The Future of Greenways in Sydney

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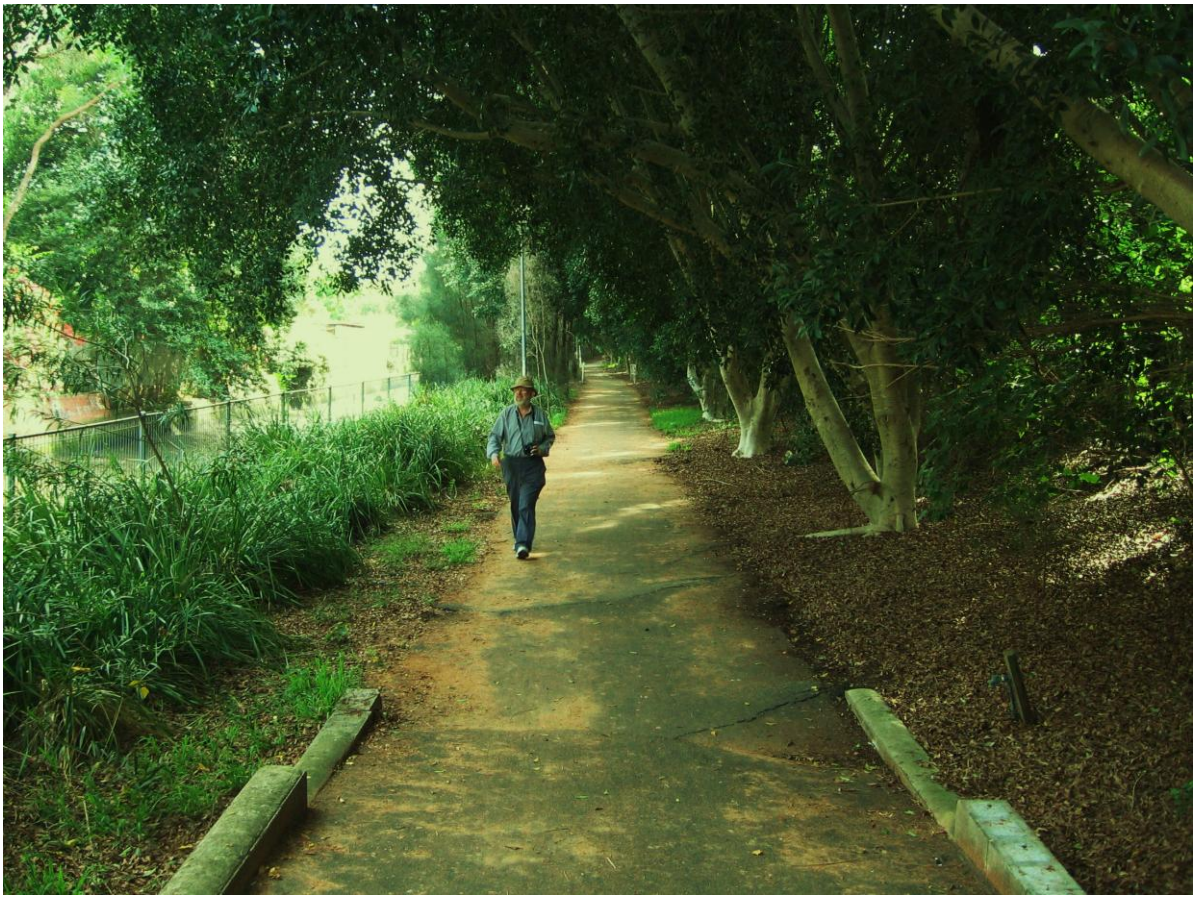

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Abstract

Greenways are a form of landscape planning. They are linear open space corridors in the built or natural environment, which preserve biodiversity or other aspects of a sustainable environment, and generally engage the community in recreational use. Concerns about sustainability have contributed to a high degree of advocacy of the benefits of greenways which have proliferated in Europe and North America. There is a dearth of research on the challenges in developing and implementing greenways in Australia where the greenway concept is still in its infancy. This thesis explores the opportunities for and challenges of greenway planning in Sydney. Factors likely to determine the extent to which greenways will gain momentum in Sydney include: ecological challenges; coordination across multi-jurisdictional boundaries; public involvement and attitudes of stakeholders; funding; physical barriers; and private property rights. A greenway is being established between the Cooks River and Iron Cove in Sydney which has been used as a case study to illustrate the issues surrounding greenway implementation. Finally, the existing planning framework and policies in relation to provision of greenways in Sydney is examined and recommendations made for future measures to facilitate the successful development and implementation of greenways.

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List of Acronyms

CR-IC GreenWay	Cooks River to Iron Cove GreenWay
DIPNR	Department of Infrastructure, Planning and Natural Resources of NSW (now Department of Planning)
GCSWG	Cooks River to Iron Cove GreenWay Coordination Strategy Working Group
IWEG	Inner West Environment Group
NGOs	Non-government organisations
NPWS	National Parks and Wildlife Service of NSW
NSW	New South Wales
NSW DoP	Department of Planning of NSW
MGP	Metropolitan Greenspace Program, NSW Department of Planning
RTA	Roads and Traffic Authority of NSW
USA	United States of America
USP	NSW Environmental Trust Making Sustainability Work Urban Sustainable Program

Chapter One: Introduction

Greenways could become a crucial feature in the urban fabric of cities. Linking the natural and built environments of neighbourhoods, these linear corridors aspire to provide biodiversity and achieve sustainability, whilst also offering a recreational space for a local community. They present a healthy opportunity for people to interact with nature in a car-free milieu. Although greenways are commonly found in Europe and the USA, the concept is still in its infancy in Australia. As the concept gains popularity in Sydney, issues and challenges for planning are likely to arise.

This first chapter summarises the purpose, scope and methodology of the thesis. A background to the problem and a summary of the theoretical foundation is provided in this section. This is followed by a problem statement which outlines the intent of the project and a discussion of the research objectives and methodology. The final component of the introduction is a summary of the structure and content of the thesis, providing a brief description of the content of each of the chapters.

Problem Setting

The concept of a 'greenway' has been frequently adverted to in landscape planning literature. Whilst there is a multiplicity of terms used to describe greenways and they come in many forms, their essential elements are similar. For the purposes of this thesis, greenways can be taken to have the following characteristics:

- they are corridors or strips of linear open space in the built or natural environment;
- they provide or preserve biodiversity or other aspects of a sustainable environment; and
- while they may be multipurpose, they generally engage the community in recreational use.

Many of the 'greenway' projects undertaken in Australia have been trails which meet some of the greenway criteria. Such criteria include ecological features and natural

catchments; integration of social and cultural spaces; and connection of humans and landscape (Friends of the Greenway 2009).

Few of these embryonic greenways in Australia have had an holistic, multi-disciplinary corridor and catchment-based approach and there has been a lack of strategic planning in provision of explicit ‘greenway’ projects. However, there have been some examples in Australia of greenway-type corridor projects where there has been an holistic approach, such as the Great Kai'mia Way and Green Ring in Sydney and the Merri Creek Trail in Melbourne.

By way of contrast, in parts of Europe and North America, greenways have had a longer history and have been developed to a more sophisticated level. However, greenway plans vary from country to country due to differences in landscapes, land uses, cultural values and legal/planning systems (Ahern 1995). A question arises as to whether existing greenway planning and implementation along the lines of Europe and North America is likely to be replicated in Sydney.

Whilst there has been widespread discussion in the literature about the economic, social, cultural and ecological advantages of greenways and a high degree of advocacy for the use of greenways, there has been very little research on the issues surrounding actual greenway implementation. In Sydney, numerous factors are likely to determine the extent to which greenways will become a prominent feature of the landscape. A number of challenges may arise in the implementation of greenways including: multi-jurisdictional boundaries, partnerships; public involvement; clear and shared visions and goals; physical barriers; funding; and a lack of adequate planning policy for provision of greenways.

Up to the present time, there has been little specific greenway planning for Sydney. This can be attributed to a number of factors, including the fact that the concept has not gained popularity and the absence of a strategic approach to planning of greenways. Whilst there has been some attempt to make provision for recreational trails, trails by definition are only the actual pathway that fits into the broader context of a greenway corridor. Thus, there has not been any significant action by way of

greenway planning to take into account ecological, social and cultural features or connecting humans with their landscape.

There is currently a specifically planned greenway between the Cooks River and Iron Cove Bay being established in the inner western suburbs of Sydney. The impetus for this project has come from a grass-roots or bottom-up approach. It aims to be a unique example in Australia of providing a coordinated and integrated approach to both the corridor and its adjoining catchment (Friends of the Greenway 2009). This project is used as a case study to explore concerns surrounding greenway implementation.

Theoretical Framework

This thesis is grounded in research relating to issues surrounding greenway development and implementation. It seeks to make a contribution to the small body of existing literature relating to the greenway concept in the Australian context and is based on a number of key concepts: collaboration theory; challenges with greenway implementation; and sustainability.

Collaboration Theory

The significant role of communities in the development of greenways has been widely discussed in the literature. Greenways have been acknowledged as often being a citizen-led movement (Little 1990). It is has been seen as necessary in multi-objective planning to include a range of stakeholders in the planning process (Little 1990; Ahern 1995; Searns 1995). Incorporating a diversity of interests from the commencement of a project establishes a foundation of cooperation, shared goals, rich expertise, stability and prevents polarisation (Rottle 2006).

Greenways have been described as one of the most successful community-level conservation strategies of the past two decades (Bryant 2006). Zube states that ‘partnerships are a way of life in greenways’ (1995, 23) and formal agreements for planning and technical assistance for interagency and intergovernmental coordination will become more the norm rather than the exception. Existing greenway plans are usually initiated at the local or regional level, as a result of

grassroots initiatives, and greenways tend to involve a broad and diverse constituency of support (Ahern 1995).

Challenges with Greenway implementation

There has been very little research which has examined barriers to greenway development and implementation. Erickson and Louisse (1997) evaluate seven metropolitan greenway systems in North America. They found that there are four key challenges to implementation of greenways: lack of coordination between government agencies and organisations; lack of regional governance over local greenway projects; financing of greenway projects; and public perceptions of greenways. Ryan et al (2006) undertook a similar study and found that there are four key strategies that are fundamental to multi-jurisdictional greenways: partnerships, clearly defined goals, public involvement and regional coordination. Rottle (2006) sets out a useful framework for factors in greenway success. This includes planning process factors (flexible 'greenlined' boundaries, broad-based collaboration, multi-faceted and overarching goals, plan based on natural and cultural landscape layers and value of professionals); organisation structure and cultural factors (skilled and committed leadership, broad-based collaborative coalition, effective structure, processes and culture and adequate resources); and implementation tools and strategies (visible stewardship move, link preservation and economics, maintenance of the working landscape and creative use of preservation tools and strategies).

Sustainability

Much of the impetus for the implementation of greenways arises from broader concerns about sustainability. In 1987 a United Nations committee addressed sustainability in the following terms: "a sustainable condition for this planet is one in which there is stability of both social and physical systems, achieved through meeting the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987). Whilst sustainability is a very general concept that is not easily implemented in practical work (Antrop 2005), in many ways it is multi-dimensional, comprising the maintenance of natural resources and spatial patterns of land use which have ecological, social and economic benefits (Leitao and Ahern 2002).

Greenways are seen by some stakeholders as part of the strategic 'battle' in the challenge for sustainable landscapes against the forces of landscape fragmentation, land degradation, urban expansion and uncontrolled land use change (Ahern 1995). Greenways promote sustainability by aiming to establish a lasting network capable of supporting basic ecological functions, conserving natural and cultural features and allowing other uses which do not adversely affect landscape sustainability (Ahern 1995).

Greenways are an attempt to address the environmental, economic and social principles of sustainability. Sustainable development necessitates that landscape change decisions take into account the *eco-physical* dimension, defined by geographical patterns and ecological processes; the *social* dimension, comprising the parameters of human perception, land use and physical and mental health; and the *economic* dimension, meaning the landscape's capacity to produce economical values (Termorshuizen et al 2007).

Problem Statement

This thesis explores the opportunities for and challenges of greenway planning in Sydney with particular emphasis on the extent to which the preconditions for greenway development are present and concerns surrounding the implementation of greenways. This exploration includes an examination of the extent to which the experience with existing greenways, including those in other countries, might be replicated in Sydney. There is an investigation of the existing planning policy framework in relation to the provision of greenways and recommendations are made for policy responses or changes.

In summary, the specific problem to be addressed in this thesis can be stated in the following terms:

Concerns about sustainability have contributed to a high degree of advocacy of the benefits of greenways, particularly in Europe and North America. However, there is a dearth of research on the challenges in developing and implementing greenways in Australia where the greenway concept is still in its early stages.

The aim of the thesis is to research the following key questions, which are designed to address this specific problem statement:

- Define the concept of a greenway and discuss what forms it takes and its development internationally and in Australia;
- Assess the benefits, considerations of criticisms and challenges involved in greenway visioning, planning and implementation;
- Undertake an intensive study of the Cooks River to Iron Cove Bay Greenway in Sydney to illustrate issues with greenway development and implementation;
- Investigate factors that might affect broader greenway implementation in Sydney; and
- Provide recommendations for improvement of greenway planning in Sydney.

Research Methodology

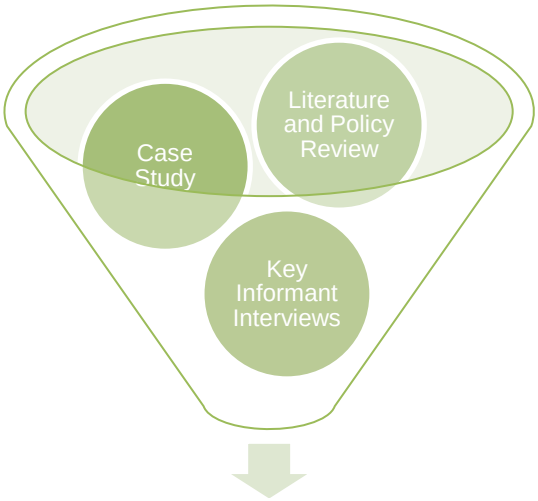
The methodology for this research utilises a range of techniques, including a local case study and a qualitative component, namely key informant interviews. There is an extensive discourse analysis of existing literature available in relation to greenways. The local case study and qualitative component have been used to supplement and highlight various aspects of the matters arising from the literature in the Sydney context and to provide additional information (refer to **Figure 1-1** for Methodology Map). It should be noted that although many of the matters discussed in this thesis could apply anywhere, the focus is on the Sydney Metropolitan Area.

Literature and Policy Review

The documentary basis of this thesis is the historical and current literature, relevant policy documents and legislation available in relation to greenways. This establishes an overall theoretical context for greenways and their relevance in the Sydney context. The literature review comprised a review of international and Australian books, journals and websites. The literature review revealed that there has been little academic discussion of greenways in Australia. The majority of greenway literature is North American and European. Much of the existing research on greenways focuses on the rise of the movement, their benefits and usage, with relatively little

research being directed at the associated concerns with greenway development and implementation. The focus of the thesis is on issues and recommendations for facilitating related to greenway development and implementation in Sydney.

Figure 1-1 Methodology Map



Source: Author

Case Study

The proposed Iron Cove to Cooks River Greenway ("CR-IC GreenWay") is examined in detail to illustrate issues with greenway development and implementation in Sydney. The data sources for this case study include:

- Observations, attending community consultation meeting, site visits and landscape surveys of the proposed greenway;
- A review of key literature and planning documents including the principal Master plan & Coordination Strategy;
- Newspaper articles from the *Sydney Morning Herald*, *Inner West Weekly*, *Inner West Courier* and *EcoTransit News*; and
- Informal discussions with representatives of the stakeholders involved in the project, including Leichhardt Council, Marrickville Council, Canterbury Council, various environmental groups, EcoTransit, Sydney Water and Railcorp.

Key Informant Interviews

Qualitative methods complemented the discourse analysis and case study and to provide a wider contextual setting. Interviews were conducted with a Transport and Environmental planner from Marrickville Council, a Greenway Sustainability Officer from Ashfield Council, the Director of Open Space and Regional Lands at the NSW DoP and an active community participant in the CR-IC GreenWay.

As described by Marshall and Rossman (1995), in-depth interviews are a very useful method for obtaining large amounts of qualitative data quickly, especially when key-informant interviewees, such as those in the current study, are selected based on their relevant areas of expertise.

Research Limitations

The following limitations need to be considered when reading this thesis:

- The scope of this thesis does not allow for a comprehensive study of all greenways in New South Wales, and for this reason, the focus of the research is generally on the Sydney Metropolitan Area.
- The study does not focus on a specific factor of greenways, for example financing or social implications, nor does it take a temporal approach.
- The study does not include any quantitative analysis of greenways in Sydney.

These are essentially limitations arising from the topic of the thesis and the associated constraint as to the extent and type of research that could be undertaken.

Thesis Structure

This thesis comprises six chapters, commencing with the greenway concept in its theory, proceeding to an analysis of greenway planning factors and a case study of a greenway in Sydney, and concluding with recommendations to facilitate future greenway planning.

Chapter One: Introduction

This component of the thesis has summarised the purpose, scope, methodology and structure of the project. A background to the problem and a summary of the theoretical foundation has been provided. The problem statement has outlined the intent of the project and the parameters for research objectives and methodology.

Chapter Two: The Evolution of Greenways

This first substantive chapter identifies and demonstrates the significance of greenways as a form of landscape planning t. An outline of the various definitions for greenways and their associated typologies is provided. A summary of the evolution of the greenway concept internationally and in Australia is included. There is also a discussion of the connection of greenways with the broader concepts of sustainability, landscape planning and urban greening.

Chapter Three: Factors Affecting Greenway Planning

This chapter investigates the factors affecting greenway planning. There is a summary of the benefits of greenways. Criticisms of the impact of greenways are also discussed. The chapter also covers the challenges of greenway development including public involvement, attitudes of stakeholders, multiple jurisdictions, funding, physical barriers, private property rights and public acquisition of land.

Chapter Four: Cooks River to Iron Cove GreenWay

This chapter turns to the case study, the proposed CR-IC GreenWay. This corridor is located in Sydney's inner west. This case study is used to illustrate some of the important challenges in developing a greenway within Sydney. Such difficulties include ecological issues, the effect on vision of light rail, managing multiple jurisdictions and funding. The key informant interviews comprising representatives from the state government, local government and the community provide a further illumination of these difficulties.

Chapter Five: Key Ingredients and Recommendations for Greenway Planning

The challenges surrounding greenway development and implementation must be addressed as existing local, sub-regional and metropolitan greenway planning is

insufficient. This chapter details the key ingredients and recommendations to improve greenway planning in Sydney. Such recommendations include integrating greenway opportunities into planning policy and legislation, undertaking explicit greenway plan-making, and improving the management of greenway planning through greenway coordinating bodies. The need for adequate funding, collaborative partnerships, public involvement and support is also addressed.

Chapter Six: Conclusion

This final chapter gives an overview of the research background, findings and recommendations of the previous five chapters. To ensure that the original aims of the thesis have been comprehensively addressed, particular reference is made to the problem statement and research objectives provided in Chapter One. Suggestions for future research are also identified.

Chapter Two: The Evolution of Greenways

This chapter identifies and demonstrates the evolution of the greenway movement and its significance. The chapter begins by defining the term ‘greenway’ and its many uses and by giving an overview of the various typologies of greenways. There is also a discussion of the history of the greenway movement internationally and in Australia. This is followed by an analysis of how the greenway concept fits into and has been promoted by the interrelated objectives of sustainability, landscape planning as well as urban greening.

Greenway Definitions, Terms and Typology

The term, ‘greenway’, is a relatively new word and was formed by joining the word ‘greenbelt’ to the word ‘parkway’. It embraces a wide range of concepts drawn from the history of linked open space (Turner 1998). There has also been usage of a number of other terms including ‘regional recreational trail’, ‘environmental corridor’, ‘ecological network’ and ‘landscape linkage’ to refer to greenway-like projects. **Table 2-1** sets out the multitude of greenway phrases, geographical usage, function, scale and spatial basis.

A myriad of greenway definitions have been offered in the landscape planning literature, but an exact description is elusive, partly because greenways take so many forms (Searns 1995). They come in many lengths, shapes and sizes (Searns 1995). Greenways may also have a variety of functions which are not necessarily present in every greenway. They may be recreation oriented, conserve biodiversity, buffer development or focus on culture heritage and history (Searns 1995).

Table 2-1 Ecological Network and Greenway Terms

Term	**Term Usage**	**Function** *Biotic Cultural Multi-functional*	**Scale** *Continental National Regional Local*	**Primary Spatial Basis** *Physical Biological Cultural*	**References**	**Examples**
Ecological networks	Europe	B	C, N, R, L	B	Physical Plan, Province of North Brabant, Netherlands	Arakawa River Ecological Network
Habitat networks	Europe America	B	N, R, L	B	Noss and Harris, 1986	Essex County
Ecological Infrastructure	Europe	B	C, N, R, L	B	Netherlands Nature Policy Plan, 1990	Gelderland, Netherlands
Greenways	America	B, C, M	R, L	P, C	Charles Little, 1990 Smith and Hellmund, 1993	Cherry Creek Greenway, Denver
Wildlife Corridors	America	B	R, L	B	Smith and Hellmund, 1993	Quabbin to Wachusett
Riparian Buffers	Europe America	B, M	R, L	P	Binford & Buchenau, 1993	Fitzroy Basin, QLD
Ecological Corridors	America	B	R, L	P	Phil Lewis, 1964	Puerto Rico
Environmental Corridors	America	M	R, L	P	Phil Lewis, 1964	Wisconsin, USA
Greenbelts	Europe America	C	R, L	C		London, England Ottawa, Canada
Landscape Linkages	America	B	R, L	B	Harris and Gallagher 1989	Florida
Regional Recreational Trails	Australia	M	R, L	P	Sydney Metropolitan Area Regional Recreational Trails Framework 2005	Cooks River to Georges River Trail

Source: Author based on Ahern 1995

Despite the difficulties created by the possible breadth of the concept, a number of writers have set out some useful definitions of greenways. Charles Little in *Greenways for America* (1990) defines a greenway comprehensively, although somewhat verbosely, as follows:

> "linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridgeline, or overland along a railroad right-of-way converted to recreational use, a canal, scenic road, or other route, any natural or landscaped course for pedestrian or bicycle passage, an open-space connector linking parks, nature reserves, cultural features, or historic sites with each other and with populated areas and locally, certain strip or linear parks designated as parkway or greenbelt".

Ahern (1995) asserts that greenways have multiple purposes compatible with the concept of sustainable land use. Turner claims that greenways are routes which are positive from an environmental perspective, with 'green' meaning green politics and 'way' interpreted in its ancient sense, to mean 'a route' (Turner 1996; 2006).

A legislative attempt to define a greenway is found in the South Australian Recreational Greenways Act (section 3a) as follows:

> "land set aside as a trail for recreational walking, cycling, horse riding, skating or other similar purpose and includes—
>
> (i) land established as a camping ground; and
>
> (ii) land on which a hut, hostel or other facility is established, for use in conjunction with such a trail";

The definition of greenway used for the purposes of this thesis adapts the above definitions and is based on greenways having the following characteristics:

- They are corridors or strips of linear open space in the built or natural environment;

- They provide or preserve biodiversity or other aspects of a sustainable environment; and
- While they may be multipurpose, they generally engage the community in recreational use.

However, it must be recognised that greenway systems are often multi-purpose corridors providing several functions and benefits (Fabos 1995). Greenways can be classified as having different typologies depending on which functions or benefits are most prominent. These include greenways that are primarily of recreational, ecological and historical, heritage or cultural value.

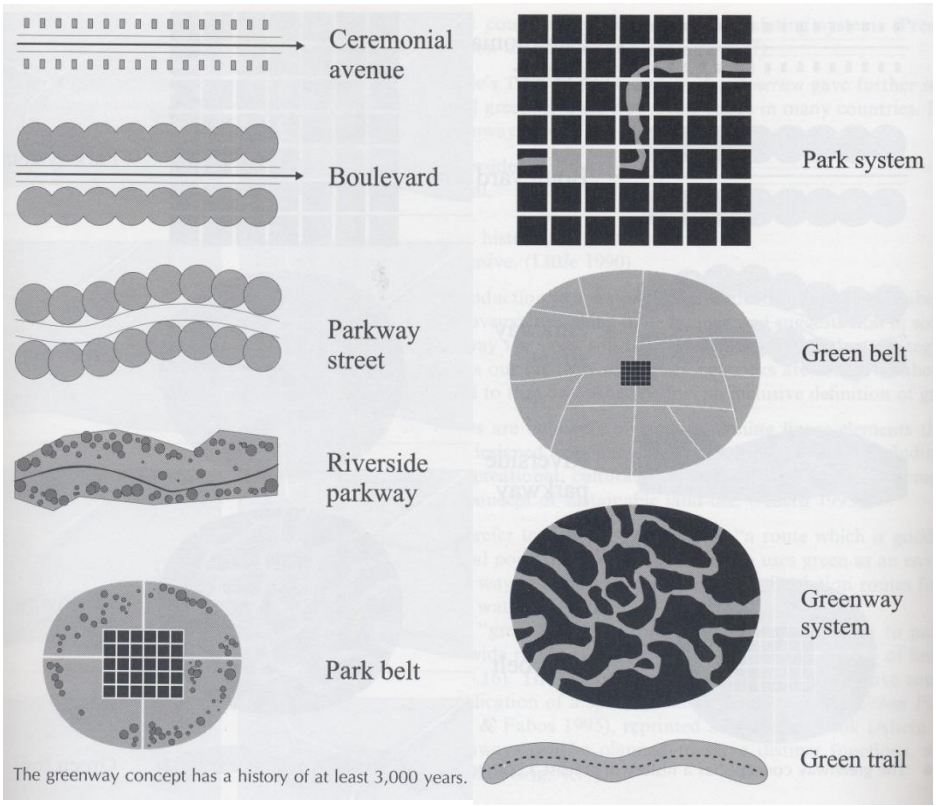
Recreational greenways feature paths and trails of various kinds, often of relatively long distances, based on natural corridors as well as canals, abandoned rail beds and other public rights-of-ways (Little 1990). Trails and routes often have scenic quality as they pass through diverse and visually significant landscapes. Gobster (1995) emphasises that many successful recreational greenways and green spaces occur where networks of trails link with water-based recreational sites and areas. Ecological greenways are significant natural corridors and open spaces, usually along rivers and streams and ridgelines, which provide for wildlife migration and biodiversity, nature study, and appropriate nature studies (Hellmund and Smith 2006). Cultural or historic greenways are places or trails with historic heritage or cultural value which may attract tourists and can provide educational, scenic, recreational, and economic benefit (Bischoff 1995).

History of Greenways Internationally

According to Turner (1998, 138), “the greenway idea is old and rich” and goes back at least 3000 years when in the ancient world of Babylon and Egypt, avenues were made for religious processions, military parades, coronations and burials (Turner 1998). Avenues were also used in Imperial Rome and in Renaissance towns and gardens and became distinguishing features of baroque cities in Europe. Avenues were used as carriage routes in towns and for dramatic effect in baroque gardens.

Early concepts of greenways were ceremonial avenues which developed into boulevards which were often tree-lined (see **Figure 2-1** for Turner's depiction of this evolution).

Figure 2-1 Evolution of the Greenway Concept



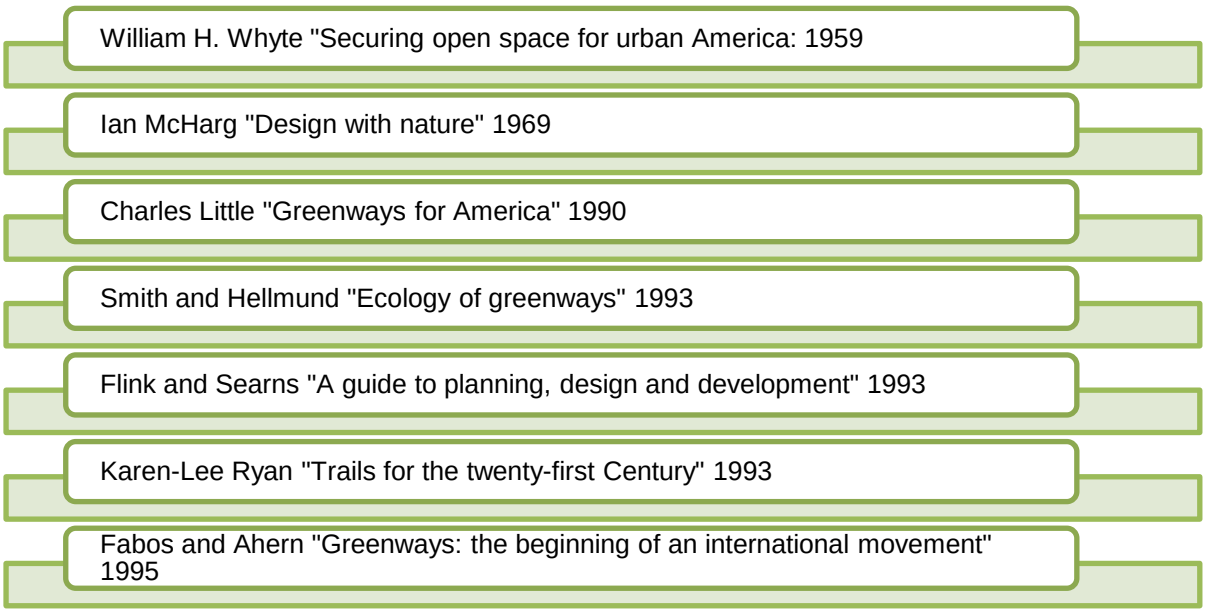
Source: Turner 1998

The more contemporary history of greenways is focused on developments in North America and Europe. During the late nineteenth century, greenway planning was furthered by landscape and city architects, especially Frederick Law Olmsted and Charles Eliot in the USA and Ebenezer Howard in the UK. The development of greenways was particularly prolific in the USA, as a reaction to the occurrence of 'runaway urbanisation' (European Greenways Association 2000). Olmsted's two sons (John and Frederick Jr) and Charles Eliot II were part of a second generation of landscape planners who continued greenway planning (Fabos 1995).

Subsequently Phillip Lewis coined the term 'environmental corridors' and this was used to plan a major state wide greenway/greenspace system with a focus on protecting environmentally sensitive areas or river corridors (Fabos 1995).

Texts influential on the greenway movement in the last fifty years are illustrated in **Figure 2-2.** William H. Whyte introduced the greenway concept to a large audience and advanced the term. The term 'greenway' was first used by Whyte in his 1959 monograph *Securing Open Space for Urban America* in a discussion of the work of Edmund Bacon, who prepared a greenway plan for an undeveloped, semi-rural area of northwest Philadelphia (Little 1990). The landscape architect Ian McHarg emphasised the ecological value of greenways in his book *Design with Nature* (1969) (Little 1990). The publication of Little's *Greenways for America* in 1990 documented the history of the greenway movement and encouraged its development in its current form.

Figure 2-2 Texts Influential on the Greenway Movement



Source: Author

Fabos is one of the most prolific and contemporary writers about the development of greenways. The greenway concept may be said to have come of age with the publication of a special issue of *Landscape and Urban Planning* in 1995 (Ahern and Fabos 1995), reprinted as a book. In 1995, Fabos saw the greenway movement as being in its infancy and suggested that, in the future, greenways "will be as evident on national, state, regional and local maps as our highway or railway networks are today" (Fabos 1995, 4).

The development of greenways was assisted in the USA by amendments to federal transportation legislation during the early 1990s, which provided monetary sources for greenway projects and lead to a significant increase in the number of greenway projects that could be undertaken (Bruce Ashley Environmental Consulting 1997; Bryant 2006). A large proportion of these projects would not have been carried out without Federal support (Bruce Ashley Environmental Consulting 1997).

The formation of a number of associations around the world who are involved in the advocacy of greenway and trail projects has also aided the rise of the greenway movement. Examples include Rails-to-Trails in the USA, Chemins du Rail in Belgium and Sustrans in the UK (European Greenways Association 2000).

In Europe, there is now a comprehensive plan for greenways, developed by a body called the European Greenways Association. A 'European Greenways Good Practice Guide' was prepared in 2000, providing inspiration for actions which should be taken for the successful launch and development of greenway projects (European Greenways Association 2000). As a result of the formation of this association, a number of greenway organisations have been established in European countries in the last decade (Friends of the Greenway 2009).

Greenway plans vary from country to country due to differences in landscapes, land uses, cultural values and legal/planning systems (Ahern 1995, 133). It is only very recently that the notion of a transnational greenway network in Europe has begun to embed itself within the minds of public authorities (European Greenways Association 2000).

History of Greenways in Australia

Greenways have not been a common feature of the Australian landscape. Nevertheless, in recent years the development of greenways has begun to take place in Australia. According to Mugavin (2004), the first greenway established in Australia was the River Torrens Linear Park in Adelaide. Adelaide has been hailed as a 'greenway city' due to the fact that it has at least ten riverina greenway schemes in the metropolitan area (Mugavin 2004). The River Torrens Linear Park,

implemented between 1982 and 1998, was seen as a multi-objective greenway as it provided for recreation and refuge (see **Figure 2-3**) but also placed emphasis on matters such as habitat conservation, improvement of water quality, mitigation of flood flows resulting from urbanisation, conservation of heritage and other cultural aspects, education and interpretation. Public consultation was a major part of the development of this greenway. Mugavin (2004) asserts that this greenway has functioned as a prototype (in its form and objectives) for other similar schemes in Australia, including greenways in small country towns such as Horsham, Victoria and cities such as Perth (Mugavin 2004).

Figure 2-3 River Torrens Linear Park

Source: Mugavin 2004

According to Friends of the Greenway (2009), many greenway-like projects undertaken in Australia have been 'trails' which have partially met some of the urban greenway criteria. However, very few of these trails have had an integrated and comprehensive corridor and catchment-based approach. Friends of the Greenway (2009) suggest that the first trail project in Australia to name itself as a 'greenway' was Greenway 1, a four kilometre community cycleway built over and alongside the former Toronto to Fassifern railway on the Central Coast of NSW. Bruce Ashley

Environmental Consulting (1997) maintains that Federal funding support for this greenway has played a significant role in the realisation of the project. There have been some examples in Australia of green corridor projects where there has been an holistic direction, such as the Great Kai'mia Way, along the Georges River in Sydney and the Merri Creek Trail in Melbourne (Friends of the Greenway 2009).

In the Sydney Metropolitan Area, there are a number of regional recreational trails, as mapped out by the NSW DoP. A Regional Recreational Trail is defined as "a corridor, trail, track or pathway used for recreational walking, cycling or horse riding that passes through or connects landscapes, facilities or sites of metropolitan regional significance" (DIPNR 2005, 11). The characteristics of such trails attract use from a wide region and cross local government boundaries. They occur mainly within open space corridors. They are publicised by the NSW DoP as having a high quality and range of amenities, unique values, and connections with regional public transport interchanges (NSW DoP 2005).

Distinctive categories of regional trails have emerged from the survey information received from Councils, NPWS, RTA and the Department of Lands and are included in the Regional Recreational Trails Framework (see **Table 2-2**). A wide range of such trails exist within the Sydney Metropolitan Area. Examples include Powell's Creek at Homebush and Alexandra Canal, within Sydney's inner city suburbs. There may be scope for some of these trails to be developed into fully fledged greenways which have as part of their vision the active promotion of environmental concerns.

Table 2-2 Categories of Regional Trails

Term	**Definition**	**Functions** *Biotic Cultural Multi-functional*	**Primary Spatial Basis** *Physical Biological Cultural*	**Examples**
Foreshore trails	Along rivers, creeks and coastline	B, C, M	B	Waverley Cliff Top Walk; Great River Walk
Foreshore promenades	Pedestrian walkway by the water	M	P, B	Bay Run Cycleway (Canada Bay)
Urban trails	Where trails through parklands are not available	B, C, M	P, C, B	Alexandria Canal and Hawthorne Canal
Nature trails	Less formal nature trails, generally walking only	B, C, M	B, C	Royal National Park Coastal Track
Rail trails	Adjacent to existing or on disused rail corridors	C, M	P	Liverpool to Parramatta Rail Trail
Tourist trails/hikes	Various types from major tourist attractions	B, C, M	C, B	Circular Quay to Mrs Macquarie's Chair; major state trails and overnight hikes such as the Great North Walk and Bicentennial Trail
Special use trails	Trails for other uses	B, C, M	P, C, B	Horse riding, mountain bike etc

Source: Author based on DIPNR 2005

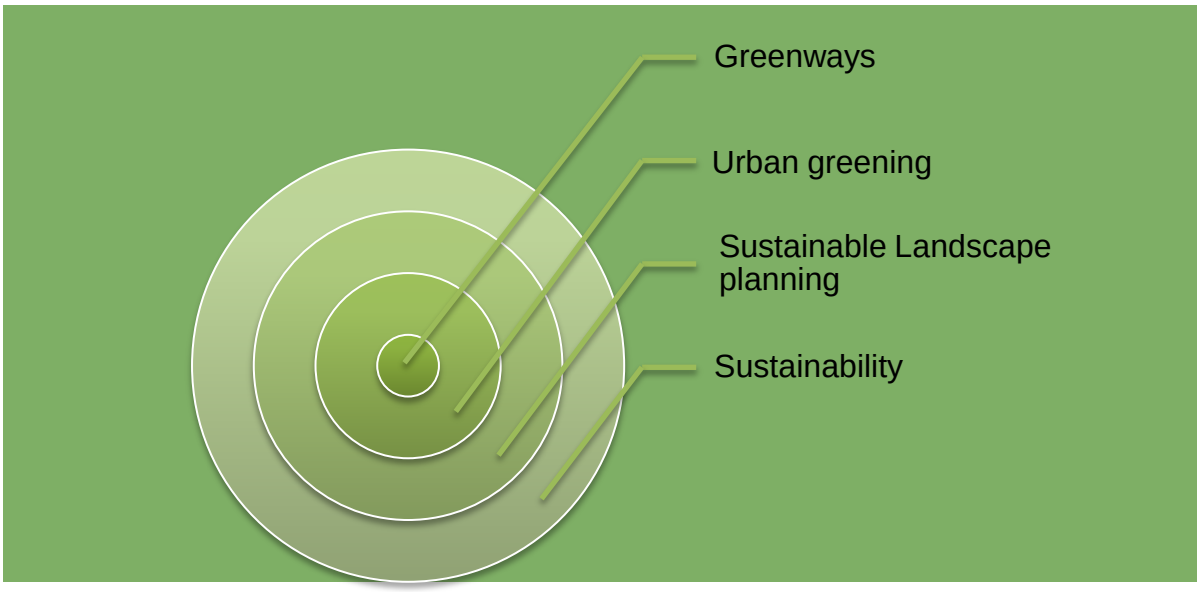
Sustainability, Landscape Planning and Urban Greening

The European Greenways Association (2000) attributes a number of reasons to the rise of the greenway movement in Europe and North America. The oil crises, environmental and anti-car movements in the 1970s and 1980s led to public authorities becoming more aware of the limits of energy reserves and creating bicycle lanes. Such social movements have resulted in an increased interest in open-air leisure activities, a growing concern among the greater population of the importance of linking heritage to communication routes and the importance of public involvement. More recently, there has been a critical importance placed on conserving the environment and developing sustainable policies.

Much of the impetus for the implementation of greenways arises from concerns about sustainability. In particular, greenways are seen by some stakeholders as part

of the strategic ‘battle’ in the challenge for sustainable landscapes, against the forces of landscape fragmentation, land degradation, urban expansion and uncontrolled land use change (Ahern 1995). Greenways promote sustainability by aiming to establish a lasting network capable of supporting basic ecological functions, conserving natural and cultural features and allowing other uses which do not adversely affect landscape sustainability (Ahern 1995). The relationship of greenways with the broader concepts of sustainability, sustainable landscape planning and urban greening discussed in this section can be seen in **Figure 2-4**.

Figure 2-4 Relationship of Greenways with Broader Concepts



Source: Author

Greenways are a form of landscape planning. Landscape planning is a discipline that is concerned with the interrelations of problems created by nature, man-made use of land and the consequential changes in the landscape (Spirn 1984). Sustainable landscape planning has emerged as a reflection of the planning discipline in the 21st century where new social values such as sustainability are increasingly being recognised and becoming a part of planning methods and legislation (Leitao and Ahern 2002). There is a need for landscape planners to take a leadership role in planning and coordinating large scale greenway networks that promote sustainability.

A manifestation of the way in which greenways aim to fulfil sustainability objectives through landscape planning is urban greening. Growing greener cities involves the "promotion of activities that employ, recognise or conserve nature in its many helpful forms to sustain urban life while limiting or reducing its depletion" (Birch and Wachter 2008, 1). Urban greening of brownfield sites, particularly converting such spaces into pedestrian greenways has gained recent prominence. Recent examples have been developed in Paris, Rotterdam, St Louis and Chicago (Birch and Wachter 2008).

An example of an urban greening project is New York City's High Line, 2.3 kilometre linear corridor located 30 feet above ground level on the long-defunct railway freight line in Manhattan's industrial district (High Line 2009). (**Figure 2-5** illustrates a photo montage of the completed High Line project.)

Figure 2-5 New York's High Line

Source: High Line 2009

Thus, urban greening has come to the forefront of the landscape planning discipline as cities across the world attempt to design green sustainable solutions in post-industrial urban environments. This is not to say that urban greening in general and greenways in particular have no role in newly developed parts of a city.

Summary

It is difficult to provide a concise and precise definition for greenways because they offer multiple and varied uses. Nevertheless, a working definition for this thesis is that a greenway is a linear open space corridor in the built or natural environment, which provides or preserves biodiversity or other aspects of a sustainable environment and generally engages the community in recreational use. This chapter has provided commentary on the evolution of greenways both in Australia and overseas. Whilst greenway-like projects exist within Australia, they are presently nowhere near as widespread as in Europe and the USA. There are a number of reasons relating to sustainability for the evolution of greenways. Greenways are an opportunity for urban greening in cities and provide a useful tool to landscape plan a sustainable corridor. While greenways can provide significant benefits in terms of sustainability, they can also enhance the landscape ecologically, economically and socially. These benefits and challenges which must be considered in the development and implementation of greenways are discussed in Chapter 3.

Chapter Three: Factors Affecting Greenway Planning

This chapter explores the factors affecting greenway planning. The chapter begins by discussing the advantages of greenways including their environmental, social and economic benefits. There is also a consideration of some of the criticisms that have been made of greenways, particularly in relation to ecological and equity issues. Finally, the challenges that arise in relation to greenway development and implementation are discussed. These challenges include public and stakeholder involvement, multiple jurisdictions, funding, physical barriers, public acquisition of land and private property rights (refer **Figure 3-1**).

Figure 3-1 Factors Affecting Greenway Planning

Source: Author

Benefits of Greenways

The literature has overwhelmingly emphasised the environmental, social and economic benefits provided by greenways. At the very least, such corridors generally provide the opportunity to escape the urban environment, which people can utilise free from noise, pollution, danger or other adverse effects (Groome 1990).

There are more diverse environmental benefits of greenways. Landscape connectivity is “a measure of how connected or spatially continuous a corridor, network or matrix is” (Forman 1995, 38) whilst fragmentation is “the breaking up of a habitat, ecosystem or land-use type into smaller parcels” (Forman 1995, 39). Greenways have the potential to overcome landscape fragmentation through their emphasis on connectivity and integration (Ahern 1995; Bryant 2006). Greenways can provide a habitat for wildlife movement, enhance survival prospects for species and create a ‘landscape synergy’ by connecting ecological, recreational and cultural resources (Zube 1995; Ahern 1995).

The NSW DoP (2004) states that the mere presence of formal paths reduces erosion by obviating informal paths. Moreover, greenways can actively enhance the environments by including environmental remediation works when constructed. This could include drainage works and tree planting to prevent erosion. Greenways can act as buffers between disturbances and riparian corridors (Ahern 1995). Such buffering for riparian corridors can filter sediments, control erosion and regulate water temperature (Peterjohn and Correll 1984; Binford and Buchenau 1993). Patch edge buffering protects patches of interior habitats such as forests, particularly from domestic animals and non-native plant species (Ahern 1995). Corridors can facilitate foraging movements, seasonal migrations, dispersal, and recolonisation (Environmental Law Institute 2003). When greenways act as green belts, they control development, enhance and protect scenery (Smith 1993) and they may reduce or disperse air pollution (Hough 1984).

Greenways can also facilitate nature education and raise awareness of the natural and built environment. Bryant (2006, 30) says that “greenways that are comprised of remnant natural areas and intact natural systems (as opposed to those that are

exclusively bike paths) can bring city dwellers into contact with nature". He also promotes the notion that greenways can enhance cultural resources by linking them to form a network that maximises interpretive and or recreational value (Bryant 2006).

There has also been wide reference to the social benefits of greenways. These corridors can influence greater social interaction within and between neighbourhoods, as well as providing a shared identity and sense of place for residents in the local neighbourhood (Bischoff 1995). The NSW DoP (2004) argues that trails can become important community meeting places.

Such environmental corridors can provide a wide range of recreational facilities and the opportunity to use non-motorised transport which has health benefits. By improving the cycling and walking environment, greenways provide the opportunity to improve health through increased exercise (Turner 1987; Coutts 2009). Furthermore, greenways may provide important psychological benefits (von Haaren and Reich 2006) by allowing people to escape the stresses of the urban environment and interact with nature. These corridors, allowing for active transport routes to access shops, schools and open space, may also offer safer alternatives to crossing at busy roads (Groome 1990).

There has not been a great deal of detailed research into the economic effects of greenways. However, there has been some advocacy by greenway community groups of the economic benefits of greenways. Viles and Rosier (2001) suggest that greenways provide monetary benefits through increased property values (in and adjoining corridors), development of tourism and the creation of employment and commercial opportunities. However, Lindsey et al (2004) contend that not all greenways have positive impacts on property values. Whilst greenways do not usually have adverse economic impacts on property values, it should be noted that greenways are not homogenous and should not be assumed to have the same effects in all locations (Lindsey et al 2004).

Consideration of Criticisms

There is relatively little criticism of greenways in the literature. Some of the criticism that does exist appears to be directed at particular greenway projects rather than the greenway concept. For example, whilst a proponent of greenways, Turner (1998, 151) argues that "planners need to shake themselves free of the idea that a strip of green joining two points on a map is, of necessity, a good thing. Too often, they become bland strips of grass, which one can walk along, but which, because they do not lead from an origin to a destination and do not have any other significant attractions, are not greenways."

There has been criticism of the greenway concept by conservationists. It has been suggested that attention to greenways may shift concern away from other conservation priorities (Bryant 2006) and that limited resources should be devoted to protecting existing large patches of habitat rather than creating corridors (Bryant 2006). These criticisms focus on the practical problem of limited funding or resources, which is discussed below.

Daniels (1988) argues that biological or wildlife corridors are not necessarily needed for ecological reasons. However, some ecological criticism goes further to focus on the extent of the potential for spreading invasive species, diseases or fire into protected areas (Viles and Rosier 2001). Ahern (1995) argues that greenways do not enjoy universal acceptance among planners or ecologists due to their complex ecological problems. He says that "strategies which advocate restoring and protecting connectivity may be a license for land use changes which lead to further landscape fragmentation" (Ahern 1995, 137).

The question as to whether corridors actually result in the spread of invasive species largely depends on the type of species, its dispersal capabilities and movement patterns across the landscape (Saunders et al 1991, quoted in Environmental Law Institute 2003). Many species can disperse across the landscape without corridors. For example, most insects disperse in random directions and there is little evidence that the intended species will use the corridors (Daniels 1988). However, in many

cases, corridors are not comprised of uniform vegetation types. This may facilitate the spread of invasive species into protected areas (Daniels 1988).

These criticisms suggest that a careful appraisal must be made of the ecological consequences of any greenway project before embarking on it. Whilst greenways may be beneficial, their landscape context should be understood to determine if the link is desirable or necessary (Ahern 1995). Further, thought must be given to the benefits and risks associated with greenways and, in particular, if there is any likelihood that the greenway will introduce disease, fire, invasive species or undesirable predators (Environmental Law Institute 2003).

Some writers have referred to the ideal of greenways being egalitarian and democratic. It is said that they are egalitarian in that they, at least in theory, offer important benefits to all citizens, regardless of wealth, power, or social standing. It is said they are democratic in that they both depend on and further strengthen traditions of civic participation and collective decision making (Hellmund and Smith 2006, 179).

However, there has also been criticism of greenways on equity grounds. This criticism essentially suggests that the funding of greenways, in practice, benefits those persons in the community higher up in the socio-economic scale. It is argued that those people live in areas that already have open space, which is more amenable to greenway development, and are in a better position to lobby for such development. Indeed research in the USA has found that greenway users are wealthy, well-educated, middle class white people with preferences for being involved in an environmental group or participant of active, trail-related recreation (Furusesth and Altman 1994; Lindsey et al 2001). This led one of the researchers to conclude that whilst greenways have the ability to intersect and connect diverse neighbourhoods, they “represent a new type of public space that is both rich with possibility and potentially problematic” (Lindsey et al 2001, 332). Furuseth and Altman (1994, 336) state that “greenways do not serve the entire community, but neighborhoods” and that “planning and development of new greenways should be pursued with this in mind.”

Such research provides a reality check on the more utopian view of greenways such as that of the President's Commission on Americans Outdoors (1987) which opined that greenways can draw people together and provides open spaces for all close to their homes. However, this does not mean that the greenway concept is flawed. Rather it means that greenways must be implemented in an equitable way so that they are available and accessible to all, irrespective of socio-economic class or neighbourhood.

Challenges to Greenway Development

Involvement of Public and Stakeholders

The role of communities is a significant factor in the development of greenways. According to Bryant (2006), greenways are one of the most successful community-level conservation strategies of the past two decades. Public involvement is generally beneficial to the implementation of greenways. Greenway projects that encompass public involvement have a greater possibility of being implemented than those that do not (Ryder 1995). Due to the fact that many greenway projects are instigated and implemented at the local level, the public has become a key stakeholder in the greenway collaboration process. The general public have their own version of local knowledge or expertise that can help ensure that policies proposed in plans reflect local conditions and values (Kaplan et al 1998; Burby 2003). By involving these stakeholders, planners can also assist the public's understanding of planning issues.

Thus Luymes and Tamminga (1995) suggest that planning models should include 'top-down' (politically or agency driven) and 'bottom up' (citizen driven) support as necessary ingredients in the process. Ahern (1995) argues that a multipurpose greenway planning approach requires that the planning process be multidisciplinary, inclusionary and with a high level of public involvement. As a result of grassroots initiatives, greenways tend to involve a broad and diverse constituency of support (Ahern 1995). Some of the literature has also referred to the important role non-government organisations ("NGOs") play in greenway development. They provide

esoteric knowledge and may act as mediators between expert and lay discourses (Bryant 2006).

The involvement of the public and the support of NGOs should be undertaken in the conceptual planning, physical design and long-term care and monitoring of greenway systems. User input upfront can help alleviate the need to fix ill-conceived designs or management policies (Ryan et al 2004). Public participation in the planning process is essential to successful planning and people are more likely to accept a project when they have had a voice in the decision-making (Decker and Chase 1997, quoted in Leitao and Ahern 2002).

However, it must be remembered that stakeholder groups associated with greenways are not homogenous. They may have axes to grind on subjects ranging from design of the trail's tread to wildlife habitat or user safety. Often a strong or dominant stakeholder group drives the planning process and the resulting changes reflect their values (Shafer et al 2000).

The concept of a greenway needs a broad support from a range of stakeholders to be successfully implemented. The building of a constituency is the most important process in the implementation of public ideas. This constituency must be at all levels: citizens, decision makers, policy writers and the media (Quayle 1995). The importance of community connections cannot be over stressed. Thus, Gobster and Westphal (2004) argue that the key factors in plan implementation include recognition all the stakeholder groups, potential sites, areas of interest and an attempt to understand these groups through a coordinated set of investigations.

Greenways which traverse multiple jurisdictions are also more likely to be implemented if a diversity of stakeholders are brought to the table and are brought into the greenway planning process. Working with the media to build public and political support may also be necessary (Rottle 2006).

Multiple Jurisdictions

The very nature of greenways following natural landscape features, being linear and their length means that implementation of a greenway project usually means they

cross multiple jurisdictional boundaries (Hoover and Shannon 1995). Ryan et al (2004, 173) suggest that “implementing greenways, especially across multi-jurisdictional boundaries, can be challenging if not impossible”. Therefore in any given greenway project, the multitude of stakeholders involved, may include more than one local government, the state government and its agencies, the federal government, as well as local community groups, local residents and landowners.

In most greenway planning cases, local government is the most powerful agent in planning and implementing green corridors (Erickson and Louisse 1997). “The consequence of isolated, local institutions is a cacophony of competing, conflicting land use policies, none of which takes into consideration the greenway in its entirety” (Hoover and Shannon 1995, 435). Coordination between government agencies and organisations is the largest challenge in greenway implementation (Erickson and Louisse 1997).

To their detriment, greenways are often perceived as individual, locally-based projects rather than as an element of a larger and integrated regional system (Ryder 1995). However, local land use policies may not consider the greenway in its regional entirety (Hoover and Shannon 1995) or may be inadequate. Moreover, lack of regional control is a barrier in greenway development. Erickson (2004) suggests that successful greenway projects should have a governmental organisation to help oversee regional planning efforts.

Coordination across multi-jurisdictional boundaries is fundamental to any development of a trail or greenway project. Apart from the multitude of land owners across a corridor, it is also necessary to take account of the different local council boundaries, electorate boundaries and catchments (which fall under different catchment management authorities). Furthermore, there may be inconsistencies in planning policies, jurisdictions and information systems across borders (both geographically and administratively).

Funding

Successful greenway projects require adequate funding. Funding can be obtained from government agencies, non-profit organizations, businesses and individuals

(Rottle 2006). However, currently funding for greenway projects predominantly comes from a public source, whether it is local council, state government or federal government. Human resources through volunteering of community groups and NGOs may also contribute to resources for a greenway.

Searns (1995) suggests that project funding is possibly the most crucial challenge for greenway projects but also that greenways are affordable because greenways require a relatively small amount of land, when compared with large non-linear open spaces, to accomplish their objectives. Erikson and Louisse (1997) argue that access to funding does not necessarily lead to the successful completion of a greenway project, nor does a lack of funding prohibit projects from being implemented. Whilst this may be true, without any adequate funding, it is unlikely that a significant greenway project will be created, unless little work need be done by way of modification to the current landscape. This is not to suggest that huge amounts of funding are likely or necessarily required.

Searns (1995) points out that expensive greenway projects may have difficulty competing for dwindling public dollars and may experience backlash of opposition, particularly if people fear more taxes or regulation. A sector-by-sector approach may be an effective adaptation to the multitude of competing needs and monetary limitations. For example, in Adelaide, the River Torrens Linear Park was undertaken in stages, a reflection of the "limited and competing financial resources available" (Mugavin 2004, 239).

Evidently, a crucial part of the funding process is not just for the planning and designs of greenways, but also for the construction of elements in such corridors. It is also important to note that greenways can be expensive to maintain compared with more conventionally shaped parks of similar area (Cooper and Hull 1978, quoted in Groome 1990). Obtaining funding for such projects takes time.

Physical Barriers, Public Acquisition of Land and Private Property Rights

Development of greenways in an urban area will often encounter physical barriers. Greenways may encounter difficulties with landscape and manmade elements of the environment (such as major roads, railroads and residential/commercial

development) in the process of development (Ryan et al 2004). Greenways are also susceptible to changes in land use and their continuity can easily be broken by development for roads, housing, industry or other transport schemes (Cooper and Hull 1979; Grimshaw 1982, quoted in Groome 1990).

The most obvious way to overcome this challenge is to propose greenways in landscapes that are free from physical barriers. Areas that are free of physical barriers are more likely to have the potential for greenway development and likely to need less funding. To make further areas available for such use will require funding and innovative bypass type planning to overcome the physical barriers.

A more expensive alternative in developing greenways is public acquisition of land. This is usually undertaken to protect open space and is often overlooked in shaping urban form and managing growth (Hollis and Fulton 2002; Ruliffson et al 2002 quoted in Bengston 2004). Tan (2006) noted that in implementing greenways in Singapore, acquisition of land is the 'biggest hurdle'. Given Singapore's small land mass, this is clearly a fundamental concern. However, whilst land acquisition is an effective means to protect open space, it is also expensive (Kelly 1993, quoted in Bengston 2004). However, public acquisition of private property for greenways is unlikely to take place within the Australian context because of this expense and respect for private property rights.

Moreover, implementing a greenway may be 'politically unacceptable' in some situations because of problems with private property rights (Bryant 2006). Private land owners may perceive a public corridor as an encroachment on their property rights and choose to oppose the greenway (Ahern 1995). Land owners may be concerned about privacy loss, liability, illegal parking, access, noise and safety (Haney 2003, quoted in Ryan et al 2004). Engaging all stakeholders in the consultation and planning process can assist in overcoming opposition to greenways by adjoining land owners, especially if the benefits to the community, including such land owners, are explained.

Summary

The advantages of greenways in environmental, social, health, cultural and economic terms are wide ranging but there are significant challenges to overcome in the process. When a greenway project is under consideration, it is necessary for all stakeholders to be aware of the problems associated with greenways. Developing and implementing greenways must take into account a number of factors, including the need to ensure that this occurs equitably across all socio-economic classes and neighbourhoods. Other challenges that must be met include ecological issues, engaging the community, the multitude of stakeholders, multiple jurisdictions, funding, physical infrastructure barriers and difficulties with land owners. This chapter looks at the challenges in relation to greenway development generally. The next chapter focuses on a specific case study and addresses these concerns more specifically in relation to Sydney.

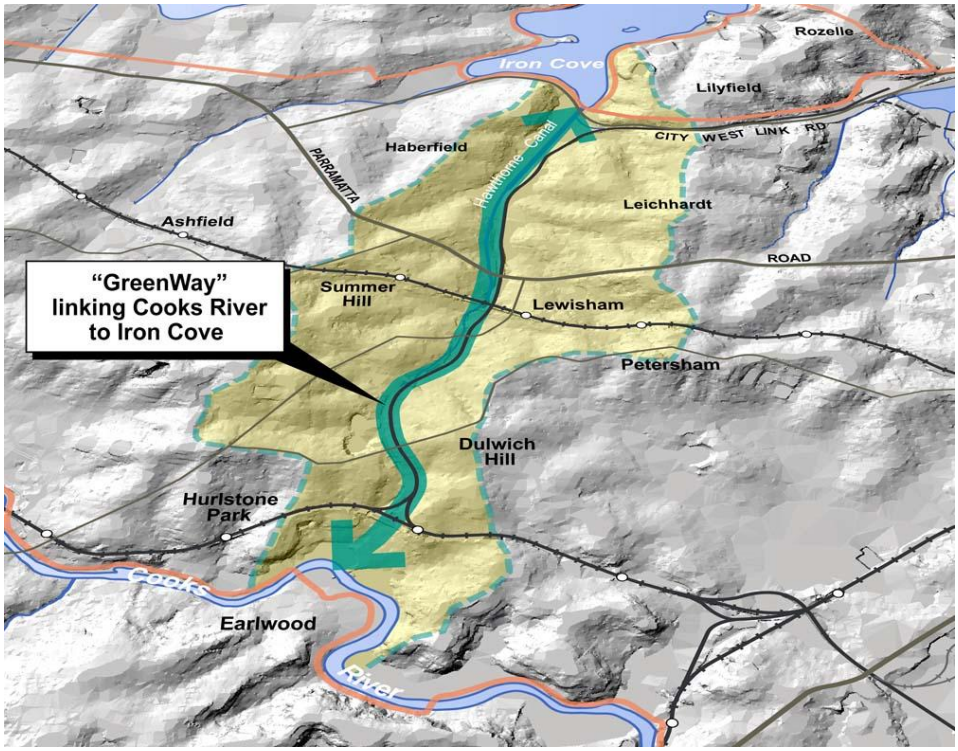
Chapter Four: Cooks River to Iron Cove GreenWay

This chapter examines as a case study the proposed Cooks River to Iron Cove GreenWay (CR-IC GreenWay), the only example of an explicit and comprehensive greenway currently proposed in the Sydney Metropolitan Region. There is an overview of the context in which the greenway is proposed, a history of the corridor and the greenway project. An examination of the major challenges surrounding the successful development and implementation of this particular greenway is undertaken. This includes an analysis of particular challenges to the development that have or might arise such as ecological issues, conflict between the vision and goals of the greenway and other uses like light rail, multiple jurisdictions, the consultation process and funding. There is also an analysis of themes which emerged from interviews with four different stakeholders connected with the project. The concerns raised may provide some guidance as to the future of this and other greenway projects in Sydney.

Overview

The CR-IC GreenWay is a proposal for a linear green corridor in Sydney's inner west. It is proposed that it stretch approximately five kilometres from the Cooks River in Dulwich Hill in the south, to Iron Cove in Haberfield in the north (GCSWG 2008) (refer **Figure 4-1**). The corridor is largely defined by the Rozelle Freight Line, owned by Railcorp, and the Hawthorne Canal, a small canalised tributary to the Cooks River, located on Sydney Water land (GCSWG 2008). Bushcare sites have also been established along the CR-IC GreenWay. The CR-IC GreenWay is located in the Marrickville, Ashfield and Leichhardt local government areas but also within close proximity of Canterbury local government area. The use of the Rozelle freight line has ceased and there is now a growing realisation of the potential for this corridor to be used as active transport, including light rail, and for bush/habitat regeneration (GCSWG 2008).

Figure 4-1 Location of CR-IC GreenWay



Source: GCSWG 2008

History of the Corridor

Prior to the 1890s, Long Cove Creek had carried stormwater and was a receptacle of sewage for the large population which had settled in the adjacent suburbs (Sabolch 2006). This area was poorly drained and was unsuitable for housing (see **Figure 4-2**). For this reason, open space was located in the corridor (Sabolch 2006). In 1890, it was proposed to canalise the creek to improve public health, enhance the waterway as a transport asset and develop the land around it (Sabolch 2006, 64). Between 1894 and 1897, Long Cove Creek was canalised (see **Figure 4-2**) and was subsequently named Hawthorne Canal (Sabolch 2006).

Whilst there was land reserved from 1888 for a goods railway line along Long Cove Creek (Sabolch 2006), it was not until 1916, that the Rozelle-Darling Harbour goods line opened. This ran from Dulwich Hill to Rozelle and Darling Harbour yards, finishing at Sydney Yard (Central) (NSW Rail 2009). Whilst this reduced the land beside Hawthorne Canal, it turned the corridor into a transport route (Sabolch 2006). After World War Two, the canal's condition went into deterioration and neglect.

Sedimentation in the canal was an ongoing problem. Community revegetation of the corridor started to take place in the 1970s (Sabolch 2006).

Figure 4-2 Before and After Canalisation of Long Cove Creek in 1892

Long Cove Creek during the construction of the railway quadruplication in 1892. The creek is still in its near-natural form. (SRNSW: NRS 17420 item 621/11)

The construction of the stormwater channel upstream from Parramatta Road near the railway viaduct. Note the Sydney water supply main crossing the creek near the bridge. (State Records, File NUA69 Image 621/13)

Source: Sabolch 2006

The section of the Rozelle-Darling Harbour goods line between Balmain Road and Sydney Yard was closed when Darling Harbour Yard was redeveloped into the Darling Harbour tourist precinct (NSW Rail 2009). The Rozelle goods line ceased

operation at the start of 2009 (Marrickville Council 2009). Much of the line around Darling Harbour area and extending to Lilyfield has been re-used for the Sydney Light Railway.

History of the CR-IC GreenWay Project

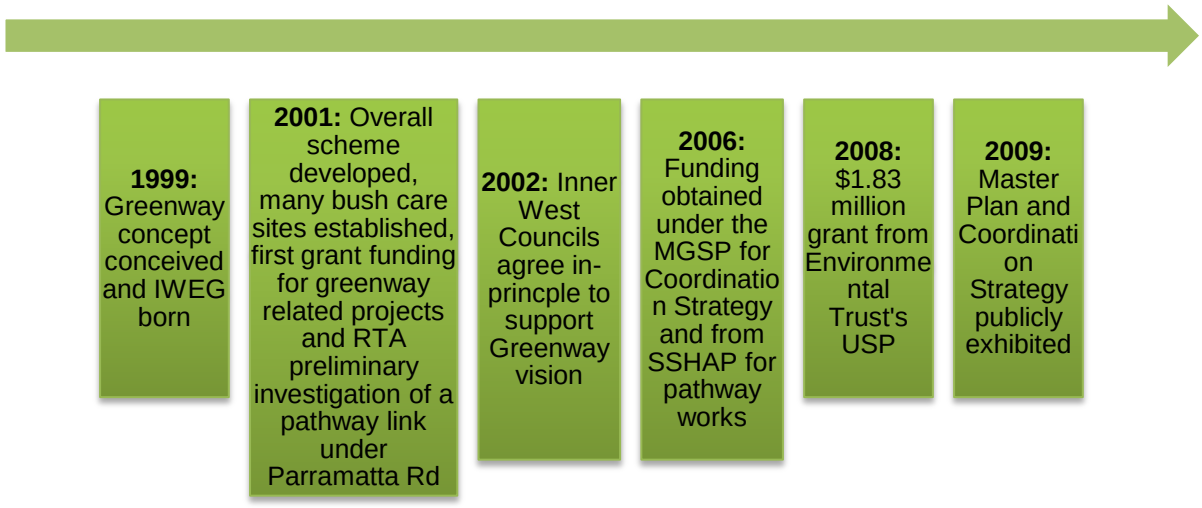
The CR-IC GreenWay concept was conceived about ten years ago by local environmental advocates who were inspired to develop a Greenway after seeing what was being achieved in Australia and overseas (GCSWG 2008). It was perceived that there was a need for a north-south connection connecting two catchments, the Cooks River and Parramatta River (B Ashley 2009, pers comm). The corridor seemed a natural 'fit' for a cycleway due to the long, shallow valley, underutilised rail freight corridor and local interest in developing regional trails (GCSWG 2008). At about the same time, local residents formed the Inner West Environment Group (IWEG) and started bush care work at sites along the Hawthorne Canal (GCSWG 2008). **Figure 4-3** illustrates a timeline for the CR-IC GreenWay project.

By 2001, an overall scheme had been developed, the RTA had finished a preliminary investigation of a pathway connection under Parramatta Road, IWEG had established a number of bush care sites and the first grant funding for CR-IC GreenWay related projects was awarded (GCSWG 2008). The project has received in-principle Council support since 2002 (GCSWG 2008). In recent years, Marrickville, Leichhardt, Ashfield and Canterbury Councils have, in partnership with community groups, supported, and in some cases led, a number of greenway planning, promotional and bushcare initiatives. Several of these projects have received grant funding from the NSW Government (GCSWG 2008).

The GreenWay Coordination Strategy, developed by the GreenWay Coordination Strategy Working Group, was initiated in 2006. This Strategy set out a plan to coordinate and guide the development of the CR-IC GreenWay and its related projects. The Master Plan & Coordination Strategy was publicly exhibited between April and June 2009 and aims to develop an overarching strategy and provide a coherent greenway. The CR-IC GreenWay has been included in planning strategies

such as the Inner West Subregional Plan and the Sydney Metropolitan Regional Recreational Trails Framework. There are still parts of the corridor which are yet to be connected (such as a link under Parramatta Road) and most of the greenway projects have been developed without an overall concept plan.

Figure 4-3 Timeline of the CR-IC GreenWay



Source: Author based on GCSWG 2008

Issues Arising with the CR-IC GreenWay

Ecological Issues

The catchment has been altered from its natural setting since European settlement, including: most of the watershed piped or channelled; surfaces hardened through construction of roads and pavement; and open space areas landscaped and planted with exotic species (GCSWG 2008). Much of the natural vegetation has been cleared in this part of Sydney. There are a few remnant trees near Iron Cove in Haberfield and in Leichhardt (GCSWG 2008). There is also still a strong representation of birds. The fragile and enigmatic long-nosed bandicoot has also been found. This species is now listed as an endangered population under the Threatened Species Conservation Act, 1995.

Bush revegetation along the corridor is gradually restoring biodiversity. The Rozelle freight line probably contains the most significant biodiversity and wildlife habitat in the inner west of Sydney (GCSWG 2008). This can be attributed to the linear nature of the corridor and nearly 100 years of predominantly unchecked weed growth, lack of public access and general undisturbed nature (GCSWG 2008). The unmaintained nature of the corridor actually attracts and supports wildlife.

One of the objectives of the CR-IC GreenWay is to create wildlife-friendly native vegetation in the corridor. Weeds are being progressively replaced by a superior coverage of native species by IWEG, with an aim to have a weed-free catchment by 2023 (GCSWG 2008). The corridor is an important space, not only for the endangered long-nosed bandicoot, but also for native birds such as yellow-faced honeyeaters and topknot pigeons. The birds rely on a few narrow green corridors with native food species such as banksias and lilli pillis to help them across physical barriers created by the urban form (EcoTransit 2009).

However, the modified natural environment has resulted in both the extinction and local removal of endemic species as well as unnatural increases in some endemic species (GCSWG 2008). There are many feral animal species that cause concern for native wildlife that occur in the corridor including foxes, rats, and feral dogs and cats, while weed species have invaded the waste land and the railway corridor (GCSWG 2008). Introduced plant species have choked and invaded bushcare sites (GCSWG 2008).

These environmental and ecological issues should be addressed in the planning and development of the CR-IC GreenWay before any ground work is undertaken. These studies should inform activity on the CR-IC GreenWay and should be fed into any environmental reporting and approval process to ensure the process followed is open and accountable and genuinely takes any concerns into consideration.

Vision and Other Uses

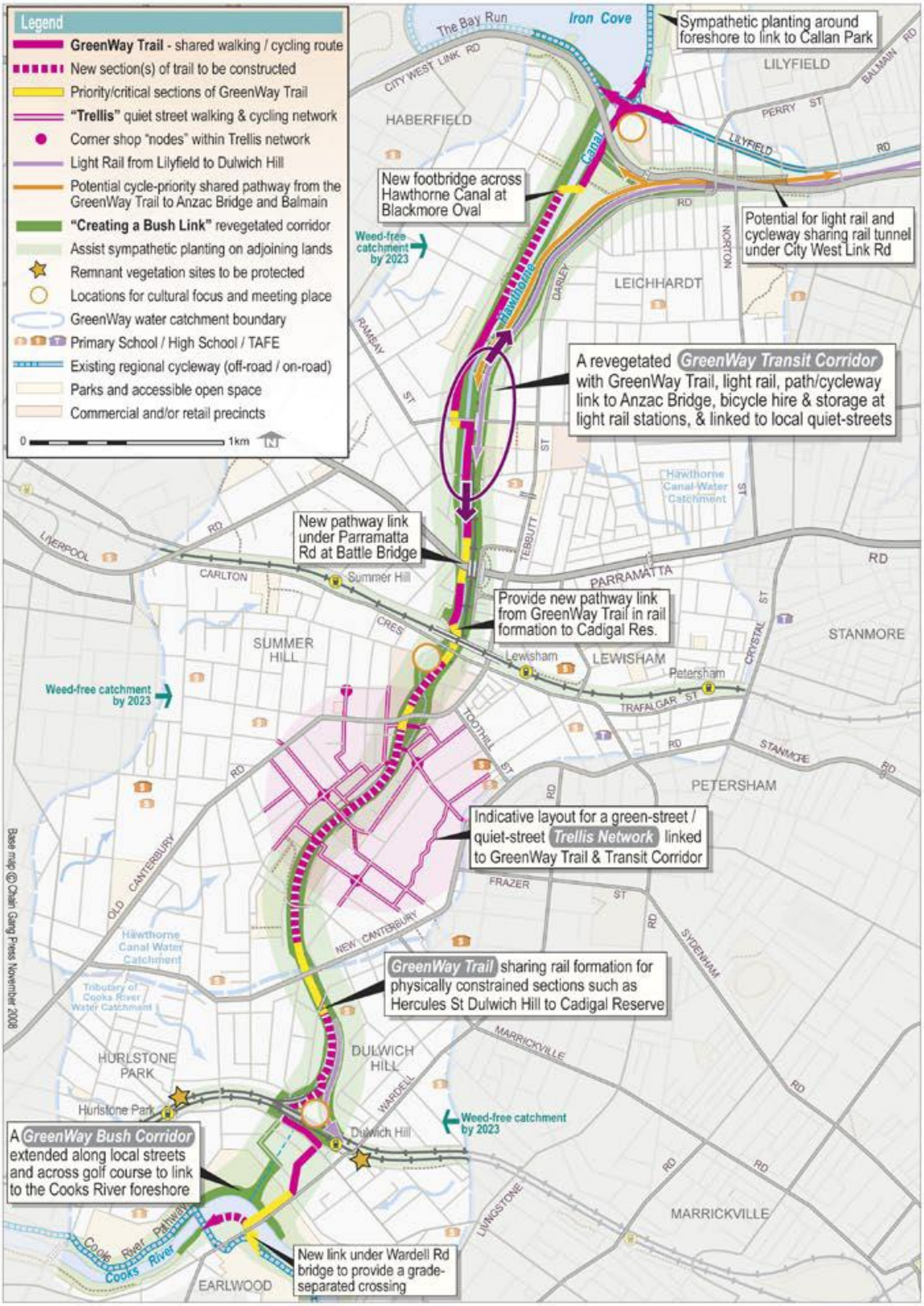
The founding community vision for the CR-IC GreenWay was “...a recognisable environmental, cultural and non-motorised transport corridor linking the sub-catchments of two important waterways” (GCSWG 2008, 2). This vision aims to form

a coherent linear open space corridor by connecting scattered open space reserves and by using water reserves, the existing road footpath network and Railcorp land (see **Figure 4-4**). The CR-IC GreenWay would be a “high quality social, ecological and built environment” (GCSWG 2008, 6). The two main elements of the CR-IC GreenWay are a trail and sustainable transport bush corridor and community ownership and involvement (GCSWG 2008).

More specifically, the CR-IC GreenWay vision encompasses a number of environmental and social principles including refocussing on the local area to increase community identity and social interaction; collaboration that encourages lasting partnerships and shared actions; empowering the community and involving all sections of the community in decision-making; protection and promotion of natural systems and creation of habitat that sustains and protects; regard for public places/the “commons” with improved accessibility; options for active and sustainable transport with walking and cycling as viable first choice; knowledge about the corridor enabling community learning and activity; and improved sustainability performance considered at all stages (GCSWG 2008). The CR-IC GreenWay also aims to develop integrated governance capacity and tools, improve the overall urban environmental condition, build harmonious communities and promote effective and sustainable transport systems.

However, there is currently a debate in relation to whether the corridor should be ‘non-motorised’ as a result of proposals for the introduction of light rail on the Railcorp land previously used by the freight line. There is a proposal to run light rail along the Rozelle freight line and this overlaps the CR-IC Greenway corridor between Summer Hill and Dulwich Hill.

Figure 4-4 Vision of the CR-IC GreenWay



Source: GCSWG 2008

As demand for the freight line diminished, more people became interested in the development of light rail in Sydney's inner west. The light rail line presently extends from the city to Lilyfield. Since the beginning of 2008, the momentum to extend light rail, using the disused freight line, to Summer Hill and as far as Dulwich Hill has risen. This has been substantially due to the lobbying of EcoTransit, a not-for-profit advocacy group dedicated to the promotion of EcoTransit development (EcoTransit 2009). Eco-transit has prepared a photo montage of the proposed Waratah tram stop at Davis Street, Summer Hill refer **Figure 4-5**).

Figure 4-5 Photo Montage of Proposed Waratah Tram Stop at Davis Street, Summer Hill

Source: EcoTransit 2009

There is potential to integrate light rail within the overall greenway scheme. Whether the pathway and bush corridor are developed in conjunction with extension of light rail services has now become a crucial subject for progress of the CR-IC GreenWay. Approval for access and use of the rail corridor and/or formation is ultimately subject to the feasibility study for light rail currently being undertaken and the decision of the NSW State Government, particularly the Minister for Transport, who will make any final decisions and approval for access to the corridor for a pathway (GCSWG 2008).

The introduction of light rail as an integral part of the CR-IC GreenWay would impact on the benefit of quiet enjoyment by persons of a green experience in the CR-IC GreenWay. Viewed in this way the light rail would be a threat to the original vision for the CR-IC GreenWay. This issue has gained momentum with recent widespread coverage in the media. There are many areas of practical concern raised by having a light rail system adjoin or being part of the CR-IC GreenWay. These include having sufficient physical space for a pathway in an active rail corridor or formation, engineering measures required, rail operational and maintenance requirements, site and/or environmental constraints, and what margin of safety is required to separate the users from any passing trains (GCSWG 2008).

There are other possible uses for the land owned by RailCorp other than being given over to the CR-IC GreenWay or being linked to the extension of light rail. Many parts of the inner city of Sydney are former railway and industrial land. Demand for such uses has decreased and many of these spaces have been converted to new residential developments. Such use could encroach on the land available for the CR-IC GreenWay or affect the nature of the CR-IC GreenWay. On the other hand increased residential densities adjacent to the disused Rozelle freight line could encourage increased awareness and use of the corridor. Along the CR-IC GreenWay corridor, urban renewal has already started to take place, with the conversion of Waratah Mills into residential apartments in 2003. Another flour mill in Summer Hill, Allied Mills, was sold in 2007 and there are current plans to redevelop the site into a mixed use residential and commercial precinct (**Figure 4-6** shows the Allied Mills site in relation to the Rozelle freight line). There is the opportunity to integrate this development with the CR-IC GreenWay including shared pathways, revegetation and habitat establishment, cultural and recreational facilities.

The implementation of the proposed CR-IC GreenWay is clearly coming up against the challenges often experienced when land becomes available that might be used for a greenway. There are often alternative uses of the land that are competing with its use as a greenway or may compromise the nature of the greenway. Given the level of power that rests with NSW Government departments relating to these matters, the future nature of the CR-IC GreenWay is likely to be largely determined by the NSW Government.

Figure 4-6 Disused Rozelle Freight Line and Allied Mills, Summer Hill

Source: Author

Multiple Jurisdictions and Consultation

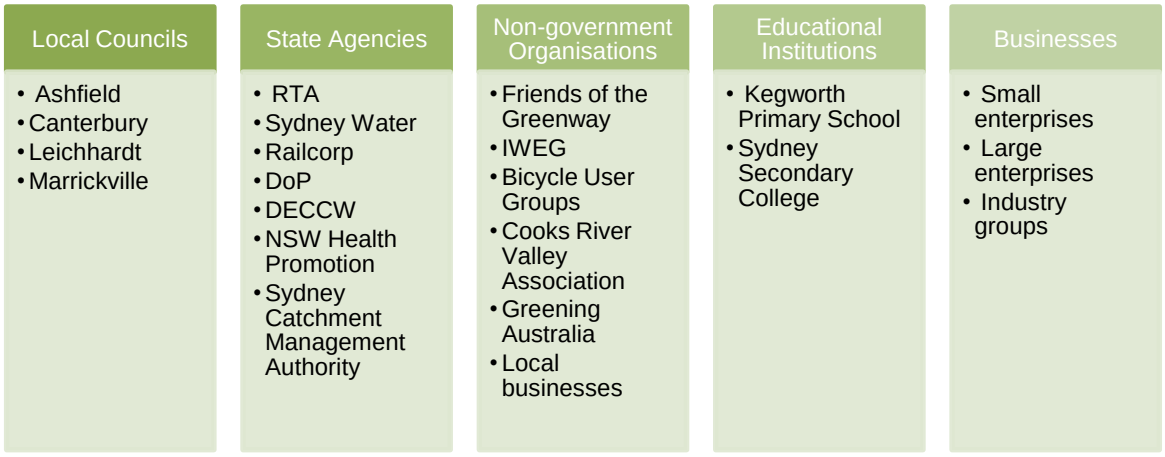
A significant challenge developing the proposed CR-IC GreenWay has been the cross-jurisdictional boundaries and multitude of land owners. The proposed CR-IC GreenWay takes in four Council boundaries, five electorate boundaries, two water catchments, two sub-regional planning areas and many organisations have overlapping responsibilities (GCSWG 2008).

There has been some coordination between these bodies. A GreenWay Steering Committee provides guidance on the CR-IC GreenWay vision and ensures that actions undertaken in the wider project are consistent with the common vision (GCSWG 2008). As discussed above, the GreenWay Coordination Strategy Working Group prepared the Master Plan & Coordination Strategy and administers the grant provided by the Metropolitan Greenspace program. Both of these greenway bodies consist of representatives from associated Councils, key State Agencies and the community. These bodies provide a model as to how to overcome some of the problems arising from multiple jurisdictions being involved in greenways.

However, Sabolch argues that “there has been a distinct lack of coordination between the various government departments and numerous local government bodies bordering the sites, with no single organisation responsible for the management and upkeep of the whole Hawthorne Canal precinct” (2006, 108) and that there is not any ultimate body responsible for the precinct, solutions to problems tend to be quick-fix and piecemeal in nature (Sabolch 2006).

On the other hand, in relation to the CR-IC GreenWay, there has been a high degree of consultation which, as discussed above, is necessary for successful implementation of a greenway project. The CR-IC GreenWay concept has been driven by the active participation of the local community, which has lobbied for the CR-IC GreenWay project as well as participated in bush regeneration projects that have already been implemented. Since 1999, the CR-IC GreenWay project has engaged a multitude of stakeholders. This includes approximately 500 local residents engaged in various greenway related activities (bushcare, active transport/cycling and greenway-planning) as shown in **Figure 4-7**.

Figure 4-7 Stakeholders Involved in the CR-IC GreenWay



Source: Author based on GCSWG 2008

The press is often an active agent in reporting and influencing public opinion, particularly when there is potential controversy in a project. Monitoring of the recent press in the case of the CR-IC GreenWay confirms that this is the case. The CR-IC GreenWay has received most of its publicity in inner west newspapers in relation to its interaction with the proposed light rail. An editorial was also published by the

Sydney Morning Herald claiming that the CR-IC GreenWay would be an 'obstacle' to obtaining light rail in the inner west and "turns over the railway line to road users – in this case, cyclists" (Sydney Morning Herald 2009).

Funding

A critical aspect of developing and implementing any greenway project is the issue of seeking and utilising funding for planning and design as well as construction. One key feature of the CR-IC GreenWay's vision has been to obtain funding from whatever source is available at the time (GCSWG 2008). To date, there have been seven successful applications for grant funding from NSW Government bodies for the CR-IC GreenWay with a total combined value of $2.5 million. The most important of these is the $1.8 million grant from the NSW Environmental Trust Urban Sustainability Program to complete a range of sustainability sub-projects (GCSWG 2008). Additional funding has also included: funding from the NSW Environmental Trust for bushcare work and active transport; the Metropolitan Greenspace Program for the Coordination Strategy and Battle Bridge plans; and Sharing Sydney Harbour Access Program for pathway linkages and works.

The four councils involved in the CR-IC GreenWay have also provided in-kind and in-principle support for the corridor and its related projects for a number of years. Such local government support aided the NSW Environmental Trust Making Sustainability Work Urban Sustainable Program ("USP") grant application process. USP grant application process secured the commitment of RailCorp and engagement of the Sydney Metropolitan Catchment Authority and the NPWS. In addition, some local businesses have provided some small funding (and in-kind sponsorship (GCSWG 2008).

To determine the feasibility of the proposal to extend the light rail system at Rozelle to Dulwich Hill, a six month study will be undertaken. Ashfield, Marrickville, Leichhardt councils and the City of Sydney have contributed $140,000 to the study, with $110,000 being provided by the NSW Government (Railway Technology 2009). The light rail feasibility will determine the costs and benefits including investment required, technical points and integration with other public transport (Railway Technology 2009).

Parramatta Road, one of the busiest transport corridors in Sydney intersects the CR-IC GreenWay and cannot be avoided. Parramatta Road is a key stumbling block in the corridor (GCSWG 2008). The proposed pathway under Parramatta Road at Battle Bridge would be a crucial connection within the CR-IC GreenWay. Without this connection the integrity of the CR-IC GreenWay will be compromised. In the CR-IC GreenWay, a significant monetary concern is the construction of the pedestrian and cycle path underneath Parramatta Road at Battle Bridge. Construction costs for a pathway under Battle Bridge have been estimated at approximately $600,000 plus $200,000 for contingency funding (GCSWG 2008). At present, it is unknown who will fund this. Construction of the link is currently listed in management plans for the three Councils (GCSWG 2008). This is an example of the funding issues arising from overcoming physical barriers that are common in Sydney.

It must also be borne in mind that funding requirements do not cease once the greenway is implemented because there are ongoing maintenance costs. The Master Plan & Coordination Strategy states that grant funding should be applied for and available for ongoing CR-IC GreenWay actions and that any funding from Councils should be built into the Management Plan and budget process (GCSWG 2008).A long-term maintenance commitment from one or more of the stakeholders in the CR-IC GreenWay should be developed and funded to cover repairs and maintenance (GCSWG 2008).

Stakeholder Interviews

To further understand the issues surrounding the implementation of the CR-IC GreenWay and their implications for the future of greenways in Sydney, in-depth interviews with key stakeholders involved in the CR-IC GreenWay and greenway planning in Sydney were conducted. The interviews were used to understand the various perspectives and the different concerns of stakeholders in the greenway planning process.

Four face-to-face interviews were conducted, with each interview lasting approximately 30-45 minutes each for this study. The interviewees were selected based on their knowledge of the CR-IC GreenWay and greenway planning in Sydney.

The interviewees were as follows:

- **Bruce Ashley, community representative and instigator of Friends of the Greenway as well as environmental consultant.** Friends of the GreenWay is an inner west community group which was formed in 2007 to support the CR-IC GreenWay. Ashley has been one of the instigators of the proposed greenway and is still an active participant and advocate.
- **Kendall Banfield, Transport Planner for Marrickville Council.** Marrickville Council is one of the four local governments involved in the CR-IC GreenWay. Banfield is the lead council contact for this greenway and has also has experience in natural resource and environmental management.
- **Lauren McIver, Project Manager of the GreenWay Sustainability Project for Ashfield Council.** Ashfield Council is another of the four local governments involved in the proposed CR-IC GreenWay. The Council received a $1.8 million grant from the NSW Environmental Trust Urban Sustainability Program for the greenway. The project manager of the greenway is a three year position which makes up part of this funding.
- **Carl Malmberg, Director of Open Space and Transitional Lands for the NSW Department of Planning (NSW DoP).** The NSW DoP provides a funding program called the Metropolitan Greenspace Program which aims to work closely with local councils to improve, plan and fund regionally significant greenspace, such as parks, trails and reserves. The NSW DoP has also developed planning frameworks which have the potential to make provision for greenway projects: the Sydney Metropolitan Strategy and its sub-regional plans as well as the Regional Recreational Trails Framework. Malmberg has a breadth of experience in local and state government on trail and corridor planning from a state government perspective
  (the interviewees and their organisations are summarised in **Table 4-1**).

Table 4-1 Interviewees and their Organisations

Interviewee	Category	Agency/organisation
Carl Malmberg	State	NSW DoP
Kendall Banfield	Local	Marrickville Council
Lauren McIver	Local	Ashfield Council
Bruce Ashley	Community	Friends of the GreenWay

Source: Author

The interviewees were briefed on the general questions to be asked prior to the face-to-face interview. Open-ended questions about problems with respect to greenway development and implementation were formulated relating to the themes described in the literature, including (1) definition of a greenway; (2) benefits of greenways; (3) issues with greenway development and implementation; (4) improvements for greenway planning Sydney.

On the basis of the in-depth interviews with these key stakeholders involved in greenway planning in Sydney, it can be concluded that there are a variety of concerns that are relevant to the implementation of greenways in Sydney. These issues include State government power and support; funding; multiple jurisdictions; collaborative partnerships; greenway plan-making; clear and shared vision and goals; geography; education; ecological issues; and availability of land for open space.

Although there was no dominant issue, the interviews highlighted four major strategies that planners might use to overcome the barriers to greenway planning in Sydney: (1) collaborative partnerships; (2) multiple jurisdictional boundaries and land tenure; (3) clear and shared vision and goals; and (4) adequate resources. These strategies are discussed below.

Collaborative Partnerships

An important theme that emerged in the interviews was the importance of collaborative partnerships between government agencies responsible for the greenway project and stakeholders who have an interest in the project.

Ashfield Council representative Lauren McIver advocates the necessity to have agreement from all parties due to the nature of the project originating from the 'grass roots' and affirms that:

> "I think with these grant projects...a lot of their success revolves around people's ability to project manage well and communicate and engage the stakeholders and the community well" (McIver 2009, pers comm., 14 Sept).

NSW DoP interviewee Carl Malmberg also discusses the importance of developing partnerships in trail projects and expresses the view that:

> "To actually get [a trail] built, you've got to develop partnerships of the local stakeholders predominantly along the pathway...you've got not only local agencies but state agencies and then there's all the local groups that are interested in that area that want to be part of it too" (Malmberg 2009, pers. comm., 14 Aug).

Marrickville Council interviewee Kendall Banfield considers the challenges associated with working with multiple stakeholders in the greenway planning process as follows:

> "When you're working with so many stakeholders and the community as well...I have struck moments of frustration where there's differences of opinion and small arguments over things.... everyone is supportive ... [and] wants to move forward...[there are] inherent difficulties working with all these people, personal disagreements about the way things should be" (Banfield 2009, pers. comm., 7 Aug).

Multiple Jurisdictional Boundaries and Land Tenure

All interviewees indicated one of the key barriers to greenway development and implementation is the challenge in the need for coordination to overcome the problems posed by multiple jurisdictions. For example, Banfield describes the challenges to working across jurisdictional boundaries with the CR-IC GreenWay in these terms:

> "One of the difficulties with the greenway is the multiple stakeholders, the fact that it crosses borders...and it happens to be on the border of the three councils, so you've got Leichhardt, Ashfield, Marrickville involved, it's right next to the Railcorp corridor [Rozelle freight line] and it's on Sydney Water land because it goes over the [Hawthorne] Canal but it also crosses RTA land [Parramatta Road] ...so it's a project that involves so many stakeholders that it's almost impossible to get anything simply because there is no one authority that can just take the lead and go forward on it...but having said that it presents advantages as well, because if you can get all the agencies and the councils on board all moving forward in the same direction you can actually get wins as well, but yeah it just means that whole thing takes a lot longer than it might have" [if it was in one local government area]" (Banfield 2009, pers. comm., 7 Aug).

Malmberg states that the key to greenway planning is inter-agency coordination:

> "(Inter-agency coordination)...and when I say that I mean...government to government levels, both local to local and local relationships with state, and state government to local government agency relationships so if you want to introduce a greenway... over an area that's going to cross different agency and organisational boundaries and jurisdictions, then the coordination is paramount" (Malmberg 2009, pers. comm., 14 Aug).

Malmberg also considers the difficulty in developing trails and greenways when there is a multitude of land tenures:

> "If you want to create a particular track or trail, and you're going across a multitude of land tenures and land uses, then that can become quite complicated to work out the best route...apart from just simple geography issues...it's that ability to deal with different land ownership....the more boundaries you cross and the more land tenures you cross and the longer the distance, the more complicated that becomes" (Malmberg 2009, pers. comm., 14 Aug).

Whilst all interviewees agree multiple jurisdictional boundaries are a barrier to greenway implementation, discussion over how greenways should be governed varies. Malmberg suggests the establishment of a greenway coordinating body by the State government but admits that its creation would be difficult due to it being "lower down the scale of government interests and functions" (Malmberg 2009, pers. comm., 14 Aug). A more effective tool is to bring stakeholders together to develop some sort of framework (Malmberg 2009, pers. comm., 14 Aug).

However, community representative Bruce Ashley (2009, pers. comm., 13 Aug) argues that having a 'greenway body' for a corridor project would add another layer of coordination to organise and proposes:

> "What can work best is coordinators, say one or two, constantly keeping tabs on what's happening and making sure that the current agencies are up to speed and things are coordinated... and get them to manage better what they're doing" (Ashley 2009, pers. comm., 13 Aug).

Clear and Shared Vision and Goals

A strategy that can be promoted by coordination and collaborative partnerships is that of clear and shared vision and goals. Ashley (2009, pers. comm., 13 Aug) argues that, in the case of the CR-IC GreenWay, there has been an inconsistent vision or goal across Councils and agencies, which has lead to unnecessary conflict and a lack of 'place manager' expertise available. A compartmentalised approach to administration can mean a lack of coordination in organising greenway projects (Ashley 2009, pers. comm., 13 Aug). Ashley (2009, pers. comm., 13 Aug) also suggests that there have been inconsistencies between different plans, jurisdictions and information systems across borders and boundaries (both geographically and administratively).

In fact, the interviews reveal the lack of clear and shared vision for the CR-IC GreenWay and the potential conflict of diverse visions. Ashfield Council representative McIver indicates that the CR-IC GreenWay's vision has changed from a non-motorised to a non-polluting corridor but this is not reflected in the Master Plan & Coordinated Strategy (McIver 2009, pers. comm., 14 Sept). Banfield and

Malmberg believe light rail is part of the greenway's vision, whilst Ashley is concerned about light rail compromising the integrity of the greenway.

Ashley (2009, pers. comm., 13 Aug) states that if there were double track light rail between Summer Hill and Dulwich Hill, the CR-IC GreenWay pathway would be put into the bush part of the corridor, resulting in the loss of the bushcare sites. Any proposal to implement a light rail system along the Rozelle freight line would be a significantly more expensive exercise (double or triple the cost) than the non-motorised CR-IC GreenWay. He states his position as follows:

> "I think you've really got to look at the net community benefit of the corridor and I'd see that yeah possibly light rail to Summer Hill but I would see a far greater community benefit by having a bush corridor and greenway trail over the tracks from Summer Hill to Dulwich Hill..." (Ashley, 2009, pers. comm., 13 Aug).

Adequate Resources

One of the key concerns for implementing any greenway project is the funding of the implementation and maintenance of the greenway. This was a concern for all four interviewees.

Funding of the pathway under the CR-IC GreenWay at Parramatta Road is particularly problematic because of its cost. Ashley (2009, pers. comm., 13 Aug) discusses how it has taken eight years just to undertake the planning and design studies. Banfield states:

> "The big question is who will fund construction because that's where the big dollars are....and cost estimates [for Battle Bridge] are of the order of $700,000 to construct....yeah I think it should be small dollars from the Councils but bigger dollars from the State and Federal governments...and Ashfield Council put in an application at the end of last year to Infrastructure Australia for Federal funding of that bridge and two other bridges ....that was knocked back....so yeah there might be some more opportunities later" (Banfield 2009, pers. comm., 7 Aug).

The responsibility for the ongoing maintenance of any greenway is discussed by Banfield:

> "I guess if you go on what often happens with these things, it's the Councils who take over the management role, they're probably best placed to do it because they have the staff on the ground in the area...but yeah there's a cost burden associated with that" (Banfield 2009, pers. comm., 7 Aug).

Ashley (2009, pers. comm., 13 Aug) indicates that more funding is required in greenway planning and pointed to a lottery scheme in England. He also suggests that because there is a lack of proactive greenway planing in Sydney, particularly at a policy level, there are very little funding sources for such corridors. The problem also arises because many of the grants offered by the State and Federal government require a dollar-for-dollar support from local council (Ashley 2009, pers. comm., 13 Aug).

Summary

The proposed CR-IC GreenWay is the first explicit example of a comprehensively planned greenway in Sydney. The corridor has a pertinent and somewhat controversial history. The greenway project has had a grass roots approach since its instigation ten years ago. This case study highlights the numerous challenges faced in developing a greenway in Sydney. These include issues of ecology, cross jurisdictional management, stakeholder involvement, funding and physical barriers. Further, the proposed further development of the CR-IC GreenWay is occurring at the same time as proposals for light rail and residential development on or adjacent to the same corridor are being considered. These proposals may alter the original vision for the CR-IC GreenWay. Interviews with stakeholders relevant to the CR-IC GreenWay also highlight a number of strategies that might facilitates greenway planning in Sydney, including collaborative partnerships, management of multiple jurisdictional boundaries, adequate funding and the need for a clear and shared vision and goals. The next chapter discusses these and other strategies with recommendations as to key components for successful greenway development and implementation in Sydney.

Chapter Five: Key Ingredients and Recommendations for Greenway Planning

This chapter discusses key ingredients and recommendations for greenway planning that have emerged from the investigation of the issues and current policies surrounding greenways, including the CR-IC GreenWay case study and interviews. A number of key ingredients for successful greenway development and implementation emerge. These include: the integration of greenway opportunities into planning policy and legislation; coordinating bodies; adequate resources; collaborative partnerships; multi-faceted and overarching goal setting; trained professionals and leadership; and commitment, public involvement and support (shown by **Figure 5-1)**. All these ingredients are considered vital to successful greenway planning in the context of Sydney.

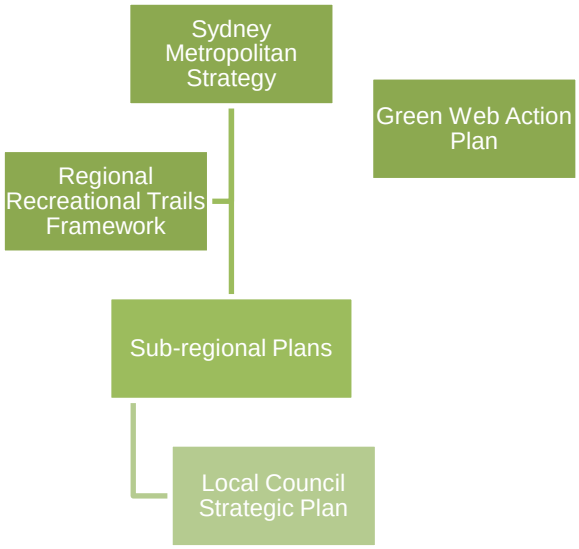
Figure 5-1 Key Ingredients for Successful Greenway Planning

Source: Author

Integration of Greenway Opportunities into Planning Policy and Legislation

Greenways have largely been ignored in state and local planning policy. This has a considerable impact on the prospects for future development of greenways which must be the subject of careful planning. Indeed, by their inherent linear nature, greenways often cross local jurisdictional boundaries, requiring sub-regional planning. There is a need to integrate state, subregional and local plans and to have a greater emphasis at a local level for the provision of green corridor projects. The current planning framework in Sydney for the provision of greenways is illustrated in **Figure 5-2** and proposed best practice planning framework for the provision of greenways can be seen in **Figure 5-3.** There is no explicit requirement to plan for greenway corridors in Sydney, particularly from a legislative standpoint.

Figure 5-2 Current Planning Framework for Provision of Greenways

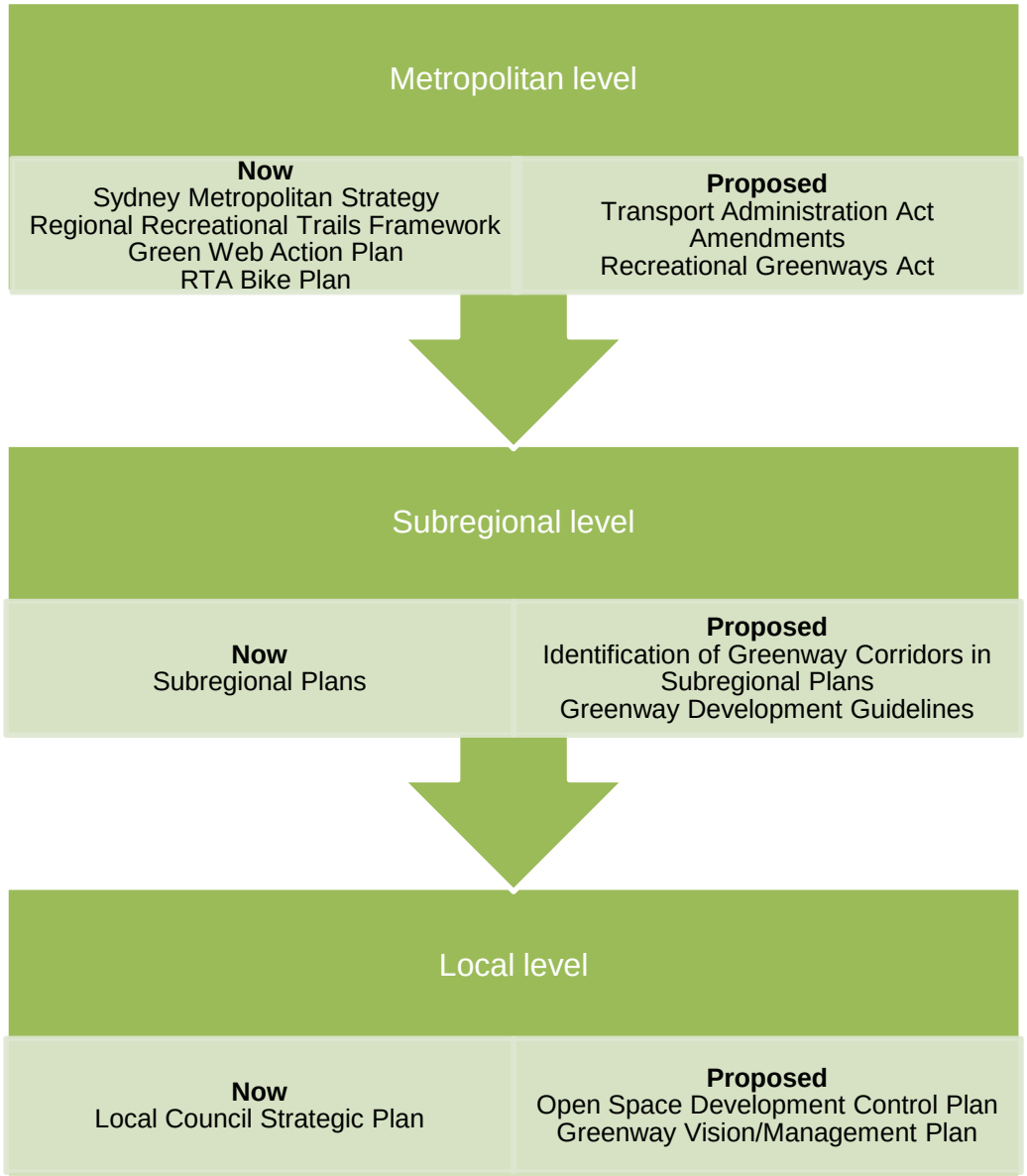


Source: Author

However, there is an overarching strategic document which guides greenway-like projects in Sydney, the NSW DoP's Regional Recreational Trails Framework, which is discussed above and summarised in **Table 2-2)**. The NSW DoP is responsible for management of greenspace and this Framework primarily aims to map out the location of existing and proposed regional trails throughout Sydney (NSW DIPNR 2005). This Framework was developed in conjunction with Sydney's Metropolitan Strategy and attempts to identify key strategic links and missing connections;

opportunities and priorities for future State Government funding; and reinforce partnerships with local government and other state agencies (NSW DIPNR 2005). The Framework is based on a number of important environmental, economic and social principles as shown in **Figure 5-4** (DIPNR 2005). There is scope for NSW DoP to establish specific guidelines to assist in greenway development and to include them in this Framework. The existing Regional Recreational Trails Framework prepared by the NSW DoP could be expanded to include such guidelines.

Figure 5-3 Proposed Best Practice Planning Framework for Provision of Greenways



Source: Author

Figure 5-4 Key Principles of Sydney's Regional Recreational Framework

Environmental	Economic	Social
• Experience and contact with nature • Encouragement of environmental protection • Experience and connection with natural and cultural heritage	• Tourism, health, sport and recreation and transport benefits associated with regional trail use and tourism • Economic benefits associated with infrastructure and business supporting leisure activities and recreation hubs such as cafes, recreation hire (bikes, canoes etc.) and other associated infrastructure	• Improved health and well being • Enhanced liveability and enjoyment of the urban environment • Meeting of the needs of future geenrations and leaving a legacy for all • Increased leisure opportunities • Connectivity in and around the urban environment

Source: Author based on DIPNR 2005

The Sydney Metropolitan Strategy has also identified broad sub-regions for assessment and planning. However, the Sydney Metropolitan Strategy and its sub regional plans have paid inadequate attention to greenways. For example The CR-IC GreenWay falls between the inner west sub-region and south sub-region. Both Subregional plans, which have been publicly exhibited, initially made no mention of the CR-IC GreenWay. Although the Inner West Subregional Plan has been updated and now includes reference to the CR-IC GreenWay vision and makes reference to the CR-IC GreenWay in terms of the NSW Government working with local councils to enhance regional open space, the South Subregional Plan still does not mention it (NSW DoP 2008). Further, neither of the subregional plans discusses the implications of the CR-IC GreenWay for sub-regional planning and transport such as the potential future use of the Rozelle freight corridor. There is scope to identify opportunities for greenway corridors in the Sydney Metropolitan Strategy and its associated sub-regional plans. Identification of existing and potential greenways could also be reflected in any strategic transport plan for the Sydney Greater Metropolitan Region.

A policy document which attempts to make provision for greenway projects is the Green Web Sydney Action Plan. Green Web Sydney is a joint initiative of the combined Sydney Regional Organisations of Councils. The purpose of this initiative is to develop a co-ordinated approach in local government to protect and enhance natural vegetation in the Sydney Metropolitan Region (Green Web Sydney Action Plan 1997). Green Web Sydney aims to illustrate local council's role in managing biodiversity and suggests actions and policies that local governments can develop to conserve and enhance habitat corridors.

There is the potential to incorporate a similar or enhanced greenway vision and concept in State and local government management planning, budgeting and initiatives where there is potential to interact with policies, actions and funding. This would create links to infrastructure and support decisions on sub-regional infrastructure (B Ashley 2009, pers comm). Incorporation of greenways in plan-making would also improve coordinated actions across jurisdictions and between agencies, which is discussed below.

Although identifying potential greenways may be suitably undertaken at the metropolitan level, greenway implementation should also take place at the local level, through neighbourhood initiatives that incorporate and respond to the preferences of the community (Lindsey and Knaap 1999). Local government policies and plans could take into account cross boundary integration and promote strategic opportunities for improving the provision, quality, functions, linkages and management of the open space network. The provision of an Open Space Development Control Plan within the planning framework of local councils could ensure linear corridors are protected. Biodiversity conservation in planning instruments could also be considered by local governments. Existing open space strategies and plans of management for parks could be reviewed to identify remnant bushland areas as local conservation zones and include requirements for their protection, ongoing maintenance and rehabilitation (Green Web Sydney Action Plan 1997).

Provision could also be made to ensure that development plans and applications take account of potential or actual greenways in the vicinity of the development.

Development pressures should not degrade greenway values and there should be consistent greenway input to the development and planning process. This was achieved in the case of the CR-IC GreenWay for the Waratah flour mill redevelopment when the developers sought input in relation to the Greenway in the course of the planning process for residential apartments (B Ashley 2009, pers comm).

There is also scope for changes in legislation that might facilitate the establishment of greenways. Legislation has recently been introduced to amend the Transport Administration Act 1988 in NSW to allow for the approximately 3000 kilometres of disused rail lines in NSW to be removed (West 2009a; West 2009b; West 2009c; Sun Herald 2009). This would facilitate the conversion of defunct rail corridors into greenway corridors. An abandoned branch line from Wagga Wagga to Tumbarumba is expected to be the first converted 'rail to trail' (Sun Herald 2009).

NSW Lands Minister Tony Kelly has advocated the economic and recreational benefits of rail trails and stated that the NSW Government is supporting communities that want to revitalise disused rail corridors (Sun Herald 2009). However, there was opposition to this amendment based on fears that it would be used for commercial development (West 2009d). This led to the Minister for Transport David Campbell agreeing to change the proposed legislation so that the disused corridors could not be sold to developers (West 2009d). Greenway development would be facilitated if the legislation permitting the removal of old rail lines also required that the corridor remain in public ownership and be transformed to broad community use. Such development would obviously be further facilitated if associated with increased funding for greenway implementation, which is further discussed below.

Legislation that more specifically addresses greenways could also be enacted to encourage the development and implementation of greenways. A model for this is the Recreational Greenways Act 2000 in South Australia (South Australian Government 2008). This legislation was established to secure public access over linear corridors that form part of a recreational trail and allows State Government Ministers to enter into an agreement with the landowner (South Australian Government 2008). Such legislation in NSW could provide for the establishment and

management of greenways for multi purposes. In particular, the legislation could make provision for: the establishment of greenways; consultation with the public and adjoining land owners; restrictions of land use on greenways; use of greenways, including public right of access; and formal agreements on access to greenways. Greenway specific legislation could give more certainty to stakeholders involved with greenway development and implementation.

Coordination

Irrespective of the institutional structure or scale of the greenway vision, a lack of coordination among agencies and organisations appears to be the biggest challenge to effective and timely greenway implementation (Erikson and Louisse 1997). Greenways are often perceived as individual projects rather than as parts within an integrated regional system (Ryder 1995). A regional greenway network requires a regional entity that oversees the greenway project (Erikson 2004). A greenway network requires a real commitment to regional planning and in many situations, to growth management.

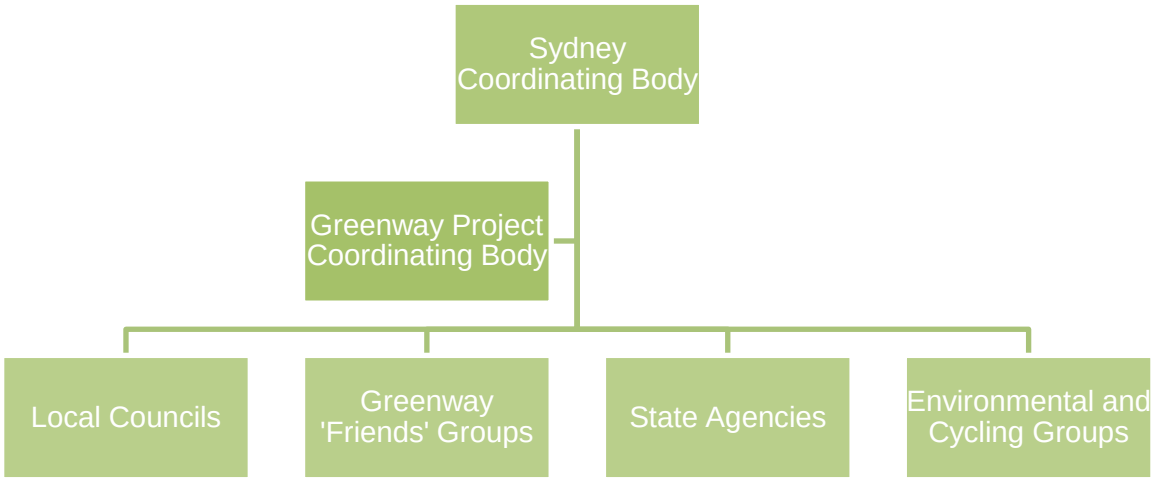
In a city like Sydney, with a population of 4.34 million, developing a metropolitan greenway system may be a challenge in terms of public awareness and understanding. By and large, the general public may have difficulty visualising an abstract land-use or geographic idea at a metropolitan scale. This can be overcome by breaking down projects into manageable and 'imaginable' pieces and defining specific corridors or local resources to assist people to become invested in a bigger vision (Erikson and Louisse 1997).

Establishing an independent coordinating body for the whole of Sydney that would make decisions on behalf of a range of agencies in greenway projects would be useful. This body could have a broad representation, community input and provide advice to government. It could also carry out further research on best practice and carry on consultation with authorities and the community. A coordinating agency can play a vital position in integrating development of a greenway network. Alternatively, an inter-agency panel could be set-up to develop a greenway network or a body could be set up under an existing agency, either within the Ministry of Transport or

NSW DoP. Any greenways which involve a rail corridor are, at present, still the responsibility of Railcorp which must have a key role in any coordinating body. A coordinating body must be open to liaison and contact with all relevant agencies.

As shown in the case of the CR-IC GreenWay, there is also a necessity to coordinate the actions of many agencies involved in a specific greenway project, such as the local councils, RTA, Sydney Water, Ministry of Transport, NSW DoP and community groups. A dedicated project body, operating within the parameters established by the Sydney coordinating body, for a specific greenway project could facilitate the work of the variety of stakeholders, ensure the synergy of projects, identify partnership linkages for site specific projects and assist with identifying potential funding sources. Such a body could have representation from various stakeholders and could also work to solve issues of conflict of interest. The inclusion of such coordinating bodies in a proposed governance structure for management of greenway corridors in Sydney is illustrated in **Figure 5-5.**

Figure 5-5 Possible Governance Framework for Management of Greenways in Sydney



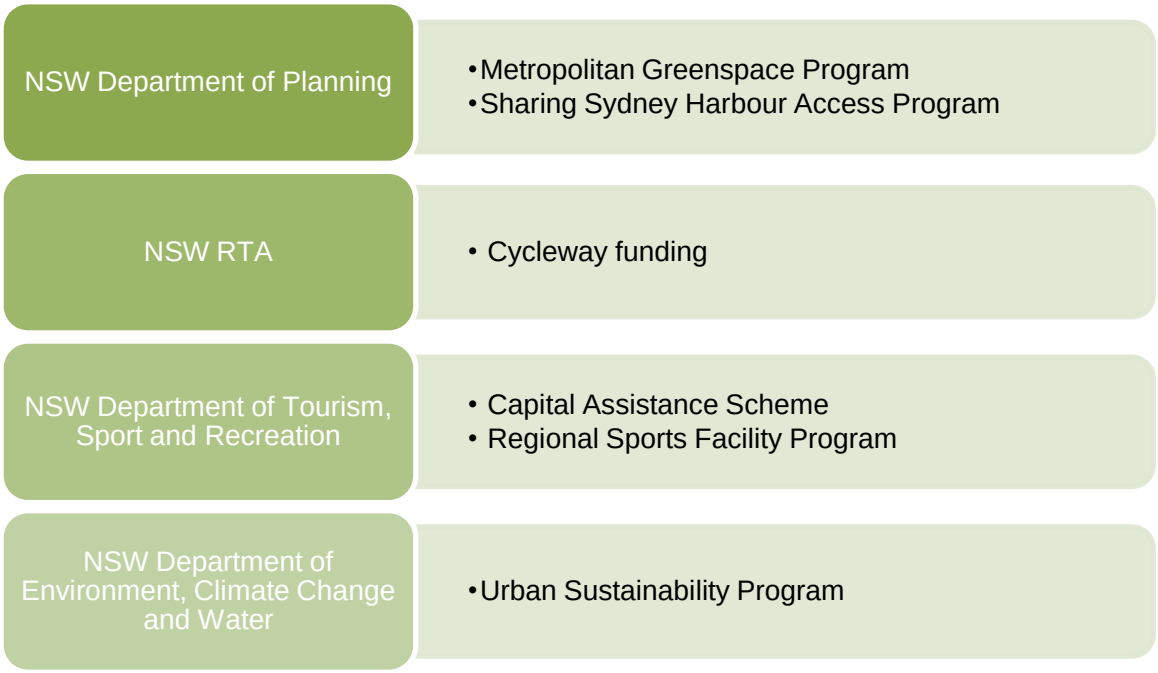
Source: Author

Adequate Resources

Funding is critical to any greenway project and, in the context of Sydney, typically comes from a combination of local, state and federal government sources. The main traditional State Government funding sources that can be used in greenway projects are shown in **Figure 5-6.**

One source of funding which local governments can access for projects like greenways is the NSW DoP's Metropolitan Greenspace Program ("MGP"). The MGP allocates grants to local governments to help plan and improve regionally significant open space and improve links between bushland, parks, waterways and centres (NSW DoP 2009). The program delivers approximately $2.4 million to councils across Sydney on a dollar-for-dollar basis for the embellishment of Sydney's trails and open space (NSW DoP 2009). Whilst MGP gives local councils the opportunity to apply for open space grants, this can be a competitive process. The Sharing Sydney Harbour Access Program is another funding initiative of the State Government. The aim of this program is to improve public access to and enhance the recreational enjoyment of Sydney Harbour and its tributaries. It distributes up to $1.35 million on a dollar-for-dollar basis for specific capital works projects such as walking tracks, cycle paths and new public waterfront parks (NSW DoP 2009).

Figure 5-6 Traditional State Government Funding Sources for Greenway Projects in Sydney



Source: Author based on NSW DIPNR 2005

Within the NSW Department of Environment, Climate Change and Water is the Urban Sustainability Program ("USP"). It aims to facilitate projects of significant environmental benefit to NSW, delivered by local government organisations in

partnership with other government agencies, local businesses, community organisations and householders. Through these projects, the USP also aims to improve the capacity of communities and organisations to protect, restore and enhance the sustainability of our urban environment (NSW DECC 2009). The USP has provided significant funding for the proposed CR-IC GreenWay in Sydney's inner west.

Other potential state government funding sources include the EPA Stormwater Trust Grants, The Estuary Management Program, Sydney Green Web, Catchment Protection and Improvement Grants, Coastcare Community Grants and NSW Environmental Trust (DIPNR 2005). Greenway funding would be better addressed if there was a funding initiative developed specifically devoted to the instigation of greenway corridors in NSW. Further, if greenway establishment in Sydney was the subject of better coordination, as discussed above, it is possible that there would be a greater ability to attract funds from the various jurisdictions and bodies involved. Staged implementation of greenway projects can help to alleviate the monetary burden for local councils and state governments.

Federal sources of funding could also be increasingly sought, as it is this level of government that increasingly has the greatest capacity to fund any projects. It should be remembered, as discussed above, that federal funding boosted the greenway movement in the USA and federal funding supported Greenway 1 on the Central Coast of NSW. Proponents of greenways could seek sources of funding other than those that have been used to date. The Federal Government could be lobbied to dedicate funds for greenway projects. A model to be emulated is the National Bike Path Program which is federally funded (Mahar 2009).

Searns (1995) suggests that proponents of greenways must be very creative in the securing and use of resources and need to look beyond government and turn to other community resources. Partnerships between non-profit organisations and government agencies have become an increasingly significant part of public acquisition of open space (Endicott 1993, quoted in Bengston 2004). The private sector or public private partnerships are another alternative for funding of greenways. There is also need to look beyond governments for funding from other

areas of the community, including the arising out of partnerships, which are discussed below.

Collaborative Partnerships

Establishing partnerships with a multitude of stakeholders is a necessary strategy for greenway implementation. Strong and open working relationships with many partners will be critical to delivering greenway projects in Sydney. Various stakeholders need to work co-operatively in the development of greenways to maximise resources for adaptive reuse of a corridor.

Forming partnerships with the community and local businesses, as well as between government agencies, is important. This has the ability to improve the potential of a greenway project to support funding applications based on economic strength. Non-profit groups are taking an increasingly important role in regional greenway implementation (Erickson 2004). Establishing a 'Friends' group for a greenway project may be useful in building community interest and support.

When partnerships are created in greenway projects, there is the opportunity for shared resources and joint promotion and marketing of greenways. This includes initiatives such as joint Geographical Information System (GIS) mapping systems, and information-based subscriber internet lists which would provide more effective tools to engage the community with greenway projects. Ultimately, this would result in an improved delivery of services. Greenways are an agent for building local capacity and improving cross-sectoral governance (B Ashley 2009, pers comm).

In greenway development and implementation, there is also the opportunity to create public private partnerships. In some cases, a lack of coordination with the building and development world has disadvantaged greenway efforts (Erikson and Louisse 1997). Greenways can thrive on a mix of public agencies and private partners (Flink and Searns 1993) and the greenway movement needs to work more closely with the development industry, corporate world and the private philanthropic community (Erikson and Louisse 1997). If such open space protection results in the economic

benefits, the private sector may be more inclined to cooperate and participate in greenway developments (Erikson and Louisse 1997).

Multi-Faceted and Overarching Goal Setting

A successful greenway project should have clearly defined goals and a shared vision in order that stakeholders can identify and unite over a clear list of aims and goals (Foster-Fisherman et al 2001). Ryan et al (2004) suggest that developing and implementing a vision or management plan can help to manage local greenway planning projects. Vision or management plans provide the opportunity to implement short-term projects whilst at the same time pursuing long-term goals. Vision plans can also assist in promoting the greenway project and developing interest and support for large-scale projects. Vision plans should be revised and updated when necessary to respond to the changing political, social and physical changes of a place (Ryan et al 2004).

The future of greenways in Sydney depends on the development of objectives that embrace a combination of social and ecological issues. Some greenways have the ability to empower citizens and have positive effects on disadvantaged populations through neighbourhood revitalisation, employment opportunities, educational programs and involvement of young people (Erikson and Louisse 1997). The multiple objectives of land use planning and growth management are increasingly important for greenway development.

Low public knowledge of ecological values and greenway development problems may also inhibit effective collaboration and greenway implementation. For this reason, it important that an educational objective is included in greenway aims and that the media is used to publicise the goals and vision of any particular greenway project.

Trained Professionals and Leadership

Trained professionals can significantly advance greenway planning efforts, facilitate collaborative processes, develop alternative concepts, and communicate planning ideas into an overall, easily understood vision (Rottle 2006). Turner (1984) argues

that greenway planning must be undertaken by specialists in this field. Much greenway planning work to date has been undertaken by staff with general planning qualifications rather than specialist landscape or open space planning qualifications, which can result in poor outcomes (Turner 2006). Dedicated courses that include greenways in the landscape planning field could be made to both landscape architects and planners.

However, the engagement of trained professionals does not obviate the need for leadership from those in the community that will benefit from a greenway. Having a skilled, visionary and dedicated leader or 'committed champion' may be a key element in sustaining the development of greenways (Rottle 2006). Linden (2002) claims that leadership qualities include a determined resolve, a measured ego, an ability to motivate rather than direct and an ability to see connections across boundaries. Committed local leadership can assist in building consensus within multi-disciplinary teams (Searns 1995).

The implementation of any greenway requires a hybrid of grassroots and 'higher' support. Whilst Erikson and Louisse (1997) assert that "grassroots support is the hallmark of the greenway movement", citizens' commitment is not enough and elected officials must also join in to implement a greenway. Such support from leaders can provide the structure for people to creatively make the greenway vision a reality.

Commitment, Public Involvement and Support

As has been discussed above, another important factor in developing and implementing a greenway is the long-term commitment from public agencies, friends groups and influential individuals. Currently in Sydney local councils generally have the greatest role in any greenway proposal. Successful greenways require local input and involvement of councils to be initiated and be successfully maintained. Councils may be reluctant to be involved if they see a project as being a financial drain and/or as posing major liability risks. Hence generation and maintenance of public involvement is crucial to greenways having a future in the Sydney context. The case of the CR-IC GreenWay has demonstrated that citizens can become involved in

several ways: by generating public support for the project; as part of the collaborative planning process; and in the construction and implementation of the greenway (B Ashley 2009, pers comm).

However, greenway projects often take a long time to complete. Thus, patience becomes another asset. Quayle (1995, 461) discusses the proposition that the greenway process involves "the need for poking and prodding, nudging and needling until the ideas are implemented". A topic of concern in terms of public involvement that can arise is community fatigue. Often greenways rely on community support to drive a project. Volunteers may contribute to on-ground work and there is the potential for "hard working non-paid participants to burnout, to be over consulted or disinterested due to extended planning and implementation timeframes" (B Ashley 2009, pers comm).

One way in which such community fatigue may be avoided is through improved information sharing processes across stakeholders and agencies. This can be undertaken through the development of effective strategies for the collection and distribution of greenway information and stakeholder agreement about the authorship of greenway information. Websites that inform people and agencies in the area about the greenway corridor can provide a dynamic and continuous community input and improve the direct communication between stakeholders.

Education and public involvement can be successful tools for greenway implementation. They generate public commitment and help minimise greenway opposition. The public should be educated about the benefits of protecting resources and participate in rallying support for public funding. It should not be difficult to convince the public of the benefits that the presence of a greenway in the Sydney environment would give its citizens in terms of a green environmental experience without having to depart the urban environs of Sydney.

Generally, once greenways are successfully introduced and established, they are perceived by the community as 'good news' items and wide community support is indicated by positive media articles, enthusiastic responses from key stakeholders and support of politicians. However, in the developmental stage, greenway proposals

may meet opposition from these same interests. An example of this is the criticism, discussed in the previous chapter, of the CR-IC GreenWay by light rail advocates in the media. There is a need for proponents of greenways to lobby politicians and make strategic use of the media to overcome such opposition.

Summary

There are a number of measures that might be taken to facilitate the successful development and implementation of greenways in Sydney. There is a need to expand the strategic and legislative greenway planning framework in NSW. There has not been sufficient information made available or planning guidelines established to have greenway networks developed as a feature of the Sydney landscape. Whilst subregional planning sounds effective in theory, its practice has been weakened by a lack of connection to the Regional Recreational Trails Framework, inconsistencies across subregional plans and by not specifically addressing existing and potential greenways. The establishment of greenway coordinating bodies would promote the greenway concept and take a proactive step in provision of such corridors. Multi-faceted and overarching goal setting ensures a broader community support for a greenway project. Whilst adequate resources and trained professionals cannot be underestimated in the development of any greenway project, the significance of leadership, collaborative partnerships and commitment, involvement and support from all stakeholders are also important. To the extent that a lack of support for greenways stems from a lack of understanding of the value of greenways, public education and use of the media are necessary. Chapter six revisits the various themes covered in this thesis.

Chapter Six: Conclusion

The final chapter of this thesis gives an overview of the research background, findings and recommendations of the previous chapters. To ensure the original aims of the thesis have been comprehensively addressed, particular reference is made to the problem statement and research objectives provided in Chapter One. Based on the findings of this study, suggestions for future research are also identified.

General Overview

This thesis seeks to make a contribution to the small body of existing literature relating to the greenway concept in Australia. It addresses the issues and challenges from an Australian perspective, particularly in the context of greenway development and implementation in Sydney.

A combination of discourse analysis, case study and key informant interviews were used for the research process. At the outset, there was a comprehensive analysis of past and present literature of greenways which enabled a description of the evolution of the greenway movement and an analysis of the general issues surrounding greenways. Following this, investigation of a proposed greenway in Sydney's inner west was undertaken to illustrate issues with greenway development and implementation. This process involved an examination of current media, policy documents, landscape surveys and conversations with key stakeholders.

The research sought to address the following specific problem statement:

Concerns about sustainability have contributed to a high degree of advocacy of the benefits of greenways, particularly in Europe and North America. However, there is a dearth of research on the challenges in developing and implementing greenways in Australia where the greenway concept is still in its infancy.

In order to address this specific problem, the following key research objectives were set:

- Define the concept of a greenway and discuss what forms it takes internationally and in Australia;
- Assess the benefits, considerations of criticisms and challenges involved in greenway visioning, planning and implementation;
- Undertake an intensive study of the CR-IC GreenWay in Sydney to illustrate issues with greenway development and implementation;
- Investigate factors that might affect broader greenway implementation in Sydney and provide recommendations for improvement of greenway planning in Sydney.

A summary of the main outcomes of this research are set out below.

Definition and Forms

Whilst greenway-like corridors exist in Australia, they are not as prominent as in Europe and the USA. Greenways offer multiple and varied uses which makes it challenging to provide an exact definition of the term. However, for this thesis, a greenway has been defined as a linear open space corridor in the built or natural environment, which provides or preserves biodiversity or other aspects of a sustainable environment and generally provides recreational use.

Benefits, Criticisms and Challenges

Greenways provide environmental, social, health, cultural and economic benefits. However, greenways are not free from criticism, particularly if they are implemented without regard to access to all citizens and the possibility of adverse ecological problems. Developing and implementing greenways must take into account a number of issues. These includes the landscape context and associated ecological issues, multiple jurisdictions and the diversity of stakeholders There is also a need to engage the community, secure adequate funding and overcome difficulties arising from physical barriers, objections from land owners and public acquisition of land.

CR-IC GreenWay

The proposed CR-IC GreenWay is the first explicit example of a comprehensively planned greenway in Sydney. This case study illustrates the multitude of difficulties

faced in developing a greenway in Sydney. These include issues of ecology, cross jurisdictional management, stakeholder involvement, funding, and physical barriers. The development of this greenway is occurring at the same time as other projects adjacent to or on the proposed corridor, such as light rail and residential development, is being considered. These proposals may potentially conflict with the original vision for the CR-IC GreenWay. Interviews with stakeholders relevant to the CR-IC GreenWay also highlight a number of strategies that might facilitate greenway planning in Sydney, including management over multiple jurisdictional boundaries, collaborative partnerships, adequate funding and the need for a clear shared vision and goals.

Key Ingredients and Recommendations for Greenway Planning in Sydney

There are a number of steps that might be undertaken to encourage the development of greenways in Sydney. There is scope to expand the strategic and legislative greenway planning framework in NSW. There has not been sufficient information made available or planning guidelines established to have greenway networks developed. The creation of more formal coordinating bodies for greenways would help overcome the problems posed by multiple jurisdictions and diverse stakeholders. Adequate funding and technical knowledge must be made available. There is also a need for collaborative partnerships and commitment, involvement and support from all stakeholders. Greenway support would be promoted by more attention being given to multi-faceted and overarching goal setting, education and use of the media relating to the benefits of greenways.

Suggestions for Future Research

Given the importance of sustainability, the multi-objective nature and benefits of greenways, it is surprising that a greater amount of research has not been undertaken to identify factors relevant to greenway planning in Australia. There are a number of directions that this research could take beyond that carried out for this thesis:

- It would be useful to expand the breadth of detailed greenway research beyond one case study to an analysis of greenway development and

implementation throughout Australia. This would increase the geographic and cultural scope of the issues discussed in this thesis.

- There is the potential to undertake more detailed research on specific factors of greenway development and implementation, such as financing, management or user experiences in a greenway. Examining a particular issue of a greenway would lend itself more easily to quantitative research.
- There is scope to conduct a temporal approach to the development and implementation of a greenway, by looking at the evolution of one or more of these projects from the proposal stage to a time subsequent to full implementation. Questions could be asked about matters such as the variation and durability of the greenway vision and the ultimate outcomes or impacts on the community, in terms of ecological, social or economic benefits.

In summary, there is a lot more analysis that could be carried out with respect to the development and implementation of greenway networks in Australia.

Final Remarks

Greenways are constantly reinventing themselves as new pressures and priorities appear. As Walmsley (1995) and Antrop (2005) note, cities are more complex than ever with decentralisation, land degradation, urban expansion, technology communications and multicultural societies. While it could be argued that greenways will never be more that a minor feature in the landscape in terms of space occupied, they could be of great importance in terms of sustainability, delivering multiple objectives and providing significant benefits for the community at large. The dual purpose of many urban greenway systems, to provide for human use and natural ecology, illustrates the need for a diversity of spaces within a comprehensive greenway system, and, in particular, to satisfy the need for nature in the city (Hough 1984).

This thesis has identified various aspects of greenway development and implementation that will affect the future of greenways in Sydney. There are presently a number of factors retarding greenway planning in Sydney, not least the planning process, implementation tools and strategies and the lack of an

organisational structure in greenway provision. If greenways are going to become a feature of the Sydney landscape, pro-active measures that explicitly encourage such corridors will have to be taken by governments and policymakers.

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