character of the site and the urban aspect. Below are a series of criteria based upon the information discovered in the analysis.

- Use the access routes from the urban hub of Sydney Olympic to extend and integrate between the natural and the urban fabric.
- Create a elevated promenade that extends the flood bank, while engaging with wetlands that terrace towards Haslams Creek.
- Develop a urban topology that mimics the current urban street pattern of surrounding areas.

The analysis has given a clear understanding of the nature of the site. It shows the site as a potential for integration between the urban and the natural, as well as providing an edge that extends.
This chapter brings together all previous research and creates a detailed design based upon the five principles, while still maintaining integration between existing realms of urban and wetland.
DETAILED DESIGN

EIGHT

PART C
8.1 STRUCTURE

The structure of the detailed design is based on the following five principles that have been explored throughout the entire thesis.

The detailed design takes inspiration from precedent study and the site analysis to fully engage the site with the surrounding area.

The following diagrams show how the design has been implemented on the site and how it forms the foundations for an integrated area within Sydney Olympic Park, at a detailed level.

**WETLANDS**

Movement between the terrace wetlands and the urban areas are based upon extensions. All areas beyond Haslams Creek stay in their current form.

The high engagement areas occur along the promenade where extension routes are located.

**GRID**

The grid is based upon extensions of the existing urban area. Continuing these access routes gives users the opportunity to interact with natural and built features.

The grid and the extension paths, which run perpendicular to one another, are lower hierarchy routes.
**EXTENSION**
Extending beyond the built form allows users to connect to the natural features of the site. The extension can also provide access and connectivity to other aspects of Sydney Olympic Park.

The pedestrian promenade promotes the most active edge within the design. In addition to extending paths from existing areas, this promenade creates interesting spaces that deliver diversity in programmes.

**DISTRIBUTION**
Creating moments of chaos over the site distributes programmes and active spaces. Hierarchy in distributed areas is applied based upon the hierarchy of the street.

Along with natural features and significant amenities, large circular forms occur to give a space an exposed area of integration. The exposed areas are distributed over the entire Olympic Park and engage with the immediate surrounding.

**OCCUPATION**
Occupation of the site occurs on two levels - the built form and the open space form. The built form occurs through commercial, residential and entertainment amenities that can be introduced onto the site.

The open space form occurs amongst the built forms. This creates connection and integration between inside and outside.
8.2 DETAILED PLAN

The plan explores redevelopment on the northern end of the urban area of Sydney Olympic Park. It uses extensions of current urban connections and grid formation to merge with the contours of the topography.

It consists of five tiers of wetland plantings that merge with the existing creek. Circular forms create distribution points along the natural feature of the creek, while the materiality is reflected on the Olympic Boulevard.

Occupation is demonstrated in the built form of an urban level, while the grid that feeds through to the natural edge provides much needed program throughout the space.
8.3 BUILDING FOOTPRINT

The building footprint for the site consists of buildings that have one to three levels. This gives the relationship between the existing and the new buildings a more intimate connection. The building footprint flows through to the promenade and creates a better relationship with the edge.

The lower level buildings are present along the edge of the promenade whereas the higher level buildings are placed along the street edge. This building orientation creates more opportunity for private investors looking to create a mixed use street that flows from the mixed use promenade edge. The stronger the connection within mixed use areas, the greater the degree of integration.

8.4 REVISED TOPOGRAPHY

The contours and structures of the site are based upon the existing flood blank terracing. The informal arrangement at present will be designed so as to become more rigged and structured whilst still maintaining its original form.

Cut and fill might occur to make extension paths and terracing more rigid. The original steepness of the flood bank on the street edge will be excavated to create urban terracing that is accessible for pedestrians. Major earthworks would occur along the paths but the natural edge near Haslams Creek will remain untouched.
FIG 8.3 FOOTPRINT OF SITE SHOWING BUILDING HEIGHT

FIG 8.4 CONTOUR MAP

- 1m contours
- 0.5m contours
- 1 story building
- 2 story building
- Existing building
8.5 WETLANDS

The planting zoning consists of six zones that cover the plan. The species found within tier 1-5 are found currently within the Sydney Olympic Park at a natural capacity. Creating a more ordered range of species will allow for awareness and characteristic profiles of the entire Olympic site, specific only to this site.

The catchment will be situated in the newly designed area where it will be a self sustainable system. The water will be pumped into the wetland terracing and will filter through each terrace. The gradient for each terrace will be based upon a pipe gradient with a grade of 1:100 slope. This will allow for water to sit but to also flow down each terrace, depending on the water amount present. The total capacity of water the wetlands can hold is 2,689 cubic metres. The following table is a calculation of each terracing.

<table>
<thead>
<tr>
<th></th>
<th>AREA</th>
<th>DEPTH</th>
<th>VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built Form</td>
<td>1635.61m²</td>
<td>0.1m</td>
<td>163.51m³</td>
</tr>
<tr>
<td>Terrace One</td>
<td>3616.73m²</td>
<td>0.1m</td>
<td>361.67m³</td>
</tr>
<tr>
<td>Terrace Two</td>
<td>3851.62m²</td>
<td>0.1m</td>
<td>385.16m³</td>
</tr>
<tr>
<td>Terrace Three</td>
<td>5856.67m²</td>
<td>0.1m</td>
<td>585.16m³</td>
</tr>
<tr>
<td>Terrace Four</td>
<td>5255.76m²</td>
<td>0.1m</td>
<td>525.57m³</td>
</tr>
<tr>
<td>Terrace Five</td>
<td>8314.84m²</td>
<td>0.1m</td>
<td>831.48m³</td>
</tr>
</tbody>
</table>
FIG. 8.6 PLANTING ZONING PLAN
8.6 PLANT DETAILING

TIER ONE: BUILT INTRODUCTION
Within the urban built area, create a mixture of new and existing species that come together to create movement towards the edge, hence generating direction.

TIER TWO: TYPHACEAE BEGINNINGS
Mass planting at a larger scale, mixing two species to create large volumes that mimic the building size from the built form.

TIER THREE: POACEAE TERRACE
Mass planting occurs on this terrace at a smaller scale than did occur on tier one. The approach here is to slowly break up the heavy buildings with smaller blocks of planting.
TIER FOUR: CYPERACEAE MIXTURE
Mixture of mass and individual planting to help create connection between parallel tiers.

TIER FIVE: JUNCACEAE EDGE
The selection of wetland species for this terrace consists of species that create movement via a mixture of colours and an individual arrangement.

TIER SIX: MANGROVE RIVER
This tier is based upon the existing edge of Haslams Creek. No modifications have been made to the immediate edge.
8.6 SECTIONS

STREET TO PEDESTRIAN PROMENADE.

There needs to be several terracing levels not only in the wetland area but also in the urban area. Ramps and stairs are prominently used to connect different terrace levels. Within the buildings are different levels that help provide movement and connection. In the centre of the design is a large car park to help provide a destination point, with commercial and entertainment precincts also set up.
SINGLE LANE PATH PROVIDES ACCESS AND SEPARATION BETWEEN VARIOUS BUILDING LAYERS, CREATE CONNECTION.

NEW PEDESTRIAN EDGE PROVIDES CONNECTION TO BUILDINGS, UNLIKE EXISTING EDGE.
EXISTING PATH ALONG THE EDGE OF THE HASLAMS CREEK, PROVIDES INTEGRATION WITH MANGROVES AND NEWLY FORMED WETLAND TERRACES. PATH PROVIDES ACCESS EAST AND WEST OF THE SITE. REFER TO FIG 8.9 FOR DETAILED SECTION.

TERRACED WETLANDS TO PROVIDE RELATIONSHIP WITH TOPOGRAPHY AND THE SITE. PROVIDES RELIEF BETWEEN LEVELS. REFER TO FIG 8.9 FOR DETAILED SECTION.
Similar to the section between the street edge and the pedestrian promenade, the section to Haslams Creek also takes on the feature of terracing. Terracing here will be formed from the existing contours found on the site that are the result of the flood bank. The user will experience various wetland species at different levels as they near Haslams Creek. The form and structure of these wetland terraces are based upon the wetland species found already at Sydney Olympic Park, creating forms that mimic the large volumes of buildings found nearby.
BETWEEN TERRACE DETAIL
The detailing between each terrace consists of an escape for the water when it overflows each terrace. The movement of water between each terrace only occurs when the previous terrace has reached its maximal capacity of water. The water is contained within the wetland terracing network and creates movement between natural systems in an ordered fashion.
Considering that a build up of water is inevitable within the terracing system, the design must incorporate a means for the water to escape. Along the existing path running parallel with Haslams Creek, there is no escape for water. Along the bottom of the wetland terracing, a series of pipes at 5m intervals will be built. This will allow the water to escape into Haslams Creek. This has been designed to withstand the water capacity of a storm event every ten years.
EXTENDING THE URBAN GRID.
Beyond the edge of the built form, extending the paths is important. This allows continual connectivity through to other areas of the park. Allowing extension of the urban areas creates major points for engagement with the wetland edge.
MIXED USE HUBS
Throughout the urban area within the design are pockets of open space that provide breathing space for the grid structure. These areas become smaller hubs within the greater structure.
TERRACING THE WETLANDS THROUGH GRID

The terracing act as a structured feature that takes the natural contours and manipulates them into a wetland features. Through this feature extended paths are formed that connect areas of Sydney Olympic Park. Based on existing routes and extension points these paths provide much needed direction and engagement on the site.
INTEGRATING WITH HASLAMS CREEK

Along Haslams Creek are distribution areas that provide interaction with the natural features of the site. These distribution points are connected via extension paths and overall, provide much needed opportunity to engage with the natural site of the Sydney Olympic Park.
THIS CHAPTER CONCLUDES THE THESIS, SUMMARISES THE OVERALL APPROACH AND OUTCOME AND FINDS POSSIBLE LINES OF RESEARCH INCLUDING WHAT COULD HAVE BEEN IMPROVED.
CONCLUSION
Playing host to the Olympics is one of the biggest highlights a city could wish to host. It not only presents the city to the world but also provides the opportunity to develop an Olympic Park and related city infrastructure. During the Olympic games the host city is on show, providing venues for sports events as well as hosting an influx of spectators, tourists and athletes. Once the Olympic games are over, the host city deals with the difficult task of reintegrating the Olympic site back into the rest of the city. Typically, it is up to the local governments and committees to deal with this integration.

Prior to any events, the primary focus of the development of an Olympic Park is to provide facilities that can accommodate the games and the large number of spectators it will attract. There is usually little thought given to the post-Olympic process and the negative aspects that are often a result of hosting the Olympics. The Olympic bidding process is now seeing movement in which the successful host city must include approaches regarding how the site can be developed afterwards, in such a way as to incorporate the Olympic Legacy and integrate the site within the context of the surrounding city. The approach of this thesis towards the need for integration addresses landscape urbanism and incorporates several ideas including extension, wetlands, grid, occupation and distribution interventions.

The typical approach to post-Olympic sites is to develop large parkland that incorporate the environmental legacy of the Olympic games. However, there is an opportunity to develop the sites to cater for more programs and amenities, and to fully integrate with the host city on social, economic, urban and recreational levels.

Understanding the needs of the surrounding city context and major infrastructure evident in the analysis of Sydney Olympic Park shows that Sydney is an opportune location to test how the future design of post-Olympic sites can be based around five key principles. These principals can not only be applied to this Olympic site, but may be a foundation on which to build future designs and redevelop existing post-Olympic sites. One of the main advantages of adding a range of new programmatic elements to post-Olympic sites is that it ensures that the Olympic site and the host city have an on-going relationship with each other, providing a high level of integration.

This thesis has developed five key principles that have given the design and thesis a direction in which to address this serious issue of integration. These five principles were founded upon rigorous study of existing Olympic sites studies, site analysis of the Sydney Olympic Park and examination of case studies in other landscape architecture projects. These principles are wetlands, grid, extension, distribution and occupation. Only through following these five principles can we begin to change the way we think about post-Olympic sites and improve upon the small amount of integration they currently have.

Wetlands played an important part of the design, considering they are one of the three key concepts from the original design by George Hargreaves in the 1996 master-plan. A set of wetland typologies have been created to allow for a more universal approach to wetland integration to aid the post-Olympic integration with its host city. Creating five typologies has provided a simple method that enables further investigation that is not a part of this thesis’ scope.
The grid is a particularly important tool for integration and connectivity. It enables sites to become connected, not only with themselves but also within the city's context. Grids are seen all over the world (i.e. Manhattan, Christchurch), are large scale and provide simple orientation of streets. Using the grid, especially at Sydney Olympic Park, enhances an existing grid and allows merging with the surrounding suburban grid system in such a way that it creates one entire system.

Extensions provide an edge break, pushing the boundaries of both the Olympic Site and the surrounding into each other, disrupting the lack of integration. It draws on the axis of the current infrastructure system, specifically road infrastructure, and brings them further into the post-Olympic site, developing several typologies including pedestrian and vehicle based.

Distribution across the entire site ensures everywhere within the Olympic Site is accessible, providing a program for all users. Distribution of paths and network channels and an opportunity to dwell for long periods are important. These should be evident within the plan and should be reflected in the overall design.

Occupation is the most important underlying principle for an Olympic Park post-Olympics. Without users occupying the site, the Olympic site becomes a ghost town, such is the case for many of the Olympic Parks currently presented in their post-Olympic setting. The fringes are the most viable opportunity for development of occupied space, as are the centre areas, which provide the most active areas, similar to that of a normal suburb.

In order for the legacy of Olympic Parks to be upheld, these five principles are required to develop an integrated system that blurs the edge of post-Olympic Sites to create one cohesive system within the host city.

As a whole, this thesis has developed and refined an approach to designing post-Olympic sites that gives importance to integration and place. At a future stage of this investigation, it would be useful to test the principles created in this thesis against existing Olympic Parks.

The Olympic Games are ever-growing event with un-proportionally larger budgets, larger events and thus a larger influx of inhabitants. An increase in venue size has an universal affect on the ability of a venue to integrate once it is no longer required for its primary use. There is, thus, a growing need for integration. Following on from the five design principles, we can begin to create a catalyst by which Olympic Parks, and their post-Olympic reputation, can be re-programmed to create successful integration between and Olympic Park and the host city.
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<th>Common Name</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myrsinaceae</td>
<td>Aegiceras corniculatum</td>
<td>River Mangrove</td>
<td>7 M</td>
</tr>
<tr>
<td>Avicenniaceae</td>
<td>Avicennia marina australasica</td>
<td>Grey Mangrove</td>
<td>3 to 10 M</td>
</tr>
<tr>
<td>Junaceae</td>
<td>Juncus bufonius</td>
<td>Rush</td>
<td>0.7 M</td>
</tr>
<tr>
<td>Junaceae</td>
<td>Juncus pallidus</td>
<td>Pale Rush</td>
<td>0.8 M</td>
</tr>
<tr>
<td>Junaceae</td>
<td>Juncus usitatus</td>
<td>Common Rush</td>
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</tr>
<tr>
<td>Junaceae</td>
<td>Juncus planifolius</td>
<td>Broad-leaf rush</td>
<td>0.5 M</td>
</tr>
<tr>
<td>Junaceae</td>
<td>Juncus cooperi</td>
<td>Cooper’s rush</td>
<td>0.8 M</td>
</tr>
<tr>
<td>Family</td>
<td>Biological Name</td>
<td>Common Name</td>
<td>Height</td>
</tr>
<tr>
<td>-----------</td>
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<td>-----------------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Tier Three</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyperaceae</td>
<td><em>Cyperus difformis</em></td>
<td>Dirty Dora</td>
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</tr>
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<td>Cyperaceae</td>
<td><em>Eleocharis dulcis</em></td>
<td>Chinese Water Chestnut</td>
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<td>Cyperaceae</td>
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<td>Sedge</td>
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<tr>
<td>Cyperaceae</td>
<td><em>Carex fascicularis</em></td>
<td>Tassel Sedge</td>
<td>0.7 m</td>
</tr>
<tr>
<td><strong>Tier Four</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Poaceae</td>
<td><em>Phragmites australis</em></td>
<td>Native Reed</td>
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<tr>
<td>FAMILY</td>
<td>BIOLOGICAL NAME</td>
<td>COMMON NAME</td>
<td>HEIGHT</td>
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<td>--------------</td>
<td>-----------------</td>
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<tr>
<td>Typhaceae</td>
<td>Typha orientalis</td>
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<td>Typhaceae</td>
<td>Typha domingensis</td>
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<td>Juncaceae</td>
<td>Ficinia nodosa</td>
<td>Knobby Club-rush</td>
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