ParkAtlantic

Park Atlantic Urban Parks and Green Areas Action Plan

MAIN REPORT

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LAND PLANNING & DESIGN

ATLANTIC AREA
ESPACIO ATLÁNTICO
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ESPAÇO ATLÂNTICO
European Union
European Regional Development Fund

Park Atlantic Urban Parks and Green Areas Action Plan

For the cities of:

Angers
Limerick
Pau-Pyrénées
Santiago de Compostela
Vila Nova de Famalicão

Work package 2 of the Park Atlantic project
The Park Atlantic project is co-funded by the INTERREG IVB Atlantic Area Programme

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Craig Bullock, Optimize Economic Consultancy

Park Atlantic Urban Parks and Green Areas Action Plan

VOLUME ONE - INTRODUCTION

1. Introduction

1.1 Background to the Project

Park Atlantic is a project funded by the European Union (EU) through the INTERREG IVB Atlantic Area Programme. The project partners are the French cities of Angers and Pau (represented by the Communauté d'agglomération de Pau-Pyrénées), Limerick in Ireland (represented by the Mid-West Regional Authority and Limerick City Council), Santiago de Compostela in Spain, and in Portugal the city of Vila Nova de Famalicão (with the collaboration of ADRAVE (the Ave Valley Regional Development Agency). The partnership also has the support of the French national association Plante et Cité (http://www.plante-et-cite.fr/).

INTERREG is an initiative that aims to stimulate cooperation between regions in the EU. The Park Atlantic cities share a number of characteristics including having important cultural and natural resources in their urban areas, as well as similar populations and an interest and previous experience in the field of sustainable urban development. Park Atlantic was created with the aim of bringing together their resources and knowledge to find solutions for the improvement of city planning, design and management as a means to achieve sustainable urban development. The partnership aims to lay the foundations for long-term collaboration, beyond the timeframe of the INTERREG funding, in order to continue working and cooperating on the theme of parks and green areas, and also in other possible thematic areas.

The sustainable development agenda – and sustainability of urban areas – has been at the core of EU policy for some time. Part I of the Charter of European Cities and Towns Towards Sustainability[1] (to which the city of Pau is a signatory) summarises the community's concerns and approach:

> **I.1 The Role of European Cities and Towns**
> *"We, European cities and towns, signatories of this Charter, state that in the course of history, our towns have existed within and outlasted empires, nation states, and regimes and have survived as centres of social life, carriers of our economies, and guardians of culture, heritage and tradition. Along with families and neighbourhoods, towns have been the basic elements of our societies and states. Towns have been the centres of industry, craft, trade, education and government.*
>
> *We understand that our present urban lifestyle, in particular our patterns of division of labour and functions, land-use, transport, industrial production, agriculture, consumption, and leisure activities, and hence our standard of living, make us essentially responsible for many environmental problems humankind is facing. This is particularly relevant as 80 percent of Europe's population live in urban areas.*
>
> *We have learnt that present levels of resource consumption in the industrialised countries cannot be achieved by all people currently living, much less by future generations, without destroying the natural capital.*
>
> *We are convinced that sustainable human life on this globe cannot be achieved without sustainable local communities. Local government is close to where environmental problems are perceived and closest to the citizens and shares responsibility with governments at all levels for the well-being of humankind and nature. Therefore, cities and towns are key players in the process of changing lifestyles, production, consumption and spatial patterns."*
>
> **I.2 The Notion and Principles of Sustainability**
> *"We, cities and towns, understand that the idea of sustainable development helps us to base our standard of living on the carrying capacity of nature. We seek to achieve social justice,*

[1] http://ec.europa.eu/environment/urban/pdf/aalborg_charter.pdf

sustainable economies, and environmental sustainability. Social justice will necessarily have to be based on economic sustainability and equity, which require environmental sustainability.

Environmental sustainability means maintaining the natural capital. It demands from us that the rate at which we consume renewable material, water and energy resources does not exceed the rate at which the natural systems can replenish them, and that the rate at which we consume nonrenewable resources does not exceed the rate at which sustainable renewable resources are replaced. Environmental sustainability also means that the rate of emitted pollutants does not exceed the capacity of the air, water, and soil to absorb and process them.

Furthermore, environmental sustainability entails the maintenance of biodiversity; human health; as well as air, water, and soil qualities at standards sufficient to sustain human life and wellbeing, as well as animal and plant life, for all time."

I.3 Local Strategies Towards Sustainability
"We are convinced that the city or town is both the largest unit capable of initially addressing the many urban architectural, social, economic, political, natural resource and environmental imbalances damaging our modern world and the smallest scale at which problems can be meaningfully resolved in an integrated, holistic and sustainable fashion. As each city is different, we have to find our individual ways towards sustainability. We shall integrate the principles of sustainability in all our policies and make the respective strengths of our cities and towns the basis of locally appropriate strategies."

This charter and more recently the EU biodiversity strategy to 2020[2], place a significant share of the responsibility for driving the sustainable development agenda in the hands of urban local authorities. The ParkAtlantic project recognises this, and recognises the critical role of parks and green areas[3] including agricultural land, i.e. the reservoir of the bulk of a city-region's biodiversity, soil and surface water, in the pursuit for urban sustainability.

1.2 Objectives of the Project

The overall objective of the ParkAtlantic project is to enhance the inherent value of urban parks and green areas in the Atlantic Area and to encourage their contribution for sustainable urban development. The project comprises three work packages.

The first work package of the project – an Urban Parks and Green Areas Study - was carried out in 2011 by CRP Consulting (www.crpconsulting.net). That study had three distinct phases:

i. A comparative analysis of public and environmental policies regarding management of parks and green areas in the five project partner areas;

ii. An inventory of natural spaces and their connections (greenways) by means of photo interpretation;

iii. Analysis, proposals, recommendations and conclusions with regard to improving the status of natural spaces and their relationship with cities.

The results and conclusions of Urban Parks and Green Areas Study provided the base information for work package 2 of the ParkAtlantic project, the preparation of a Parks and Green Areas Action Plan for the five

[2] http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_ACT_part1_v7%5B1%5D.pdf

[3] The term 'parks and green areas' is understood by the project partners to include (i) parks, gardens, squares etc., (ii) collective gardens: family gardens, shared gardens, educational gardens, public allotments, (iii) natural green areas including forests, wooded areas, lakes, waterways etc. 'Parks and green areas' is the general term used throughout this document to refer to these resources. They can also be collectively termed the 'green infrastructure' of a city.

partner cities. This report represents the culmination of work package 2. In the call to tender for the action plan its overall objective was described as follows:

> *"The overall objective of the Urban Action Plan is to improve the quality of life in towns and cities via the implementation of policies geared towards sustainable development. It is directly linked to the urban parks study and will act as a reference point for public management of urban parks and green areas. The Action Plan should be action orientated and clearly outline to different project partners short, medium and long term actions that they can undertake to achieve the above objective while taking into account economic, social and environmental aspects of urban development and use of resources. As such the Sustainable Management Action Plan should:*
>
> - *Improve the quality of life in urban areas;*
> - *Improve the quality of the urban landscape and environment;*
> - *Promote the use of green resources;*
> - *Support educative and environment actions;*
> - *Encourage increased usage of parks, green areas & public spaces;*
> - *Harmonise integration of human activity in parks and green areas and reduce their impact on same."*

1.3 Project Team

Ireland's Mid West Regional Authority (MWRA, http://www.mwra.ie/) is the lead partner for the preparation of the ParkAtlantic Parks and Green Areas Action Plan. Following a tender process the MWRA appointed a project team comprising the following consultants to carry out the work package:

- **Cunnane Stratton Reynolds**, town planners and landscape architects specialising in green infrastructure planning, with the support of Ainhoa González Del Campo, environmental planner and geographic information systems (GIS) specialist;
- **Michael Cregan & Associates**, landscape architect with experience in local and regional authorities;
- **Optimize Economic Consultants**, economist specialising in environmental resources, agriculture and landscape.

1.4 Project Methodology

The tasks completed by the project team in the preparation of the Parks and Green Areas Action Plan included the following (see graphic representation overleaf):

i. Analysis and summary of the results of the Urban Parks and Green Areas Study, and SWOT analysis (strengths, weaknesses, opportunities, threats) of each of the partner cities;

ii. The identification of examples of best practice in each of the partner cities;

iii. Informed by the themes that emerged in the Urban Parks and Green Areas Study, the SWOT analyses and by the consultant's brief, research into international best practice in parks and green areas development and management. The brief required that the results of this research be categorised into three main subject areas:

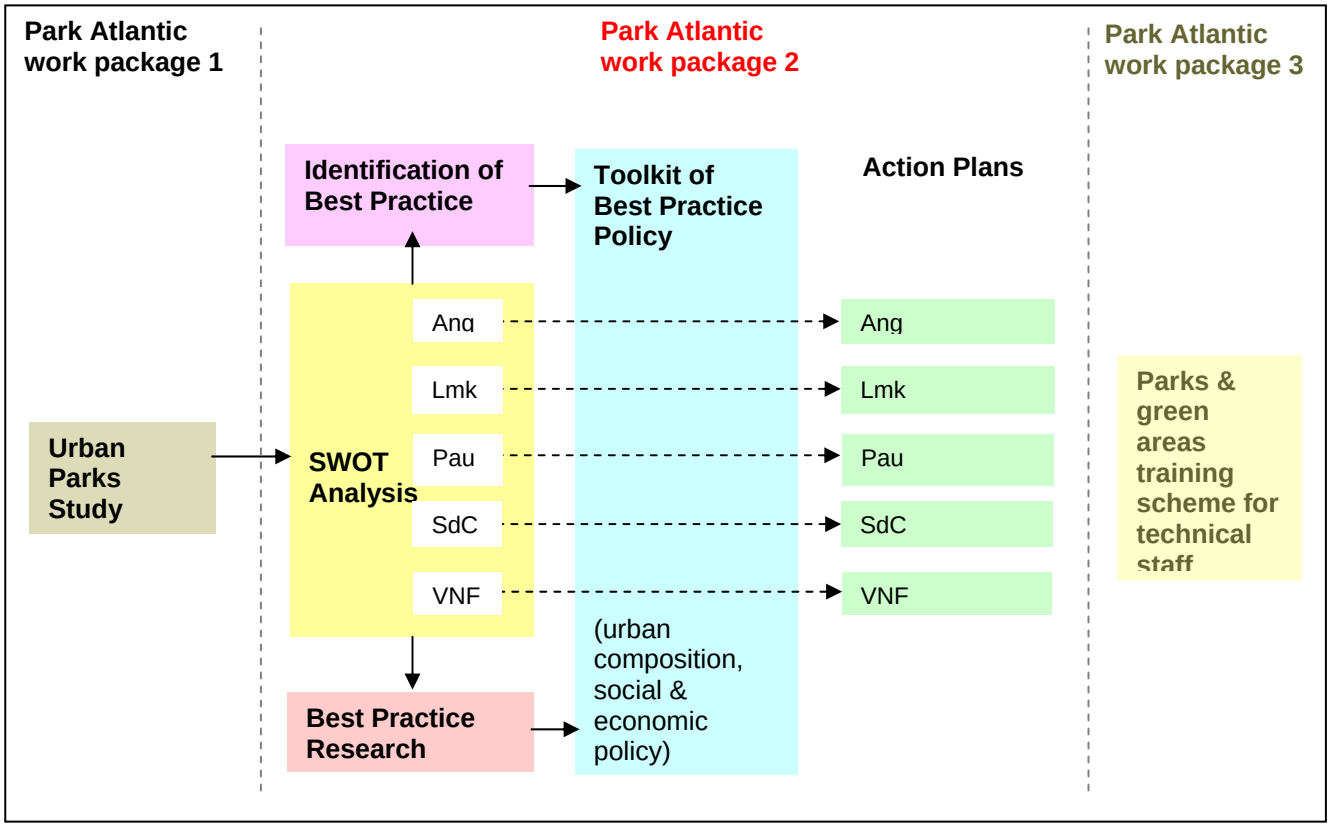
   - Parks and green areas as **urban composition features**;
   - Parks and green areas as **social features**;
   - Parks and green areas as **economic features**.

iv. Informed by the SWOT analyses, the identified best practice in the partner cities and the research into international best practice, the preparation of draft action plans for each of the partner cities;

v. Interaction with the partner city representatives in the form of:

- A workshop to present and discuss the initial findings of the SWOT analyses and best practice research. This workshop was held in the visitor centre in the Phoenix Park, Dublin, in April 2012;
- Meetings in the five partner cities to discuss initial drafts of the action plans, and brief surveys of the cities to verify the results of the SWOT analyses and the selection of best practice examples. The city visits were conducted by members of the project team over the course of June and July 2012;
- Email correspondence as required for the general exchange of information.

vi. Following the city visits, refinement of the action plans and completion of the final report/s.



Work package 2 project methodology

1.5 Format of this Report

The contents of this report are as follows:

- **Volume 2** is a discussion of the value of parks and green areas to cities, including an historical overview, a discussion of their role (what are parks for?), their economic importance, and certain theories about their planning including an introduction to the concept of green infrastructure and ecosystem services.
- **Volume 3** provides brief profiles of the parks and green areas of the five partner cities, SWOT analyses of their respective resources and examples of their best practice in parks and green areas development and management.
- **Volume 4** is a toolkit of best practice policy for parks and green areas. The current thinking and practice in key subject areas relating to parks and green areas management are summarised, and references for further reading are provided. This is intended for use as a reference point for policy

makers and practitioners. As required by the brief the policy subjects are categorised into the three themes of urban composition, social aspects and economic aspects.

- **Volume 5** provides action plans for each of the partner cities, informed by the toolkit of best practice policy:
  - The actions are divided into a range of broader topics such as green infrastructure, urban agriculture, urban forestry, water management, landscape amenity, communication and resourcing;
  - The actions are referenced to the best practice toolkit, and awarded a notional scoring in terms of their potential to generate urban composition, environmental, social and economic benefits;
  - They are also divided into strategic, medium term and short term actions, which could translate as 0-3 year, 3-7 year and 7-10 year timeframes depending on the resourcing and planning systems of the cities;
  - For each action the responsible party or parties for implementation are identified;
  - Monitoring indicators are proposed for each action, to assess their success over time.

The contents can be compiled as a single report covering all five partner cities, or can be compiled into shorter reports specific to each city.

1.6 Park Atlantic Action Plans - The Next Steps

The preparation of the action plans (work package 2) and a series of training visits and conferences held by the partner cities for local authority personnel (work package 3) brings the Park Atlantic project to a close.

The implementation of the action plans is now dependent on each individual city - dependent on the allocation of human and financial resources in order to programme and carry out the actions. The actions cover a wide range of themes, and particularly the strategic actions could affect the practices of, or require the participation of, a number of departments/divisions within a local authority. This could create difficulties in identifying a responsible party for implementation. It may be appropriate for the local authorities to establish an office (or identify a staff member) within their structures to communicate, coordinate, evaluate and report on the actions. The Communaute d'Agglomeration Pau-Pyrénées is intending to follow this course of action, by employing an officer for the implementation of the action plan.

There is potentially real benefit to be gained from the the five local authorities maintaining the partnership established by the project (as is the intention of of the INTERREG programme), since the project has shown that there is significant scope for learning between the partners.

Maintaining the partnership and seeking to implement actions jointly may also – in addition to facilitating learning and achieving better results – increase the possibility of obtaining further funding. While some of the proposed actions could be implemented within existing structures and budgets, many will require the dedication of resources – personnel and finance. Even if in the long run the actions would prove economically sustainable, in the current economic climate finding resources within existing budgets and staff structures to initiate the actions will be difficult. Additional, external funding will be required for some of the actions.

It is important that the local authorities constantly monitor the opportunities for external funding that exist, and seek to make the most of their established partnership, and the output of the Park Atlantic project, to leverage funds from national, European and other sources (e.g. local business, NGOs). For more on this subject refer to policy E5 in the Toolkit of Best Practice, Volume 4 of this report.

Park Atlantic

Park Atlantic Urban Parks and Green Areas Action Plan

VOLUME TWO – THE VALUE OF PARKS AND GREEN AREAS TO OUR CITIES

This volume presents a discussion of the value of parks and green areas to cities, including an historical overview, a discussion of their role (what are parks for?), their economic importance, and certain theories about their planning including an introduction to the concept of green infrastructure and ecosystem services.

2. The Value of Parks and Green Areas to Our Cities

2.1 Historical overview

The importance attached to parks and green areas in urban settings is attested to from ancient times. The Greeks in addition to the agora, provided numerous outdoor recreation resources for inhabitants of their cities; gymnasia, academies, hippodromes, theatres. Likewise in Roman cities, non-commercial public space was one of the hallmarks of imperial urbanism. The spaces were enjoyed by the citizens on a daily basis. The tradition of small gardens as an urban feature also developed in Rome evolving from farms encircling the expanding city. The typical lushly vegetated peristyle gardens found in towns such as Herculaneum and Pompeii were a distinguished feature of Hellenistic urbanism.

Gymnasium, recreation and training area with swimming pool, Pompeii circa 1st Century AD, and the Prater Vienna
(Source: Wikipedia Commons. Attributed: Herbert Ortner)

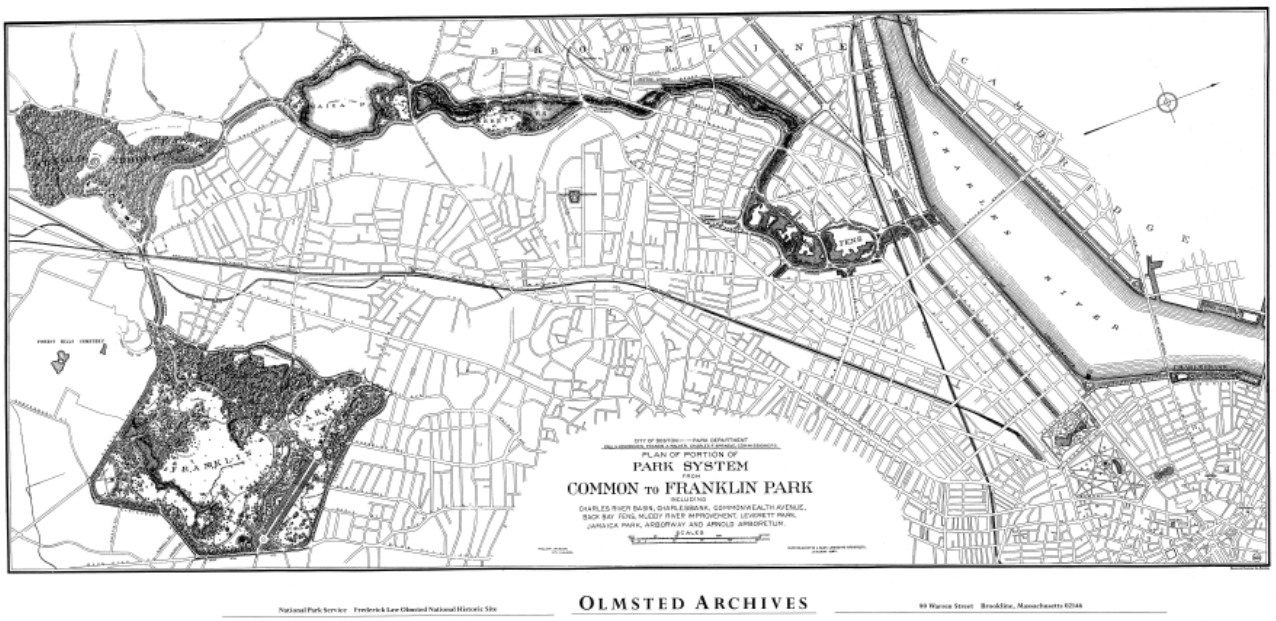
Open spaces in medieval cities included the parvis (open space adjoining the cathedral or church), the market place, gardens, and commons. Most cities had at least one common or field used for recreation and military exercise. The historian Marie – Louise Gothein[4] registers the names of famous medieval open spaces; Prado in Madrid, Prater in Vienna, and Le Pré aux Clercs in Paris. It is recorded that the open spaces were much valued and attempts to appropriate them for private uses were stoutly resisted. They provided the model for the 19th public park.

In the early modern period, open spaces such as squares were created to organise the physical form of expanding cities. Groenplaats in Antwerp was opened as a public space in 1569, and is credited as the first city to use street trees. Dublin's Georgian squares demonstrate how they positively influence the city's morphology. Open spaces were also developed as places for play, pageantry and social exchange.

From the 16th century the 'garden' was adopted as an outdoor setting deemed appropriate to royalty. Louis XIV's Versailles was widely imitated with its royal palace and monumental gardens set in open countryside away from the city and thus closely juxtaposed with nature. The public were gradually allowed access to these parks, e.g. Hyde Park, London in 1635, Jardin Royale, Bordeaux in 1746, and Phoenix Park in Dublin c.1740. Cities like Angers, Pau and Santiago also have a rich inheritance of royal parks and gardens.

The 19th century made two important contributions – the 'public park', and the concept of interconnected open space systems exemplified by Haussmann's plan for Paris, and more fully realized in the USA, for example in Frederick Law Olmsted's *'Emerald Necklace'*- a boulevard linked system of parks that originated with Olmsted's addressing a problem of flooding on Boston's Fens. The latter work was an early recognition of the ecological functions of urban open space. Patrick Abercrombie's 1914 plan for Dublin - *'Dublin of the Future'* - was based similarly on connecting the city's major open spaces, waterways, and the surrounding hinterland including the Dublin Mountains.

[4] Gothein M-L (1913) *A History of Garden Art*

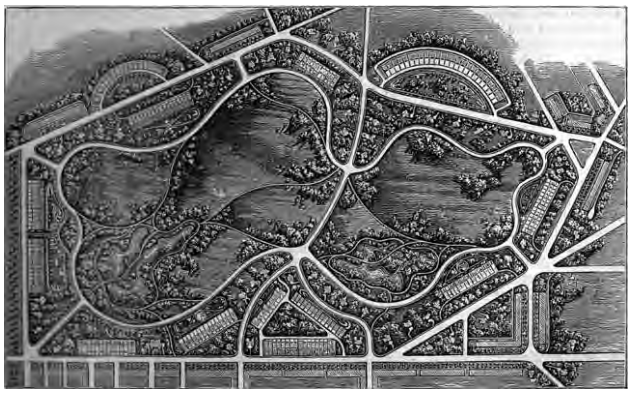


The Emerald Necklace Boston (Source: Wikipedia Commons)

"We want a ground to which people may easily go when the day's work is done, and where they may stroll for an hour, seeing, hearing, and feeling nothing of the bustle and jar of the streets where they shall, in effect, find the city put far away from them..."
- Frederick Law Olmstead 1870

The public park was a response to the poor physical conditions which characterised many 19th century industrial cities. Munich's Englischer Garten from 1804 is considered the first example - and proposed a retreat from the travails of the city. Birkenhead Park near Liverpool, designed by Joseph Paxton and opened in 1849, is considered to be the first truly public park. Its layout influenced Frederick Law Olmsted who with Calvert Vaux subsequently won the competition for the design of Central Park in New York. Public cemeteries were also an important open space resource for cities in the 19th century and were used widely for recreation. The concept of such joint use has been resurrected in a number of European cities and notably in Denmark. Vestre Kirkegård and Assistens are two such cemeteries in Copenhagen.

Englischer Garten Munich in plan 1789-1804 and today
(Source Wikipedia Commons. Photo attributed: Bbb at old wikivoyage shared)



Plan of Birkenhead Park, Liverpool, England 1847 and View of Lower Lake
(Source: Wikipedia Commons. Photo attributed Sue Adair)

The Garden City movement and Le Corbusier's city plans also sought to give recognition to the health benefits and city shaping functions of open space, with *'fresh air, light…greensward, sports grounds and abundant plantations of trees'.*

Olmsted's work on the Boston Fens illustrates the multifunctional nature of urban open space but arguably this perspective became blurred through much of the 20th century. Open space issues throughout this period became focused on recreation provision and on quantitative standards for provision. In reducing open space functions to recreation, as exemplified by the public park, the wider values of open space to urban formation and urban health became sidelined.

2.2 What are Parks For?

Through the latter part of the 20th century there was a perception that suburban gardens mitigated against the need for parks. Coupled with increasing car ownership, the accessibility of extra-urban, "real" green space, countryside and natural areas raised the question, "What are urban parks for?" and are they necessary anymore, at least in the same way as was traditionally expected – a respite from the dense living conditions of the modern industrial city.

The purely quantitative provision of park and green space for recreation and sports (sq.m / 1000 pop) became a well used model. At its most extreme, the quantity of open space became an objective in itself rather than the quality and role of that space. This can be seen in some of the large unstructured open spaces created around housing developments in the 1960s to 1980s throughout Europe and North America.

However private gardens only provide some of the functions of parks and green spaces and not everyone has access to a car or travel – particularly children, teenagers and the elderly. In a general sense those least likely to have a garden are also least likely to have a car. So the "need" for well designed, quality green space becomes more acute in certain sections of communities, and the consequences, socially, of its absence in any qualitative sense became serious. Large areas of open space are not sufficient. To quote a former planner of Dublin County Council *"If we give people prairies, why are we surprised that they act like cowboys?"*

We all have images and memories of trips to city parks over our life. City parks and urban green spaces are where we spend most of our park time – first steps as toddlers, playing and developing social skills as children, hanging out as teens, courting, family visits, walking with friends or the dog, meeting our neighbours, sitting on benches – we go to them, walk through them, look at them and form significant memories of them.

Playing, socialising, exercising, walks and trails

Teenagers "hanging out" *(Source: Wikipedia Commons. Attributed: Jorge Royan and Joe Mabel)*

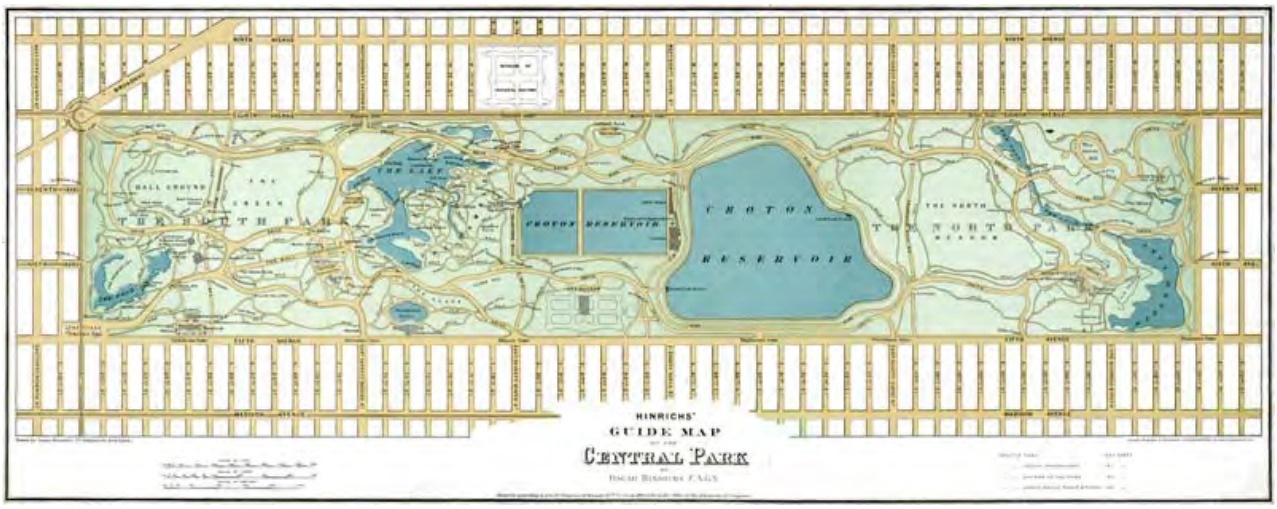
Romance, friends and family, nature

However parks and green spaces have a complex role in our cities and urban life. At their most ambitious, the greatest parks become symbols of their cities. They can lift the quality of our lives significantly, providing reasons to get out and about and engage with our neighbours, providing part of the social "glue" and building the human capital that life in a civilised city depends on, and allowing us to engage with nature and wildlife. They provide places to exercise, keeping us healthy, and places to observe other people, listen to music and/or perform, and places for children to start to safely engage with the physical world.

These are not intangible values. In recent decades cities have rediscovered the value in economic development terms of investing in the quality of the public realm and civic space in the city, as part of their competitive edge, in competing in "attractiveness" for inward investment, migration and enhancing the city value.

This is not a new phenomenon. Some of the cities in the project area – Angers, Pau, Santiago – reflect the contribution to local civic pride, identity and prestige of hundreds of years of royal or civic investment or patronage, creating an ongoing heritage and culture that maintains and develops that inheritance. Similarly, it is not a surprise that our world centres of capitalism have indulged in the same actions for the same reasons.

At the time of its construction (1857 – 1873) Central Park in New York was the largest public works project in US history. Ten years after the opening of Central Park, while property values elsewhere in the city had increased twofold, those around Central Park had increased 12 fold and they were paying one third of the entire expenses of the city in taxes. The park declined significantly in the 1970s through lack of care and attention and increasing crime levels. Since the 1980s hundreds of millions of Dollars have been invested as part of a public private partnership[5] to bring the park back to its world class status.



Central Park, New York, 1875-plan and surrounding city blocks *(Source: Wikipedia Commons.)*

Iconic view of Central park, New York
(Source: Wikipedia Commons. Attributed Alfred Hutter)

The current Mayor of New York, Michael Bloomberg, as part of a long term vision and strategy for the city "Plan NYC"[6], has initiated an ambitious greening project for the city including a public private partnership with the New York Restoration Project[7] aiming to plant one million trees in the city. The purpose of these initiatives is to address city image issues, livability issues and build the environmental and social capital that will ensure the city has a sustainable and prosperous future. "Urban Beautification" projects are underway throughout North America most notably New York's rival sister city, Chicago where it was driven by its Mayor, Richard Daley.

[5] Ref: http://www.centralparknyc.org/.
[6] Ref: http://www.nyc.gov/html/planyc2030/html/theplan/the-plan.shtml.
[7] Ref: http://www.nyrp.org/.

Similar initiatives in European cities have seen major investments in the enhancement and development of parks, the urban environment and city attractiveness. Copenhagen has a vision of becoming the capital city in the world with the best urban environment by 2015. The enhancement of urban green is one of the tools for reaching this vision. By 2015 the municipality aims to establish 14 new pocket parks throughout the city and plant 3,000 trees to create green streets and connections. By 2015 90% of all Copenhageners will be able to walk to a park, a beach or a harbour bath in less than 15 minutes.

Within the project study areas, housing renewal projects in Angers and Pau have extensive and high quality open space components, Santiago has been implementing a city masterplan including a 'Green Strategy' characterised by interconnectedness for the past 40 years. In the more recently evolved city of Famalicão a modern parks heritage is being created with outstanding design, materials and craftsmanship in public spaces, including the impressive new Devesa Park. Limerick is currently investing significantly in the public realm of its historic centre and river corridor. The most ambitious project amongst the project partners is the proposed renewal of the banks of the Maine River in Angers, creating extensive areas of new urban green space, and transforming the city's relationship with its river.

Parks and urban green spaces have traditionally provided a complex service to cities. They are part of the infrastructure that makes cities more habitable and beautiful and are no less important to successful urban economies and quality of life than transportation, telecommunication, electrical and drainage serves. Our understanding and appreciation of their multiple functions are constantly developing, underlining their role and value.

2.2.1 Planning for Urban Green Spaces[8]

The practice of planning for the provision and the roles/functions of parks over the decades has involved varying strategies internationally from city planners. Quantitative standards do not make a great park system, and the function, role and range of facilities in parks cannot be answered by a formula. Real life cities are too complex with physical impediments, climatic variations, political interferences, cultural and economic exceptionalities for the application simple standards. Rather than measuring cities against standards it would be more useful to compare cities with other cities of similar size and density, and their comparative amenities. The Park Atlantic project aims to do this, to identify the universal principles of parks and green areas provision and management that generate a good system while allowing for the varying geographic attributes of the cities and the cultures, needs, desires and interests of the citizens.

Need should drive the provision of parks and recreation facilities – local need derived from local communities or specific potential user groups e.g. skateboard park for local teenagers, bowling green for retired citizens, seating and walking amenities for the wider population, playgrounds for toddlers and for older children, sports fields/courts tailored for local clubs/interests, i.e. real facilities for real needs. Whilst quantities for some uses can be easily related to need, e.g. football pitches relating to the number of clubs, and games per season etc., other facilities are more difficult to prescribe, such as lneght of walks and trails, number of benches, picnic spaces, nature spaces, etc. The key isn't application of a blanket standard but the need to *devise a process for meeting need in each specific community,* i.e. a process of dialogue, consultation and engagement with local communities – ideally their full participation in strategy formulation and decision-making.

Population Density

Some cities have vast amounts of open space and some have very little and these factors can be both positive and negative for a range of cultural, social and physical reasons. Many historic European cities, hundreds of years old, have a limted number of trees, traditional parkland, playing fields and plazas, etc.,

[8] Ref Urban Green – Innovative Parks for Resurgent Cities, Peter Harnik, Island Press 2010. Peter Harnik is the Director for City Park Excellence at the Trust for Public Land (USA). The Trust provides an extensive resource of research and studies in this field. See: http://www.tpl.org/

yet they can be beautiful, attractive cities. By contrast other cities or city districts have too much green space and not enough of the other ingredients of "city" resulting in less human and social interaction, and therefore less value being derived from the available green space. Density of urban population – as evidenced by the findings of the Park Atlantic study - is a crucial factor to the success of parks. Less density means less human interaction, less diversity of culture, retail, culinary opportunities, entertainment, and architecture.

Access
Access to spaces/distances should be based on measurements of distance not time unless the time relates to walking. The key issue about distance both from residences and work places, is its influence on whether a decision to visit a park is made or not. Convenient access, i.e. 5-10 minutes or 500m may mean a visit is worthwhile or not. If the visit is not made the use of the park declines and the value of the city's investment is less.

Politics and Civic Leadership
Fundamentally what makes a great park system is politics and civic leadership. It is politics that decide that parks and green spaces are an essential part of the city's infrastructure and which prioritise particular objectives – healthy living, city image, education, social capital, strengthening the urban core, lifting sub-urban sprawl, protecting the environment, habitat creation, fighting climate change. Parks policy – even where quantitative standards are in place – is almost always set by politics. This usually involves those lobbying for improvements/increases in amenities, those involved in city planning policy who tend to respond to the reality of public pressure/demands rather than just their development plan standards, and political leaders – mayors, city managers, city councils – who may have a policy vision or agenda around city greening, etc.

Designing Successful Urban Parks and Green Spaces
The planning of parks and green areas requires expertise in landscape architecture, horticulture, hydrology, ecology, psychology, sociology and communication. With the evolution of the concept of 'green infrastructure' and the objective of 'ecosystem services' delivery (see 2.4 below) an even wider range of expertise is potentially required.

Parks and open spaces 'compete' for users with private/home entertainment, gyms and clubs, restaurants, streets, private gardens, leisure parks and malls, and to be successful they must provide adequate attractions. As a core amenity safety and cleanliness are paramount followed by quality planting/horticulture and hard landscape. Other attractions can include sculpture, artwork, water features, performance spaces and views, as well as more intimate areas. The addition of a cultural/educational attraction, café/food outlet or similar within or just adjacent to a park can significantly enhance its attractiveness. The incorporation of exercise facilities including exercise machines can add significantly to park use and assist healthy living/lifestyles particularly amongst populations that cannot afford gym membership. A fitness zone with a few grouped machines can promote social interaction and exercise and attract older children away from playground areas. Planning the environs of the park to maximise use of both the park and the retail/services opportunities it presents, and/or the private provision of some of the above amenities, can also add value.

Planning for parks is therefore a process, a process of Open Space Planning or Master Planning which allows the whole community (children through adult citizens to business people, politicians and professionals) to have a meaningful dialogue about the current and future parks system.

Delivery should involve a significant creative design input to add value to the sum of amenities created. The process should deliver and enhance a parks and green areas system or network that fulfils the needs of people. Needs are constantly changing and are no longer based solely on local geographic or sectoral agendas. Parks and all open and green areas are increasingly adopting a wider and more valuable role in delivering further services to society into the future.

2.3 The Economics of Parks and Green Areas

The elementary benefit of parks and green space is in their value to individuals as places for amenity, social interaction, exercise and recreation. These uses contribute to social welfare (well-being) and so are of economic value. They are also a communal, i.e. a shared resource or 'public good'. As spaces for social interaction, parks reduce problems of social exclusion, social isolation and racial segregation, with particular benefits to the young and the old. As spaces for recreation, parks provide significant public health benefits in terms of physical and psychological health, for adults, but also for children and young people through opportunities for play, interaction, physical activity, and spatial awareness. Many of these benefits also provide savings for society, the state and for local authorities in terms of reduced healthcare expenditure, reduced productivity losses and reduced problems of anti-social behaviour or minor crime.

Further savings on municipal expenditure can be realised through ecosystem services. For example, green space can be designed and located to provide sustainable urban drainage systems (SuDS) at lower cost than engineered drainage and with demonstrable savings due to the avoided cost of localised flood events. Parks and green areas also moderate urban temperatures, reducing energy use and expenditure, now also representing an adaptation to climate change. The ecological benefits extend to biodiversity protection, water quality, noise mitigation, improved air quality through particulate capture and, for more wooded areas, to carbon sequestration. Economic values can be attributed to each of these benefits.

Parks and green areas can also be a resource for economic growth or development. Attractive parks attract use, and with it expenditure through footfall for local shops and cafes. Likewise, parks attract tourism and expenditure and can be used as spaces for events or festivals with further economic returns to the city. Parks can contribute to the promotion of a city's image as historical, progressive or dynamic. This image can be underpinned through the protection of heritage, through the use of local materials and the promotion of civic art, again providing economic returns.

A positive image of livability enhances property values and, thereby, local property taxes. New residents are attracted to the city, reducing outward migration to the suburbs or countryside and making for a socially diverse, economically dynamic and functional urban environment.

It is important to recognise, however, that for parks and green areas to be a social and economic asset, and for public expenditure savings to be realised, they must also be attractive, appealing and well-maintained. Only progressive management can ensure that parks contribute economic benefits. By contrast, poorly maintained parks are a drain on city resources. The green infrastructure concept (see below) strengthens the benefits of parks and green space through physical connections that link parks for recreation, sustainable commuting and biodiversity. The ecological connections supply ecosystem services whose cumulative economic value is greater than the sum of its parts.

2.4 The Future of Parks and Green Area Planning - Green Infrastructure for Ecosystem Services

As discussed earlier, appreciation of the environmental functions of parks became blurred through much of the 20th century but with the onset of environmental concerns in the 1960s followed by the urban ecology movement and later the concept of sustainable development, this role once again came to the fore.

Since the turn of the 21st century the term **ecosystem services** has been used to describe the beneficial outcomes to humans and the natural environment that result from ecosystem functions. In city-regions ecosystems and ecosystem functions occur - or have the potential to occur - in their most extensive and purest form in parks and green areas including the rural hinterland. In addition to their social and economic services discussed in 2.2 and 2.3 above, their environmental services include:

- Habitat provision, protection and enhancement for biodiversity;
- Water management including drainage and flood attenuation, run-off filtration and pollution control;
- Nutrient cycling and soil formation;
- Air quality improvement;
- Regulation of micro-climates (green lung) and potentially climate change adaptation.

The resources for the delivery of ecosystem services have come to be known collectively as **green infrastructure** (GI). There are various definitions of GI. One of the most comprehensive, and most relevant to this project, is that of Natural England (the English government's advisor on the natural environment):

> *"Green Infrastructure is a strategically planned and delivered network comprising the broadest range of high quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability. Its design and management should also respect and enhance the character and distinctiveness of an area with regard to habitats and landscape types.*
>
> *Green Infrastructure includes established green spaces and new sites and should thread through and surround the built environment and connect the urban area to its wider rural hinterland. Consequently it needs to be delivered at all spatial scales from sub-regional to local neighbourhood levels, accommodating both accessible natural green spaces within local communities and often much larger sites in the urban fringe and wider countryside."*

GI planning as the means to develop and manage urban parks and green areas into the future has been given further impetus by the EU biodiversity strategy to 2020 (detailed in a communication from the Commission of the European Communities entitled *Our Life Insurance, Our Natural Capital: An EU Biodiversity Strategy to 2020*). The strategy identifies GI as the mechanism for incorporating an ecosystem approach into the systems of spatial planning. This will translate into the incorporation of GI plans and policy into the development plans and activities of governments at national, regional and local level, in urban and rural areas. Parks and green areas including the rural hinterland will form the core components of GI networks in city-regions. They will be subject to planning, development and management as meticulous as that for the 'grey infrastructure' of our urban areas, with an emphasis on ecosystem services delivery.

Park Atlantic

Park Atlantic Urban Parks and Green Areas Action Plan

VOLUME THREE – PROFILES OF THE PARK ATLANTIC CITIES

This volume provides brief profiles of the parks and green areas of the five Park Atlantic partner cities (informed by the study carried out in the first Park Atlantic work package, by CRP Consulting), SWOT analyses of their respective resources and examples of their best practice in parks and green areas development and management.

3.1 Angers

3.1.1 Historic Overview

The Angers-Loire-Metropole district was created in 2001 replacing the previous district originating in 1968. It is located in western France, 300km south west of Paris and 120km from the Atlantic. It is situated on the Loire River at the confluence of the Loire with the Mayenne, Sarthe, Loir and Maine rivers. Consequently the landscape, character and history of the region is defined by this continuous river valley presence, covering about 90km2 of the 510km2 that make up the region, and its associated floodplains, woodlands and natural areas and panoramas.

The district has approximately 283,000 inhabitants, with the City of Angers forming the main urban centre with 156,000 inhabitants over 46km2.

The region's built heritage reflects its local geology of blue-indigo shale and slates, ochre coloured limestone and clay bricks and contains many fine historic buildings and chateaus. The City of Angers is notable in this regard and for three hundred years was known as a royal city and retains a fine "old city" character, with fortifications and related features.

Moat garden, Château d'Angers.

Le Jardin Des Beaux-Arts at Galerie David D'Angers.

Place Sainte-Croix

Château d'Angers looking east across the river Maine from Bd Henri Arnauld

Of particular relevance to this study is the city's long standing relationship with the world of horticulture. This is France's leading horticulture region with extensive nurseries, plant and seed centres, and horticultural businesses as well as the National Horticultural Centre, and a range of horticultural and landscape institutions and a university research centre. This horticultural culture is evident throughout the City of Angers and the district and is evident in the extensive and high quality parks and gardens and the participation and engagement of the community in the greening of their city.

3.1.2 Parks and Green Areas Profile

The Angers-Loire district has the highest proportion of parks and green areas of all the cities in France, with 550ha in the City of Angers including five community parks and 1,000 allotments plus an additional 250 ha of rivers, floodplains and lakes. The vast alluvial plains of the Mayenne, Sarthe and Loire rivers, which extend to the north and south of Angers, are known collectively as the Basses Vallees.

The river banks are easy to access and develop and are favoured leisure areas for both old and recent housing areas. There are about 60km of hiking trails in the Basses Vallees. The majority of the region's natural spaces are linked to the Basses Vallees, in particular:

- Ile Saint Aubin – a heart shaped island (600ha) between the Sarthe, Vieille Maine and Mayenne with extensive meadows, liable to flooding, an old farm managed on organic lines and used as an educational resource. The island is only accessible by boat and explored by bike or on foot. It is partly owned by the municipality of Angers and forms an excellent example of rural countryside accessible as a public parkland for walkers and visitors.
- Maine left bank/Saint-Nicolas lake/Brionneau stream - 450ha of interconnected water bodies, parks and forests to the south-west of the urban area. The key components of this area include:
  - *Balzac and Lac de Maine parks* - 300ha of water, meadows and groves with several playgrounds, a beach, water sports centre, and an Environmental Centre, created from former gravel pits and inert landfills. *(See Stage 1 Study of Angers for detailed description of and proposals for these parks);*
  - *The Parcs Saint-Nicolas et Garenne (Angers) and Parc de la Haye (Avrillé)* - These parks consist of a narrow wooded craggy valley, originally former slate quarries, now with a very diverse environment requiring careful management, as well as a park (de Garenne) designed and laid out in 1936 with animals (deer, goats, etc) and a very large playground.
  - *The Parc du Brionneau (Angers and Beaucouzé)* - Large woods and moorland forming an extended part of the Saint Nicolas park
  - *The green corridor of Mollières or Vallon de l'Hermitage* - A valley forming in excess of 1700m of natural space leading into the heart of the Mollières district.
- The Basse Vallée of the Loire - To the south of the urban area, the Loire and its floodplains spread out in a vast corridor about 4 km wide consisting of tributaries, sand and gravel banks, streams, lakes and alluvial plains of regional and international importance.

Rural Angers

The region includes extensive rural areas - farmland, hedges, woods, chateaux and estates. The farmland, a patchwork of hedged fields, horticultural concerns and, in places, vineyards, is well preserved although many of its constituent old towns and villages have expanded significantly. Although representing the inevitable urban sprawl around a city like Angers, these expanded towns and villages do retain or have created landscape qualities in their new form. In the wider rural area two favoured areas, open to visitors, are notable:

- The Château de Montriou, to the north of the municipality of Feneu - 11th, 15th and 19th century architectural heritage, large managed forests, ornamental lake, specimen trees and an enclosed vegetable and fruit garden.
- The national forest of Longuenée, a former royal hunting forest since the 12th century, is the only large forest open to the public in the metropolitan area. It is managed by the French forestry authority and contains predominantly coniferous and some broad leafed woods, a lake and paths.

Urban Angers

Green spaces and gardens within the city or urban areas are made up of a rich heritage of parks, gardens and open spaces from the middle ages to the present day. A number of characteristics are attributable to each era of park origins:

- The first gardens were private, associated with estates, hotels and convents.
- The first public garden, Promenade du Mail (today Avenue Jeanne d'Arc) was created in 1615. *(See Stage 1 Study of Angers for detailed description of and proposals for this Avenue.)*
- In the 18th century the previously fortified city was modified and ramparts knocked down and boulevards and public spaces/gardens including the Jardin du Mail created.
- Further modernisation in the 19th century saw the redesign of some gardens. The Jardin du Mail *(See Stage 1 Study of Angers for detailed description of and proposals for this park)* was designed by André Leroy and Edouard André designed the Parc de la Garenne and the botanical garden, now the Jardin des Plantes. The garden belonging to the School of Fine Arts, now the Parc d'Ollone, was also developed. The horticultural society created French-style borders in the château moats in 1912.
- From the 1960s to 1980s Angers acquired a number of former private parks and gardens which became part of its municipal parks and gardens networks:
  - The G. Allard arboretum, planted from 1863 to 1915 and acquired in 1960; the city maintains and adds to several collections of trees, shrubs and perennials and it currently has over then thousand species;
  - The La Perrière flower-garden in Ste-Gemme, acquired in 1972 and which is now Parc Hutreau;
  - Parc Hébert de la Rousselière in 1979 with a noteworthy collection of trees (Monplaisir district);
  - Parc de la Chalouère with a monumental cedar (Saint-Serge district);
  - The Parc du Pin, also acquired in 1980, has a long history of great significance for Angers horticulture: the Leroy family created a horticulture business there in 1704 which expanded hugely for two centuries. Numerous trees, flowering shrubs and flowers were acclimatised and multiplied there before being sold throughout Europe and in the United States. Levavasseur bought the nurseries early in the 20th century.
- Modern gardens include:
  - Promenade Jean Turc, the Esplanade du Port de Ligny and Montée Saint-Maurice as a whole: a classic composition, with French-style borders at the foot of the old city, they set off the Maine and the cathedral, with spectacular views from Montée St-Maurice;
  - The Jardin François Mitterrand created on a disused railway on the edge of the Maine: this very "high-tech" garden with its radical, sombre composition links the new service sector and university district to the Maine and Boulevard Ayrault;
  - The private park "Terra Botanica", a plant-themed attraction park to the north of Angers.

The communes around Angers also have gardens, most notably Avrillé, "ville-parc" (park city), which acquired and restored the Château de la Perrière and built a golf course in the park. There are some fine views over the Mayenne valley and the château, which is a listed building.

Collectively the gardens reflect the historical development of the city, its rich horticultural tradition through its range of exotic trees and shrubs and quality large specimens, and provide a setting for the distinctive built heritage of the city.

Arboriculture and Horticultural Displays

There are 16,000 trees lining the streets of Angers and counting the trees in the parks the city has a population of over 110,000 trees. Other communes in the metropolitan area also have an extensive heritage of trees in addition to this. The trees are important in structuring and framing the public spaces, boulevards and avenues of the urban areas.

The city has tremendous expertise in arboriculture and won an award for this in 2000. The size, planting methods and choice of species is well managed with a few dominant tree species which reinforce the city

identity - 58 differrent species are found with 11 dominant species, namely Platanus, Acer, Tillia, Carpinus, Quercus, Liquidambar, Robinia, Prunus, Gleditsia, Fraxinus and Magnolia. These are the species best suited to the local conditions. As well as managed street and avenue trees Angers also hosts a range of heritage trees including:

- Trees of exceptional age, size or growth habit;
- Cemetery lines of cedars and cypress trees.

Various planting techniques have been developed including the use of engineered soils - a combination soil and gravel - for the past 20 years as well as management techniques, notably a method of soft pruning.

Reflecting its horticultural heritage, the city has a long tradition of colourful flower plantings in hanging baskets and planters, around trees and in borders, with particular attention paid to the colour palettes of the displays. The flowers are produced in the municipal greenhouses.

Arboricultural and horticultural displays, resources and skills

Squares, Playgrounds and Community Green Spaces

Criticism is made of the large housing developments built between the 1960s and 1990s. These schemes are typically characterised by large housing blocks set in extensive grassed areas with roads and parking. This pattern is at odds with the historical urban pattern of the region and the resultant green spaces are often uninviting, poorly laid out in terms of pedestrian access, and both poorly supervised and lacking in more intimate spaces. The Stage 1 study highlights five key issues (common to many cities):

- Anti-social behaviour;
- The dominance of cars and vehicles in the public spaces;
- Poor planning for adolescents and their needs leading to conflicts with other uses;
- The need for better pedestrian links/access between neighbourhood facilities and amenities;
- The need to explore alternative management solutions which use intermediate structures between the city departments and residents to maintain and manage spaces.

These areas, including Verneau district, Roseraie, Grand Pigeon, Monplaisir and Belle Beille, are the object of rehabilition programmes since 2004, within the framework of the program of urban renovation (ANRU) and involving extensive consultataion with the inhabitants and local people. The objectives of the programmes include the domestication of the areas around buildings and redefinition of public places (car parks, footpaths, playgrounds, etc.).

It is noted that a number of more recent developments since the 1990s address the above issues through the use of prescriptive plans guiding development and are generally more diverse in terms of housing and social mix. As well as addressing the key issues above these new developments consider quality in design, scale of development, detailing and finishes and ecological opportunities/provision. This approach is particularly strong in the new developments seen in The Lac du Maine district, the Mollière and the Desjardins.

Playground provision is in accordance with best practice Europe wide.

Allotments and Landscape Innovations

There are nearly 1,000 allotment plots over 10 sites in Angers. These are managed by associations and given technical support by the city authority. There is a big demand for allotments and community gardens in the city and new initiatives to expand their provision are ongoing. Generally the city provides the sites and infrastructure and develops a management agreement with a group or society to manage the grounds in terms of leases/users, etc.

The allotments play an important role for local communities in terms of social cohesion and mixing, education (gardening), and diet. Children's events are regularly held as well as community restaurants and other activities.

Quality allotment facilities and Community Gardens

Elsewhere the city authority facilitates residents planting and managing spaces around buildings in social housing schemes as well "street gardening" in other neighbourhoods.

A number of self-service municipal herb gardens have also been created in the district of Avrillé.

Wastelands / Derelict Lands

Only one semi-derelict area is highlighted, between the Maine and the expressway at Saint Serges. The expressway generally prevents the full interaction of the city and its river and is a major intrusive element in the city/river fabric.

However the city is progressing a major new urban renewal project in reclaiming the banks of the river Maine, "Angers Rives Nouvelles". The project reflects an ambition to make the metropolitan area more sustainable, greener, more respectful of its heritage and its natural wealth and to look toward a modern Angers and the future.

Following a unique citizen participation process, and engagement with consultant urban designers, planners and landscape architects, plans for a 15-20 year transformation of the central river corridor of the Maine in Angers are now in place. The main objectives are to provide new development areas and to restore/create a unique and iconic river corridor landscape for the city. The project area extends to 320 hectares on a six kilometer stretch on both sides of the river. Many existing and completed projects have been integrated to form a grand vision for the urbanised river. The project addresses traffic issues, tourism, business, cultural and amenity issues and imagines what the city might be in 20, 30 or 50 years and seeks to realise the potential of the river corridor in this respects.

The project is an example of best practice in managing major urban change, realising opportunities in the physical and natural resources of the city's landscape, engaging citizens in developing a vision and creative urban and landscape design, and land use planning.

3.1.3 Policy and Management Context

The metropolitan area and the City of Angers have a proactive parks, gardens and landscape division. There is an extensive workforce to design, manage and maintain the various projects. Of the total Angers city capital (investment) budget of €65.5 millions, €3 million is used for parks and open space investment and of the total Angers city budget of €182.2 millions, €1.8 million is used parks and open space for maintenance.

There is no specific hierarchy of open space/parks provision applied to the city. The most relevant classification of green space would be that used by the French Landscape Institute which uses terms such as – Parks, Gardens, Squares, Accompanying Gardens, Streets/Roads, etc. The social function of green space is underlined by policies:

- 10 years ago the Mayor decided that there should be a green area within 500m of every citizen;
- In terms of quantity of open space there is 34sq.m of green space per citizen excluding water areas, sports fields and gardens. If included these would raise the quantity of open space to 50sq.m per inhabitant;
- To ensure public participation in programming/landscape development and restoration;
- To ensure a partnership with the public in the management of allotments, sacred gardens, nature areas etc. In particular for the city in bloom project advice and guidance is provided on flowering schemes – annual, perennial and shrub planting;
- The organisation of guided tours, educational events and cafes.

The landscape division has a range of environmental policies including:

- Eliminate the use of chemicals in weed control – planned by 2014;
- Minimise the use of pesticides for disease and pest management both in the field and nursery context;
- Minimize water requirements for irrigation;
- Recycle green waste;
- Implement differential management of grassed spaces or meadows for ecological and efficiency gains e.g. meadow grass management at Parc de Balzac;
- Diversify plantings with resulting reduced maintenance;
- Encourage wildlife including management to protect and preserve avifauna in consultation with Bird Protection Organisations - The city has an active programme of enhancing biodiversity and has participated in the France stage of the European Capital of Biodiversity 2010 see http://www.capital-biodiversity.eu/2.html;
- Water run-off attenuation and rainwater management/filtering systems.

There are also agreed codes or classifications for the management of green spaces according to the level of quality required. The ratio of green space to operative in Angers is 5ha per operative. Standards elsewhere in France can be as high as 3.5ha per operative.

The city has developed a classification system for costs of managing green space in Angers ranging from the most intensive and expensive – flower beds, annual displays etc – through a range of classifications of space to the most simple/basic management. The system means that each park or area has a classification of inputs and management requirements/tasks which staff understand and a related "rate" or cost per hectare or sqare metre which means that the budgetary implications of any changes or new areas are easily identified. The City is currently reviewing these classifications in order to simplify and reduce the number and become more effective.

Management categories

The city works with the International Competition Center to develop and exchange technical practices with private companies and actively promotes experimental projects in partnership with private companies and organisations.

Tree Management is carried out by a team of seven tree surgeons with one security man. Some works are contracted out. Specialist (urban) tree soils are always used with some long standing examples now 10-15 years.

There are a range of landscape and biodiversity protections/policies at different levels in place or under development including:

Regional and City Governance, Policy Development and major Project Delivery
The Communauté d'agglomération d'Angers Loire Métropole is the intercommunal structure gathering of the City of Angers and some of its suburbs and surrounding communities/villages. The Communauté consists of 33 individual municipalities (including the City of Angers) each with their own structure and staff although some are quite small. Whilst many public agency functions/services are carried out directly by the individual municipalities, the role of the Communauté is to coordinate land use strategy as well as transport, education and economic development across the district and liaise with the individual municipalities to achieve this. The Communauté also manages and develops a number of strategic projects on behalf of the district.

The agency Angers-Loire Development decides economic policy for the region including the role of the city retail areas and their protection.

The City (Mairie) of Angers manages and runs all functions and services of the Angers municipality under the direction of the Mayor. It has the competency to develop all projects and initiatives within the strategy developed by the Communauté. Fanny Maujean is Director of Parks for the city but the post is part funded

by the Communauté to which it provides advice and services in landscape. The Director of Parks for Angers is involved in all the major projects for the city.

The Scheme of Territorial Consistency (ScOT) is an Urban Planning Agency that assists the City of Angers plan for, develop masterplans and fund the expansion of the city into new development areas as well as the renewal of urban/housing areas in need of renewal. The Agency provides technical advice in planning, urban design masterplanning as well as financial aid and grants. Plans are agreed with local elected representatives. ScOT is part of a network of central government agencies which manage urban expansion and renewal schemes on behalf of and in partnership with municipalities, thus ensuring consistent quality and best practice is applied nationally. These agencies also provide expertise internationally. Typical examples of such projects in Angers include the proposed expansion in Avrillé in the north of the city and the residential renewal scheme at Lafayette Eblé.

SEM or Société d'Economie Mixte, is a semi-state company put in place to deliver a particular service or carry out a particular project. This structure is used to manage public housing and urban renewal programmes in residential and other areas in Angers[9].

National/European Level

- The Loire Valley itself - a UNESCO World Heritage Site stretching from Sully (east of Orleans) some 200km west to the estuary beyond Angers.
- Natura 2000 sites – Basses Vallées – flooded alluvial plains along the rivers Loir, Mayenne and Sarthe

District Level – sensitive natural sites:

- Basses Vallées - Ile St-Aubin, La Grande Baillie and confluence of the Maine and the Loire.
- The slate quarries of Trélazé and the hedgerows on granite in St. Clément-la-Place.

There is an Agenda 21 programme for the city and agglomeration.
There is a Local Urban Plan under development between the local councils and on a scale of the Communauté d'agglomération Angers proposing Green corridors and Blue corridors and a Local Biodiversity Plan at the same scal is also in progress

Local Level – via the local town plan

- Protection of classified woods and certain trees.
- Protection of registered heritage components including hedges, trees, landscapes etc – although this is a flexible protection.
- Zoning for agricultural and natural heritage areas.

3.1.4 Planning and Economic Development

Thought is currently being given at the scale of the metropolitan area to debate these various protection levels and achieve harmony on all components to be protected. Whilst development quality control in the wider urban area of Angers is strong, elsewhere in the rural communes of the metropolitan area such quality is rarely delivered.

Economic policy in the region recognises the strong interconnectedness of city brand, image and identity for tourism, business attractiveness and self image – there is a very strong positive regional brand with an international profile. This interconnectedness is feeding through to sustainable development policies for business developments. The proposed Maine River Banks project is the most ambitious example of this thinking with major investment in city development, amenity an image to take place over the next 15-20 years.

[9] See http://www.soclova.fr/

Although there is an intuitive recognition of the relationships between economic well being and environmental quality and parks/recreational amenities, there is a need to build an evidence based approach to this position – how can the economical value of public space be evaluated? Are there examples of economic development and innovative public space/environmental quality being mutually reliant, and can this be managed/manufactured?

On the wider or district scale a Local Urban Plan between local councils and on a scale of Angers agglomeration is on-going.

The above policies, events and opportunities are communicated to the public through the city website.

3.1.5 SWOT Analysis

Strengths

- The River Loire and floodplains, woodlands and natural areas generate identity and character, and represent a major landscape resource. This provides the base for the city's larger parks and natural areas – often with extensive wildlife, sometimes agricultural with livestock, islands as parks and walks and trails – extending a green corridor into the heart of the city.
- Angeres is a fine old city with a royal, historic character and a tradition of public gardens/parks provision dating from early 1600s.
- The city continues ongoing generational provision of new amenities up to the present day including contemporary open spaces.
- The city has a particularly fine inheritance of 19th century gardens.
- Angers is in France's leading horticultural region and a World Competition Centre for plant material. There is therefore a strong cultural tradition, expressed in local public/street gardening, colourful flowers, collections of exotic trees, etc.
- The city has a rich tree heritage - street, avenue and heritage trees - in Angers, with 110,000 overall and 16,000 lining the streets of the city.
- There is extensive use of local materials and the areas geology is reflected in its buildings.
- The city has a highly legible landscape structure of definable elements, with a clear hierarchy, from central urban Angers stretching out to surrounding rural landscape.
- There is a generous provision of parks, open spaces and walking / cycling trails - 550ha of publics green spaces in Angers + 283 ha of agglomeration's parks + 350kms of footpaths in the entire agglomeration. These figures exclude public heritage in others districts forming the agglomeration.
- There is a city policy to ensure that all households have access to at least 1 green area within 10min by foot or a distance of 500m
- There is a large allotment provision - 1,000 no with additional social and educational activities.
- There is strong social engagement with the horticultural and open spaces.
- There is strong civic pride and expectation, in terms of quality, in the public realm.
- There are many newly developed community parks and green spaces, comprehensive programmes of environmental education, guided tours, gardening workshops and exhibitions etc
- There is an extensive rural region within the city district with its own landscape and visitor attractions – Chateaux and Gardens and a National Forest.
- There are self-service municipal herb gardens provided in the Avrillé district
- The city has an ambitious integrated environmental strategy.
- Angers has a successful planning and design strategy particularly in recent decades.

Weaknesses

- Angers, like many cities, has an inheritance of large 1960s – 1990s residential developments with poor urban structure and conflicting with the historical city pattern generating a range of issues. However it is noted that urban renewal initiatives are underway since 2005/06 to address these problems, and continue.

Opportunities

- There is underused land available in the various 1960s – 1990s estates, which creates opportunities iwthin the current and ongoing programme of urban/landscape renewal.
- Planning policies offer potential for synergy through review/rationalisation of protections.
- The Banks of the Maine project and the major redevelopment proposed will address the intrusion of major roads through the city centre and along the river corridor.
- The Avenue Jean D'Arc offers potential for renewal and animation whilst respecting its historic character and qualities.
- Where feasible, there is the potential to develop panorama/viewing points over the city e.g. the elevated car-park at Lac de Maine has potential.
- The public spaces and new parks in the Lac de Maine area could be enhanced..
- The extensive network of green and landscape spaces within the urban area and surrounding rural hinterland is potentially an interconnected network of "Green Infrastructure" and offers opportunities for improved links and to add environmental value to the rich city inheritance of landscape and nature.
- Community and shared gardens could be developed further with more innovative approaches and participation.
- Public spaces could accommodate new uses/activities and broadentheir rols and use.

Threats

- There is a potential conflict between the "designed" landscapes and the "horticultural" landscape – style/place versus decoration in urban spaces.
- There is a need to articulate economic rationale for investment in urban green space to ensure the long term sustainability of the public / green space quality. This ecomic analysis should be based on evidence of the relationship between quality and economic development and activity.

3.1.6 Examples of Best Practice

Berges de Maine – Major Project	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓✓

Description of Action, Context and Goals:
Berges de Maine is a major project initiated by the City/Mairie of Angers. There has been a strong awareness that something needed to be done with the intrusion of the AI34 motorway between the Old City, particularly the castle and the river. There is a recognition that the city's "attractiveness" is a key factor in attracting residents, visitors and investment/jobs. In competing with other cities the city's attractiveness is a function of its economic development, quality of life - cultural and sporting. The Berges de Maine project addresses all of these issues for the city. It is perceived that the city's main competitors are the local cities of Nantes, Rennes, Le Mans and Tours. These cities although varying in scale would compete within France and internationally for investment – industrial, commercial and tourism related – and image and "attractiveness" is regarded as crucial in this regard.

The main objectives of the project are to provide new development areas and to restore a unique and iconic landscape for all Angevins, so they can imagine the future city. This project, with considerable challenges, must create links with many urban projects already completed or in planning on both sides of the Maine.

Further Information:
- http://www.angers.fr/projets-et-politiques/rives-nouvelles/rives-nouvelles/index.html

Public Consultation and Participation	Urban	Env	Social	Econ
	✓	✓	✓✓	✓

There is a structured process of civic dialogue with the local citizens. This is not just project related but a permanent structure through which each local area is communicated with.

This structure typically involves:

- District (Quartier) meetings involving local elected representatives. There are 10 Quartiers;
- Participants from neighbourhood, typically for a period of 1-2 years;
- Relevant Associations.

As new projects arise relevant technical staff, e.g. landscape, liaise with this structure to discuss, agree and develop projects. This may involve nomination of additional representatives from specifically affected areas/groups e.g. streets, societies etc.

This process has evolved in recent years, reflecting Agenda 21 sustainability objectives, and reflects a mix of representative democracy and participative democracy in decision making. The structure appears to have built enormous goodwill and trust between the community and the local authority with very transparent decision making on projects and initiatives. It has provided a structure whereby the professional staff can listen to local community problems, issues, and needs but also where they can inform and educate / lead the local community in best practice approaches to particular problems or project proposals. Decisions are still made on the basis of a majority and this process has facilitated the development and implementation of large and radical urban renewal projects as well as smaller projects and management changes in parks and other local authority services.

The process was taken to a further level by the Berges de Maine Project were 90 citizens of Anger were selected to participate and act with the City Council professionals in developing a brief and managing the selection of the winning design team for the scheme masterplan. The process involved building the capacity of the citizens to participate through educational tours to similar cities/projects elsewhere, workshops and presentations. In this way the project reflects the widest intentions/needs of the city and its residents, their values and aspirations, and their analysis of issues and problems, thus ensuring “best fit” concepts and solutions without hindering any of the scheme ambition.

Further Information:

- http://www.angers.fr/projets-et-politiques/democratie-participative/index.html
- http://www.angers.fr/projets-et-politiques/angers-rives-nouvelles/participation-des-habitants/index.html

Housing Renewal Projects	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓

There are a range of housing renewal projects in Angers focusing on five priority neighbourhoods which cumulatively form a significant part of the city area:

La Roseraie, Belle Beille, Grand Pigeon Monplaisir and Verneau (Hauts-de-Saint-Aubin).

As well as home improvements, economic revitalisation, energy efficiency and improved social mix, an extensive programme of landscape and public space projects is included involving, typically, communal gardens often around the base of high rise apartment buildings like domestic gardens, play areas and recreational facilities, and quality public ream and streetscapes.

The urban renewal programme is spread over seven years, although still ongoing. Each project is different and details can be reviewed on the Angers City Council website but illustrates a commitment to quality design intent and finish that extends from the residential units to the streets and public realm and amenities.

The creative and social approach to the landscape of these renewed neighbourhoods, where prairie style and disowned landscapes become treasured domestic spaces, is transferable to similar initaives elsewhere.

Financial Aspects:

- €385M budget has been spent with 6000 homes renovated and 8000 new homes built.

Further Information:

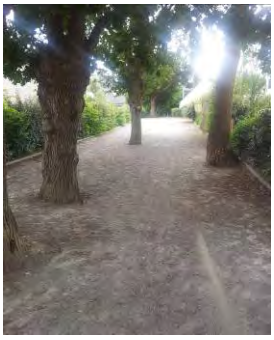
- http://www.angers.fr/projets-et-politiques/renovation-urbaine/index.html

Landscape Quality of New Housing Developments	Urban	Env	Social	Econ
	✓✓	✓	✓✓	✓

New housing developments in Angers illustrate a creative and high quality approach to landscape design achieving a range of physical, practical and visual amenity gains. The following examples – suburban and urban - are transferable to potential new developments in the partner cities.

Alleé du Grand Servial – suburban:

- The neighbourhood green, designed – with the use of mounds and planting - to serve as an adventure play space.
- Retention of former hedgerow trees as specimens within the development. They retain an historical landscape line or mark without the often inconvenient hedge/shrubs which can be inappropriate in a housing area.
- Quality groundcover tree and shrub planting thoughout public realm/streets.



Desjardins Park and District – urban:

- Attenuation and play spaces creatively integrated.

Jardins Du Mail	Urban	Env	Social	Econ
	✓✓	✓	✓✓	

The Jardins du Mail are quite simply a pleasure garden, designed to be walked through, sat in, viewed – a delight of French horticultural tradition. Yet they have been modernised in very subtle ways which provide inspiration for similar traditional parks inherited in some of the partner cities. Techniques involved in their modernisation include:

- New trees and replacement of some older trees forming the landscape structure– the garden feels "young" yet timeless.
- Use of more contemporary planting/bedding mixes illustrating excellence in horticulture, yet informally contrasting with the expectation of a French garden.
- Integration of a children's play area into the gardens.

The above changes have allowed the garden to become relevant and contemporary without compromising its historic character and values.

Aerial view of Jardins Du Mail (Source: Google Earth)

Further Information:

- http://www.angers.fr/vie-pratique/environnement/les-parcs-et-jardins-publics/patrimoine/parcs-et-jardins/jardin-du-mail/

Ille St Aubin	Urban	Env	Social	Econ
	✓✓	✓	✓✓	

The Ile Saint Aubin is an island of which almost 600 hectares are under water in the winter, and meadows in the summer. It is located to the north-east of Angers and is an agricultural landscape managed to be ecologically rich, providing visitors with environmental education as well as recreation/relaxation. The island is reached by a cable ferry and contains way-marked trails to keep the visitor to specific paths. A farm building has been retained and restored in the centre of the island to provide interpretation. It is open to the public from May (end of flood) until September, and cows can be seen grazing on common pastures of the island. It offers a permanent exhibition on the life of the island and temporary exhibitions on themes related to the environment. The exhibitions are made by the different partners involved on the island (Bleak Angevine, Federation of hunters Maine et Loire / Wildlife Association, League for the Protection of Birds and City of Angers).

It is an excellent opportunity for the city visitor or resident to access a traditional and ecologically rich landscape a short walk or cycle from the city centre, which due to its regular inundation and role in water management has remained undeveloped to the present day. It illustrates the value of retaining such, often negelected and undervalued landscapes, as wonderful relaxing amenities for the city and/or cities elsewhere. It provides a useful model for the Coonagh landscape area in Limerick.

Further Information:

- http://www.angers.fr/vie-pratique/environnement/la-maison-de-l-environnement/l-ile-saint-aubin/index.html
- http://fr.wikipedia.org/wiki/%C3%8Ele_Saint-Aubin

3.2 Limerick

3.2.1 Historic Overview

Limerick City is the third largest conurbation in the Republic of Ireland and the fourth most populous - supporting 95,000 inhabitants in a space of 31 square kilometres which spreads into neighbouring County Clare. The city territorial limits are populated by 56,779 people, though this has reduced over recent successive years with a trend of migration towards the county area. It is located in the province of Munster and is the principle city in Irelands Mid-Western region. It is situated approx 60km inland from the Atlantic Ocean at the head of the broad river Shannon estuary, (which is approximately 80km in length).

The city has developed on several bends and an island of the River Shannon, which spreads into an estuary shortly after Limerick. It has a low lying position on a relatively flat landform and is heavily characterised by its relationship to and with the river. Medium to long range views are largely controlled by the built environment; those available are principally associated with the river corridor. Views extend over the surrounding landscape which is largely defined by agricultural floodplains, wetlands and tributary waterways. Some views towards the gently rising landform and Woodcock Hill (310m) northwest of the city are also afforded from certain vantage points within the city.

Urban Limerick – the medieval, fortified city on the River Shannon. *Source: CRP Consulting*

The extensive riverine resource and landscape setting of the city

Limerick's climate is classified as temperate - being a mild climate with an annual average rain fall of 927mm, 1273 hours of sunshine per year and an average temperature of 10°C.

The city dates from at least the Viking settlement in 812 at the head of the river Shannon and river Abbey. The Normans redesigned the city in the 12th century and added much of the most notable architecture i.e. King Johns Castle and St Mary's Cathedral. As a medieval city, Limerick was a fortified town dominated by its castle and associated fortifications. Later on in the 18th century Limerick was extended to the south in the style of a formally 'planned' town as it prospered through trade. This area now represents the current day central business district and is characterised by the red brick buildings typical of the Georgian period.

Combined with the River Shannon the central medieval and Georgian cities create a distinctive, interesting and unique city pattern. However despite these physical assets, over many decades, there has been a decline in terms of population and commerce, and urban quality, in the central historic area. Furthermore Limerick has a high proportion of social housing particularly within the city boundaries. Many of these areas have consistently experienced serious social problems and high profile anti-social and illegal activity over a period of years. Until recently, the generally poor presentation of the urban area coupled with ongoing anti-social issues has compounded the economic difficulties the city experiences and exacerbated image problems for the city in terms of attractiveness for visitors, residents and investors.

In recognition of these issues a number of major initiatives have been progressing in recent years and are planned including:

- The merging of the City and County of Limerick to create one unitary authority, thus allowing the city and its hinterland to be planned and managed efficiently as one entity. This is planned to take place after local elections in 2014. Currently an economic and spatial strategy is being prepared to support the new authority when it forms.
- An ambitious plan of urban renewal and public realm renewal and enhancement throughout the central area – streetscape, pedestrianisation, redeveloped squares and major enhancement of the River Shannon corridor, associated Park Canal and Medieval Quarter. There has been successful implementation of a number of these initiatives which have transformed central areas of Limerick and perceptions of the city.
- Two major publicly funded regeneration projects are currently underway in the north (Moyross) and south (Southill/Ballinacurra/ Weston) of the city - to address the infrastructural and economic inadequacies and the associated social issues. The projects between them cover just over 3,000 houses.

3.2.2 Parks and Green Areas Profile

Urban Limerick

Limericks quays and bridges are important public spaces which offer the best vantage points of the wider city area. Limerick City Council clearly places an importance on these physical assets as evidenced in the "Limerick City's Public Space Renewal Up-Date 2010" which includes sixteen projects - ten of which are riverside projects as part of Riverside Improvement Strategy. Projects proposed or carried out under this strategy include:

- Park Canal restoration – first phase involving restoring the navigability of the canal and associated infrastructure is complete. Future phases would involve the opening and development of the canal bank for amenity and recreation.
- Clancys Strand – improved riverside walkway, parking and setting for local historical features including a viewing point over the river and to St John's Castle. These works are now complete.
- O'Callaghan's Strand – improvements to riverside walkway, now complete.
- Clancy's Strand Boardwalk - new riverside boardwalk, now complete.
- The City Quays – public realm enhancement of the southside city quays associated with the improvements to the City Centre adjacent – at scheme design stage.
- King John's Castle Boardwalk – development of design options to continue pedestrian access along the quays at the base of St John's Castle.
- Medieval Quarter, Nicholas Street – Design development for up-grading this street linking St John's Castle to the City Centre – preliminary design stage.
- Medieval Quarter Nicholas Street Building Refurbishment.
- Creative Limerick at the Medieval Quarter
- Steamboat Quay Skate Park – New skateboard park for young people on site adjacent the Shannon – completed.
- Riverside Legibility Initiative – development of interpretative material to enhance awareness and understanding of the river and its history.

Other Public Realm Projects include a range of city centre projects:

- Baker Place new public square with high quality stone paving materials and furniture – now complete.
- Bedford Row (Lower and Upper) - street pedestrianistaion (limited vehicular use), with high quality paving materials, street trees and lighting / street furniture – now completed.
- Thomas Street and Catherine Street – widened footpaths reconstructed with stone paving, and quality materials / furniture and street trees – now completed.
- William Street – streetscape improvements with footpath widening, quality paving and street trees – ongoing.
- St John's Square – restoration of urban square in medieval quarter – at design stage.
- O'Connell Street – partial pedestrianisation and streetscape reconstruction – paving, street trees, lighting and street furniture – design stage.

The historic urban character of Limerick City is very much derived from the use of grey limestone in civic and public buildings and brick in more domestic structures.

Other recent complementary initiatives include the development of walkways at King's island, Shannon Banks and Condell Road.

The main City Parks and Gardens consist of the following:

- **O'Brien Park (2.4 ha) and People's Park (3.5 ha)** - Donated to the inhabitants of Limerick by public benefactors in the 19th century, these parks are described as public gardens (Victorian Style) rather than parks. Both are well used and play a significant role in the city's green infrastructure and history. There is also a household Compost Demonstration site in O Brien Park along with 2 demonstration allotments plots.

O'Brien's Park and People's Park. Source: Limerick City Council

- **Arthurs Quay Park (0.8ha)** – Primarily an event space used as a through space linking old city quarter to new. It was observed that this was poorly used outside of specific event occasions. Urban regeneration proposals for the city increasingly regard this site as a prime development location adjacent the river and a potential location for employment generating activities.

Arthurs Quay Park. Source: CRP Consulting

- **Shelbourne Park (3.4ha)** – Enclosed park in residential area with equipped play facility and well used grass pitch area dominating. It was observed that whilst basic the park was well used for exercise and play.

Shelbourne Park play area

- **Westfield Park (21.5ha)** – 'Natural' parkland created around marsh at the edge of the Shannon and developed as a park in a nature reserve style. It was observed to be well used and of high ecological and recreational value.

Westfields Park. Source: CRP Consulting

- **Baggot Estate (28ha)** – Formerly the grounds of Ballinacurra House and containing a significant amount of planted woodland. Recent significant investment in footpaths, security and the unique provision of outdoor exercise equipment has opened this area up to recreation and amenity use, cleared litter and reduced anti-social activity. The scheme has been shortlisted for an Excellence in Local Government Award.

Baggot Estate – Woodland Park

The Phase 1 Park Atlantic Study noted that in Limerick socialising is less park orientated partly due to its inclement climate[10], and instead more centred around sports activities and indoor recreation than perhaps the continental model would be. However the City Council does run a series of events/festivals in the parks in the Summertime, access to which is free and open to all. The study sets out a description and a range of potential actions to enhance these parks and gardens further.

In general there is ample open space provision in the city area. However other than the well known city centre parks described above, Westfield and Baggot Estate, there has been little development in the remaining spaces beyond grassed areas with some limited planting. Playgrounds in People's Park, O'Brien's Park and recently developed in Shelbourne Park and Moyross illustrates the impact of a new facility in attracting people to use open space. Pitches and active sports areas have in general been leased out to clubs on an ongoing basis by the City Council. The low population density of Limerick in relation to the quantum of potential open space available does create a management challenge in terms of the purpose of open space facilities / amenities. Without community and political pressure for park development and improvements there is a real question about **"what are these spaces for?"**

Nonetheless Limerick City Council has a well developed policy on the provision of public open space for recreation and amenity purposes. Many green spaces can be dominated by grass and the provision and maintenance of such grassed areas for games / active recreation. Leased open space on a long term basis to sports and other clubs to develop and maintain them as playing pitches can result in welcome savings and reduced responsibilities for the City Council, however this process can result in restricted access to these sites by other users and the wider public as well as varying management regimes / quality. In addition the City Council loses control of land assets which it may wish to use for other amenity purposes as part of a wider strategic approach. Equally it can also result in value derived from sites being limited to sports use to the detriment of biodiversity and visual amenity objectives.

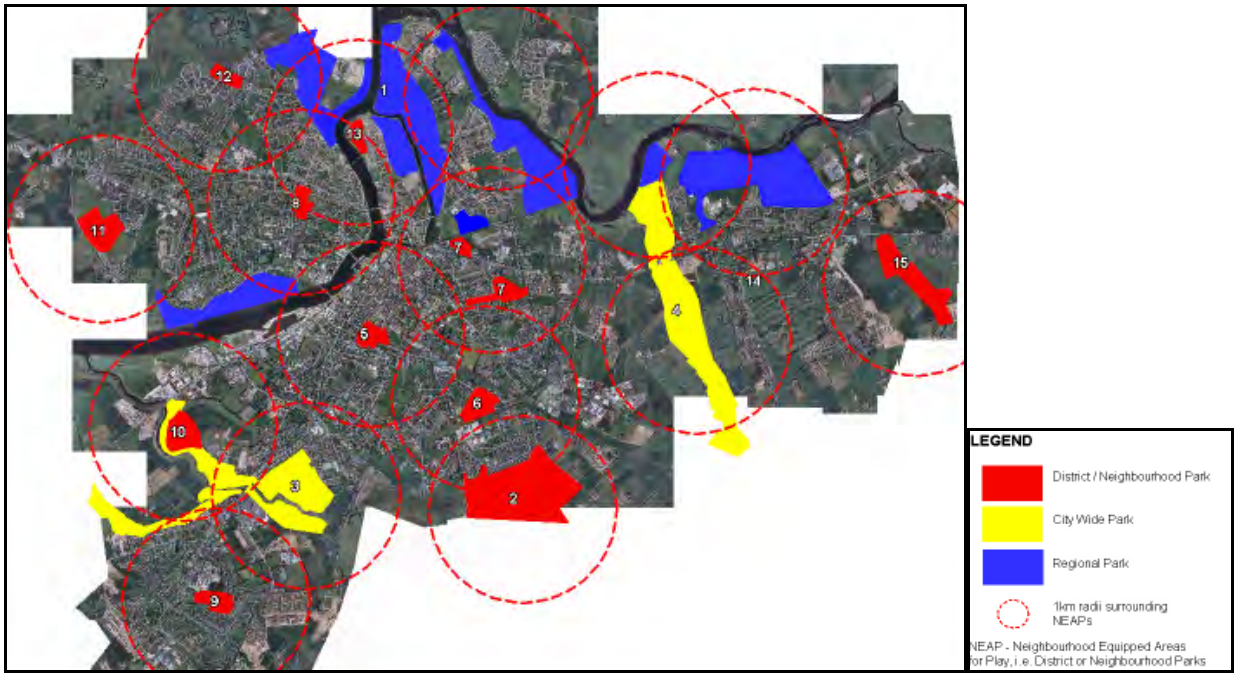
The City Council's policy recognises a hierarchy of open spaces as follows:

- **Strategic Corridors & Networks**, Cycling and walking routes, rights of way, green, blue and brown routes, corridors and networks. (A number of river walks have been developed including Condell Road, Park Canal to Plassey and Red Path).
- **Regional Open Space/Parks**. Sites which individually or cumulatively, as part of an overall strategy, create an amenity of regional importance. This generally involves projects of wider potential value to the City – Economic Development focus/catalyst, image building as well as recreation and amenity. e.g. The Shannon corridor including Westfields (166.76 ha), through to the University of Limerick Campus
- **Citywide Open Space/Parks**. Sites which create an amenity of Citywide importance. This could include parts of regional spaces and/or larger playing fields/sports stadia and golf courses. e.g. Groody Valley Park (unextended - 47.52ha), Rathbane Public Golf Course (58ha), Baggot Estate (taking account of the southern cross route 73.7ha). This could also include the newly acquired amenity areas of Coonagh West (see The Coonagh Recreational Framework Plan, 2009).
- **District Open Space/Parks.** Parks/open spaces of around 8ha in size with the potential to provide a range of facilities/ activities to a neighbourhood:
  - Kennedy Park
  - Shelbourne Park
  - O'Briens Park
  - Green Park Racecourse (within context of new development)
  - South of Dublin Road, Newtown, Castletroy

[10] Limerick's climate is classified as Temperate Oceanic. Met Éireann maintains a climatological weather station at Shannon Airport, 20 kilometres west of the city in County Clare. Shannon Airport records an average of 977 millimetres of precipitation annually, most of which is rain. Limerick has a mild climate, with the average daily maximum in July of 20 °C (68°F) and the average daily minimum in January of 3°C (37°F). The highest temperature recorded was 31.6°C (88.9 F) in 1995, and the lowest −11.4°C (11.5 F) in 2010. Limerick is the cloudiest city in the state, averaging only 1,295 sunshine hours annually, 3.5 hours of sunshine every day. There are on average 59 days of no recordable sunshine, 6 days of thunder, 19 days of hail and 8 days of snow per year.

- The People's Park, Boherbuoy
- Ballygrennan adjacent train line and Craeval Court
- Lands adjacent to Clonmacken Road & N18
- Lands adjacent to Limerick Regional Hospital

- **Local Open Space / Parks** Spaces, varying in size, usually associated with local housing which provide informal and formal local recreational potential as set out in the Open Space Schedule – 'Local Spaces'



Proposed Open Space Hierarchy – Extract from Limerick Sports and Recreation Strategy 2004

Nonetheless, other than the main city parks and gardens mentioned above investment to develop the above parks as high quality amenities has been limited and inputs have been confined to maintenance of grassed areas for playing fields and general amenity open space with few facilities, playgrounds or other activities. Whilst playing fields are clearly a useful and important amenity for a city with a strong sporting tradition, greater value (and services) for the city should be extracted from the extensive lands they occupy. Some "open spaces" are also of questionable value and should be reconsidered for other uses.

It is the policy of the City Council to provide play facilities and a hierarchy of provision is set out in the City Development Plan:

- Local Areas for Play (LAP). These include small areas of open space specifically designated and laid out for young children to play close to where they live. They cater for children up to 6 years of age and can be overseen by parents,care professionals and the local community.
- Local Equipped Area for Play (LEAP). These include areas of open space designed and equipped for children of earlyschool age and located within a 5 minute walk from home.
- Neighbourhood Equipped Area for Play (NEAP). These cater mainly for older children and are located within a walkingtime of 15 minutes from home.

However play area provision is limited and confined mostly to the key city parks and gardens in the central area.

It is the intention of Limerick City Council to update the city's Recreational Facilities Needs Study in conjunction with Limerick County Council. Coupled with the extensive regeneration initiatives and the planned merger of the two councils, the context of this review may significantly change.

Urban tree & floral planting

Limerick has approximately four thousand street trees which make a significant contribution to the city. In addition many trees in private gardens add value to public spaces. Limerick City Council has a range of policies to protect and maintaining trees in the city however the management of trees and the development of the tree resource as a city asset is needs to be more strategic e.g. Planting and management/pruning of trees along streets and roads, ensuring they reach their potential particularly near buildings and infrastructure (overhead wires). A database of street trees is needed to facilitate their management and a strategy for the more extensive planting of trees in existing built areas and/or as part of reimagining the city's attractiveness e.g along key city approaches, residential areas and elsewhere, reflecting precedent high quality streetscapes created by inherited trees from past planting e.g. Georges Quay. New tree planting is primarily a function of other new developments without a strategic overview or objective.

Heritage trees at George's Quay and Baggot Estate

Strong new Avenue planting on the Northern Ring Road and more mixed results with recent tree planting elsewhere

Limerick City Council Parks Dept floral works prevalent throughout city are generally well appreciated and there has also been extensive local community participation – planting spring bulbs, maintaining green areas etc.

Allotments

The city council created one allotment site in 2011 and more are available privately outside the city. The site has 28no. 1.5mx 7m raised beds. Sheds are also provided and a composting area. Recent invitations for allotments by the city council resulted in limited interest being expressed by the public. It is notable that there is a relatively high percentage of private back gardens in Limerick which may abate demand to some degree. However, allotments provide a useful social function where communities can work together, meet and enjoy social and horticultural events.

Rural Limerick

Rural and natural spaces constitute a large portion of the city area mainly on the left bank of the Shannon around Coonagh. Most rural spaces within the city boundaries consist of floodplain / wet meadows of

ecological value, often with traditional farming techniques. The Coonagh Recreational Framework Plan sets out proposals to develop this area as a countryside leisure and amenity destination for the city. The area offers opportunities for walking, hiking, boating and nature activities, as well as educational opportunities in relation to ecology and rural life. The riverside landscape, panoramic views and the natural habitats all contribute to an excellent walking landscape in close proximity to the City Centre.

Proposals include the development of looped walks and short walking routes (45 mins to 2 hours) well signposted and catering for older people, buggy users, cyclists and people with mobility difficulties. Themed routes are planned with historical, bio-diversity and environmental focus. Facilities would include parking, recreational facilities and amenities / services.

As a result of the Southern Ring Road and tunnel construction adjacent resulting in the need for various reinstatement and mitigation works to the area an extensive area devoted to the creation of new habitat will be formed.

This proposed plan provides the opportunity to create a unique amenity for the city, both residents and visitors, where they can experience and see a remnant rural landscape and its ongoing activities, and the wild character of the Shannon flood plain, all a short stroll from Limerick City Centre.

Wastelands
There are numerous areas of agricultural land scattered throughout the city which could offer potential opportunities for expansion of green infrastructure as appropriate to the urban development policy.

Biodiversity
The city council has a biodiveristy plan. The plan sets out aims and objectives for the city, highlights what can be done to help maintain biodiversity for future generations, identifies where there are key habitats containing biodiversity within Limerick City and how the understanding and appreciation of Limerick City's Biodiversity can be enhanced. The City Council has also supported wildflower meadow development in 5no. Schools cross the city and a number of community centres.

3.2.3 Policy and Management Context

Management Strategies Adopted by Limerick City Council
The Limerick City Parks section has 18 staff engaged in a wide range of activities including maintaining 380acres of turf grass and 4000 trees, management of open spaces and riverside walks, street trees, roadside margins along main roads, landscaped embankments and roundabouts, pedestrian paths, football pitches and children's playgrounds located in the Peoples Park, Shelbourne Park and O'Brien Park to Rospa safety standards. Staff also carry out Nursery Greenhouse Duties including the preparation and planning of tasks for nursery stock production and plants for spring and summer bedding.

The 18 staff include:

- <u>One Acting Acting Parks Superintendent</u> responsible for the:
  - Work planning, organisation and management of parks and open spaces, ensuring safe quality parks and facilities.
  - Overseeing the upkeep, construction and renovation of parks facilities as needed.
  - Advising the planning department and landscape services, street trees management of operational matters relating to Parks and Landscape Services in the city.
  - Investigating and responding to citizens enquiries and complaints
- <u>One Supervisor</u> responsible for the smooth functioning of parks and recreation areas, to supervise the maintenance of landscaped areas, street trees and playgrounds etc, to instruct staff in work techniques, use of equipment and safety procedures also the proper handing storage and use and disposal of pesticides, and to prepare and maintain records

- Park rangers who work in city parks and provide protection (with Garda back-up) for the park and visitors. They ensure that visitors abide by park regulations and prevent them from disturbing the natural setting/ ambience of the parks. The are also a source of park information for visitors.
- Craft gardeners
- Gardeners

The Parks Department also makes use of private subcontractors. Identified Parks Department environmental strategies include:

- Rainwater harvesting used for summer watering needs;
- Wood waste mulching used to reduce weed-killer requirement;
- Green waste management /composting systems and a demonstration model in O'Briens Park to promote household composting;
- Differential management of grassed spaces – formal grass cutting / wildflower meadow regimes in selected areas;
- Usage of proven plant palette of plant species based on environmental conditions favouring native species.
- Use of ecological expertise to manage biodiversity in new sites such as Westfields.

The Parks Superintendent reports via the Senior Executive Officer to the Director of Services Environmental and the City Manager.

The recreation and events services of Limerick City Council are delivered by a separate department. Typical events include outdoor activities in the park such as:

- National Recreation Week Activities
- May Fest with choirs, quartets, jazz and marching bands
- Christmas programme with family treasure hunt, Christmas gift making (Planting) and a puppet show.
- Eva visual art festival
- Limerick on Ice
- Pride festival
- Halloween and Easter treasure hunt

However the separation of these roles can result in the functions and potential role of parks and open spaces being devised by a separate department. This can limit joint thinking, development and resourcing of the open space asset and potential synergies. There is an active Arts community in Limerick and an Arts Services department in the City Council as well as three third level institutions including the College of art and Design

Environmental Improvement Grants and Community Participation:
There are small environmental improvement grants in available for local community groups. 72 city grants were awarded in 2012. This is linked to the wider Tidy Towns initiative and the Going for Gold Campaign" which is focused on the development of active committees in residential areas and the central business district. The JPMcManus €50k Limerick Community Challenge, or Going for Gold Campaign is an incentive for Limerick city communities to get involved in the national Tidy Towns competition. "The objective of the Community Challenge is to raise awareness, get people involved and make a physical difference to their environment,"

Sponsorship and assistance from the business community in floral displays and wider cleansing in the business district is achieving significant success and building good working relationships and an appreciation of responsibilities between the City Council and the Business community. The grant is of real assistance to areas not taken in charge by the council.

There is potential to develop the community and voluntary structures and a residents group forum to discuss environmental improvement ideas and best practice in terms of achievable enhancements of their areas i.e best practice dissemination and support. The City Council needs local communities to initiate and take forward projects themselves and assists and facilitates this process through supporting the Tidy Towns initiative and Going for Gold.

The City Council also runs a Garden Competition under "Going for Gold". Although aimed at private gardens it is a starting point for building wider benefits for the community, knowledge sharing as well as setting biodiversity and green practice goals.

At least 5 Community Gardens have been developed around the city, supported by Limerick City Council and 3 annual community garden workshops for the general public have been run by the City Council's Environment Department. It is a very popular day long course and generally over subscribed.

There is a sense that with all the regeneration projects and other initiatives ongoing that some parts of the community have consultation fatigue. However there is also a view that there are other stakeholders/departments/community organisations that could be proactive in enhancing the city's parks and green areas. Potential project partners could include:

- The wider public / community
- Social Economy projects and initiatives such as the Civic Trust and local environmental projects
- Sports Partnership
- Sli na Slainte – Health Board

In general the City Council and the public have a good and improving relationship as everyone realises that they have a role in improving the city and supporting its development and growth and resolving the major social, economic and civic problems the city has encountered. The City is undoubtedly a lead or facilitator in that process and needs ongoing resources to continue to develop and build this goodwill.

European Policy

Protection policy for natural spaces is derived from European and national legislation under which the following designations exist in Limerick:

- **Special Areas of Conservation** (SAC's) - Covering the water courses (Shannon, Abbey River and two streams, Ballincurra Creek and Crompaun River), the tidal range and the associated marshes.
- **Natural Heritage Areas** (NHA's) - Include the Shannon tidal range, Westfield, the Shannon flowing past the old city and part of the marshes and meadows either side of the R464 to the north of the city.
- **Special Protection Areas** (SPA's) - The Shannon downstream from the industrial port of Limerick.

The city has huge potential to capitalise on the high quality natural environment right in the heart of the city.

Limerick City Development Plan 2010-16

The merging of the City and County administrative districts will change the context in which Limerick is managed significantly, nonetheless the City Development Plan sets out a number of goals relevant to landscape and parks / green spaces which will most likely transfer to the new plan. These goals relate primarily to:

- Realising the role of Limerick as a National Gateway City (to the Midwest) with commercial, industrial and cultural development, housing and infrastructure appropriate to this role and scale.
- Facilitating social inclusion and equality.
- Providing for a high quality natural and built environment and improved quality of life for those living and working in Limerick City and also for those visiting the City.

This Goal specifically describes the attractiveness of the City as being "*to a large degree dependent upon the quality and character of the environment – the buildings, the public realm, the amenity spaces and the natural heritage. A good quality environment is extremely important to the City for reasons of quality of life and economic prosperity. The City Council will therefore introduce a range of measures in this Plan to ensure a high quality built and natural environment for the City.*"

Other policies set out the City's ambitions and actions to address regeneration of socially disadvantaged areas of the city (Moyross / Southill/Ballinacurra Weston), urban and public realm renewal, improved and sustainable transportation and educational needs. In addition the role of Arts, Culture and Sport in establishing a strong city image / brand based on Creativity is highlighted. This underlines the importance in that strategy of maintaining a unique and attractive City Region to attract foreign direct investment and employment, and the importance of the "creative class" to the sustainable economic success of the city.

The City Development Plan recognises Limericks unique and distinctive landscape, built and natural heritage. There are various policies and actions to protect that heritage and, in relation to the Shannon River, to develop and enhance that resource. However, policy in relation to the public realm, parks and green areas is currently focused on the city centre and flagship projects, often high in capital investment. Whilst there is a parks system set out in the development plan, there is a need for a strategy to develop and invest in the development of that parks system. There is also policy to protect trees and natural areas, and a system of play areas set out in the development plan.

Other than regeneration/urban renewal areas landscape development/provision of open space is generally treated as a development control issue or protection issue (trees, natural areas). There is scope for a more proactive policy to:

- Develop parks and gardens – a green and beautiful city;
- Develop street tree provision – a green leafy city;
- Develop a well distributed hierarchy of play areas – a child and parent friendly city;
- Develop a network of outdoor sports facilities (paths, cycleways) – an active city.

The city development plan also refers to the long term policy to restore the Longpavement landfill site as a positive landscape feature that provides a recreational, amenity and biodiversity resource.

A unique and innovative policies within the Limerick City Development Plan relates to Teenage Spaces.

Teenage spaces are public spaces aimed at the 12-20 age group where young people can congregate in a safe environment with passive surveillance and participate in recreational activities e.g. skateboard parks, playing pitches, open space in residential developments etc.

"Any new teenage space facility shall adhere to the following requirements:

- *National Recreation Policy for Young People: '**Teenspace' 2007.***
- *Be located to provide maximum visibility in and through the space.*
- *Be located near public transportation (i.e. bus routes).*
- *A specific space e.g. skateboard park, shall include components that serve a variety of skill levels*
- *Have a code of conduct.*
- *Spectator accommodations (i.e. seating and/or viewing area/refuse facilities).*
- *Community generated art.*
- *A drinking fountain.*
- *A bike rack.*
- *Possible restroom facilities within a larger park area.*
- *Signage may include hours of use, recommendations for safety gear if necessary etc.*
- *Noise and lighting impacts must be considered."*

3.2.4 SWOT Analysis

Strengths

- The distinctive wild and estuarine character and largely accessible nature of the River Shannon's banks and quaysides throughout the city is an exceptionally positive feature that would be envied by many continental cities. Initiatives to capitalise on this and the quality of riverside walks, promenades and quays are progressing.
- The juxtaposition of the central medieval city with 18th century and more modern creates a distinctive, interesting and unique city pattern, currently the subject of significant investment to enhance the public realm and streetscape.
- There is recognition of the need, policies in place and action progressing, to address social and physical regeneration of the city including major area based regeneration projects and merger with county area.
- There is recognition in city policy and economic development of the importance of city attractiveness in sustainable economic development and creating a city of creativity.
- The recently developed Westfield park has created a unique natural but contemporary spaces.
- The recent access, recreation and security facilities that have been developed at Baggot Estate
- There is a strong sports culture / tradition in city.
- Cycleways and walkways have been established in recent years.
- There are strong links established between the Parks Department & Art College.
- There is a recognition in the plan of the importance of planning for teenagers and their recreation.
- There are a number of public events already carried out in parks – e.g. 'Haunting in the park' Halloween event which are cost free to public.
- The community challenge Tidy Towns model is established in the city.
- There is a range of project partners, including the public, assisting in delivering open space improvements. It should be noted that improving partnerships with local communities and business interests should not be perceived as a means of delivering improvements in the absence of the optimum resources but an important mechanism in ensuring the sustainability of and adding value to improvements *whatever the available resources.* Improved partnerships and resident / business community participation in the city environment is a worthwhile objective in itself.

Weaknesses

- There is no stated 'Parks or Open Space Strategy', i.e. a vision for the future role and importance of parks and green spaces in Limerick – where are we going?
- There are only four urban parks of quality/significance within the city ranging from Arthurs Quay Park (0.8ha) to O'Briens/People's park and Shelbourne Park (3.4ha) or the natural parkland at Westfield Park (21.5ha). Recent developments at Baggot Estate see the emergence of a fifth such space.
- No strategy or data base for managing the cities street trees exists. Current tree planting and management is ad hoc.
- Parks department resources do not relate to amount of parks and open spaces requiring maintenance. The bulk of the Parks Department budget/resources are committed to cutting grass. The department is struggling to maintain status quo, and there is little opportunity to develop new/improved facilities.
- Climatically, Limerick is wet and cloudy, park use may be affected by this local characteristic.
- The number of skilled staff in parks dept limited (14 of 18 general operative level).
- There is an overdependence on grassed areas with limited amenity or animation as the foundation of park / green space.
- The 'Parks Dept' is a separate department to 'Recreation/Sports & Amenity'.
- There is a modest scale and lack of diversity within Limericks parks and gardens is a weakness.
- There is no large contemporary park in the city reflecting a strong landscape design expression.
- Similarly there is no botanical, pleasure gardens or similar horticultural themed gardens in the city.
- There are limited play facilities throughout city. Equipped play areas in all districts could be better integrated through appropriate design input by a landscape architect.
- There is a lack of a coherent open space hierarchy in city.

- The lease agreements with existing sporting clubs for lands may constrain additional/alternative and beneficial uses.
- The Parks department has a limited capacity – staff resources and budgets - to implement the ambitious goals of the city development plan as they relate to parks, open spaces and related amenities.

Opportunities

- The current urban regeneration projects provide a significant opportunity.
- The proposed merger of city and county councils provides an opportunity to rebrand the city with consequential opportunities for new thinking and strategies in relation to parks and green spaces.
- There is potential for the development of parks and open spaces strategies to delver and complement city attractiveness and contribute to overall rebranding / economic development:

    - Develop parks and gardens – a green and beautiful city
    - Develop street tree provision – a green leafy city
    - Develop community gardens – a socially inclusive city.
    - Develop a well distributed hierarchy of play areas – a child and parent friendly
    - Develop a network of outdoor sports facilities (paths, cycleways) – an active city.

- Improving communication and partnership between the city council and the public / community is a potentially powerful resource.
- The further development of community gardens as social, educational and horticultural amenities could be considered.
- The potential for leisure activities around the river should be exploited.
- The policy to encourage movement of people back into the city centre / Georgian quarter should create demand and use for urban spaces.
- The role of Limerick as an arts centre provides additional potential.
- The large third level student population is also a resource.
- Voluntary organisations such as the Civic trust / Bio-diversity Network / Community and Voluntary Forum can act as project partners.
- There are opportunities to develop naturalistic areas for play in open spaces (not necessarily formally equipped).
- Parks can be developed as venues for public events – is there potential for a linear park space along the River Shannon.
- There are opportunities for business sponsorship of parks and open space development.
- Lighting in parks and open spaces can be used imaginatively to promote informal security.
- GIS resource to become available to parks in near future.
- The city climate can re-imagined and celebrated through the development of design tools for maximising park space/use in the context of a rainy often cloudy climate.
- The proposed Coonagh Recreational Framework Plan and associated waterside / nature spaces at Westfield could create a distinct amenity for the city.
- The potential to create new landscapes at the Longpavement Landfill site at restoration – coupled with the Coonagh / Westfield lands these create two green “book-ends” to the north and south west of the city on the western side of the river would extend this riverside park corridor.
- There is an opportuinity to engage strong contemporary design and its transformative power to tackle problem landscapes and neighbourhoods.

Threats

- The city lacks the critical mass of population (to support a high quality, diverse range of parks) and there is an ongoing trend of people moving out of city centre to the suburbs such as Caherdavin.
- Budget cuts.
- Security and policing of open space.

- Notwithstanding the need for strategic thinking and planning in any new action plan, there is also a need for deliverable, manageable initiatives and projects to be taken forward by existing structures in the short term.

3.2.5 Best Practice Examples

Westfield Park Development	**Urban**	**Env**	**Social**	**Econ**
	✓✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

Westfield Park is a wet marshland area on the north western banks of the Shannon close to the city centre and adjacent residential areas of the North Circular Road. The park consists of 6ha of lakes, 9ha of marshland, 3ha of wet woodland and 3ha of parkland grass and trees. Much of the park is inaccessible making it an ideal nature reserve as well as an attractive natural outlook to the river and walking area for local residents.

Its natural character and appearance is much valued locally and its "formalistaion" as a park is very much the outcome of a partnership between local residents, the City Council and the Limerick Civic Trust – a social economy company which provides labour and resources for the management of the park/nature reserve.

Stage 1 of this study suggested various ongoing improvements including picnic tables and related facilities – it should be noted that local residents have been developing such an area in the glade amongst the trees – birdwatching huts, exercise furniture along footpaths, etc. Such improvements should be carefully implemented to maintain the unique natural character of the park and limit anti-social behaviour.

The park is a unique natural amenity borne out of the natural floodplain and undeveloped banks of the Shannon River. It is transferable as best practice, both elsewhere in Limerick and to the project partners, as it illustrates how a park of great natural beauty can be created involving active participation by the local community, social economy partners and facilitated by the City Council, through relatively minor improvements and management of a natural landscape - access and footpaths, viewing points, information boards and nature walks.

Further Information:

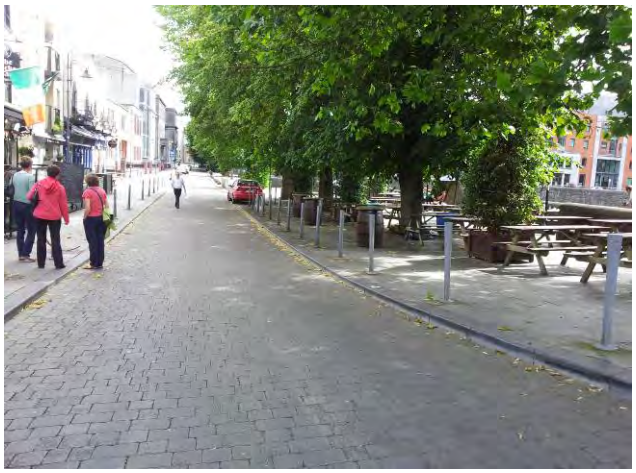
- http://www.westfieldswetlands.com/

City Centre Public Realm Renewal Programme	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

Although not strictly part of the parks remit, the urban renaissance underway in the streetscape of central Limerick is an example of best practice in the reclamation of the physical public realm after decades of decline. The general thinking, conceptual development and implementation in terms of design, palette of materials and quality is transformative and as the individual projects are completed their cumulative effect is very significant.

The works are certainly transferable to any city facing similar issues of urban decline as Limerick has experienced, although the partner cities are of a high quality in this regard themselves.



Further Information:

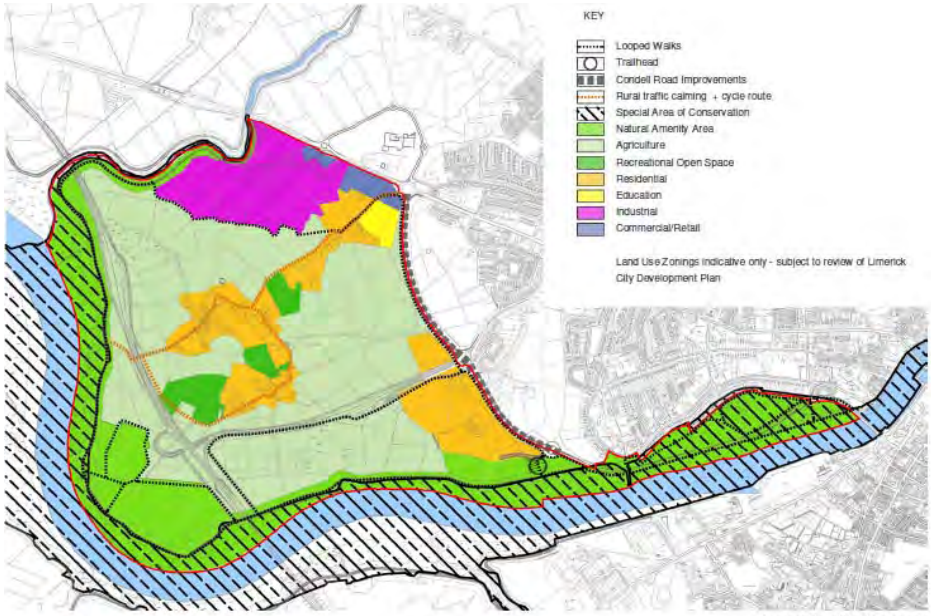
- Limerick City Centre Strategy 2008: http://www.limerickcity.ie/Publications/Thefile,8018,en.pdf
- Article on Limerick William Street and Sarsfield Street public realm enhancement scheme: http://www.limerick.ie/living/localinformation/limerickcityremodellingprojects/williamstreetsarsfieldstreetpublicrealmenhancementscheme/, and John's Square: http://www.limerick.ie/living/localinformation/limerickcityremodellingprojects/johnssquarepublicrealmenhancementscheme/
- Limerick City draft Public Realm Design Guide: http://limerickcity.ie/Publications/Thefile,9434,en.pdf

Coonagh Recreational Framework Plan	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

As a result of its low lying nature and intermittent flooding, and the recent construction of tailing ponds associated with the Limerick Tunnel, in the area, a large parcel of land on a bend in the Shannon only a short distance from Limertick City Centre, will remain undeveloped into the future. Following a recent study, a strategy has been devised to develop the walking, cycling and hiking opportunities in the area as an amenity for the city. A series of 1-2 hour looped walks has been identified for development accompanied with opportunities for nature and educational projects and rural tourism associated with the city.

This is an excellent example of what could be achieved as under-used urban fringe lands can play a positive role in the life of the city and city dwellers particularly when coupled with other new riverside amenities through the central city river corridor. It is currently at concept / plan stage and is similar to the actual Ill St Aubin project in Angers.



Proposed Land Use Framework

Further Information:

- Consultants for the preparation of the strategy, Nicholas de Jong Associates: http://www.ndj.ie/coonagh.html

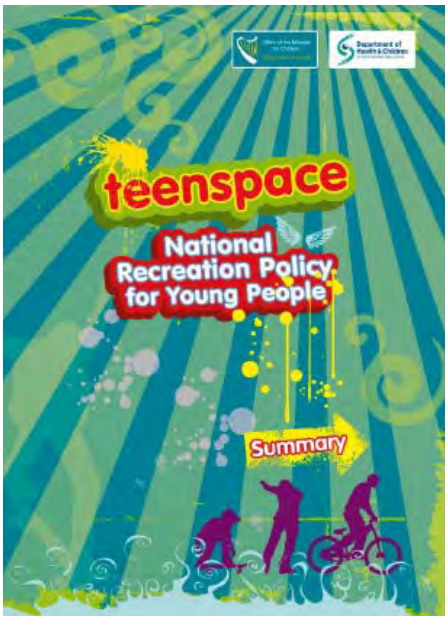
City Policy for Teenagers	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

The incorporation of a policy for teenagers within the city development plan is innovative and reflects the need and current thinking that teenagers are not catered for in the planning and design process. In particular parks and open spaces which are amongst the few places that teenagers can go that should be safe, partly supervised and free of charge, are often unwelcoming of them – teenagers being perceived as causing problems and/or inappropriate or anti-social behaviour. The idea of "Teenspace" is ideal and is ideal for incorporation into public parks as a concept. Conflicts between teenagers and the wider park users in public parks are as much about design and designing for teenagers as about behaviour.

Although primarily operational at policy level, there has been some physical expression in Limerick in the creation of a new skateboard park.

The city policy is derived from Irish national policy emanating from the Office of the Minister for Children, and defines teenage spaces as public spaces aimed at the 12-20 age group where young people can congregate in a safe environment with passive surveillance and participate in recreational activities e.g. skateboard parks, playing pitches, open space in residential developments etc. Further information is given in the city profile above.



Further Information:

- http://www.dcya.gov.ie/documents/publications/TEENSPACE_Summary_ENG.pdf

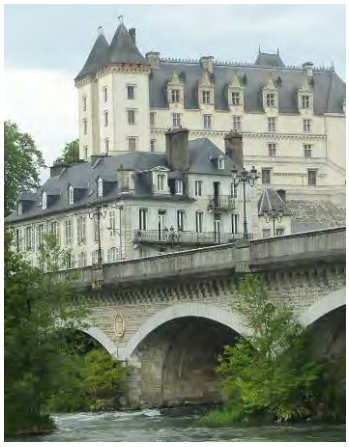
3.3 Communauté d'Agglomération de Pau-Pyrénées

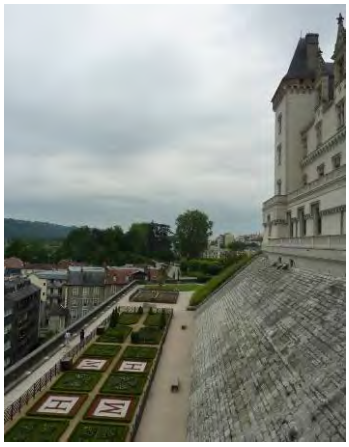
3.3.1 Historic Overview

The city of Pau is located in the south west of France on the lower slopes of the Pyrenees Mountains and some 100km from the Atlantic Ocean. It is the capital of the Pyrénées-Atlantiques Department and along with 13 neighbouring communes (local municipalities) forms the communauté d'agglomération (Agglomeration Community – hereafter referred to as the Community) of Pau-Pyrénées. The total area of the Community is 184km^2 and the population is 153,000, of which 85,000 are in the urban area of Pau. The city experienced relatively rapid population growth (nearly 10%) in the last decade.

The Community was established in 2000. It is an institutional framework that allows the 14 communes to share resources and cooperatively manage the spatial planning, environment, transportation, economic development and employment of the collective area.

The geographic location of Pau, in particular its position on the Gave de Pau, is fundamental to it history, and to the character and quality of its public spaces, green areas and visual amenity. The city is situated on the north bank of the Gave, on a terrace elevated 20-30m above the river's broad floodplain. The elevation of the town above the alluvial plain affords a panoramic view south towards the Jurançon hillsides and the peaks of the Pyrenees on the horizon. The town was established in the 12th century with the construction of a fortress at a strategic fording point across the river – providing a passage to the Pyrenees. Later Pau became the seat of the viscounts of Bearn, and in the 16th century the castle and gardens were extensively improved – the gardens becoming known as the finest in Europe. The castle was again refurbished in the 19th century, by Napoleon III, who also added streets of Belle Epoque architecture and public spaces to the city. Most notable was the Boulevard des Pyrénées which linked the Chateau de Pau with the new Parc de Beaumont, running along the edge of the terrace above the Gave valley.





The castle overlooking the Gave River

The Boulevard des Pyrénées and the Boulevard d'Aragon, some of the streets laid out in the 19th century to take advantage of the views over the Gave River to the Jurançon hills and the Pyrenees

For a period from the mid 19th to early 20th centuries Pau was a centre of tourism, being especially popular with the English. In the winter of 1880 over 5,000 visitors came to live in the town (which then had a population of 29,000). The town remains a centre for winter sports as well as equestrian events and whitewater sports. Tourism is recognised as one of the mainstays of the economy of the Bearn region (of which Pau is the capital), along with the oil business, the aerospace industry and agriculture.

Pau enjoys a mild climate, with rain falling all year round (average 962mm per year). The very fertile soils of the alluvial plain of the Gave are ideal for plant development. At an important stage in the city's development, when it thrived as a tourist destination and many new squares, boulevards and avenues were being laid out, vegetation from the East and the Americas was increasingly being imported into Europe. A wide variety of exotic trees were planted in the city's public spaces and private gardens, and this heritage remains today. Pau has one of the highest ratios of greenery (square metre per capita) of any European city, and markets itself as the 'Green City' or 'Garden City'.

3.3.2 Parks and Green Areas Profile

This section summarises some of the key features and characteristics of the parks and green areas resource.

Gave de Pau

The town developed at a fording point on the Gave. However, for various reasons there is a degree of disconnection between the urban area and the river. The river flows in multiple streams on a bed of pebbles in a wide alluvial plain. The flow of the river is often strong and tumultuous, and shifts the pebble bed and stream alignment considerably with each spate. The wide floodplain if also flooded regularly and this dynamism of the river does not 'sit easily' into the structure of urban form. The floodplain is occupied by riverside forests of predominantly willow (giving the forests the name "saligues"), which in conjunction with the topography (the city perched on a terrace above the valley) hide the river from view from the urban area.

In addition to these natural factors the disconnection between the city and the river was reinforced in the 19th century by the construction of a railway line on the valley floor at the foot of the escarpment - creating a linear physical barrier. Later, in the 20th century, there was a phase of development of factories and extensive areas of low rise housing in the plain south of the river, in the communes of Jurancon, Gelos and Mazerez-Lezons. Recently, a large whitewater sports stadium was developed (with ancillary facilities such as car parks) in the plain of the Gave, and this development, like the 20th century urban expansions, is considered somewhat incongruous with the natural values of the river.

The saligues of the Gave alluvial corridor are the most noteworthy natural resource of the Community area and are subject to a Natura 2000 designation. The Urban Natural Park of the Gave project (or PNU) covers an area of 350ha and includes measures for the restoration and protection of the saligues, as well as the development of green routes and a natural bathing area.

The railway at the foot of the terrace beneath the old city is one of the elements that divides the city from the wooded river valley. There is a requirement for improved access to the river from the surrounding city to take advantage of the improvements in its ecological condition and recreation amentities brought about by the PNU project.

City Parks and Gardens

There is a rich tapestry of gardens and public open spaces at the southern edge of the city, centred around the castle overlooking the Gave. When Pau became a royal city during the Renaissance major work was undertaken to transform the castle and gardens, with the focus on opening up towards the south, the sun and the view. While large parts of the **castle gardens** were since taken over by the city some key features remain, including:

- The medieval garden on the terrace at the foot of the castle walls.
- The Basse Plante. This space is the hingepin between the lower city, the castle and the castle park (Petit Parc). It is a formal garden characterised by close trimmed lime trees and topiary borders of fine box and yew.
- The Petit Parc. This large linear park extends to the west of the castle and the Basse Plante on the slope above the Gave plain. The naturalistic network of paths and woodlands was designed to provide views over the valley, the hillsides and the Pyrenees. It is the most visited natural space in Pau along with Parc Baeumont. The quality of the woodlands and the paths has deteriorated but a programme of restoration works is underway dealing with issues such as drainage and the vulnerability of tall trees to high winds.

The Haute Plante was one of the castle gardens taken over by the city. The Bernadotte barracks was built along the west side but the majority of the space remains – now known as the **Place de Verdun**. It is occupied by sports fields and a large car park, and fringed by avenues of trees.

The Place de Verdun, occupied by a car park and sports fields but framed by avenues of trees

The **Boulevard des Pyrénées** was built by Napoleon III along the edge of the terrace above the Gave Valley, linking the castle and its gardens to the Parc de Beaumont. With buildings on its north side only the boulevard gives structural emphasis to the terrace-like topography and celebrates the panorama of the Pyrenees, and the city's relationship with the Gave and the mountains. This is one of the numerous high quality, tree-planted public spaces serving the densely populated city centre. Others include the **Place Royale**, **Place G. Clemenceau**, **Place Gramont**, **Place de la Liberation** and **Place Albert 1er** amongst others. The **Jardins Johantos** were developed on the footslope alongside the supporting structures of the Boulevard des Pyrénées. Planted with a selection of palm trees the garden has a distinctly tropical character and is representative of the city's exotic planting heritage.

Parc Beaumont is at the eastern end of an axis of 19th century open space developments inspired by Pau's emergence as a centre of tourism. The 13ha facility is highly frequented by visitors and residents of Pau. The park was designed in the 'English style' around three main components, the Winter Palace (theatre and casino), the lake and the central bandstand. It is characterised by a variety of spaces of diverse ambience, including small, intimate 'green rooms' along the stream, pathways through the woodlands and open, 'ceremonial' spaces around the casino. It also contains playgrounds and a snack bar. The park is encircled by boulevards and is unenclosed (by fence or hedging), allowing unhindered access and views in and out of the park from all directions. Parc Beaumont contains a rich plant heritage including many exotic specimens introduced in the early 20th century. Many of the trees are especially large, and a proportion of the stock is recognised as dangerous, requiring renewal.

At the time of its construction in 1840 the **Villa Lawrance** was situated in the countryside to the north of Pau. A large park was laid out around the house. The property has since been subsumed by the urban area and during the Second World War it was purchased by the city. The villa now houses the Presidency of the University of Pau as well as the Resistance Museum. The park is open to the public. It contains a playground and the extensive lawn areas are used by local schools for sports training. Many of the trees planted at the time of its construction survive as magnificent specimens today.

Like many of the city's parks the Villa Lawrance is characterised by magnificent trees

At the northern edge of Pau, separated from the urban area by the A64 motorway, is the **Foret de Bastard** or Bois de Pau. Developed as a racecourse the forest was already in existence in 1840 in the Pont-Long moors to the north of the town. The communal property is managed by the ONF (French equivalent of Coillte) and the management plan was prepared in association with the city of Pau and the General Council of the Pyrénées-Atlantiques. The forest covers 300ha and with a wide variety of biotypes (including wetlands beside the three streams that drain the area) it forms a substantial biodiversity reservoir and green lung. The network of paths provides a facility for walking, running and horse riding, and the forest is well used and well loved by the citizens of Pau.

Contemporary Parks and Gardens

There have been few public parks or gardens created in Pau the period since the Second World War as public funds were rather invested in green spaces associated with traffic routes or car parks. The only exceptions are the **Parc Sargosse** (subject of a detailed analysis and proposals for remediation in the Urban Parks study) and the **Town Hall** (office of the General Council of Pyrénées-Atlantiques). The latter is situated at the foot of the Boulevard des Pyrénées. The garden is composed of a formal arrangement of canals, pools, lawns, clipped hedges and beds of perennials.

The gardens of the office of the General Council of Pyrénées-Atlantiques

Suburban Green Space

Post-war urbanisation took a different form to previous development. As the density of new residential neighbourhoods reduced the urban area expanded, not only in Pau but in all of the surrounding communes. Private low rise detached houses account for only 20% of the housing stock in Pau but they cover over half of the total urbanised area. In the neighbouring communes this urban typology is predominant. As is the norm with such areas the resulting landscapes are lacking in quality and character and offer no focal point for community or social life. The distribution of open space is often random, there is no clear hierarchy of space, no complementarity of form and function, and limited permeability. Open spaces tend to be strictly functional with little aesthetic value.

While the above description is the norm there are examples of good practice in the use of landscape resources as a structuring element. These include (a) the north-south green route linking Val d'Or in Pau to the Mohedan valley in Billiere, and (b) the green routes of Le Hameau.

The district of Le Hameau is presently the subject of an urban renovation project led jointly by the city of Pau and the National Urban Renovation Agency (ANRU). The economically disadvantaged district comprises 'one-off' private houses developed in the 1950s, social housing units developed in the 1960s, and private low rise estates and apartment developments built between 1970 and 2000. The area also retains pieces of the historic rural landscape (a few cornfields and meadows) as well as some industrial and commercial sites. The project involves the demolition and reconstruction of 417 units in diverse new typologies, but also significant landscape interventions. Four green corridors are to be developed giving structural definition to the district and providing ecological and slow-mode (transport) connectivity internally and externally. These will improve the district's identity, legibility and permeability. A substantial public park (4.5ha) is to be built on land purchased by the city. 1.2ha of allotment gardens are to be provided, along with an 'integration gardens' project providing opportunities for people on the fringe of society to reintegrate through supported market gardening. The Pau Parks and Gardens Department is to develop new premises, greenhouses and a garden containing its collection of national plants in the district, providing an institutional presence and reinforcing the intended green image of the district.

A refurbished streetscape in Le Hameau, the site of a major new park at the heart of the district, and a community garden occupying one of the disused agricultural plots enclosed within the district.

Allotments

There is a tradition of allotment gardening in Pau and the city has 406 plots spread between nine sites totalling 13ha. There are a further 110 plots covering 2.6ha in six allotment sites in the communes of Lons, Gelos, Jurancon, Billiere and Bizanos. The majority of the land is communally owned and most sites are managed by the Pau Allotments Association; each site is maintained by a representative of the Association.

The plots range from 200m2 to 350m2, which is sufficiently large to produce fruit and vegetables for a household. Half-plots are also available for single people. All available plots are in use and there is a long waiting list.

A number of noteworthy initiatives are being developed by the Initiative Centre for the Promotion of Agriculture and Rural Environment (CIVAM). These include:

- Interdependent plots – This encourages links between farmers and city dwellers, creating vocations for organic market gardening and ultimately supplying the city's central canteen;
- An 'Agricultural Incubator' project – This provides land, a commercial network, technical, administrative and financial support for student market gardeners);
- A community orchard.

Rural Landscapes

Although urban and suburban development is widespread there are three areas of predominantly rural character, in the north west, north east and south of the Community area. The fertile northern areas are used for cereal crop production. The landscape is comprised of large, gently undulating fields with few woods except in the corridors of the streams which flow parallel to the Gave. Towards the edge of the terrace in particular these spaces afford beautiful views of the Pyrenees to the south. There are fine quality traditional rural houses dispersed through the landscape but these are often enclosed by modern housing.

The rural landscape of the Jurancon hills to the south has a distinct topography, with a pattern of narrow ridges separating flat bottomed valleys that are liable to flooding. Mixed crops and vines were traditionally grown in this area and the farmland was interspersed with small castles and parks (e.g. Astous, Jolys, Rousse, etc.) on the ridges. The vineyards are unique in their design, with vines trained high and planted on ridges between mowed strips. This was a rural landscape of exceptional quality but it is in the process of change. The ridges are highly coveted for residential development and urban sprawl has taken place, detracting from the character and quality of the landscape. In addition some of the steeper farmland has been abandoned and has wooded over.

Parks and Green Areas in the Communes Surrounding Pau

Jardins de Lescar

Lescar, a short distance to the west of Pau, is the oldest town in the region and the capital of the Beneharnais people from whom the provincial name Bearn is derived. Occupied by the Romans and then destroyed by the Vikings, the 'new' town was rebuilt in the 12th century surrounding a cathedral located on the terrace above the Gave floodplain. The listed cathedral building stands in a terraced garden facing the Pyrenees over the Gave plain. The vegetation and the pebble and brick masonry of the garden walls form an exceptional composition of colours and textures.

3.3.3 SWOT Analysis

Strengths

- The city of Pau has an extraordinary combination of natural heritage (the Gave and associated topography and vegetation, the nearby Jurancon hillsides and Pyrenees) and designed open space which are quite uniquely interconnected and generate high amenity value. The city will soon be submitting an application to become a UNESCO World Heritage Site.
- Since the establishment of the communauté d'agglomération the Community has adopted a strong urban design orientated focus, advancing projects such as the Gave de Pau Urban Natural Park (PNU), the Porte des Gaves development and the renovation of the Le Hedas and Le Hameau districts (including the Parc-en-ciel and interdependent plots).
- The PNU project aims to restore and protect 350ha of natural space in the Gave floodplain and develop associated recreation facilities. The project is considered exemplary for its communal approach to resource management, particularly in terms of land use and planning.
- The district of Le Hameau urban renovation project seeks to redefine the previously disadvantaged suburban area through the reconstruction of a significant portion of the housing stock and a number of substantial landscape interventions intended to improve legibility, permeability and connectivity. The project is considered significant and innovative for a number of reasons including the level of public participation harnessed in the process and the very substantial investment of public funds in the landscape.

- Strong partnership between the city and the associations and the participation of residents is characteristic of Community projects, as exemplified by the Le Hameau and Le Hedas projects, and especially the landscape perception of the Gave de Pau.
- Pau has a rich tree heritage. It has one of the highest ratios of greenery (square metre per capita) of any European city, and markets itself as the Green or Garden City. There are some 25,000 trees in the city of which 11,000 line the streets. The green space department has undertaken to restore the old tree heritage with major pruning work, after recent storms revealed weakness in some plantings. In addition more than 650 street trees have been planted in the last three years.
- After World War II the green spaces of large housing developments in the Saragosse district, as well as the hospital and the university adjacent to the main road north of the city connecting to the A64 motorway were planted with large numbers of trees. This planting has created a mature green corridor along which many visitors to Pau travel, arriving from the A64.
- The city is characterised by flower displays, in central reservations, squares, in open ground borders, etc. A new planting theme is researched and implemented each year, combining perennials and annuals.

Weaknesses

- The Pau PLU (urban district community) 'guideline document' only covers those parts of the communal area to be constructed (does this mean it covers only the development areas?). There is no guidance or plan that defines a green network (hedge, natural spaces, green routes, etc.) except under the ANRU (National Urban Renovation Agency) project in the Le Hameau district, and no plan or consideration given to the future use of the remaining farmland in the area.
- As elsewhere in France and abroad, post-war, low density suburban development has resulted in landscapes lacking in quality and character. In these areas the distribution of open space is random with no complementarity, permeability or hierarchy and consequently no focal point for community and social life. Open spaces tend to be strictly functional with little aesthetic value.
- Regarding the above there is no planning/programming of public spaces for new/future residential neighbourhoods. To date the PLU has had success in planning for certain specific development areas but a broader focus of policy is urgently required to make sustainable use of space (prevent sprawl), protect the sensitive components of the landscape and natural resources and create balanced networks of public spaces with non-motorised transport routes.
- Parc Beaumont is a park of high design quality, which has retained its integrity and value as an urban asset. Its appeal is however randomly spoiled by signs of ageing and damage, including erosion on paths, excessive vegetation enclosure (insufficient thinning and/or pruning causing the loss of vistas), and ageing of the tree stock. Views of the car parking surrounding the park can also detract from the ambience.

Opportunities

- The PNU project is focussed on ecological and recreation objectives. The Urban Parks study identified that there is a requirement to update and expand the project to incorporate broader urban and landscape objectives, to address the transition between the natural park and adjacent urban areas and achieve greater harmony in the overall composition.
- The Port des Gaves Eco-District project is an initiative covering 250ha in the communes of Pau, Gelos, Bizanos, Mazeres-Lezons, Jurancon and Billiere, collectively the 'lower city'. It is organised around three major units, the station and a large rundown railway estate, industrial wastelands, and the Gave. The project aims to create a new district that is ecological, sporting, recreational and cultural, which weaves urban links between the Boulevard des Pyrénées and the urban areas of the communes on the plain while respecting the natural character of the Gave. One of the major issues is to do away with the physical barrier created by the railway.
- Place de Verdun. The space is exceptional for its size (given its city centre location) and for the quality of the huge façade of the Bernadotte barracks. It is well used for walking and as a sports ground and parking area, however it is considered that its full potential is not realised. An opportunity exists to re-envision the space in terms of its urban function and landscape quality. This might entail a

- A restoration and redevelopment programme is required for Parc Beaumont to ensure the achievement and maintenance of its full potential as an urban landscape asset. Two studies have been carried out, by Francois Baros in 2002, and Jeanne-Pierre Bombaut in 2012, which should inform the redevelopment programme. The programme should address a number of key issues including (a) the restoration of the paths (and associated resolution of drainage issues), (b) renewal of the ageing tree stock, striking a balance between the exotic vegetation heritage and maximising the park's habitat value, (c) maintenance of views in and out of the park, including consideration of boundary hedge planting to block detracting elements from view (or removal of those elements, e.g. concentration of parking into a single area).
- The hiking trail that crosses the Jurancon hillsides is considered no longer very attractive as a result of the urbanisation of the landscape. An opportunity exists – in order to retain it appeal – to move the route southwards to traverse the most interesting vineyard area.
- Opportunities exist for the creation of new green routes in the area, including:
  - A north-south route between the valley of Mohedan at Billieres and the Gave Urban Natural Park;
  - A north-south route between Chemin Henri IV in Bizanos and Avenue de la Fontaine de Trespouey in Pau;
  - An east-west route along the Ousse-des-Bois/Oussere de Sendets to Lescar.
- The Urban Parks study identified a particularly unattractive council housing development, the Toulet HLM housing units on the Avenue du Loup in the Le Hameau district. A number of specific problems were identified including poor (unsightly, ineffective) boundary treatment, inadequate and overly exposed private spaces at the foot of the buildings, and large inhospitable communal spaces. An opportunity exists to significantly improve the quality of life of the residents through a programme of landscape improvements to address these and other issues.
- Further opportunities for gains in landscape quality (and quality of life) in or attached to the Le Hameau district were identified:
  - The Le Hameau green corridor itself is considered suboptimal in its composition. The boundaries are poorly defined, the space has little ambience and as a result it is little used. This condition provides an opportunity for a reinvention of the green corridor, retaining its ecological functions but enhancing its recreation and aesthetic amenity values.
  - Full public appropriation of the Ousse-des-Bois, with a green route developed beyond the district to connect to Lescar in the west and Sendets in the east, to provide a 20km continuous green corridor.
  - Rearrangement of the streetscapes of busy thoroughfares like Boulevard de la Paix, Boulevard d'Hauterive and Avenue de Loup, to provide a footpath separated from the road by a hedge as well as lines of trees.
  - Construction of small, friendly spaces at crossroads close to shops, bus stops, etc. with planting to define and identify the place.
  - Preparation of a plan for the future use of nine residual agricultural plots totalling 11ha. Consideration should first be given to protection of their agricultural use, and thereafter to multi-site mixed use development or at least a masterplan or scheme for their coordinated development.
- The Urban Parks study identified a comprehensive suite of proposals for landscape improvements to enhance quality of life in the Saragosse district.
- The business parks in the urban area, e.g. those in Gave and the RD817 in the communes of Lescar and Lons, offer opportunities for landscape improvements to improve quality of life. The roads and parking areas are over-dimensioned and the parks and green areas could be designed and maintained for greater sustainability.
- The Bastard Forest is a space that is greatly appreciated by Pau residents, but it is cut off from the city by the motorway and suffers adversely from traffic noise. There is no bus service to it. Thought must be given to improving access to the wood and soundproofing it.

Threats

- The view south from Pau towards the Pyenees is fundamental to the character of the city. Accordingly, in 1944 some 367ha of the landscape in view from the southern edge of the city – including the golf course, the park of the Chateau Franqueville and numerous parks and estates in the Gave plain and the Jurançon hillsides – were listed for protection. However this listing covers a small proportion of the landscape in the panoramic view and it is considered that the long term protection of the landscape and visual amenity is not sufficiently well secured. This is evidenced by the urban crawl that has taken place along the ridges.
- The fertile rural landscapes in the north west and north east of the Community area are valuable resource for food production and provide an aesthetic counterbalance to the extensive urban area. Suburban development continues to encroach on the remaining rural land however and there is an urgent need to protect the resource from further reduction or change.

3.3.4 Examples of Best Practice

Community Co-Development of Rue du Chanoine Laborde	Urban	Env	Social	Econ
	✓✓	✓	✓✓	✓

Description of Action, Context and Goals:

The municipality of Pau is co-developing a streetscape and pocket park refurbishment project on the Rue du Chanoine Laborde with the district community council. As co-developer of the street and park the community's understanding of the place, its ambitions and interests are central to the project.

The municipality is providing its professional expertise, technical capacity and funding to support 20 citizens representing the district community council as the co-developer (and lead decision-maker) on the project. (The district community council is itself made up of three 'colleges': 1. residents, 2. associations, 3. business interests.) The community representatives were facilitated in making an analysis of the site by using survey, photographs and written commentary to explore the issues. They were then facilitated in evaluating the possible functions/services of the site and defining the priorities for its refurbishment (i.e. setting the design brief). In the later stages of the project the community representatives will provide direct input to and approve the detailed design for the site by a professional landscape architect, and ultimately oversee the implementation of the project.

This model should be transferrable to any municipality but it is facilitated by the existence of the French 'district community council' structure, and by the dedicated community participation department of the Pau- Pyrénées municipality.

Diagnostic participatif pour l'aménagement du Square Chanoine Laborde
Balade urbaine du 29 mai 2012

Heure: 18h

Consigne
Prendre en photo ce qui semble intéressant à prendre en compte pour le réaménagement : les lieux que vous utilisez ou que vous évitez, ceux que vous aimez ou qui vous déplaisent, ceux qui posent problèmes ou ceux qu'ils faut préserver, ...
Notez ci-dessous les commentaires relatifs à chaque photo.

N°	Photo	Description (lieu/objet pris en photo)	Commentaires (pourquoi avez-vous pris cette photo: ce qui vous plait, déplait, comment ce lieu est utilisé,vos attentes, ...)
1		Vue depuis l'entrée de la rue J.J. de Monaix (devant l'église Notre Dame)	- On ne devine pas qu'il y a un square - Présence de beaux arbres à mettre en valeur
2		Mur d'entrée du square	- Première impression: le mur et les panneaux donnent le sentiment que c'est une propriété privée (occupée par des structures), avec un parking réservé aux usagers du site (et ce malgré le panneau « parking gratuit ») - Aucune mention du square - Il faudrait écrire « Entrée du square » - Qui se gare ici ? - La présence du parking ne cadre pas avec le square - personne ne savait que c'était un square, encore moins public, avant l'invitation à l'annonce de la démarche participative.

LA RUE DU CHANOINE LABORDE
Analyse des ENJEUX et détermination des CONTRAINTES DE CONCEPTION pour le réamenagement
Réunion de travail du 22 mai 2012
Participants : Barre-Guénée Anna-Marie, Brana Karine, Lloancy Marie-Thérèse, Nouzille Jacqueline

LES FONCTIONS DE LA RUE A quoi on sert une rue?	L'ETAT DES LIEUX	LES ENJEUX (Ce qu'on peut gagner ou perdre par le projet) *Consigne : Pour chaque sous-fonction, est ce vous pensez que le projet*				Synthèse des ENJEUX et des CONTRAINTES posées aux concepteurs strictement impératifs (colonnes 1 et 3) ou pouvant varier avec des scénarios (colonne 2)
		Devra faire GAGNER (augmenter, améliorer,...) sans réserves ni conditions (1)	Devra faire GAGNER plus ou moins selon les reconvoiements pour d'autres fonctions (2)	Devra RESTER PAREIL, NE PAS PERDRE même si des choses sont modifiées dans l'aménagement (3)	Pourra faire PERDRE (diminuer, rendre moins simple,...) (4)	
		%	%	%	%	
La fonction de circulation						
Circulation des personnes handicapées et mal-voyantes	Trottoirs impraticables (pas aux normes)	75%	25%		0%	DEVRA AMELIORER sans réserves ni conditions Le respect des normes s'impose
Circulation des piétons	Pas de continuité des trottoirs	50%	50%		0%	DEVRA AMELIORER soit au maximum soit plus ou moins selon des SCENARIOS
Circulation des vélos	Pas de dispositif en faveur des vélos (ni aménagement, ni réglementaion)	25%	75%		0%	DEVRA AMELIORER plus ou moins selon des SCENARIOS

Financial Aspects:

- Since the municipality has a dedicated team (and budget) for the encouragement and facilitation of community participation in urban planning there was no additional cost for the community's involvement in the project.
- The community's involvement will not result in any greater cost of implementation. Decisions on design and materials etc. will be informed by the community representatives' co-developer, the municipality.

Further Information:

- Jean-Pierre Bombaut (jp.bombaut@agglo-pau.fr), Communauté d'agglomération de Pau-Pyrénées.

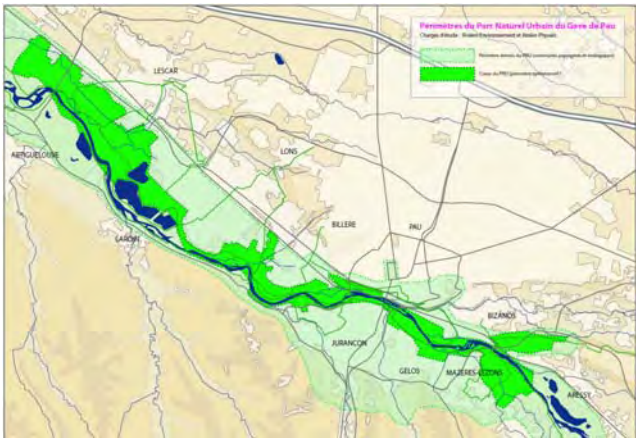
Parc Naturel Urbain Du Gave	Urban	Env	Social	Econ
	✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

In recognition of the Gave River's strategic position in the agglomeration and the critical services it provides to the population including provision of potable water, regulation of flooding, health and quality of life of, and its role as a biological corridor, the Agglomération of Pau-Pyrénées initiated a study of the Gave River, its banks, floodplain and its relationship with the urban area in 2009. As well as its strengths it had been recognised that the river and environs had suffered from uncoordinated development and management over a number of decades.

The Parc Naturel Urbain (PNU) du Gave project was aimed at restoring the ecological functions of the river and developing its urban and social functions. 350ha of lands at the heart of the city are now being developed and managed to enhance these functions and thereby maximise the role of the Gave in achieving the city's ultimate goal of sustainability. A detailed suite of actions was prepared for the PNU under the themes (1) structure and ownership of the PNU, (2) guarantee the preservation and quality of the environment, (3) open the town onto the Gave, (4) develop the recreation function of the PNU, (5) consolidate the agricultural function of the PNU. The implementation of the project is in process, with various measures taken to restore ecological functions (including land acquisitions) and a continuous green route along the full length of the PNU nearing completion. A number of associated park and green area developments will contribute significantly to the green infrastructure of the city.

A project such as the PNU could be replicated in any city located on a river but is perhaps most transferrable to Limerick (among the Park Atlantic cities) due to the similarity of the Shannon's role and status in urban, environmental and social terms compared to the Gave and Pau.



Financial Aspects:

- The PNU planning stage cost approximately €300,000.
- The cost of development (including land acquisitions and capital works are estimated at €8 million.
- The annual management costs of the PNU are estimated to be €80,000.

Further Information:

- Alexia Quintin (alexia.quintin@agglo-pau.fr), Communauté d'Agglomération de Pau- Pyrénées.

Urban Agriculture Projects	Urban	Env	Social	Econ
	✓	✓	✓✓	✓✓

Description of Action, Context and Goals:

The Communauté d'Agglomération de Pau-Pyrénées provides a 6ha site to CIVAM (the Initiative Centre for the Promotion of Agriculture and Rural Environment, www.civam.org) for the operation of a community farm comprising a vegetable garden and an orchard. CIVAM employs an animator to oversee the management of the farm, and community volunteers who subscribe to the project for a fee of €50 per year cultivate the land and share the produce. There are three three-hour sessions of work per week, and every volunteer/subscriber who participates in a session takes home an equal proportion of the day's produce. There is an emphasis on social and cultural inclusivity.

There is a separate agricultural incubator project, also provided jointly by the Community and CIVAM, whereby aspirant market gardeners are provided with land, a commercial network, technical, administrative and financial support in order to set up business. The farmers sell a proportion of their produce commercially and a proportion is given to the Pau-Pyrénées Community kitchen, which provides meals for schools, retirement homes, etc. In December 2011 the project was expanded with the initiation of a training programme aimed particularly at long-term unemployed persons.

These projects are transferable to other jurisdictions and indeed similar projects are operating in Angers and Santiago de Compostella (among the Park Atlantic cities), which share Pau's culture of urban agriculture. That culture does not currently exist in Limerick or Famalicão, although recent developments suggest that there is latent interest in the community. A community garden which opened in Moyross, Limerick in 2010 has proved successful, and in Famalicão the demand for allotments is greater than will be available with the development of the Devesa Park. This interest is likely to grow in the current economic climate and with ever increasing awareness of sustainability issues. It has been considered in the past that in Irish cities with lower densities, where houses tend to have their own gardens, there would be less demand for allotments and community gardens. However the success of urban agriculture projects such as those described above in Pau, relies on more than just the availability of land. Individuals and communities benefit from the sharing of motivation/accomplishment, expertise, resources and produce.

The development of a culture of urban agriculture through urban agriculture projects should be among the key policies and actions of city councils/authorities; urban agriculture generates gains in all three strands of sustainability, i.e. environmental health, social welfare and (local) economic activity.

Financial Aspects (for the Community Farm):

- The City of Pau owns the land, developed (cleared) the site and provides it rent-free to CIVAM. There is provision for three-yearly renewals of the 'rental' contract.
- The City of Pau contributes a sum of €17,900 for the farm's operation per year, which CIVAM puts towards the cost of services for the site (water, electricity, etc.) and the farm animator.

Further Information:

- Alexia Quintin (alexia.quintin@agglo-pau.fr), Communauté d'Agglomération de Pau- Pyrénées.

3.4 Santiago de Compostela

3.4.1 Historic Overview

Santiago de Compostela is the capital of the Spanish province of Galicia, and a designated UNESCO World Heritage Site. It is located inland, 40km from the Atlantic and 75km from La Coruña on the Bay of Biscay. The municipality features an undulating landscape, with the old city sitting on a hilltop at approximately 260m above sea level, and is characterised by open and long-distance views. This open urban space is a major feature of the landscape, identity and quality of life in Santiago. Although there are no large rivers in the municipality, there are numerous streams, most notably the Sar and the Sarela which run either side of the old city. The surrounding landscapes show marked contrasts between the hills, with poor soils and dominated by woods and moors, and the rich valleys and plateaux mainly given over to farming. The climatology of the area is described as wet and warm, with 1200 mm of annual rainfall, 2040 hours of sunshine per year and an average temperature of 14°C.

The municipality has experienced a steady rise in population since the 1950s, with 95,207 inhabitants in 2011 over the 37Km^2. The city is visited by almost one thousand pilgrims on a daily basis, after completing the world renowned Santiago Way. It is a major cultural centre with a strong commitment to sustainability. The 'city of culture' built on top of the Gaias hill overlooking the city was inaugurated in January 2011. The municipality's commitment to sustainability is reflected in the sustainable development policies implemented since the 1990s and the numerous international and national awards received (e.g. Sustainable Municipality Green Flag 2002 and 2004, Dubai international award 2002 for good practices to improve the living environment).

The topography and geology of the region have shaped the built heritage of Santiago de Compostela. The old city is defined by successive terraces that support streets, public spaces and gardens along the steep slopes that culminate with the cathedral on top of the hill. The extensive architectural heritage of the city, a significant part of which is associated with the public spaces, is dominated by granite masonry and shale. The municipality is known as "the capital with a thousand gardens" due to its outstanding network of green spaces. It contains approximately 200ha of interconnected historic and contemporary public parks and gardens and natural spaces spread over 24 main sites. Of particular relevance to this study is their continuity, through direct interconnection or via a green route that goes all round the city, providing high quality pedestrian links to the districts and the majority of buildings and monuments, places of learning, auditorium and stadiums in the city.

Santiago is a city of dramatic and beautiful topography, architecture and landscape

3.4.2 Parks and Green Areas Profile

The landscapes around Santiago de Compostela, with extensive rural areas particularly to the north, intertwine hills and valleys. The hills are dominated by sweet chestnut and English oak woods and moors with heather and gorse, and the valleys by medium-sized and small agricultural plots, often perpendicular to the rivers, with a network of ditches and access roads. Monte Pedroso, a natural site and an exceptional lookout point, is the highest point of the three ranges of hills surrounding the city. Farming is declining rapidly and, as a result, the agricultural lands on the valleys have experienced significant land use changes in the last decade, giving way to a continuum of buildings along the rural roads in the outskirts of the city.

City Parks and Gardens

The historical urban patterns of the city centre with its densely-built narrow streets mark the boundaries of internal pockets of gardens, some of which have been purchased and restored by the city and thus converted into pleasure gardens (e.g. Belvís, Bonaval, Vista Alegre, Brandía, Xixón, etc.). These historic parks are complemented with contemporary green areas built as part of the development of new districts (e.g. Eugenio Granell, Carlomagno, Galeras, Aviles de Tarramancos, San Lorenzo, etc.). The city offers more than 20 m^2 per inhabitant of natural spaces open to the public, and each new district has a garden or a park linked to the existing itinerary of green routes. The municipality has recently acquired two additional spaces to be turned into parks: Parque de Granxa do Xesto and Parque de Selva Negra. This well-connected network of high quality public parks and gardens is characterised by and enriched with diverse settings, ambiences and compositions. The urban green routes of Santiago provide visitors an experience of contrasts: enclosed or open green spaces, defined by historic or modern architecture, with formal or innovative layouts, and lush or austere vegetation.

A city of green routes

The physical infrastructure is complemented by information on the routes, the parks, the natural and cultural heriage and views throughout the network

Parque de la Alameda y de Santa Susana, created in the 16th century and purchased by the city in the 19th century, is the largest public park in Santiago. Its 8.5ha surrounded by historical walls incorporate a hill that links with the old city. It is dominated by the Chapel of Santa Susana and contains a network of wide and well-shaded paths, monumental steps, terraces, fountains, pools, statues and engineered ironwork. The park is well maintained and contains large plant borders with perennials and annuals, a rose garden, a collection of outstanding exotic trees, a line of mature lime trees and a grove of very old, large English oaks. The Alameda also accommodates the parks and gardens interpretation centre, which hosts regular exhibitions on biodiversity, tree species and their history, etc. The park is very well frequented, both by the city's inhabitants and by tourists and pilgrims, throughout the year.

Most pilgrims also visit **Parque de Belvis**, an area of 7.5ha of greenery at the gate of the old city crossed by the 'Camino Frances' of the Santiago Way. The historic park lies on sloping, exposed hillside facing west with a river running through its lower section. It is dominated by green lawns and contains a large variety of tree species, many of which are indigenous (e.g. sweet chestnut, hazel, common ash, beech, cherry, English oak, etc.). The park has an environmental interpretation centre, a children's playground, soccer pitch, lookout point, municipal vegetable garden used to demonstrate and experiment with local crops, and neighborhood allotments. The allotments are lent to volunteer inhabitants, who maintain the plots and grow crops organically. The range of public and community services, together with its historical and natural features, its prime location and linkages with the old city, render a very attractive park highly frequented by visitors and residents alike.

One of the largest parks recently built in Santiago, inaugurated in 2003, is **Parque de Eugenio Granell** which is located to the south of the city, at the edge of the Paxonal district, and covers nearly 13ha. This open park has several pedestrian paths and footbridges, and is well served by a bus route that links with the city centre. Its lower section to the north is divided by the Sar stream; it provides a natural setting with dense riparian vegetation which is liable to flooding. The land slopes steeply towards the south where open lawns with scattered, immature non-native tree species provide attractive views over the city. Street furniture is provided along the paths and squares, but public services and facilities are mainly located along its perimeter, including children's playgrounds. Although the park adjoins the fields and woods of an old farm

estate on its western side, the major traffic routes surrounding the park to the north and east create safety and noise problems affecting its quality. It functions mainly as a neighbourhood park.

Urban Community Allotments and Neighbourhood Gardens

Urban gardening and farming have significantly expanded in recent years, promoted by the municipality and other organisations such as the Galician Association for Urban Horticulture. Three districts in Santiago (Santa Martha, Conxo and Pumbal) have community allotments. In addition, the municipality has recently created three neighbourhood gardens on communal lands: two enclosed gardens in Parque de Belvís and a garden in the heart of a suburb at the foot of the old city, between Parque de la Alameda y de Santa Susana and the city hall. It is anticipated that more community allotments and gardens will become available given the success of the current schemes.

Urban Fringes and Rural Areas

There are significant extents of agricultural wasteland in the municipality as a result of some of the poorest lands being abandoned or divided into small plots. A large neglected area is located at the foot of the old city (in Calle Huertas), representing critical urban issues. No plans have been drafted for the development of these areas; they may convert to built environments or new public parks and garden spaces with a view to expanding and enhancing the green network and further developing urban horticulture initiatives.

Santiago has vast farmland beyond the edges of the city, but it is generally highly fragmented as a result of the downturn in the agricultural economy of the region. Urban expansion is likely to add to this fragmentation unless a green infrastructure approach is adopted. Key considerations to enhance rural spaces during development include: protection of rivers and riparian habitats through the creation of green links; creation of lookout points; and protection of hedgerow networks.

In the context of green infrastructure, two complementary green spaces to the city's parks and gardens are being currently developed on the west-facing slope of Monte Pedroso, in the rural areas of Santiago. **Parque de Granxa do Xesto** and **Parque de Selva Negra**, which are directly connected and accessible by car, provide natural spaces that add to the city's green infrastructure. Parque do Xesto is near completion and sits on a sloping hillside offering reasonably open and very diverse spaces. It contains three small lakes where aquatic ecosystems have been recreated, and native and non-native trees and shrubs planted along the paths. Basic public facilities are provided, including a cafeteria. Parque de Selva Negra, under development, has experienced significant changes with the planting of local species and the gradual elimination of eucalyptus and locust trees. The dominant feature is the forest, which is crossed by a footpath and contains a very fine old oak grove at the bottom of a valley and two outstanding glades. Selva Negra is envisaged as a strict natural space. These natural areas are visited by residents and mainly used for amenity walks.

3.4.3 Policy and Management Context

The Santiago de Compostela Parks and Gardens Department is part of the Environment Department of the City Council. It is in charge of managing green spaces, restoring damaged parks and gardens, revising landscape plans and design projects as part of planning proposals (to enforce the creation of high quality green spaces and continuity of green networks), and coordinating works for the conservation and maintenance of street furniture, playgrounds and open sport areas. It employs seventeen people in four units: playground supervision and maintenance; municipal greenhouses; technical and administrative office; and mechanical workshop and general stores.

The maintenance and creation of green areas is outsourced to three organisations: CESPA and INTEGRO, private green space design and maintenance companies; and ASPAS, local association for insertion of mentally-disabled people. Any proposed design or works programme is checked and approved by the Parks and Gardens Department prior to commencing works. The Parks and Gardens Department often engages in consultation with the inhabitants over the neighbourhood gardens, to raise awareness on local management and exchange expertise on maintenance of communal green spaces and allotments.

The municipality has published a 'Parks and Gardens Environmental Statement' under the European EMAS (Eco-Management and Audit Scheme), which includes actions to: enhance the urban environment by developing parks and gardens; improve the management of these spaces and reduce their environmental impact, and provide information and educational actions for the public on the quality and value of green areas. Some key actions associated with the Statement have already been implemented, including:

- Replanting a forest of indigenous species (e.g. oaks and sweet chestnuts) in the Parque de Selva Negra under a multi-year programme of eliminating introduced eucalyptus and locust trees;
- Granting of aid to private owners who plant indigenous species;
- 'Tree Day' when primary and secondary school children help to plant young trees;
- Creation of pedestrian routes all around the city, including new links between the Parques de Bonaval and de Almaciga and the Sar stream;
- Undertaking a digital inventory of species and preparation of tree catalogue sheets with the objective of organising botanic routes along the parks; and
- Preparation of a 'Sustainable Green Area Management System' mainly to reduce the environmental impact of managing green spaces and increase the positive effects of parks on the urban ambience (established key objectives include: reducing water consumption for watering green areas by 15% by 2013; composting of all green waste with the construction of a composting centre within a year; and gradually renewing the Department's park machinery towards energy efficiency, and reduction of sound and air pollution).

Santiago de Compostela's development plan (or 'Plan General de Ordenación Municipal') establishes specific zonings for urban and non-urban lands, and sets up the minimum conditions for development and the building rules for each zoning. The areas zoned as non-urban are protected from development due to their agricultural or ecological value. The development plan defines the network of public spaces in the municipality, and includes a requirement for at least 15% of the total area subject to urbanisation to be developed as part of the green infrastructure.

3.4.4 SWOT Analysis

Strengths

- Santiago has significant historical heritage, which is reflected in the layout, design and architecture of many of its parks and gardens and which has left a legacy of outstanding mature trees.
- The green spaces are well-connected either through direct interconnection or via a green route that goes all round the city. The high quality paths connect the major attractions and places of interest in the city and provide favourable vantage points.

- The municipality strictly controls the quality of public spaces and the continuity of green networks through an urban strategy, and planning applications need to demonstrate the appropriate provision of new green infrastructure.
- The acquisition, restoration and provision of natural spaces in the outskirts of the city (Parque Granxa do Xesto and Parque de Selva Negra) show clear commitment to green infrastructure development.
- The Parks and Gardens Department has prepared a sustainable green areas management system (to reduce the environmental impact of managing spaces and increase the positive effects of parks on the urban ambience).
- The provision of neighbourhood gardens and allotments contributes to citizen engagement in the management of local green spaces. These initiatives present a major innovation potential in urban culture and in the renewal of social links within districts.
- The municipality actively promotes the use of green routes and an awareness of natural and historical features in green spaces through the distribution of 'catalogue sheets' in the city councils' website.

Weaknesses

- The significant amounts of agricultural wasteland surrounding the city and the lack of a plan or strategy for their development.
- The vast extent of grassed areas requires significant watering and regular mowing. These are negative maintenance aspects in terms of sustainable development.
- There are very few borders planted with perennials or annuals. Certain parks or squares could well benefit from borders in open ground with a choice of compositions that minimise maintenance work.
- Sustainable landscape maintenance practices need to be improved through clear actions such as the creation of rainwater capture and reuse for irrigation, the use of plant waste for mulching (the recently approved composting project is currently being implemented), and enhancement of biodiversity (initiatives such as installation of bird feeders, use of local species, removal of invasive species, etc. are underway).

Opportunities

- The success of the municipal vegetable garden is encouraging the creation of similar types of garden in other parts of the city. Similarly, the demand for neighbourhood allotments and the appeal of the associated organic market is leading to the gradual conversion of other sectors of the Parque de Belvis, mainly the plots on the western extremity near the car park on Rúa do Castrón Douro. The potential also exists for wasteland areas (e.g. Calle Huertas) to be converted to allotments.
- The completion of Parque de Selva Negra to ensure the sustainable realisation of its full potential through the protection and/or recreation of representative Atlantic environments and the removal of imported species and plantation of indigenous trees and shrubs.
- Diversification of least used grass areas in many of the city parks by turning them into meadows and thus reduce the amount of cutting and watering needed, ensuring more sustainable landscape practices.
- Diversification on the variety of plant species used, with easy to maintain and attractive species, in order to invigorate existing planting borders.

Threats

- Potential increase in agricultural wasteland. A clear strategy is needed for the municipality for wasteland areas to be restored through landscaping initiatives, community allotments and/or connectivity with existing green routes.

3.4.5 Best Practice Examples

Development of Selva Negra	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

The Concello de Santiago aquired in 2007 an area of approximately 22 ha to increase the green infrastructure network of the municipality, and restore the previously established monoculture to a forest habitat of high ecological value. It is the first project of its kind in the region, with the overall aim of restoring indigenous deciduous forests. The vision is to provide a natural park that enhances, diversifies and complements the urban green spaces in the city through the nurturing of indigenous tree cover and associated vegetation.

The recovery of the area, and the provision of natural environments for public recreational and amenity use, includes maintenance works to enhance the naturally occurring oak forests, measures to increase biodiversity and enhance natural ecosystems (including full removal of invasive species and planting native trees and shrubs, and the conversion of a derelict quarry to a wetland habitat), the restoration of architectural heritage (including stone walls, the spring fountain and associated irrigation channels), and the provision of activity zones, picnic areas, and interpretation panels about the local flora and fauna.

The municipality is currently exploring the opportunity to pursue its designation as a *Natural Area of Local Interest*. The creation of a new habitat worthy of designation indicates a commitment towards the principle of reversal of biodiversity loss.

Financial Aspects:

- The lands were privately owned and purchased by the Municipality for €4,000,000.
- The restoration of Selva Negra has yet to be completed. The two intervention plans, for the removal of invasive species and the planting of native species are gradually been implemented. The budget and time-frame of the second plan have been approved. The cost of the first restoration plan was 400,000€.
- The intervention plans are based on sustainable management practices and include measures to promote the growth of existing native species and thus reduce costs associated with new planting.
- The substantial investment by the municipality in the city landscape is part of the ongoing green infrastructure network strategy.

Further Information:

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Environmental Declaration - Eco-Management and Audit Scheme (EMAS)	Urban	Env	Social	Econ
	✓	✓✓	✓	✓

Description of Action, Context and Goals:

The municipality has adopted a detailed and extensive sustainable management system for the activities that are carried out within the Parks and Gardens Department. The management system is based on the European Eco-Management and Audit Scheme (EMAS). It aims at reducing the environmental impact of managing green spaces and increasing the positive effects of parks on the urban environment. Environmental protection is achieved through compliance with environmental legislation, prevention of contamination, sustainable use of natural resources, specific environmental interventions in parks and gardens (e.g. irrigation, selection of planting species, etc.), capacity building of personnel, and promotion of public involvement.

The sustainable management system is reviewed on a yearly basis to include new actions/targets that improve the sustainability of the proposed interventions. These are consequently monitored, with indicators reported on an annual basis. Recent actions and targets include improvements in the management and recycling of green waste, reduction in water use, selection of pest-resistant and low-water requirement species, and gradually renewing the Department's machinery with the aim of achieving energy efficiency, and reduction of sound and air pollution.

The adoption of the EMAS management system illustrates a clear awareness and commitment to sustainable development and environmental quality in the management of green spaces, principles that are transferable to other cities.

Financial Aspects:

- The EMAS management system was developed and adopted over a period of time by the Department staff and with no dedicated budget. The annual reviews are similarly accommodated within the work programme and budget of the Department.

Further Information:

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Green Area Network	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

Santiago de Compostela has been gradually implementing a green infrastructure strategy following the visionary initiative of the city mayor in the early 1980s, who established minimum requirements for green space provision under the spatial planning regulations that govern the land use planning of the city (i.e. 'Plan General de Ordenación Municipal'). A formal 'Green Strategy for the City of Santiago' was prepared in 2010, resulting from the need to improve the environmental quality of certain areas of the city (i.e. Brañas del Sar). The objective of the strategy is to provide an interconnected network of green spaces that ensures the protection of natural resources, and thus promotes urban sustainability. In addition to spatial and environmental objectives/actions (such as connectivity of green corridors, sustainable urban drainage, etc.), the strategy includes a social dimension with actions such as community events and gardening workshops.

Santiago now has an extensive and well connected network of green spaces. Its approximately 200ha of interconnected historic and contemporary public parks and gardens and natural spaces, provide high quality pedestrian links to the districts and the majority of buildings and monuments, places of learning, auditorium and stadiums in the city. It is an inspiring example in the provision of green infrastructure for other cities.

Financial Aspects:

- As the provision of green spaces is strictly enforced through spatial planning regulations and land use zoning, there are no direct costs associated with the creation of the green infrastructure network. However, local specific interventions have been undertaken in recent years to ensure the connectivity between green spaces, with an approximate cost of € 300,000.

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3.5 Vila Nova de Famalicão

3.5.1 Historic Overview

Vila Nova de Famalicão is a municipality in the north of Portugal. It is located in the valley of the Ave River, some 20km from the Atlantic Ocean. The municipality is made up of 49 'parishes' (small villages and hamlets) spread around the central city of Vila Nova de Famalicão, which is at the crossroads of two major arteries – the road from Porto to Braga and the road between Guimarães and the sea at Vila do Conde. The city has a total area of 11km^2 and a population of 30,000. The wider municipality covers an area of 201km^2 and has a population of some 134,000.

Until the 20th century Famalicão was a modest village, although it had a market due to its location at a regional crossroads. The industrialisation of the Ave Valley, mainly with large textile factories and hydroelectric plant, triggered a major population expansion. For a period the settlement pattern remained dispersed, as the majority of the factory workers remained living in the country and continued farming as a secondary occupation. However over time the individual parishes became more dense and their urban areas expanded. During the 1970s, with further industrial development now centred mainly around Famalicão, they merged to form an agglomeration. Due to the unplanned evolution of the city it was - and remains - characterised by a patchwork urban landscape, with denser urban areas interspersed with residential land, industry, farmland and plantations on the hills.

A view over Famalicão showing its patchwork character

For its size Famalicão has relatively little architectural heritage and limited provision of public open space. There are few green routes and there is no connectivity between the parks and gardens. However the few open space assets demonstrate a high quality of design and workmanship – particularly in the stone pavements. They are well used and appreciated and contribute to the city identity.

A complex range of hills between 100m and 250m above sea level encloses the urban area which occupies a wide, gently sloping valley. The soil quality of the hills, especially to the west of the city, is poor and the peaks are planted with invasive eucalyptus. The surrounding rural landscape is very important to the cultural identity of Famalicão. The area is characterised by a particular method of growing vines on tall pergolas supported by granite pillars following the contours of the hills.

Famalicão is traversed by numerous streams but due to the historically poor urban planning they are often culverted and are severely polluted. The sources are domestic and industrial and the pollutants are various. This complex problem affects Famalicão's ecological resources, its agriculture, drinking water resources and landscapes, and presents a major challenge to the city.

3.5.2 Parks and Green Areas Profile

City Parks and Gardens

This section summarises some of the key features and characteristics of the parks and green areas resource.

The 19th century core of Famalicão was comprised of the Misericórdia Hospital (today occupied by the university and sacred art museum), four or five streets and a large market (now the Dona Maria II Square). Most of the public gardens in Famalicão – even those dating from the 19th century - have been laid out or refurbished in the period since 1970.

The **Dona Maria II Square and Garden** is comprised of two spaces separated by a building housing the headquarters of the Cupertino de Miranda Foundation. The building is remarkable for its 34m mosaic-clad tower and contains a museum, library, auditorium and a cafe. It is due to be extended, with the addition of a second tower, in the near future. The smaller space to the north of the building – the Dona Maria II Square - is laid out as a terrace with a large black and white mosaic pavement, two large pools and two fine plane trees at the corners. The larger space to the south of the building contains a large number of mature trees including an old avenue of plane trees. The space is divided into a garden alongside the Alameda Dona Maria II and a car park. The narrow, linear garden has a playground and generous provision of seating. The car park makes questionable use of the city centre space, and the trees are not sufficiently protected from the cars, which has led to a number being lost.

The formal square to the north of the Cupertino de Miranda Foundation

The southern portion of Dona Maria II comprises a linear garden including a playground, and a car park

Another open space dating from the 19th century is the **9 de Abril Square**, a small triangular space at a crossroads at the historic western entrance to the village. It is comprised of hard surfacing with grass strips around the edges and is planted with large trees. Seating is provided but the modest size and exposure of the space to the surrounding traffic are restrictive of its function and ambience.

The **1 de Maio Gardens** were the first public gardens to be developed in the city. The space dates back to 1930 when the Avenida 25 Abril to the west of the town centre was laid out, with a large roundabout at the location of the park. In 1940 this space was developed as a garden with a formal geometric layout to either side of the avenue passing though the middle. In 1968 the traffic was diverted around the park and the gardens were again redeveloped. The angular geometry was replaced by a pattern of interlocking circular ponds and flower beds in a parkland of lawns and woodland. There is a well used playground in the

northern area and an open, sunny square with a fine mosaic pavement in the south. The park is well used by families with children and by visitors to Famalicão. A number of items detract from the otherwise high quality park, including a car park which projects into the space beside the playground, a deteriorating hedge around the northern boundary, the tarmac surfacing of some of the paths, and an unsightly welded mesh fence around the large pool.

9 de Abril Square, and the 1 de Maio Garden with its distinctive circular ponds and planters, paving and plane trees

The **Alvaro Marques Gardens** were developed in the grounds of the new City Hall, with the layout designed to enhance the architecture of the building. The gardens are characterised by geometric forms (angular in this case) and by striking mosaic pavements.

The **Juventude Park** was originally planned and designed by the municipality in the early 1970s for a new high density residential district which was built in farmland just to the south west of the historic town centre. The current park was designed and built in 2000 and contains a number of sports pitches as well as lawn areas enclosed by trees, and a paved terrace outside a cafe. Washed gravel paths give access across the space. The park and its sports facilities are very well used and its character is functional rather than aesthetic. Its appearance and ambience are somewhat limited by the fencing surrounding the sports pitches (which interrupt views across the space) and its exposure to the surrounding roads, parking and traffic. The park is complemented by a public swimming pool in its own gardens (much used in the summer) just to the south at the edge of a large sports campus.

Juventude Park

Covering 4.7ha the **Sinções Park** is the largest in Famalicão (pending completion of Devesa Park). It was built in conjunction with an art museum, a library and a job and training centre. The layout of the linear space is largely determined by the Carlos Bacelar Avenue, a major dual carriageway which runs along the park's western boundary. Two footbridges over the road give access to the park from the city centre to the west. There is a culverted stream alongside the road from which the land rises steeply to the east. The slope is accommodated by a variety of retaining walls, ramps, stairs and terraces. The park contains a playground, skate park, a large pool with a fountain and more than 3.5ha of grass, hedges and trees. The network of paths is well used for walking and jogging. The only significant detractor from the ambience of the park is the noise of the traffic on the busy Carlos Bacelar Avenue. It is also regrettable that the stream is culverted, limiting the habitat value of the park. It is otherwise an attractive and successful open space.

The **Vinhal Park** in the north west is the most recently developed park in the city. It was developed in conjunction with a major housing estate and is enclosed to the west by a large apartment building and to

the east by a collection of town houses. A stream meanders through the park and trees on the grass banks provide pleasant, intimate spaces. The network of paths, a playground, and a flower garden and pool make for a very successful modern neighbourhood garden.

The city is in the process of developing an ambitious open space project, the **Devesa Park**. This is a 32ha linear open space along a 1.2km stretch of the Pelhe River – the main stream draining Famalicão – just to the east of the town centre. The park is being developed at a cost of €6.4 million and was conceived as a 'cultural ecological corridor'. It is designed to strengthen the urban structure, provide a range of civic and cultural facilities, abundant green space of various character, sports facilities, pedestrian and bicycle routes, and contribute to the cleansing of the river. A key characteristic is its connection to the Sinções Park.

Open Space in Residential Projects

The Bairro das Lameiras is an apartment development of 210 dwellings, built in 1983. The four to five apartment building has a rectangular plan form, enclosing a central open space accessed by passageways through the building. There is no vehicular access to the space. It has a play area and planted lines of trees and is used extensively by the apartment residents. The quality of this space derives from the absence of cars and good insulation from city noises. There is also a very active residents association, which has succeeded in developing a nursery school and a facility for the elderly attached to the development. The Devesa Park is to be located adjacent to the development and will widen the horizons of families in this district considerably.

The Urbanização das Bétulas is a recent development of 35 dwellings in small collective housing estate to the south of the station along the railway line. The development is of distinctive, contemporary design. The community spaces are small but car fee and very well designed. Planting is mainly perennial groundcover and birch trees (it is hoped that this tree which is very sensitive to dry atmospheres will grow properly). The spaces are well used by the resident children, but there is a need for a larger, more diverse neighbourhood park in the vicinity.

Lines of Trees, Outstanding Trees and Flower Displays

There are approximately five thousand trees in Vila Nova de Famalicão, with three thousand lining the streets. Some if these are strong structuring components in the urban landscape, most notably the plane trees along 25 de Abril Avenue. The lines of trees along França Avenue, Mal. H. Delgado Avenue and Conseilheiro Santos Viegas Street also contribute to the legibility of the city (which is generally weak).

The most prevalent species are plane (Platanus sp.), lime (Tilia sp.), gum (Liquidambar styraciflua), cedar (Cedrus sp.), southern magnolia (Magnolia grandiflora), American red oak (Quercus rubra), Albizia (Albizzia sp.) and cherry plum (Prunus ceracifera).

There are three classified (protected) trees in the municipality including a Tulip tree (Liriodendron tulipifera), a Sequoia and a Douglas fir (Pseudotsuga menziessii in a private farm property in a parish near Famalicão.

There are extensive flower beds in the parks and squares, characteristically in simple geometric compositions with edging plants. Hanging baskets are little used in the city and this is considered good in that it avoids the public spaces taking on an artificial/contrived appearance.

Allotments

Gardening is a traditional pastime in Famalicão, and vegetables are grown in some private gardens. A number of private farms on the outskirts of the city rent out small plots to city dwellers for vegetable production but prior to the development of the Devesa Park there was no public provision of allotments. The new park will contain an educational organic vegetable garden and associated allotments.

Rural Landscapes
The rural landscape surrounding Famalicão, and the agricultural methods practiced in the area, are important to the cultural history of the city. Most notable is the method of growing vines on tall pergolas supported by granite pillars following the topography of the land – creating distinctive patterns and valuable heritage. This practice and the associated landscape of the "vinho verde" region are however threatened by the adoption of systems and vine stocks more easy to cultivate by mechanical means.

The city was formed by the growth and merger of a large number of rural villages. In that process some of the rural lands that surrounded the villages became incorporated into the urban landscape. These remaining urban agricultural lands make a valued contribution to the identity (spatial and cultural) of the city. However due to their urban location their economic viability is questionable and a solution that guarantees their survival is required.

There are many forests around Famalicão but they are all privately owned and focussed on the production of paper pulp, with non-native eucalyptus and fir trees the predominant species. There is little of the native woodland species such as holm oak, cork oak, English oak, holly and the strawberry tree remaining in the vicinity of the city. Ribeira woods to the north west of Sincães is a privately owned forest open to the public, and a few cork oaks have been planted in this forest.

Wastelands
There are numerous plots of abandoned agricultural land – often on higher ground - within the boundaries of the city, either no longer commercially viable or earmarked for urban development. These wastelands have significant potential, for example in providing a more extensive and evenly distributed green network, and in providing vantage points to improve the legibility of the city.

3.5.3 Policy and Management Context

The municipality of Vila Nova de Famalicão is made up of 49 parishes surrounding the main parish of Famalicão. It is the second largest of eight municipalities in the Ave Valley district which is administered by ADRAVE (the Ave Valley Regional Development Agency, a body that brings together the local authorities with local private partners).

The Parks and Gardens Division of the municipality has a staff of 43 to maintain all the city's natural spaces and produce flowers in the municipal greenhouses.

The development of 'natural' spaces in new urban areas is plan-led. The municipality requires developers to set aside 63m^2 per dwelling to create facilities (schools and natural spaces). Developers' proposed layouts must comply with a plan drawn up by the municipality to ensure acceptable urban insertion.

As part of the revision of the Master Plan for the urban part of Vila Nova de Famalicão a draft Ecological Structure plan has been prepared. This identifies a 'wet system' of key and complementary lands along stream corridors, a 'dry system' (the catchments of watercourses) and a 'built system' of public spaces and heritage lands. It also identifies a 'system of corridors' including spaces along roads and forest tracks, and bicycle lanes. This plan identifies the existing and envisioned resources of the city's ecological (or green) infrastructure but the actions required to achieve its full realisation have yet to be identified.

3.5.4 SWOT Analysis

Strengths

- There is a tight cluster of good quality parks and gardens of various character and use in the centre of the city (Dona Maria II, 9 de Abril, 1 de Maio, Juventude), all within walking distance from each other and mostly connected by tree-lined shopping streets. Individually and more so collectively these parks comprise a valuable resource for residents as well as a visitor attraction. The wider network of parks (Vinhal, Sincães, Devesa), although further apart and not so well connected, has potential to complement the city centre cluster and further enhance the collective value of the resource.
- All of the public gardens in Famalicão– even those dating from the 19th century - have been laid out or refurbished in the period since 1960. With this scenario there is a risk of producing commonplace modern spaces of internationalised design. However the public spaces in Famalicão mostly demonstrate a high design quality in terms of spatial composition, furniture and surfacing (use of locally quarried and cut stone slabs, and mosaic pavements) and a character particular to the city. The result is a collection of spaces of original design, which contributes to the city identity. 1 de Maio Park, A. Marques Gardens, Sincães Park and Vinhal Park are considered of particularly high quality.
- There is a tradition in Famalicão of building parks in conjunction with cultural and entertainment facilities. The Sincães Park contains an art museum, library and a job and training centre. The Dona Maria II Square contains the headquarters of the Cupertino de Miranda Foundation with its museum, library, auditorium and café. There are cafes in the 1 de Maio Park and Juventude Gardens. When completed the Devesa Park will contain municipal offices of forward planning, a cultural centre and an amphitheatre. These associated buildings and uses lend social and cultural importance to the parks, as well as vitality and security.

Weaknesses

- The unplanned development of the city, through the merger of a number of rural villages, has precluded the creation of a strong urban structure. As a result there is a deficiency in the provision of parks and green spaces (in terms of European recommendations in this regard), although those parks and spaces that do exist are considered to be of high design quality and are well used.
- Famalicão is traversed by numerous streams but they are often culverted and are severely polluted. The sources are numerous and include domestic, agricultural and industrial sites, and the pollutants are various. This complex problem affects Famalicão's ecological resources, its agriculture, drinking water resources and landscapes, and presents a major challenge to the city-region. A programme is required to address stream quality generally through pollution prevention (e.g. improved agricultural and industrial practices), pollution treatment, and returning piped sections of streams to the open air and creating green buffers (vegetation on the banks, meadows, wetlands).
- The forests around Famalicão are all privately owned and focussed on the production of paper pulp, with non-native eucalyptus and fir trees the predominant species. The are few specimens or forests of the native woodland species (such as holm oak, cork oak, English oak, holly and strawberry tree – all now nationally protected) remaining in the vicinity of the city. This constitutes a weakness in ecological, cultural and landscape terms.
- The car is virtually the only means of travel in Famalicão. The bus network/service, apart from school busses, is poor. The predominance of private car usage for transport is reflected in the city's landscape, with road and parking infrastructure dominant over the public realm.
- The 1 de Maio Gardens is a park of high quality, well used by families with children and by visitors to Famalicão. A number of items detract from the park however, including a car park which projects into the space beside the playground, a deteriorating hedge around the northern boundary, the tarmac surfacing of some of the paths, and an unsightly welded mesh fence around the large pool.
- There is a relative lack of public participation in decision making regarding parks and green areas and in urban planning generally. Efforts have been made to encourage public participation on a project by project basis – notably the Devesa Park project for which a partnership was established including the residents of a social housing scheme, various community associations, a textile research institute,

- There are no protected spaces or habitats in the Famalicão area although the Town Planning Master Plan does identify heritage components on certain maps (e.g. interesting farmland, archaeological sites, noteworthy natural spaces, wet sites, large water courses, etc.).

Threats

- The remaining urban agricultural lands within the city boundaries make a valued contribution to the identity (spatial and cultural) of Famalicão. However their economic viability is questionable and a solution that guarantees their survival is required. The question of agriculture and the future of agricultural spaces and expertise is considered critical in the city's landscape and cultural physiognomy.
- The vineyards of Famalicão's rural hinterland, part of the 'vinho verde' region, are a valuable component of the city's landscape and cultural heritage. The tradition of growing vines on tall pergolas following the topography of the land creates a distinctive landscape pattern. The practice and the associated landscape are however threatened by the adoption of new systems and stocks more suited to cultivation by mechanical means.
- The trees in the southern part of the Dona Maria II Square are not sufficiently protected from car movements in the car park and a number of mature specimens have been lost.

Opportunities

- There is a deficiency in the provision of pedestrian or 'green' routes in the city, except through the parks themselves – but these are not connected. The Devesa Park, in particular its connection to the Sincães Park, is intended to initiate the development of a connected green network. The Urban Parks study identified the potential/requirement for development of a 'green and blue network' comprised of parks that currently exist supplemented by new parks and green links. The network of streams could form the skeleton of the network. This concept has been developed by the municipality in the Ecological Structure plan of the draft Master Plan for the city, but further work is needed to break the plan down into a series of actions, and to embed the plan in the green infrastructure of the city-region.
- The Urban Parks study identified an opportunity to extend the green corridor upstream and especially downstream of the Devesa Park, along the Pelhe River. This would involve restoration of the stream and the creation of green buffers, including through large car parks where the stream is currently (partially) culverted.
- There are numerous plots of abandoned agricultural land – often on higher ground - within and at the edges of the city, either no longer commercially viable or earmarked for urban development. These wastelands have significant potential, for example in providing a more extensive and evenly distributed green network, and in providing vantage points to improve the legibility of the city. An opportunity exists to conduct an analysis of these individual and collective resources, and prepare a plan to maximise their positive contribution to the city's future development. (This should include consideration of their return to agricultural use.)
- There are few locations/opportunities for comprehending the city in Famalicão; the open space has not been laid out for that purpose. The landmarks used for orientation are limited to a number of taller buildings and the fine lines of trees on 25 Abril Avenue. However, with the topography of the city and an untapped resource in the wastelands there is potential to improve the legibility of the city, by creating vantage points in public open space at elevated locations, or placing markers/visual reference points on the hilltops.
- The development of the Devesa Park demonstrates the city's renewed policy regarding public spaces and presents a number of opportunities:
  - The park is of sufficient scale to allow for the creation and maintenance of semi-natural spaces (wood, meadows – through differential grassland management, and moors);
  - The park will allow for the creation of an experimental vegetable garden and allotments. This project might be harnessed to encourage public interest and develop demand for further allotment provision, for example making use of some of the wastelands;

- The park provides a vehicle for the exhibition and sharing of traditional farming techniques and practices. This heritage is fundamental to the city's identity and to the continuity of its cultural history.

- The occupation of a large part of the Dona Maria II square by a car park makes sub-optimal use of the city centre space. The square is surrounded by shopping streets, enclosed by attractive, historic buildings. Being the former market it has a heritage of use as a public space, and it features many mature trees. It is easy to imagine the space transformed into a larger city centre garden by removing the car park to another location or underground. Such a development has previously been envisioned but progress has stalled. This is an opportunity worthy of further effort.
- The Ribeira Forest in Famalicão has potential for enhancement both as a recreation facility and an environmental resource. Its development could be modeled on the Selva Negra project in Santiago de Compostella where the eucalyptus is bein eradicated in favour of oak and sweet chestnut forest. In a similar move, municipal grants for planting local species in private spaces could be reinstated.

3.5.5 Examples of Best Practice

Development of Devesa Park	Urban	Env	Social	Econ
	✓✓	✓✓	✓✓	✓

Description of Action, Context and Goals:

The municipality of Vila Nova de Famalicão has developed a park of 32ha along a 1.2km stretch of the Pelhe River. The park is only minutes' walk from the city centre. It was developed on farm and forest land enclosed within the urban area, which the municipality purchased (or had donated) from private land owners. The location and scale of the site create opportunities of city-wide significance for the achievement of urban composition and environmental quality, social and economic objectives. The park was conceived as a 'cultural ecological corridor' and includes a cultural centre and outdoor theatre, informal sports/play areas, a network of pedestrian and cycle routes connecting to the surrounding roads and to the adjacent Sinções Park, allotment gardens, extensive grassland and woodland areas, dedicated habitat zones along the river and a lake to capture and store rainwater for irrigation.

A flagship development such as Devesa park can change the identity of a city and substantially increase the range and quality of ecosystem services provided by the parks system to citizens and visitors. While the urban history and composition of Famalicão were conducive to the assembly of a large site close to the city centre, the ambition for such a development should not be discounted in other cities.

Financial Aspects:

- The 32ha parcel of land was acquired by the municipality by a variety of means including direct purchases (totalling €1.7 million) and development concessions by land owners, as well as a donation of 6ha by an industrial research facility adjacent to the park. The park is being developed at a cost of €6.4 million.
- A variable mowing and irrigation regime will be applied across different parts of the park to minimise the overall maintenance cost while facilitating the intended uses.
- The substantial investment by the municipality in the city landscape is part of a strategy to alter the industrial image of the city and attract investment in clean technologies.

Further Information:

- Francisca Magalhaes (franciscamagalhaes@vilanovadefamalicao.org) and Marissa Moreira (marisacmoreira@sapo.pt), Municipality of Vila Nova de Famalicão. Tel: + 351 252320900.

Commitment to Landscape Development for Environmental and Image Enhancement	Urban	Env	Social	Econ
	✓✓	✓✓	✓	✓

Description of Action, Context and Goals:

Vila Nova de Famalicão and the Ave Valley region have an industrial history and a legacy of pollution, particularly water pollution. The city and regional authorities have recognised the potential of landscape developments to address these problems. They are investing in capital projects such as the Devesa Park and the striking streetscape improvements to Brasil Avenue (one of the main gateways to the city) to enhance the environment and change the image of the city, as part of a strategy to attract clean/green industry to the region.

The commitment to landscape improvement is illustrated also by the employment of a city landscape architect. The city landscape architect has design oversight on all public realm developments in Vila Nova de Famalicão, where elsewhere this role might be fulfilled by an engineer or architect. Their presence in the municipality generates an appreciation and expectation of landscape, and a sophistication in design which is visible in the larger projects and in the finer details of works throughout the city.

Financial Aspects:

- The cost of development of the Devesa Park is outlined on the previous page. The municipality does not have a specific budget for landscape projects; however it is estimated that €3.6million has been spent on landscape works including maintenance in the last three years.
- The cost of employing the city landscape architect is €23,700 per year.

Further Information:

- Francisca Magalhaes (franciscamagalhaes@vilanovadefamalicao.org) and Marissa Moreira (marisacmoreira@sapo.pt), Municipality of Vila Nova de Famalicão. Tel: + 351 252320900.

Use of Vernacular Materials and Craftsmanship – Paving and Walls	Urban	Env	Social	Econ
	✓✓	✓	✓	✓

Description of Action, Context and Goals:

The use of locally quarried paving slabs and blocks in a variety of patterns is characteristic of the squares, street pavements and footpaths in parks in Vila Nova de Famalicão, and is testimony to the skill of the local designers and craftsmen. The paving lends liveliness and character, appreciable quality and comfort underfoot to the spaces, complementing the planting, water features and surrounding architecture. There is a similar tradition in the design and construction of stone walls which are prevalent (accommodating level changes) in the parks throughout Famalicão. These practices are sustainable in environmental, social and economic terms.

When compared with Famalicão the ground surface as a designed component/dimension of public space is under-utilised in the other Park Atlantic cities. It would seem that there is potential for these cities to learn from Famalicão and establish a vernacular of their own.

Further Information:

- Francisca Magalhaes (franciscamagalhaes@vilanovadefamalicao.org) and Marissa Moreira (marisacmoreira@sapo.pt), Municipality of Vila Nova de Famalicão. Tel: + 351 252320900.

Park Atlantic

Park Atlantic Urban Parks and Green Areas Action Plan

VOLUME FOUR – A TOOLKIT OF BEST PRACTICE FOR PARKS AND GREEN AREAS MANAGEMENT

This section presents a suite of policies for the sustainable management of urban parks and green areas. The policies and actions are drawn from the analysis of the practices of the Park Atlantic partner cities and from research into urban parks and green areas management elsewhere. The policies are divided into three main themes, namely (1) urban composition features, (2) social features, and (3) economic features.

The toolkit of best practice is not an exhaustive/complete list of policies for parks and green areas management. The policy areas discussed are those that were identified during the study as having potential for application in the five Park Atlantic partner cities, due to their particular circumstances.

4. A Toolkit of Best Practice for Parks and Green Areas Management

This section discusses a suite of policies for the sustainable management of urban parks and green areas. The policies and actions are drawn from our analysis of the practices of the Park Atlantic partner cities and from research into urban parks and green areas management elsewhere. The policies are divided into three main themes, as required by the brief:

- The development and management of parks and green areas as **urban composition features**. This refers to (a) the spatial aspect of parks and green areas, i.e. their position within the urban landscape (relative to other land uses, and population), their size, form, connectivity and layout/composition, and (b) their environmental/ecosystem functions, i.e. their role in providing and protecting habitats and biodiversity, improving air, water and soil quality, and reducing energy consumption, etc.
- The development and management of parks and green areas as **social features**. This refers to the function of parks and green areas in providing for the recreation, education and entertainment of the community and visitors, in providing opportunities for food production (and other materials/products), and in promoting cultural and civic activity.
- The development and management of parks and green areas as **economic features**. This theme has two distinct aspects. Firstly, it refers to the role that parks and green areas can play in encouraging economic activity in their vicinity (e.g. by attracting residents or visitors/tourists to a district or the city as a whole, creating 'footfall' and thereby opportunities for retailers and service providers). Secondly, it refers to the financial aspects of parks and green areas, i.e. the cost of, and potential funding sources for, their development and management.

The toolkit of best practice is not an exhaustive/complete list of policies for parks and green areas management. The policy areas discussed are those that were identified during this study as having potential for application in the five Park Atlantic partner cities, due to their particular circumstances. There are many other policies that could be added to the best practice toolkit for a more complete 'system of management' of parks and green areas.

The policy headings are listed below. In the following pages each of the policies is individually discussed. The motivation behind the policy is explained and references and examples for further reading are provided.

Policy Index

Urban Composition Features – Spatial Planning Policies	
UC1	Green Infrastructure Strategy for Ecosystem Services
UC2	Spatial Database of Parks and Green Areas Resources
UC3	Connectivity of Parks and Green Areas
UC4	Maximising the Use of Space
UC5	Urban Landscape Character and Legibility
UC6	Protection of Biodiversity in the City Region
UC7	The Urban Forest and a Tree Database
UC8	Trees in the Urban Environment
UC9	Urban Agriculture
UC10	Agricultural Land Use and Landscapes in the City Region
UC11	Sustainable Urban Drainage Systems, Green Streets and Green Roofs
UC12	Biotope Area (or Ecosystem Services Delivery) Factor Scheme
UC13	Redevelopment/Enhancement of Substandard Urban Landscapes - Residential
UC14	Redevelopment/Enhancement of Substandard Urban Landscapes - Commercial & Industrial
UC15	Sustainable Parks and Green Areas Management Plan (or Environmental Charter)

Social Features	
S1	Promotion of Good Landscape and Urban Design
S2	Standards for Provision of Parks and Green Areas
S3	Community Participation in Parks and Green Areas Development and Management
S4	Communication with Citizens (Communications Strategy/Charter)
S5	Promotion of Cultural Activity/Initiatives
Socio-Economic Features	
E1	Recognition of the Value of Parks and Green Areas for Human Wellbeing and Social Capital
E2	Recognition of the Value of Parks and Green Areas for Ecosystem Services and Sustainable Development
E3	Recognition of the Value of Parks and Green Areas for Generating Economic Activity and Promoting City Image
E4	Quantification of the Economic Value of Parks and Green Areas, for Budgeting, Funding and Investment
E5	Funding Sources for Parks and Green Areas Development and Management
E6	Use of Local Materials and Craftsmanship in Parks Development

4.1 Best Practice Policy – Urban Composition

UC1	Green Infrastructure Strategy for Ecosystem Services

A Green Infrastructure (GI) Strategy is a *spatial plan* and a *programme of policies and actions* that guides the development and management of the parks and green areas of a city to maximise the delivery of ecosystem services. A GI strategy will form a critical part of any city's approach to climate change adaptation.

The GI concept embraces the principles of *multi-functionality*, *complementarity* and *connectivity* of the parks and green areas in order to maximise the ecosystem services provided by (a) each component of the landscape, (b) networks of components, and (c) the collective parks and green areas resource.

A GI Strategy includes policies and actions for the achievement of measurable objectives - quantitative and qualitative - for each of the GI components and ecosystem services. It should be integrated with and complementary to the urban land use and development plan, and should cover public, private and institutional lands.

The GI Strategy should form the framework for the future expansion of the urban area and inform measures for the enhancement of the existing urban area.

A GI Strategy should be long term (minimum 10 year outlook) to promote sustainability independent of political changes. It should however include medium and short term objectives and actions, with precise timetables and budget requirements, as well as a programme to monitor the effects of the actions.

GI components can include:

Regional/Peri-urban:
- River (and their floodplains), lakes, wetlands and waterways;
- Shoreline (beaches and dune systems);
- Agricultural lands;
- Forests/plantations;
- Protected areas (e.g. Natura 2000 sites);
- Long distance walking routes;
- Former mineral extraction sites (quarries).

Urban:
- Streams and ponds;
- Public parks, squares and playgrounds;
- Greenways (non-motorised transport routes);
- Streets (including the street trees, drainage channels, pavements);
- Allotment gardens;
- Institutional lands (e.g. sports clubs, universities, schools, churches, civic offices, etc.);
- Industrial and commercial campuses;
- Cemeteries;
- Private gardens;
- Derelict/disused sites or wastelands;
- Green roofs and walls.

Ecosystem services provided by GI include:

Environmental:
- Habitat provision, protection and enhancement for biodiversity;
- Water management including drainage and flood attenuation, run-off filtration and pollution control;
- Nutrient cycling;
- Soil formation;
- Air quality improvement;
- Regulation of micro-climates (green lung) and potentially climate change adaptation.

Social & Cultural:
- Urban structure;
- Landscape/visual amenity;
- Identity, of place and community;
- Urban legibility (including physical and visual access to natural and cultural heritage);
- Recreation, physical and mental health;
- Education (nature, sustainability, agriculture, horticulture, etc.);
- Sustainable (non-motorised) mobility;

Economic:
- Tourism;
- Stimulation of local economy (property values, footfall to local retail and services, etc.);
- Food, flowers, timber, fuel and other primary production.

References

Landscape/Green Infrastructure Strategies:

- *Planning for a Healthy Environment – Good practice Guidance for Green Infrastructure and Biodiversity:* http://www.wildlifetrusts.org/sites/default/files/Green-Infrastructure-Guide-TCPA-TheWildlifeTrusts.pdf
- *Green Infrastructure - Sustainable Investments for the Benefit of Both People and Nature*: http://www.surf-nature.eu/fileadmin/SURFNATURE/Publications/Green_Infrastructure.pdf
- Natural England's green infrastructure guidance: http://www.urbanspaces.eu/files/Green_Infrastructure_Guidance.pdf
- UK Government support for green infrastructure projects: http://www.defra.gov.uk/news/2011/10/11/more-green-spaces/
- Comhar the Sustainable Development Council's publication *Creating Green Infrastructure for Ireland 2010*, includes a recommended planning process for a green infrastructure strategy: http://www.comharsdc.ie/_files/Comhar%20Green%20infrastructure%20report%20final.pdf
- Cork City Landscape Strategy: http://www.corkcity.ie/newdevelopmentplan/Landscape%20Strategy.pdf
- EU green and blue space adaptation for urban areas and eco towns: http://www.grabs-eu.org/about.php.

Ecosystem Services:

- The European Commission, on Green Infrastructure: http://ec.europa.eu/environment/nature/ecosystems/index_en.htm and http://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_integration.pdf and http://ec.europa.eu/environment/integration/research/newsalert/pdf/259na3.pdf
- Regulation of micro climate, Stuttgart: http://sustainablecities.dk/en/city-projects/cases/stuttgart-cool-city.

UC2 Spatial Database of Parks and Green Areas Resources

Effective, strategic planning and management of a city's parks and green areas (its green infrastructure) requires the availability of a georeferenced database (i.e. a Geographic Information System – GIS) of its components. The database should be integrated with the urban land use and development plan. It could incorporate or be linked to a database/register of trees (see related policy on the Urban Forest, UC7).

In addition to facilitating the planning and management of resources a mappable database allows for the generation and dissemination of information to interested parties and the public.

The parks and green areas spatial database should include the following information:

Spatial:

- Location, size and form of spaces (i.e. a polygon). For large spaces with differential management the area might be divided into sub-areas;
- Sub-components/surfaces by area, e.g. lawn areas, flower beds, paved areas, woodland, etc.;
- Boundary treatments;
- External factors, e.g. adjacent land use, surface water plow, etc.

Functional:

- Ecosystem services (by category, allowing for the sorting and/or mapping of components by function) and ecosystem services objectives;
- Maintenance regime, e.g. mowing dates, blade height, watering, etc.
- Recreation/visitor facilities;

Administrative:

- Ownership;
- Access (if access is restricted);
- Designations/classifications affecting management or use, e.g. Natura 2000, etc.

References

- Merano, Italy: http://www.baumkataster.gemeinde.meran.bz.it/map/index.php?zoom_type=trees.

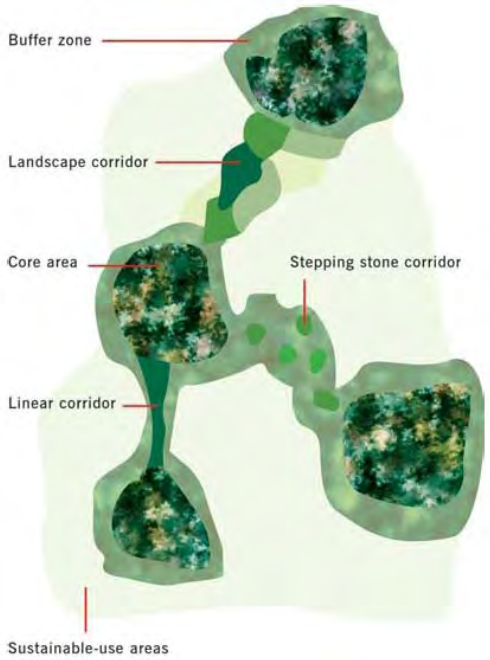
UC3	Connectivity of Parks and Green Areas

In accordance with the principles of landscape ecology, connectivity of a city's green infrastructure should be among the key objectives of parks and green areas development and management. Connectivity of the network has benefits for:

- Urban structure and legibility including the urban-rural interface;
- Habitat/biodiversity and related ecosystem services;
- Access to recreation opportunities;
- Access to natural and cultural heritage, for recreation, education and inspiration.
- Sustainable mobility (and related Carbon reduction objectives) and human health;

All opportunities for achieving connectivity should be sought, including:

- Retrofit of existing urban areas to create spatial connections between dispersed parks and green areas;
- Planning the parks and green areas network (i.e. the green infrastructure) of future urban expansion areas in advance of development, so that new development builds the networks in a coordinated manner.



Options/methods for the connection of parks and green areas include:

- Streams and drainage features (swales, etc.);
- Linear parks and strings of pocket parks;
- Greenways, i.e. dedicated non-motorised transport routes;
- Green streets.

References

- Open Spaces and Connectivity: http://www.isocarp.net/Data/case_studies/1611.pdf
- EU: http://ec.europa.eu/transport/urban/urban_mobility/action_plan_en.htm
- France: http://www.installationsclassees.developpement-durable.gouv.fr/Urban-Travel-Plan-PDU.html

UC4	Maximising the Use of Space

A key principle of the concept of sustainability is the requirement to derive maximum use of urban land, thereby to reduce the need for urban expansion and associated loss or alteration of natural resources and processes. This principle can also be observed in the practice of green infrastructure planning, which encourages development of the functions of space, and multi-functionality where possible. It recognises that any spatial resource performing any ecosystem service contributes to the sustainability of the urban structure.

This awareness is given emphasis by the prospect of climate change. A city's green infrastructure will be critical to its capacity to ameliorate the impacts of climate change, for example through water management and microclimate control.

The purpose of preparing policies and conducting exercises to maximise the use of space is therefore threefold. The identification of new spatial resources for a city's green infrastructure can (a) serve to rectify a deficiency arising from the urban morphology or historic planning, (b) contribute to a greater diversity of open space typology and function, and (c) improve the city's capacity for climate change adaptation.

Optimising the extent and the range of functions of open space requires analysis and planning beyond the traditional typologies of open space. Urban green infrastructure consists not only of parks and gardens, green corridors, outdoor sports facilities, allotments, cemeteries, etc. but encompasses the whole continuous matrix of surfaces in the urban area. It includes streets, un-built or disused land and (grey) infrastructure and even the under-utilised surfaces of structures, e.g. their roofs and walls. Analysis of this 'matrix' for example through a spatial resource inventory may provide opportunities previously not recognised for addition of space and functions (ecosystem services) to the green infrastructure of a city.

References

- *New York – Organic Rooftop Garden:* http://sustainablecities.dk/en/city-projects/cases/new-york-organic-rooftop-garden
- 'Living roofs' as habitats for threatened insects and birds: http://sustainablecities.dk/en/city-projects/cases/london-insects-up-high
- *Chicago – Converting Vacant Lots to Greenery:* http://sustainablecities.dk/en/city-projects/cases/chicago-converting-vacant-lots-to-greenery
- Germany: Industrial wasteland to parkland: http://sustainablecities.dk/en/city-projects/cases/emscher-park-from-dereliction-to-scenic-landscapes
- Green and Blue Space Adaptation for Urban Areas and Eco Towns (GRaBS) project website: http://www.grabs-eu.org/
- Chicago's CitySpace plan: http://www.cityofchicago.org/city/en/depts/dcd/supp_info/cityspace_plan.html
- *Oases of Green – Gardens Conquer Cities:* http://www.goethe.de/kue/arc/dos/dos/sls/sdz/en3645200.htm

UC5	Urban Landscape Character and Legibility

A legible urban environment is one where the landscape coheres into a unified mental image. The image is constructed in the act of moving through the city, and thus a legible city facilitates easy navigation through it. Legibility enables citizens and visitors to gain an emotional ownership of the city arising from having a mental picture of it, of feeling that they know it and are safe in it, or of recognising its beauty.

Features or characteristics that most contribute to legibility include paths, edges, districts, nodes and landmarks. These define a city's character or place identity. Parks and green areas, through their interface with other urban land use, contribute to or themselves constitute these features. They can articulate the morphology of a city and link/unify its diverse components. They can also embed the city in its regional context, responding to natural elements (topography, hydrology, ecology, climate) as well as social and cultural factors. At city-region, district and local level parks and green areas are critical to legibility and sense of place.

Legibility can be planned and improved through urban design interventions (for example, by the development of the Boulevard des Pyrenees in Pau), just as it can be diluted by poor planning (for example the sprawling residential estates at the perimeter of cities). Planning for legibility should recognise that people travel through cities using a range of modes including private cars, public transport, cycling and walking. Each mode has its own distinct network of routes and can result in different mental maps of one city.

The contribution of parks and green areas to urban legibility can be analysed and planned with reference to the following key variables:

- **Paths**: The channels along which people move, e.g. streets, walkways, bicycle routes, rivers, canals, green corridors. Paths are often the predominant elements in people's images because people observe the city while moving through it and see other elements arranged along the paths, connected by the paths. Paths should be easy to follow and there should be a small number of principal routes.
- **Edges**: The boundaries between areas or linear breaks in continuity. Edges can impede, encourage or channel cross movement and interaction. They create definition by dividing urban structure into recognizable components.
- **Districts**: These are defined as medium to large sized sections of the city and are recognisable as having some particular identifying set of characteristics. Parks, green areas and the urban forest can articulate districts by creating edges between them, or characterising them by emphasis or variation (e.g. a district characterised by a particular species of street tree, a paving material in the streetscape, a series of pocket parks, etc.).
- **Nodes**: Nodes are focal places such as junctions of paths, or places that gain importance by intensification of some use or physical character. As people move through a city nodes afford and encourage an opportunity to gain awareness of their surroundings.
- **Landmarks**: Landmarks are point references and are distinct from nodes in that they cannot be entered. They possess some singular feature (natural, e.g. a specimen tree, or built/cultural, e.g. a piece of public art) which makes them distinctive and memorable. Open space design can articulate and emphasise the presence of landmarks.

References

- Profile of Kevin Lynch, urban legibility innovator: http://www.csiss.org/classics/content/62/
- Blog on urban legibility and waterfronts: http://urbanwaterfront.blogspot.ie/2011/02/image-of-city.html
- Vantage points as landmarks, Norway's National Tourist Routes: http://www.nasjonaleturistveger.no/en
- Bristol legible city: the Concept of a Legible City: http://www.bristollegiblecity.info/c1.html

UC6	Protection of Biodiversity in the City Region

Habitat loss and degradation as a result of resource use (including land use) is the main cause of biodiversity loss, and the threat to biodiversity is most acute in and around urban areas where human activity is concentrated.

The European Commission has adopted a Biodiversity Strategy, which aims to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and to restore them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss. The six main targets of the Biodiversity Strategy cover:

- Full implementation of EU nature legislation to protect biodiversity;
- Better protection for ecosystems, and more use of green infrastructure;
- More sustainable agriculture and forestry;
- Better management of fish stocks;
- Tighter controls on invasive alien species;
- A bigger EU contribution to averting global biodiversity loss.

The Biodiversity Strategy, which is to be implemented through national and local Biodiversity Action Plans, places a responsibility on local authorities to minimise the impact of urban land use and expansion, and to create conditions in which habitats are maintained so that species continue to prosper and ecosystem services continue to be delivered in the urban setting. Green Infrastructure provides a vehicle by which local authorities can deliver on this responsibility, by providing a spatial and policy framework for the effective incorporation of biodiversity objectives into land use planning.

Biodiversity-inclusive urban planning by means of green infrastructure development will seek to: - Create robust connectivity between green areas (linking urban, peri-urban and adjacent countryside); - Create heterogeneous environments to increase species richness; - Promote the planting of native and naturalized species; - Eradicate and avoid introduction of invasive species; - Restore river and wetland systems, and other habitats, that have been degraded by urbanization; - Create buffer zones around natural and protected areas; - Implement measures for the conservation or enhancement of protected and/or endangered flora and fauna species; - Protect landscape features and maintain natural landscape processes that sustain biodiversity; - Introduce urban features that facilitate species movement and viability (e.g. bird nests, bat boxes, wildlife corridor passages, etc.); and - Coordinate planning between adjacent municipalities/counties/regions to ensure compatibility of land uses and enhance biodiversity conservation at the ecosystem level.	Creation, protection and enhancement of biodiversity, in tandem with other sustainability aspects, can be delivered through the preparation and implementation of: - Biodiversity action plans; - Green infrastructure strategies; - Sustainable green areas management plans; - Technical specifications at strategic or project level; - Project design and planning consent specifications; - Local land use planning policies. - Guidance manuals; or - Best practice notes.

References

- The European Commission, on Green Infrastructure: http://ec.europa.eu/environment/nature/ecosystems/index_en.htm and http://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_integration.pdf
- The EU Biodiversity Strategy: http://ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm
- The UN, on Ecosystems and Biodiversity – The Role of Cities: Convention on Biological Diversity: http://www.unep.org/urban_environment/PDFs/Ecosystems_and_Biodiversity_Role_of_Cities.pdf
- International case studies: http://www.cbd.int/authorities/casestudies.shtml
- 'Biodiversity by Design' – UK and International case studies: http://www.urbed.coop/sites/default/files/Biodiversity%2520by%2520design.pdf
- 'Capitals of Biodiversity' – EU case studies on local biodiversity protection: http://www.capital-biodiversity.eu/uploads/media/European_Capitals_ENG.pdf
- Spain – Murcia: http://www.murcianatural.carm.es/c/document_library/get_file?uuid=2dbb38b2-b9a0-4df4-9fca-50bccc4e28bf&groupId=14
- UK – Suffolk: http://www.suffolkbiodiversity.org/biodiversity-action-plans.aspx
- Canada – Edmonton: http://www.edmonton.ca/environmental/natural_areas/protecting-edmontons-biodivers.aspx

UC7	The Urban Forest and a Tree Database

The term Urban Forest encompasses the entire tree population in the urban area including wooded lands (natural, heritage and commercial/productive), trees in parks, gardens, institutional lands (e.g. university campuses), commercial lands (e.g. business parks), tree-lined streets and squares, undeveloped areas, transport and river corridors.

The ecosystem services provided by the urban forest are numerous, and warrant the adoption of a comprehensive development and management policy to maximise these benefits.

Urban forest policy should be long term and should seek to maximise and sustain the yield of services, by (a) growing the tree population in terms of tree numbers and/or canopy cover, (b) achieving an appropriately diverse species mix favouring native vegetation and biodiversity, (c) and achieving balanced age distribution.

Urban forest policy should address the entire resource, i.e. trees on public, private and institutional lands, encouraging development and management of the trees in each context for an agreed collective benefit. Since implementation requires the cooperation and participation of a wide range of resource owners, urban forest policy – the vision, objectives and development/management techniques - should be developed through a process of public consultation.

Strategic development and management of the Urban Forest requires a comprehensive spatial database or inventory of tree resources, which allows for change to be planned, monitored and evaluated. Preparation of a mappable city-wide tree register can also be the starting point for engaging public participation in the Urban Forest project. There are many examples of this (see references below) as well as standards for the information to be captured in the database.

Benefits of Trees in Urban Areas include:

Social:
- Recreation opportunities;
- Improvement of work and home environments;
- Improvements to character of town;
- Improvements to physical and mental health;

Aesthetic/Architectural:
- Landscape variation and richness through range of forms, colours, textures, and seasonal dynamics;
- Experience of nature;
- Defining spaces, framing and screening views;

Climatic and Physical:
- Protection from sun;
- Cooling and wind control;
- Impact on urban climate through temperature and humidity control;
- Air pollution reduction;
- Sound, glare and reflection abatement;
- Flood an erosion control;

Aesthetic/Architectural:
- Biotopes for flora and fauna;
- Biodiversity enhancement;

Economic
- Increased property values;
- Tourism benefits.

Urban Forest as a Recreation Resource:

"Urban woodlands and other parts of the urban forest are the most popular outdoor recreation environments in Europe." (Konijnendijk, 2003)
"Between 1/4 and 1/2 of all annual forest visits in France take place in the 80,000 ha of forests in the Greater Paris region." (Moigneu, 2001)
"In Sweden, an estimated 55% of all forest visits are to urban woodlands." (Rydberg, 1998)
"Urban woodlands in Europe often attract several thousands of visits per hectare per year… as the large majority of all recreational visits to forests are paid to sites not more than 1-2 km from the home…". (e.g. Hornsten, 2000)

Urban Forest as an Economic Resource:

"Cities have often turned to green areas for providing attractive environments for businesses to settle and people to live... The generally positive impact of nearby forests and green areas on house prices has become documented…" (Konijnendijk, 1999)
"Well-maintained trees and landscaped business districts have been shown to encourage consumer purchases and attract increased residential, commercial and public investments." (Wolf, 2004, 2007)

References

- http://en.wikipedia.org/wiki/Urban_forestry;
- Miller, R.W., 1997. *Urban Forestry: Planning and Managing Urban Green Spaces*. second ed. Prentice Hall, New Jersey;
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- Boston urban tree inventory: http://www.bostonforest.org/bufc/treeinventory.htm;
- Comune di Merano, Italy: http://www.baumkataster.gemeinde.meran.bz.it/map/index.php?zoom_type=trees
- San Fransico: http://urbanforestmap.org/
- Seattle: http://www.seattle.gov/transportation/treeinventory.htm
- Australia: http://www.leichhardt.nsw.gov.au/Urban-Forest-Policy.html
- California: http://www.cityofalamedaca.gov/Go-Green/Trees
- Urban Ecology Institute: http://www.urbaneco.org/urban-forestry-tools.html;

UC8	Trees in the Urban Environment

Individually and collectively as the urban forest, urban trees are an important part of a city's green infrastructure, providing a range of ecosystem services (see UC7 Urban Forest above). However the urban environment and particularly streets can be a difficult setting for trees, with 30-50% of trees lost during the first year of planting. The threats to urban trees – affecting their establishment and maintenance techniques and costs, stress levels and life span - are numerous and include:

- Inadequate soil volume (urban infrastructure is complex and competes with trees for space below ground) and poor soil quality;
- Soil compaction and soil moisture fluctuations;
- Restricted space for crown development;
- Construction activities and other sources of physical damage including vandalism;
- Improper planting techniques and improper maintenance – arising from conflicts with street infrastructure such as lighting, signage, overhead wires, CCTV, etc.;
- Pollution of air and water, temperature fluctuations and exposure to wind and salt spray;
- Pests and diseases.

If a city is to develop and maintain healthy trees and a healthy urban forest it should have a comprehensive tree management strategy – informed by and complementary to the urban forest policy. It should be prepared with the cooperation of all city departments engaged with public spaces and services.

The tree management strategy should specify (a) the objectives and requirements for trees and the urban forest, in order for these to be embedded into the policy and practices of the various city departments (in particular those responsible for 'competing' grey infrastructure), (b) the funding and staffing requirements (including qualifications and training) for the development and management of the tree resources, and (c) the standards and techniques to be applied in tree establishment and maintenance, including;

- The selection and procurement of healthy specimens of the appropriate species for planting – informed by the urban forest policy;
- A programme of ongoing planting concurrent with removal of over-age/dangerous trees;
- The quantity and quality of soil, nutrition, air and water required for healthy growth;
- The space above and below ground required for healthy growth;
- The measures required for protecting trees from physical (and other) damage throughout their life;
- Monitoring of the health of trees, and of risks to public safety presented by trees.

Criteria for street tree selection:

- Strong apical growth;
- Predictable growth rates;
- Potential for long life span;
- Strong branching angle;
- High aesthetic value;
- Resistant to pollution, pests and diseases;
- Need for range of crown sizes/shapes to meet needs of different townscapes;
- Climate adaptable (growth rhythm, adaptable to different temperatures and temperature fluctuations, winter survival, tolerant of water stress);
- Functional requirements such as habitat provision, shade, winter shelter, etc.

References

- *Trees in the Townscape, a Guide for Decision Makers,* Trees and Design Action Group: http://www.tdag.org.uk/trees-in-the-townscape.html
- *Urban Trees and the Green Infrastructure Agenda,* Martin Kelly, p.166: http://www.forestry.gov.uk/pdf/FCRP017.pdf/$FILE/FCRP017.pdf
- *Urban Forests and Trees,* Konijnendijk et al: www.scribd.com/doc/66730165/Forest.
- *Road to a Thoughtful Street Tree Master Plan,* Simons K and Johnson GR: http://www.myminnesotawoods.umn.edu/wp-content/uploads/2008/12/Street-Tree-Manual.REVISED_20082.pdf

UC9	**Urban Agriculture**

Urban agriculture is the practice of cultivating, processing and distributing food (and flowers, timber, fuel crops, etc.) in or around a town or city. It adheres to the three main principles of sustainability, i.e. it enhances environmental health, ensures social welfare and enables economic activity. As such urban agricultural lands are an important part of a city's green infrastructure. The environmental benefits of urban agriculture include:

- Reduced transport, storage including refrigeration and packaging – all sources of pollution – due to the proximity of production to consumption;
- Habitat provision and biodiversity ("*As urban agriculture grew in the Washington USA metropolis from 1978 to 1998, the variety of tomatoes available in the market increased from eight to seventy-four. Urban agriculture is the conservator and generator of biodiversity in agricultural crops…"* Jac Smit, *Urban Agriculture and Biodiversity, www.ruaf.org*);
- Water management including attenuation, run-off filtration and pollution control;
- Nutrient cycling and soil formation;
- Air quality improvement and regulation of micro-climate.

The social and economic benefits include:

- Food security and nutrition, often for residents living near or below poverty level;
- Individual capacity building and sense of well-being (derived from self-sufficiency, life skills, etc.);
- Protection and/or enhanced appreciation of (agricultural) traditions and culture;
- Family and community cohesion derived from a common productive goal;
- Reduction in unemployment and underemployment;
- Catalyst for entrepreneurial activity, often in underrepresented populations.

Agriculture can be practiced throughout the urban landscape, including:

- Publically and privately provided allotment gardens and community gardens;
- Private gardens;
- Communal spaces of apartment developments (public and private), and on balconies and rooftops;
- Institutional lands such as schools, hospitals and prisons;
- Public parks;
- Agricultural lands enclosed by or adjacent to the urban area;
- Brownfield sites;
- Along transport corridors.

Urban agriculture projects can be initiated by individuals, families, communities and associations, but international experience has shown that supportive policy and initiatives (e.g. financial support, provision of information/encouragement and technical assistance) can nurture a culture of urban agriculture.

From a blog on San Francisco's Urban Agriculture Programme 2012:
"the San Francisco Board of Supervisors passed a local ordinance to establish a formal urban agriculture program for the city… to 'generally enhance and increase urban agriculture in San Francisco'… The new ordinance requires city agencies to advocate for state and federal funding, collect data related to urban agriculture, identify opportunities to use urban agriculture for job training and employment... It establishes an urban agriculture coordinator [and] requires a strategic plan for urban agriculture that includes target dates to achieve specific goals… The goals established by the ordinance include:
- *An audit of potential city rooftops suitable for agriculture;*
- *Incentives for temporary agriculture projects on vacant land and stalled development sites;*
- *Streamlining of urban agriculture procedures;*
- *At least 10 new urban farms/gardens by July 1, 2014;*
- *The creation of garden resource locations across the city to provide compost, seeds, and tools;*
- *And a strategy to reduce the wait list for community garden plots to one year."*

References

- Ruaf Foundation: http://www.ruaf.org/node/2323
- San Francisco urban agriculture legislation, articles: http://www.urbanfoodpolicy.com/2012/08/sf-urban-agriculture-ordinance-nyc.html and http://grist.org/urban-agriculture/new-san-francisco-legislation-will-jump-start-urban-farming/
- Vegetable gardening in the United Kingdom: http://sustainablecities.dk/en/city-projects/cases/london-2012-vegetable-gardens-by-2012 and http://www.capitalgrowth.org/
- Community Gardens Vancouver, Canada: http://vancouver.ca/commsvcs/socialplanning/initiatives/foodpolicy/projects/gardens.htm

UC10	**Agricultural Land Use and Landscapes in the City Region**

Cities grow from settlements in rural landscapes, and cities of regional scale (such as the Park Atlantic partner cities) in particular are intrinsically connected to their rural hinterland in landscape, socio-economic and cultural terms. The rural hinterland constitutes the bulk a city-region's green infrastructure, delivering ecosystem services to the urban population to a degree that the urban landscape cannot.

However due its proximity to the city the rural hinterland is under particular threat from urban generated pressures. It is critical that the agricultural economy, the rural landscape and communities are protected from disintegration and decline, in the interest of (among other things):

- Sustainability (e.g. carbon sink);
- Food security;
- The local/regional economy;
- iodiversity and a range of related ecosystem services;
- Water resource management (e.g. aquifer protection, flood prevention/alleviation);
- Climate change adaptability;
- Human health (through provision of recreation opportunities, access to nature, air and water purification, etc.);
- The city's and regional/rural cultural identity.

While the rural hinterland and agricultural land use is threatened it is also presented with opportunities arising from its proximity to the city. These include provision of recreation amenities and tourism facilities (agritourism and ecotourism). The realisation of this potential is dependent on maintaining the integrity of the rural/agricultural economy, community and landscape and critically, access to these – both physical and in the form of information.

Furthermore, as responsibility for reversing the loss of biodiversity and degradation of ecosystems is increasingly falling into the remit of local authorities (refer to the EU Biodiversity Strategy to 2020) the rural hinterland is gaining in importance. These landscapes hold the critical mass of potential for achievement of this goal. It is necessary for planning authorities to begin planning the agricultural/rural landscape of their jurisdiction as meticulously as the urban landscape. In particular the status of the agricultural, forest and other rural lands as green infrastructure should be recognised, and the relationship of this landscape to the urban area – connected via the urban green infrastructure - should be strengthened.

References

- EU Sustainable Urban Fringes Project: http://www.sustainablefringes.eu/home/home.asp
- An American Rural Sustainability Plan: http://www.tlgv.org/uploads/Publications/Reports/Rural%20Sustainability%20Plan,%20editing%20draft.pdf
- Urban-Rural Interactions publication: http://books.google.ie/books?id=H6yioZVMlEYC&pg=PA15&source=gbs_toc_r&cad=4#v=onepage&q&f=false

UC11	Sustainable Urban Drainage Systems, Green Streets and Green Roofs

Sustainable Urban Drainage Systems or SuDS is the practice of replicating natural systems in urban areas so as to reduce the impact of urban land use on the drainage pattern and on surface and ground water quality, i.e. to prevent flooding and water pollution.

A planning authority can use a SuDS manual to guide its own development and management of spaces, and to guide (through the provision of standards) the planning and design of private developments. A SuDS manual would be an important component of a Biotope Area Factor Scheme.

Roads and parking areas can comprise a substantial portion of a city's impervious surfaces, and contribute proportionately to the run-off and water pollution generated in the urban area. The concept of Green Streets has developed in response to this. A **Green Street** employs a range of typical SuDS techniques and associated measures to minimise the impact of the road on drainage and water quality, as well as increase the street's provision of other ecosystem services. Green Streets can be developed new, or the concept can be applied to retrofit existing urban areas.

Roof tops constitute another large part of a city's impervious surfaces and contribute to run-off requiring piped transmission beyond the urban area. **Green Roofs** can absorb rainwater and reduce the demand on the sewer system. They also provide insulation, create wildlife habitat and provide other ecosystem services such as lowering the urban air temperature to reduce the heat island effect.

SuDS employs a range of techniques or development components to minimise or eliminate water discharges from a site, thereby minimising its impact on the receiving environment. Typical components include: - Green roofs; - Soakaways; - Infiltration trenches; - Filter strips; - Bioretension features; - Rain gardens - Filter strips; - Filter drains; - Rainwater harvesting; - Channels and rills; - Swales; - Trench troughs; - Detention basins; - Retention ponds; - Wetlands; - Stream restoration; - Permeable pavements; - Geocellular/modular systems for below ground storage or infiltration.	*"The **City of Portland** is a leader in using strategies to manage stormwater runoff, enhance community and neighborhood livability, and strengthen the local economy. **Green Streets**, which incorporate landscaped kerb extensions, swales, planter strips, porous paving and street trees, are used to manage stormwater runoff at its source. In 2007, Portland City Council approved the use of Green Streets in public and private development and have retrofitted a number of streets in Green Street projects. With streets comprising 35 per cent of the City's impervious surface, Green Streets are recognised as an important control strategy to:* - *Reduce polluted stormwater entering Portland's rivers and streams;* - *Improve pedestrian and bicycle safety;* - *Divert stormwater from the sewer system and reduce basement flooding, sewer backups and combined sewer overflows to the Willamette River;* - *Reduce impervious surface so stormwater can infiltrate to recharge groundwater and surface water;* - *Increase urban green space;* - *Improve air quality and reduce air temperatures;* - *Reduce demand on the city's sewer collection system and the cost of constructing expensive pipe systems;* - *Address requirements of federal and state regulations to protect public health and restore and protect watershed health.*

References

SuDS:

- CIRIA SuDS components table: http://www.ciria.org.uk/suds/pdf/C687_table%202.1.pdf;
- German experience: http://ib-kraft.de/int_wasser_konferenz_berlin.htm

Green Roofs:

- http://livingroofs.org/
- Copenhagen's green roof ambitions: http://livingroofs.org/20100522222/world-green-roof-policies/copenhagen-green-roofs.html
- *Space for Urban Wildlife: Designing Green Roofs as Habitats in Switzerland*: http://www.urbanhabitats.org/v04n01/wildlife_full.html

Green Streets:

- Philadelphia: http://www.wrtdesign.com/projects/detail/philadelphia-green-streets-projects/140, and http://www.phillywatersheds.org/BigGreenMap
- Portland: http://www.portlandonline.com/bes/index.cfm?c=45379&a=209685

UC12 Biotope Area (or Ecosystem Services Delivery) Factor Scheme

A key aim of every city should be the minimisation of the environmental impacts of urban land use. An alternative approach is to seek to maximise the beneficial environmental functions of urban land, by ensuring that all land/sites perform some ecosystem services.

A Biotope Area Factor (BAF) or similar scheme can be used by a city to set ecosystem service performance targets for a given area of land. A site's BAF is calculated by awarding it a score for its performance across a range of ecosystem services, or for its incorporation of prescribed performance enhancing measures.

The BAF scheme can be used by the city council in the determination of planning applications for new development (by requiring proposed developments to achieve a target factor - see Seattle Green Factor in the box below). The BAF scheme can also be used to measure the ecosystem service performance of existing sites and identify suitable measures with which to retrofit the site to improve performance. The scheme could thus be used to encourage the retrofit of inadequately performing sites by, for example, offering local tax/rates reductions for the achievement and maintenance of a certain factor.

How does the Seattle 'Green Factor' work?

"The Green Factor is a landscape requirement designed to increase the quantity and quality of planted areas in Seattle while allowing flexibility for developers and designers to meet development standards. It currently applies to new development in commercial and neighborhood commercial zones outside of downtown, and is proposed for multifamily residential zones and the South Downtown planning area…

"Permit applicants in affected zones must demonstrate that their projects meet the Green Factor by using the Green Factor Score Sheet. The scoring system is designed to encourage larger plants, permeable paving, green roofs, vegetated walls, preservation of existing trees, and layering of vegetation along streets and other areas visible to the public. Bonuses are provided for food cultivation, native and drought-tolerant plants, and rainwater harvesting. As designers add landscape features, the score sheet automatically calculates a project's Green Factor score, allowing the applicant to easily experiment with different combinations."

References

- In 2007, the City of Seattle, USA, developed its own *Green Factor*: http://www.seattle.gov/dpd/Permits/GreenFactor/Overview/
- Berlin's Biotope Area Factor (BAF): http://www.stadtentwicklung.berlin.de/umwelt/landschaftsplanung/bff/index_en.shtml
- Based on BAF, the Greenspace Factor was implemented in an urban development in Malmö, Sweden in 2001: http://www.grabs-eu.org/downloads/EP6%20FINAL.pdf
- Copenhagen's green roof ambitions: http://livingroofs.org/20100522222/world-green-roof-policies/copenhagen-green-roofs.html

UC13	Redevelopment/Enhancement of Substandard Urban Landscapes – Residential

The public housing projects of the 1960s and 1970s - constructed both as high rise apartments and as mainstream two-storey houses in large estates on the periphery of towns - and the sprawling private housing estates of the same period and later are recognised as being sub-standard in landscape quality, having been guided by inappropriate policies and design strategies.

Problems typical of these environments include random distribution of open space with no complementarity of form and function, limited connectivity and permeability. The functions of open spaces are unclear and the demarcation of private, communal and public spaces is poor. The result is bleak, underused, frequently vandalised spaces which can become settings for anti social behaviour. They contribute little to the quality of life of their residents, to the sense of place and identity of their communities, and to the green infrastructure (and ecosystem service provision) of the city.

There is a requirement and an opportunity for local authorities to address the sub-standard landscapes of these neighbourhoods/districts though redevelopment programmes informed by the principles of green infrastructure. In many cases, due to an oversupply of open space, they have significant potential for ecosystem services delivery.

Physical regeneration must be complemented by a social programme. Two basic principles have informed successful regeneration programmes over the last number of decades: demand orientation, and a participatory approach. The first principle requires that proposals should be responsive to the stated priorities and wishes of the communities. The second principle requires the active participation of residents, users and the public in planning, implementing and evaluating renewal proposals and actions.

Within the context of the two principles of responsiveness and participation, there are a number of fundamental design/environmental issues that must be addressed for successful regeneration of an estate's parks and green areas:

1. How does the estate respond to its landscape and urban context? (Green space should respond to local context; in doing so it will reflect local identity and culture.)
2. How well is the estate connected to the surroundings?
3. How easily can residents' access and use the green spaces?
4. Does the design of the green spaces enhance the character of the neighbourhood? (The installation of public art can contribute significantly to creating a sense of local identity.)
5. Do the green spaces provide a good mix of activities?
6. Are the uses aimed at achieving inclusion? (It is important to provide many different activity zones for passive and active recreation and thereby encourage a diversity of uses, and social inclusion. The provision should include opportunities for children and young people and these should embrace a whole spectrum of activities.)
7. Are the layouts adaptable and robust?
8. Do the green spaces maximise the delivery of ecosystem services, e.g. by enhancing biodiversity and offering residents contact with the 'natural world', by incorporating sustainable urban drainage system measures, encouraging recycling, or providing opportunities for food production?

References

- A project in Scotland developed a public realm strategy based on the concept of a series of green routes each offering experiences to different types of users: http://www.dumgal.gov.uk/index.aspx?articleid=7548.
- UK example of public participation in regeneration: http://www.theglasshouse.org.uk/projectshowcase/dee-park-regeneration/.
- Danish urban regeneration with green areas focus: http://www.sbi.dk/byudvikling/friarealer/byens-frirum-et-felles-anliggende/kvarterloft-er-en-gave-til-byens-udeliv.
- http://www.parkcentral.co.uk/Development/Park.aspx.
- http://www.greenstructureplanning.eu/scan-green/index.htm.

UC14	Redevelopment/Enhancement of Substandard Urban Landscapes – Commercial & Industrial

The commercial and industrial estates on the fringes of urban areas are often of poor quality in terms of ecosystem services delivery including landscape amenity. They are characterised by homogenous 'landscaped areas' (large areas of lawn, few trees and shrubs), excessively large areas of hard open space (wide access roads and pavements, large parking and loading areas), and sprawling buildings. As a category of land use, which can be a substantial proportion of the urban area in some cities or districts, the commercial and industrial estates have significant potential for redevelopment/enhancement for ecosystem services.

- The appearance and function of the green spaces within and at the perimeter of the estates are often of little consequence to the estate owners/managers; their primary concerns are the cost of management and the security of their property. These green areas can be retrofitted for the delivery of ecosystem services such as storm water retension and infiltration, habitat provision, and enhancement of landscape amenity.
- The hard open spaces can be replaced with permeable paving and any superfluous areas can be replaced by functional green space or interspersed with infiltration and planting features.
- The buildings can also be retrofitted for ecosystem services delivery, for example by the introduction of green roofs or systems for rainwater capture: *"An example of a retrofit is the intensive 704m2 green roof on ESRI Canada Ltd… It covers 100% of available roof space on a commercial building, and it hosts 52 plant types including sedums, grasses, flowers, herbs, shrubs and trees"* (http://www.toronto.ca/greenroofs/what.htm#new).

In an era in which companies are becoming increasingly aware of their environmental responsibility and image, a business location (whether a commercial estate or a city) with sustainability credentials can hold an advantage over its competitors: *"High-performance green building space experiences lower vacancy rates and commands a premium price, compared to conventional space… Because of this, commercial building owners are adopting green retrofits as a market differentiator"* (http://www.pikeresearch.com/newsroom/energy-efficiency-retrofits-for-commercial-buildings-represent-a-400-billion-market-opportunity).

The local authority has a role to play in initiating and encouraging the redevelopment or enhancement of these landscapes, initially through research and development of suitable retrofit techniques (possibly in partnership with site owners) and thereafter through incentive schemes for property owners/managers. The use of a biotope area factor scheme (or similar – see UC12 above) would facilitate the process.

References

- A report on a sustainable industrial estate in South Africa: http://www.engineeringnews.co.za/article/gauteng-ecosensitive-industrial-estate-attracting-interest-2007-07-20.
- Industrial estate retrofit project in the US: http://www.greenbiz.com/news/2008/07/31/retrofit-brings-new-life-old-industrial-park.
- Commercial buildings retrofit, the market opportunity: http://www.pikeresearch.com/newsroom/energy-efficiency-retrofits-for-commercial-buildings-represent-a-400-billion-market-opportunity.
- The city of Ottowa's brownfield redevelopment program: http://ottawa.ca/en/city_hall/planningprojectsreports/planning/brownfields/index.html.
- Green roof retrofit examples from the US: http://waterproofmag.com/back_issues/201004/green_roof_retrofit.php.

UC15	Sustainable Parks and Green Areas Management Plan (or Environmental Charter)

The local authority has direct responsibility for the management of a significant portion of the urban area (the streets, parks, green areas, rivers) as well as providing or being involved in the provision of a range of critical services (e.g. waste management). Therefore the sustainability of the city is to a large extent determined by the policies and practices of the local authority. As the government level closest to the citizen the local authority also has an important influence on the environmental habits of the general public.

The local authority should adopt and periodically review a comprehensive suite of policies and practices for the sustainable management of the parks and green areas of the city. Such a Sustainable Parks and Green Areas Management Plan should address:

- **Environmental aspects**, including water usage, chemical usage, carbon emissions, waste management, etc.: Using the principle of sustainability, objectives should be set to minimise the use of water and chemicals in plant production and maintenance, maximise the re-use of waste (e.g. through composting, recycling) and minimise carbon emissions.
- **Biodiversity aspects**, including diversification of habitats such as grass areas (differential management regimes), species selection for parks and streets, pruning/trimming practices, pest and invasive species control, measures to increase biodiversity (e.g. bird and bat boxes), etc.
- **Infrastructure/design aspects**, including signage, lighting, furniture, pavements, boundary treatments: Objectives should be included covering the quality of materials, maintenance and replacement requirements, etc.
- **Public access and safety aspects**, including access arrangements (opening hours, etc. for enclosed parks), social functions (sport, recreation, cultural events), policies and practice to ensure safety.

The plan should state the guiding principles and policies of the local authority, but should also specify the application of these to the affected parks and green areas. It should include individual management plans for various defined categories of space, and for each of the key parks and green areas in the city.

The highest performing Park Atlantic partner city in terms of sustainable management of resources is Santiago de Compostela. The municipality has published a 'Parks and Gardens Environmental Statement' under the European EMAS (Eco-Management and Audit Scheme). EMAS provides **a** structured framework **for managing and improving the local authority's environme**ntal performance. There are an increasing number of public authorities seeking EMAS registration. To date, there are more than 140 located in the following Member States: Austria, Belgium, Germany, Denmark, Spain, France, Italy, Sweden and the United Kingdom.

The sustainable parks and green areas management plan should pay special attention to key environmental considerations such as:	The management plan should contribute to:
- Species selection to optimise viability and minimise maintenance costs (e.g. adapted to local climatic conditions, resistant to drought/frost, pollution, pests and/or diseases, and appropriate size/growth); - Use of environmentally sustainable phytosanitary protection to ensure that existing fauna in green areas is not affected; - Management and reuse of natural resources to promote ecological processes and reduce maintenance costs (e.g. rainwater capture systems and use of humidity sensors for reducing water consumption for irrigation, recycling generated biomass by turning it into compost or mulch, etc.).	- Ensuring environmental sustainability; - Setting up maintenance and management priorities; - Developing monthly and quarterly work programmes for operational staff; - Informing the annual budget-setting process; - Identifying requirements for additional financial and human resources; - Promoting safe and inclusive public activities, and - Monitoring success and progress against management targets.

References

- The European Eco-Management and Audit Scheme (EMAS): http://ec.europa.eu/environment/emas/local/index_en.htm
- A Guide to Producing Park and Green Areas Management Plans: http://www.green-space.org.uk/downloads/Publications/Guide%20to%20producing%20park%20and%20gs%20management%20plans.pdf
- 'Greener Neighbourhoods - a Good Practice Guide to Managing Green Space': http://issuu.com/groundworkuk/docs/greener_neighbourhoods/36
- NYC: http://www.nycgovparks.org/sub_about/sustainable_parks/Sustainable_Parks_Plan.pdf
- Spain – Barcelona: http://w110.bcn.cat/portal/site/MediAmbient/menuitem.37ea1e76b6660e13e9c5e9c5a2ef8a0c/?vgnextoid=303179583ad1a210VgnVCM10000074fea8c0RCRD&vgnextchannel=303179583ad1a210VgnVCM10000074fea8c0RCRD&lang=en_GB
- UK – Aylesbury Vale: http://www.aylesburyvaledc.gov.uk/leisure-culture/parks-open-spaces/parks-open-spaces-management-plans/

4.2 Best Practice Policy – Social Aspects

S1	Promotion of Good Landscape and Urban Design

Landscape design is the process of forming places in the public realm to bring about improvements in their function, comfort and appearance, so as to make them attractive to people/users*. Successful spaces are those which encourage frequent visits and use of the facilities thereby improving quality of life, which enhance their urban context and which meet the intended design objectives. Design objectives for public space might include the provision of opportunities for social interaction, facilities for activity to support physical and mental wellbeing, for appreciation of natural beauty or cultural heritage, for cultural and other events. Design objectives can also include performance of a range of ecosystem services.

Unsuccessful spaces are those which are largely ignored by the public. Reasons given by the public for not visiting urban parks include: (1) lack or poor condition of facilities, (2) undesirable users, (3) concerns about dogs and dog mess, (4) safety and security, (5) environmental problems, e.g. litter and vandalism.

Creating successful spaces requires attention to both function and quality. Good design does not originate from a rigid prescriptive approach such as quantitative standards. It requires approaches that draw out qualities that make spaces function to achieve the ends desired. Fundamental design consideration must address the form of the space and the pattern arrangements to be created. A successful green space will usually respond to the complexity of the indigenous landscape, its heritage and culture. It will be adaptable in the context of changing social economic and environmental conditions. It will be socially inclusive by functioning as a resource for a wide range of people of both sexes, of different ages and backgrounds. As part of a city's green infrastructure it will relate/connect to the wider public realm, and be designed to sustain and enhance biodiversity.

Certain cities have an appreciable history or culture of high quality landscape design. In order to ensure maintenance of already high standards, or where design has proved to be less successful, it may be appropriate for a city to formulate a statement of its design philosophy or approach to guide public and private developments. This should set out a vision for the quality of city's public open spaces and the fundamental principles for the design of space, while allowing for the flexibility necessary to create beauty. It is generally not desirable to curtail design by restricting or prescribing motif or materials; however this may be appropriate where the intention is to create a distinctive character across a city's network of parks (as has been achieved in Vila Nova de Famalicão).

A public open space design statement could address the following:

- Fulfillment of necessary spatial and functional requirements - designers should have a clear understanding of the functions being provided and of the intended users*;
- Complementarity and connectivity of functions within the network;
- Appropriateness of the scheme (its functions and appearance/aesthetic qualities) to the environment in which it is locate;
- Adaptability - spaces should be capable of adapting to a range of changing conditions;
- Maintenance considerations, incl. sustainability issues (water, energy, chemicals, etc.).

* Urban design consultant Jan Gehl, who has studied public spaces for more than 30 years, classifies users as follows:

- *Everyday users*. People who live and work in the area;
- *Visitors and customers*. People who visit the area from beyond;
- *Passersby*. People passing through the area, going or coming from other places;
- *Recreational visitors*. Those who visit the park because of its beauty or to use the space for recreation;
- *Visitors to events*. People who come for special programs.

References

- Articles on good park design: http://www.pps.org/reference/six-parks-we-can-all-learn-from/, http://www.pps.org/reference/grplacefeat/, http://lhoustoun.wordpress.com/public-spaces/chapter-4-ingredients-for-successful-public-spaces/.
- US park design standards: http://www.mrsc.org/subjects/parks/parkplanpg.aspx.

S2	Standards for Provision of Parks and Green Areas

The provision of open spaces in urban areas has traditionally been guided by quantitative standards. The standards would specify areas to be provided as a ratio of population size (e.g. 6 acres/1000 population). The standards would include a hierarchy of open spaces types in which different categories of parks would be arranged in order ranging from neighbourhood park to parks serving city-wide functions. The model derived from the victorian public park and the need for such standards arose because each park was a stand-alone entity largely disconnected from other parks in the city. This model of the 'isolated' park is being supplanted by open space systems whereby the green spaces of the city are interconnected, continuous and multifunctional. The value of this model is that urban green spaces are embedded in the fabric of the city and provide multiple services; they become part of the vital infrastructure of the city.

The application of certain quantitative standards may be necessary in the planning, provision and assessmen of parks and green areas, for example setting a minimum distance for all homes in the urban area from the nearest public open space (e.g. 500m). However qualitative benchmarks and indicators should be the means by which an integrated green space system is assessed, for example:

- Does the public space (system) attract continuous use, day and night, week days and weekends, across the seasons – is the space enlivened by human presence and social interaction?
- Does the public space (system) provide facilities that cater for and encourage use by people of all ages and abilities, and of both sexes – is the space adaptable for various uses and events?
- Does the space reflect the needs and values of the intended users and the public – were they involved in its conceptualisation and design, are they active participants in its management, and are they informed by the local authority of any uses, programmes or maintenance which might affect them?
- Does the public space contribute to the connectivity and accessibility of the wider public space system, and do its functions complement those of other spaces thus enhancing their collective value?
- Is the public space considered beautiful, comfortable and attractive by users - does the space include features such as water, flowers, trees, or sculpture that enliven and beautify the space?
- Does the space have a distinct identity of its own - is it legible/identifiable in its urban context?
- Does the space reflect the local or regional context (cultural, landscape, etc.) through its physical components, functions and facilities - do the form and scale of the space relate comfortably to the surrounding urban components (e.g. buildings, streets)?
- Are the components of the space - the pavement, planting, furniture, etc. - of appreciably good quality and robust against time and use?
- If it is an intended objective, does the space provide habitat and contribute to the biodiversity of the urban area - does the space allow for the functioning of any natural processes that occur in the area (e.g. drainage), and does it deliver further ecosystem services such as microclimatic control?

The following five benchmarks form the basis for establishing assessment criteria and indicators for green space provision

- **Quantity**: surface area, fragmentation, isolation from other green spaces, connectivity, accessibility.
- **Quality:** indigenous species/naturalness; species diversity, habitat diversity, protection of cultural and natural heritage, capacity to improve environment quality, emotional and physical benefits from contact with nature; local identity.
- **Use**: catchment area; accessibility; recreation /sports facilities; multifunctionality; education in green space; variety of uses including play, growing fruit and vegetables; social interactions, cultural and community events; social inclusion; safety; employment.
- **User satisfaction**: surveys conducted in open spaces provide critical information to the management agency regarding the changing needs, values and expectation of users.
- **Planning:** urban green policy and its legal context, aesthetic and cultural aspects; citizen's involvement; integration with other areas of planning; sustainable waste/eco management.

References

- Practical evaluation tools for urban sustainability: http://www.petus.eu.com/.
- Evaluation of urban green space, URGE project – development of urban green spaces to improve the quality of life in cities and urban regions: http://www.urge-project.ufz.de/CD/evaluation.htm.

S3	Community Participation in Parks and Green Areas Development and Management

The full participation of local communities in city planning including the development and management of a city's parks and green areas is fundamental to the principle of sustainability. The principal purpose of parks and green areas is to provide social, economic and environmental services to the local community – to individual citizens, community and special interest groups (e.g. civic, educational, sporting) and the business community. The satisfaction of their requirements can only be met by an ongoing dialogue to identify their needs, opinions and values (which evolve over time), and by facilitating their participation in devising solutions and strategies and decision making. Successful participation of the local community can:

- Create a shared vision for the future of parks and green spaces based on (a) agreed/identified current and future community needs and aspirations, and (b) better understanding of local issues and locally important aspects of place, heritage and culture;
- Ensure better use of public resources, and complement these resources with those of the community (labour, etc.)
- Develop partnerships and synergies between public agencies and communities, and between different interests/groups within the community, thereby building social capital;
- Achieve benefits in community health (through active participation in practical works, and increased use of facilities) and education;
- Engender a sense of ownership of the parks and green areas among citizens, thereby encouraging use and appreciation, enhancing security and reducing anti-social behaviour (through proactive supervision by local community members), and encouraging participation in the maintenance of the resources;
- Achieve extensions of enhancements beyond publically managed areas to the private realm;
- As a consequence, safeguard the future of green spaces, improve the quality of neighbourhoods and enhance the well being of local people.

There is also a wider community with interest in the management of a city's parks and green areas. This includes the neighbouring local authrotities, NGOs, regional and national government and agencies, and international organisations (e.g. the EU and UN).

While meeting the needs of the local community is paramount, it is the responsibility of a local authority to ensure that the wider community's needs are understood and where appropriate reflected in management practices. The local authority must also ensure that meeting the local and wider communties' needs is achieved in an economically sustainable manner. To minimise the conflicts that may arise between these varying interests and achieve the greatest degree of consensus among stakeholders the local authority must – in addition to educating itself regarding the needs of the communities – seek to educate the local communuity in any issues, policy, guidance and best practice affecting parks and green areas management.

For successful community participation, certain preconditions must be met. These include:

- People must want to be engaged in local decision making through community participation;
- The information/data necessary to enable groups make informed decisions must be available (see for example Greenspace Information for Greater London – http://www.gigl.org.uk/);
- The community must be empowered to make effective decisions;
- Community leadership and skills training is an essential part of the process;
- There must be a policy framework within the city administration to permit and support community participation;
- The participants must have confidence in the officials engaged with the programme and there needs to be efficient and supportive co-ordination.

The techniques for effective community participation are being greatly enhanced by the use of computer/internet technologies. These provide tools for discussion groups, surveys of user groups, and allow for data to be organised, displayed and updated/manipulated online using interactive maps, etc.

Charter of European Cities & Towns Towards Sustainability (Aalborg, 1994), Section I.13 **Citizens as Key Actors and the Involvement of the Community**:

"We, cities & towns pledge to meet the mandate given by Agenda 21, the key document approved at the Earth Summit in Rio de Janeiro, to work with all sectors of our communities - citizens, businesses, interest groups - when developing our Local Agenda 21 plans…

We shall ensure that all citizens and interested groups have access to information and are able to participate in local decision-making processes. We will seek opportunities for education and training for sustainability, not only for the general population, but for both elected representatives and officials in local government".

The European Urban Charter, 4.12 Theme: **Citizen participation, urban management & urban planning:**

"The satisfaction of physical, social and emotional needs can only be established and respected through an open dialogue between official management and individual members of the urban community.

Management of a town must therefore be conducted in order to ensure that those people, whose rights and property are affected to a significant degree by proposed administrative acts and decisions are informed of them, have their views heard and thus become an active part in the decision-making process."

The seminal work on public participation is recognised as being Sherry Arnsteins' *A Ladder of Citizen Participation*, published ion 1969. (There have been subsequent articles and theories on the subject but many refer back to Arnstein's work.) This classified eight types of participation divided into three categories:

- **Citizen power:** (8) Citizen control, (7) Delegated power, (6) Partnership;
- **Tokenism:** (5) Placation, (4) Consultation, (3) Informing;
- **Non-participation:** (2) Therapy, (1) Manipulation.

It should be an objective of the local authority to facilitate citizen power; i.e. partnership, delegated power or citizen control, in its city planning and management practices.

Among the Parkatlantic partner cities this has been achieved in Pau with the community co-development of the Rue du Chanoine Laborde (see examples of best practice in Pau, 3.3.4 in the main report). For this streetscape and pocket park refurbishment project the city is providing its professional expertise, technical capacity and funding to support 20 citizens representing the district community council, who collectively are the lead decision-maker on the project.

This model of participation has itself been facilitated by the French system of District Community Councils, whereby the community of a defined urban area is represented in all decisions affecting the area by a council made up of three 'colleges': 1. residents, 2. associations, 3. business interests.

References

- EU Urban Charter: http://sustainable-cities.eu/upload/pdf_files/URBAN_CHARTER_EN.pdf
- Charter of European Cities & Towns Towards Sustainability: http://ec.europa.eu/environment/urban/pdf/aalborg_charter.pdf.
- A UK community support network with a public open space focus: http://www.groundwork.org.uk/who-we-are/our-vision.aspx;
- Community Planning Network principles and methods for successful community participation: http://www.communityplanning.net/principles/principles.php and http://www.communityplanning.net/methods/methods_a-z.php.
- UrbSpace and ekoPolic report on public participation: http://www.urbanspaces.eu/files/Act.3.2.2_Public_participation_FINAL.pdf.
- Greenspace Scotland online resources for communities and authorities: http://www.greenspacescotland.org.uk/our-services.aspx.
- APaNGO (advocacy, participation and NGOs in planning) final report *Community Engagement in Planning – The Way Forward:* http://www.tcpa.org.uk/data/files/apango__full_report.pdf.

S4	Communication with Citizens (Communication Strategy/Charter)

Inhabitants of a town and visitors cannot fully experience the town without being informed and responsive to its history, qualities, attributes, policies. The EU Urban Charter states that citizens are entitled to be consulted over all major projects affecting the future of their community. Urban management and planning must be based upon maximum information on the characteristics and special features of the town – information that must be readily available to the citizens.

A communication strategy for green spaces is a blueprint for organising information and modes of communication. It determines the communication objectives, the target audience, the information to be communicated, and the modes/techniques by which the communication will be conducted.

Sustainable green spaces are being increasingly managed for multiple objectives. To foster coherence, it is essential to engage citizens at all levels in an open dialogue about future plans and management strategies. Communication objectives would include increasing a public understanding of the values of urban green spaces.

A green space communication programme will document and present information in a comprehensive manner to all sectors of the community – citizens, business groups, special interest groups, and public representatives – and so facilitate understanding and involvement in the development and on-going management of urban green spaces. An important aspect of defining target groups is ensuring that there are no under-represented groups. Communication is not just information providing; it is engaging systematically in two way information processes, which include active listening to the others.

Communication actions fall into one of three categories depending on their purpose. These are 1) One-way information distribution – promotions, publicity such as maps and signage in parks. 2) Education- a long term process to transfer knowledge, attitudes and values. 3) Dialogue with specific groups as part of a formal consultation. The green spaces communication strategy can be applied in different combinations of the above depending on the intentions, message and intended target group.

It goes without saying that determining how to reach the target audience is fundamental to effective communication. There are well tested methods, tools and tactics available for delivering the messages including exhibitions, workshops, internet, presentations, public notices, social media networks, and DVDs.

A review of a communication strategy should be an ongoing process. The effectiveness of the strategy needs to be constantly evaluated. Information needs and priorities change over time. The communication programme should also include mechanisms for providing and responding to feedback.

References

- EU Urban Charter: http://sustainable-cities.eu/upload/pdf_files/URBAN_CHARTER_EN.pdf
- Charter of European Cities & Towns Towards Sustainability: http://ec.europa.eu/environment/urban/pdf/aalborg_charter.pdf
- www.waldpaedagogik.at

S5	Promotion of Cultural Activity/Initiatives

Urban open spaces can host cultural events and function as a locus for artistic activities if properly designed to achieve those ends. Opportunities can be created for special cultural events. The space can be viewed as an extension of a theatre or the site itself can allow an engagement with its history and its contemporary condition. Performances in green spaces can intensify a community's identity with them, through a sense of ownership and pride.

Green spaces can provide sites for 'public art' in places where people can benefit directly from the immediacy of the contact. It is noted that the term 'public art' is eschewed in favour of *'innovative engagement of artists with urban green spaces'*. The description allows for a broader definition of arts practice in public space and acknowledges the range of art forms and diversity of potential green spaces available for such practices. As open spaces form an important component of the identity of a place, public art and cultural projects can respond to local landscape, culture and heritage, and provide a framework for reflections on local needs and expectations.

Many city authorities have policies in place that promote contributions to art schemes as part of development proposals. Their most valuable contribution is that of providing unequivocal support to the promotion of art in the public domain, and not functioning solely as a grant giving body.

Artists can make positive contributions to development projects provided they are engaged at an early stage of the project. Schemes such as PROJECT (UK) show that artists raise the quality and value of the projects and ultimately of the surrounding environments.

Green spaces can become part of innovative arts-based area regeneration. Examples of this can be found in Westerpark in Amsterdam, Park Fiction in Hamburg, and in a North West Dumfries Public Art Commission Plan. There can also be an emphasis on green spaces as sites for experimentation and research. Gunpowder Park in Essex is a key example and has been created with the specific remit of developing innovative programmes which focus on arts, science and nature. The park's heritage of 'research' informs creative policy and explores the meaning and use of open space in society.

Artists can also make a useful contribution to imagining future city structures rather than confining them to post-facto responses to urban development including green space developments.

An **arts/culture policy for green spaces** should consider the following:

- Develop an urban arts/green spaces strategy covering a broad spectrum of arts/cultural activity;
- As a city authority advocate the value of art in the public realm and promote a wide range of arts/culture endeavours;
- Consider the value of arts-based green space regeneration;
- Establish engagements between art/cultural activities (including institutions) and local communities;
- Define key attributes of your city in terms of its character and history, and use them as a basis for an arts programme.

References

- New York's Art in the Parks Programme: http://www.nycgovparks.org/art-and-antiquities/art-in-the-parks
- Dublin's Art Park: http://www.sebastianguinnessgallery.com/exhibitions.php?ID=110
- Anchorage youth employment in parks, Art in the Parks programme: http://www.anchorageparkfoundation.org/projects/YEP.htm
- PROJECT, engaging artists in the built environment: http://www.publicartonline.org.uk/pasw/project/evaluation/index.php
- Westchester Art in Parks programme: http://parks.westchestergov.com/art-parks
- www.gunpowderpark.org
- www.parkfiction.org
- www.art-public.com

4.3 Best Practice Policy – Socio-Economic Aspects

E1	Recognition of the Value of Parks and Green Areas for Human Wellbeing and Social Capital

Through the direct provision of amenity and recreation opportunities parks and green areas (or green infrastructure) make a significant contribution to citizens' physical and mental well-being, on their quality of life, and on a city's social capital. They provide opportunities for play and exercise, commuting routes away from motorised traffic, communing with nature and appreciation of natural beauty, quiet retreat and social interaction. Critically, well designed parks are available to and appreciated by all members of society. As attractive back-drops to residential or other development, parks also contribute to people's general sense of well-being, their sense of place and identity, thereby further contributing to utility.

These values are among the fundamental reasons for the provision of urban parks and green areas and for city authorities' investment in urban greening, including the use of landscape within urban regeneration. Parks and green areas have historically been - and continue to be – among the most important and most visible expressions of a city's civic wealth.

It is important for cities to recognise these values and to adopt policy and allocate the resources required to continually improve the quantity and quality of parks and green areas as a means to achieve social sustainability.

References

- *URBAN PARKS: The Value of Small Urban Parks, Plazas and Other Outdoor Spaces:* http://www.urban-nature.org/publications/documents/UrbanParks.pdf
- *The Value of Parks and Greenspaces,* Liverpool City Council: http://www.green-space.org.uk/downloads/Publications/The%20Value%20of%20Parks%20-%20LCC.pdf
- *The Social Value of Public Spaces:* http://www.jrf.org.uk/sites/files/jrf/2050-public-space-community.pdf
- *Beyond Recreation – A Broader View of Urban Parks*, The Urban Institute: http://www.urban.org/UploadedPDF/311011_urban_parks.pdf

E2	Recognition of the Value of Parks and Green Areas for Ecosystem Services and Sustainable Development

The environmental functions of parks and green areas - in addition to the social values - have been recognised and planned from the outset of the modern town planning era, which emerged as a result of industrialisation and associated urban expansion.

Appreciation of the environmental functions of parks became blurred through much of the 20th century but with the onset of environmental concerns in the 1960s followed by the urban ecology movement and later the concept of sustainable development, this role once again came to the fore. Since the turn of the 21st century the term 'ecosystem services' has been used to describe the beneficial outcomes to humans and the natural environment that result from ecosystem functions. In urban areas ecosystems and ecosystem functions occur in their most extensive and purest form in parks and green areas, and in the agricultural lands of the city-region, where their environmental services include:

- Habitat provision, protection and enhancement for biodiversity;
- Water management including drainage and flood attenuation, run-off filtration and pollution control;
- Nutrient cycling and soil formation;
- Air quality improvement;
- Regulation of micro-climates (green lung) and potentially climate change adaptation.

It is important for cities to recognise these values and to adopt policy and allocate the resources required to continually improve the quantity and quality of parks and green areas, to maximise their ecosystem services as a means to achieve environmental sustainability.

Early examples of recognition of the environmental functions of parks and green areas – **Frederick Law Olmsted's Emerald Necklace for the City of Boston:**

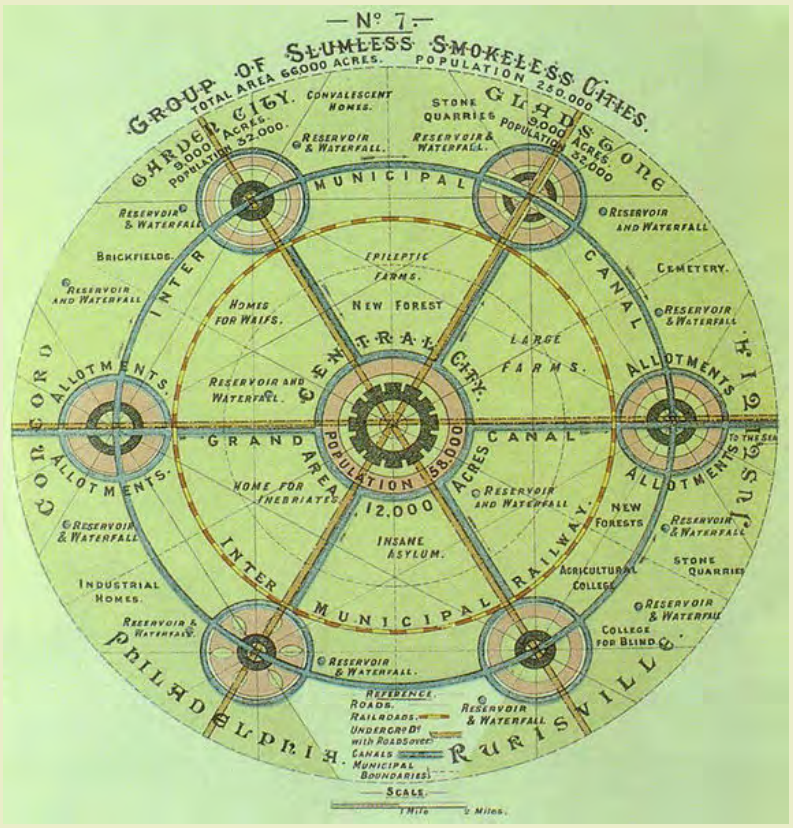
The late 19th century Emerald Necklace plan for Boston was a 10 mile long park system along the Muddy River. Its primary purpose was to clean up and control the flow of the river, but the development evolved into a comprehensive 'green space framework' for the metropolitan area, incorporating three rivers, six mostly connected green wedges on the outskirts, beaches, islands and numerous small squares, playgrounds and parks in the most densely populated urban areas.

Ebenezer Howard's Garden-City:

In 1898 Ebenezer Howard, with his publication *Garden Cities of To-morrow*, effectively proposed the concept that nearly a century later became known as 'sustainable urban development'.

With his diagram of the 'three magnets' he made the case for the 'garden-city', which combined all the environmental advantages of the country as a place for living *('beauty of nature', 'fields and parks of easy access', 'pure air and water', good drainage', 'no smoke'*), with all the employment, access and amusement advantages of the city.

The conceptual garden-city had a poly-centric urban structure arranged by and within a functional green framework providing all the resource needs of the population, i.e. a comprehensive green infrastructure.



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- The European Commission on Green Infrastructure: http://ec.europa.eu/environment/nature/ecosystems/index_en.htm and http://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_integration.pdf and http://ec.europa.eu/environment/integration/research/newsalert/pdf/259na3.pdf
- *Green Infrastructure - Sustainable Investments for the Benefit of Both People and Nature*: http://www.surf-nature.eu/fileadmin/SURFNATURE/Publications/Green_Infrastructure.pdf
- Regulation of micro climate, Stuttgart: http://sustainablecities.dk/en/city-projects/cases/stuttgart-cool-city
- *URBAN PARKS: The Value of Small Urban Parks, Plazas and Other Outdoor Spaces:* http://www.urban-nature.org/publications/documents/UrbanParks.pdf
- Garden Cities of Tomorrow: http://en.wikipedia.org/wiki/Garden_Cities_of_To-morrow

E3	Recognition of the Value of Parks and Green Areas for Generating Economic Activity and Promoting City Image

Well planned and managed parks, gardens and squares enhance the 'livability' of an area and have a positive impact on local property values. For businesses an improved public realm can attract more customers and increased consumer spending, encourage investment in local business and contribute to staff retention. Benefits may be realised by the municipal authority in the form of revenue from property taxes and increased economic activity.

In a similar fashion, attractive cities appeal to graduates and other qualified workers as places to live, including, as perceived by some the 'creative class'. Private investment is attracted by these demographics. Companies have also found that attractive cities enhance their own corporate identity, while developers identify opportunities for schemes of high landscape quality to enhance rental values.

Cities too promote and market their identity for investment, migration and tourism using factors such as heritage and quality of life. Cities with an attractive, lively or historic green environment attract tourism and related expenditure. Parks or open space are part of the attraction of visits to London, Barcelona and indeed Angers, Pau, Santiago de Compostela and Limerick (e.g. for the Riverfest). Parks provide a resource for cultural events and festivals that strengthen this income flow from visitors and retain local inhabitants during weekends and holidays. The normal footfall to popular parks sustains local shops, cafes and restaurants, and is enhanced by public events.

It is important for cities to recognise that good quality parks and green areas can stimulate increased property prices and offer positive economic benefits, and to develop policies accordingly.

In addition to the benfits to the city economy, parks and green areas can be developed and managed to generate economic benefits for individuals, families or targeted groups. Examples of this include urban agriculture projects (see UC9) and an initiative by the Nationa Forest Office in Pau where dead trees are no longer removed mechanically but rather by horse and driver – providing specialist employment opportunities and contributing to the conservation of cultural heritage.

The effect of parks on property value - Experience from the United States:

Typically, houses that command a view of green space attract a higher property value because the value of the view is capitalised in the house price. Indeed, raising real estate values was one of the earliest rationales for parks, for example Central Park in New York. At the time of its construction (1857 – 1873) Central Park was the largest public works project in US history. Ten years after opening the park, while property values elsewhere in the city had increased twofold, those around Central Park had increased 12 fold and they were paying one third of the entire expenses of the city in taxes. For 20 US cities, Crompton (2000) noted that the local tax income from such combined value increments resulting from park developments/improvements exceeded the maintenance costs of the parks.

The extent of the benefit does of course depend on the quality of the view or of the park. Unattractive spaces, or ones subject to crime or anti-social behaviour, including the possibility of burglaries, have been shown to reduce the value of surrounding properties. Knowing and responding to this can also reap benefits: Ernst and Young found that rents in the vicinity of New York's Bryant Park (historically known as 'needle park' in reference to its use by drug users) rose by between 75% and 152% more than in surrounding areas after the park's rehabilitation in the 1990s.

References

- Research into land values, investment decisions, landscape quality and community engagement: http://www.environment-investment.com/?option=com_content&task=view&id=16&Itemid=29
- *Does Money Grow on Trees?*, CABE: http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/files/does-money-grow-on-trees-summary.pdf
- *The Value of Public Space – how high quality parks and public spaces create economic, social and environmental value:* http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/files/the-value-of-public-space.pdf

E4	Quantification of the Economic Value of Parks and Green Areas, for Budgeting, Funding and Investment

It is important that cities recognise that parks and green areas (or specifically green infrastructure) are not just 'nice to have', but rather an essential component of an economically sustainable and successful city. The benefits identified in E1-3 above are all to some extent of economic value to cities. They generate real savings and real income for individual citizens, businesses and local government.

Being able to quantify the value of green infrastructure in financial terms is becoming increasingly important to ensure (a) that green infrastructure is recognised as being critical to the sustainability of cities (in that it provides services that alternative (grey) infrastructure could not deliver or could only deliver with massive investment), (b) that the green infrastructure is afforded appropriate protection from potentially conflicting development, and (c) that an appropriate level of investment and resources is allocated to development and management of the green infrastructure.

Examples of quantifiable economic benefits include:

- *Amenity and recreation*. Parks and green areas can improve public health and thereby reduce healthcare expenditure, as well as reducing sick days and associated productivity losses. There are also benefits for children's development that may manifest themselves in later life as reduced levels of obesity or possibly through enhanced spatial and other skills of productivity value. These benefits are realised firstly by individuals. However some economic benefits could accrue to municipal authorities through reduced health expenditure, and could be used to justify support from national programmes.
- *Social inclusion*. These benefits too are realised firstly by the individuals at risk, but can contribute indirectly to reductions in health budgets, the incidence and cost of anti-social behaviour and to more effective inclusiveness programmes.
- *User expenditure and events space*. Park access can be designed to benefit local businesses through footfall. Parks can also be used for public events with municipalities benefitting either directly from fees or indirectly through local expenditure.
- *Environmental quality*. Attractive parks attract people to live in cities supporting a level of residential density that permits for efficient municipal service provision and raising property prices in surrounding neighbourhoods that in turn directly contribute to local property taxes or business rates.
- *Investment*. In combination with other civic attributes, attractive parks attract skilled workers, the businesses that employ such workers, and businesses for whom an attractive headquarters is part of the corporate identity. There are indirect benefits for employment and local taxes.
- *Tourism and identity*. Parks can be part of a city's identity, attracting tourism or acting as a brand for local products. There are benefits from tourism expenditure, to employment and the local tax base.
- *Sustainable travel*. Greenways and interconnections support walking and cycling, benefitting public health. They can generate commute-time savings making for a more efficient working city, and they deliver benefits in reduced fuel costs and vehicle emissions, and possibly congestion costs.
- *Biodiversity*. As well as the benefits to well-being, bio-diverse green space can potentially attract community buy-in and assistance with management, donations, support from NGOs, and potentially investment in biodiversity offsets.
- *Drainage*. Sustainable urban drainage can reduce municipal expenditure on engineered drainage and sewerage, and contribute to the avoidance of the potential costs of flood events.
- *Climate*. Green space can reduce energy demand (i.e. air conditioning) and reduce climate related illnesses with potential benefits for local or national health budgets.

It is acknowledged that quantifying the monetary value - in an integrated study - of the social capital, ecosystem services and economic stimulus provided by green infrastructure is extremely complex. Nevertheless, it is possible to estimate many of the economic benefits and there is a growing body of research and expertise in this area internationally.

Green Infrastructure Valuation Toolkit

The *Green Infrastructure Valuation Toolkit* provides a flexible framework for identifying and assessing the potential economic and wider returns from investment in green infrastructure. The Toolbox estimates values from 11 economic benefits as follows:

1. Climate change adaptation and mitigation
2. Water and flood management
3. Place and communities
4. Health and wellbeing
5. Land and property values
6. Investment
7. Labour productivity
8. Tourism
9. Recreation and leisure
10. Biodiversity
11. Land management

The toolkit uses recognised valuation techniques to assess the potential economic benefits a green infrastructure project can deliver, depending on the type of project and the characteristics of the area it is being delivered in. A set of tools has been developed within each of the 11 categories to look at how the range of green infrastructure benefits deriving from an asset or investment can be valued.
(Source: Nichole Collomb, previously of CABE. Presentation to The Landscape Institute: *Paying for Parks: making the case for investment in green infrastructure*)

References

- Green infrastructure valuation toolkit, GI North West, UK: http://www.greeninfrastructurenw.co.uk/html/index.php?page=projects&GreenInfrastructureValuationToolkit=true
- *Measuring the Economic Value of a City Park System,* Trust for Public Land: http://www.tpl.org/publications/books-reports/ccpe-publications/measuring-the-economic-value.html
- The economic value of parks, San Francisco: http://www.openspacesf.org/node/39
- *Making the Invisible Visible, The Real Value of Park Assets,* CABE*:* http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/publications/making-the-invisible-visible
- Ecosystem valuation: http://www.ecosystemvaluation.org/
- Chicago Trees Initiative: Value of trees/urban forest http://www.chicagotrees.net/our-urban-forest/
- Centre d'Analyse Strategique report on ecosystem services: http://www.strategie.gouv.fr/content/rapport-les-aides-publiques-dommageables-la-biodiversite
- http://www.ecosystemvaluation.org/1-02.htm

E5	Funding Sources for Parks and Green Areas Development and Management

E1-4 above provide an argument for cities to allocate a significant propotion of their budget to the development and management of the green infrastructure.

However, the multiple benefits of parks and green areas – environmental, social and economic – accruing to individual citizens and the public good, to business and to local and national government, makes them ideal vehicles for the attraction of funding from a range of sources including private, institutional and public sources; local, national and international, e.g.:

- Economic development agencies (local, regional, national);
- Natural and cultural heritage agencies and authorities;
- Health authorities or bodies charged with promoting public health;
- Sports authorities/bodies;
- Transport authrotities;
- Tourism authorities and development agencies;
- Urban regeneration agencies;
- Water (and rivers/waterways) authroties and agencies;
- Authorities/agencies with responsibility for climate change adaptation;
- NGOs;
- Etc.

Local authorities, in consultation with communities, should actively and continuously seek (a) sites, (b) project concepts, and (c) project partners/stakeholders, with which to develop their provision of green infrastructure. They should be familiar with relevant national and European funding progammes (e.g. LIFE+) and monitor the annual calls for proposals to identify opportunities.

To maximise the chance of successful funding applications project agents (e.g. local/municipal authorities) should prepare well-considered project proposals, (a) backed up by supporting strategy or policy e.g. a green infrastructure strategy, (b) preferably with community buy-in if not active participation or a co-development role, and (c) with clearly defined beneficial outcomes linked to the investment requirement.

Funding opportunities in Europe:

The **EU LIFE+** programme is the financial instrument supporting environmental and nature conservation projects throughout the EU, and may be the most applicable source of funding for parks and green areas projects. During the period 2007-2013, the European Commission will launch one call for LIFE+ project proposals per year. Proposals must be eligible under one of the programme's three components: LIFE+ Nature & Biodiversity, LIFE+ Environment Policy & Governance, and LIFE+ Information & Communication.

LIFE+ Nature & Biodiversity
The Nature & Biodiversity component will co-finance best practice or demonstration projects that contribute to the implementation of the Birds and Habitats Directives and the Natura 2000 network. In addition, it will co-finance projects that contribute to the implementation of the objectives of Commission Communication (COM (2006) 216 final) on "Halting the loss of biodiversity by 2010 – and beyond". *Parks and green areas – specifically green infrastructure - will play a critical role in halting biodiversity loss in urban environments; funding opportunities should be available for innovative development and/or management projects (*http://ec.europa.eu/environment/nature/info/pubs/docs/greeninfrastructure.pdf).

LIFE+ Environment Policy & Governance
The Environment Policy & Governance component will co-finance innovative or pilot projects that contribute to the implementation of European environmental policy and the development of innovative policy ideas, technologies, methods and instruments. The LIFE+ 2012 call for proposals included among its principal objectives, "Urban environment: To contribute to improving the environmental performance of Europe's urban areas". *Green infrastructure is central to the environmental performance of urban areas, and green infrastructure projects should be eligible for funding under this objective/component.*

LIFE+ Information & Communication
This new component will co-finance projects relating to communication and awareness raising campaigns on environmental, nature protection or biodiversity conservation issues, as well as projects related to forest fire prevention (awareness raising, special training).

INTERREG IVC provides funding for interregional cooperation across Europe, in order to improve the effectiveness of regional policies and instruments. It encourages exchange of experiences among partners who are responsible for the development of their local and regional policies; indeed the Park Atlantic project falls under the umbrella of INTERREG IVC. While the programme is primarily aimed at identification and transfer of good practices, carried out through workshops, seminars, conferences, surveys and site visits, INTERREG IVC also allows 'light implementation or piloting, but only if these complement the exchange of experience activities'. *There may exist some potential for the funding of a joint or mirror capital project or initiative implemented in each of the five partner cities, by which experience of the process and results could be shared (e.g. community co-development of an Atlantic Park in each city?).*

Funding opportunities in Ireland:

The Heritage Council Grants Programme: There are three distinct project types, namely (1) heritage research, (2) heritage management and (3) heritage education, community and outreach, which may be carried out in any of the fields of national heritage specified in the Heritage Act 1995: 'monuments, archaeological objects, heritage objects, architectural heritage, flora, fauna, wildlife habitats, landscapes, seascapes, wrecks, geology, heritage gardens and parks and inland waterways'. Parks and green areas projects and initiatives could fall into either the heritage management or heritage education, community and outreach categories.

The grants programme is open to individuals, non-profit organisations such as environmental NGOs, local community groups, heritage and preservation societies, local authorities, statutory organisations, academic institutions and private companies. Any of these might have a role to play in parks and green areas projects.

References

- EU LIFE Programme: http://ec.europa.eu/environment/life
- LIFE building up Europe's green infrastructure (refer to p.50: Building green infrastructure into urban planning): http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/green_infra.pdf
- LIFE urban environment & quality of life projects: http://ec.europa.eu/environment/life/themes/urban/thematic.htm
- LIFE in the city: http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/urban_lr.pdf

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E6	**Use of Local Materials and Craftsmanship in Parks Development**

The use of local materials, e.g. stone or carpentry, helps to retain local primary industries and associated skills. Similarly, local artists and creative industries can be supported through the use of art such as sculpture in public places. Use of local materials and skills provides neighbourhoods and cities with particular identities that make for use/well-being benefits and which is attractive to tourism. Local pride may encourage public participation and mitigate against vandalism. Conscious use of local resources also provides cities with an additional attribute on which to promote themselves for tourism and investment.

A paper prepared by the Prince's Foundation (UK) identified a range of benefits of the practice:
- It enables a local workforce to be used … this ensures that a greater proportion of economic value is captured in the local economy;
- Jobs are created by the manufacturing (e.g. quarrying) of the materials; it results in professional skills development;
- For workers involved in the industry, a heightened sense of personal dignity and social wellbeing resulting from long-term professional employment;
- Improved social capital;
- Healthier buildings/developments;
- A more resilient building supply chain, and increased longevity of developments;
- Reduced CO2 emissions arising from reduced transportation costs.

References
- The economic potential of local building materials: http://www.energybulletin.net/node/51960.

Park Atlantic Urban Parks and Green Areas Action Plan

VOLUME FIVE – ACTION PLANS FOR THE PARK ATLANTIC CITIES

This volume presents action plans for each of the Park Atlantic partner cities:

- The actions are divided into a range of broader topics such as green infrastructure, urban agriculture, urban forestry, water management, landscape amenity, communication and resourcing, implementation;
- The actions are referenced to the best practice toolkit, and awarded a notional scoring in terms of their potential to generate urban composition, environmental, social and economic benefits;
- The actions are divided into strategic, medium term and short term actions, which could translate as 0-3 year, 3-7 year and 7-10 year timeframes depending on the resourcing and planning systems of the cities;
- For each action the MAIN responsible party or parties for implementation are identified;
- Monitoring indicators are proposed for each action, to assess their success over time.

5.1 Sustainable Management Action Plan for Angers

5.1.1 Green Infrastructure Theme

A- L-1: **Green Infrastructure Strategy for Ecosystem Services** Refer to Toolkit Policy UC1	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

The City of Angers and its environs has a rich inheritance of parks, open spaces and natural areas, and continues to develop and enhance them for amenity, ecological and development objectives. However consideration of these spaces and related private lands as a network of interconnected green spaces delivering a range of ecosystem services would significantly enhance the sum of these individual elements. Such a strategy should focus on maximising the delivery of ecosystem services by applying the key principles of multi-functionality and connectivity of parks and green areas.

The Green Infrastructure Strategy should be prepared at the level of the Communauté d'Agglomération. The strategy would bring together many existing and new development sites and projects including the "Banks of the Maine" project and add hugely to their value in the provision of amenity, ecological and other services such as routes and cycleways, flood attenuation and horticultural and farming. Rather than landscape, park, tree lines, open spaces and green areas being a series of individual spaces and areas within the city / Communauté boundaries, their role as the context or environmental network within which the city lives (and thrives) can then be seen, optimised and managed.

The Green Infrastructure strategy can also address the interface between the urban and adjacent rural areas and the development pressures around the rural villages in the region.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération - Angers Ville	- Completion of a green infrastructure strategy and adoption as policy of Communauté d'Agglomération

A-S-1: **City of Angers Landscape/Green Infrastructure Strategy** Refer to Toolkit Policy UC1	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓✓	✓✓	

Prepare a Landscape/Green Infrastructure Strategy for the main city urban area of the City of Angers, particularly in the context of the proposed "Banks of the Maine" project and the potential to build significant ecological value within the wider city as part of this major infrastructural development.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	Completion of a green infrastructure strategy and adoption as policy of Communauté d'Agglomération

A- L-2: **Biotope Area (or Ecosystem Services Performance) Factor Scheme** Refer to Toolkit Policy UC12	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓	✓✓	✓	✓✓	

Develop a Biotope Area Factor scheme whereby all proposed developments and existing urban sites would be assessed/scored in terms of their delivery of a range of defined ecosystem services, or their incorporation of a range of biotope-supporting (or ecosystem service delivery) measures. This planning process would complement the Green Infrastructure Strategy, adding value to the "network" with each new development.

The new "Atoll" shopping centre would be an interesting pilot project to assess and establish a benchmark.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération - Angers Ville	- Establishment of a Biotope Area (or Ecosystem Services Performance) Factor Scheme; - Number of private development proposals/applications subjected to assessment by the scheme; - Number of existing developments/sites subjected to assessment by the scheme.

A-L-3: **Measurement of the Economic Value of Ecosystem Services** Refer to Toolkit Policy E1-4	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Based on international precedents and research develop a methodology and conduct an exercise in estimating the monetary value of the ecosystem services provided by the parks and green areas in Angers. The methodology should allow for ongoing measurement/re-calculation to monitor the effectiveness of measures to improve ecosystem services delivery.

The results and predictions should be used to recognise the value of parks and green areas in urban and budgetary planning, set priorities and justify spending on both (a) the maintenance and improvement of existing resources and (b) development of new resources.

A methodology for measuring the economic value of a city's parks and green areas will be a transferrable tool and could be developed as a joint exercise by the Park Atlantic cities, or used by the other cities (Park Atlantic, EU or elsewhere) once developed in Angers.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville - Possibly in partnership with ParkAtlantic partners	- Completion of the measurement of the monetary value of the ecosystem services provided by the parks and green areas (including farm and forest lands) in the municipality area.

A-M-1: **Commercial/Industrial Landscapes Improvement Strategy and Pilot Project** Refer to Toolkit Policy UC14	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓	✓	

Conduct an analysis (ideally in the context of a Green Infrastructure Strategy and making use of an emerging Biotope Area Factor Scheme) of the industrial and commercial estates in the Community area and develop a generic toolkit for landscape improvements for ecosystem services and amenity. (Generic landscape improvements might include reducing the dimensions of roads and parking areas, planting/ maintenance for biodiversity, green roofs, water attenuation and harvesting, etc.).

Select one site for the implementation of a suite of improvements as a joint pilot project between the Community and the site owner.

Consider possible mechanisms to encourage site owners to retrofit sites. These might include an environmental award or certification scheme or financial incentives such local tax/rates reductions for achievement of ecosystem services targets, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Identification and analysis of all commercial and industrial sites in the municipality area, in terms of a range of ecosystem performance measures informed by the emerging biotope area factor scheme; - Preparation of a toolkit of generic landscape/environmental improvements for commercial and industrial sites; - Selection of a site for a pilot project; - Design and implementation of the pilot project; - Establishment of an environmental (ecosystem services) certification and/or award scheme for commercial and industrial sites.

5.1.2 Drainage and Water Quality Theme

A-M-2: **Sustainable Urban Drainage System (SUDS) Manual** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓		✓✓	

Develop or adopt a comprehensive policy or manual for sustainable drainage in the urban area. This should outline the city's approach and identify all of the possible techniques to be applied in public and private developments to minimise or eliminate water discharges from a site, thereby minimising its impact on the receiving environment. The SuDS manual should include policy on 'green streets' and green roofs.

The SUDS manual should be incorporated into the Biotope Area Factor Scheme (see A-L-2) when developed.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Completion of a sustainable urban drainage systems strategy and adoption as policy of Angers Ville; - Completion of a manual identifying and specifying generic SuDS measures/techniques for application by private developers and the municipality; - Number of new developments (private and public) incorporating SuDS measures; - Number/proportion of urban sites achieving specified standards/ limits of water discharge.

A-S-2: **Pilot Green Street Project** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓✓	✓	✓✓	

Conduct an analysis of the city streets to identify those most suitable for conversion to green streets. Identify a street for a pilot project, develop the concept for local conditions, design and implement the city's first retrofitted green street. (See City of Portland Green Streets pamphlet: http://www.portlandonline.com/bes/index.cfm?c=45379&a=209685).

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Completion of an assessment of the streets in the urban area and identification of sections with potential for a green street retrofit; - Identification of a section of road for a pilot green street project; - Implementation of the pilot green street project.

5.1.3 Urban Forest and Arboriculture Theme

A-L-4: **Urban Forest Strategy** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Long term/ Strategic**
	✓✓	✓✓	✓		

Prepare an Urban Forest Strategy for the entire Angers-Loire-Metropole Community area including public, private and institutional lands. The Strategy should contain policies and actions to maximise the ecosystem services delivered by the tree population of the city, by growing (particularly in poorly vegetated parts of the city and along key streets and roads) and diversifying the tree population, and achieving balanced age structure.

The strategy should contain policies and actions to (a) ensure the health of the urban forest (applying principles such as species diversity, native rather than exotic species, balanced age structure, good environmental/growth conditions), (b) grow the forest and (c) maximise its delivery of ecosystem services. The Carbon sequestration value of the existing forest and the potential in its expansion should be identified and contribute to the development of energy / CO2 reduction targets for the region.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération - Angers Ville	- Completion of an urban forest strategy and adoption as policy of the Communauté; - Increase in tree cover in the municipality area (tree numbers and/or canopy cover), and measure of increased ecosystem services; - Measure of species diversity in the urban forest (according to identified ideal); - Proportion of native versus exotic trees.

A-S-3: **Urban Forest Database/Tree Register** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓		

If not already in place initiate the preparation of a geo-referenced (mappable) urban forest database or tree register to facilitate strategic management of the tree population of the city (analysis, planning, monitoring and evaluation of effects).

The assistance of the public should be enlisted in this exercise, as a means to obtain as much information as possible (including data on trees on private land) but also to encourage appreciation and ownership of Anger's exceptional tree resource.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Establishment of a georeferenced (mappable) tree database; - Percentage/number of trees on public lands entered into the database; - Percentage/number of trees on private and institutional lands entered into the database; - Availability of the tree database/map online; - Capacity for public to enter data into the database.

A-M-3: **Urban Forest Development Projects** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓	✓	

Analyse the urban forest database to identify parts of the Community area where the tree population is relatively sparse or otherwise inadequate (e.g. imbalance in age structure, species diversity, etc.). Devise and implement projects to address these inadequacies, including street tree planting, parks and green areas development, companion planting for ageing trees, support measures for planting on private lands (tree stock, funding, technical expertise, etc.).

This action is contingent on the initiation of and substantial progress with short term action A-S-3 (urban forest database/tree register).

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération - Angers Ville	- Identification of urban forest development projects/sites; - Number of trees planted in the municipality area (on public and private lands).

5.1.4 Landscape Amenity Theme

A-S-9: **Redevelopment of Avenue Jean D'Arc**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓	✓✓	✓	

Using the analysis in Stage 1 of this study as a starting point draw up aims and objectives to enhance and add value to this historic promenade. Conduct a public participation process to articulate community concerns, values and expectations. In particular the process should facilitate the development of a Conservation Plan which sets out its conservation value and qualities and conservation objectives, whilst integrating renewal and animation of the space, reflecting the criticisms set out in the Stage 1 report.
Using the resulting brief, consultation process and conservation plan progress with the programme of renewal of the Avenue.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Completion of a Conservation Plan; - Public acceptance of the changes required; - Redevelopment of the avenue.

A-S-4: **Develop and articulate a city landscape and design strategy or policy** Refer to Toolkit Policy S1 and S3	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓	✓	

Explore the design conflicts that arise within the city parks and open spaces. These can result in conflicts of style and taste. Agree - through a facilitated, educational public participation programme - a city design philosophy that recognises heritage places and landscape character, traditional crafts and skills, as well as opportunities to create and express the best of 21st Century Angers and today, communicating a modern city image built on strong proud foundations.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Articulation of a landscape design stategy and city vision, specifying landscape aims and objectives for the local authority.

A-S-5: **Ensure landscape renewal proposals for study areas recommended in Stage 1 are included in existing urban renewal programmes for estate renewal**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓	✓	

- Completion of DesJardins Park and District reflecting the high design quality and ambience created to date;
- Lac De Maine District;
- Belle Beille/Notre-Dame Du Lac District;
- Monplaiser.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Completed projects.

A-S-6: **Panoramic Viewpoints** Refer to Toolkit Policy UC5	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓✓	✓	

As well as the viewpoint over the city in the Lac de Maine area highlighted in Stage one of the study, investigate the appropriate provision of viewing points for panoramas over the city, river valleys and countryside for the development of destination points on scenic drives / walks / cycles in the landscape. Such viewing points should be designed to the highest modern standards, becoming sculptural features in themselves, and transforming their immediate location by their presence. See examples of a design led approach developed in Norway: http://www.nasjonaleturistveger.no/en ; http://www.visitnorway.com/en/What-to-do/Tours-Safaris/Tour-suggestions/Follow-a-National-Tourist-Route/

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville - Tourism authority	- Development of network of panorama points.

5.1.5 Community and Education

A-M-6: **WiFi in Public Parks**	Urban	Env	Social	Econ	Medium term
			✓✓	✓✓	

Investigate the feasibility of and initiate free WiFi in Public Parks and Open Spaces.
Add value to public parks and open spaces and draw new visitors / users to these spaces through the provision of free wi-fi internet access. Facilitate city visitors and tourists by providing access to city information and adapt without exorbitant costs. The facility could be commenced on a trial basis in a number of city parks/spaces, e.g with the renewal of Avenue Jeanne d'Arc. The initiative could be developed in partnership with a private service provider. See:
http://www.linz.at/hotspot_portal/hotspot_projekt.asp
http://www.paris.fr/pratique/paris-wi-fi/paris-wi-fi-comment-ca-marche/rub_7799_stand_29153_port_17981
It should be noted that such infrastructure (wifi) is increasingly being regarded as an alternative to hard infrastructure and costs associated with various data point services such as security cameras, parking meters etc, and maybe self funding via other service needs.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Establish need and strategy for WiFi roll out. - Develop one pilot site / area.

5.1.6 Economic Development and City Promotion

A-M-7: **Optimise the synergy of quality landscape parks, open spaces, historic city and river, and a centuries old horticultural tradition and industry**	Urban	Env	Social	Econ	Medium term
			✓✓	✓✓	

Investigate the feasibility of holding an annual or biannual horticultural / garden festival with a unique and contemporary angle and attractive to both big name and celebrity designers, the public / tourists and which firmly establishes Angers internationally in the minds of the garden enthusiast and tourist. Rather than reproduce the traditional flower or garden show themes there may be scope for a quite distinctive character and attraction to be created that lasts more than a few weeks e.g. merging garden / horticultural skills with biodiversity, green infrastructure and biodiversity concepts.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville - Communauté d'Agglomération	- Develop and establish festival event

A-M-8: **City marketing and brand/image** Refer to Toolkit Policy E3	Urban	Env	Social	Econ	Medium term
			✓✓	✓✓	

Use the city's landscape, parks and open space heritage – and new plans - to construct and communicate a contemporary and desirable image of the city as a place to visit, live in and invest in.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville - Communauté d'Agglomération	- Promotion programme

A-S-7: **Promote, even at the planning stage, the Banks of The Maine redevelopment project, enhancing awareness of Angers and interest and potential repeat visits over the course of the redevelopment.**	Urban	Env	Social	Econ	Short term
			✓✓	✓✓	

The project brochure refers to precedent cities such as Barcelona in Spain as examples of cities addressing their waterfront etc. It should be noted that perception of and interest in Barcelona changed long before the physical urban renewal programme was complete. There is potential to create interest in the dynamic of change – a happening place.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Promotion programme - Documentary - radio and tv coverage.

A-S-8: **Record the Banks of the Maine redevelopment process**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
			✓✓	✓✓	

This project illustrates some unique mixes of public participation, public vision and creative city planning and urban design. It is particularly striking that a city with so many historic assets should choose to continue to develop and change for the 21st Century and beyond. Examples of this scale of change are usually found in much larger cities. A public record of the process should be developed and maintained in video and documentary form, illustrating the process' undergone, including the political and public participation process, to achieve the ultimate aims.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Promotion programme; - Documentary - radio and tv coverage.

A-S-9: **Bicycle Friendly City Index**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓	✓✓	✓✓	

Informed by a survey of cyclists in the city, conduct an analysis of the 'bicycle friendliness' of Angers making use of the Copenhagenize Index (www.copenhagenize.eu) or a similar method that allows comparison of the results with other cities.
This action should lead to the establishment of a dedicated page on the Angers Loire Metropole City and Community websites to promote cycling and update the index results.

Responsible party/parties:	**Monitoring and Indicators**:
- Angers Ville	- Improving cycling statistics.

5.2 Sustainable Management Action Plan for Limerick

5.2.1 Green Infrastructure Theme

L-L-1: **Green Infrastructure Strategy for Ecosystem Services** Refer to Toolkit Policy UC1	Urban	Env	Social	Econ	Strategic
	✓✓	✓✓	✓✓	✓✓	

Prepare a spatial plan and a programme of policies and actions for the development and management of the parks and green areas as a collective resource and a framework for urban land use. The Green Infrastructure Strategy should focus on the delivery of ecosystem services and should apply the key principles of multi-functionality and connectivity. It should address the urban area, the rural hinterland, and the transition between the two landscapes. The Strategy should recognise the value of, and include policy and actions for, public, institutional and private lands.

Limerick City has already prepared and adopted a Biodiversity Plan. This plan identifies the existing key habitats within the city. This forms a starting point for the development of a green infrastructure strategy subject to identification of the existing or potential other ecosystem services that each area of land / landscape can provide both individually and more importantly collectively as a network. Progressing a GI strategy would benefit from:

- An analysis of existing and potential ecosystem services provided, by the individual components and the collective resource;
- The identification of actions (for urban and rural, public and private lands) to incrementally develop the Ecological Structure (or Green Infrastructure) to achieve its full potential for delivery of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority); - Liaison with neighbouring County Clare where overlap).	- Completion of a green infrastructure strategy and adoption as policy of the Limerick City and County merged authority.

L-S-1: **Spatial Database of Parks and Green Areas** Refer to Toolkit Policy UC2	Urban	Env	Social	Econ	Short term
	✓✓	✓	✓	✓	

Develop the existing spatial (GIS) database of parks and green areas. This should be integrated with the urban land use and development master plan, but maintained by the parks or landscape department of the council. For each space/polygon a range of standard information should be attributed, including functional (ecosystem services), administrative and maintenance requirements.

The Biodiversity plan already prepared by the City Council should be integrated into this database. Ultimately, the ecosystem services information should be gathered for the expanded/merged local authority area, allowing for comprehensive assessment, management and planning of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of a database of parks and green areas and their current and potential ecosystem services within the city area; - Completion of an expended database for the wider urban area of the merged local authority and the rural hinterland.

L-S-2: **Habitat Mapping and Biodiversity Audit** Refer to Toolkit Policy UC6	Urban	Env	Social	Econ	Short term
		✓✓	✓		

Build on the Biodiversity Plan and develop the existing city habitat map (in accordance with a national methodology and classification system) and biodiversity audit of the city (and expanded urban and rural parts of merged authority) area, to inform a strategy for biodiversity protection and development.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of a detailed habitat mapping and biodiversity audit.

L-M-1: **Potential Green Links Study** Refer to Toolkit Policy UC3	Urban	Env	Social	Econ	Medium term
	✓✓	✓✓	✓✓		

Ideally in the context of (a) Green Infrastructure Strategy and (b) an Urban Landscape Character and Legibility Study, conduct an analysis of the urban area to identify requirements and opportunities for the creation of green links between the existing parks and green areas, and the agricultural lands within and around the urban area. Possible green links include restored streams and drainage features, linear parks or strings of pocket parks, greenways/green routes (dedicated non-motorised transport routes), tree lines and 'green streets'. Formulate policies and actions to ensure the realisation of the identified opportunities.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of green links study and opportunities for green links identified; - Length of linear park created; - Length of strings (or number of islands) of pocket parks created; - Length of new tree lines planted; - Length of new greenways built; - Length of stream/s restored to surface flow.

L-M-2: **Strategy for Biodiversity Protection and Development** Refer to Toolkit Policy UC6	Urban	Env	Social	Econ	Medium term
	✓	✓✓	✓		

Ideally in the context of, or as part of a Green Infrastructure Strategy, build on the aims and objectives of the Limerick City Biodiversity Plan and prepare a strategy to both protect and develop biodiversity in the city-region. Identify a benchmark goal to mark the rich existing and enhanced biodiversity value and ecological capital of the city.

The strategy should include measures to increase biodiversity in all environments/landscapes occurring in the city-region, urban (buildings, streets, parks, gardens, cemeteries, institutional and commercial lands, etc.) and rural (farmland and forest), and provide practical guidelines for development and existing develop areas to enhance their biodiversity value.

Although extensive tracts of the river Shannon corridor have high existing ecological designations consider how adjacent areas can expand this value and add to it.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of a biodiversity strategy and adoption as policy by Limerick City Council/merged authority; - Increase in lands dedicated to habitat provision or the quality of those lands; - Measures/features installed and/or management activities altered on existing and new urban development sites for the provision of habitat; - Land management activities on agricultural lands altered for the protection of biodiversity; - Identification of additional biodiversity protection and development areas.

L-M-3: **Commercial & Industrial Landscapes Improvement Strategy and Pilot Project** Refer to Toolkit Policy UC14	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓	✓	

Conduct an analysis (preferably making use of an emerging biotope area factor scheme) of the industrial and commercial estates in the municipality area and develop a generic toolkit for landscape improvements for ecosystem services/sustainability and amenity (e.g. reducing the dimensions of roads and parking areas, planting for biodiversity, green roofs, water attenuation and harvesting, etc.).
Select one site for the implementation of a suite of improvements as a joint pilot project between the City Council and the site owner.
Consider possible mechanisms to encourage site owners to retrofit sites. These might include an environmental award or certification scheme (possibly sponsored by Shannon Development) or financial incentives such a local tax/rates reductions for achievement of ecosystem services targets, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority); - Shannon Development.	- Identification and analysis of all commercial and industrial sites in the municipality area, in terms of a range of ecosystem performance measures informed by the emerging biotope area factor scheme; - Preparation of a toolkit of generic landscape/environmental improvements for commercial and industrial sites; - Selection of a site for a pilot project; - Design and implementation of the pilot project; - Establishment of an environmental (ecosystem services) certification and/or award scheme for commercial and industrial sites.

L-M-4: **Sustainable Parks & Green Areas Management Plan or Environmental Charter** Refer to Toolkit Policy UC15	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓	✓	✓✓	

Develop and periodically review a comprehensive statement of policy and practices for the sustainable management of the parks and green areas of the city. The parks and green areas management plan or environmental charter should be informed by the Agenda 21 project currently underway in partnership with the regional cities.
As well as stating the guiding principles and policies of the municipality it should specify targets/objectives for sustainable management practices (e.g. for minimising usage of water, chemicals, fuel, energy, etc.) and the application of these to the affected parks and green areas. It should thus include individual management plans for various defined categories of space, and for each of the key parks and green areas in the city. Ideally the management plan should be linked to a database of parks and green areas.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of a sustainable parks and green areas management plan and adoption as policy of Limerick City Council; - Annual or bi-annual review of the management plan; - Annual or bi-annual assessment of performance against targets/objectives stated in the management plan, e.g. water usage, chemicals usage, fuel usage, etc.

L-L-2: **Biotope Area Factor (or Ecosystem Services Performance) Factor Scheme** Refer to Toolkit Policy UC12	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓	✓	

Develop a Biotope Area (or Ecosystem Services Performance) Factor scheme whereby the Council identifies ecosystem service performance targets, and measures for their delivery, for lands and/or land use. All proposed developments should then be assessed/scored in terms of their delivery of ecosystem services or their incorporation ecosystem service delivery measures.
The scheme could also be used to assess existing sites or land use, to encourage improvement (through physical measures or management) of inadequately performing lands.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority)	- Establishment of a Biotope Area (or Ecosystem Services Performance) Factor Scheme; - Number of private development proposals/applications subjected to assessment by the scheme; - Number of existing developments/sites subjected to assessment by the scheme.

L-L-3: **Measurement of the Economic Value of Ecosystem Services** Refer to Toolkit Policy E1-4	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Based on international precedents and research develop a methodology and conduct an exercise in estimating the monetary value of the ecosystem services provided by the parks and green areas in Limerick City. The methodology should allow for ongoing measurement/re-calculation to monitor the effectiveness of measures to improve ecosystem services delivery.
The results and predictions should be used to recognise the value of parks and green areas in urban and budgetary planning, set priorities and justify spending on both (a) the maintenance and improvement of existing resources and (b) development of new resources.
A methodology for measuring the economic value of a city's parks and green areas will be a transferrable tool and could be developed as a joint exercise by the Park Atlantic cities, or used by the other cities (Park Atlantic, EU or elsewhere) once developed.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority); - Possibly in partnership with ParkAtlantic partners.	- Completion of the monetary value of the ecosystem services provided by the parks and green areas (including farm and forest lands) in the municipality area.

5.2.2 Drainage and Water Quality Theme

L-M-5: **Sustainable Urban Drainage System Manual** Refer to Toolkit Policy UC11	Urban	Env	Social	Econ	Medium term
	✓	✓✓		✓	

Develop or adopt a comprehensive policy and a manual for sustainable drainage in the urban area. This should identify all of the possible techniques to be applied in public and private developments to minimise or eliminate water discharges from a site and to treat pollution where it occurs. The SuDS manual should include policy on green streets and green roofs. It could be incorporated into the Biotope Area Factor Scheme when developed and SUDS functions integrated with an evolving Green Infrastructure strategy.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority)	- Completion of a sustainable urban drainage systems strategy and adoption as policy of the Limier City Council/ merged new authority; - Completion of a manual identifying and specifying generic SuDS measures/techniques for application by private developers and the municipality. - Number of new developments (private and public) incorporating SuDS measures; - Number/proportion of urban sites achieving specified standards/ limits of water discharge.

L-S-3: **Pilot Green Street Project** Refer to Toolkit Policy UC11	Urban	Env	Social	Econ	Short term
	✓	✓✓	✓	✓	

Conduct an analysis of the city streets to identify those most suitable for conversion to green streets. Identify a street for a pilot project, develop the concept for local conditions, design and implement the city's first retrofitted green street. (See City of Portland Green Streets pamphlet: http://www.portlandonline.com/bes/index.cfm?c=45379&a=209685).

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of an assessment of the streets in the urban area and identification of sections with potential for a green street retrofit; - Identification of a section of road for a pilot green street project; - Implementation of the pilot green street project.

L-M-6: **Pilot Rainwater Collection Scheme** Refer to Toolkit Policy UC11	Urban	Env	Social	Econ	Medium term
	✓	✓✓		✓	

Select a city-owned property comprising buildings and/or hard surfaces of substantial scale close to an extensive landscaped area currently requiring irrigation. Install a rainwater harvesting system on the property and use the collected water to supplement or replace potable water currently used for irrigation. Monitor the performance of the scheme in terms of the reduction in potable water usage, and cost-benefit over an appropriate period of time. Develop a policy on rainwater harvesting for city properties on the basis of the pilot scheme results.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Selection of a city (or institutional) site for a pilot rainwater collection project; - Installation of a rainwater collection and irrigation scheme; - Volume of potable water saved by its replacement with harvested rain water; - Cost benefit assessment of scheme.

5.2.3 Agriculture Theme

L-L-4: **Strategy for Agricultural Lands and the Agricultural Economy** Refer to Toolkit Policy UC10	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓	✓	✓✓	

With the merger of the City and County Councils the authority, as part of its spatial planning and economic development functions, will become responsible for an extensive agricultural landscape both in the environs of the city and the wider hinterland.

The new Council, in conjunction with relevant partners, should prepare a strategy for:

(a) the City Council's support and promotion of the agricultural economy of the county region and

(b) the most advantageous use of the remaining agricultural lands within the urban area.

This should include a vision for agriculture and forestry, which will guide all the decisions and initiatives of the council affecting farming, forestry and the use of agricultural and forest land.

The strategy should seek to create conditions in which rural and urban agriculture will thrive in economic and social terms, minimise the environmental impacts of agricultural and forestry practices, maximise ecosystem services derived from farm and forest land, and reflect and safeguard the agricultural heritage of the area. Amongst other things the strategy should:

- include an identification of any threats to the existing agricultural economy and agricultural lands including urban sprawl;
- include policy protecting agriculture and forest lands (whether currently used or disused) from other land use;
- specifically address the opportunities generated by the disused agricultural lands within and at the edges of the urban area, to avoid the erosion of this resource through uncoordinated urban development e.g. The Coonagh Recreational Framework Plan is an initiative already in place to address ecologically valuable lands with traditional agricultural practices on the edge of the city, The Ile Saint Aubin park in Angers is an excellent example of what can be achieved.
- include policies and actions supportive of the development of a local brand and increased sales of local produce. The existing and potential role of the farm produce markets, and farm-to-fork' outlets, should be considered in this regard;
- identify a land parcel to develop as a model farm displaying traditional and sustainable farming methods (Again ref. Coonagh Recreational Framework Plan and Ile Saint Aubin in Angers)

Consideration should be given to the appointment of a municipal agriculture or countryside officer for the preparation and implementation of the strategy.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority). - Teagasc - Bord Bia - Coillte	- Completion of an agriculture strategy and adoption as policy of the new Council; - Area of agricultural and forest land (whether currently used or disused) lost to other land uses. - Increase in market days; - Increase in market stalls and Increase in market sales; - Establishment of a local brand for farm food and flower products; - Establishment of model farm/agricultural landscape; - Establishment of a farm-to-fork outlet (restaurant).

L-M-7: **Urban Agriculture/Productive Parks (Allotment) Strategy** Refer to Toolkit Policy UC9	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓	✓	

Prepare a policy statement, strategy and an action plan for the provision of allotments for the use of individuals, communities and associations for the production of vegetables, fruit, flowers and materials.
Limerick City Council has a policy to develop and facilitate the availability of allotments for residents. Whilst the Stage 1 report concluded that the widespread ownership or access to private gardens in Limerick housing mitigated against the use of allotments, such land use patterns are also found in many other Irish cities where demand for allotments has been growing rapidly in recent years. Currently in Limerick experience has indicated an interest in Community Gardens rather than individual allotments, and this may evolve. Nothwithstanding these practical issues allotments fulfill a role in social and educational terms that is extremely valuable, providing another venue/place for local communities – young and old - to meet and get to know each other and thus help build the social capital essential for sustainable development.

Allotments require investment to set up and structures for their management, however they can also provide a revenue stream once in place and have attracted the interest of the private sector where lands have little alternative use – such allotments are primarily accessible to those with private transport and will probably come within the councils spatial planning area on merging of the two local authorities.

The strategy could include:
- a study of demand;
- initiatives to encourage demand;
- identification of sites to meet existing and projected future demand;
- programmes for the development and servicing of sites;
- policy facilitating the provision of allotments by private land owners both charitably and as commercial enterprises;
- policy to maximise the range of productive parks projects, i.e. family plots, farm enterprise incubator plots, plots for social inclusion initiatives, community gardens, etc.;
- policy/programmes to promote, encourage and maintain the traditional agricultural heritage of the area.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority). - Educational, Community and other "land-holding" institutions, Private landowners	- Completion of an urban agriculture strategy and adoption as policy; - Launch of an initiative to encourage demand for allotments; - Number of allotment plots provided in the city region (on public and private lands); - Establishment of a municipal office to develop and manage the allotment sites and provide support to allotment users and associations.

5.2.4 Urban Forest and Arboriculture Theme

L-L-5: **Urban Forest Strategy** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓		

Prepare a strategy for the development and management of the Limerick City Urban Forest (the entire tree population in the city-region including natural, heritage and productive forests, trees on farmland and along river corridors, trees in parks, squares and on streets, in private gardens, on institutional lands, commercial and industrial sites and transport corridors).
The strategy should contain policies and actions to (a) ensure the health of the urban forest (applying principles where appropriate such as species diversity, native rather than exotic species, food-producing, balanced age structure, good environmental/growth conditions), (b) grow the forest and (c) maximise its delivery of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of an urban forest strategy and adoption as policy of the City Council; - Increase in tree cover in the municipality area (tree numbers and/or canopy cover); - Measure of species diversity in the urban forest (according to identified ideal); - Proportion of native versus exotic trees.

L-S-4: **Urban Forest Database/Tree Register** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓		

Initiate the preparation of a georeferenced tree database/register to facilitate strategic management of the Urban Forest.
The assistance of the public should be enlisted in this exercise, as a means to obtain as much information as possible (including data on trees on private land) but also to encourage appreciation and ownership of the city's tree resource.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Establishment of a georeferenced (mappable) tree database; - Percentage/number of trees on public lands entered into the database; - Percentage/number of trees on private and institutional lands entered into the database; - Availability of the tree database/map online; - Capacity for public to enter data into the database.

L-M-8: **Urban Forest Development Projects** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓		

Analyse the urban forest database to identify areas where the tree population is relatively sparse or otherwise inadequate (e.g. imbalance in age structure, species diversity, etc.). Formulate and implement projects to address these inadequacies, including street tree planting, parks and green areas development, companion planting for ageing trees, support measures for planting on private lands (tree stock, funding, technical expertise, etc.).
Develop a Limerick urban forest project and engage with the wider community. Identify sites that lend themselves to extensive areas of new woodland planting.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Identification of urban forest development projects/sites; - Number of trees planted in the municipality area (on public and private lands).

L-S-5: **Street Tree (Leafy City) Strategy and Action Plan** Refer to Toolkit Policy UC7, UC8	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓		

There are four thousand street trees in Limerick. The partner cities in France have 11,000 (Pau) and 16,000 (Angers) street trees, significantly enhancing their built environments.

Appropriate street tree planting coupled with skilled management is a relatively fast and effective environmental enhancement that can contribute significantly to a range of positive outcomes from city image (leafy approach roads), to air quality, to CO2 reduction.

A tree database and identification of areas of potential for street tree planting should be prepared as a strategic approach. Potential should address a range of criteria including impact to city image, enhancement of residential amenity, constraints (services etc) and opportunity e.g. planned street improvements or maintenance works. Design intentions for key streets / routes or areas should be agreed.

Street tree planting must be a shared vision to create a leafy green Limerick – of the local authority including roads and services (lighting drainage) departments , as well as the public and contractors so that the presence of trees along the road is regarded as a standard feature rather than the exception and best practice management (pruning) and digging regimes are in place. To this end a series of best practice standard details for tree planting (including size, staking, use of urban tree soils, root barriers etc) should be agreed between the relevant stakeholders. In addition a public information campaign to explain the planting, care and management of trees should be carried out. Trees should be selected for sustainable amenity impact, biodiversity, cultural, even food production reasons, with an agreed management regime identified for the lifetime of the tree / street. Appropriately skilled management personnel should be in place.

At an early stage an approach road or important route to the city, or representative residential area should be identified and a pilot street tree planting project carried out.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority). - Statutory undertakers	- Carry out a pilot street tree planting project; - Agree street tree planting strategy and action plan; - Agree appropriate procedures with other stakeholders; - Carry out a public education programme.

L-M-9: **Native Woodland Species Planting Programme** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓		

Ideally in the context of an urban forest strategy, establish a programme to encourage and support private land owners and householders in the planting of indigenous or locally common / distinctive woodland trees. Support could be in the form of provision of plant stock or funding for their purchase, technical support, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Number of native woodland trees and/or area of woodland forest planted on private lands.

5.2.5 Landscape Amenity Theme

L-S-6: **Landscape Strategy for Limerick City (Parks and Green Areas)** Refer to Toolkit Policy S1, S2, UC5	Urban	Env	Social	Econ	Short term
	✓✓	✓	✓✓	✓	

Limerick has already set out quantitative standards for the provision of recreation and amenity open space. However no qualitative standards have been set out e.g. range of amenities, qualitative characterisation and quality of materials including planting to be used, etc. Nor, other than a hierarchical service function, is it clear the role of a particular park within the wider grouping of parks and green areas. Ideally in the context of a Green Infrastructure Strategy, and informed by national and international best practice the city should prepare a landscape strategy setting out roles and design aims and objectives for parks and green spaces including important streetscapes, built up areas or vacant lands. The strategy should be based on a landscape character assessment of the city and the development of a landscape vision for the city and how each space or element contributes to that ref:
http://www.corkcity.ie/newdevelopmentplan/Landscape%20Strategy.pdf.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of a policy document specifying landscape aims and objectives for the local authority.

L-S-7: **Develop a Design Toolkit for Limerick** Refer to Toolkit Policy S1	Urban	Env	Social	Econ	Short term
	✓✓	✓✓	✓✓	✓	

Limerick has a mild climate but a high cloud cover. Although rainfall at 977mm annually is not excessive by international standards, it is dispersed throughout the year in more continuous rainfall patterns than heavy downbursts. In this regard it has to be questioned how parks should work in such a climate and whether the tried and trusted provision of amenities in parks elsewhere is appropriate or allows optimum use of amenities by the public. It is recommended that a study involving landscape architects, architects, artists and parks professionals as well as potential user groups be initiated to explore what design "toolkit" would optimise park and green space amenity for the city. Such a study could look at approaches and techniques in similarly climatically challenged parts of the world including western Scotland, Scandinavia, western North America – Portland, Seattle and Vancouver – and elsewhere.
As part of this project an appropriate park could be identified as a pilot to test the ideas.

Potential techniques might involve:

- Celebrating rain, designing parks to make features of rain – water courses that work in rain, fun SUDS techniques – dripping features, muddy puddles for kids (or clean ones) etc.
- Engage the wider community in a fun debate about rain and its impact.
- Devise techniques to "brighten" parks through colour and planting that works in all weathers.
- Incorporating shelters or covered walkways in parks as refuges rather than ubiquitous.
- Techniques for creating temporary cover for events e.g permanent structures that can be quickly dressed for events that are threatened by rain.
- Setting out trees and associated vegetation to create dry walkways within parks (double avenues can be very effective)
- Use of more evergreen trees to maintain some rainproofing in winter.
- Devising simple methods to cover key areas such as play areas in full or in part.
- Reviewing the provision of grassed based playing fields which deteriorate quickly or are unusable in heavy rain, and have a limited carrying capacity even in optimum weather conditions. Use of more all-weather pitches with smaller footprints of intensively used land may free up extensive areas of parks for other uses including other desirable amenity buildings, private development generating capital and revenue to fund the more costly all-weather facilities, and woodland creating shelter and habitat.

On completion of the analysis it should be possible to develop a rain- proofing audit check for parks to ensure suitable elements have been incorporated within the park to optimise use under a range of conditions.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Development of a bespoke design toolkit for Limerick City; - Implement a pilot project; - Develop a rain-proof auditing check.

L-M-10: **Urban Landscape Character and Legibility Study** Refer to Toolkit Policy UC5	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓	✓	

Ideally in the context of a Green Infrastructure Strategy, conduct a study to identify the landscape character areas and the characteristics and features that contribute to the city's legibility. Identify opportunities for the enhancement of legibility, for example by strengthening or creating new paths, edges, districts, nodes and landmarks through parks and green areas developments.
Consider especially how the topography of the city and the abundant undeveloped, disused and forested land can be exploited to provide vantage points and landmarks (for example, could a number of sculptural features on the hilltops generate legibility and distinctiveness). Prepare policies and actions for the enhancement of city legibility.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Completion of landscape character and legibility study and opportunities for enhancement identified; - Creation of new vantage points in new open space developments; - Creation of new landmarks in open space developments; - Observable improvement of legibility of paths, edges, districts, nodes.

L-M-11: **Interpretation Pages for City Parks and Green Areas** Refer to Toolkit Policy S4	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓		

Prepare an interpretation page for each of the main city parks and green areas, providing a map, information on the history and design (including materials and construction techniques), access and recreation facilities, and a catalogue of the notable vegetation and wildlife.
Make the interpretation pages available on the city website and in printed form, for the individual parks and squares and in the form of a pamphlet for a walking tour. The pages should be creatively designed to inspire the exploration of the city through the parks and green areas. (For example, see http://www.santiagoturismo.com/parques-e-xardins.).
Use historical and other research to develop the open space and park stories.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Availability of publicly accessible information.

L-M-12: **Develop a Landscape Strategy for the River Shannon Corridor**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓✓	✓✓	

Ref: http://www.thames-landscape-strategy.org.uk/
Bring together the many initiatives and potential initiatives along the river corridor through Limerick City (and County?) and set out a landscape vision to inform projects and their design.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Agreed strategy document.

L-M-13: **Implement the Coonagh Recreational Framework Plan**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓	✓✓	

See Best Practice – Limerick Profile

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Lengths of trails and footpaths created - Numbers and types of visitors

L -M-14: **Develop a Master Plan for a developing amenity at Longpavement Landfill**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓✓		
Although there are significant sub-surface and engineering constraints to its long term use, the role, and aesthetic character of this now disused landfill should be considered when formulating concepts for the River Shannon corridor and in particular north west Limerick.					
Responsible party/parties: - Limerick City Council (and future merged authority).	**Monitoring and Indicators**: - Evolving concepts for role of former landfill.				

L-M-15: **Identify and Implement a Superlative City Garden Project**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓✓	✓	
The Stage 1 report highlighted the absence of a Botanic Garden in the city. Whilst such a project would generate a range of collection, educational and curatorial issues, the absence of horticultural pleasure gardens is clear. Nothwithstanding the extensive areas devoted to parks there is no specific city garden. The French system of open space characterisation specifically uses the term gardens as a category of open space and there are examples in all the partner cities such as Jardin du Mail in Angers where spaces are devoted for pleasurable strolling amongst flowers, shrubs and tree collections and horticultural displays. Such initiatives may receive support from Failte Ireland and Bord Bia in their various tourism and horticultural areas of responsibility. Such projects are not just inherited from previous ages and are not unusual in regeneration cities and similar districts e.g. Garden Festivals throughout UK and Europe, Thames Barrier park, London http://www.london-attractions.info/thames-barrier-park.htm. Such a project could be developed in an existing city centre park, an historic public site associated with the medieval or Georgian city, or on a Greenfield site within one of the regeneration areas – St Mary's Park / Kings Island lends itself well to such a use, possibly at the proposed Verdant Park.					
Responsible party/parties: - Limerick City Council (and future merged authority); - Failte Ireland (Tourism authority).	**Monitoring and Indicators**: - Design and implementation of a city garden.				

5.2.6 Community Participation and Involvement Theme

L-S-8: **Survey of Public Needs and Benefits** **Refer to Toolkit Policy S3, S4**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓	✓✓	✓	
Using the results of the survey conducted for the Parks and Green Areas Study as the initial baseline, establish a routine of assessing the needs of parks and green areas users on a regular basis (e.g. annually or bi-annually) to inform development and management strategies. The survey should establish, for example, how often people use the city's parks and green areas, at what time of day, what they do when visiting, how long they stay, how far they travel, how they travel, context (i.e. dedicated trip, breaks from work, en route somewhere else), changes they would like to see and what it is they value about the parks (and other factors, e.g. neighbourhood identity and quality), response to trialled maintenance regimes (e.g. wildflower meadows), etc.					
Responsible party/parties: - Limerick City Council (and future merged authority).	**Monitoring and Indicators**: - Annual or bi-annual survey of parks and green areas users.				

L-S-9: **Implement the Teenage Space Policy Including Two Pilot Projects**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓	✓✓	✓	
Develop a strategy and action plan for delivering teenage spaces. Identify and implement 2 pilot projects.					
Responsible party/parties: - Limerick City Council (and future merged authority).	**Monitoring and Indicators**: - Strategy and action plan to deliver "teenage spaces"; - Develop two pilot projects.				

L-M-16: Develop Community Participation Structures Refer to Toolkit Policy S3, S4	Urban	Env	Social	Econ	Medium term
	✓	✓	✓✓	✓	

Develop public participation processes and involve citizens in decision making about their place or area. Develop participation in Area Committees and SPCs as a vehicle for the local authority professional staff to engage with local communities on an ongoing basis and thus build trust, a relationship and mutual understanding of technical and other issues/constraints and local priorities/problems.

Such structures in the partner cities are across the council areas of service and have taken a number of years to establish and work. Parks, green areas and associated amenity and recreation issues could provide an initial pilot basis for introducing such a new structure whose area of competence could be expanded beyond this area if successful.

Use existing experienced community development personnel from the City Council to manage such structures.

The Council should prepare a charter to formalise the city's policy on communication with citizens and visitors about parks and green areas, and on the processes to facilitate community participation in parks and green areas management. The communication strategy should seek to enhance the understanding and appreciation of the resources, inform citizens and visitors about the development and maintenance activities of the authority, and promote the facilities and events to encourage greater use.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Establishment of district community participation structures across the city.

5.2.7 Management, Resourcing and Investment Theme

L-S-10: **Develop a Strategic Vision/Goal for Parks as Part of the Wider Limerick City Council Services**	Urban	Env	Social	Econ	Short term
	✓✓	✓	✓✓	✓✓	

It is essential that the role of parks and green areas in the merged local authority and within the wider Limerick Regeneration programme is developed and articulated. Their role in city marketing, brand and image is fundamental to changing perceptions and putting forward positive stories, particularly in relation to quality of life, at a relatively affordable cost. Parks and green spaces have been part of a city's fabric and "attractiveness" for hundreds if not thousands of years. They are not an optional and functional extra providing the minimum service of sports pitches but should fulfil a wider range of functions from ecological to aesthetic.

There is an opportunity to focus on landscape development and the creative potential therein. Various actions with this plan envisage the creation of a "green and beautiful city", a "green and leafy city", a "socially inclusive city", a "child and parent friendly city" and an "active healthy city". There is huge potential to optimise the synergy of the existing regeneration initiatives with a quality parks and open spaces system, the historic city and river, strong sporting tradition, educational institutions (UL, Mary Immaculate College and LIT) and Limerick as a home of major national institutions e.g Lyric FM

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority); - Shannon Development.	- Develop a strategic vision and goal and implement.

L-S-11: **Optimise Synergy in Initiatives to Develop City Attractiveness and Brand/Image** Refer to Toolkit Policy E3	Urban	Env	Social	Econ	Short term
	✓✓	✓	✓✓	✓✓	

There is huge potential to optimise the synergy of the existing regeneration initiatives with a quality parks and open spaces system, the historic city and river, strong sporting tradition, and educational institutions.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority); - Shannon Development.	- Ensure top level integration of these initiatives.

L-M-20: **Professional Landscape and Parks/Green Areas Capital Works and Management Team**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓✓	✓✓	

Develop the optimum model of staffing and skills required to take forward the landscape vision and this action plan. The action plan puts a strong emphasis on design and development of existing and new parks and open spaces within the city. Structures such as a "Parks Capital Projects Team" (ref: Cork City Council Environment and Recreation Directorate), ideally design led, should be put in place with a focus on the development of new projects and improvements, and to complement the parks management team and their existing commitments. Resource issues to consider include:

- Appropriate management capacity in landscape design, horticulture and arboriculture, as well as operative teams on the ground.
- In the context of current recruitment restrictions, external procurement of management and design of new works,
- Enhanced function as employer's representative where procuring external consultancy support.
- Examination of various special purpose to deliver programmes or projects whilst developing the long term capacity and structures necessary within the parks service e.g. charitable trust organistions such as the UKs Groundwork Trust http://www.groundwork.org.uk/default.aspx including the involvement of volunteers and community groups. Such structures can sometimes attract funding unavailable to public bodies from philanthropic and other sources.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Review models to deliver this action plan and consider resources and staffing in an entrepreneurial manner to devise mechanisms for delivery and identify funding opportunities, whilst investing in a long terms and sustainable parks and Green areas service.

L-M-21: **Promote City Landscape Initiatives**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓✓	✓✓	

Promote, even at the planning stage, the city urban renewal and landscape projects, enhancing awareness of Limerick, positive images and the Creative City goal. This should seek to achieve national coverage, building on the success of the limerick.ie website, e.g. http://www.limerick.ie/living/localinformation/limerickcityremodellingprojects/williamstreetsarsfieldstreetpublicrealmenhancementscheme/.
The process and story of change is a product in itself and a potential "draw" to a happening city. It is not necessary to wait until works are completed to tell this story.

Responsible party/parties:	**Monitoring and Indicators**:
- Limerick City Council (and future merged authority).	- Changed image / profile of the city incorporating the green city image built around its parks and green spaces.

5.2.8 Immediate Actions for Limerick

In general to take forward the action plan above, in Limerick, requires a significant prioritisation of parks, open space and landscape issues as part of the city development and regeneration plans. It would also require upgrading and enhancing of the management and delivery capacity of the parks department within the city council to *at least* reflect the capacity of partner cities, which do not face the same challenges as Limerick in delivering a parks system and service.

It is generally good practice to be seen to achieve things whilst considering more strategic initiatives and in recognition of the current practical constraint and at the request of Limerick City Council, the following list of actions and pilot projects is proposed which can be taken forward immediately with little additional investment and early perceived results. Many of the proposals are initial steps in building the wider strategies or action plan.

- Urban and Street Tree Project – Greening Limerick
  Identify locations where trees would articulate important segments of the city (the city's morphology), have a significant visual impact and not conflict with other programmes,
  - major entrances / approaches to the city e.g. stretches of the Ennis Road and Ballysimon Road
  - water fronts / canal and riverside walks, and in the vicinity of key cultural/ historic structures, and areas in the city.
  - Residential areas which would benefit.
  - New developments / highway and other initiatives already planned

  Prepare a tree planting masterplan / scheme for each identified site. The plan would determine the segments which would most benefit in the immediate future from tree planting. The plan would set out standards for planting (tree size at planting, planting depths, soils, amelioration e.g. urban tree soils, fertilizing, water management, spacing, species selection, and future management. Liaison with sub-surface and overground service providers would be important at this design stage.

  Identify a list of trees most suitable to Limerick conditions and character and select from this.

  Prepare a management plan for each tree scheme. The plan would include a specification for management of trees where there are over- head wires to optimise development, form and contribution of tree to streetscape. This should involve negotiation with the ESB re its tree pruning programmes.

  The above initiative could be commenced in the coming planting season with a few high profile locations selected and large tree stock used – (heavy standard (16-18cm girth, 4m height) minimum size. This could be an initiation into the more long term programme of developing an urban forestry system for the city, in accordance with the best practice guidelines.

  It would be important to employ an arboriculturalist as a consultant or in-house to advise on the programme.

  The benefits of existing tree planting could also be maximised by reviewing the current pruning and tree management regime in the city with a view to allowing trees grow and develop to achieve their optimum shape and form.

  Publicise the scheme and educate the public as to what is being done and why.

- Capitalise on Limerick 's Waterside setting
  Identify all areas of the city and surroundings associated with water. Prepare a comprehensive plan to make the water visible and, where feasible/ accessible. This may involve clearing vegetation, crown lifting trees or other actions to open views to the river amenity.

e.g. O'Connell Avenue runs for several hundred metres along the north western bank of the Shannon, however the river is not visible for the road user. Rotating management of riverside trees and vegetation could open up views of the river along the corridor, with due regard to ecological considerations. This would derive added value from the river in its contribution to the character and quality of the city landscape (this proposal is already contained within the Coonagh Recreational Framework Plan).

Publicise the scheme and educate the public as to what is being done and why.

- Develop masterplans for 1-2 individual parks outside the central city area
  There is a need to start changing and enhancing parks throughout the city to provide the widest level of amenity and value. Notwithstanding the need to develop long terms open space strategies, select 1-2 open spaces for the development of masterplans involving participation/consultation with local communities, e.g. Kennedy Park in the south east of the city, Garryowen/Caherdavin east of the central area.

  - Commission and appoint landscape architect led design teams.
  - Initiate capacity building with local community to understand the potential of their parks.
  - Develop a project brief with the local community.
  - Develop a masterplan with costing. Assess how the project can be funded – special grants, sponsorship or even partial development generating a project budget.
  - Ensure certain elements of the project can be taken forward by existing or local resources e.g. the Limerick Civic Trust or similar social economy initiative to allow early commencement of physical works.
  - Publicise the scheme and educate the public as to what is being done and why.

- Community and Stakeholder Participation
  Build on and consolidate existing community partnerships. Work with the Limerick Biodiversity Network and engage with other complementary programmes – Arts, Civic Trust to build synergy of actions and a community infrastructure to work with. The City of Culture in 2014 and the busy arts and cultural community within the city provide a potential focus for such an endeavour.

  With the evolving community network develop a community garden or allotment site as a pilot project illustrating a means of using left over, underused land effectively. Identify all areas of the city with open spaces where these open spaces could be converted into orchards, community gardens or allotments. Set up a programme of engaging local communities in the process and provide active encouragement to them to manage such a programme. Prepare a plan for the city on that basis.

  Consider developing a voluntary extension of the existing park ranger service.

- Maximise value and cost effectiveness of existing green space
  Identify all open spaces currently under grass which could be converted into wild flower meadows.

  Map all open spaces in the city irrespective of size and identify how some of these spaces could be linked.

  Publicise the scheme and educate the public as to what is being done and why.

- Shannon / Lough Derg Trail
  Develop the concept of a long distance Shannon Trail, building on the existing Lough Derg trail, with an Environment centre and a start/end point or hub in Limerick.

- Play initiatives
  Appoint design consultants to develop playground models that don't rely on equipment but can be developed with labour, earth moving equipment and natural or found materials – see:

  - http://www.naturalplaygrounds.com/index.php
  - http://www.naturalplaygrounds.ca/
  - http://www.naturalplaygrounds.info/index.htm
  - http://playgrounddesigns.blogspot.ie/2008/03/are-natural-playgrounds-better.html
  - Alleé du Grand Servial, Lac de Maine.

  Involve allied creative professionals such as landscape architects, artists, horticulturalists, and engineers to create exemplary "natural" playgrounds.

  Identify 1-2 suitable pilot locations. Roll out the scheme in other parks and green spaces throughout the city.

  Publicise the scheme and educate the public as to what is being done and why.

- Seating
  As with the natural playground model use simple built-in (walls) or found materials (boulders / logs – carved or as found) to provide seating in parks where resources are limited and/or "robustness" is a necessity.

- Management and Professional Development
  As well as the project partners establish a link with other city parks departments in Ireland – Dublin, Cork and Belfast – with a view to secondments, shared learning, training and related opportunities.

  Join the Parks Professional Network (ref M Hannon in South Dublin County Council) for seminars, information sharing etc.

  Procure Landscape Architectural advice and experience to complement existing horticultural, management and community development skills, and to advise on the development of a Parks Capital Projects Programme and general parks/green area/open space design and development.

  Set up a joint working team or, in advance of any restructuring expected with the merger of city and county, a shadow integrated department between Parks, Recreation and Arts creating a synergy between related services within the City Council. This will allow development initiatives by any partner to be supported / reinforced by the other partners.

  Set up a liaison team with transport and infrastructure to discuss and develop models for streetscape improvements outside the main regeneration initiatives.

5.3 Sustainable Management Action Plan for the Communauté d'Agglomération de Pau-Pyrénées

5.3.1 Green Infrastructure Theme

P-L-1: **Green Infrastructure Strategy for Ecosystem Services** Refer to Toolkit Policy UC1	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Prepare a spatial plan and a programme of policies and actions for the development and management of the parks and green (and blue) areas as a collective resource and a framework for urban land use in the city-region. The Green Infrastructure Strategy should focus on the delivery of ecosystem services and should apply the key principles of multi-functionality and connectivity. It should address the urban area, the rural hinterland, and the transition between the two landscapes. The Strategy should recognise the value of, and include policy and actions for, public, institutional and private lands.
The Green Infrastructure Strategy should be prepared at the level of the Communauté d'Agglomération, beneath and complementary to the Schema Coherence Territoriale and Trame Verte et Bleu. It should be prepared so as to allow for more detailed planning and implementation at Commune level.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Completion of a green infrastructure strategy and adoption as policy of the Community.

P-M-1: **Spatial Database of Parks and Green Areas** Refer to Toolkit Policy UC2	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓	✓	

Develop and maintain a spatial (GIS) database of ecosystem services provision for the Community area, linked to the land use plan including parks and green areas. This should follow an initial habitat mapping study and biodiversity audit – see P-M-2 below.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées; - Conservatoire Espaces Naturels d'Aquitaine.	- (Following completion of a habitat mapping study and biodiversity audit), completion of a spatial database of ecosystem services provision.

P-S-1: **Potential Green Links and Sustainable Mobility Study** Refer to Toolkit Policy UC3	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓✓		

Ideally in the context of Green Infrastructure Strategy conduct an analysis of the urban area to identify requirements and opportunities for the creation of green links to increase the connectivity of parks and green areas and the agricultural lands within and around the urban area. **For example** consider:

- A western link between the parc Beaumont and the villa Saint-Basil's, continuing to the Ousse River; and a southern link between the parc Beaumont and the Ousse river by pedestrian footbridges on the rue Léon Say, continuing to the Gave de Pau/PNU along the canal through the disused industrial zone;
- A pedestrian footbridge from the Boulevard des Pyrénées over Avenue Jean Biray and the railway line to the Gave (this could be a flagship project for the city);
- An east-west greenway along the Ousse-des-Bois/Oussere de Sendets to the east and Lescar to the west.

Combine this study with an analysis of the city-region's infrastructure for walking, cycling and other non-motorised modes of transport to identify gaps or deficiencies restricting the **shift to sustainable mobility**. Formulate policies and actions to ensure the realisation of the identified opportunities.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées; - Communes de l'agglomeration.	- Completion of green links study and opportunities for green links identified; - Length of linear park or other green links created; - Length of new greenways built/extension of dedicated pedestrian and cycle routes achieved.

P-M-2: **Strategy for Biodiversity Protection and Development** Refer to Toolkit Policy UC6	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓	✓		

Ideally in the context of, or as part of a Green Infrastructure Strategy prepare a strategy for the protection and development of biodiversity in the city-region with a view to halting the deterioration of status of species and habitats and achieving measurable improvements by 2020, in accordance with EU biodiversity policy.

The strategy should be prepared following a **habitat mapping study and biodiversity audit** of the Community area.

The strategy should include measures to increase biodiversity in all environments/landscapes occurring in the city-region, urban (buildings, streets, parks, gardens, cemeteries, institutional and commercial lands, etc.) and rural (farmland and forest).

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Completion of a biodiversity strategy and adoption as Community policy; - Increase in lands dedicated to habitat provision; - Measures/features installed and/or management activities altered on existing and new urban development sites for the provision of habitat; - Land management activities on farm and forest lands altered for the protection of biodiversity; - Status of protected habitats and species in the municipality area.

P-S-2: **Differential Management Plan for Parks and Green Areas** Refer to Toolkit Policy UC15	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓✓	✓	✓	

Develop a methodology of differential management/maintenance of parks and green areas depending on their differing uses, type/character and location/context (i.e. depending on their designated functions or ecosystem services), in order to focus interventions/resources on those sites of a more horticultural character while minimising maintenance interventions on the more natural sites.

As part of this process conduct research to identify more sustainable maintenance techniques to minimise water usage, chemical usage and carbon emissions, and maximise the re-use of waste.

The preparation of the differential management plan will require the following tasks to be completed:

- Develop a method of categorisation of the parks and green areas of the city (taking account of usage, physical characteristics, natural and cultural heritage features/processes, environmental constraints/risks, etc.);
- Identify maintenance classes among the categories of parks and green areas;
- Define the maintenance requirements/techniques for each of the classes, and use these to prepare maintenance plans specific to each park and green area in the city. Each plan should be defined in consultation with the local community and/or users;
- Establish a training programme to educate the maintenance staff in the differential techniques and plans;
- Implement a communication plan to inform the city residents of the management plan.

(For advice on this action refer to the landscape division of Angers which has a well developed system of parks and green areas classification for maintenance and costing.)

Responsible party/parties:	**Monitoring and Indicators**:
- Ville de Pau; - Autres communes de l'agglomération.	- Completion of a study categorising the parks and green areas for maintenance purposes; - Completion of a review of maintenance practices and techniques to enhance sustainability; - Completion of a differential management/maintenance plan for all parks and green areas in the city; - Number of maintenance personnel trained in the new system; - Number and cost of communication actions taken; - Area/number of spaces under new maintenance regime.

P-L-2: **Biotope Area Factor (or Ecosystem Services Performance) Factor Scheme** Refer to Toolkit Policy UC12	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓	✓	

Develop a Biotope Area (or Ecosystem Services Performance) Factor scheme whereby the planning authority identifies ecosystem service performance targets, and measures for their delivery, for lands and/or land use. All proposed developments should then be assessed/scored in terms of their delivery of ecosystem services or their incorporation ecosystem service delivery measures.

The scheme could also be used to assess existing sites or land use, to encourage improvement (through physical measures or management) of inadequately performing lands. This might require a related incentive scheme, for example a certification or local tax/rate reduction, awarded for the achievement of a certain factor.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Establishment of a Biotope Area (or Ecosystem Services Performance) Factor Scheme; - Number of private development proposals/applications subjected to assessment by the scheme; - Number of existing developments/sites subjected to assessment by the scheme.

P-M-3: **Commercial & Industrial Landscapes Improvement Strategy and Pilot Project** Refer to Toolkit Policy UC14	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓	✓	

Conduct an analysis (ideally in the context of a Green Infrastructure Strategy and making use of an emerging Biotope Area Factor Scheme) of the industrial and commercial estates in the Community area and develop a generic toolkit for landscape improvements for ecosystem services and amenity. (Generic landscape improvements might include reducing the dimensions of roads and parking areas, planting/ maintenance for biodiversity, green roofs, water attenuation and harvesting, etc.).

Select one site for the implementation of a suite of improvements as a joint pilot project between the Community and the site owner.

Consider possible mechanisms to encourage site owners to retrofit sites. These might include an environmental award or certification scheme or financial incentives such local tax/rates reductions for achievement of ecosystem services targets, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Identification and analysis of all commercial and industrial sites in the Community area, in terms of a range of ecosystem performance measures informed by the emerging biotope area factor scheme; - Preparation of a toolkit of generic landscape/environmental improvements for commercial and industrial sites; - Selection of a site for a pilot project; - Design and implementation of the pilot project; - Establishment of an environmental (ecosystem services) certification and/or award scheme for commercial and industrial sites.

P-L-3: **Measurement of the Economic Value of Ecosystem Services** Refer to Toolkit Policy E1-4	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Based on international precedents and research develop a methodology and conduct an exercise in estimating the monetary value of the ecosystem services provided by the parks and green areas in the Community area. The methodology should allow for ongoing measurement/re-calculation to monitor the effectiveness of measures to improve ecosystem services delivery.

The results and predictions should be used to recognise the value of parks and green areas in urban and budgetary planning, set priorities and justify spending on both (a) the maintenance and improvement of existing resources and (b) development of new resources.

A methodology for measuring the economic value of a city's parks and green areas will be a transferrable tool and could be developed as a joint exercise by the Park Atlantic cities, or used by the other cities (Park Atlantic, EU or elsewhere) once developed in Pau- Pyrénées.

Responsible party/parties: - Ville de Pau- Pyrénées; - Possibly in partnership with Park Atlantic partner cities.	**Monitoring and Indicators**: - Completion of the monetary value of the ecosystem services provided by the parks and green areas (including farm and forest lands) in the municipality area.

5.3.2 Drainage and Water Quality Theme

P-M-4: **Sustainable Urban Drainage System (SuDS) Manual** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓		✓	
Develop or adopt a comprehensive policy and a manual for sustainable drainage (SuDS) in the urban area. This should identify all of the possible techniques to be applied in public and private developments to minimise or eliminate water discharges from a site and to treat pollution where it occurs. The SuDS manual should include policy on green streets and green roofs. It could be incorporated into the Biotope Area Factor Scheme when developed.					
Responsible party/parties: - Communauté d'Agglomération de Pau-Pyrénées.	**Monitoring and Indicators**: - Completion of a sustainable urban drainage systems strategy and adoption as policy of the Community; - Completion of a manual identifying and specifying generic SuDS measures/techniques for application by private developers and the municipality. - Number of new developments (private and public) incorporating SuDS measures; - Number/proportion of urban sites achieving specified standards/ limits of water discharge.				

P-S-3: **Green Street Strategy** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓✓	✓	✓	
Conduct an analysis of the city streets to identify and those that are technically suitable for conversion to green streets. (Make use of the research and design undertaken for the first green street retrofit of the Rue du Parc in Pau.) Having identified the streets that meet the technical requirements develop a strategy for their redevelopment. In developing the strategy consider the development of a 'green street quarter' where the area's ecosystem services delivery could be measured against a comparable area of ordinary streetscape treatment.					
Responsible party/parties: - Communauté d'Agglomération de Pau-Pyrénées; - Communes de l'agglomeration.	**Monitoring and Indicators**: - Completion of an assessment of the streets in the urban area and identification of sections with potential for a green street retrofit; - Identification of a prioritised list of green street retrofit/development projects; - Length of city streets converted to green street.				

5.3.3 Agriculture Theme

P-L-4: **Strategy for Agricultural Lands and Agricultural Economy** Refer to Toolkit Policy UC10	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓	✓	✓✓	

Ideally in the context of a Green Infrastructure Strategy prepare a strategy for (a) the Community's support and promotion of the agricultural economy of the city-region and (b) the most advantageous use of the remaining agricultural lands in the urban area. This should include a vision for agriculture and forestry, which will guide all the decisions and initiatives of the Community affecting farming, forestry and the use of agricultural and forest land.

The strategy should seek to create conditions in which rural and urban agriculture will thrive in economic and social terms, minimise the environmental impacts of agricultural and forestry practices, maximise ecosystem services derived from farm and forest land, and reflect and safeguard the agricultural heritage of the area. Amongst other things the strategy should:

- include an identification of any threats to the existing agricultural economy and agricultural lands including urban sprawl;
- include policy protecting agriculture and forest lands (whether currently used or disused) from other land use;
- address the opportunities generated by the disused agricultural and forest lands within and outside of the urban area to avoid the erosion of this resource through uncoordinated urban development.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Completion of an agriculture strategy and adoption as policy of the Community; - Area of agricultural and forest land (whether currently used or disused) lost to other land uses.

P-M-5: **Strategy for Use of Residual Agricultural Land in Le Hameau District** Refer to Toolkit Policy UC9	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓	✓✓	

In advance of or in parallel with a city-wide urban agriculture strategy conduct a public and stakeholder consultation exercise in the preparation of a plan (or various scenarios) for the future use of nine residual agricultural plots totalling 11ha in the Le Hameau district. Consideration should first be given to protection of their agricultural use – as individual plots or as a collective, and thereafter to multi-site mixed use development or at least a masterplan or scheme for their coordinated development.

Responsible party/parties:	**Monitoring and Indicators**:
- Ville de Pau.	- Completion of a study of scenarios for use of the residual agricultural lands in Le Hameau; - Selection of a strategy for use of the lands.

P-M-6: **Urban Agriculture/Productive Parks Strategy** Refer to Toolkit Policy UC9	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓	✓	

Ideally in the context of an agriculture strategy for the city-region and building on the success of numerous existing projects, prepare a policy statement and action plan for the provision of further facilities for urban agriculture. The strategy could include:communications theme

- Determination of existing and predicted future demand, and initiatives to encourage demand;
- Identification of sites to meet existing and projected future demand;
- Programmes (developed in partnership with CIVAM) for the development and servicing of sites, and for the provision of support services for users.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées; - Communes de l'agglomeration; - CIVAM.	- Completion of an urban agriculture strategy and adoption as Community policy; - Identification of sites to meet existing and projected future demand; - Number of new allotments, community gardens and other urban agriculture facilities provided in the city region.

5.3.4 Urban Forest and Trees Theme

P-M-7: **Urban Forest Strategy** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓		

Prepare a strategy for the development and management of the Pau-Pyrénées Urban Forest (the entire tree population in the city-region including natural, heritage and productive forests, trees on farmland and along river corridors, trees in parks, squares and on streets, in private gardens, on institutional lands, commercial and industrial sites and transport corridors).
The strategy should contain policies and actions to (a) ensure the health of the urban forest (applying principles such as species diversity, native rather than exotic species, balanced age structure, good environmental/growth conditions), (b) grow the forest and (c) maximise its delivery of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Completion of an urban forest strategy and adoption as policy of the Community; - Increase in tree cover in the Commuity area (tree numbers and/or canopy cover); - Measure of species diversity in the urban forest (according to identified ideal); - Proportion of native versus exotic trees.

P-M-8: **Urban Forest Database/Tree Register** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓		

Initiate the preparation of a georeferenced tree database/register of the entire Community area to facilitate strategic management of the Urban Forest. (A register of the trees on public lands in the Pau commune already exists. This should be expanded to cover private lands and the surrounding communes.) The assistance of the public should be enlisted in this exercise as a means to obtain as much information as possible (including data on trees on private land) but also to encourage appreciation and ownership of the city's exceptional tree resource. The database should be made available online.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Establishment of a georeferenced (mappable) tree database; - Percentage/number of trees on public lands entered into the database; - Percentage/number of trees on private and institutional lands entered into the database; - Availability of the tree database/map online; - Capacity for public to enter data into the database.

P-M-9: **Urban Forest Development Projects** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓		

Analyse the urban forest database to identify areas where the tree population is relatively sparse or otherwise inadequate (e.g. imbalance in age structure, species diversity, etc.). Formulate and implement projects to address these inadequacies, including street tree planting, parks and green areas development, companion planting for ageing trees, support measures for planting on private lands (tree stock, funding, technical expertise, etc.).

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Identification of urban forest development projects/sites; - Number of trees planted in the municipality area (on public and private lands).

5.3.5 Landscape Amenity Theme

P-S-4: **City-wide Landscape Strategy** Refer to Toolkit Policy UC1, S1	Urban	Env	Social	Econ	Short term
	✓✓	✓✓	✓✓	✓✓	

Preferably as part of a city-wide green infrastructure strategy, prepare a strategic landscape plan to enhance the amenity and legibility/coherence of the city. The strategy should:

(a) identify the key landscape character areas/districts, gateways, corridors, nodes and landmarks in the city that contribute to (or have the potential to contribute to) the character and quality of the city landscape;

(b) identify policies or actions that would enhance the amenity function/value of each of these landscape elements or groups of elements. This could include landscape development (planting and management) strategies for the identified gateways and corridors to the city - refer to the Angers Schema Directeur des Amenagements Paysagers des Vois Publiques.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Completion of a city-wide landscape strategy and adoption as policy of the Community.

P-S-5: **Reassessment and Extension of the Horizons Palois**	Urban	Env	Social	Econ	Short term
	✓✓		✓	✓	

Building on the 1994 study of the horizons palois on behalf of the Aquitaine DIREN (Ministry of the Environment) and the more recent recommendations of the Aquitaine DREAL (National Environment Agency) under the Schema de Coherance Territoriale, identify the landscapes beyond the currently protected 367 ha (all within the foreground of the view from the city) that contribute to the character and quality of the view south from the city.

Consider the vulnerability of these lands to change and explore methods to protect them, including spatial extension of the horizons palois listing or alternative planning measures.

As part of this study explore options for the realignment of the Jurançon hillsides hiking trail, to minimise the adverse effect of recent unsympathetic development in the hillsides and maximise the amenity and cultural value of the route.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Completion of a study to identify lands beyond the existing horizons palois listing requiring protection against unsympathetic development; - Development of a mechanism to ensure the protection of these lands; - Identification of a new alignment for the Jurançon hillsides hiking trail; - Development of the new Jurançon trail; - Promotional campaign for the new trail.

P-M-10: **Re-imagining and Redevelopment of the Place de Verdun** Refer to Toolkit Policy S1, S3	Urban	Env	Social	Econ	Medium term
	✓✓	✓	✓✓	✓	

In partnership with the public and stakeholders, initiate an exercise in reimagining the Place de Verdun, to make optimal use of its key characteristics including its size, central location, its history as part of the Haute Plante of the castle gardens, and its relationship with the Bernadotte barracks. The project should consider amongst other things the removal of the car park function to an underground facility, diversifying its functions and improving amenity value, re-creation of the historic canals that were a feature of the Haute Plante, improved interpretation, etc.

Following selection of a preferred design option, obtain funding for the development and progress towards implementation.

Responsible party/parties:	Monitoring and Indicators:
- Ville de Pau.	- Completion of a study, with public consultation including an exhibition of design options, to re-imagine the Place de Verdun; - Selection of a preferred option; - Obtain funding for development; - Detail design and implementation.

P-S-6: **Gave de Pau/PNU Urban Environs Improvement Scheme**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓	✓	

The Gave de Pau Urban Natural Park (PNU) will soon be completed and will achieve significant nature conservation and recreation objectives for the PNU area. A study should be undertaken to identify ways in which the city and particularly the adjacent urban environment (land use, buildings, streets, open space) and communities can derive maximum benefit from the project.
For example, the feasibility of creating a pedestrian and cycle connection between the rue du Soust and PNU upstream to the bridge of XIV JULY, and developing the street Louise Michel for green link access to the PNU, should be assessed.

Responsible party/parties:	Monitoring and Indicators:
- Communauté d'Agglomération de Pau-Pyrénées.	- Definition of a Gave de Pau/PNU urban character area, and assessment of the area for complementarity with the PNU; - Identification of measures to maximise the benefits to the adjacent communities from the PNU (e.g. through improved physical and visual access); - Implementation of identified measures.

P-S-7: **Saragosse District Landscape Improvement Measures**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓		✓		

With the participation of the residents, design and implement a series of general and specific landscape improvement measures in the Saragosse district, in line with the recommendations of the Urban Parks Study. (Despite the recognised assets of the Saragosse district, notably the tree heritage and the Parc Saragosse, a large number of weaknesses were identified in the Urban Parks Study.)

Responsible party/parties:	Monitoring and Indicators:
- Ville de Pau.	- Preparation of a landscape improvement strategy identifying and prioritising actions/measures; - Implementation of landscape improvement measures.

P-S-8: **Toulet HLM Housing Landscape Regeneration Plan**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓		✓		

In partnership with the residents, and providing all necessary support to encourage their participation, conduct a planning and design exercise for the regeneration of the Toulet HM housing complex. With an overriding aim of lifestyle enhancement, ensure that certain key issues are addressed including (a) boundary treatment, (b) definition and protection of private, semi-private and semi-public open space, (c) definition of open space functions/ecosystem services and (d) amenity enhancement.

Responsible party/parties:	Monitoring and Indicators:
- Office Palois de l'Habitat; - Ville de Pau.	- Preparation of a landscape improvement strategy identifying and prioritising actions/measures; - Implementation of landscape improvement measures.

P-S-9: **Restoration Programme for Parc Beaumont**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓	✓	

Based on the studies carried out by Francois Baros in 2002 and Jean Pierre Bombaut in 2012, prepare a restoration and redevelopment programme for Parc Beaumont. The programme should address a range of issues including (a) the restoration of the paths (and associated resolution of drainage issues), (b) renewal of the ageing tree stock, striking a balance between the exotic vegetation heritage and maximising the park's habitat value, (c) maintenance of views in and out of the park, including consideration of boundary hedge planting to block detracting elements from view (or removal of those elements, e.g. concentration of parking into a single area).

Responsible party/parties:	**Monitoring and Indicators**:
- Ville de Pau.	- Completion of a restoration programme comprising prioritised landscape improvement actions; - Implementation of identified measures.

P-M-11: **Restoration/Improvement Programme for Parc Lawrance**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓	✓	

Conduct an analysis of the Parc Lawrence to identify measures that can be taken to improve the amenity value and the ecosystem services delivered by the park while respecting its historic integrity. This should include an assessment (by survey and/or facilitated user analisys) of the needs of the local community and the schools, which make use of the park. Informed by the analysis prepare a landscape improvement programme for the park.

Responsible party/parties:	**Monitoring and Indicators**:
- Ville de Pau.	- Completion of an analysis of the park in terms of amenity value (social functions), other ecosystem services and historic integrity; - Completion of a survey or facilitated user analysis of user needs including local schools; - Preparation of a programme of landscape restoration/improvement actions; - Implementation of programme.

P-S-11: **Restoration and Maintenance Programme for the Castle Gardens**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓	✓	

Prepare a plan for the restoration and maintenance of the Castle Gardens focussing on the reconstitution of the path surfaces and drainage system, to avoid further issues of erosion. The plan should also address the upkeep of the forests and the maintenance of 'windows' through the forest for appreciation of the views. (The Castle and grounds are in ownership of the State and therefore not the responsibility of the Community; however the Community may encourage the relevant ministry/agency to take action.)

Responsible party/parties:	**Monitoring and Indicators**:
- Ministry of Culture and Communication, Directorate General of Heritage.	- Completion of a restoration and maintenance programme for the Castle Gardens; - Implementation of the programme.

P-M-11: **Supplementary Landscape Improvements for the Le Hameau District**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓	✓	

Prepare and implement plans for a number of landscape interventions to supplement the ongoing regeneration of the Le Hameau district, including:

- Rearrangement of the streetscapes of Boulevard de la Paix, Boulevard d'Hauterive and Avenue de Loup (and other busy thoroughfares), to provide a footpath separated from the road by a hedge as well as lines of trees.
- Construction of small, friendly spaces at crossroads close to shops, bus stops, etc. with planting to define and identify the place.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées; - Ville de Pau.	- Preparation of plans for streetscape improvements; - Implementation of streetscape improvements.

P-M-12: **Standards for Provision and Development of Parks and Green Areas** Refer to Toolkit Policy S1, S2	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓✓	✓	

Ideally in the context of a Green Infrastructure Strategy, and informed by national and international standards, develop quantitative and qualitative standards for the provision of parks and green areas in the municipality area (e.g. maximum distance of any home to a park, accessibility for the disabled, area per resident, connectivity to the wider network, minimum facilities in parks of various levels in the hierarchy – neighbourhood, district, city, region, etc.), range and quality of materials including planting to be used, etc.).

The parks provision and development standards should be applied by the municipality in the planning of future urban areas, the assessment and retrofit of existing areas, and in evaluating the development proposals of private developers. The standards should be integrated into the biotope area factor scheme when it is developed.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau- Pyrénées; - Communes de l'Agglomération.	- Completion of a policy document specifying the standards for provision of parks and adoption by the town councils; - Completion of an evaluation of all parks and green areas against the identified/adopted standards; - Completion of a plan for new spaces and retrofit projects for existing areas to meet the identified standards.

P-S-12: **Survey of Public Needs and Benefits** Refer to Toolkit Policy S3, S4	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓	✓✓	✓	

Using the results of the survey conducted for the Parks and Green Areas Study as the initial baseline, establish a routine of assessing the needs of parks and green areas users on a regular basis (e.g. annually or bi-annually) to inform development and management strategies.

The survey should establish, for example, how often people use the city's parks and green areas, at what time of day, what they do when visiting, how long they stay, how far they travel, how they travel, context (i.e. dedicated trip, breaks from work, en route somewhere else), changes they would like to see and what it is they value about the parks (and other factors, e.g. neighbourhood identity and quality), response to trialled maintenance regimes (e.g. wildflower meadows), etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau- Pyrénées (PNU); - Office National des Forêts; - Domaine National du Château de Pau; - Communes de l'Agglomération.	- Annual or bi-annual survey of parks and green areas users.

P-M-13: **Branded Community Environmental Enhancement Programme**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓	✓	

Modelled on the award-winning German initiative "Show Colours for Munster" (http://www.epsa-projects.eu/index.php?title=Show_colours_for_M%C3%BCnster) develop a branded annual campaign to encourage the involvement of citizens and businesses in the environmental enhancement of the city and the outlying communes.

The campaign should form an umbrella for a range of existing and new initiatives including, for example, balcony flower display and garden competitions, street gardening, taking care of public playgrounds, parks and flower beds, housing associations giving away flowers to their tenants, business-sponsored tree and flower planting, seasonal gardening education programmes for children, participative inventories (e.g. of the urban forest), etc.

Consider the introduction of an award scheme for best street, neighbourhood, district, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau- Pyrénées; - Communes de l'Agglomération.	- Establishment of a branded community environmental enhancement programme; - Establishment of an award scheme for best performing communities.

5.3.6 Communications Theme

P-M-14: **Communications and Community Involvement Charter** Refer to Toolkit Policy S3, S4	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓		✓✓		

Prepare a charter to formalise the city's policy on communication with citizens and visitors about parks and green areas (and urban planning generally), and on the processes to facilitate community participation in parks and green areas management.

The communication strategy should seek to enhance the understanding and appreciation of the resources, inform citizens and visitors about the development and maintenance activities - in particular differential management - of the authority, and promote the facilities and events to encourage greater use.

The charter should also address education, i.e. the role that the city will play in educating children and the wider community about environmental issues through the use of its parks and green areas.

The charter should detail the methods of information dissemination to be used by the Community including traditional forms (e.g. public information office, pamphlets, etc.) and emerging technologies (e.g. apps) but for the present should concentrate on optimising the delivery of information via the internet.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau- Pyrénées; - Communes de l'Agglomération.	- Completion of a communications and community involvement charter, and publication on the Community website.

P-S-13: **Landscape Interpretation Centre**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
			✓✓	✓	

Pau has been awarded the label 'ville d'art et d'histoire' by the Ministry of Culture and Communication, Directorate General of Heritage, and the development of an architectural interpretive centre for the town is in planning. It is to be located in a restored house, le Pavillon des Arts, near the boulevard des Pyrénées. The Community should ensure that the landscape, in recognition of its fundamental role in the history, morphology and character of the city, is adequately represented and celebrated in the interpretive centre.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau- Pyrénées; - Ministry of Culture and Communication, Directorate General of Heritage.	- Landscape appropriately represented in the interpretive centre exhibition.

P-S-14: **Interpretation Pages for City Parks and Green Areas** Refer to Toolkit Policy S4	Urban	Env	Social	Econ	Short term
	✓	✓	✓✓	✓	

Prepare an interpretation page/pamphlet for each of the main city parks and green areas, providing a map, information on the history and design, access and recreation facilities, and a catalogue of the notable vegetation and wildlife. Make the interpretation pages available on the Community (and other relevant) websites and in printed form.
The individual parks pamphlets should ultimately be accompanied by a map of walking and cycling trails (of various themes, e.g. parks, views, notable trees, habitats, etc.) around the city.

Responsible party/parties:	**Monitoring and Indicators**:
- Office de tourisme; - Domaine National du Château de Pau; - Ville de Pau; - Office National des Forêts.	- Completion and publication of pamphlets for the main parks and green areas in the city.

P-S-15: **Creation and Promotion of Walking and Cycling Tours** Refer to Toolkit Policy UC3	Urban	Env	Social	Econ	Short term
	✓	✓	✓✓	✓✓	

Select/design a number of walking and cycling trails around the city, of various lengths (e.g. half day walking tour, one day cycle tour) and with various themes (e.g. parks, views, notable trees, habitats, as well as architecture, cultural heritage, etc.).
Identify gaps/deficiencies in existing infrastructure and formulate strategies or projects to overcome these.
Develop the physical and communications infrastructure (e.g. signage, information boards, apps, etc.) required to promote the trails as a product for tourism and education.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Identification of a suite of walking and cycling trails around the Community area, of various lengths and with various themes; - Development of physical and communications infrastructure around which to promote a trails product; - Promotion of a Community-wide suite of walking and cycling trails for tourists and education purposes.

5.3.7 Implementation Theme

P-S-16: **Park Atlantic Action Plan Management**	Urban	Env	Social	Econ	Medium term
	✓✓	✓✓	✓✓	✓✓	

Establish an office within the structures of the Agglomération de Pau-Pyrénées with a remit to implement the proposed actions. The actions are wide ranging and could potentially affect the practices of numerous departments/divisions within the authority, as well as other agencies such as the communes. This could create difficulties in terms of identifying the responsible party for implementation of each action.
In order to ensure implementation of the action plan at least one dedicated officer will be required to coordinate, evaluate, report on and communicate the actions. One other person may be required for the short term (three years) to assist with the launch and implementation of the action plan.
The action plan implementation/management office would also have responsibility for:
- Maintaining links and cooperation with the Park Atlantic partner cities and all other parties that contributed to the project, to encourage further interaction/cooperation;
- Identifying funding opportunities, e.g. the European Regional Development Fund 2014-2020 and formulating project proposals for funding applications.

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau- Pyrénées.	- Establishment of an office and the employment/identification of personnel for the implementation of the action plan; - Number of actions implemented; - Evaluation reports on implemented actions.

5.4 Sustainable Management Action Plan for Santiago de Compostela

5.4.1 Green Infrastructure Theme

S-L-1: **Landscape or Green Infrastructure Strategy** Refer to Toolkit Policy UC1	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Prepare a spatial plan and a programme of policies and actions that will continue to develop the city's green infrastructure in the long term (to bring together green space provision measures currently embedded into planning), focussing on the delivery of ecosystem services.

The city's approach to parks and green areas as a framework for the urban form and for social dividends has been successful. The Green Infrastructure Strategy should seek to build on this success by broadening the range of services delivered by the resources, both the existing parks and green areas and future developments.

The Green Infrastructure Strategy should also focus – in spatial and functional/services terms – on the transition between the urban area and the rural hinterland, which is characterised by neglected agricultural lands.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of a green infrastructure strategy and adoption as policy of the Community.

S-L-2: **Biotope Area Factor (or Ecosystem Services Performance) Factor Scheme** Refer to Toolkit Policy UC 12	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓	✓	

Develop a Biotope Area (or Ecosystem Services Performance) Factor scheme whereby the planning authority identifies ecosystem service performance targets, and measures for their delivery, for lands and/or land use. All proposed developments should then be assessed/scored in terms of their delivery of ecosystem services or their incorporation of ecosystem service delivery measures.

The scheme could also be used to assess existing sites or land use, to encourage improvement (through physical measures or management) of inadequately performing lands. This might require a related incentive scheme, for example a certification or local tax/rate reduction, awarded for the achievement of a certain factor.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Establishment of a Biotope Area (or Ecosystem Services Performance) Factor Scheme; - Number of private development proposals/applications subjected to assessment by the scheme; and - Number of existing developments/sites subjected to assessment by the scheme.

S-L-3: **Measurement of the Economic Value of Ecosystem Services** Refer to Toolkit Policy E1-4	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Based on international precedents and research, develop a methodology and conduct an exercise in estimating the monetary value of the ecosystem services provided by the parks and green areas in Santiago de Compostela. The methodology should allow for ongoing measurement/re-calculation to monitor the effectiveness of measures to improve ecosystem services delivery.

The results and predictions should be used to recognise the value of parks and green areas in urban and budgetary planning, set priorities, and justify spending on both (a) the maintenance and improvement of existing resources and (b) development of new resources.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of the monetary value of the ecosystem services provided by the parks and green areas (including farm and forest lands) in the municipality area.

S-M-1: **Strategy for Biodiversity Protection and Development** Refer to Toolkit Policy UC6	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓	✓		

Prepare a strategy for the protection and development of biodiversity in the city-region with a view to halting the deterioration of status of species and habitats and achieving measurable improvements in Santiago de Compostela by 2020, in accordance with EU biodiversity policy.
The strategy should include measures to increase biodiversity in all environments/landscapes occurring in the city-region, urban (buildings, streets, parks, gardens, cemeteries, institutional and commercial lands, etc.) and rural (farmland and forest).
As a means to protect the biodiversity value and landscape/cultural character of the agricultural areas in the city-region, consider the use of the IUCN Category V 'Protected Landscape' model. This is specifically designed for areas characterised by a high degree of human interaction with the environment. Consider issues of connectivity and fragmentation.
Consider as a proactive measure the identification of a site or sites for potential designation for conservation (i.e. sites to be developed/managed specifically to achieve a designation status such as the 'Entorno Natural de Interés Local' (ENIL) currently being pursued for Parque de Granxa do Xesto and Parque de Selva Negra.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of a biodiversity strategy and adoption as Community policy; - Increase in lands dedicated to habitat provision; - Measures/features installed and/or management activities altered on existing and new urban development sites for the provision of habitat; - Land management activities on farm and forest lands altered for the protection of biodiversity; - Status of protected habitats and species in the municipality area.

S-M-2: **Institutional Landscapes Improvement Strategy and Pilot Project** Refer to Toolkit Policy UC14	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓	✓	

Conduct an analysis (ideally in the context of a Green Infrastructure Strategy and making use of an emerging Biotope Area Factor Scheme) of the institutional lands/properties in the urban area and develop a generic toolkit for landscape improvements for ecosystem services and amenity. (Generic landscape improvements might include reducing the dimensions of roads and parking areas, planting/ maintenance for biodiversity, green roofs, water attenuation and harvesting, etc.).
Select one site for the implementation of a suite of improvements as a joint pilot project between the Concello and the site owner.
Consider possible mechanisms to encourage site owners to retrofit sites. These might include an environmental award or certification scheme or other incentives for achievement of ecosystem services targets, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Identification and analysis of all institutional sites in the city-region, in terms of a range of ecosystem performance measures informed by the emerging biotope area factor scheme; - Preparation of a toolkit of generic landscape/environmental improvements for institutional sites; - Selection of a site for a pilot project; - Design and implementation of the pilot project; and - Establishment of an environmental (ecosystem services) certification and/or award scheme for such sites.

S-S-1: **Strategy for Use of Residual Agricultural Land in the Old City** Refer to Toolkit Policy UC4, UC9	Urban	Env	Social	Econ	Short term
	✓✓	✓	✓✓	✓	
Conduct a public and stakeholder consultation exercise in the preparation of a plan (or various scenarios) for the future use of three derelict agricultural plots at the foot of the old city. Consideration should first be given to their protection as components of the green infrastructure network, with a view to further developing urban agriculture/horticulture initiatives, and thereafter to multi-site mixed use development or at least a masterplan or scheme for their coordinated development.					
Responsible party/parties: - Concello de Santiago de Compostela	**Monitoring and Indicators**: - Completion of public/stakeholder consultation; - Identification of future uses for these derelict agricultural lands; and - Implementation of measures to redevelop these lands.				

5.4.2 Drainage, Water Quality and Water Use Theme

S-M-3: **Sustainable Urban Drainage System (SuDS) Manual** Refer to Toolkit Policy UC11	Urban	Env	Social	Econ	Medium term
	✓	✓✓		✓	
Develop or adopt a comprehensive policy and a manual for sustainable drainage (SuDS) in the urban area. This should outline the city's approach and identify all of the possible techniques to be applied in public and private developments to minimise or eliminate water discharges from a site and to treat pollution where it occurs, thereby minimising its impact on the receiving environment. The SuDS manual should include policy on green streets and green roofs. It could be incorporated into the Biotope Area Factor Scheme when developed.					
Responsible party/parties: - Concello de Santiago de Compostela	**Monitoring and Indicators**: - Completion of a sustainable urban drainage systems strategy and adoption as policy of the Community; - Completion of a manual identifying and specifying generic SuDS measures/techniques for application by private developers and the municipality; - Number of new developments (private and public) incorporating SuDS measures; and - Number/proportion of urban sites achieving specified standards/ limits of water discharge.				

S-M-4: **Pilot Green Street Project** Refer to Toolkit Policy UC11	Urban	Env	Social	Econ	Medium term
	✓	✓✓	✓	✓	
Informed by the emerging SuDS policy and research into the spatial requirements and other constraints/factors, conduct an analysis of the city streets to identify those most suitable for conversion to green streets. Identify a street for a pilot project; develop the concept for local conditions; design and implement the city's first retrofitted green street (see City of Portland Green Streets pamphlet: http://www.portlandonline.com/bes/index.cfm?c=45379&a=209685)					
Responsible party/parties: - Concello de Santiago de Compostela	**Monitoring and Indicators**: - Completion of an assessment of the streets in the urban area and identification of a streets or sections of a street with potential for a green street retrofit; - Identification of a prioritised list of green street retrofit and/or development projects; - Length of city street/s converted to green street.				

S-L-4: **Pilot Rainwater Collection Scheme** Refer to Toolkit Policy UC11	Urban	Env	Social	Econ	**Strategic**
	✓	✓✓		✓	

Select a city-owned property comprising buildings of substantial scale close to an extensive landscaped area currently requiring irrigation. Install a rainwater harvesting system on the property and use the collected water to supplement or replace potable water currently used for irrigation. Monitor the performance of the scheme in terms of the reduction in potable water usage, and cost-benefit over an appropriate period of time. Develop a policy on rainwater harvesting for city properties on the basis of the pilot scheme results.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Installation of a pilot rainwater collection scheme; and - Performance in terms of reduction in potable water usage, and cost-benefit over time.

5.4.3 Urban Forest and Trees Theme

S-L-5: **Urban Forest Strategy** Refer to Toolkit Policy UC7	Urban	Env	Social	Econ	**Strategic**
	✓✓	✓✓	✓		

Prepare a strategy for the development and management of the Urban Forest (the entire tree population in the city-region of Santiago de Compostela including natural, heritage and productive forests, trees on farmland and along river corridors, trees in parks, squares and on streets, in private gardens, on institutional lands, commercial and industrial sites and transport corridors).
The strategy should contain policies and actions to (a) ensure the health of the urban forest (applying principles such as species diversity, native rather than exotic species, balanced age structure, good environmental/growth conditions), (b) grow the forest and (c) maximise its delivery of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of an urban forest strategy and adoption as policy of the Community; - Increase in tree cover in the Community area (tree numbers and/or canopy cover); - Measure of species diversity in the urban forest (according to identified ideal); - Proportion of native versus exotic trees.

S-S-2: **Municipal Urban Forest Database/Tree Register** Refer to Toolkit Policy UC1	Urban	Env	Social	Econ	**Short term**
	✓✓	✓✓	✓		

Complete the preparation of a georeferenced (mappable) urban forest database and complete the tree catalogue to facilitate strategic management of the tree population of the municipality (analysis, planning, monitoring and evaluation of effects).
The assistance of the public should be enlisted in this exercise, as a means of obtaining as much information as possible (including data on trees on private land) but also to encourage appreciation and ownership of Santiago's exceptional tree resource. Refer to UC3 and UC4 in the Best Practice Toolkit.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of a georeferenced (mappable) tree database; - Percentage/number of trees on public lands entered into the database; - Percentage/number of trees on private and institutional lands entered into the database; - Availability of the tree database/map online; - Capacity for public to enter data into the database.

S-M-5: **Urban Forest Development Projects** Refer to Toolkit Policy UC7	Urban	Env	Social	Econ	Medium term
	✓✓	✓✓	✓		

Analyse the urban forest database to identify areas where the tree population is relatively sparse or otherwise inadequate (e.g. imbalance in age structure, species diversity, etc.). Formulate and implement projects to address these inadequacies, including street tree planting, parks and green areas development (e.g. the completion of Parque de Granxa do Xesto and Parque de Selva Negra), companion planting for ageing trees, elimination of non-native plantations in favour of indigenous forests, and support measures for planting on private lands (tree stock, funding, technical expertise, etc.).

Responsible party/parties:	**Monitoring and Indicators**:
- Communauté d'Agglomération de Pau-Pyrénées.	- Identification of urban forest development projects/sites; - Number of trees planted in the municipality area (on public and private lands).

5.4.4 Sustainable Management Theme

S-M-6: **Sustainable Parks and Green Areas Management System** Refer to Toolkit Policy UC15	Urban	Env	Social	Econ	Medium term
	✓	✓✓	✓	✓	

Continue to review the sustainable green areas management system to incorporate annual objectives and measures for sustainable chemical usage, and to continue promoting best practice in plant waste management, differential management of grassland, diversification of plant species selection and invasive species. Gradual inclusion of additional measures, such as rain water capture and reuse, should also be considered in future revisions.

If the city chooses to adopt an ecosystem services approach (e.g. through a Green Infrastructure Strategy and/or Biotope Area Factor Scheme) then adapt the sustainable green area management system accordingly by including objectives and measures for all of the services.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Updates of the Sustainable Parks and Green Areas Management System; and - Number and type of new actions that improve green areas management practices.

S-M-7: **Alternative Planting and Maintenance of Grassland Areas** Refer to Toolkit Policy UC15	Urban	Env	Social	Econ	Medium term
	✓	✓✓		✓	

Continue to analyse grassland areas in the city to identify those that could be planted with low maintenance trees/shrubs or maintained using an alternative regime such as wild flower meadows.

Select a number of sites for conducting experiments with various alternative planting or maintenance regimes, and monitor their performance. Performance should be assessed in terms of the ecosystem services delivery (including social services such as recreation, visual amenity, education, informed by public/user survey) and of maintenance costs. Compare the results of the experiments and prepare a strategy for alternative planting and maintenance of the city's grassland areas.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Identification and analysis of all grasslands in the Community area suitable for alternative planting; - Selection of a site/s for a pilot project/s; - Implementation of the pilot project; and - Preparation of a toolkit of generic strategic planting practices and low maintenance species.

5.4.5 Sustainable Mobility Theme

S-M-8: **Sustainable Mobility or Urban Travel Plan** Refer to Toolkit Policy UC3	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓	✓✓	✓	

Conduct an analysis of the existing infrastructure, information and initiatives for the encouragement of sustainable mobility (walking, cycling and other non-motorised or emission free modes) in the city. Identify obstacles and deficiencies and prepare a plan for enhanced sustainable mobility.
This action should incorporate the findings of, and seek to address any deficiencies identified in, proposed action S-S-3.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Analysis of existing infrastructure, information and initiatives for the encouragement of sustainable mobility; and - Completion of a plan for enhanced sustainable mobility.

S-S-3: **Bicycle Friendly City Index** Refer to Toolkit Policy UC3	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓✓	✓✓	✓	

Informed by a survey of cyclists in the city, conduct an analysis of the 'bicycle friendliness' of Santiago de Compostela making use of the Copenhagenize Index (www.copenhagenize.eu) or a similar method that allows comparison of the results with other cities. In particular identify obstacles to comfortable cycling (e.g. steep slopes) and map a series of routes that would ensure cyclists' comfort by avoiding such obstacles. This action should lead to the establishment of a dedicated page on the Concello de Santiago website to promote cycling and update the index results.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Analysis of bicycle friendliness of the city; and - Identify routes and establish measures to encourage cycling.

5.4.6 Landscape Amenity Theme

S-M-9: **Maximising the Use of Open Space** Refer to Toolkit Policy UC4	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓	✓	

Ideally in the context of a Green Infrastructure Strategy, prepare a strategy for maximising the use of open space. Carry out an analysis of open space resources in the municipality to increase the diversity of uses arising from a deficiency of open space in certain quarters, or to increase the range of functions available, or for adaptation in the context of climate change. The result of the survey on public needs and benefits S-S-7) should be used to optimise the social functions of open spaces.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Analysis of open space resources in the municipality and their uses/functions; and - Completion of a strategy for maximizing open space use.

S-M-10: **Casco Historico Gardens Enhancement and Public Access**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓		

Conduct a study of the internal pockets of gardens of the old city, e.g. along the Rua de San Pedro, Rua de San Lorenzo, Rua das Hortas, etc. Identify those that lie waste or are otherwise under-utilised and consider ways to enhance their public value, e.g. through purchase and redevelopment as public parks or community gardens.
Continue to promote public access to private gardens (e.g. permitting general public access to internal gardens of hotels and restaurants). Consider also ways to derive greater public benefit from the large, enclosed gardens and parks belonging to the aristocracy and religious orders, e.g. through provision of access – even occasional access in the form of guided tours, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Identification and analysis of internal pockets of gardens of the old city; - Number of internal gardens redeveloped; and - Number of private gardens with public access.

S-M-11: **Pilot Community Pocket Park Development Project** Refer to Toolkit Policy S3	Urban	Env	Social	Econ	Medium term
	✓	✓	✓✓		

Identify a site for the development of a community pocket park, using the model of public participation in Pau-Pyrenees. That is, invite 20 people from the locality, representing the total community (i.e. young, old, working, non-working, etc.), to participate fully in the planning, design and construction of the park, with the Concello de Santiago acting purely as facilitator and providing technical expertise.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Identification of a site for the development of a community pocket park; - Preparation of a design for the redevelopment of the site in close collaboration with the local community; and - Implementation of the design and development of the community pocked park.

S-S-4: **Plan for the Completion of Selva Negra**	Urban	Env	Social	Econ	Short term
	✓✓	✓✓	✓		

Implement the approved plan and programme of measures for the completion of Parque de Selva Negra and incorporate it into the green infrastructure of the municipality. The plan should ensure the sustainable realisation of its full potential through the protection and/or recreation of representative Atlantic ecosystems and the removal of imported species and plantation of indigenous trees and shrubs.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Implementation of the plan and programme of measures.

S-S-5: **Expansion of Community Allotments** Refer to Toolkit Policy UC9	Urban	Env	Social	Econ	Short term
	✓✓	✓✓	✓✓	✓	

Building on the success of the three established neighbourhood gardens, prepare a plan or a programme of actions to create additional neighbourhood allotments in other parts of the city where there is an interest in the community to adopt such a project. This action should incorporate any recommendations arising from the proposed action S-S-1 (strategy for residual agricultural lands).

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of a plan or a programme of actions to create additional neighbourhood allotments; and - Number of new allotments and community gardens provided in the city region.

S-S-6: **Branded Community Gardening Initiative**	Urban	Env	Social	Econ	Short term
	✓✓	✓	✓✓		

Modelled on the award-winning German initiative "Show Colours for Munster" (http://www.epsa-projects.eu/index.php?title=Show_colours_for_M%C3%BCnster) develop a branded annual campaign to encourage the involvement of citizens and businesses in the beautification of the city.
The campaign should form an umbrella for a range of initiatives including, for example, citizens planting flowers in their front gardens and around trees in their streets, taking care of public playgrounds, parks and flower beds, housing associations giving away flowers to their tenants, business-sponsored tree and flower planting (e.g. the existing Day of the Tree), seasonal gardening education programmes for children, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Development of a branded annual campaign to encourage the beautification of the city; and - Implementation of the campaign.

5.4.6 Communications Theme

S-M-12: **Communications and Community Participation Charter** Refer to Toolkit Policy S3, S4	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓		✓✓		

Maintain the city's informal policy of communication and collaboration with citizens groups and visitors about parks and green areas (and urban planning generally), and on the processes and techniques for encouraging community participation in parks and green areas management.
The communication strategy should continue to promote the understanding and appreciation of the resources, inform citizens and visitors about the development and maintenance activities of the authority, and promote the facilities and events to encourage greater use.
The charter should further promote participative and educational activities.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of a communications and community involvement charter, and publication on the Community website.

S-S-7: **Identify Public Needs and Benefits** Refer to Toolkit Policy S1, S3, S5	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓		✓✓		

Undertake baseline survey of both park users and residents to establish how often they use parks, at what time of day, what they do when visiting, how long they stay, how far they travel, how they travel, context (i.e. dedicated trip, breaks from work, en route somewhere else), changes they would like to see and what it is they value about both parks and other open spaces (e.g. neighbourhood identity and quality). Broadly estimate user and health benefits.
Use the survey results to identify other lines of action and further promote and expand socio-cultural activities in parks and gardens. Diversity the range of services offered, and cater for different age groups and interests.

Responsible party/parties:	**Monitoring and Indicators**:
- Concello de Santiago de Compostela	- Completion of the baseline survey and identification of lines of action to expand socio-cultural activities in parks and gardens; and - Number of socio-cultural activities provided/undertaken in parks and gardens.

5.5 Sustainable Management Action Plan for Vila Nova de Famalicão

5.5.1 Green Infrastructure Theme

F-L-1: **Green Infrastructure Strategy for Ecosystem Services** Refer to Toolkit Policy UC1	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Prepare a spatial plan and a programme of policies and actions for the development and management of the parks and green areas as a collective resource and a framework for urban land use. The Green Infrastructure Strategy should focus on the delivery of ecosystem services and should apply the key principles of multi-functionality and connectivity. It should address the urban area, the rural hinterland, and the transition between the two landscapes. The Strategy should recognise the value of, and include policy and actions for, public, institutional and private lands.

The Vila Nova de Famalicão municipality has prepared an Ecological Structure plan as part of the Draft Master Plan for the city. This plan identifies the existing and envisioned spatial elements of the city's ecological (or green) infrastructure. It would benefit from:

- An analysis of existing and potential ecosystem services provided, by the individual components and the collective resource;
- The identification of actions (for urban and rural, public and private lands) to incrementally develop the Ecological Structure (or Green Infrastructure) to achieve its full potential for delivery of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão; - Liaison with neighbouring municipalities (for policy conformity if possible).	- Completion of a green infrastructure strategy and adoption as policy of the Vila Nova de Famalicão municipality.

F-S-1: **Spatial Database of Parks and Green Areas** Refer to Toolkit Policy UC2	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓	✓	

Develop a spatial (GIS) database of parks and green areas. This should be integrated with the urban land use and development master plan, but maintained by the parks or landscape department of the municipality. For each space/polygon a range of standard information should be attributed, including functional (ecosystem services), administrative and maintenance requirements.

The Ecological Structure plan already prepared by the municipality as part of the master plan could form the basis of the spatial database, but it should be extended to cover the entire city-region. Ultimately, the ecosystem services information should be gathered for the entire territory of the municipality, allowing for comprehensive assessment, management and planning of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a database of parks and green areas; - Completion of

F-M-1: **Potential Green Links Study** Refer to Toolkit Policy UC3	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓✓		

Ideally in the context of (a) Green Infrastructure Strategy and (b) an Urban Landscape Character and Legibility Study, conduct an analysis of the urban area to identify requirements and opportunities for the creation of green links between the existing parks and green areas, and the agricultural lands within and around the urban area. Possible green links include restored streams and drainage features, linear parks or strings of pocket parks, greenways (dedicated non-motorised transport routes), tree lines and 'green streets'. Formulate policies and actions to ensure the realisation of the identified opportunities.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of green links study and opportunities for green links identified; - Length of green links (linear park, string of island/pocket parks, tree lines, greenways) created.

F-L-2: **Strategy for Biodiversity Protection and Development** Refer to Toolkit Policy UC6	Urban	Env	Social	Econ	Strategic
	✓	✓✓	✓		

Ideally in the context of a Green Infrastructure Strategy prepare a strategy for the protection and development of biodiversity in the city-region with a view to halting the deterioration of status of species and habitats and achieving measurable improvements by 2020, in accordance with EU biodiversity policy.
The strategy should be prepared following a habitat mapping study and biodiversity audit of the municipality area.
The strategy should include measures to increase biodiversity in all environments/landscapes occurring in the city-region, urban (buildings, streets, parks, gardens, cemeteries, institutional and commercial lands, etc.) and rural (farmland and forest).
Consider as a proactive measure the identification of a site or sites for potential designation, i.e. sites to be developed/managed specifically to achieve a status qualifying for national, European (e.g. Natura 2000) or international designation. For a rural landscape (e.g. Brufe) consider use of the IUCN Category V 'Protected Landscape' model. This is specifically designed for areas characterised by a high degree of human interaction with the environment.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a biodiversity strategy and adoption as policy of the Vila Nova de Famalicão municipality; - Increase in lands dedicated to habitat provision; - Measures/features installed and/or management activities altered on existing and new urban development sites for the provision of habitat; - Land management activities on farm and forest lands altered for the protection of biodiversity; - Identification of biodiversity protection and development areas; - Status of protected habitats and species in the municipality area.

F-S-2: **Habitat Mapping and Biodiversity Audit** Refer to Toolkit Policy UC2, UC6	Urban	Env	Social	Econ	Short term
		✓✓	✓		

Conduct a habitat mapping study (in accordance with a national methodology and classification system) and biodiversity audit of the municipality area, to inform a strategy for biodiversity protection and development.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a habitat mapping and biodiversity audit.

F-L-3: **Biotope Area Factor (or Ecosystem Services Performance) Factor Scheme** Refer to Toolkit Policy UC12	Urban	Env	Social	Econ	Strategic
	✓✓	✓✓	✓	✓	

Develop a Biotope Area (or Ecosystem Services Performance) Factor scheme whereby the municipality identifies ecosystem service performance targets, and measures for their delivery, for lands and/or land use. All proposed developments should then be assessed/scored in terms of their delivery of ecosystem services or their incorporation ecosystem service delivery measures.
The scheme could also be used to assess existing sites or land use, to encourage improvement (through physical measures or management) of inadequately performing lands. This might require a related incentive scheme, for example a certification or local tax/rate reduction, awarded for the achievement of a certain factor.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão; - ADRAVE.	- Establishment of a Biotope Area (or Ecosystem Services Performance) Factor Scheme; - Number of private development proposals/applications subjected to assessment by the scheme; - Number of existing developments/sites subjected to assessment by the scheme.

F-M-2: **Commercial & Industrial Landscapes Improvement Strategy and Pilot Project** Refer to Toolkit Policy UC14	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓	✓	

Conduct an analysis (preferably making use of an emerging biotope area factor scheme) of the industrial and commercial estates in the municipality area and develop a generic toolkit for landscape improvements for ecosystem services/sustainability and amenity (e.g. reducing the dimensions of roads and parking areas, planting for biodiversity, green roofs, water attenuation and harvesting, etc.).
Select one site for the implementation of a suite of improvements as a joint pilot project between the municipality (and/or ADRAVE) and the site owner.
Consider possible mechanisms to encourage site owners to retrofit sites. These might include an environmental award or certification scheme (possibly sponsored by ADRAVE) or financial incentives such a local tax/rates reductions for achievement of ecosystem services targets, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão; - ADRAVE.	- Identification and analysis of all commercial and industrial sites in the municipality area, in terms of a range of ecosystem performance measures informed by the emerging biotope area factor scheme; - Preparation of a toolkit of generic landscape/environmental improvements for commercial and instrial sites; - Selection of a site for a pilot project; - Design and implementation of the pilot project; - Establishment of an environmental (ecosystem services) certification and/or award scheme for commercial and industrial sites.

F-L-4: **Measurement of the Economic Value of Ecosystem Services** Refer to Toolkit Policy E1-4	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓✓	✓✓	

Based on international precedents and research develop a methodology and conduct an exercise in estimating the monetary value of the ecosystem services provided by the parks and green areas in Vila Nova de Famalicão. The methodology should allow for ongoing measurement/re-calculation to monitor the effectiveness of measures to improve ecosystem services delivery.
The results and predictions should be used to recognise the value of parks and green areas in urban and budgetary planning, set priorities and justify spending on both (a) the maintenance and improvement of existing resources and (b) development of new resources.
A methodology for measuring the economic value of a city's parks and green areas will be a transferrable tool and could be developed as a joint exercise by the Park Atlantic cities, or used by the other cities (Park Atlantic, EU or elsewhere) once developed in Vila Nova de Famalicão.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão; - ADRAVE; - Possibly in partnership with ParkAtlantic partners.	- Completion of the monetary value of the ecosystem services provided by the parks and green areas (including farm and forest lands) in the municipality area.

F-M-3: **Sustainable Parks and Green Areas Management Plan, or Environmental Charter** Refer to Toolkit Policy UC15	Urban	Env	Social	Econ	Medium term
	✓	✓✓	✓	✓✓	

Develop and periodically review a comprehensive statement of policy and practices for the sustainable management of the parks and green areas of the city. The parks and green areas management plan or environmental charter should be informed by the Agenda 21 project currently underway in partnership with the regional cities.

As well as stating the guiding principles and policies of the municipality it should specify targets/objectives for sustainable management practices (e.g. for minimising usage of water, chemicals, fuel, energy, etc.) and the application of these to the affected parks and green areas. It should thus include individual management plans for various defined categories of space, and for each of the key parks and green areas in the city. Ideally the management plan should be linked to a database of parks and green areas.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a sustainable parks and green areas management plan and adoption as policy of the Vila Nova de Famalicão municipality; - Annual or bi-annual review of the management plan; - Annual or bi-annual assessment of performance against targets/objectives stated in the management plan, e.g. water usage, chemicals usage, fuel usage, etc.

5.5.2 Drainage and Water Quality Theme

F-L-5: **River (and Water Quality) Restoration Strategy** Refer to Toolkit Policy UC11	Urban	Env	Social	Econ	Strategic
	✓	✓✓	✓		

Develop a long term strategy for the restoration, cleaning and de-pollution of the rivers in the urban area. This would involve assessing the current water quality status of all the drainage lines (in accordance with the EU Water Framework Directive), assessing their potential for restoration to surface flow (where they are piped) and the potential for creation of a green buffer for protection of the stream. Following these assessments a strategy should be prepared for incremental restoration of the network of streams through a series of interventions/actions on public and private lands.

The restoration of the Pelhe River in the Devesa Park has illustrated the multiple benefits of this approach, including raising awareness of the water quality issue amongst citizens.

The strategy for physical restoration and protection of streams should complement:

- A process of identification and elimination of pollution sources (including domestic, industrial and agricultural);
- An education programme designed to target the identified pollution sources (including land use/management practices);
- A Sustainable Urban Drainage System (SUDS) Manual to be developed by the municipality.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão; - Portugal Environment Agency (APA); - Liaison with farmers and industrial associations.	- Completion of a river (and water quality) restoration strategy and adoption as policy of the Vila Nova de Famalicão municipality; - Water quality assessment of all streams in the municipality area; - Identification of sections of river for restoration projects; - Length of river/s restored to surface flow; - Length and area of green buffer established along rivers; - Water and riverside habitat gains (quantity and quality); - Water quality improvement (ref EU Water Framework Directive).

F-M-4: **Pelhe River Restoration Strategy** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓	✓		

The momentum established by the Devesa Park project should be harnessed by the municipality for further restoration of the Pelhe River. Ideally in the context of a wider river and water quality restoration strategy (F-S-3), carry out a project to restore the piped section of the Pelhe River to the surface and the creation of a green buffer along the stream. The section of the stream where it passes beneath a car park has been identified as feasible initially, but all other sections should be investigated.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Study completed identifying all sections of the Pelhe River feasible for restoration to surface flow; - Length of Pelhe River restored to surface flow; - Length and area of green buffer established along Pelhe River; - Water and riverside habitat gains (quantity and quality); - Water quality improvement (ref EU Water Framework Directive).

F-M-5: **Sustainable Urban Drainage System (DUDS) Manual** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓		✓	

Develop or adopt a comprehensive policy and a manual for sustainable drainage in the urban area. This should identify all of the possible techniques to be applied in public and private developments to minimise or eliminate water discharges from a site and to treat pollution where it occurs. The SUDS manual should include policy on green streets and green roofs. It could be incorporated into the Biotope Area Factor Scheme when developed.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a sustainable urban drainage systems strategy and adoption as policy of the Vila Nova de Famalicão municipality; - Completion of a manual identifying and specifying generic SuDS measures/techniques for application by private developers and the municipality. - Number of new developments (private and public) incorporating SuDS measures; - Number/proportion of urban sites achieving specified standards/ limits of water discharge.

F-S-3: **Pilot Green Street Project** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓✓	✓	✓	

Conduct an analysis of the city streets to identify those most suitable for conversion to green streets. Identify a street for a pilot project (consider the Adolfo Casais Monteiro Road), develop the concept for local conditions, design and implement the city's first retrofitted green street. (See City of Portland Green Streets pamphlet: http://www.portlandonline.com/bes/index.cfm?c=45379&a=209685)

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of an assessment of the streets in the urban area and identification of sections with potential for a green street retrofit; - Identification of a section of road for a pilot green street project; - Implementation of the pilot green street project.

F-M-6: **Pilot Rainwater Collection Scheme** Refer to Toolkit Policy UC11	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓✓		✓	

Select a municipality-owned property comprising buildings and/or hard surfaces of substantial scale close to an extensive landscaped area currently requiring irrigation. Install a rainwater harvesting system on the property and use the collected water to supplement or replace potable water currently used for irrigation. Monitor the performance of the scheme in terms of the reduction in potable water usage, and cost-benefit over an appropriate period of time. Develop a policy on rainwater harvesting for city properties on the basis of the pilot scheme results.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Selection of a municipality (or institutional) site for a pilot rainwater collection project; - Installation of a rainwater collection and irrigation scheme; - Volume of potable water saved by its replacement with harvested rain water; - Cost benefit assessment of scheme.

5.5.3 Agriculture Theme

F-L-6: **Strategy Agricultural Lands and Agricultural Economy** Refer to Toolkit Policy UC10	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓	✓	✓✓	

Prepare a strategy for (a) the municipality's support and promotion of the agricultural economy of the city-region and (b) the most advantageous use of the remaining agricultural lands in the urban area. This should include a vision for agriculture and forestry, which will guide all the decisions and initiatives of the municipality affecting farming, forestry and the use of agricultural and forest land.

The strategy should seek to create conditions in which rural and urban agriculture will thrive in economic and social terms, minimise the environmental impacts of agricultural and forestry practices, maximise ecosystem services derived from farm and forest land, and reflect and safeguard the agricultural heritage of the area. Amongst other things the strategy should:

- include an identification of any threats to the existing agricultural economy and agricultural lands including urban sprawl;
- include policy protecting agriculture and forest lands (whether currently used or disused) from other land use;
- specifically address the opportunities generated by the disused agricultural and forest lands within and at the edges of the urban area, to avoid the erosion of this resource through uncoordinated urban development;
- include policies and actions supportive of the development of a local brand and increased sales of local produce. The existing and potential role of the farm produce markets, and farm-to-fork' outlets, should be considered in this regard;
- identify a land parcel to develop as a model farm displaying traditional and sustainable farming methods.

Consideration should be given to the appointment of a municipal agriculture officer for the preparation and implementation of the strategy.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão; - ADRAVE; - Liaison with farmers associations.	- Completion of an agriculture strategy and adoption as policy of the Vila Nova de Famalicão municipality; - Area of agricultural and forest land (whether currently used or disused) lost to other land uses.Increase in market days; - Increase in market stalls and Increase in market sales; - Establishment of a local brand for farm food and flower products; - Establishment of model farm; - Establishment of a farm-to-fork outlet (restaurant).

F-L-7: **Agricultural Protection and Development Area** Refer to Toolkit Policy UC10	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓	✓	✓✓	✓	

Ideally in the context of a strategy for agricultural lands and the agricultural economy, identify an area (for example Brufe) for designation as an agricultural protection and development area. Prepare a strategy for its long term management, focussing on its retention in agricultural use and the maintenance of traditional farming practices and landscapes.

Consideration should be given to basing this initiative on the French model of 'périmètres de protection et d'aménagement de l'espace naturel et agricole' (PAEN – agricultural and natural space protection and development areas). This is lasting protection and is imposed legally by means of the land use plan. In this area, a space management plan defines the objectives in terms of agricultural economy, ecology, green network, biodiversity and landscape. Inside this area the local authority has first refusal on any land up for sale, either for municipal cultivation or to create allotments or to assign or rent the land to a farmer under a specific agreement. Farmers working the spaces before the application of this plan of course keep their land and even receive assistance. The authorities can also promote increased marketing of production as farm-to-fork outlets, open air markets, local Internet networks, etc.

In order to avoid resistance from land owners the initiative could be introduced on a voluntary basis, i.e. not imposed but rather having farmers voluntarily sign up to a common land management plan in return for benefits e.g. assistance with branding and marketing of produce, technical assistance, etc. If the voluntary initiative is successful the designation could be formalised, making the protection permanent.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão; - ADRAVE; - Liaison with farmers associations.	- Identification of an area to be designated for agricultural protection and development; - Establishment of a voluntary land management regime for farmers, and number of farmers signed up; - Formalisation of the designation for agricultural.

F-M-7: **Urban Agriculture/Productive Parks Strategy** Refer to Toolkit Policy UC9	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓	✓	

Ideally in the context of an agriculture strategy for the city-region and building on the platform created by the Devesa Park allotments project, prepare a policy statement and an action plan for the provision of allotments for the use of individuals, communities and associations for the production of vegetables, fruit, flowers and materials. The strategy could include:

- a study of demand;
- initiatives to encourage demand;
- identification of sites to meet existing and projected future demand;
- programmes for the development and servicing of sites;
- programmes for the provision of support services for users (including the establishment of an office providing access to information, training and funding);
- policy facilitating provision of allotments by private land owners both charitably and as commercial enterprises;
- policy to maximise the range of urban agriculture projects, i.e. family plots, farm enterprise incubator plots, plots for social inclusion initiatives, community gardens, etc.;
- policy/programmes to promote, encourage, maintain the traditional agricultural heritage of the area;
- an initiative modelled on that of the Galician Association for Urban Horticulture (AGHU) to establish a seed bank to protect and exchange the seeds of the natural flora of the Vila Nova de Famalicão area, seeds of local food plants and food plant seeds from elsewhere that suit local bioclimatic conditions.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of an urban agriculture strategy and adoption as policy of the Vila Nova de Famalicão municipality; - Launch of an initiative to encourage demand for allotments; - Number of allotment plots provided in the city region (public and private lands); - Establishment of a municipal office to develop and manage the allotment sites and provide support to allotment users and associations.

5.5.4 Urban Forest and Trees Theme

F-L-8: **Urban Forest Strategy** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Strategic**
	✓✓	✓✓	✓		

Prepare a strategy for the development and management of the Vila Nova de Famalicão Urban Forest (the entire tree population in the city-region including natural, heritage and productive forests, trees on farmland and along river corridors, trees in parks, squares and on streets, in private gardens, on institutional lands, commercial and industrial sites and transport corridors).
The strategy should contain policies and actions to (a) ensure the health of the urban forest (applying principles such as species diversity, native rather than exotic species, balanced age structure, good environmental/growth conditions), (b) grow the forest and (c) maximise its delivery of ecosystem services.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of an urban forest strategy and adoption as policy of the Vila Nova de Famalicão municipality; - Increase in tree cover in the municipality area (tree numbers and/or canopy cover); - Measure of species diversity in the urban forest (according to identified ideal); - Proportion of native versus exotic trees.

F-S-4: **Urban Forest Database/Tree Register** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓		

Initiate the preparation of a georeferenced tree database/register to facilitate strategic management of the Urban Forest.
The assistance of the public should be enlisted in this exercise, as a means to obtain as much information as possible (including data on trees on private land) but also to encourage appreciation and ownership of the city's tree resource.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Establishment of a georeferenced (mappable) tree database; - Percentage/number of trees on public lands entered into the database; - Percentage/number of trees on private and institutional lands entered into the database; - Availability of the tree database/map online; - Capacity for public to enter data into the database.

F-M-8: **Urban Forest Development Projects** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓✓	✓		

Analyse the urban forest database to identify areas where the tree population is relatively sparse or otherwise inadequate (e.g. imbalance in age structure, species diversity, etc.). Formulate and implement projects to address these inadequacies, including street tree planting, parks and green areas development, companion planting for ageing trees, support measures for planting on private lands (tree stock, funding, technical expertise, etc.).
A Vila Nova de Famalicão munucipality forest has recently been established. This project should be expanded if possible and other sites should be identified and developed, informed by the urban forest strategy.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Identification of urban forest development projects/sites; - Number of trees planted in the municipality area (on public and private lands).

F-S-5: **Native Woodland Species Planting Programme** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓✓	✓		
Ideally in the context of an urban forest strategy, establish a programme to encourage and support private land owners in the planting of indigenous woodland trees such as holm oak, cork oak, English oak, holly and strawberry tree on their lands. Support could be in the form of provision of plant stock or funding for their purchase, technical support, etc. The municipality has an established arrangement with the Catholic Church to provide tree stock to plant on its properties. This programme should continue, informed by the urban forest strategy, and expanded to include other land owners (including institutional, commercial, agricultural, etc.) if possible. Seek the cooperation of the land owner in a programme similar to the Selva Negra project in Santiago de Compostella, whereby eucalyptus forest is being replaced with large areas of indigenous oak and sweet chestnut forest.					
Responsible party/parties: - Municipality of Vila Nova de Famalicão.	**Monitoring and Indicators**: - Number of native woodland trees and/or area of woodland forest planted on private lands.				

F-S-6: **Ribeira Forest Environmental Enhancement Project** Refer to Toolkit Policy UC7	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓✓	✓		
Seek the cooperation of the land owner in a programme similar to the Selva Negra project in Santiago de Compostella, whereby eucalyptus forest is being replaced with large areas of indigenous oak and sweet chestnut forest. Provide recreation and educational facilities such as trails and signage to derive maximum social benefit from the project.					
Responsible party/parties: - Municipality of Vila Nova de Famalicão; - Ribeira Forest land owner.	**Monitoring and Indicators**: - Area/proportion of eucalyptus forest replaced by native woodland; - Recreation facilities provided on site; - Educational facilities provided on site.				

5.5.5 Landscape Amenity Theme

F-M-9: **Urban Landscape Character and Legibility Study** Refer to Toolkit Policy UC5	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓		✓		
Ideally in the context of a Green Infrastructure Strategy, conduct a study to identify the landscape character areas and the characteristics and features that contribute to the city's legibility. Identify opportunities for the enhancement of legibility, for example by strengthening or creating new paths, edges, districts, nodes and landmarks through parks and green areas developments. Consider especially how the topography of the city and the abundant undeveloped, disused and forested land can be exploited to provide vantage points and landmarks (for example, could a number of sculptural features on the hilltops generate legibility and distinctiveness). Prepare policies and actions for the enhancement of city legibility.					
Responsible party/parties: - Municipality of Vila Nova de Famalicão.	**Monitoring and Indicators**: - Completion of landscape character and legibility study and opportunities for enhancement identified; - Creation of new vantage points in new open space developments; - Creation of new landmarks in open space developments; - Observable improvement of legibility of paths, edges, districts, nodes.				

F-M-10: **Standards for Provision and Development of Parks and Green Areas** Refer to Toolkit Policy S1, S2	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓✓	✓	✓✓	✓	

Ideally in the context of a Green Infrastructure Strategy, and informed by national and international standards, develop quantitative and qualitative standards for the provision of parks and green areas in the municipality area (e.g. maximum distance of any home to a park, accessibility for the disabled, area per resident, connectivity to the wider network, minimum facilities in parks of various levels in the hierarchy – neighbourhood, district, city, region, etc.), range and quality of materials including planting to be used, etc.).

The parks provision and development standards should be applied by the municipality in the planning of future urban areas, the assessment and retrofit of existing areas, and in evaluating the development proposals of private developers. The standards should be integrated into the biotope area factor scheme when it is developed.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a policy document specifying the standards for provision of parks and adoption by the municipality.

F-S-7: **Community Pocket Park Development Project** Refer to Toolkit Policy S3	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓✓		

Identify a site for the development of a community pocket park, using the community co-development model of public participation applied in Pau for the Rue de Chanoine Laborde project. That is, invite 20 people from the locality - representing the total community (i.e. young, old, parents, working, non-working, etc.) – to participate fully in the planning, design and construction of the park, with the city acting purely as technical facilitator.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Identification of a site for the development; - Engagement with the community and selection of community representatives to act as co-develop of the project; - Obtain funding for development; - Planning, detail design and implementation.

F-S-8: **Re-imagining the Dona Maria II Square**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓✓	✓	

The occupation of the larger southern part of Dona Maria II square by a car park makes sub-optimal use of the city centre space. The square is surrounded by shopping streets lined with attractive historic buildings and it is easy to imagine the space transformed into a city centre garden by removing the (fenced) car park to another location or underground.

The municipality should initiate a study to (a) identify an alternative location for the parking area (including an investigation of the feasibility of developing an underground car park beneath the square) and (b) evaluate design solutions for an enlarged square, park or garden that makes best use of the location (including the character and use of the surrounding streets and buildings), the history of the space, and the trees. The study might also consider the feasibility of removing car traffic from the road around the eastern boundary of the square, or at least the prioritisation of pedestrian traffic on the street.

This study would provide an opportunity for engaging with the public on a project of significant potential to enhance the public realm of the city centre, building on the momentum generated by the success of the Devesa Park.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a study, with public consultation including an exhibition of design options, to re-imagine thw Dona Maria II Square; - Selection of a preferred option; - Obtain funding for development;Detail design and implementation.

F-S-9: **1 de Maio Gardens Environmental Enhancement Project**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓✓	✓	✓✓	✓	

In consultation with the local community and park users, plan, design and implement a scheme to address the identified detractors from the otherwise high quality park. These include the car park which projects into the space beside the playground, the deteriorating hedge around the northern boundary, the tarmac surfacing of some of the paths and the welded mesh fence around the large pool.

The duck pond is a valued element of the park – especially for children - but does detract from the aesthetic quality of the gardens. Consider construction of an aviary in the park as an alternative feature, to allow the fenced pond to be re-designed.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a plan, in consultation with the community, for environmental enhancements to the 1 de Maio Gardens; - Obtain funding; - Detail design and implementation.

F-M-11: **Private Gardens and Forest and Access Programme**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓	✓	

Develop a programme for engagement with the owners of forests, farmland and heritage houses in the city-region to encourage the provision of public access to their lands for recreation. Where possible develop the lands for delivery of a broader range of ecosystem services in partnership with the land owners, using the Parque de Ribeira as a pilot project. Once the initiative is underway, consider the promotion of a visitor trail linking the participating heritage gardens.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Establishment of a programme for engagement with private land owners to arrange for public access to lands; - Number of private land owners signed up to scheme; - Promotion of a trail.

F-M-12: **Branded Community Environmental Enhancement Programme**	**Urban**	**Env**	**Social**	**Econ**	**Medium term**
	✓	✓	✓✓	✓	

Modelled on the award-winning German initiative "Show Colours for Munster" (http://www.epsa-projects.eu/index.php?title=Show_colours_for_M%C3%BCnster) develop a branded annual campaign to encourage the involvement of citizens and businesses in the environmental enhancement of the city.

The campaign should form an umbrella for a range of existing and new initiatives including, for example, citizens planting flowers in their front gardens and around trees in their streets, taking care of public playgrounds, parks and flower beds, housing associations giving away flowers to their tenants, business-sponsored tree and flower planting, seasonal gardening education programmes for children, etc. Consider the introduction of an award scheme for best street, neighbourhood, districts, etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Establishment of a branded community environmental enhancement programme; - Establishment of an award scheme for best performing communities.

5.5.6 Communications Theme

F-M-13: **Communications and Community Involvement Charter** Refer to Toolkit Policy S3, S4	Urban	Env	Social	Econ	Medium term
	✓		✓✓		

Prepare a charter to formalise the city's policy on communication with citizens and visitors about parks and green areas, and on the processes to facilitate community participation in parks and green areas management.

The communication strategy should seek to enhance the understanding and appreciation of the resources, inform citizens and visitors about the development and maintenance activities of the authority, and promote the facilities and events to encourage greater use.

The charter should also address education, i.e. the role that the city will play in educating children and the wider community about environmental issues through the use of its parks and green areas.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a communications and community involvement charter and adoption as policy of the Vila Nova de Famalicão municipality.

F-M-14: **Interpretation Pages for City Parks and Green Areas**	Urban	Env	Social	Econ	Medium term
	✓		✓✓		

Prepare an interpretation page for each of the main city parks and green areas, providing a map, information on the history and design (including materials and construction techniques), access and recreation facilities, and a catalogue of the notable vegetation and wildlife.

Make the interpretation pages available on the municipality website and in printed form, for the individual parks and squares and in the form of a pamphlet for a walking tour. The pages should be creatively designed to inspire the exploration of the city through the parks and green areas. (For example, see http://www.santiagoturismo.com/parques-e-xardins.)

Substantial research has been carried out by the municipality on the history of the public open spaces in Vila Nova de Famalicão in preparation for an exhibition at the opening of the Devesa Park. It is intended to publish the research as a book, and the material could also be used in summary form on the interpretation pages.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of a communications and community involvement charter and adoption as policy of the Vila Nova de Famalicão municipality.

F-S-10: **Survey of Public Needs and Benefits** Refer to Toolkit Policy S3, S4	Urban	Env	Social	Econ	Short term
	✓	✓	✓✓	✓	

Using the results of the survey conducted for the Parks and Green Areas Study as the initial baseline, establish a routine of assessing the needs of parks and green areas users on a regular basis (e.g. annually or bi-annually) to inform development and management strategies.

The survey should establish, for example, how often people use the city's parks and green areas, at what time of day, what they do when visiting, how long they stay, how far they travel, how they travel, context (i.e. dedicated trip, breaks from work, en route somewhere else), changes they would like to see and what it is they value about the parks (and other factors, e.g. neighbourhood identity and quality), response to trialled maintenance regimes (e.g. wildflower meadows), etc.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Annual or bi-annual survey of parks and green areas users.

F-S-11: **Bicycle Friendly City Index**	**Urban**	**Env**	**Social**	**Econ**	**Short term**
	✓	✓	✓✓	✓	

Informed by a survey of cyclists in the city, conduct an analysis of the 'bicycle friendliness' of Vila Nova de Famalicão making use of the Copenhagenize Index (www.copenhagenize.eu) or a similar method that allows comparison of the results with other cities.
This action should inform the ongoing sustainable mobility strategy of the municipality and lead to the establishment of a dedicated page on the municipal website/s to promote cycling and update the index results.

Responsible party/parties:	**Monitoring and Indicators**:
- Municipality of Vila Nova de Famalicão.	- Completion of the Copenhagenize index; - Number (increase in number) of commuter cyclists (workers, students, school children).

Park Atlantic

Park Atlantic Urban Parks and Green Areas Action Plan

APPENDIX ONE – THE ECONOMIC BENEFITS OF PARKS AND GREEN SPACE

Optimize Economic Consultants

The Economic Benefits of Parks and Green Space

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Introduction

This following short report was prepared by Optimize to inform the preparation of the Park Atlantic Action Plan by introducing and exploring the economic values of parks and green areas. The report describes some of the benefits that parks and green spaces provide and explains how these are also of economic value. This value essentially arises from the benefits to individuals, of parks as a public good, the direct contribution that parks can make to a city's identity, and also the potential income and savings that are available to society and local authorities from well-maintained parks. The report shows how these benefits are all interlinked and discusses, in brief, some of the tools that can be used to estimate economic value.

Types of Economic Benefits

Many of the accepted benefits of parks and green spaces, be these for leisure, recreation, visual quality, biodiversity or the marketing of city identity, are also economic benefits in that they improve on social and economic well-being. Often the benefits are *public goods* in that they are non-excludable (individuals cannot be excluded from their consumption) and non-rivalous (the benefits do not conflict with those enjoyed by other others). However, there is a continuum between public goods and private goods in that some outputs clearly benefit society as a whole, while others may be realised largely at an individual level and to a varying degree depending on proximity or use of green space. Of course, the green space itself could be public, as with municipal parks, or private, as with residential gardens, institutional lands or golf courses that allow either no public access or varying degrees of access. However, even where there is no access, these spaces could are still capable of supplying *external benefits* such as views or wildlife habitat.

Benefits can be categorised according to a 'total economic value' typology in which some benefits are of direct use value, some of indirect use value, and others of passive or non-use values. The word "passive" acknowledged a degree of use such as an appreciation of a view, while other values are pure non-use (e.g. bequest, vicarious, existence values). There are also benefits realised as savings on other forms of civic expenditure. In the description that follows it requires only a little introspection to understand that green space benefits that might typically have been perceived as esoteric, i.e. amenity, health, wildlife or climate, are either of economic worth or save on expenditure elsewhere.

In that green space supplies economic benefits it is also an economic asset. In competing for finance with other public expenditure needs, the value of this asset requires explanation. Municipal authorities will be concerned to know how these benefits can accrue to the city or how they can be used to attract external funding. For example:

- Amenity and recreation. These benefits are realised firstly by individuals. However, they also provide for health benefits, some of which could accrue to municipal authorities where they can contribute to reduced health expenditure or be used to justify support from national public health programmes.

- Social inclusion. These benefits too are realised firstly by the individuals at risk of social exclusion, but can contribute indirectly to reductions in health budgets and the incidence and cost of anti-social behaviour as well as to more effective inclusiveness programmes.

- User expenditure and events space. Park access can be designed to benefit local businesses through footfall. Parks can also be used for public events with municipalities benefitting either directly from fees or indirectly through local expenditure.

- Environmental quality. Attractive parks attract people to live in cities supporting a level of residential density that permits for efficient municipal service provision and which can raise property prices in surrounding neighbourhoods, in turn directly contributing to local property taxes or business rates.

- Investment. In combination with other civic attributes, attractive parks attract skilled workers, the businesses that employ such workers, and businesses for whom an attractive headquarters is part of the corporate identity. There are indirect benefits for employment and local taxes.

- Tourism and identity. Parks can be part of a city's identity, attracting tourism or acting as a brand for local products. There are benefits from tourism expenditure, to employment and the local tax base.

- Sustainable travel. Greenways and interconnections support walking and cycling, benefitting public health, but also potentially reduced pollution and congestion costs.

- Biodiversity. As well as the benefits to well-being, bio-diverse green space can potentially attract community buy-in and assistance with management, donations, support from NGOs. They could are also potentially attract investment in biodiversity offsets.

- Drainage. Sustainable urban drainage can reduce municipal expenditure on engineered drainage and sewerage as well as reducing localised flooding.

- Climate. Green space can reduce energy demand (i.e. air conditioning) and reduce climate related illnesses with potential benefits for local or national health budgets.

The realisation of these benefits is not inevitable and requires green space to be of a satisfactory quality or to have a satisfactory range of facilities. Poor quality green space is a drain on resources, for example by attracting (rather than reducing) anti-social behaviour. However, while many of the benefits of quality green space are indisputable, quantifying them is another matter.

Nevertheless, it is possible to estimate many of the economic benefits, albeit with varying sophistication depending on how much is invested in the exercise. The most valuable benefit of green space is the amenity (utility) value to individuals. This can be estimated through surveys of park users or local residents to indicate, for example, how often people use parks, how far they come and what they do when they get there. This is information that can lead to more cost-effective management, but which also hints at the health benefits. Surveys can also be used to find out if people have spent money locally in the course of their visit or if the users are from out of town. Tourists can be surveyed directly to discover if parks or the local environment played a part in their decision to visit a town.

Non-market valuation techniques, such as contingent valuation (see box), can be included in surveys too to help quantify the value that people place on park use or a park's existence. Local research support could be employed to broadly estimate the benefits and, perhaps, to add a few straightforward contingent valuation questions to the survey. An alternative non-survey technique is hedonic pricing which is used by economists to measure the extent to which environmental benefits are captured in local property prices. Done correctly, it is a

sophisticated methodology, but an indication of the contribution of parks to local property prices can also be provided by local estate agents or by scrutinising recent property sales.

Valuation Toolkits

CABE Space has developed a pilot Green Infrastructure Valuation Toolkit to value. This set of Excel spreadsheets can be downloaded from www.bit.ly/givaluationtoolkit. The toolkit draws on a "library" containing valuation indices from a very limited range of studies. However, the calculations are transparent and it is possible to replace values in the library with average figures from a wider range of studies or with local estimates. Other elements remain to be developed.

Valuation methods

1) Stated preference methods.

These involve public surveys (e.g. in-park, house-to-house, mail). The contingent valuation method (CVM) asks people (after a suitable range of information and preceding questions) how much they would be 'willing to pay' (WTP) or a change in a non-market 'good'. This could be as an open question (straightforward) or "would you be willing to pay €x?" (more complex).

Discrete choice experiments (DCE) are a more sophisticated variant in which respondents are presented with pairs of 'choice sets' comprised of varying (park) characteristics and asked to choose the set they most prefer. This indicates the value placed on each characteristic, providing useful feedback for the allocation of resources. The inclusion of a 'price attribute' amongst the characteristics means that each can be valued in €.

2) Travel cost method (TCM)

Enquires how far people have travelled and allocates a cost to this (e.g. fuel costs), although, for parks the opportunity cost of time may be more relevant. It is necessary to isolate the park trip from other destinations with multi-destination trips.

3) Hedonic pricing method (HPM)

Estimates how much a environmental good, e.g. a park, adds to property values. Typically requires statistical techniques, although enquiries of estate agents can also work well. 'View' often features highly.

4) Averted expenditure/avoided cost.

Can include the avoided cost of flooding as a (minimum) benefit of green space or of savings on hard engineering investment where SuDS is used.

Ultimately, the objective is to supply the right amount, quality and mix of green space. In this respect, there is likely to be a relationship with substitute public goods such as sports facilities. Many of the benefits of public green space are also substitutable by private green space including gardens in cities that lack a tradition of apartment rentals. An objective is to ensure that the benefits of public green space exceed the costs. There is a direct cost in terms of park maintenance, but also an opportunity cost in that the area may have an alternative development value that could be substantial in some cases.

The following sections describe the various economic benefits of parks and green space. These are grouped as follows:

Use values

- Amenity, recreation and passive use
- Health, exercise and social interaction

Indirect values – Ecosystem services

- Biodiversity
- Sustainable urban drainage

- Flood protection, noise mitigation, temperature moderation and carbon sequestration

Indirect values – Neighbourhood quality

- Neighbourhood quality and property values

Direct and indirect values

- Promotion of city image for tourism and economic development

Funding for parks and green areas

The description under each heading is followed by a section providing examples of estimates and methods of economic valuation.

The report concludes by describing how many of these benefits can provide income or reductions on expenditure for society and local authorities. It also demonstrates how the benefits are inter-related, including for municipal income, climate change adaptation and city promotion.

Use values - Activity related

Amenity, recreation and passive use

Parks and green spaces are highly valued for active recreation, including sports and jogging, for passive use such as sitting, walking and strolling, and for family activities such as accompanying children on walks, bikes and to play facilities. These activities are personally valued by their participants. This benefit also constitutes a public good in that there are very many such individuals and access is typically free. More varied parks attract greater use (Jacobs, 1966) and infrastructure such as exercise facilities, cycle paths and playgrounds attract further levels of use. Jacobs also highlighted the importance of parks as spaces for passing through on route to work, lunch dates, shops, etc. Popular parks support local businesses through increased footfall. Cafes, street-side or in-park vendors can benefit tremendously from this trade as can businesses that appeal to park users, e.g. sports wear. In New York's Central Park, refreshment sales now contribute $4.5 million to the city's budget annually (Askwith, 2008).

Recreational habits are always changing. Cities need to maintain the best of their traditions, but also to evolve facilities over time. Parks will always be attractive for field sports or for families with children where play facilities are available. At present, walking, jogging and cycling are popular with all age groups as are environmental interests. This presents opportunities to capitalise on wider health and ecological policies and to tap such sources for funding.

Economic estimates

Although recreation is an obvious benefit of parks, rather few studies have attempted to quantify this directly. Coskeran (1998) used 'contingent valuation' to estimate residents' "willingness-to-pay" for parks in Northampton (UK), estimating annual values at around £60 per person. Conjoint analysis is another method that can be used to show the public value of different park attributes, thereby contributing to efficient management depending on park managers' ability to direct funding to the most valued attributes. Applying this valuation method in Dublin, Bullock (2008) finds that facilities for passive recreation are a relatively important attribute in neighbourhood parks, but that walking facilities are more valued in larger parks while people are willing to travel further to enjoy features such as the lakes and woodlands. Most activity is represented by light or passive recreation and therefore it is unsurprising that basic paths were the attribute that had the highest perceived value. Parks

with additional facilities for active recreation were valued more. In monetary terms regular visitors in the Dublin study valued the finite selection of park attributes in the experiment at €105 per year, while those using parks around once a month valued these same types of parks at €65 per year. These values are indicative of the contribution that green space makes to economic welfare. The figures become sizeable when multiplied by numbers of users (e.g.. there are at least 500 million visits to parks each year in the UK (Worpole referenced in Askwith 2008).

Health, Exercise and Social interaction

Public health

As well as being of direct use value, recreation also contributes indirectly to public health. As an attractive environment in which to exercise, green space provides an increment to personal welfare, in that people value being healthy. There are benefits to productivity in the form of fewer sick days and even extended working life. In addition, there are savings to the personal health expenditure and to public health expenditure through reduced cardiovascular treatment, a reduced incidence of strokes, type2 diabetes, osteoporosis and depression. Statistical estimates of the 'value of life' are based on people's willingness to pay to reduce the risk of ill-health or premature mortality. In practice, these values are reflected in private health insurance or life assurance payments.

Playing fields serve a purpose too and are often in high demand. In the UK, 70% of 10-40 year olds were once believed to participate in active sports, whereas now this figure has fallen to just 11% for males and 4% for females with the decline being highest amongst teenagers (Sillitoe, 1969). Such trends have obvious implications for physical health.

The same rationale applies to mental health in that green space permits social interaction and contributes to a reduced prevalence of loneliness especially amongst lone parents and elderly people (Sullivan et al., 2004; Kuo et al., 1998; Kweon et al., 1998). Indeed, there is evidence that people feel happier just by being in or seeing green places. Again these acknowledged personal, social and community benefits have an economic dimension leading to benefits of productivity and savings in healthcare.

Finally, trees capture airborne particulates and reduce environmental risk factors leading to respiratory problems and possibly cancer. The Trust for Public Land claims that trees can remove as much as 18% of surface ozone and 13% of particulates, but only where tree cover is continuous. Torbay in England has estimated that its 818,000 trees remove £218,000 of pollutants each year in addition to the carbon sequestration benefit.
(http://www.torbay.gov.uk/itree?dm_i=JEZ,OHQP,2WRV4W,1ZMTA,1)

Children's health and development

There is every reason to expect that children who are encouraged to exercise are less likely to suffer from obesity either as children or once grown-up. In Ireland, around 60% of adults take insufficient physical activity (HSE, 2007) and 16% are classed as inactive (ESRI, 2011). Only 51% of boys and 38% of girls undertake the amounts of exercise recommended by the Health Service and by the age of 15 these figures have fallen to 27% and 13%. Inactive children are likely to become inactive adults. In addition, there could also be benefits in fostering social and spatial skills by providing exciting play areas such as woods or, indeed, wasteland (Valentine & McKendrick, 1997; Burgess et al., 1988; UK DoE, 1973). It is very likely that these attributes could be of economic advantage in later life.

Estimating the economic role of green space in reducing health expenditure is a near impossible task given that even the role of exercise (as a whole) has not been reliably quantified. However, the cost of treating obesity already exceeds that for lung cancer. There are various estimates of the costs of inactivity, many of which are taken from the US where levels of obesity are currently higher. In Europe, the health costs of inactivity are claimed to cost everybody at least €150 per year (UK Dept of Health, 2004). In Switzerland, the direct (treatment) cost is estimated at €170 per capita per year and indirect costs (productivity losses) at €85 (Martin et al., 2001). For purposes of estimating the benefits, Hakim et al (2005) find that if just one in every 100 inactive people in were to take regular exercise, for instance by walking, this would save the (Scottish) Health Service £88 million per year. There are also productivity benefits. Elvik (2000) estimates that extra physical activity reduces absence from work by 1% (from 5%-6%). Given an average industrial wage of around €36,000, the benefits of a previously physically inactive person taking more exercise would therefore be worth €2,900 per year after tax, but more to society if measured in terms of an individual's contribution to economic output. On the basis of these figures, if 1% of the 630,000 Irish people visiting parks at least once per week were previously inactive this saving could be worth up €34 million per year. Sports injuries could reduce this figure, but can be discounted on the basis that these are relatively few in most parks. However, parks are not the only sources of exercise. In valuing green space in Scotland, Regeneris (2009) reduced their total benefit estimates by three quarters on the grounds of additionality.

Sustainable Travel

In many cities, greenways including those that link parks or follow rivers, canals or former railways, provide an attractive environment for walking and cycling. A major benefit is to health. Where greenways are used for commuting there are also benefits in time savings for participants. Time has an opportunity cost. If priced in income as a proxy for gained working time or productivity, the benefit can be quite substantial and is a contribution to the efficiency of a city functioning equivalent to the benefit from investments in metro systems. If the level of walking or cycling is substantial, greenways can also contribute to reduced traffic and congestion with benefits that extend to the rest of society as further savings in time or reduced external costs associated with pollution or accidents.

The Irish Department of Transport values commuting time at a market price of €8.10 per hour and non-work journeys at €7.32 per hour. Similar indices will have been estimated for other Member States. For an medium sized town with a working population of 3,000 and a college population of 1,000 these values could result in time savings of €240,000 per year if 10% of these individuals were to save just 20 minutes each day on their journeys to and from work or college. If these journeys do lead to reduced road traffic, then these benefits can also be quantified on the basis of reduced vehicle operating costs, pollution, carbon emissions and potentially reduced likelihood of accidents.[1] However, for journeys through parkland landscapes a higher level of benefit is likely to be realised by the participants themselves in terms of utility and health benefits.

[1] Benefits have been estimated for the Dublin Share Bike Scheme by Optimize (2011).

Indirect use values – Ecosystem services

Biodiversity

Green spaces provide habitat for wildlife. To the extent that this wildlife is appreciated by people and contributes to quality of life, there is an economic benefit. The scale of the benefit depends on the mix of ornamental or natural vegetation. Recently, the Britain in Bloom festival has moved to encourage the use of more native wildflowers that are attractive to insects. As such, there is the potential for more ecosystem service benefits such as pollination where there are natural areas or meadows. Green space can also provide islands of urban biodiversity and, where configured as greenways, may have particular benefits in overcoming fragmentation by permitting the movement of wildlife through the urban environment. There are also direct economic benefits through the conversion of intensively managed flowerbeds and lawns to wildflower meadows with consequent savings on water, fertilisers and mowing.

Economic values
There are estimates of the value of pollinators and of other insect services, but in relation to agricultural output rather than allotments or to gardens. However, vegetables and fruits are highly dependent on pollination. A higher value is likely to be city dweller and park users' own valuation of urban wildlife in terms of the utility benefit, although we can find any specific quantifications of this value.

Sustainable urban drainage systems (SuDS)

Most urban flood events are due mainly to run-off from hard surfaces rather than rising rivers. In urban areas, run-off can amount to 85% of total precipitation (Hough, 1989), a proportion that has been increasing given the tendency for households to hard surface areas for car parking and alike. By contrast, green space allows water to be discharged directly to the underlying water table rather than diverted through pipes or drains. In itself, drainage is not an ecosystem service, but there is potential to use the ecosystem to remove pollutants, e.g. hydrocarbons from road surfaces, through engineered wetlands and to avoid run-off needing to be cleaned along with sewerage in older drainage systems. Consequently, SuDS conforms with the Water Framework Directive by benefitting water quality, reducing surface water, and allowing for groundwater recharge. There is also the potential to create new areas for biodiversity and amenity,

Aware of the threat of climate change and of the increased incidence of heavy rainfall events, local authorities have become even more conscious of the benefits of green space for drainage and of designating particular areas for this purpose. As this threat has only acknowledged by local planning policy in the last 10-20 years, cities are realising an "option value" from former zoning for open space.

Economic values
Potentially economic values can be estimated for individual cities depending on data on the extent of suitable land for SuDS, the past incidence of flooding and the costs of conventional pollutant removal. Research at the University of Manchester suggests that Increasing green space by 10% can reduce surface run-off by almost 5%. In the UK, the annual maintenance cost of conventional drainage has been put at £2,800 whereas a comparable area of SuDS could be managed for £917 (Bray, 2002). The savings would be higher where existing sewerage systems are inadequate or where stormwater is mixed with sewerage. The capital costs of conventional drainage are also likely to be higher.

Flood protection, noise, temperature moderation and carbon sequestration

Trees, especially where accompanied by an understory, help to reduce traffic and other noise. The benefit can be overstated. Bolund & Hunhammer (1999) argue that a significant sound reduction requires a hundred metre wide foliage barrier, although Coder (1996) reports a 7db reduction with each 30 metres. There are certainly significant benefits by reducing the visual disamenity of traffic.

For temperature, parks and green areas provide shade or a cooler microclimate impact that is of particular value in hotter countries. This in turn attracts users adding to the amenity value. This effect is a significant economic benefit in hot countries where heat-stroke and productivity losses could be reduced. There are also significant energy savings through reduced use of air conditioning. Woodlands can also provide benefits in terms of water retention. In cooler climates, shelter is an immediate benefit for park users while wooded areas will provide adjacent properties with protection from wind.

Climate change mitigation through cooling or carbon sequestration are benefits that went unappreciated until recent times and which may be of greater value in the future. As such, they are other examples of an option value. However, for sequestration, the net benefit is marginal as parkland trees are mature. The main benefit is through the carbon storage of the standing stock of trees, although this too is likely

Economic values

Wetlands provide protection from flooding and potentially pollution, but often serve as areas for amenity, agriculture or wildlife reserves too. The Ile de St Aubin, an environmental reserve above Angers floods in winter reducing the risk of flooding in the city. In 1995, flooding in Angers cost between €100m-150m. 20,000 citizens are at potential risk (Tribune-Angers, 3 Jan 2011).

There are various estimates of the benefits of reducing noise, particularly in relation to property values, for example Brett et al. (2007), Clark (2006) and Duarte et al. (2009)., but particular for high noises such as aircraft for which green space will have little impact. Property based hedonic studies are likely to compound reductions in noise with the value of views.

The utility values of climate amelioration through cooling is significant as the external benefits extend to surrounding built areas and because of the use by urban residents seeking the comfort of shaded parks. It has been suggested that a 10% increase in the area of trees would reduce urban temperatures by as much as 1ºC and of green space by as much as 4ºC (Burdick, 2007; Nowak & McPherson, 1994). This contribution can be linked to the cost of health care, and of mortaility, for occasions where temperatures exceed the locally acceptable thresholds (e.g. 25ºC in the UK). Economic estimates could be devised. In principle, a (complex) methodology for estimating this effect is provided by Hubler et al. (2008). In cooler climates, protection from wind and rain is as important for users.

In Dublin, Ningal (2012) has estimated that the city's trees sequester 11% of vehicle CO_2 each year. London plane trees perform best due to their large canopy. The benefits will be greater in urban forests or forested country parks and figures for CO_2 are readily available for various tree species.

Indirect values – Neighbourhood quality

Neighbourhood quality and property values

Typically, houses that command a view of green space attract a higher property value because the value of the view is capitalised in the house price. Indeed, raising real estate values was one of the earliest rationales for parks, for example Central Park. For American cities, Crompton et al (2001) report high values for properties adjacent to small quiet parks. The extent of this benefit does, of course, depend on the quality of the view or of the park. Unattractive spaces, or ones subject to crime or anti-social behaviour, including the possibility of burglaries, have been shown to reduce the value of surrounding properties. On the other hand, Ernst and Young found that rents in the vicinity of New York's Bryant Park (i.e. "Needle Park") rose by between 75% and 152% more than in surrounding areas after the park's rehabilitationin the 1990s. For 20 US cities, Crompton (2000) noted that the local tax income from these combined value increments exceeded the maintenance costs of the parks. There could be displacement effects whereby these values are substituting for potentially higher values at other locations within the same city. However, a net effect will arise if the purchasers of these properties would otherwise choose to live in another city or the countryside.

In that municipal authorities aim for well-managed green spaces, these can be expected to contribute property values, especially to adjacent properties and especially where towns have relatively few green spaces (Cheshire & Sheppard, 1995). They also raise the appeal of a wider area. A further factor is the separation that undeveloped green areas provide from neighbouring new development (Schwartz, 1981; Knapp, 1985; Katz & Rosen, 1987, Geoghegan, 2002). The distance-decay factors measures the extent to which the increment to values diminishes with distance and will depend on many factors of which green space is only one. The challenge is to identify the increment that is due to the green space and this will vary from city to city. The property price increment will also include a varying contribution the use value that residents attach to a park for recreation as well as for views or neighbourhood quality.

The increment to property values and the steepness of the distance decay curve is location specific. Examples of prices are irrelevant in this context, but percentages give some indication of the contribution. Estate agents in fashionable areas of London claim that adjacent green space can add 10%-20% of value to a property (Llewellyn-Davies, 1992; Markosky, 2003). For adjacent properties, Peiser and Schwann (1993) report prices of 15% and Correll et al (1978) prices that were 32% higher. CABE Space (2005) reports typical increases of 5%-7%. The increment to adjacent properties is principally attributed to view. However, a University of South California study found that prices were 11% higher than average within a 60-150 metre radius where views were less of a benefit and that this increment applied even in poorer neighbourhoods. In Portland, Lutzenhiser and Netusil (2001) estimated increases of 1.8% even within 450 metres.

Direct and Indirect Values

Promotion of City Image for Tourism and Economic Development

Some authors claim that quality green spaces can contribute to a city obtaining a higher share of inward investment or of retaining skilled workforces. Indeed, American cities annually

compete with one another to climb up the quality of life ranking in an effort to attract investment and high calibre workers. Portland is often described as one of America's most "liveable cities" and is home to Hewlett-Packard, Intel and Hyundai.

The notion of liveable cities corresponds to the neighbourhood quality that is reflected in property values. Investment in green space is almost invariably a feature of public investment in urban renewal. It can also be used to provide a new definition to regenerated areas. The vital role of parks in urban regeneration is officially acknowledged in the UK Department of Environment reports People, Parks and Cities (1996) and Greening the City (1996), the latter concluding that parks may not in themselves stimulate economic regeneration, but "are essential components of comprehensive strategies".

In this same way, parks and green space can contribute to an entire city's distinct identity. These identities are now actively pursued by European cities for marketing purposes (see "The Creative City", Landry et al, 1997). Marketing a city's green environment is used to attract tourists. Parks or open space are certainly part of the attraction of visits to London, Barcelona or, indeed, Angers and Pau. Parks can also be a forum for entrenching this image through the use of local products and skills such as masonry or sculpture. As such they can contribute to a recognition of a characteristic products from a city or its "brand"

Economic values
Although various claims are made of the value of green space in company location decisions (e.g. Sherer 2003), there have been no serious studies of the direct role of parks in attracting investment. It is conceivable that the alleged benefits could equally be secured by other environmental policies, cultural heritage, attractive modern architecture or social vibrancy. However, certain parks can certainly attract tourism, for example London's royal parks or Central Park in New York which the Central Park Conservancy claims that the city earns $1 billion each year from the park's 25 million visitors. The contemporary interest in gardening, combined perhaps with reduced local authority expenditure, are factors in a 116% increase in visitor revenue (entry fees and shop sales) at UK National Trust owned gardens between 1989 and 1998 (Hanna et al, 1999). Of the partner cities, tourism is an element of the **Angers** economy given the city's history along with its parks' floral identity and the attractions of the local countryside which itself is linked to the city's green spaces and the Ile St-Aubin through a network of trails. In **Vila Nova**, the stone craftsmanship on show in the city's parks is a distinct feature and one that can be used both to sustain local jobs and skills and to market an image more nationally.

Funding for Parks and Green Areas

These days funding for parks and green space is likely to come from a variety of sources. Tin the UK most funding still comes from local authorities, but central government account for 12% and lottery funds for 9% and developer levies for 5% (Collomb, 2012). Businesses and charitable trusts can also be sources of funding (e.g. there are 8,000 grant making trusts in the UK). Alternative sources of funding include economic regeneration, health, sport, crime prevention and specific government initiatives.

This review of the economic benefits provides some indicators of how project cities could justify expenditure or look for additional funds from the last sources as well as from other local departments and non-governmental organisations. Calculations of the amenity benefits of parks could be used to justify funding, including commercial sponsorship, but there are also direct opportunities to, for example, funnel footfall along retail routes (strengthening

local businesses, employment and prospects for rateable values), or to obtain revenue from licenses for street or in-park vendors. The health benefits of amenity are near impossible to quantify, but are certainly convincing enough to justify support from national health programmes, perhaps through funding of joint initiatives such as walking routes or greenways. Likewise, there can be financial synergies with other local authority departments where municipalities share responsibilities for the funding of health.

The contribution of parks to property values can be partially recovered through planning levies, property taxes and commercial rates. In this case, there is a very clear self-interest behind municipalities' investment in parks. Local economic development, transport and environmental agencies should have an interest in the potential time savings of sustainable commuting using greenways. Likewise, they should have an interest in the city's profile for the purposes of investment and tourism. Investment in green space is a relatively quick-return method of transforming images and of making a city more attractive to tourism, including in the first instance, day trips based on shopping or cultural visits by non-locals with the consequent benefits this brings for local expenditure.

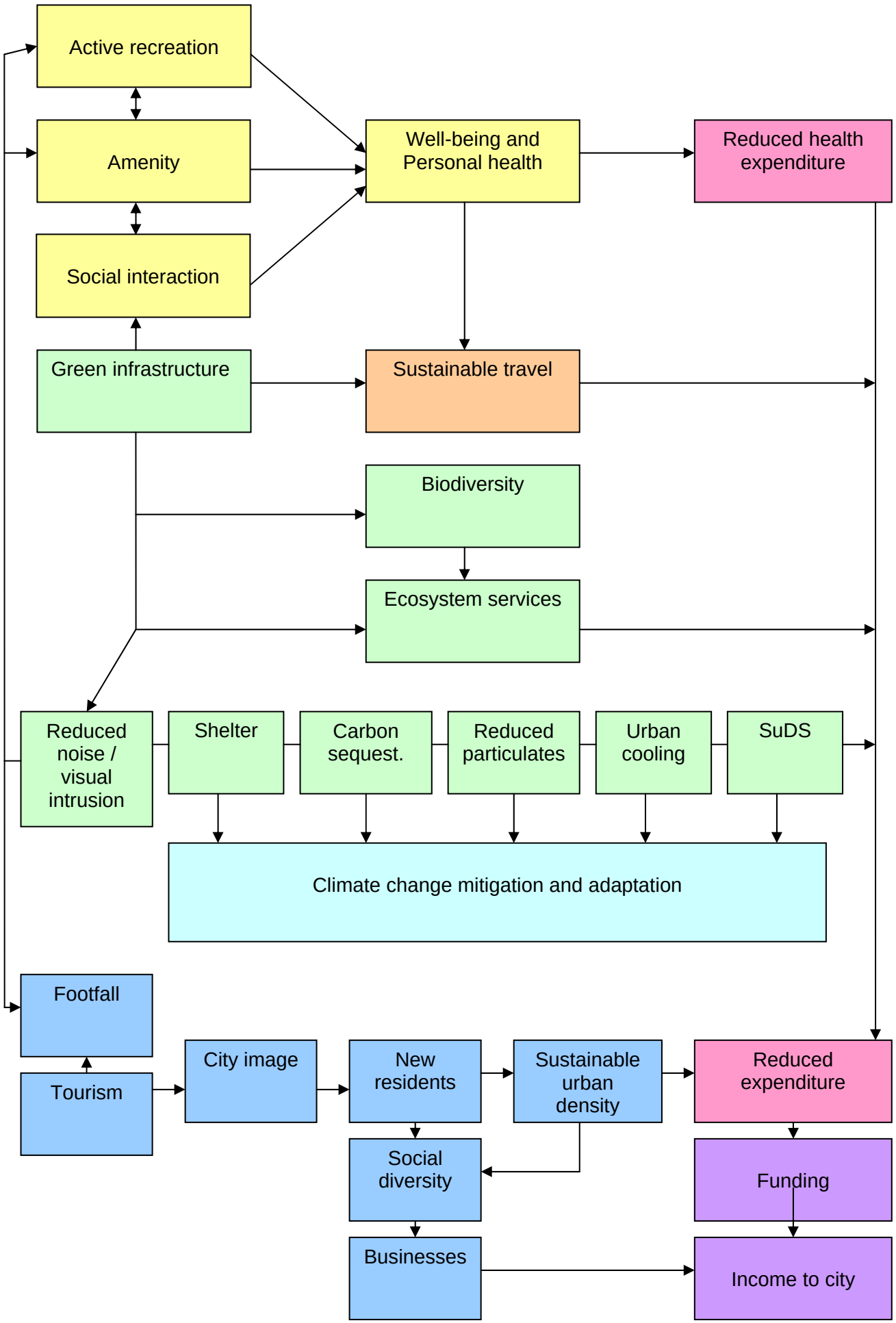
Biodiversity provides a means to engage the community. There are opportunities for local sponsorship. There are also opportunities for increase public participation including voluntary input into park maintenance. Policy shifts means that urban green space is increasingly being perceived as part of a wider natural environment and green infrastructure agenda. Partnerships can be nurtured with state and voluntary conservation agencies. There is also a possibility for funding from biodiversity offsets in exchange for development elsewhere that may have an adverse impact (http://www.defra.gov.uk/environment/natural%20/biodiversity/uk/offsetting/) Several pilot projects are being started in the UK. Areas for sustainable drainage offer opportunities for wetland creation. In addition, sustainable drainage offers quantifiable economic savings that could be used to secure more income for parks budgets from departments traditionally concerned with water or sewerage.

Inter-relationships

Each of the benefits of parks and green space is inter-related at one level or another. For example, the health benefits and savings are linked through amenity, recreation and social interaction. These equally impact on a city as an attractive place to live providing, in turn, benefits in terms of new residents, new businesses and tourists. The ecosystem services of green areas underpin the amenity and residential attributes and also provide for green commuting, healthier lifestyles and reduced reliance on the car. Equally, they provide reduced health risks from particulates or excess temperatures and soft engineering alternatives to drainage investment, each of these presenting an opportunity for climate change adaptation.

Conclusion

Parks and green space contribute to quality of life, the attractiveness of cities and the well-being of their inhabitants. These are also economic benefits. In several respects, parks and green areas also provide direct benefits to the economy or savings for society and local authorities. Inter-linkages exist between each (see figure below) such that well-maintained, strategically planned open space with a range of facilities and ecosystem services should never be regarded as just a budgetary outlay, but ultimately an investment in the future prosperity of the city.


Active recreation
Amenity
Social interaction
Well-being and Personal health
Reduced health expenditure
Green infrastructure
Sustainable travel
Biodiversity
Ecosystem services
Reduced noise / visual intrusion
Shelter
Carbon sequest.
Reduced particulates
Urban cooling
SuDS
Climate change mitigation and adaptation
Footfall
Tourism
City image
New residents
Sustainable urban density
Reduced expenditure
Social diversity
Funding
Businesses
Income to city