Greenspace Targets

IPSWICH CITY COUNCIL

- Final
- 9 January 2006

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Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
1	24 May 2005	LAM, SC	LAM	22 May 2005	Draft edits
2	3 June 2005	SC	SC	3 June 2005	Client edits
3	9 January 2006	SC	SC	9 January 2006	Further client comments

Distribution of copies

Revision	Copy no	Quantity	Issued to
Draft	1	1 x pdf 1 x hard copy	C Maudsley Ipswich City Council G Faulkner Ipswich City Council
Final	1	1 x pdf 1 x hard copy	C Maudsley Ipswich City Council G Faulkner Ipswich City Council
Final	1	1 x pdf 1 x hard copy	C Maudsley Ipswich City Council F Bigge Faulkner Ipswich City Council

Printed:	10 January 2006
Last saved:	10 January 2006 01:36 PM
File name:	I:\QENV\Projects\QE09215 Additional After Archiving\Greenspace_finalreport_090106.doc
Author:	Katina McDonald, Susanne Cooper
Project manager:	S Cooper
Name of organisation:	Ipswich City Council
Name of project:	Greenspace Targets
Name of document:	
Document version:	Final
Project number:	QE09215

1. Introduction

1.1 Introduction

Ipswich City Council (ICC) commissioned Sinclair Knight Merz to evaluate the adequacy of its Greenspace areas to cater for future population growth, and to assess whether current Greenspace targets are appropriate. The project involved:

- Reviewing relevant case studies of Greenspace targets in Australia and internationally;
- Developing criteria to evaluate Greenspace areas; and
- Suggest future opportunities to increase or improve upon the extent or quality of Greenspace in the City.

The objectives for Greenspace in Ipswich City is seen to be broader than contributing to just environmental or biodiversity outcomes. Contributions to quality of life, recreation and scenic amenity are also considered important objectives for Greenspace.

These multiple objectives have influenced the criteria and the evaluation of Greenspace in Ipswich City. The objectives recognise that Greenspace is important for protecting the natural environment and conserving biodiversity, but is also essential as social infrastructure for the community, in terms of providing opportunities for leisure, recreation activities and contributing to well-being and identity.

This evaluation project is timely given that Ipswich City has been identified as part of the Western Corridor growth area within the draft South East Queensland Regional Plan. In particular Ipswich has been identified as the prime location for accommodating a large proportion of the population growth in the South East Queensland region over the next 20 years. This is an important issue as a recurring theme in the examples from the Australian and overseas case studies examined, is the importance of taking early action for identifying and securing Greenspace, whether in protected areas or not, avoiding procrastination and ensuring an adequate amount of Greenspace is protected now and in perpetuity.

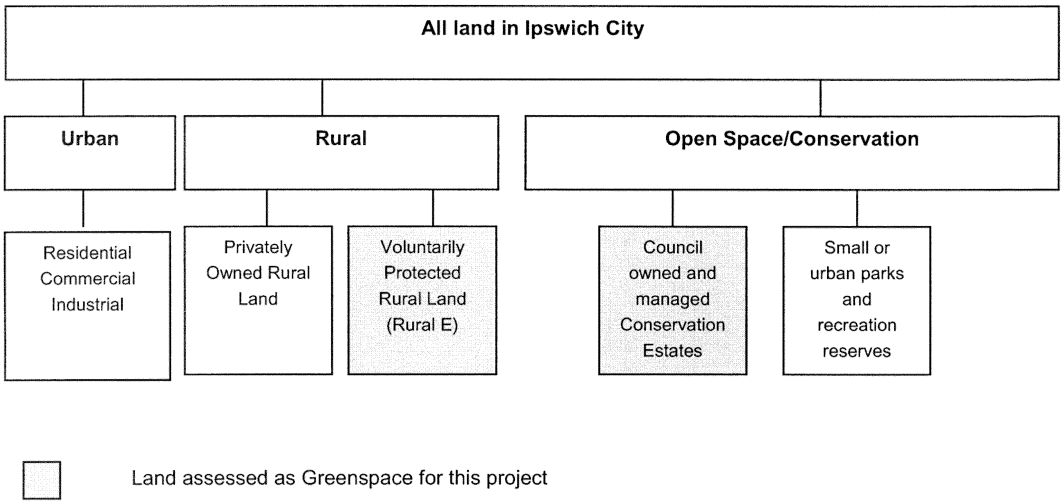
1.2 What is Greenspace

Greenspace in the context of this evaluation does not include sporting fields, parks and gardens. Nor does it include narrow waterway linkages and other urban parkland that extend through urban areas. Rather, Greenspace refers to the large tracts of natural/semi-natural landscape areas of open space or Greenspace in the City, providing ecological character, liveability and recreation services for the community. Their extensive area and natural-semi-natural landscapes are features that distinguish Greenspace from other forms of open space or parkland in the City. This is a point of

difference from many other similar studies that typically include all Greenspace, from urban parks and sporting fields to larger vegetated areas.

The following diagram illustrates the land uses of Ipswich City that are evaluated as Greenspace for this project.

- Figure 1 Land assessed as Greenspace in Ipswich City



1.3 Benefits of Greenspace

Greenspace contributes significantly to the overall livability of the urban and peri-urban environment. The environmental, social and economic contribution of Greenspace includes:

- Individual – nature-based recreation, scenic amenity, environmental appreciation;
- Community – community and cultural identity, communal responsibility for landscape outcomes, community health and wellbeing;
- Land Use Planning – separated urban areas, future opportunities, reduced development impacts, community boundaries, containment of urban sprawl, future options;
- Landscape Amenity – outdoor recreation, attraction of business, nature-based tourism; and
- Ecosystem Services – habitat, nature refuges, healthy waterways, human health (eg. clean air).

It is important to recognise in developing a robust Greenspace system, that the cost of establishing and developing such a system is typically more expensive than conserving one very early in the land development process and set aside for long term master plan goals. The cost of retro-fitting a

Greenspace system is typically prohibitive. However the benefits and value of protecting and managing Greenspace are wide-ranging. The availability and accessibility of quality Greenspace is considered an integral part of a livable, sustainable City.

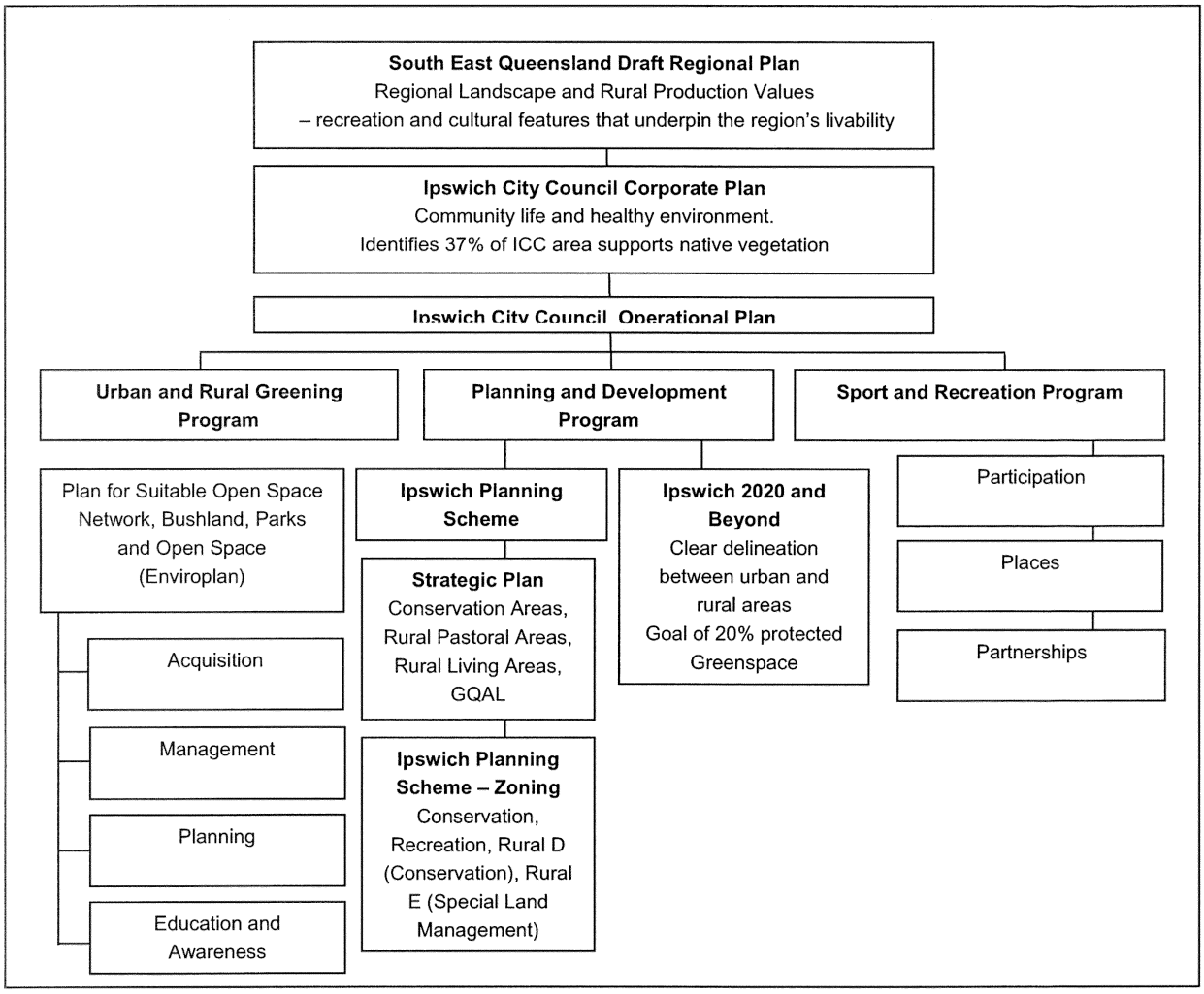
2. Planning Context

This section outlines the existing planning and policy context for Greenspace in Ipswich City, including the Draft Regional Plan for South East Queensland, the Ipswich Planning Scheme, the Ipswich Corporate Plan, Ipswich Futures – Ipswich 2020 and Beyond and Ipswich Initiatives. The planning context outlines the various management mechanisms that currently protects Greenspace in Ipswich.

Both the Regional Plan and the ICC Planning Scheme focus on the conservation importance of Greenspace, whilst the ICC Corporate Plan has a particular focus on community and liveability importance of Greenspace. It is likely that this is due to the fact that the Corporate Plan has an additional role to play and influence over community and liveability elements of the City relative to statutory planning documents. However, there is substantial background literature that supports the importance of considering the social objectives of Greenspace and therefore, the two statutory planning documents together with the Corporate Plan and the various Programs as part of the Corporate Plan are all relevant to how Greenspace is provided for in Ipswich.

Figure 2 below illustrates the interrelationship and hierarchy of the documents, plans and programs discussed in this section.

Figure 2 Interrelationship of plans and programs



2.1 Draft South East Queensland Regional Plan

The Draft Regional Plan for South East Queensland (SEQ Plan) is the primary plan, and prevails over all other planning documents in the region. The SEQ Plan sets a regional vision for the future of SEQ to accommodate the projected population growth. A key strategic direction for the SEQ Plan is the support of regional landscape and rural production values. The rural and natural landscape areas are recognised as being highly valued for a range of reasons, including recreation and cultural features, and underpin the region's livability.

The key maps indicating the Plan's commitment to Greenspace are Map 2 and Map 5 of the SEQ Plan. Map 2 demarcates the Regional Land Use in broad categories, primarily defining a boundary between the Urban Footprint, Regional Landscape and Rural Production Areas.

The Regional Landscape and Rural Production Area include, amongst other things, the range of protected areas and areas of conservation significance, good quality agricultural land, other productive rural areas and land forming strategic and regionally significant inter-urban breaks.

Map 5 illustrates Publicly Accessible Regional Open Space including State Forests, Timber Plantations and Protected Areas. However there are no such areas identified in Ipswich City at this point in time.

2.2 Ipswich Planning Scheme 2004

The Strategic Framework for the Ipswich Planning Scheme outlines the considerations for the provision of open space, recreation, and maintenance of rural landscape character. The Strategy Map 1 of the 'Whole of City' illustrates Ipswich Conservation Areas, Rural Pastoral Area, Rural Living Areas and Good Quality Agricultural Lands. Strategy Map 2 Urban Area, indicates the interurban breaks provided by the Greenspace and Recreation designation. The larger areas of the Greenspace and Recreation designation on Map 2 is contiguous with the Conservation Areas shown in Map 1.

The Conservation Area and Greenspace and Recreation designations translate into 'Conservation' and 'Recreation' zones in the Ipswich Planning Scheme, which provides for a high level of protection from further development. The rural zones provide some level of protection through minimum lot sizes and land use types envisaged for these areas, which provides planning controls to drive the preservation of conservation in these areas. In particular, the Rural D (Conservation) zone which specifically conserves natural features and areas of scenic amenity, and makes allowance for eco-tourism operations. Furthermore, Rural E (Special Land Management) zone is similar to Rural D (Conservation) in that it seeks to protect areas of habitat significance and natural areas of importance for scenic amenity. Essentially Greenspace consist of the combination of Rural D and E zones.

2.3 Ipswich Corporate Plan 2002 - 2007

The Ipswich Corporate Plan includes the corporate agenda for Greenspace in the City.

The Ipswich Corporate Plan has a strong focus on community life and healthy environment. The opening statements in the Corporate Plan demonstrate the commitment from the Council for developing the community and enhancing the lifestyle in Ipswich to make the City a great place to live, including by guaranteeing a healthy environment.

Community Life is the prime focus of the outcomes and core operations for the City. The core operations for community life and healthy environment are through managing land use activities, promoting personal health, creating a greener city, increasing public visitation at conservation reserves, preserving scenic landscapes, managing and improving parks, reserves and open space areas.

Of particular note is that the Corporate Plan identifies that 37% of the City's area is covered with native vegetation. Much of the regionally significant and threatened habitats and natural areas are being targeted for acquisition through the Enviroplan program. Currently, Enviroplan has protected 5,000 hectares of significant conservation reserves.

2.4 Ipswich 2020 and Beyond and the Ipswich Future Master Plan

Ipswich 2020 and Beyond project is a community visioning exercise for the future of Ipswich, involving the community, business and government agencies. Actions and activities for implementation will support the Ipswich 2020 and Beyond Vision and will ensure the community expectations and values are protected and enhanced in the long term.

The Ipswich Future Master Plan contains the draft vision for Ipswich 2020 and Beyond. The vision sees Ipswich as:

"...a regional city with vibrant neighbourhoods.... linked by parks, Greenspaces... conserves its landscape richness of bushland, forests, open spaces, rivers and creeks, mountains, valleys and successful farms and agricultural pursuits. Open space backdrops, corridors and breaks form an identity..."

The designation and preservation of Greenspace will support the guiding principles contained in the Master Plan by clearly delineating urban and rural areas and the protection of agricultural land and bushland, protection of scenically attractive, natural and rural landscapes, and establish Greenspace settings for urban communities.

The Ipswich Future Master Plan sets a goal for 20% of the total area of the City as protected Greenspace. The accompanying Ipswich Futures Map identifies Conservation Areas as covering 19.91% of the Ipswich local government area. This goal has largely has essentially been achieved, however, what presents a challenge in terms of preservation, management and accessibility is that of the 19.91%, only 0.5% is State Owned and 3.43% is Council owned. The remaining 15.98% is privately owned.

2.5 Existing Ipswich Initiatives

2.5.1 Urban and Rural Greening Program and the Enviroplan

The Urban and Rural Greening Program is part of the Ipswich Operational Plan. The Enviroplan is part of the Urban and Rural Greening Program and comprises the range of initiatives for managing bushland and natural areas, providing an open space network, managing parks and open spaces, as well as enhancing the streetscape and urban amenity, and implementing catchment management.

The Ipswich Enviroplan is Ipswich City Council's key Greenspace initiative, which aims for a Greener Quality Lifestyle. The Enviroplan recognises the diversity of the natural areas in the City, including rainforest, dry vine forest, soft wood forest, open forests, woodlands, heathlands, wetlands and grasslands, and the range of wildlife these ecosystems support.

The Enviroplan has four major programs with numerous individual components within each program, relating to initiatives for both public and private land.

Voluntary Agreements	▪ Voluntary Conservation Agreements – between a landowner and Council on private property for vegetation retention (VRA), rural conservation (RCA) or nature conservation (NCA). Includes direct financial grants, material provisions and management input.
Management	▪ Private Land Support Program – Partnership approach to private land management with direct support and rebates including weed control rebates and the free plant program. ▪ Public Land Management – Securing and managing significant natural resources in the public estate.
Planning	▪ Flora and Fauna Surveys ▪ Natural Resource Mapping ▪ Ecosystem Assessment ▪ Development ▪ Public Access and Facilities for nature based recreation - enhancing conservation areas through revegetation, Access – signage, walking trails, board walks and Facilities – picnic tables.
Education and Awareness	▪ Seminars, workshops and exhibitions ▪ Publications – brochures, fact sheets and posters ▪ Enviroplan funding – Enviroplan Levy as part of the Urban and Rural Greening Program

2.6 Summary

The most significant point to emerge from review of the planning context is the lack of mapped Greenspace in Ipswich City in the SEQ2021 Regional Plan. The areas mapped are based upon State protected areas (National Parks, Conservation Parks, Forest Reserves) and does not recognise the Conservation Estate secured by ICC.

Even if the relatively small areas of the Conservation Estate were included, the issue of inadequate areas of publicly accessible land in ICC highlights the challenges of identifying and preserving Greenspace which is further explored in the evaluation; **Section 5**.

The Planning context generally discusses the basis for how the Greenspace system in Ipswich is managed and protected, and opportunities for expansion, in the range of instruments and mechanisms. There is clear evidence of corporate commitment and recognition within ICC for the need to develop the Greenspace system for the local area as well as the region. Social or community outcomes from Greenspace are also highlighted in the ICC planning context.

Greenspace, with its links to livability, landscape features and identity, is considered an essential component of the ICC Corporate goals and vision; it is difficult to see how they could be realised without an effective Greenspace program. The Planning Scheme provides a mechanism for protecting the landscape character in the rural areas through the innovative rural management zones. The community visioning project/s will further enhance the social need for Greenspace in Ipswich

3. Case Studies

The case studies presented in this chapter provide some valuable examples of successful programs for establishing a Greenspace system from regions that have experienced and planned for population growth. This is a context similar to the high growth currently experienced in South East Queensland. The locations of the case studies are:

- Durban, South Africa;
- Victoria, Canada;
- Portland, USA;
- New Jersey, USA;
- Ottowa, Canada;
- Parks Canada (Federal Agency);
- Sydney, Australia;
- South-East Queensland local governments.

3.1 Durban Environmental Services Management Plan

Title	Durban Environmental Services Management Plan
Location	Durban, South Africa (now known as eThekwini Municipality)
Description	The Durban Environmental Services Management Plan is also considered an Open Space Plan, and was prepared to improve the quality of life to Durban's residents and for planning development in an integrated and sustainable way that is within the carrying capacity of the natural environment.
Nature of Project	To provide a well-connected and diverse open space system for the sustainable supply of environmental goods and services to Durban, which comprise both natural open space areas and open space areas in urban settings. The basis for providing for the long term sustainability of the city's environment and quality of life requires that the land, water and air resources that are contained within its open spaces are planned and managed as critical socio-economic as well as ecological assets of the city. Open space planning began in Durban more than 20 years ago, and has evolved over time to respond to new approaches to environmental and land use planning. The early phases focused on preserving areas worthy of conservation and areas directly contributing to the open space network in the 1970s and 1980s. There was a shift away from solely conservation and ecological viability in the 1990s to recognise the need for managing the social and economic elements of the open space system. The first cut at a three-tiered approach to the open space system was mapped using GIS, which demonstrated 33% of the metropolitan area was in the open space network. Of this areal extent, 52% of the open space was regarded as open space due to it being undevelopable for physical constraints such as steepness, flooding or instability, or having zoning constraints to development. A change of local government boundaries in 2000 increased Durban's land area by 67%. This had implications for the established open space system, and the system need to be extended. The subsequent review of Durban's new land area enabled 54% of the land area to be included in the open space network, and was considered the optimal proportion for the new municipal area. This total included agricultural land and rural areas in the calculation. Political pressure, due to growing development pressures in the City, resulted in a refined open space network that was more manageable, which distinguished between accessible open space areas and those areas where the land contributed to the feeling of open space in the local government area. This led to the introduction of a range of implementation tools for protecting the values and character of open space including land development rights transfer, property rates rebates, environmental charges, zoning regulations, incentivising landowners and land acquisition. Now, the open space system is a primary municipal function for delivering goods and services for environmental and socio-economic benefit.
Relevance to Ipswich City	▪ Several mechanisms used to establish and maintain the network over the long term; ▪ Planning strategy to consider areas which contribute to the open space character of the local government area protected by a range of mechanisms, particularly creative zoning. ▪ Phases of Greenspace planning from acquisition with an environmental focus in the early stages to socio economic objectives and a broader range of goals. ▪ Distinguished between publicly accessible areas and those that are not (eg rural areas) but contribute to an open space 'feel'.

Mechanisms and Approaches Used	▪ Supply Management – Open Space management principles ▪ Demand for Services – Land Use Management principles ▪ Incentives for Conservation (and disincentives to prevent poor land use) ▪ Development of the GIS database ▪ Audit of protected areas ▪ Acquisition and expropriation of land ▪ Land owner consultation (where open space on private land)
Targets	54% in an Open Space Network (includes privately owned and rural land)

3.2 The Capital Regional District (Victoria, Canada)

Title	Greenspace in the Capital Regional District
Location	Victoria, Canada
Description	The Capital Regional District (CRD) is the name given to the south east portion of Vancouver Island, in Canada's west. CRD is also the name given to the regional government overviewing the regional planning for thirteen municipalities, including Victoria City. The region is 2,400km^2, and has a population of 342,000 people. CRD Parks is a department of CRD responsible for managing the regional parks and trails system.
Nature of Project	The CRD Regional Growth Strategy is required to be monitored annually for progress against targets and indicators of a sustainable community. The Report on the Environment: Monitoring Trends in the Capital Regional District, included a section on the Amount of Greenspace in the CRD as one of many indicators for sustainable communities. It was the first time such an analysis was carried out. Greenspace in the CRD is considered to comprise of protected areas, recreational parks, agricultural land, vacant Crown land with Greenspace values and golf courses. The CRD has 80% of the land area categorised as Greenspace, of which; ▪ 5% is in parks or protected areas; ▪ 14% identified as sensitive ecosystems but lacks protection; ▪ 55% managed forest land, subject to logging; ▪ 7% agricultural land reserve, actively farmed. The metropolitan areas in the region, being the core municipalities, have a provincial guideline of 12% of Greenspace to be in parks or protected status with reasonable access from population centres. Currently the region has 5% in parks or protected areas, and needs to increase the proportion for the current population. However, the CRD considers the percentage of region's area more relevant than Greenspace area per capita.
Relevance to Ipswich City	▪ Dealing with the challenge of a growing population with the need to increase the open space system for the current population. ▪ Recognition and importance of publicly accessible land.
Mechanisms and Approaches Used	▪ Acquisition (with funding via property taxes) ▪ Land Exchange (as part of a contribution agreement with the Province of British Columbia) ▪ Land Sales – after acquisition, CRD Parks places a conservation covenant over environmentally sensitive areas of the property, and sold the balance) ▪ Partnerships – eg. for maintenance and access to the public
Targets	12% in Protected areas

3.3 Portland – 2040 Growth concept

Title	Metro 2040 Regional Framework Plan
Location	Portland, Oregon, USA
Description	The Metro 2040 Planning Framework has been the topic of much debate about strategic planning and managing for high rates of population growth. The primary concept for Metro 2040 is the 'Urban Growth Boundary' (UGB) as a way of delineating between urban and rural areas, centred on Portland Major Regional Centre.
Nature of Project	An important component of the growth concept is the availability and designation of lands that will remain undeveloped, both inside and outside the urban growth boundary. Rural reserves are lands outside the UGB that provide a visual and physical separation between urban areas and farm and forest lands. Open spaces include parks, stream and trail corridors, wetlands, floodplains, rural reserves, both inside and outside an urban growth boundary. The primary way of managing green space, other than securing environmental areas and rural reserves, is through land use decisions guided by the 2040 Plan to protect natural areas, parks, streams, farmland both inside and outside the urban growth boundary. The performance measures include the amount of environmentally sensitive land that is permanently protected, the amount that is developed; and public access to open spaces.
Relevance to Ipswich City	▪ Rapidly growing population ▪ Acquisitions for future Greenspace areas ▪ Commitment to public access ▪ Function of Greenspace as an inter-urban break important
Mechanisms and Approaches Used	▪ Urban growth boundary – rural reserves to separate urban areas. ▪ Planning Scheme and development control
Targets	Not available

3.4 Smart Conservation - New Jersey and others

Title	Smart Conservation for Towns
Location	New Jersey, USA
Description	The term 'Smart Conservation' is an approach for creating an interconnected regional web of healthy recreation areas, ecosystems, wildlife habitats, water supplies and agriculture. The process for 'Smart Conservation' is to start with an ultimate master plan, regulate the master plan, focus on land acquisition and leverage conservation efforts on a regional basis. 'Smart Conservation' was initiated in New Jersey, and has also been used in other areas in the USA. The website www.smartgrowthgateway.org provides further information and case examples.
Nature of Project	New Jersey is the national leader in land conservation, as 24% of the state is publicly owned, parkland or deed-restricted farmland. New Jersey established Smart Conservation to answer the question "How can municipalities become more effective and efficient at protecting land and creating parks? And how can they provide their citizens a bigger bang for their buck?" It was in response to the realisation that land preservation was opportunistic and reacted to development pressure rather than forward thinking. Using Smart Conservation, Eastampton Town in New Jersey increased its preserved land area from 8% to 30% in only four years. Eastampton's Smart Conservation included a resident authorised open space tax of 19 cents per $100, which allowed acquisition. 'Smart Conservation' relies on a Master Plan with a inventory, conservation element, Open Space and Recreation Plan, Farmland Preservation element, and GIS tools to enable aggressive and effective implementation and monitoring. Smart Conservation has also been successful by encouraging authorities to act as soon as possible with identifying property acquisitions, raising funds and leveraging conservation efforts on a regional scale.
Relevance to Ipswich City	▪ Keen to seek an efficient and strategic approach to acquisitions (avoid the ad-hoc) ▪ Seek maximum leverage on a regional basis from the acquisition efforts
Mechanisms and Approaches Used	▪ GIS Mapping ▪ Open space tax – with supportive residents ▪ Greenbelt plan, using zoning for agriculture-commercial and recreational uses, acquisition ▪ Land Sales (sold wetlands to a mitigation bank) ▪ Clustering – a 'Conservation Design' ordinance requiring a minimum of 50% permanently preserved, undivided open space/agricultural land; ▪ Incentive Zoning – rewards landowners who enter 75% of their acreage to a Farmland Preservation program when subdividing land, by allowing an increase the number of buildable lots on the balance 25%; ▪ Transfer of Development Rights – preserve all remaining farmland through its TDR program by transferring development rights from farmland to a pedestrian-friendly, mixed-use village.
Targets	30% in Greenspace system

3.5 Ottawa's Greenbelt Master Plan

Title	Ottawa's Greenbelt Master Plan 1995 – 2015 (National Capital Commission)
Location	Ottawa, Canada
Description	The National Capital Greenbelt surrounds Ottawa with a variety of functions, including protecting wildlife and wetlands, providing land for recreation, parks, agriculture and forests. The Greenbelt is used as a recreation trail and is a mosaic of core natural area components to enhance the region's livability.
Nature of Project	The Greenbelt is a mosaic of farms, fields, forests and research complexes, and has been in existence since the 1950s, to shape the expanding urban capital and provide a reserve of land. The Master Plan is used to guide decision making, and ensure the greenbelt area remains large, rural, open space running in a continuous belt and remain in the public domain. The greenbelt is also to maintain a diverse mix of uses and landscapes. The Master Plan comprises two land designations – ecological and land management focus and interest/character focus. The land management focus designates land according to Natural System (core natural area and natural buffer), Natural Linkage (rural system, cultivated landscapes), Rural Landscape (built system facility) and an Infrastructure Corridor.
Relevance to Ipswich City	▪ Continue to encourage a high level of public contribution to the future vision; ▪ Recognition of dual functions of ecology and interest/character ▪ Multi-purpose use of Greenbelt ▪ Role of Greenbelt in defining the urban boundary ▪ Master Plan developed to guide securing the Greenbelt
Mechanisms and Approaches Used	▪ High level of public ownership and involvement ▪ Revegetating marginal farmland ▪ Acquire land and then retain control through leasing arrangements – farms, residential uses, research institutions and recreation facilities. ▪ Master Plan for land use decisions and long term commitment to the Greenbelt. ▪ Public support for the Master Plan review process ▪ Generate revenue from the greenbelt to enable re-investment back into the Greenbelt, for example Greenbelt user fees
Targets	Master Plan (no quantitative targets available)

3.6 Resource and Environmental Management in Canada

Title	Endangered Species Campaign – World Wildlife Fund (Canada)
Location	Canada
Description	Parks Canada is the organisation for managing protected areas in Canada.
Nature of Project	Campaign in the late 1980s, in recognition of the urgent need to improve the land area in a protected state. In response to the Brundtland report (WCED 1987) which recommended that current global areas needed to be tripled in size for sustainability reasons. The target was 12% of the landscape should be in protected areas. The Canadian government has continued to establish a National Parks system for protected areas to reach the target. However, it has been emphasised that the 12% is not adequate for biodiversity, and is the only the core of a range of mechanisms for conservation across the landscape Philip Dearden – Chapter 10 – Parks and Protected Areas
Greenspace Values and Contributions	▪ Biodiversity
Relevance to Ipswich City	▪ Example of a target of 12% in protected areas is only part of the open space system.
Mechanisms and Approaches Used	▪ Acquisition ▪ Public awareness
Target	12% in Protected areas

3.7 Sydney Metropolitan Greenspace Program

Title	Sydney Metropolitan Greenspace Program
Location	Sydney and Greater Metropolitan Region (GMR), Australia
Description	The NSW Department of Infrastructure, Planning and Natural Resources (DIPNR) has created the Sydney Metropolitan Strategy, which will be used to respond to growth and change in the GMR over the next thirty years. DIPNR have also created a funding program for local governments in the Sydney area to create Greenspace projects.
Nature of Project	Since the 1970s, the NSW Government has been focussed on acquiring new regional open space, particularly in Western Sydney. The acquisitions have totalled 35,000 hectares of land through Government funding and local Government contributions. Several significant corridors have been created that provide a green backdrop for Fairfield, Liverpool Blacktown, including Nurragingy Recreation Area at Doonside. There are other programs underway at Penrith Lakes, Rouse Hill, St Marys and Mt Penang. Greenspace contributes to the city's liveability. It creates picturesque landscapes that include mountain ranges, beaches and rural areas, adds to the scenic amenity and also provides intrinsic values. Funding is available for Greenspace acquisitions of $1 million per annum on a dollar for dollar basis. Criteria for funding are: ▪ project will contribute to use by wider range of residents and variety of recreation activities ▪ enhance regional environmental significance ▪ enhance access to regional waterways ▪ enhance open space in a region where open space is scarce ▪ enhance visibility or visual amenity of open space ▪ will form a part of a network of open space Acquisitions were focussed in western Sydney with some in eastern Sydney on the basis that they added to the amenity and biodiversity of the region
Relevance to Ipswich City	▪ State government assistance to acquire Greenspace areas, although purchase done at the local level ▪ Multi-purpose values of Greenspace recognised ▪ Acquisition criteria for new Greenspace developed
Mechanisms and Approaches Used	▪ The Sydney Metropolitan Greenspace Program gives up to $1,000,000 in funding to local Governments for their Greenspace Programs. This funding must be applied for at DIPNR. ▪ Update and reporting on performance indicates From 5% to 8% of regional Greenspace is now protected 14% to 11% of Greenspace is now unprotected 20% of the coastline is in protected parkland

3.8 Case Study Summary

3.8.1 Targets

The following table summarises the key features of the case studies that will be useful in evaluating the adequacy of ICC's Greeenspace. Ipswich City has been included to highlight comparisons.

Table 1 Case study summary features

Case study/location	Population	Land Area	% Open space / Greenspace	Greenspace land type inclusions
Durban, South Africa	3 million (approx)	2,297km^2	54% in Greenspace system (including privately owned and rural land)	Urban open space – eg. parks, golf courses, sports fields, road reserves, rural areas, forestry Natural open space – eg. ecosystems, floodplains, wetlands, forests, waterways.
Victoria, Canada	342, 000	2,500km^2	Target of 12% of Greenspace in Protected Area status	Protected areas, recreational parks, agricultural land, vacant Crown land with Greenspace values and golf courses.
Portland, USA	540, 000	100, 000 km^2 (approx)	N/A	Combination of areas outside of the Urban Growth Boundary, protected Greenspace areas and parkland.
Easthampton town, New Jersey, USA	6,202	9km^2	30% secured in Greenspace system, Target N/A	Parkland and rural areas.
Ottawa, Canada	1,200,000	110.2 km^2	N/A – Master plan (17,000ha in protected greenbelt)	Natural systems, rural landscape and infrastructure corridor.
Sydney, Australia	4,889,800		85% secured in GMR	Protected areas, rural landscapes, cultural landscapes, protected water supply catchments, wetlands and flood prone lands, extractive industries.
Ipswich City, Australia	676,000 (future expected)	1,200 km^2	20% (4% conservation 16% rural)	Natural and significant areas for biodiversity; rural areas

3.9 South-East Queensland Greenspace comparisons

Local governments in South-East Queensland have been active in protecting Greenspace areas through acquisition (often through conservation levies or similar) and voluntary agreements with landholders; typically on rural land.

Table 2 provides a snapshot of current achievements for a number of local governments. They do not necessarily represent 'targets', but provide a comparison for the achievements of Ipswich City.

- Table 2 Greenspace areas protected in South-east Queensland*

Local government	Area (ha)	State conservation areas (NP, CP, Forest Reserves) (ha)	Local government acquired and publicly accessible Greenspace (ha)	State Greens pace as % of LGA area	Publicly accessible Council owned Greenspace as % of LGA area
Gold Coast City	137,682	12,250	2770	14%	2%
Brisbane City	134,375	30,776	1600	12%	1%
Esk Shire	392,736	60,634	-	19%	
Maroochy Shire	116,111	29,197	1,480	25%	1.3%
Caloundra	109,622	27,954	N/a	29%	N/a
Ipswich City	120,154	429	4,600	0.35%	4%

* Note: figures are generally accurate although small adjustments may be required to reflect recent local government acquisitions and changes through the Regional Forest Agreement.

Table 2 clearly indicates the unusual situation of ICC in relation to Greenspace. Compared with other local governments, ICC has:

- Almost no Greenspace in National Parks or Forest Reserves, and
- A large proportion contained in Council acquired areas.

This results in a small proportion of ICC's Greenspace area being publicly accessible, and a heavy reliance on Council to provide adequate Greenspace. In contrast, most other local governments have between 12-30% of their area in such tenures, and this pattern is typical for other local governments within SEQ. Redland and Noosa Shires have even higher proportions in National Parks/Forest Reserves with 33% and 36% respectively of their areas. .

For South-East Queensland, the total area of publicly accessible Greenspace land (excluding water bodies) is around 17%. This is lower than other regions in Australia containing major metropolitan centres. By way of comparison, Sydney region with only a slightly higher population than South-East Queensland, has 44% of its area in Greenspace landuses.

- Sydney and SEQ regional Greenspace comparisons

Region	Total area of region (ha)	Area (ha) of National Park, Cons Park, Forest Reserves	% of area
Sydney region	2,939,852	1,303,986	44%
SEQ	2,579,389	449,613	17%

Therefore, it is difficult to argue that any deficit in Ipswich's Greenspace is more than compensated for by 'surplus' amount elsewhere.

3.9.1 Other key points

Table 1 indicates a wide range of land area and populations, which makes direct comparisons with Ipswich City difficult. An additional complicating factor is the mix and proportion of rural and publicly owned land. However, it appears that in terms of publicly accessible areas, the targets set for ICC are below those established in other areas. Even with this diversity there are still a number of important themes that have emerged from the case studies that are relevant to Ipswich City.

- Greenspace is recognised as an asset in both physical and social terms, and an intrinsic part of planning a sustainable city;
- A regional scale is more typical of Greenspace planning due to the mix of tenures involved, and the scale and extent of land required. Open space planning on the local scale tends to have a focus on small-scale outcomes of urban parkland, sporting fields and setbacks. Greenspace suggests a 'bigger picture' canvas of planning that is more suited to a regional/sub-regional approach;
- Having a plan or master plan for Greenspace is typical of the case-studies. This is often triggered through recognition that rapid development and population growth make this essential to guide acquisitions and identification of the purpose of Greenspace and appropriate lands that suit its functions;
- Most objectives for Greenspace are multi-purpose, and include livability, recreation, amenity, and natural environment;
- Greenspace is typically a mix of privately owned rural farmland together with natural areas with a nature conservation objective, which results in some areas not being accessible to the public; and
- There is also recognition that schemes developed by local/regional authorities have a link to State or Federal programs such as National Parks, State forests or their equivalent.

Targets vary widely and are heavily influenced by the proportion of private and public land, mix of tenures, and purpose of the Greenspace.

3.9.2 Greenspace targets

The concept of a Greenspace target is a useful tool, although there is little research or practical examples that provide a meaningful framework to develop appropriate targets for Ipswich City.

Case studies identified for this project have a diverse mix of tenures, landuses, areas and populations. Targets have been identified and applied widely to the urban setting of parks, sports and recreation fields, but have not been developed for a Greenspace context as defined for this project. However, the examples that have been reviewed indicate that key pressures are likely to include local population growth, increasing use from a regional catchment, close proximity to Brisbane, and a low proportion of publicly accessible areas in current Greenspace.

The amount protected in both rural lands and publicly accessible areas from the case studies above suggests that the 4% target for Ipswich City will be inadequate to serve community needs in coming decades.

4. Biodiversity targets and thresholds

One significant benefit from Greenspace is the protection and maintenance of biodiversity values and ecosystem services.

Recent ecological research suggests there are thresholds for the minimum area of habitat needed to retain viable populations of species and other ecosystem attributes. A threshold can be viewed as "a point where there is a dramatic change in the state of the system" (Biological Conservation 2005, p 299). Thresholds are usually expressed quantitatively, and so can also be interpreted as possible targets for the retention of natural areas and the ecological values they support.

A number of specific thresholds have emerged from recent studies in Australia and internationally. The studies suggest that increasing habitat fragmentation results in marked changes in the diversity of species remaining in the smaller remnants. The studies have been undertaken across a range of landscapes, including aquatic, woodland, agricultural and forests, and have used both conceptual modelling and empirical field studies.

It should be recognised that when interpreting the findings from these studies, some uncertainty exists around specific threshold values and the rate of species or ecosystem change once the threshold is exceeded. This is largely due to various species having different habitat requirements, inadequate knowledge on species tolerance of various disturbance regimes, and varying mobility of different species. Nevertheless, although debate continues about both the role of thresholds in species and ecosystems decline and specific threshold levels, there is emerging evidence on the existence of critical thresholds.

A selection of thresholds relevant to this project is outlined below. Their relevance is related to the following Greenspace issues:

- Many visitors to natural areas have some expectation of viewing native species and habitat that are not commonly seen within the suburban environment. If many of these ecological attributes disappear, then the perceived value by the community of the natural areas that support them will also reduce;
- The values linked to larger tracts of native vegetation in good condition provide a different recreation and appreciation experience from that gained in smaller parks within an urban, more disturbed or artificial setting. The greater sense of 'nature', remoteness from urban sounds, activities and landscapes, and appreciation of natural values can only be provided within larger natural areas. These are largely synonymous with the natural areas that constitute Greenspace for this study;
- Ipswich has a civic pride in natural icons associated with its distinctive landscapes. These include a series of striking volcanic peaks in a sediment-dominated landscape, and species that

have significant association with the local area (eg, *Pouteria eerwah* (Flinders Plum found around Flinders Peak), *Melaleuca irbyana*, (many of the few remaining areas of this endangered ecosystem found in Ipswich City) and the flora species *Notolaea lloydi,* named after local naturalist Lloyd Bird. Loss of these locally endemic species would mean part of the distinctive environmental identity and sense of place particular to Ipswich City would also be lost;

- Some findings suggested that not just extent of area, but quality of habitat is also crucial, and that species can persist more rigorously if habitat quality is high. This also suggests an important role for larger Greenspace areas, as their good condition can be managed and retained more effectively and efficiently than smaller remnants;
- Fauna and flora species associated with Ipswich City's conservation estate represent species and ecosystems typical of open eucalypt forest at low elevations. The size and intactness of this habitat tract is a scarce resource, and has been recognised as a regional resource in South-East Queensland. This is increasingly likely to become a sought-after destination for the region's rapidly growing urban population that will seek experiences offered by a natural environment setting.

The more extensive tracts of native habitat that are publicly accessible provide an important ecological function, in addition to scenic, recreation and education/appreciation roles. It can be argued they make a substantial contribution to the 'liveability' of the local area that is valued by Ipswich City Council. They are also likely to experience increased pressure to function as multi-purpose Greenspace areas that will need to accommodate additional uses and visitors within the overall objective of nature conservation which presents its own management challenges.

4.1 Threshold study findings

Note that findings relating to thresholds are relevant to the sub-catchment, catchment and sub-regional scale.

- Dramatic decline in species richness of birds and mammals occurs below a critical threshold of 30% habitat cover (Huggett 2005);
- The thresholds recommended for managing eucalypt-dominated grazed woodlands for sustainable livestock production in Australia and to protect biodiversity are - a maximum threshold of 30% intensive land use on properties, a minimum of 30% woodland cover, 10% of a property to be managed for wildlife, 30-40% maximum bare ground, 5-10 ha minimum size of woodland patches (Bennet and Ford 1997, Arnold and Weeldenburg 1998);
- A threshold of well in excess of 10% tree cover was required to avoid serious decline of woodland-dependent avifauna in Northern Victoria (Radford et al 2005);

- The impact of fragmentation upon biodiversity was assessed in the outskirts of southern Sydney (Drinnan 2005) for different groups species including bird, fungi, frogs and plants. The results were:
  - **Birds:** remnant size of greater than 5ha is required before forest interior birds dominate over suburban birds. Remnants over 50ha were required for forest interior birds to dominate over generalist bird species;
  - Poor quality **corridors** linking remnants also lead to dominance of urban tolerant and generalist bird species;
  - **Frogs:** remnants over 50ha were required for rare or threatened and urban-intolerant species;
  - **Plants:** larger tracts of habitat over 50ha supported locally significant plants and more threatened plant species; and
  - The **area** of the vegetation remnant was the most important factor in accounting for species richness and diversity across all taxa.
- Quality of habitat is important. Fauna species may persist in smaller remnants if the habitat quality is high to allow foraging, breeding and movement (Fahrig 2001).

4.2 Implications for Greenspace targets

There are several practical implications from the above studies for Ipswich City's Greenspace targets. They include:

- A threshold of at least 30% vegetation cover is required at a regional, subregional or wider catchment scale to prevent serious and dramatic species decline, although species loss will occur above these levels. This suggests vegetation cover of more than 30% in larger reserves is required to retain a minimum level of species diversity;
- Remnants smaller than 5ha are unlikely to be viable for many species that are intolerant to urban and highly modified landscapes;
- The full range of Greenspace ecological values will not be present in reserves and protected areas that consist of small and fragmented vegetated remnants. Appreciation and awareness of native species and ecosystems that are only found in less disturbed, extensive, intact areas is a significant value that adds to quality of life and ecosystems services that Greenspace can provide;
- Large intact reserves of quality native habitat are essential for retaining biodiversity values and species richness. Smaller, fragmented areas will result in serious and possibly dramatic species decline; and

- 50ha of good quality habitat was identified as a threshold level for some bird, frog and plant species in the outskirts of South Sydney.

For these reasons, it is suggested that Ipswich City incorporate in its Greenspace targets:

- a number of reserves in good condition that are above 50ha in size;
- a connection of high quality corridors of habitat; and
- establish habitat cover greater than 40% across the particular catchment area.

4.3 Regional Vegetation Management Code

The regional vegetation management code is important because it sets regional targets for the extent of native vegetation that can be a guide to assess the adequacy of environmental outcomes for Greenspace targets.

This code pursuant to the *Vegetation Management Act 1999* is used for the assessment of development applications for clearing vegetation under the *Integrated Planning Act 1997.*

The Code employs a number of targets or thresholds to inform levels of appropriate retention of native remnant vegetation that will retain ecological processes, maintain biodiversity and avoid land degradation.

They include:

- At least 20% of an individual property retained as remnant vegetation;
- No clearing in drainage basin sub areas that have less than 30% remnant vegetation when compared to its total area;
- Clearing does not reduce the extent of remnant vegetation in the Brisbane Valley sub-region (in which Ipswich City is located) to less than 25% of the original extent of vegetation;
- Clearing will not reduce the extent of 'not if concern' ecosystems to less than 30% of its original extent; and
- Clearing will not reduce the extent of an 'of concern' regional ecosystem to less than 10% of its original extent.

The thresholds outlined above are similar to those identified in ecological studies, and outline recommended thresholds at the property, sub-region and drainage area scales. Therefore, it would seem that the Act reinforces the concept of thresholds of native vegetation cover and habitat that are necessary (at a minimum level) to achieve a range of biodiversity functions.

5. Evaluation

5.1 Evaluation framework

Greenspace in Ipswich City was evaluated against a number of criteria to assess its adequacy in terms of extent of area and physical features to meet Greenspace needs for future population growth. To guide the selection of useful criteria, it is important to ask the question:

'what objectives or purposes is Ipswich City's Greenspace intended to achieve?'

Discussions with Council officers suggested multiple objectives for Greenspace that encompass environmental benefits in addition to what could be described as 'quality of life' outcomes. To meet these objectives, seven criteria for Greenspace have been identified, and have been specifically outlined below.

- **Accessibility** to residents and visitors;
- **Diversity** of Greenspace settings;
- Provides for **outdoor, nature-based recreation;**
- **Visibility** to residents and visitors;
- Contributes to **local character, identity** and **sense of place;**
- Protects and maintains **ecological processes** and **biodiversity**; and
- Establishes an effective **inter-urban break.**

These criteria therefore capture three important objectives for Greenspace, being: to improve livability and 'quality of life' for its residents; to protect significant elements and processes of the natural environment; and to provide for a range of nature-based recreation experiences.

Table 3 demonstrates the link between the seven evaluation criteria to the three broad Greenspace objectives.

Table 3 Evaluation criteria and link to broad objectives

Criteria	Contributes to Greenspace objective		
	Quality of life, livability	Recreation	Environment
Accessibility	✓	✓	
Diversity of settings	✓	✓	
Nature-based recreation		✓	
Visibility	✓		
Local character, sense of place	✓		
Biodiversity, environment			✓
Inter-urban breaks	✓		

5.2 Explanation of evaluation criteria

There are a number of crucial points that will inform the criteria to evaluate Greenspace targets.

5.2.1 Livability and quality of life

Livability or quality life issues are linked, with the claim made by some cities to be livable (and even the most livable....) without specifically identifying indicators or the special features that contribute to this lifestyle or quality of life.

Recent research (summarised in Maller et al 2002) on the role of public parks and natural areas in community health concluded that the following have been demonstrated *with certainty* by current research:

- When given a choice, people prefer natural environments (particularly those with water features, large old trees, intact vegetation or minimal human influence) to urban ones, regardless of nationality or culture;
- The majority of places that people consider favourite or restorative are natural places, and being in these is recuperative;
- People have a more positive outlook on life and higher life satisfaction when in proximity to nature (particularly in urban areas);
- Having nature in close proximity or just knowing it exists, is important to people regardless of whether they are regular 'users' of it.

Therefore, having 'natural' Greenspace areas visible and accessible to the community plays a significant role in achieving a 'Quality of Life' objective.

5.2.2 Accessibility

Criteria explanation

Greenspace that is not accessible to the public (eg privately owned rural areas, farmland) performs the useful functions of scenic amenity, protecting local landscape character, sense of place, biodiversity and ecosystem services. However, these functions have a passive involvement from the community; residents and visitors can view this landscape from cars and appreciate it from a distance, but cannot physically access or experience it directly.

The **publicly** accessible areas of Greenspace therefore perform an important role in Ipswich City. They comprise the only natural landscape that the community can view and appreciate for its scenic and natural amenity *in addition to* serving a range of recreation and other activities directly. Access will result in a *direct* experience, rather than a passive or indirect one that would result from privately-owned areas.

The proportion of ICC's Greenspace that is publicly accessible is therefore an important evaluation criterion.

Areas accessible to the public have been identified from land having ICC or State government ownership. This study neither assumes nor recommends that private freehold rural lands are publicly accessible.

Assessment

Overall a poor rating, as only 22% (52 km^2) of the ICC Greenspace area assessed for this report (based on the area of the Conservation Estate and Rural E zone) and 4% of Ipswich City's total area is accessible to the public. Much of the Greenspace area is privately owned farmland, which is closed from public access. Even parts of the Conservation Estate such as Saplings Pocket Nature Reserve do not have ready access for the public, and are not promoted for public use.

This low level of public access is insufficient for the future population. Part of this has arisen due to no large National Parks or Forest reserves in Ipswich City that constitute a considerable proportion of Greenspace in other areas. The following figures highlight this, which places a greater expectation on ICC that it will provide the shortfall.

Local government	National Parks, Forest Reserves	Council acquired Greenspace
Gold Coast	14%	2%
Brisbane City	12%	1%
Esk	19%	-
Maroochy	25%	1.3%
Ipswich	0.35%	4%

The distribution of publicly accessible Greenspace is overwhelmingly concentrated in the southeast portion of the City. Although this may reduce accessibility to residents or visitors approaching from the west or north, in fact distances are relatively small and would have some, but not a major impact on accessibility for users. The furthest geographical separation from western Ipswich to publicly accessible Greenspace areas in the east is approximately 40 km, which represents the likely maximum distance to be travelled to access Greenspace areas by an Ipswich City resident.

5.2.3 Diversity

Criteria explanation

Diversity in settings and physical features of Greenspace areas adds to the range of recreation, scenic amenity, and ecological opportunities provided by Greenspace. Catering for a population with diverse preferences and abilities suggests diverse Greenspace is also required to meet different needs. Whilst extensive homogenous features can be visually striking, this sameness needs to be complimented by areas that offer contrasting and alternate settings.

Diversity of Greenspace can be demonstrated by:

- Areas of steep slope and physically challenging terrain, in addition to more gentle, flatter and areas accessibly to most levels of physical mobility;
- Areas adjacent to, or with views of permanent water; and
- Areas of noticeably different terrain, vegetation and physical features. For example, viewpoints, rocky outcrops or peaks, valleys and low-lying areas.

Assessment

Greenspace in Ipswich City consists of diverse landscape types and settings, including:

- Rocky peaks of Flinders Peak, White Rock, Mt Goolman, Spring Mountain;
- Low-lying wetlands of Daly's Lagoon;
- River-scapes, such as Brisbane River around Saplings Pocket; and
- Rolling hills around the foothills of the Little Liverpool range, Flinders Peak/Mt Goolman.

The various elevations, slopes, land and water landscape types are represented in ICC's Greenspace.

Closer examination suggests that water-based landscapes are few in number and extent. Given the hot climate and attraction of water for many types of recreation, this landscape type is poorly

represented in Greenspace areas. This perhaps reflects the few extensive areas of permanent water in Ipswich City, but also suggests the need to secure additional areas.

Slope is an attribute indicating diversity of settings and type of terrain that constitutes the Greenspace area. An analysis of the percentage of Greenspace area in various slope categories gave the following results:

Slope category	% of Greenspace area	
	Conservation Estate	Rural
< 15%	34%	48%
15-20%	16%	8%
20-25%	13%	13%
> 25%	37%	31%

A striking feature of the analysis is the high proportion of Greenspace areas in relatively steep (15-25%) to very steep slopes (> 25%). Overall 66% of the Conservation Estate and 44% of Rural E land are in these categories. This has implications for the types of recreation activities having access to such areas in terms of sustainable high trail maintenance costs in steeper areas, safety, and level of physical challenge.

Sites in excess of 15% slope attract stringent planning controls for any proposed development, and such sites are generally considered as unsuitable for development.

On the positive side, areas of steep slope are often associated with striking and visually attractive landscape features.

5.2.4 Outdoor, nature-based recreation

Criteria explanation

The focus on recreation for this study is on outdoor, nature-based recreation. This does not include scenic drives and viewing scenery from a car. Outdoor recreation includes non-motorised activities such as picnicking, nature appreciation, swimming, bushwalking, horseriding, camping, canoeing, and mountain biking. These are activities associated with more extensive areas of Greenspace, and not the recreational cycling, strolling or walking-the-dog activities commonly associated with urban parks or small areas of parkland.

This range of activities includes active pursuits (eg horseriding, mountain biking) in addition to more passive activities (nature appreciation, picnicking).

Recent surveys indicate that the most popular activities for outdoor recreation in South-East Queensland are picnicking (65% of SEQ population participating), bushwalking/nature-study

(60%) and swimming (39%) (Queensland Sport and Recreation 2000). Camping was also very popular, with 25% of SEQ's population going camping annually. Recreational horseriding had low participation rates by comparison (7%).

Catering for the dominant recreation preferences will therefore require landscapes and recreation settings that are compatible with these activities. To adequately accommodate outdoor recreation, a number of sites, trails and opportunities would need to be available in the Greenspace areas.

Assessment

The opportunities for this activity are confined to 4% of ICC's area, or the publicly accessible area of the Conservation Estate.

Recreation trails, tracks and day-use nodes (for picnics, BBQ's) have been established across the Conservation Estate, although in limited areas and numbers. **Table 4** provides a statistically picture of recreation facilities and opportunities in Greenspace areas:

Table 4 Greenspace trails and recreation facilities

Recreation facility/opportunity	Number	Length	Location
Visitor or day-use nodes (includes short walks)	3	N/a	Flinders Peak foothills
			Goolman (Hardings Paddock)
			White Rock entrance
Walking trails	5	7 km	Hardings Paddock
		5 km	Flinders Peak
		2 km	Mt Blaine
		1.5 km	Sandy Creek
		10 km	White Rock/Spring Mtn
Horse-riding trails	1	5 km	Hardings Paddock (in progress)
Disabled access trail	1	0.5 km	Hardings Paddock
Camping	0	N/a	Need flagged, but not yet available
Nature appreciation	N/a	-	Available from walking trails, visitor nodes
Canoe trails	1	18 km	Trail promotion and upgrades in progress along the Brisbane River
TOTAL	10	49 km	

The range of maintained recreation opportunities is supplemented by un-signposted walks in more remote settings that are not maintained by Council, and are suited to bushwalkers with some confidence and experience in more challenging terrain.

Table 4 indicates extensive trails, although overall length of each is relatively short. Trails occur on water (Brisbane River), land, and traverse steeper terrain (Flinders Peak) in addition to gentler

slopes (Hardings Paddock, Sandy Ck). Many of the trails end at significant viewing spots (White Rock, Spring Mountain, Flinders Peak).

Horseriding and longer walking trails are limited within Ipswich City, although it is atypical for local governments to provide these. Usually, longer trails are managed as part of the State managed National Park and Forest Reserves. Camping has long been recognised by ICC as having an unmet demand, and although facilities for overnight camping are planned for the future, they are not yet available.

Essentially, **Table 4** indicates the range of nature-based recreation opportunities are well-provided for in Ipswich City, although they are confined to a small proportion of the Greenspace area and some (e.g. horseriding) have only limited opportunities restricted to one natural area at present. Diversity of recreation opportunity is therefore accommodated, but the number and extent of these opportunities are fairly limited.

The situation for some recreation activities is becoming more constrained due to the transfer of State Forests to a Forest Reserve status, which for many areas, restricts previously allowed activities such as horseriding. This has, in turn, placed increased pressure on other areas to cater for this activity.

5.2.5 Visibility

Criteria explanation

Greenspace that is clearly visible typically has a strong visual impact, is recognised by the local community, and helps to form a backdrop or physical definition of the local area. Visibility contributes to an awareness of the presence of Greenspace, and the sense that it forms part of Ipswich's character. High visibility builds an appreciation of the presence of Greenspace that does not require a resident to physically visit the site. Benefits from Greenspace can therefore accrue to the community during everyday activities through viewing a scenic backdrop, or being able to see distant Greenspace features.

Assessment

The following proportions of land in Greenspace are estimated at falling within the following elevation levels, giving an overview of visibility. Proportions are estimates.

Elevation category	Conservation Estate	Rural (privately owned)
< 150 metres	50%	36%
150 – 300 metres	34%	44%
300 – 500 metres	10%	15%
> 500 metres	5%	5%

These suggest large proportions of Greenspace are visible across much of Ipswich City, and able to form an effective 'visual backdrop' for the City, particularly as they are concentrated along the south-east and south-western boundaries.

5.2.6 Local character, identity and sense of place

Criteria explanation

Ipswich has a civic pride in natural icons associated with its distinctive landscapes. The distinctive 'peaks and creeks' landscape formed the vision for the regional Flinders Peak and Greenbank Greenspace Strategy, and are a well-documented feature of this area. They form a link with the past, reflecting volcanic geological processes that have formed today's terrain.

Rural areas are still an important link with a history of land use in Ipswich, and form the non-urban backdrop in many areas. Many families associated with rural holdings have a long association with the City, making social history intertwined with the history of land use. Preserving rural landuses as part of Ipswich's Greenspace retains continuity with the City's identity and evolution.

The biodiversity associated with Ipswich City also contributes to its identity.

Assessment

The Greenspace in Ipswich preserves many important features that contribute to the City's identity. These include:

- Rocky outcrops and peaks, including volcanic peaks that are distinctive features of the sub-regional landscape;
- Significant species largely endemic to Ipswich, or part of the few remaining areas located in the City; and
- Rural landscapes and landuses that were part of the City's history.

Both Council's Conservation Estate and privately owned rural Greenspace contribute to these criteria.

The distinctive 'peaks and creeks' landscape formed the vision for the regional Greenspace Strategy, and are a well-documented feature of this area. They form a link with the past, reflecting volcanic geological processes that have formed today's terrain.

Major waterways (Brisbane, Bremer Rivers) help to define the Ipswich City boundary, and are a focus for securing future Greenspace areas.

Rural areas retain an important link with the Ipswich's rural history and past identity, and form the non-urban backdrop in many areas. Many families associated with rural holdings have a long association with the City, making social history intertwined with the history of land use.

Vegetation species also contribute to the City's identity. Examples include *Pouteria eerwah* (Flinders Plum found around Flinders Peak), *Melaleuca irbyana*, (many of the remaining areas of this endangered ecosystem are found in Ipswich City) and the flora species *Notolaea lloydi,* named after local naturalist Lloyd Bird. Loss of these locally endemic species would mean part of the distinctive environmental identity and sense of place particular to Ipswich City.

They are protected in the Conservation Estate.

5.2.7 Biodiversity

Criteria explanation

Ecological (or environmental) benefits from large area of high quality, native habitat for flora and fauna diversity has been discussed in **Section 4**.

Other benefits in terms of ecosystem services areas outlined in a recent report to Council (SKM 2005). A brief summary of ecological and environmental benefits includes:

- Air quality and regional air shed;
- Pollination;
- Pest control;
- Genetic resources;
- Habitat;
- Erosion prevention;
- Soil fertility;
- Water regulation – flow and quality; and
- Waste breakdown.

Assessment

The information below summarises the extent of native vegetation in Greenspace areas.

	Conservation Estate	Rural E
% area supporting remnant vegetation	86% (7,799 ha)	88% (12,311 ha)
% of ICC's total remnant vegetation located in Greenspace areas	46% (21,110 ha in Greenspace out of ICC total vegetation of 43,733 ha)	

Note that area of remnant vegetation is based upon vegetation mapping and communities as in the ICC Nature Conservation Strategy.

Eighty seven per cent of Greenspace areas support native remnant vegetation (defined using ICC mapping). This totals 46% of the total extent of native vegetation in Ipswich City, reflecting the crucial role of Greenspace in protecting the remaining remnant vegetation. In fact, 46% of remnant vegetation is contained in just 20% of the City's area, illustrating the crucial contribution of Greenspace to retaining a range of biodiversity and ecosystem functions.

Of the 19 vegetation communities present in Ipswich City, Greenspace areas contain 17. Seven vegetation communities with a very restricted distribution in Ipswich City are protected within the Conservation Estate. White Rock-Spring Mountain and Flinders–Goolman Conservation Estates (the two largest areas within the whole ICC Conservation Estate) together support a total of 1018 flora species, and 341 fauna species (Note: some species are likely to be present in both areas).

Based upon the diversity of the vegetation communities, the extent of remnant vegetation in Greenspace areas, and the extensive habitat tracts protected by Greenspace arrangements, biodiversity and environmental objectives are well supported by their current extent and location.

Greenspace areas also provide for important ecosystem services. The following table lists key ecosystem services, and outlines the extent to which each type of Greenspace area contributes to their continued presence.

Ecosystem service / Greenspace	Conservation Estate	Protected rural areas
Production of oxygen by land based plants		
Maintenance of freshwater systems by vegetation		
Production and maintenance of fertile soil		
Provision of foods, pastures for cattle and sheep, timber, fire, wood and harvested wildlife		
Provision of native species and genes used in industry research and development		
Pollination of agricultural crops		
Pest control in agricultural land		
Flood mitigation		
Breakdown of pollutants by micro-organisms in soil and aquatic systems		
Greenhouse gas reduction		
Maintenance of habitat for native plants and animals		
Maintenance of habitats attractive for recreation, tourism, cultural activities, spiritual importance.		

Marginally contributes to this ecosystem service

Moderately contributes

Strongly contributes

5.2.8 Inter-urban breaks

Criteria explanation

An important function of Greenspace areas is to convey the feel of moving from one landscape type (ie urban) to another (ie rural or natural / semi-natural). This suggests that urban parkland does not have sufficient area to perform this function, and that more extensive Greenspace areas are required.

For Greenspace to operate effectively as inter-urban breaks, it needs to be visible and experienced by residents and the local population. Inter-urban breaks need to give the feel of changing from one landscape type to another – from an urban, built-up form to one dominated by natural, semi-natural or rural landscapes. Greenspace that is hidden, or 'invisible' to the community does not achieve this purpose.

The value of relieving the homogeneity of a constructed and intensively settled landscape is a widely accepted and implemented planning principle. Securing Greenspace as an inter-urban break also establishes definition to the boundary of the urban area, and avoids sprawl.

Assessment

The only area of Greenspace that is likely to form an effective urban-break function in the future is the area to the east: Flinders – Goolman, White Rock-Spring Mountain. Neighbouring Beaudesert Shire has an extensive Urban Investigation Area flagged in the SEQ Regional Plan, which adjoins Ipswich City boundary. This potential urban area combined with the urban area of Ipswich City could become an extensive area of urban landuses unbroken by substantial natural –semi-natural areas.

The Saplings Pocket area to the north also forms a minor inter-urban break function from Brisbane City, although this area of Brisbane is largely rural or rural-residential, and is likely to remain in this land use.

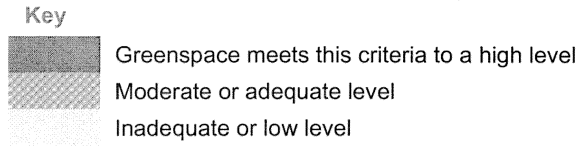
Greenspace areas to the west of Ipswich City form part of an almost continuous rural area extending to Boonah and the scenic rim, and therefore are not required to perform the function of an inter-urban break.

5.3 Greenspace evaluation

Table 5 summarises the evaluation of ICC's Greenspace against each of the seven criteria. Evaluations for the Council owned Conservation Estate and private Rural lands are provided separately, in addition to an overall evaluation rating. This recognises the different attributes of these areas that together constitute Greenspace.

Table 5 Criteria and evaluation rating

Criteria	Greenspace assessment		
	Conservation Estate	Rural protected areas	Overall assessment
Provides appropriate level of **accessibility** to the public			
Provides **diversity** of landscape types, including level of physical challenge			
Provides for outdoor, **nature-based recreation**			
High **visibility** to residents and visitors			
Contributes to **a sense of place, local character and identity** for Ipswich City; a geographic 'anchor' for the City			
Greenspace provides important outcomes **for biodiversity** and waterway health			
Establishes an effective **inter-urban break**			



Overall, it can be seen that Greenspace in Ipswich City performs very highly against three of the seven criteria, moderately against two, and poorly against two.

Lack of public access contributes to a reduced performance against broad recreation and quality of life/livability objectives, as 78% of Greenspace areas cannot be visited or experienced directly.

This suggests additional publicly accessible areas will be required for the future population, and that the current extent of Greenspace will be insufficient.

Table 6 summarises some of the key features of ICC's Greenspace against the seven criteria.

Table 6 A snapshot of Ipswich City's Greenspace

Attribute	Heading
Accessibility	Only 22% of Greenspace area, & 4% of ICC's area publicly accessible.
	Of this total, limited entry points and access into the areas
Visibility	15% of Conservation Estate and 20% of Rural E are above 300 metres in elevation, achieving high visibility and an effective visual backdrop to the City
Biodiversity	17 out of 19 native vegetation associations protected in Greenspace areas
	46% of vegetation contained in just 20% of City's area
	87% of Greenspace areas support native vegetation
	182 fauna species located in Flinders-Goolman and 159 in White Rock-Spring Mountain Conservation Estates.
Recreation	10 trails/visitor node totalling 49 km in length
	Good diversity of opportunity, but limited in number.
Diversity	Peaks, water, rolling hills, steep terrain all represented
	All slope categories well represented.
Local identity	Geological history, rural land-use, vegetation species significant to the local area all represented.

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6. Future Opportunities

The criteria of visibility, biodiversity, local character and identity, and inter-urban breaks are well provided for by Greenspace in Ipswich City. However, current Greenspace is inadequate to meet the criteria of accessibility and nature-based recreation.

This suggests that future opportunities to secure additional Greenspace areas should primarily be directed toward sites that do not duplicate what is already well provided for, but address important gaps.

The key gap is in areas that are publicly accessible. Securing Greenspace that is situated around water settings, or has water views would be an additional benefit.

Nature-based recreation opportunities can be largely addressed by having additional areas that are publicly accessible. The importance of having accessible areas is essential to achieve the objectives of quality of life, livability and recreation. A poor performance against this key criterion suggests the area of Greenspace is inadequate for future populations.

6.1 Mechanisms

Various opportunities to achieve additional Greenspace relevant to the context of Ipswich City have been highlighted by the case studies.

Greenspace, as it is defined for this project, services more than just a local population. Regional or sub-regional benefits are typically associated with Greenspace, and the scale of planning to secure this asset reflects this. State assistance is therefore now an established precedent in other States, and is part of programs in Sydney and Adelaide, where the relevant State agency has provided financial assistance for securing appropriate areas.

Therefore, it would seem appropriate to seek assistance from the Office of Urban Management, as the leading agency in dealing with sustainable growth in SEQ in securing appropriate areas that can meet a regional, as well as local demand. ICC's track record in acquiring extensive natural areas can provide some leverage in this regard. It has arguably achieved more per resident from this program than any other local government in the State.

6.1.1 Leasing arrangements

Leasing arrangements from private landholders have been successfully applied in New South Wales. They are a possible mechanism that can be voluntarily entered into by private landholder to lease at an agreed commercial basis a portion of land that is useful for Greenspace purposes. This land allows public access, and may have basic recreation facilities such as a picnic area, walking trails or similar.

The NSW case study involved a lease arrangement whereby the public could access a designated portion of the land, while the owner had rights to use it also. The arrangement provided income to the land owner, allowing him to maintain the property and gave the council a low cost alternative to Greenspace acquisition.

The portion of leased land is typically located so it does not impinge of landholder privacy or important farm operations. Leases are usually for a period of 5-10 years, with an option to relocate the area if impacts from public access prove unacceptable or suggest a 'rotation' to different areas would be beneficial.

This mechanism is useful in that it:

- Increases publicly accessible land without having to purchase;
- Provides an additional income stream for the landholder at no cost;
- Is voluntary;
- Allows public access to scenic and desirable Greenspace settings; and
- Places management responsibility on Council.

Other mechanisms such as transferable development rights and land swaps are frequently noted as alternative approaches. Whilst they have merit in many situations, the need to acquire more extensive, natural areas, preferably adjacent to existing Greenspace sites, suggests this approach will have limited applicability.

6.1.2 Planning scheme

The Planning Scheme has been used effectively to secure areas that contribute to Greenspace that avoids the need for land purchase. There appears limited benefit to further apply this mechanism to additional areas, as the priority areas have been addressed using this approach, and the more immediate need is acquire publicly accessible areas.

6.1.3 Open Space Levy

ICC could consider extending the existing environmental levy to a broader levy that includes open space benefits. Gaining community acceptance and implementing such a levy poses a major challenge for ICC in that much use of Greenspace areas would occur from the regional population (particularly from metropolitan Brisbane), whereas the levy would be paid for by local residents. There may well be opposition to local funding of what could be seen as a regional resource.

6.2 Priority Sites

Some site-specific areas have been highlighted through this study that are priorities to add to current Greenspace. They include:

- Site immediately west of Saplings Pocket along the Mid-Brisbane River. Currently under extractive licence, activity will cease in a few years, where the site is likely to be sold. Immediate discussions should focus upon possible acquisition and management arrangements for the site. The area is highly scenic and presents one of the rare opportunities for acquiring river-based natural areas within Ipswich. The sites immediately to the east of Saplings Pocket Nature Reserve should also be seen as a priority acquisition. This site would provide both biodiversity, scenic and recreation opportunities. This site would provide biodiversity, scenic and recreation opportunities, and would require careful management to ensure biodiversity values are protected through compatible uses and appropriate access.
- It can be strongly argued that both these sites have regional values, and that additional resources from State or regional sources are appropriate.
- Land parcels adjoining the Bremer River
- Sites bordering Flinders-Goolman Conservation Estate, given the population expansion that will occur in the Ripley Valley and in Beaudesert. This population growth will place pressure on their conservation values, with increased demand for access and recreation opportunities. Securing additional areas will assist this area to be managed for a multi-purpose function.
- Securing additional areas adjacent to current Council owned sites to increase management options and give additional flexibility to cater for additional access and activities.

6.3 Management

The history of acquiring Greenspace in Ipswich City areas has a strong nature conservation focus. Whilst this has achieved positive results, many areas are relatively small, and therefore limit opportunities for multi-purpose management.

Current Greenspace trends suggests multi-purpose use will become increasingly common as the preferred Greenspace management direction. Acquiring large areas with diverse landscapes is an efficient approach to achieving this.

6.4 Overall findings

The major findings of this study indicate that:

- A master plan for ICC Greenspace should be developed that reflects nature conservation, community access, recreation and other environmental and social benefits. The master plan should include future management of existing Greenspace areas, level of access, types and

location of activities, in addition to the strategic acquisition of new Greenspace that both compliments and builds upon existing areas.

- Ipswich City's current Greenspace is inadequate to meet the needs of future population, particularly against criteria of accessibility and nature-based recreation. Lack of accessibility means most of the Greenspace cannot be experienced *directly* by residents. This results in the overall objective of contributing toward quality of life is only partially met.
- Greenspace targets should factor in a level of regional demand, not just local. It is highly likely Greenspace areas will service a larger regional population in the future. Future population levels suggest an increase of 700% on current population, which will require additional Greenspace to meet community needs.
- Although research on appropriate Greenspace targets is still in a formative stage, the case studies and supporting information suggest target of **25-30%** is more appropriate for Ipswich City given:
  - Future population growth and regional catchment demand for Greenspace areas
  - Biodiversity thresholds
  - Case studies of areas in South-east Queensland and internationally.

This additional area should be Greenspace that is publicly accessible.

Ipswich City has achieved an enviable track record in securing Greenspace that has demonstrated a strong performance against four of the seven evaluation criteria.

It is highly visible, diverse, functions as a useful inter-urban break, has protected key biodiversity values, and has conserved elements that make a substantial contribution to the identity and sense of place for Ipswich City. These criteria together constitute a strong argument that quality of life, or livability is Ipswich City is not just a catch-all phrase, but can be backed by statistics and specific examples of where Council has worked to achieve it.

However, public accessibility to Greenspace is a key criterion that is likely to place increased pressure on the Greenspace areas in the future, with increasing population and continuing demand for nature-based activities. Providing direct experiences of Greenspace areas is important to achieving 'quality of life' and livability.

Evidence suggests population demand for Greenspace will not just be from the local catchment, but originate from the regional population as well. This places more pressure on Greenspace areas, and the requirement they will be managed as multi-purpose use areas. Increasing demand for, and multiple use of Greenspace suggests the current publicly accessible Greenspace, which has a number, although carefully controlled opportunities for recreation, will be looked to provide more

such opportunities in the future. This may impact on selected biodiversity values, or suggest that areas are acquired adjacent to sensitive habitat that expands the total area available for public access, and so present greater options for future management.

6.5 How much Greenspace is enough?

The key question is how much Greenspace will be adequate for Ipswich City's future population? An important factor affecting this assessment is the local and regional content of Ipswich City.

Although this study is focused around Ipswich City's need for Greenspace and servicing the resident population, it is an inescapable fact that regional population growth in SEQ will vastly increase the urban catchment of people seeking to experience natural areas –for recreation or other purposes.

Greenspace located in Ipswich City will therefore be catering for a local and part of the regional population. It will be the closest extensive Greenspace to population living south and west of Brisbane CBD. These areas are within a half – one hour's drive from Greenspace areas, making them highly accessible and attractive to urban users.

The future population using Ipswich City Greenspace is therefore more likely to be closer to one million than the future estimated population of Ipswich (676,000). This combined figure represents a 700% increase on current Ipswich City population levels, and 68% increase on Ipswich's City's future population in 2021.

6.6 Recommended Greenspace targets

6.6.1 Assumptions

To accurately quantify the precise amount of future Greenspace required by ICC is challenging given existing studies and research, and the limited extent of this report. The following are therefore general estimates based on the assumptions below and other information collected for the report.

An estimated adequate amount for Greenspace for Ipswich City to cater for future population is based upon the following assumptions and previous findings:

- A minimum vegetation cover of 30% is required to support a basic level of biological diversity and function. Approximately 36% of ICC's area supports remnant vegetation; around almost half of this amount is located in Greenspace areas. The potential for some future remnant vegetation loss due to development and population growth suggests the extent of remnant vegetation is at a level close to a minimum area required for retention of biodiversity functions at a sub-regional scale.

- Areas of Greenspace need to be sufficient to achieve Quality of Life objectives through providing places for solitude, peaceful relaxation and appreciation of nature. Current limited levels of access coupled with increasing demand suggest this objective requires additional Greenspace areas.
- Overall paucity of Greenspace in South-east Queensland, which currently lies at around 16% of SEQ's area, which is below other comparable regions (eg Sydney region).
- Levels of publicly accessible Greenspace across a range of local governments in South-east Queensland are far greater than in Ipswich City. The range for Greenspace for these SEQ examples is between 12% to 29%, compared with 4% for ICC (refer **Table 7**). When the area of local Councils is considered, the difference between publicly accessible Greenspace in ICC and other SEQ local governments equates to many thousands of hectares. This range is also supported by examples internationally and open space protected along the Sydney region coastline. Large portions of such areas are comprised of State managed National Parks and Forest Reserves, which are absent from ICC. Other examples from SEQ indicate between 12,000 ha (BCC) to 60,000 ha (Esk) are currently in State parks and reserves. ICC's figure for such lands is 429 ha.
- Table 7 Greenspace areas for selected local governments in South-east Queensland*

Local government	Area (ha)	State Greenspace areas (NP, CP, Forest Reserves) (ha)	Local government acquired and publicly accessible Greenspace (ha)	State Greenspace as % of LGA area	Publicly accessible Council owned Greenspace as % of LGA area
Gold Coast City	137,682	12,250	2770	14%	2%
Brisbane City	134,375	30,776	1600	12%	1%
Esk Shire	392,736	60,634	-	19%	
Maroochy Shire	116,111	29,197	1,480	25%	1.3%
Caloundra	109,622	27,954	N/a	29%	N/a
Ipswich City	120,154	429	4,600	0.35%	4%

* Note: figures are generally accurate although small adjustments may be required to reflect recent local government acquisitions and changes through the Regional Forest Agreement.

- Location of Ipswich City within close proximity to the Brisbane metropolitan area, suggesting substantial use of Ipswich Greenspace by a regional population.
- Expected population increases of both Ipswich City and South-east Queensland, resulting in increased demand for Greenspace.

6.6.2 Future Greenspace Requirements

Ipswich City needs to approximately double the existing area of publicly accessible Greenspace to meet quality of life, environment and nature-based recreation objectives. This is based on:

a) current Greenspace area – including area accessible to the public;

b) future population growth;

c) diversity of Greenspace functions;

d) case studies of appropriate Greenspace areas elsewhere, both nationally and internationally; and

e) comparison of ICC Greenspace with other local governments in South-East Queensland.

A more realistic target for ICC's future Greenspace is therefore:

- 18,700 ha (187 km^2 ha or 16% of ICC area) of privately owned, rural lands, which is the present target.
- **An increase of 3,000 to 4,000 ha of publicly accessible areas** from the existing levels of 4,600 ha to a total closer to 9,000ha. This represents an increase of around 85% from the current extent, and would constitute 7.5% of the City's area.
- This, coupled with Rural Greenspace areas totals around 23,500 ha of Greenspace. This **revised total Greenspace target would amount to around 23.5% of the City's total area**. The revised target is not exceptionally higher than the current target of 20%, although the additional Greenspace secured in publicly accessible lands would make a substantial difference to the number, diversity and range of recreation, biodiversity and quality of life opportunities. This target is closer to, although still below, many of the other local governments in SEQ having a comparable area to Ipswich City.
- This figure represents a more realistic target given future population growth in Ipswich City, growth in the broader region, and increasing demand for nature-based recreation activities and access to natural areas.

The absence of extensive State managed parks or reserves has resulted in nearly all of the Greenspace to date being acquired through ICC's initiatives, with the cost borne by local ratepayers. Given the increasing regional use of Greenspace, and the role ICC's Greenspace will play in providing natural and social 'green' infrastructure in the future, it is appropriate that assistance from other sources is sought to secure adequate Greenspace areas.

7. References

Capital Regional District, 1997 Report on the Environment: Monitoring Trends in the Capital Regional District Available at: http://www.crd.bc.ca/rte/report/p-a3.htm

Department of Infrastructure, Planning and Natural Resources (New South Wales), 2005 Green Landscapes Program - Sydney Metropolitan Strategy. Available at: http://www.metrostrategy.nsw.gov.au/dev/ViewPage.action?siteNodeId=54&contentId=192&languageId=1

Drinnan, I. 2005 The Search for Fragmentation Thresholds in a Southern Sydney Suburb Biological Conservation Vol 124 Pg 338-349

eThekwini Munipality 2002, Durban Environmental Services Management Plan, Available at: http://www.durban.gov.za/eThekwini/Services/Downloads/dmoss_pop_doc_1

Hugget, A. 2005 The Concept and Utility of Ecological Thresholds in Biodiversity Conservation Biological Conservation Vol 124 Pg 301-310

Ipswich City Council, 2002 Ipswich City Council Corporate Plan 2002-2007

Ipswich Enviroplan (www.ipswich.qld.gov.au/environment.conservation/environmental_plan.php)

Ipswich Future Master Plan Discussion Paper – A Vision for Ipswich 2020 and Beyond Operational Plan 2004-2005

Lindenmayer, D. Luck, G. 2005 Synthesis: Thresholds in Conservation and Management Biological Conservation Vol 124 Pg 351-354

Lindenmayer, D. Fischer, J. Cunningham, R. 2005 Native Vegetation Cover Thresholds Associated with Species Responses Biological Conservation Vol 124 Pg 311-316

Luck, G. 2005 An introduction to Ecological Thresholds Biological Conservation Vol 124 Pg 299-300

Kerlinger, P. 2000 Economics of Open Space Cornell Lab of Ornithology, Available at: http://www.birds.cornell.edu/pifcapemay/kerlinger.htm

Maller, C. Townsend, M. Brown, P. St Leger, L. 2002 Healthy Parks Healthy People: Health Benefits of Contact with Nature in a Park Context, A review of current literature Faculty of Health and Behavioural Science, Deakin University, Melbourne

Metro, 2000. The Nature of 2040 – The Region's 50-year plan for Managing Growth. Available at: http://www.metro-region.org/library_docs/land_use/2040history.pdf

Metro, 2002 2040 Growth Concept Map Available at: http://www.metro-region.org/article.cfm?articleID=231

Mitchell, B. Resource and Environmental Management, 2nd edition, Harlow, Prentice Hall, 2002, 367 pp. (Philip Dearden – Chapter 10 – Parks and Protected Areas)

National Capital Commission Ottawa's Greenbelt Master Plan 1995 – 2015, Available at: http://www.ucalgary.ca/UofC/faculties/EV/designresearch/projects/2001/CEDRO/cedro/cip_acupp_css/ottawa.html

New Jersey Future, 2004 Smart Conservation for Towns: Smart Growth for New Jersey Future. Issue 7 Revised September 2004 Available at: http://www.njfuture.org/articles/smartconserve.pdf

Office of Urban Management, 2004 Draft South East Queensland Regional Plan, Queensland Government, Brisbane

Radford, J. Bennett, A. Cheers, G. 2005 Landscape-Level Thresholds of Habitat Cover for Woodland-dependant Birds Biological Conservation Vol 124 Pg 317-337

Regional Landscape Strategy, 2003 Regional Parks for South East Queensland: Greenspace for Recreation: Draft Discussion Paper

Roseland, M. 1992 Sustainable Development and Local Government: Toward Ecocities? Urban Ecology Australia, EcoCity 2 Conference, Adelaide

SKM, 2005 Ecosystem Services, Background Research for Ipswich City Council.

Stoneham, G. Chaudhri, V. Strappazzon, L. 2003 Selecting Policy Mechanisms for Biodiversity Conservation on Private Land Proceedings of the Conference on Land Use Change

Queensland Government, 2004 Regional Vegetation Management Code for Broadscale Clearing, South-East Queensland Region

Queensland Outdoor Recreation Foundation, 2004 Outdoor Recreation in Queensland – the Big Issues Available at: http://www.qorf.org.au/_dbase_upl/OutdoorRecreationIssues.pdf

Van Herzele, A. Wiedemann, T. 2003 A monitoring tool for the Provision of Accessible and Attractive Urban Green Spaces, Landscape and Urban Planning Vol 63 Pg 109-126

Wascher, D. 2002 Landscape Indicator Assessment: Steps towards a European Approach. In Frontis workshop, June 2002. Alterra Wageningen (in press).