

A Networking Experience for Successful City-River Interfaces

edited by Biagio Guccione, Andrea Meli, Giorgio Risicarìs



RiverLinks

interface d'excellence pour un rapport durable ville fluvie



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Contributors

This book is a synthesis of the work undertaken by a large working group over three years. The texts published here were written by the following authors: chapters 1, 2, 3, and 6 by Giorgio Risicaris, chapter 4 by Biagio Guccione, chapter 5.1. by Siim Sarapuu, chapter 5.2. by Jean-François Guérin, chapter 5.3. by Andrea Meli, chapter 5.4. by Detlev Soeffler, chapter 5.5. by Francisco Javier Pando Sastre and chapter 5.6. by Christian Korndörfer and Frank Frenzel

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via Fiume, 8 - 50123 Firenze
Tel. 055/289639 - Fax 055/289478
www.edifir.it - edizioni-firenze@edifir.it

Editorial project
Simone Gismondi

Editorial co-ordination
Massimo Piccione

Layout
Fabrizio Sodini

Translations
Biagio Guccione, Antonio Brancato (Italian)
Frank Frenzel (German)
Maria Luisa Diaz Borrego (Spanish)
Anne Raimat, Jean-François Guérin, Cabinet Gallagher (French)
Siim Sarapuu (Estonian)

Supervision of the English texts
Clare Littlewood

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Pacini Editore Industrie Grafiche – Ospedaletto (Pisa)

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Introduction

Throughout man's history water has always constituted a "vital" factor of great attraction for all civilisations.

Along the banks of the Arno Florence has developed one of the most flourishing and famous cultures in the world, where its own architecture characterises its landscape and history.

The Arno, however, is a quaint river with the characteristics of a stream and the ambitions of a river rather than the poetic, light-hearted nature of a waterway "of silver in which the firmament is reflected".

Throughout its history the Arno has been the cause of periodic floods which have damaged the city, culminating in the dramatic one of 1966 which has its fortieth anniversary this year.

To avoid the risk of new floods the administration and the firms appointed to manage the situation have recently concentrated on many interventions of prevention and maintenance with the scope of reducing and avoiding flooding in the future.

In this context the studies of the renaturalisation of the waterways and the installations expressly made for hydraulic safety have been repeated and River Links has also suggested unifying safety and landscape, two important aspects of a river which crosses a city such as Florence.

A river flowing through our city in the form of a canal would not be easy to appreciate, where historic palaces, monuments, hills and parks would have to vie with concrete banks, completely out of harmony with life around them.

For these reasons the work produced by River Links can contribute in making the coexistence between the city and its river more compatible and pleasant, not only for Florence.

Claudio Del Lungo

Environment Councillor of Florence Comune

Introduzione

Nella storia dell'umanità l'acqua è sempre stata un fattore "vitale" e di forte attrazione per tutte le civiltà.

Firenze ha sviluppato, sulle sponde dell'Arno, una delle culture più fiorenti e famose del mondo, con una sua architettura che ne caratterizza il paesaggio e la storia.

L'Arno però è un corso d'acqua bizzarro avendo più le caratteristiche di torrente con ambizioni di fiume che quelle poetiche e spensierate di un corso d'acqua «d'argento [dove] si specchia il firmamento».

Nella sua storia l'Arno ha avuto periodiche alluvioni con le quali la città ha dovuto fare i conti fino all'ultima drammatica del 1966 della quale ricorre quest'anno il quarantesimo anniversario.

Per porre rimedio al rischio di nuove alluvioni l'attenzione delle amministrazioni e degli enti preposti alla sua gestione e manutenzione, si sono concentrati in questi anni in innumerevoli interventi di prevenzione e manutenzione con lo scopo di ridurre ed evitare in futuro il ripetersi di esondazioni.

In questo contesto gli studi sulla rinaturalizzazione dei corsi d'acqua e delle opere idrauliche realizzate espressamente per la sicurezza idraulica si sono ripetuti ed anche River Links ci offre uno spunto per far coniugare due aspetti importanti di un fiume che attraversa una città come Firenze: la sicurezza e il paesaggio.

Sarebbe difficilmente apprezzabile un fiume che attraversa la nostra città che avesse le sembianze di un canale, dove i palazzi storici, i monumenti, le colline e i parchi dovessero fare i conti con sponde in cemento o completamente disarmoniche rispetto alla vita circostante.

Per questi motivi il lavoro prodotto con River Links potrà contribuire, non solo per Firenze, a rendere più compatibile e piacevole la coesistenza fra la città e il suo fiume.

Claudio Del Lungo

Assessore all'Ambiente del Comune di Firenze

Preface

It is common knowledge that rivers exert a strong attraction in terms of landscape, recreation, touristic and cultural appeal, but this conflicts with the serious problems arising from safety and the results of catastrophic flooding.

Modern technology used in the hydraulic systems of the flood storage area and the consequent control of the water flow, have encouraged citizens to approach waterways with open minds and to develop a calmer, more constructive relationship with their rivers.

In this context River Links strongly relaunches the appeal of waterways crossing cities and stimulates the approach towards a more active connection with the river and its banks.

European examples for the positive processes launched during the upgrading of cities in their relationship with rivers are plentiful.

Sixteen case studies were selected for their original solutions for the protection and revitalisation of river banks, all carefully evaluated and considered according to the specific realities of each urban context.

These include cities which have concentrated on solving the problem of flooding; others which have chosen to expand the reclamation of manufacturing areas along rivers; still others which gave greater importance to the landscape for recreation purposes; some cities have revitalised their historic centres and rediscovered the neglected relationship with their rivers.

This study involved meticulous investigation, supported and encouraged by the enthusiasm of the partners who assiduously believed in River Links, and the passion of the consultants who gave their utmost to this European project.

So to all these friends I deliver my heartfelt, affectionate thanks for their participation and their perspicacity.

My sincere thanks also go to the European Union which made the study of these "optimal practices" possible which will permit the reader to draw useful conclusions for a better approach towards his own river.

The teamwork involved in this context should not be allowed to end; I consider it useful, even vital, to request further support from the European Union so that this store of experience and knowledge can be extended and integrated with other realities where environment and landscape themes coincide with the needs of the river.

This activity should certainly find valid support in the next structural funds which Europe will have at its disposal.

Giovanni Malin
RiverLinks Project Coordinator
and Director of the Environment Office
in Florence Commune

Prefazione

Che il fiume rappresenti un'attrattiva forte per tutto quanto può offrire in termini di paesaggio, di vita sportiva, di richiamo turistico e culturale, ma che si ponga anche in modo conflittuale per le gravi problematiche legate alla sicurezza e quindi ai grandi eventi sfociati in catastrofiche esondazioni, è questione ben nota. Le moderne tecnologie legate alla sistemazione idraulica delle casse di espansione ed al controllo quindi delle portate fluviali, hanno indotto i cittadini ad avvicinarsi con maggiore apertura ai corsi d'acqua ed a rivivere, pertanto, il rapporto con il fiume più sereno e costruttivo.

River Links si pone in questo contesto, rilanciando in maniera forte il richiamo verso i corsi d'acqua che attraversano i centri abitati, stimolando contestualmente l'approccio verso una più attiva vita con il fiume e le sue sponde.

Gli esempi in Europa non sono mancati, per i processi positivi che hanno rilanciato la riqualificazione delle città nel loro rapporto con i corsi fluviali.

Ben sedici casi sono stati selezionati per le loro originali soluzioni di salvaguardia e di rivitalizzazione delle sponde, esempi tutti da valutare e considerare con attenzione in ragione delle specifiche realtà vissute da ogni contesto urbano.

Si ritrovano quindi città che hanno puntato a risolvere il solo problema delle alluvioni; altre che hanno optato più ad incrementare il recupero delle aree produttive lungo fiume; altre ancora che hanno dato maggior valore alle caratteristiche del paesaggio per garantirne i fini ricreativi; altre città, infine, hanno rivitalizzato i

loro centri storici recuperando il rapporto, da tempo trascurato, con il proprio corso d'acqua.

Un lavoro d'indagine, meticoloso e puntuale, sostenuto ed incentivato dall'entusiasmo dei partners che assiduamente hanno creduto in River Links, e dalla passione dei consulenti che in questo progetto europeo hanno dato il meglio di loro stessi.

Ed allora a tutti questi amici il mio ringraziamento più sincero ed affettuoso, per la loro partecipazione e per il loro acume.

Ma un grazie sentito va anche all'Unione Europea che ha permesso lo studio di queste "buone pratiche" e che ha indotto così il lettore a trarre utili spunti per un migliore approccio con il proprio fiume.

La collegialità condivisa tra le parti in questo contesto non può però esaurirsi; ritengo utile, direi quasi necessario, un ulteriore sostegno da parte della stessa Unione Europea perchè questo patrimonio di esperienza e di conoscenza possa ampliarsi ed integrarsi con altre realtà territoriali ove la combinazione delle tematiche ambientali e paesaggistiche bene si coniuga con le esigenze fluviali.

Un'azione, questa, che potrà trovare certamente valido sostegno nei prossimi fondi strutturali che l'Europa metterà a disposizione.

Giovanni Malin
Coordinatore Progetto RiverLinks
e direttore della Direzione Ambiente
del Comune di Firenze

The RiverLinks project

1.

The RiverLinks project challenges

A unique opportunity for the future of European river cities

A large majority of inland European cities are developed along rivers that defined their prosperity, health and wealth as well as causing damage and disasters. The European urban civilisation is strongly influenced by an economic and social development strengthened around water courses and supplied water power. Rivers constituted the heart and soul for crafts, industries, communication, recreation and food provision of citizens for many centuries. Such a lucky equilibrium permitted the development of intensive urban life, social spaces, employment, markets, scientific advancement, culture and arts.

The exhausting power of the industrial revolution during the 20th century, the new power sources and the globalisation of production changed European cities radically and river cities even more so.

Rivers crossing cities are no longer a key economic issue, a protagonist and conditioning element for urban life. Nowadays, citizens discover that their rivers still exist only during flood damage, pollution emergencies or accidents and they cast a rapid glance down to the water whilst crossing bridges.

This is a generalised negativity produced over the last decades, defined principally by fear, indifference, lack of knowledge and absence of physical river spaces for life.

Our European cities on the other hand are now experiencing a flourishing period of regeneration and redevelopment. Urban spaces are rapidly reorganised, reshaped and reactivated looking forward to a new, qualified and winning appeal. Disused areas,

abandoned buildings and entire neglected neighbourhoods welcome new investors, innovative activities, new residents and visitors. A surprising urban springtime is increasingly affecting our cities, starting from large capitals and powerful towns that react to a generalised development push introducing large renovations, down to weaker, smaller towns that use renovation for standing and upgrading in global competition.

Within this framework, European river cities can count on the precious legacy of their history and rediscover river spaces as a unique potentiality able to offer them a step ahead if well integrated into a future vision and wisely managed in a sensitive environmental perspective.

In the framework of this analysis, the European Commission supported the RiverLinks project within the Interreg III C south Initiative, dealing with the challenge to examine existing potentialities in six representative river cities, to compare the planning experiences developed, evaluate the results obtained by several recent realisations and draft new local scenarios together with larger European visions and recommendations.

River areas crossing metropolitan spaces are composed of a multitude of historic sedimentations, recent developments, green parks, abandoned functions, incompatible infrastructures, that produce a back yard effect weakening the challenging interface with the water surface, the largest public square of these cities.



Florence, Arno river by bike



Lyon, the Rodano river banks

2.

Facing emergencies and highlighting excellencies

From optimal practices to a new planning framework

The RiverLinks project aimed to face the recent state of emergencies created by a critical state of security in river cities in Europe, due to extreme climate phenomena that caused damaging floods recently in central Europe and the consequent measures programmed to reduce risk and manage river waters crossing urbanised areas. The reason of this insecure balance should be better evidenced in the framework of the generalised neglect of rural and forest lands along hydrographical basins and of the high speed of water during intensive rains that face physical restrictions of the river courses through urbanised areas.

River cities are supposed to supply hydraulic management plans introducing new overflow basins and dams in order to improve water control and reduce flood risk in urban areas. RiverLinks aimed to evaluate the perspective to combine such measures with the need for river environment upgrading and improved interface with the cities.

If rivers represent a risk for citizens today, they should be managed in a way to obtain both a generalised secure and highly qualified urban space in which to live and share excellencies and values.

The evident scale economy of this perspective should be further strengthened by the low cost availability of public river spaces

suitable for rediscovery and integration into city life. On the other hand a long time inertia of river spaces or a consolidated neglect of former uses are progressively introducing development visions under the economic pressure for investment and greater land value, not always integrated into a secure and quality framework for wise water management and flood protection. The hard tendency for inner city regeneration should take advantage of water management and environmental policies in a harmonious and balanced perspective.

A new methodological framework should focus on merging development and safety, apart from environmental quality and nature preservation purposes. RiverLinks aimed to contribute towards this by using militant and intensive dialogue and exchange of experiences between six river cities which applied six different approaches for river urban developments. Each city partner promoted a range of measures in a local framework corresponding to a concrete decision making process and a real intervention programme.

Partner cities met several times, pooling their experts to discuss and assess how to skirt emergencies by introducing quality and integrated visions and then, how to strengthen this quality by using excellence and endogenous values.



Florence, Arno river



Lyon, the Rodano river banks

3.

A collegial approach and a common chance
to promote different scenarios

Experiences in a network arena

The methodological performance of the RiverLinks project, took advantage of the differentiated scenarios developed by project partners within the common aim to link the cities to the rivers using integrated interventions and quality developments. Through this approach, differences became the wealth of the new shared knowledge produced and of the increased sensibility promoted. Each pilot project's strengths and weaknesses offered a source of comparison between the partners and precious opportunities to gain experience from optimal practices and to avoid errors.

Dresden: high value experience for historic town protection against floods, elaborated after severe damage in 2002.

Bordeaux: extensive operation for the Garrone river integration of abandoned areas and natural spaces into city life.

Florence: improvement of the interface between "Le Cascine" historic park and the river and creation of a natural park in the overflow basin of Argingrosso.

Bremen: improvement of water quality in the old peat harbour and canal and creation of a link between city life and its water.

Pirita: development of a recreation park in the Pirita valley compatible with the natural values of the area.

Sevilla: qualification of the Triana neighbourhood interface with the river creating a linear park and pathways.

Four thematic areas enabled comparison and codification of work progress using a key to assess the differences: Natural and Cultural Landscapes; Equipped Parks; Infrastructures and Services to Citizens; Boating and River Activities. Each city undertook a pilot project that included one or more of these themes, and offered its own general experience, pointing out specific approaches and involving sensitive topics such as: Environment Qualities, Flood Protection measures, Natural Life, Cultural Values, Citizen Participation, Investors' Interests, Recreation Vocation.

RiverLinks Pilot projects offered a range of contributions to each of the thematic areas which permitted a balanced joint overview, hard to obtain through individual performances tackling local problems and emergencies by seeking solutions alone.

An analysis of each theme, evaluating the added values sourced by RiverLinks pilot projects.

Natural and Cultural Landscapes

This is the mainstream topic that should support a river-city interface development since urban water courses are first of all nat-

ural ecosystems and specific environment values that produced tangible and intangible cultural heritage defining living conditions between city, citizens and their river through the centuries. All pilot projects elaborated parts of their plans dealing with this thematic area.

It is the case of the Pirita river valley plan for a recreational park in Tallinn, which should globally preserve and restore natural fauna and flora ecosystems in a compatible way with light human activities. The challenge of this plan is to define activities that do not interfere negatively, producing a damaging impact on natural life. The critical point is to clearly define the limit to introducing new activities and to establish use intensity limitations. The plan is supposed to protect the valley from contrasting developments while permitting limited physical transformations for services and infrastructures. Pirita's case is quite a rare example of well preserved natural ecosystems in urbanised areas and gives the project partners an opportunity to learn a lesson concerning the risk between two distinguished perspectives: reaction and preservation, introducing unique environmental quality for citizens or overcharging and intensification, resulting in the exhaustion of the natural heritage.

A different approach came from the Sevilla plan introducing intensity along the river front of the Triana neighbourhood. Its aim is the opposite to the Pirita plan. Taking advantage of the stable water level of the "darsena" and the limited natural characteris-



Tallinn, Pirita River valley

tics, the plan aims to increase citizens' presence and activities in order to offer recreational opportunities, reinforce public security, promote private developments along the built river front, generate footpaths along the banks, improve built environment quality and open spaces. This is a correct approach for an impaired urban river front that can radically contribute to the quality of urban life by regenerating an open public space enabling an intensive river life for citizens.

The case of the Bordeaux RiverLinks pilot project is quite similar to Sevilla but with a higher natural parameter to consider. The Lormont neighbourhood along the Garonne, a few km from the city centre, is heavily damaged by important infrastructures such as a high bridge, traffic and a railway crossing. The plan aims to introduce new environmental quality for the neighbourhood promoting environment and landscape values, also using a footpath along the river bank. This is an integrated development perspective for the neighbourhood including both nature preservation and citizens' activities in balanced and distinguished zoning. The lesson learned by this experience corresponds to the majority of border urbanised areas along rivers which require a development perspective based on environmental values and strengthened by preservation and restoration of natural ecosystems.

The project developed in Florence is much more effective than the Bordeaux case, since an historic park and an overflow basin are involved on opposing river banks. This crucial urban area on the western border of the city is strategically positioned in the heart of the most populated neighbourhoods, offering a unique opportunity to develop a new river front with high level natural and cultural values, open to citizens. It is the case of the potential of Le Cascine historic park, presently under-exploited, and of the Ardingrosso overflow basin area with its many incompatible uses, agricultural activities and abandoned spaces. The plan permitted the codification of existing visions and projects in a unifying perspective as an introduction to new integrated planning. The aim of the plan is to create a new natural river front to the historic park allowing access to the water and outdoor citizens' activities and to promote environment values and preservation of the natural ecosystem in the Ardingrosso area together with social and recreational uses.

Equipped Parks

This topic deals with river front urban areas still to be developed while balancing the environmental option together with important physical regeneration. This is a particular approach involv-

ing large urban areas where the environment is not the predominant element but the qualifying one for planned development. Elements of the RiverLinks pilot projects and other river experiences of partner cities offered success stories and visions for the creation of equipped parks.

It is the case of Bremen and the Expo 2000 developments across the river Weser that permitted a balanced regeneration producing high quality environment for dwellings, recreation and commercial activities. In this case the excellence of the river environment supported a linear development of urban fronts and areas introducing new life and activities near to the river docks and permitting recreation and open air activity for citizens.

A similar experience in Sevilla along the Cartuja island, site of the Expo installations, and along the disused railway areas on the opposite river bank, allowed a radical upgrading of the urban river fronts and programmed future developments. This is part of an integrated linear system of parks intended to connect all the darsena's city-river interface by green areas, recreation, pedestrian and cycle paths.

In Bordeaux the project for the renovation of inner city river docks, now under development, will create a large pedestrian area for recreation together with large green areas and commercial activities. A real central river park will result, capable of transferring the barycentre of social life along the largest urban square: the water surface.

All three of these optimal practices assessed by RiverLinks clearly define the tendency to develop central river areas using the equipped park option to regenerate free areas, redevelop disused factories and convert parking and traffic infrastructures when incompatible with river environment values of preservation and integration into city life. RiverLinks also assessed other external partnership cases, such as Paris, Hannover, London, Bilbao, Lyon, which all follow the same intervention framework, confirming environmental access and quality, vital for strategic regeneration of the river-city interface.

Infrastructures and Services to Citizens

This thematic approach aims to combine hydraulic infrastructures and the need for river safety with the opportunity to develop scale economies creating services for citizens. RiverLinks promoted this approach as a major innovation, corresponding to river flood risk emergencies for European cities as well as regeneration and the needs of new urban spaces.

RiverLinks, together with the participation of cities that recently experienced damaging floods, Dresden with the river Elba (2002 flood) and Florence with the river Arno (1966 flood), conducted an extensive analysis of this theme, assessing present programmes and on-going designs for river safety.

In Dresden after the 2002 flood and thanks to EC financial help, a strategic plan was elaborated in order to improve safety of the historic town. In the framework of this plan several measures are proposed in order to contain different water levels during floods. Movable and fixed elements are supposed to be constructed in the historic centre along the river banks, based on historical knowledge of the urban structure and river infrastructures before the second world war destructions. Such physical measures directly affect the urban form of central historic spaces and will modify the shape of public spaces.

In Florence after the 1966 flood, several measures aimed to contain risk, still not under satisfactory control. One of the most important overflow basins is situated in the western city neighbourhood called Argingrosso, where there is also a linear earth wall for water containment. This sensitive and strategic hydraulic area, has been preserved as a green area for a long time but now there is pressure for development. The RiverLinks plan for Argingrosso is promoting the hydraulic function and examining compatible uses that do not interfere with the water overflow capacity. This innovative approach indicated options for natural environment developments with light functions that permit public access and offer open air activities and services to citizens. These results could be imitated in other similar urban areas and remain as a RiverLinks optimal practice experience.

In Bremen the infrastructural approach of the pilot project for the old peat harbour deals with water quality. This is also an innovative option developed especially by RiverLinks, and could be imitated in similar conditions. The proposal is supposed to be developed in two stages. The first introduces clean water into the canal from the park lake and the second collects rain water from the roof of the exhibition centre on the canal. The overall aim is to improve water quality helping water activities and river fauna redevelopment. As a consequence of this water treatment a specific urban development plan has also been elaborated in

order to equip the area around the peat harbour and to improve neighbourhood life and activities. A transport service between the peat harbour and the University zone is also scheduled using traditional peat boats.

Since rivers physically divide towns, a planning tool to strengthen city life around the river must consider pedestrian infrastructures to connect the banks. In Bremen Expo 2000 area a pedestrian bridge was instrumental to the success of the redevelopments. In Sevilla several projects for new pedestrian bridges support the linear park exploitation. In Florence there is a proposal of the Urban Structural Plan to construct new pedestrian bridges at the two opposing ends of the consolidated urban area. In Pirita river a wooden pedestrian bridge was built during RiverLinks activities, permitting skiers to cross the river.

Boating and River Activities

This approach concerns the traditional use of rivers for transport of goods and passengers. RiverLinks examined the relationship between development plans and boating activities for transport and leisure, as well as sport, show performances, and fishing activities. The finding is that all plans can be strongly improved, introducing such activities according to river and water hydraulic and quality conditions. In all the RiverLinks sites boating and other related activities have now declined and only take place on exceptional occasions. Large rivers such as Elba, Guadalquivir, Weser and Garrone are used for transport, but rivers such as Arno and Pirita, due to their torrential character and to dams implemented to control the water level, can only support limited local boating for recreation and sport purposes.

In Florence the City is trying to promote local transport for tourism and recreation, organise fishing competitions, and also encourage cultural and sports events (river golf) aiming to attract citizens and visitors to the river.

In Bordeaux during the "Fête du fleuve" annual event, several boating and sports activities are performed, to complement other land-based activities.

In Pirita one of the most promising activities of the park is the introduction of rowing boats for leisure and fishing.

4.

RiverLinks demonstration themes

A thematic overview of six demonstration projects

The rediscovery of a closer link between many cities and their rivers in Europe – similar to experiences being conducted in America and Asia¹ – has provoked a series of positive reactions in city reclamation, many of which have been studied by the participants of the River links project, already described in the publication *A selection of Advanced River Cities in Europe ... a good practice guide*¹, in which 16 European case studies are described, chosen for their original solutions to the city-river relationship. The information collected in the book follows a prearranged order to allow easy comparison between the different experiences examined, all showing different priorities simply divided into four main groups:

- the first group includes the cities which concentrated on flood control: Cologne, Regensburg, Vienna, Prague and Budapest;
- the second describes the experiences in reclamation of manufacturing areas: Bilbao, Lisbon, Porto;
- the third presents all the operations of landscape recovery for recreation purposes, giving rise to the classic river park of collective imagination: Lyon confluence, Lyon Miribel, Strasbourg;
- the last group shows proposals for the revitalisation of historic centres using their often denied or neglected rivers – Turin, Rome, Padua, Bremen – as well as the ephemeral experiences in Paris.

Obviously the situations are more complex in reality than in these simplified categories. A more attentive exploration of the above cases and particularly the experimentation of new solutions used by the various pilot projects showed that these rivers require different rather than univocal or simplified solutions, some of which have been implemented by Riverlinks partners:

1. a new, innovative type of water regulation which does not exclude the city/river relationship (Dresden);
2. a new design and conception of river banks for recreation (Seville, Bordeaux, Bremen, Florence);
3. the river seen as the seminal element for a nature park, with high ecological value, but also accessible for public enjoyment (Pirita);
4. flood storage areas designed with greater understanding, creating an opportunity for landscape improvement in the areas involved (Florence);
5. the possibility of using navigation for traditional tourism

(Bateau Bus) developed and reinterpreted in many ways (Bordeaux);

6. the possibility of using navigation for normal commuter movement (Bordeaux);
7. the improvement of water quality (Bremen);
8. urban renewal programmes, as already experimented for derelict industrial or port areas, taking advantage of their centrality (Seville, Bremen);
9. the river used as a link between its banks rather than as a fracturing element (Pirita, Seville);
10. an element of interconnection between open spaces (Florence, Bordeaux, Seville).

The points listed above emphasise the problems which obviously are never faced separately but always as a whole. The presence of a river certainly offers a great opportunity to resolve the forementioned points organically.

Nowadays open spaces are reduced to the minimum within the city and do not allow much room for the positive process currently involving the landscape and urban culture throughout Europe. This is linked to the interconnection between open spaces within the urban structure (squares, gardens, parks, recreation grounds, etc.). The opportunity presented by a river can only be exploited when its banks are accessible, giving rise to a wide range of experiments conditioned by the shape of the river, the urban layout, legislation and so on.



Liverpool, the Mersey embankment

Access to water and its perception remain priorities, obviously it is not to be taken for granted, frequently important historic buildings prevent it, but also constructions of little interest, sometimes superimposed and sometimes improperly used or illegal which should be removed.

In any case many cities are redesigning their waterfronts in order to reunite open spaces by using this new relationship with the water. Already the cities crossed by rivers as opposed to seafront cities have the dual possibility to use both banks and often use (or build) bridges. They can also create double cycle tracks and footpaths linking open spaces. Where the passage is blocked in certain stretches on one side or both there are always alternative solutions.

Often river banks have true recreation grounds rather than just paths. Many cities have never lost this facility: river ports have often become meeting areas; but today this characteristic is strengthened sometimes trusting too much in what the river bank can offer and generating problems, see the experience of Seville Expo or the more fortunate Lisbon Expo. Also in Liverpool, on the occasion of the first International Garden Festival in 1984, a highly polluted abandoned port area along the Mersey was reclaimed, with simple well-gauged interventions. Nowadays the new pub built along the river during this opportunity for environment recovery is one of the more popular in the city, a sign that the area very quickly recovered a certain vitality.

One of the most stimulating cases considered is that of Lyons, apart from work in progress along the Thames in London and the Seine in Paris, which involves a series of problems beyond the simple city-river relationship. Work along the Rodano is particularly demanding, a river park full of inviting spaces, a correct way of rediscovering the city-river relationship or rather between inhabitants and the river. A series of spaces for recreation designed along the banks permits constant dialogue with the areas involved, evaluating social needs whilst bearing in mind historic and naturalistic features. A project only just begun but which will hopefully experiment a systemic model of great interest.

The experiences of the Riverlinks partners

All the cities participating in the Riverlinks project faced the problem of connection and intervention, but they all presented peculiarities, which in many ways recalled the experiences already noted. On comparison many of these offer alternative solutions.

The Florence pilot project fits in with the wider process in which the focal point is the Arno Metropolitan Park. In fact the guidelines



Paris, Citroën Park

outlined in the feasibility study, attribute a fundamental role of interconnection between open spaces in the Florentine metropolitan system to all the rivers.

From the synthesis of the Territorial Plan (Basin Plan, Territorial plan of Provincial Coordination, Municipal Land Use Plan) all the potential territorial components for the formation of the Arno Metropolitan Park, summarised in these strategic elements, emerge extremely clearly.

Regarding rivers, four strong areas were identified along the Arno riverbank, called nodal points: Renai, Cascine-Argingrosso, Anconella-Coverciano, Sieci-Pontassieve, improved and reinforced through operations of landscape connection. The connection is already underway between Renai and Cascine, while the link between the nodal system between Anconella and Pontassieve seems to be more complex. The presence (or rather the lucky survival) of a "green belt" encircling the central area of Florence, consisting of the *Parco Storico delle Colline (Hillside Historic Park)*, could have a decisive role for the nodal points of the strategic areas of Cascine-Argingrosso and Anconella-Coverciano and also the areas at risk of saturation such as the park of the Castello plain and the ANPIL at Mensola linked to each other through the valleys of Terzolle and Mugnone.

The Florentine green belt has an environment and landscape setting, essential for the metropolitan Park, which has two extensive

systems, different from each other in character and quality: one is more reassuring and less problematic – the hillside landscape system of the surrounding communes –, the other is more at risk and full of contradictions, the wetlands system of naturalistic interest of the Florentine plain. The proposals for the Arno Metropolitan Park are based on these and have the following objectives:

1. to improve and protect the more valuable areas of landscape interest;
2. to prevent unsustainable operations which tend to saturate or interrupt the ecological landscape structure still surviving in the Florentine metropolitan area;
3. to promote functional connective interventions and strengthen environment systems.

The resulting plan is based on two determining components: the *waterways* and *woodlands*, the former the backbone of the park

while the latter constitute a mosaic of areas, with high territorial coverage, subject to rigorous protection and legally stable.

Thus the Arno Park should have the following characteristics:

- the park is a metropolitan system of open spaces each with a hierarchy and differentiated according to use and role in the landscape.
- the primary objectives of the park are the promotion and functional equipping of the landscape for recreation and touristic value;
- the main strategic policies of the park are the constitution of a network of greenways, based on the adaptation of the existing successful models of Florentine culture and landscape;
- the park gives the greenways a dual role, capable of attracting progressive interventions and management sensitive to landscape quality, and functional structure, essential for recreation.

The Florentine pilot project, for which this final project constitutes the necessary technical base for experimental realisation, involves



Lyon, Miribel Park



Lyon, mock-up of the remodelling of the Rodano river banks

a significant stretch of the river bank in the historic Cascine Park. It entails remodelling the land into meadows, as stipulated in the current regulations, allowing closer contact with the river and increasing recreation already practiced in this area such as jogging, fishing, walking and other compatible activities, foreshadowing a future greenway.

Bordeaux too has developed a similar system but with a very different landscape and taking advantage of a healthy river flow, navigable all year round.

The Bordeaux Urban Community, an administrative structure well prepared on the subject of road systems and cycle tracks, has developed a project for a footpath along both banks of the river to encourage the population to rediscover and reappropriate the River Garonna.

This is a wide-ranging project to improve the landscape heritage, pleasant nature spots and marinas, as well as historic and panoramic sites, developing alternatives to the car by using river craft, cycle tracks and footpaths.

As with the Florentine experience the creation of a cycle track posed the problem of respect for nature. In Bordeaux a careful analysis of existing species guided the intervention regarding trees and shrubs, all rigorously counted in a census, but most of all it was an occasion for introducing people to pleasant, quiet nature spots.

Thanks to an investment programme of 11 million Euros to be spent

between 2000 and 2006, to which Riverlinks also contributed, three objectives were obtained:

- to create immediate and functional access to the river (pleasure ports, nautical stopping places, pontoons, houseboats, river transport ...);
- to encourage its discovery or reappropriation for the people (footpaths, belvederes, remarkable buildings ...);
- to exploit the river and its natural spaces (river banks, marshland, protected areas or flood storage areas ...).

The case of the Pirita River valley is very different since the river flows through a rich natural area of high environmental value, with very little urbanisation, where the proposals were all directed towards creating a system of recreation activities compatible with nature in the valley. The planners have divided it into four landscape units with the following components:

- natural areas in which use would be minimal, hiking and observation of nature would be permitted; cycling and skiing are not allowed;
- natural and semi-natural areas, parks in which there would be passive recreational activities: walking, hiking, observation of nature, picnic areas. Cycling and skiing are partly allowed;
- natural and semi-natural areas, parks in which there would be active recreational activities: jogging, skiing, cycling, small-scale sports and recreational structures (barriers, horizontal bars,

- climbing tracks, picnic areas etc);
- planned artificial areas in which it would be possible to establish sports and recreational structures.

This programme repeats certain aspects of the Lyon Miribel experience, a larger park than Pirita (2000 hectares as against the 500 of the Estonian park). A previously degraded area used for excavating hard materials, now subject to attentive politics aimed at reclaiming and renaturalising it to exalt its biodiversity, while Pirita is already almost uncontaminated. The management of Miribel Park, as at Pirita, aims to satisfy the needs of many requests, which means inventing a new type of territory – a suburban nature reserve which balances the needs of enjoyment with those of nature. To achieve this the areas set aside for recreation are carefully graduated from the west towards the natural environments to the east of the site. Today the Miribel-Jonage park receives 3.500.000 visitors a year, an extraordinary green lung for Greater Lyons, an extensive recreation area where it is possible to practice many sports, and an interesting site for environment education. A positive experience which gives hope for the future of the Pirita valley.



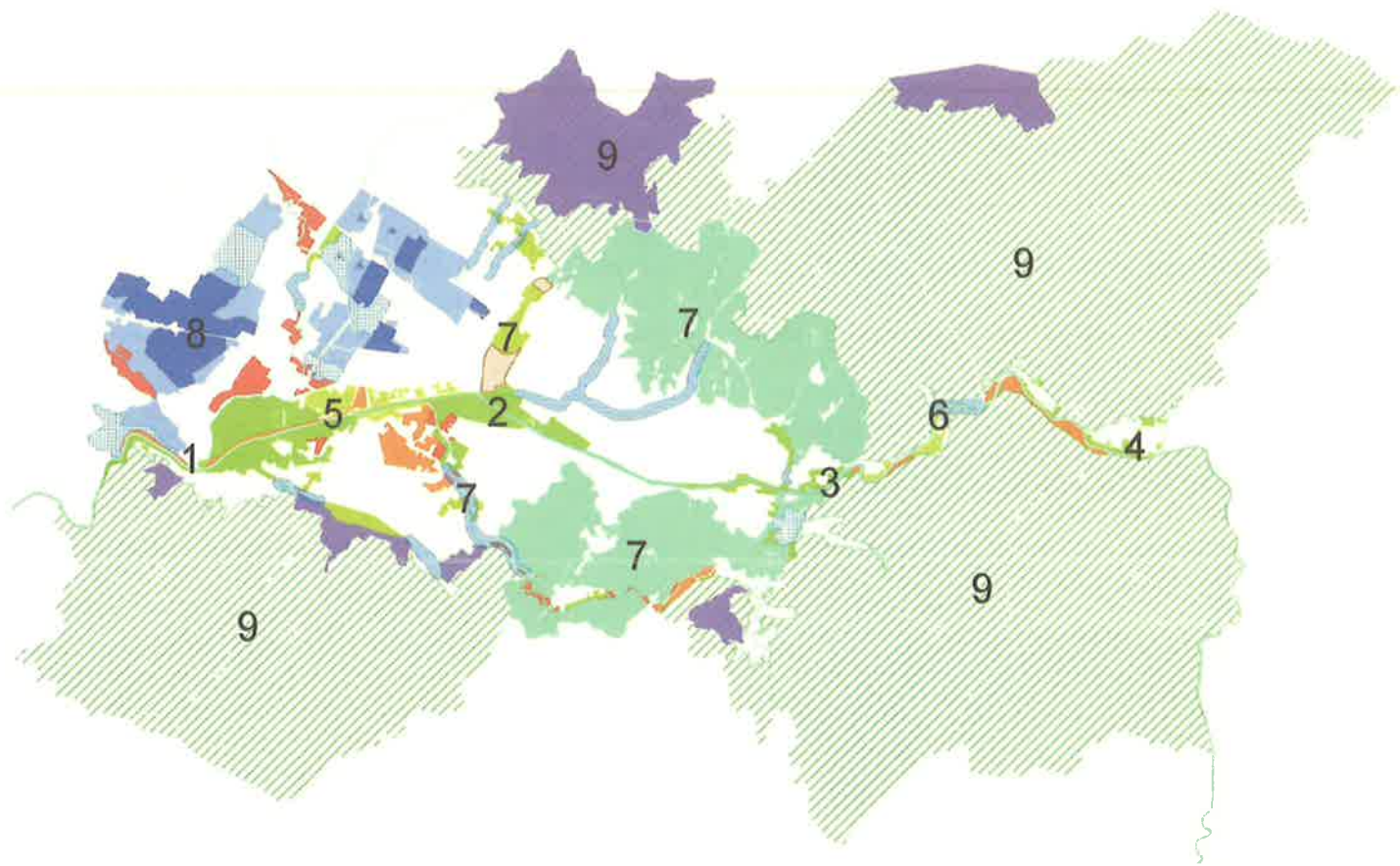
Lyon, mock-up of the remodelling of the Rodano river banks

The reclamation of the old Peat Harbour at Bremen was a chance to experiment in an area strategically near a famous historic park (BuergerPark) with great potentiality for recreation, with every possible solution available. The proposal of Bremen Municipality did not only aim at the reclamation of the port to extend the canal system used nowadays for recreation, but was also enriched by another objective with important consequences on the procedure: water purification. The intervention also tried to eliminate the negative effects of rainwater from the grooves flowing into the canals and thus prevent pollution of the canal water. With this experimentation the project sets out to reach the pre-established objectives in the programme:

- «Establishing the legislative requirements;
- Providing access to the canal and the harbour, to remarkable sites and to natural space by towpaths and landing stages, offering a new waterway and boat traffic;
- Providing recreational space;
- Providing new, complementary procedures to involve the public».

Dresden suffered badly during the recent floods of August 2002. The solution of mobile barriers was one of the themes recently studied to solve the problem in the short term, due to the frequency of these phenomena. Although following the experiences of Cologne, Regensburg and Prague it differs from them in that many permanent barriers were constructed, leaving mobile barriers in very few situations: a more economic solution but which certainly heavily conditions the structure of the city. In Dresden a solution was experimented proposing a combination of permanent and mobile barriers in order not to disturb the image of the city, especially where historic values must be protected and not interfered with. Likewise the solutions proposed by the city of Dresden became a link with the river Elba and not fractured by the river crossing it. Seville too has tried to confront these topics. The centrality of the chosen site required a radical renewal of the area. More than anything else to reduce the backyard effect of houses backing onto the river and to intersperse them with landing places without neglecting the ecological needs.

It consists of a riverbank walkway of great natural value, and a distinct green zone that concentrates a large number of trees and shrubs that condition its own natural ecosystem next to the river. Despite the multiple possibilities of entertainment and environmental development that this river walk offers, its use has not been taken advantage of, nor enjoyed by citizens as an open and recreational space.



The Arno Metropolitan Park, overall plan of action

To conclude, the Riverlinks experiments – as can be seen in the following examples – referred to projects carried out in other cities, especially to assess their value but also to improve on them or to experiment new techniques and ideas without ignoring past experiences.

The objective was to rediscover past functions some of which are still valid today and to preserve the memory of those no longer practicable, since the main interest is not pure functionality but to change attitudes towards the river, as in the course of history, towards perfect integration and a balanced interdependence.

«Cities crossed by rivers, narrow or wide as they may be, showed an intimate and complex relationship: their waters never appeared to be a limit, but rather an extension of the city's fabric»³.

Notes

- ¹ See for example the cases of Boston or Baltimore in the USA or Shanghai in China.
- ² B. GUCCIONE (edited by), *A selection of Advanced River Cities in Europe ... a good practice guide*, Edifir, Firenze, 2005.
- ³ R. BRUTTOMESSO-M. MORETTI, *Il fiume e la città: i waterfront fluviali*, in L. SASSO (a cura di), *La continuità e lo Specchio. Progettare architetture e paesaggi fluviali*, Lybra Immagine, Milano, 2005.

Summaries

The experimentation of new solutions used by the various pilot projects brought to light the fact that these rivers involve diversified rather than univocal or simplified solutions, some of which were implemented by Riverlinks partners: 1) A new, innovative type of water regulation which does not exclude the city/river relationship (Dresden); 2) A new design and conception of river banks for recreation (Seville, Bordeaux, Bremen, Florence); 3) The river seen as the seminal element for a nature park, with high ecological value, but also accessible for public enjoyment (Pirita); 4) The flood storage area designed with greater understanding, creating an opportunity for landscape improvement in the areas involved (Florence); 5) Possibility of navigation for traditional tourism (BateauBus) developed and reinterpreted in many ways (Bordeaux); 6) Possibility of navigation for normal commuter movement (Bordeaux); 7) Improvement of water quality (Bremen); 8) Urban renewal programmes, as already experimented for derelict industrial or port areas, taking advantage of their centrality (Seville, Bremen); 9) The river used as a link between its banks rather than as a fracturing element (Pirita, Seville); 10) An element of interconnection between open spaces (Florence, Bordeaux, Seville).

Trovandoci a sperimentare nuove soluzioni nei vari progetti pilota, ci si accorge che i temi che riguardano i fiumi non presentano soluzioni univoche o semplificate ma diversificate, alcune delle quali sono state affrontate dai partners che possono essere individuati nei seguenti punti: 1) Un nuovo tipo di "regimazione" delle acque innovativo che tende a non escludere il rapporto città fiume (Dresda); 2) Un nuovo disegno e una nuova visione delle sponde fluviali a fini ricreativi (Siviglia, Bordeaux, Brema, Firenze); 3) Il fiume come elemento generatore di un parco naturalistico, ad alta valenza ecologica, ma al tempo stesso vissuto dalle persone (Pirita); 4) Casse di espansioni progettate con maggiore consapevolezza, che diventano occasione per il miglioramento paesaggistico delle aree interessate (Firenze); 5) Navigabilità intesa come occasione per il Turismo tradizionale (BateauBus) ma potenziato e rivisitato in molti aspetti (Bordeaux); 6) Miglioramento delle qualità delle acque (Brema); 7) Operazioni di rinnovo urbano, come già sperimentato per le ex-aree industriali o portuali, sfruttando la centralità di queste aree (Siviglia, Brema); 8) Il fiume come elemento non di frattura, anzi tramite, di giunzione, collegamento delle due parti (Pirita, Siviglia); 9) Elemento di interconnessione e articolazione del sistema del verde: Firenze, Bordeaux, Siviglia.

Die experimentelle Anwendung neuer Herangehensweisen durch die verschiedenen Pilotprojekte zeigte deutlich, dass bezogen auf die Flüsse eher mannigfaltige als einheitliche oder vereinfachte Lösungen gefunden wurden, von denen einige durch die Projektpartner auch angewendet und praktisch umgesetzt wurden: 1) Neuartige, stadtbildverträgliche Hochwasserschutzanlagen unter Berücksichtigung bestehender funktionaler Beziehungen zwischen Stadt und Fluss (Dresden); 2) Neue Entwürfe und Konzeptionen für Erholungszwecke an Flussufern (Seville, Bordeaux, Bremen, Florence); 3) Ein Fluss – als grundlegendes Element eines Naturparks – mit hohem ökologischen Wert, aber auch öffentlich zugänglich für Sport und Erholung (Pirita); 4) Entwürfe für Hochwasserrückhalteflächen, die zugleich die Möglichkeit der Verbesserung des Landschaftszustands eröffnen (Florence); 5) Entwicklung und Re-Interpretation verschiedener Möglichkeiten der Schifffahrt (BateauBus) für den traditionellen Tourismus (Bordeaux); 6) Möglichkeiten der Schifffahrt für den Berufs- und Pendlerverkehr (Bordeaux); 7) Verbesserung der Wasserqualität (Bremen); 8) Stadterneuerungsprogramme, die für Industriebrach- und Hafenflächen bereits entwickelt wurden; unter Ausnutzung ihres Vorteils der stadtzentrischen Lage (Seville, Bremen); 9) Der Fluss als ein seine Ufer mehr verbindendes als unterbrechendes Element (Pirita, Seville); 10) Der Fluss als ein Element, um Freiräume untereinander zu verbinden (Florence, Bordeaux, Seville).

La experimentación de nuevas soluciones usadas en los diversos proyectos piloto saca a la luz el hecho de que estos ríos suponen la aplicación de soluciones diversificadas en vez de una respuesta singular o simplificada; algunas de las cuales ya han implementado los socios de RiverLinks: 1) Un nuevo e innovador tipo de normas sobre la regulación del agua que no excluya la relación ciudad-río (Dresden); 2) Un nuevo diseño y concepto de las riberas para usos recreativos (Sevilla, Burdeos, Bremen, Florencia); 3) El río visto como el elemento fundamental de un parque natural, con alto valor ecológico, pero también accesible para el disfrute del público (Pirita); 4) El área de presa o almacenaje de aguas de inundaciones, diseñada con mejor conocimiento, crea una oportunidad para mejorar el paisaje en las zonas afectadas (Florencia); 5) La posibilidad de la navegación para uso del turismo tradicional (BateauBus – BarcoBus) desarrollado y reinterpretado de muchas formas (Burdeos); 6) La posibilidad de la navegación para un servicio normal de transporte diario (Burdeos); 7) Mejora en la calidad de agua (Bremen); 8) Programas de rehabilitación urbana, según ya se ha experimentado, para zonas marginales industriales o de puerto, aprovechando su situación de centralidad (Sevilla, Bremen); 9) El río como lazo entre sus riberas en vez de un elemento de división (Pirita, Sevilla); 10) Un elemento de interconexión entre espacios abiertos (Florencia, Burdeos, Sevilla).

La mise en œuvre de nouvelles solutions expérimentales dans des projets pilotes diversifiés et différents a mis en lumière le fait que les fleuves nécessitent des solutions d'aménagement spécifiques plutôt que des solutions basiques ou trop simplifiées dont certaines ont pu être exécutées par les partenaires de RiverLinks. 1) Un système d'un type nouveau, innovateur dans la protection contre les crues, et qui n'exclut pas un rapport ville/fleuve (Dresde); 2) Une nouvelle conception et une réalisation de berges ouvertes aux loisirs (Séville, Bordeaux, Brême, Florence); 3) La rivière vue comme élément source d'un parc de nature à forte valeur écologique mais aussi accessible au public (Pirita); 4) Une zone de rétention d'inondations conçue avec réflexion pour améliorer le paysage des secteurs concernés (Florence); 5) La possibilité de favoriser le tourisme fluvial traditionnel (Bateau Bus) par des aménagements divers et adaptés (Bordeaux); 6) La possibilité de maintenir le mouvement habituel des bateaux de croisière (Bordeaux); 7) L'amélioration de la qualité des eaux (Brême); 8) Des programmes de renouvellement urbains, déjà expérimentés, avec abandon des activités industrielles ou portuaires dans le centre ville (Séville, Brême); 9) La rivière utilisée comme une liaison entre ses berges plutôt que comme un élément de fracture (Pirita, Séville); 10) Un élément d'intercommunication entre des espaces naturels (Florence, Bordeaux, Séville).

Mitmetes pilootprojektides kasutatud uute lahenduste katsetamine tõi päevavalgele fakti, et nende jõgedega kaasnevad pigem mitmekesised kui üheselt mõistetavad või lihtsustatud lahendused, millest mõned viidi ellu RiverLinksi partnerite poolt: 1) Uus, uuenduslik veetaseme reguleerimise tüüp, mis ei välista jõe ja linna suhet (Dresden); 2) Jõekallaste uus kujundus ja kontseptsioon puhkealadena (Sevilla, Bordeaux, Bremen, Firenze); 3) Jõgi kui looduspargi viljastav element, millel on suur ökoloogiline väärtus, kuid mis on kättesaadav ka avalikuks nautimiseks (Pirita); 4) Mõtestatult kujundatud tervikala, mis loob võimaluse kaasatud aladel maastikku täiustada (Firenze); 5) Liiklusvõimalus traditsioonilise turismi jaoks (BateauBus), mis on mitmel viisil välja arendatud ja uuesti interpreteeritud (Bordeaux); 6) Liiklusvõimalus tavalise pendelrände jaoks (Bordeaux); 7) Vee kvaliteedi tõstmine (Bremen); 8) Linnakeskkonna uuendamiskavad, millelaolisi on juba katsetatud mahajäetud tööstus- ja sadamapiirkondades, kasutades ära nende asukohta keset linna (Sevilla, Bremen); 9) Jõe kasutamine pigem mõlema kalda ühendajana kui eraldajana (Pirita, Sevilla); 10) Siduv element avatud ruumide vahel (Firenze, Bordeaux, Sevilla).

5.

Six experimental realisations

5.1. Pirita (Tallinn)

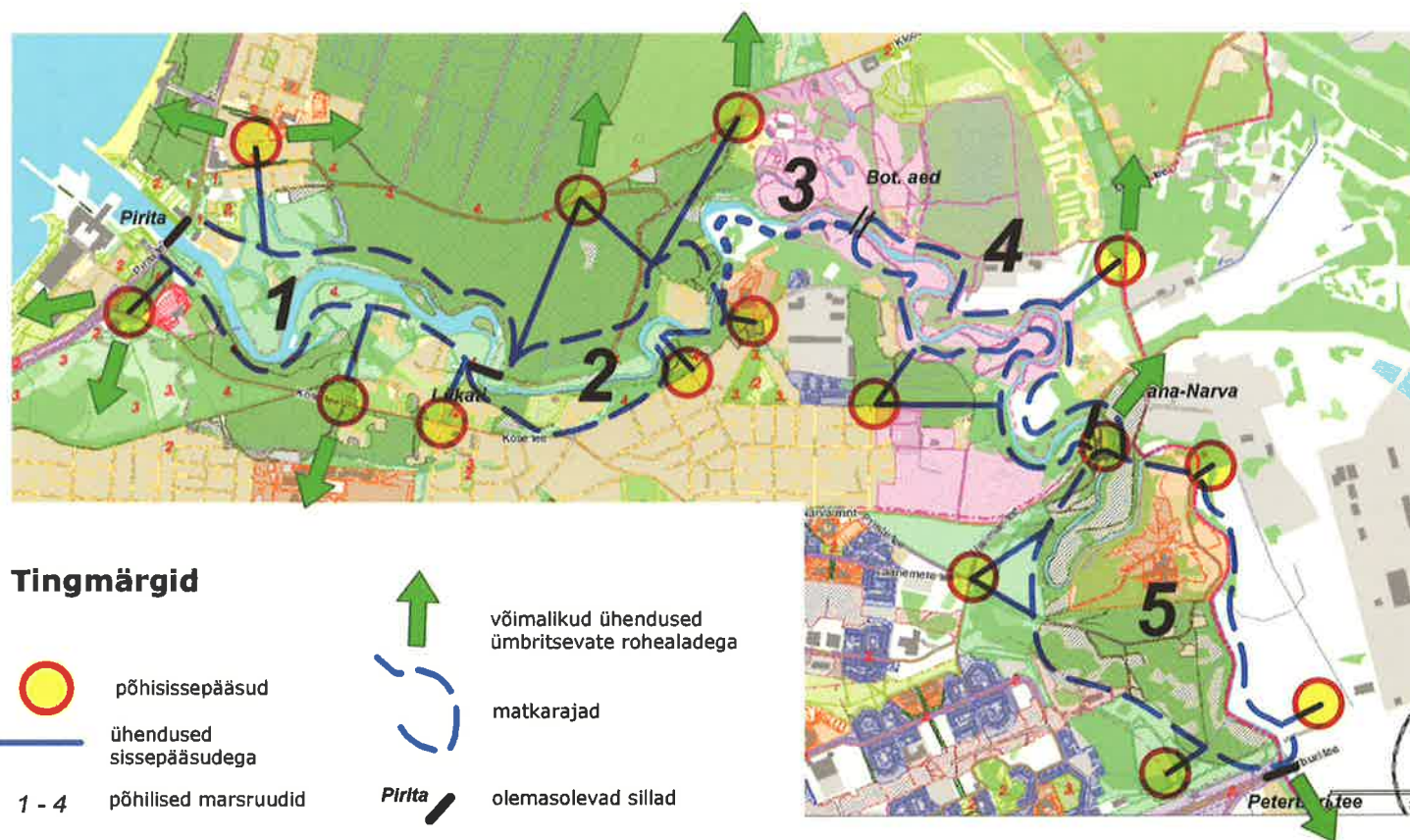
The project area

The Pirita River is situated in North Estonia where it flows from Southeast to North into the Baltic Sea, the only river that flows through the capital of Estonia, Tallinn. The Pirita River basin covers about 2000 km².

The Pirita River is important to Tallinn for two reasons: it is a connection between the Paunküla catchment basin and lake Ülemiste, where drinking water for Tallinn is drawn. Secondly, the Pirita riverbanks have always maintained their natural appearance and very few houses are situated on the shore.

Due to its uniqueness, about 500 ha of the Pirita River basin was proclaimed a protected area in 1957. Nowadays the size of the Pirita River protection area is 523 ha and most of it (74.7%) belongs to the Pirita District Administration.

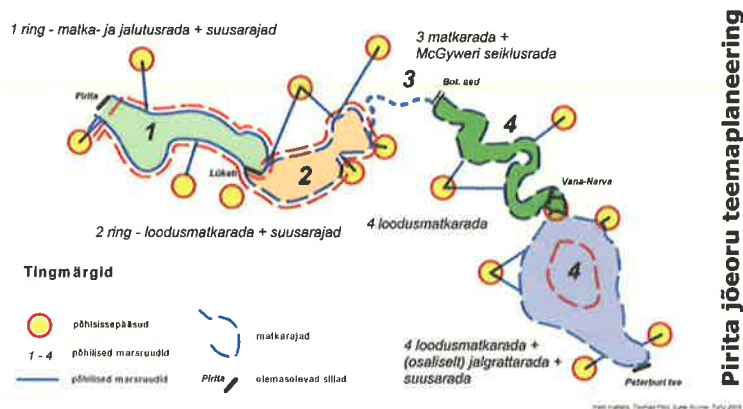
There are more than 350 ha of semi-natural areas and Tallinn Botanical Garden is also situated in the valley of the river. In the year 2000, 28 species of protected plants were represented in the Pirita nature reserve. About 42% of the protected area is covered with forest (common pine, birch, alder).



Pirita jõeoru teemaplaneering

Heiki Kalberg, Toomas Põld, Sulev Nürme. Tartu 2005

Conception: structure of hiking tracks



Pirita jõeoru teemaplaneering

Conception: different nature tracks

The objectives

Prevention of bad planning is critical in saving the Pirita River valley and the nature reserve. Due to land reform, many estates have been returned to former owners or will be returned and the river valley is endangered by building because of its delightful natural beauty. Many inhabitants from the neighbouring district of Lasnamäe, use the Pirita River valley intensively, because it is very near to this part of town.

Decision making

The head of Pirita District Administration was given the authorisation to represent the city of Tallinn in Interreg IIIC RiverLinks project with order No 2205 on 01.10.2003 by Tallinn City Government and Pirita District Government was appointed as the cooperation partner of the project on behalf of Tallinn. The collaboration agreement between the manager of the Interreg IIIC project and the partners was approved with order No 2957 on 17.12.2003 by Tallinn City Government. The objective of the project is to find the best solutions for the co-existence of natural and urban environments. The RiverLinks project helps to establish methods in order to preserve the catchment area of the river and at the same time, offer the citizens opportunities for resting and to find solutions for the spatial planning of the area.

Measures proposed and realised

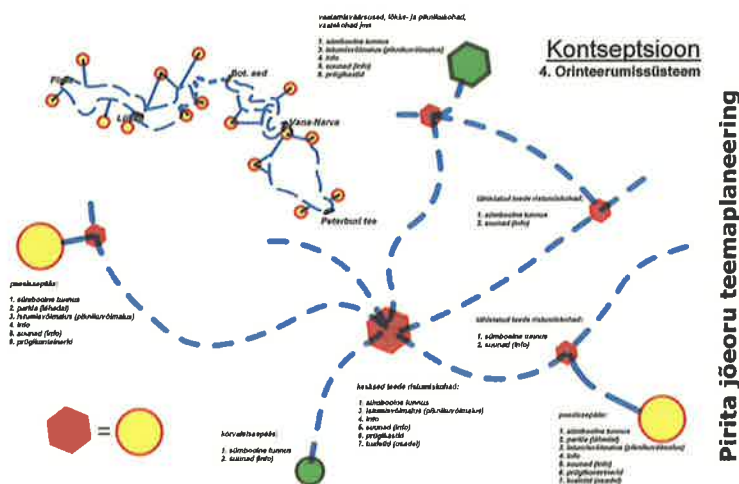
Pirita River valley thematic plan: to make a detailed plan of the valley of the Pirita River and the landscape protection area which includes the conceptual design, assessment of environmental influence and final planning.

The objective of the thematic plan is to develop the recreation possibilities of the Pirita River landscape protection area and its surroundings, considering the conditions of nature protection.

As a result of the thematic plan, the movement of people in the Pirita River valley and on the riverbanks will be organised and thus the city forests will be preserved and protected in the landscape protection area of the Pirita River valley.

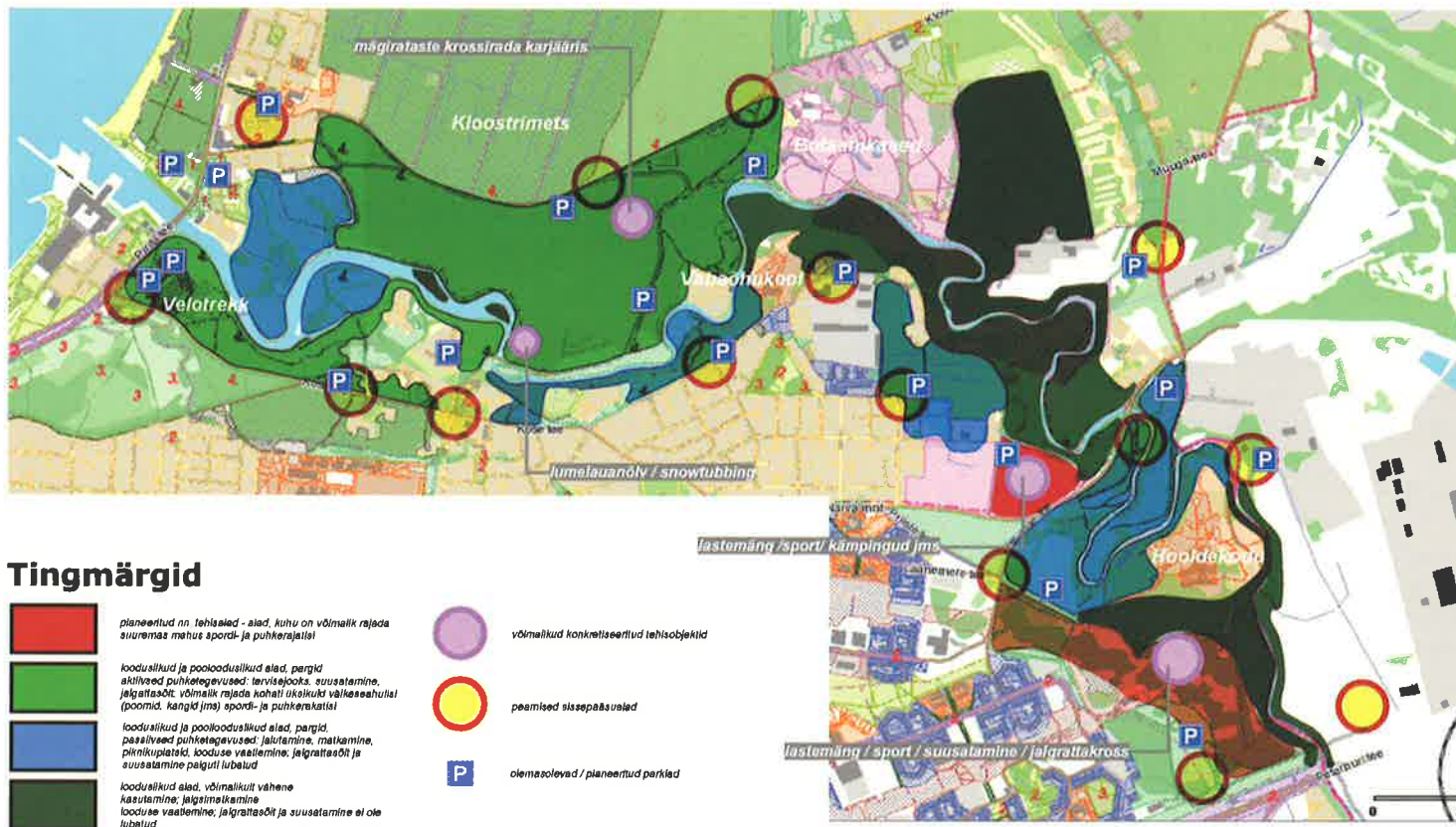
The main stages of the thematic plan: *Recreational plan of the landscape protection area of the Pirita River valley.*

The compilation of work began with a thorough examination of the area in autumn 2005 in the course of which the entire planning area was walked through and the present situation was recorded in photographs and plans. Field work was a substantial part of the landscape analysis in the course of which an overview of the forest was compiled, forest site types were determined as well as the resultant fire hazard class and treading resistance. Different habitat types, objects of cultural and environmental value and the most important environmental problems were also marked on the area during landscape analysis.



Pirita jõeoru teemaplaneering

Conception: orientation system



Pirita jõeoru teemaplaneering

Heiki Kalberg, Toomas Põld, Sulev Nurme, Tartu 2005

Conception: zoning

A conception of possible activities in different areas was compiled on the basis of the landscape analysis results. In the conception, the areas were divided into four, according to activity and assortment (*see conception zoning*):

- natural areas in which use would be minimal, hiking and observation of nature would be permitted; cycling and skiing are not allowed;
- natural and semi-natural areas, parks in which there would be passive recreational activities: walking, hiking, observation of nature, picnic areas. Cycling and skiing are partly allowed;
- natural and semi-natural areas, parks in which there would be activerecreational activities: jogging, skiing, cycling, small-scale sports and recreational structures (barriers, horizontal bars,

climbing tracks, picnic areas etc);

- planned artificial areas in which it would be possible to establish sports and recreational structures.

Besides identifying different activities, the conception outlined the entrances and parking areas, different tracks and connections in the planning area.

On the basis of potential use, the tracks were divided regionally (*see conception different nature tracts*):

- 1st circle) hiking and walking tracks + ski track;
- 2nd circle) nature hiking track + ski track;
- 3rd circle) hiking track + possible adventure track;
- 4th circle) nature hiking track + partial cycling track + ski track.

The conception also proposed an orientation system (*see concep-*

tion orientation system), where the entrances and crossroads of different levels, places of interest, picnic areas, observation platforms etc are equipped with an inventory according to the importance of the place (signs, information posts, seating, garbage bins, restrooms) and insignia. It was proposed in the conception that the inventory should be made from natural materials but it could also be synthetic. Destruction and fire pose a problem in the region at the present moment and because of that it is difficult to keep light or small wooden equipment.



Botanical Garden

On the basis of the landscape analysis results, the conception was begun by determining the locations of tracks, picnic areas, parking lots etc and their use (what can be done in each area, what must be done and what cannot be done). As the planning area is one of the biggest green areas in Tallinn city, it is rational to establish different structures which favour activities that fit in with nature in the areas which are of little value regarding nature protection. At the same time, we are dealing with a protection area, the objective of which is to preserve and protect the present values.

The following questions arose in the course of work and they were answered during the environment impact evaluation analysis:



Pirita river Tallinn, the new bridge for pedestrians and skiers



Pirita river valley



Do the activities established for the planning area have to compensate the deficiency in fairgrounds, sports grounds and tracks outside the planning area?

While planning the city of Tallinn, the preservation of the forests by the Pirita River has been taken into account for decades, the area under question has also been the recreation area of the city of Tallinn. The planned area does not have to satisfy the deficiency of fairgrounds and sports grounds outside the area but less valuable areas could be used in order to establish playgrounds and sports grounds in conformity with the protection regulations of the protection area.

Does the bringing of people to the landscape protection area guarantee its preservation and protection?

The movement of people must be organised and then protection will be guaranteed.

Which is more important: whether people have the chance to stay in nature in the city or whether there should be a nature reserve in the city where the access of people is not welcome?

It is important that people should be organised to guarantee the preservation of nature.

Does the natural environment prevail more if we do not plan the activities here which the people have desired or if we prescribe a certain possible use for them?

With the help of the well-organised system of paths, objects and informative material, it is possible to organise the movement of people and the natural environment reserves better than where nothing is organised. If the present and new activities are not planned then the only way to protect the area is to prohibit the movement of people altogether and we do not want that.

Are planned and organised activities in the protected area (e.g. mountain biking in a prescribed space) better than prohibiting the respective activities so that unplanned areas for these activi-



Pirita river valley: examples of mixed vegetation

ties would originate?

The prevailing opinion is that organised activity is better than unorganised activity: if there are specific and well-usable tracks and resting areas then there is no need to make new ones through the woods or to make new resting areas.

Will the city of Tallinn find a solution for the deficiency of sports grounds and tracks outside the planning area?

The city of Tallinn has to find a solution for the deficiency of play- and sports grounds and tracks, otherwise pressure on the planning area will continue.



Detail of Pirita river valley near the river islands

Besides compensating the deficiency in the recreational areas outside the planning area, one of the key issues is the *tolerance ability and pleasantness of the environment*: how many people per square metre could there be that the use of the recreational area would still be pleasant and people would come to nature and not to a gathering of people?

Skating-rink

A skating-rink with the dimensions of 40x50 m will be built on the bank of the Pirita River. The rink will be open from November to April and is designed for the residents of the Pirita district as well as for everyone else. A pipeline filled with freon gas will be placed in the soil in the course of construction. With the help of a compressor, it would be possible to produce ice already with a +5 degree temperature. The fact that water can be drawn from the Pirita River facilitates the creation of the skating-rink. The plan is to cover the rink with artificial grass in order to play tennis in the summer months.



Aerial view of the central part from the tv tower and the Lasnamae neighbourhood

Conclusion

The thematic plan of the landscape protection area of the Pirita River valley is just the first step towards the complete development of the entire area. In the future, the plan is to construct the road network (hiking and sports roads) of the protected area, picnic areas, places of interest will be marked and information signs will be installed.



Pirita river valley, aerial view



Ruins of St. Brigida Church

Summaries

The prevention of bad planning is critical in saving the the Pirita River valley and the nature reserve. Due to land reform, many estates have been returned to former owners or will be returned. The river valley is endangered by building because of its delightful natural beauty. Many inhabitants from the neighbouring district of Lasnamäe use the Pirita River valley very actively, because it is very near to this part of town. The objective of the thematic plan is to develop the recreation possibilities of the Pirita River landscape protection area and its surroundings, considering the requirements of nature protection. As a result of the thematic plan, the movement of people in the Pirita River valley and on the riverbanks will be organised and thus the city forests will be preserved and protected in the landscape protection area of the Pirita River valley. The thematic plan of the landscape protection area of the Pirita River valley is just the first step towards the complete development of the entire area. In the future, the plan is to construct the road network (hiking and sports roads) of the protected area, picnic areas and places of interest will be marked and information signs will be installed.

Fondamentale ai fini della salvaguardia della valle e della riserva del Fiume Pirita è evitare la cattiva pianificazione. A causa della riforma fondiaria molte tenute sono state restituite o saranno restituite ai precedenti proprietari. La valle è messa in pericolo, per la sua straordinaria bellezza naturale, dalla speculazione edilizia. Molti abitanti del distretto di Lasnamäe usano attivamente la valle per la sua vicinanza. L'obiettivo del piano tematico è lo sviluppo delle possibilità ricreative offerte dall'area protetta della valle e dei suoi dintorni, tenendo nella debita considerazione il fatto che si tratta appunto di un'area naturalistica protetta. Il piano tematico è solo il primo passo verso lo sviluppo dell'intera area. In futuro ci si propone di costruire una rete stradale destinata al podismo e altre attività sportive, zone per i picnic, di segnalare i luoghi d'interesse e di installare segnaletica informativa.

Das kritischste Moment, um das Tal des Pirita-Flusses und den Naturpark zu schützen, besteht in der Vermeidung gebietsunverträglicher Planungen. Auf Grundlage der Bodenreform wurden bereits und werden noch viele Grundstücke den früheren Eigentümer wieder übergeben. So ist das Flusstal mit seiner reizvollen natürlichen Schönheit durch Bebauung gefährdet. Viele Einwohner aus dem benachbarten Stadtteil Lasnamäe nutzen das Tal des Pirita-Flusses auf Grund seiner Nähe zu Wohngebieten sehr intensiv. Zielsetzung der Fachplanung ist es, Möglichkeiten für Freizeit und Erholung im Landschaftsschutzgebiet des Pirita-Flusstales und seiner Umgebung unter Beachtung des Naturschutzes zu entwickeln. Als ein Ergebnis dieser Fachplanung wird sich eine Bewegung ortsansässiger Bürger organisieren, um die städtischen Waldgebiete im Landschaftsschutzgebiet des Pirita-Flusses zu schützen und zu erhalten. Die Fachplanung für das Landschaftsschutzgebiet des Pirita-Flusses ist aber nur der erste Schritt zur vollständigen Entwicklung des gesamten Gebietes. Zukünftig sollen ein Netzwerk von Rad- und Wanderwegen, Loipen und Picknick-Plätze errichtet sowie interessante Orte markiert und Informationstafeln aufgestellt werden.

El aspecto más crucial para salvar el valle del río Pirita y su reserva natural es evitar la mala planificación. Debido a las reformas agrarias, muchas fincas o bien se han devuelto a sus propietarios originales, o bien se van a devolver. El valle está amenazado por el peligro de la excesiva construcción, debido a su belleza natural. Muchos habitantes del distrito colindante de Lasnamäe, usan el valle activamente, porque está muy cerca de este parte del pueblo. El objetivo del plan temático es desarrollar las posibilidades recreativas de la zona de protección paisajística del río Pirita y sus alrededores, considerando las condiciones de protección de la naturaleza. Como resultado del plan temático, se organizará el desplazamiento y el movimiento de personas en el valle del río Pirita y se ordenarán sus riberas; lo cual conllevará la protección y preservación de los bosques de la ciudad de la zona de protección paisajística del valle del río Pirita. Este plan temático es sólo el primer paso hacia el desarrollo completo de la zona. En el futuro, los planes contemplan construir la red de carreteras de la zona protegida (para excursionismo y deporte), además de áreas de picnic, junto con la señalización que informará al visitante sobre los lugares de interés.

Le plus délicat dans la sauvegarde de la vallée fluviale Pirita et de la réserve naturelle est d'éviter une urbanisation inappropriée. En raison de la réforme foncière, de nombreuses parcelles ont été ou seront rendues à leurs anciens propriétaires. La vallée fluviale est mise en danger par l'urbanisation de ces parcelles situées dans un site d'une beauté naturelle remarquable. Cette vallée de Pirita est très fréquentée par des promeneurs venant du quartier très proche de Lasnamäe. L'objectif du plan thématique de RIVERLINKS est de développer les possibilités de loisirs de ce secteur tout en protégeant le paysage et la nature du fleuve Pirita et de ses abords. Grâce à ce projet, le déplacement des promeneurs le long des berges de cette vallée du fleuve Pirita sera organisé afin que les forêts proches de la ville soient préservées et protégées dans le cadre de la protection de l'ensemble de la vallée. Ce projet, concernant la protection du paysage, constitue un premier pas vers un développement complet de l'ensemble de la vallée. Le programme futur prévoit l'aménagement de sentiers pédestres de découverte et des pistes sportives, la protection de la flore, l'aménagement d'aires de pique-nique et la mise en place d'une signalétique faisant découvrir les curiosités touristiques.

Pirita jõeoru maastikukaitseala säilimisel on oluline mõtestatud planeerimistegevus. Looduslikult kaunist jõeorgu ähvardab täisehitamine kuna omandireformi käigus on paljud maatükid endistele omanikele tagastatud või veel tagastamisel. Samuti külastavad Pirita jõeorgu aktiivselt naaberlinnaosa Lasnamäe elanikud. Teemaplaneeringu eesmärgiks on Pirita jõeoru maastikukaitseala ja selle lähiümbruse puhkevõimaluste väljaarendamine arvestades looduskaitselisi tingimusi. Teemaplaneeringuga soovitakse korrastada inimeste liikumist Pirita jõeorus ja jõe kallastel ning tagada selle kaudu linnametsade säilimine ja kaitse Pirita jõeoru maastikukaitsealal. Pirita jõeoru maastikukaitseala teemaplaneering on esimene samm kogu ala terviklikul arendamisel. Tulevikus on plaanis ehitada välja kaitseala teedevõrgustik (matka- ja spordirajad), piknikukohad, märgistada vaatamisväärsused ja paigaldada infosiidid.

5.2. Lormont (Bordeaux)

1. Description of the site of the pilot project

The Town of Lormont, located along the Garonne river, has undertaken a project for the reclamation and enhancement of its natural spaces.

The project encompasses the recovery of the river front, the development of the urban pathways and the inclusion of panoramic views of the adjoining banks.

The project is part of the extension of other projects: to the north, the rehabilitation of the Chaigneau Bichon CDZ as from Place Aristide Briand to the south, the roundabout area or development of the crossroads of Dupeyron/Chemin de Lissandre.

To the east, the heavily wooded hillside will benefit from access to the waterfront.

The project for the redevelopment of the river banks is designed to establish the continuity of the pedestrian paths and bicycle trails, impact the public spaces so as to reduce the size of the roads which are currently too wide and to extend the perception of longitudinal parking. The project provides for the restructuring of the bicycle trail, the enhancement and preservation of natural spaces and

the use of appropriate lighting to improve the appearance and the safety of roads used for traffic. The studied sector of the Garonne river banks encompasses, from south to north, the Quai Elisabeth Dupeyron, following on from the Quai de Brazza situated in Bordeaux and the Quai Numa Sensine leading to the Quai Chaigneau-Bichon and the heart of the old part of Lormont. This river bank road forms a long sequence which appears to be homogeneous given the constant presence of the river to the west. On the other side, however, the alternation of houses and increasingly high embankments gives the impression of a progressive climb toward Old Lormont and the Pont d'Aquitaine suspension bridge.

Existing constructions

The hillside of the Garonne, formerly exploited by the cement works of Les Ciments Français, presents a series of small houses in three sections along the road with the railway used by the Paris-Bordeaux high speed train, among others, between them.

The rows of houses thus alternate with the raised portion of the railway. Of regular height, between 2 and 3 storeys, their freestone



Aerial view of Garonne river



Bordeaux, Garonne, Belvédère

façades do not offer any particular structural ornamentation apart from one exception.

Access

The Quai E. Dupeyron and the Quai N. Sensine are essentially linear but in fact bend twice at the end of the first two series of houses to faithfully follow the curve of the river. As from the intersection with the Chemin de Lissandre, to the south, they do not encounter any road, cul-de-sac or passage before reaching the Place Aristide Briand situated at the bottom of Old Lormont where shops and houses come together.

Service with the River Bus and traditional buses makes this vast intersection a very busy, bustling place at the start and end of the day. This is where the bicycle trail ends and where the pedestrian paths start.



Bordeaux, Hermitage



Bordeaux Gondolas

Vegetation

The existing vegetation is specific to the existence of a river bank road in an «extra-urban» context, created by the hillside which restricts urbanisation. A long line of plane trees can be seen which forms the link from the Quai de Brazza in Bordeaux (or even the Quai de Queyries and therefore La Bastide) right up to the bottom of Old Lormont where it comes to an end. Given their sheer size, the plane trees appear to accompany the spontaneous vegetation which has grown on the hillside and in the old cement works. The Place A. Briand and its surrounding area benefit from the attraction of other anthropic species such as chestnut or lime trees.

Endemic vegetation has grown along the edge of the river depending on pruning operations and the height of the tides. Riverain trees can be found at different stages of growth, in copses or in isolation, leaving here and there openings on to the river. There are also willows, ash trees, poplars, water irises, reeds but also acacia and maple trees. Closer to the town, the local inhabitants have taken possession of the river banks, benefiting from a small garden here, a vegetable patch there, or just somewhere to rest.

Survey of the banks of the Garonne

A survey of the flora of the banks of the Garonne was carried out on July 19, 2005 along the entire distance covered by the road rehabilitation project between the Place Aristide Briand and the Chemin de Lissandre, namely a total of roughly 995 m.

standing buildings, etc.), enhancing the river and related natural spaces (banks, marshes, protected zones and/or expansion of wetlands, etc.).

Technical description of the project

The project provides for the creation of a 3 m wide bicycle trail following the existing line of plane trees on the western side, the restoration of the pavement on the eastern side, the reduction of the existing street and the layout of longitudinal parking spaces on each side of the road.

For approximately 1 km, there is a stretch of entirely natural river bank. The spontaneous vegetation on the banks serves to reinforce the wild aspect of the site.

This concrete bicycle trail will offer a unity of surface with stabilisation at the foot of the plane trees. Its implementation will take into account the existing trees and restrict as far as possible the risks of cutting roots. Provision is to be made for additional trees as the alignment is not currently totally homogeneous.

Generally speaking, a uniform treatment will be sought over the entire length of the project with an occasional element to break the rhythm (a pedestrian platform in Zone 30 at the exit of the hermitage park, wooden viewpoint platforms on the banks, alternation with more cultivated plants and shrubs in a few specific points).



Garonne river, Bordeaux, tourist boat trip

The pavement on the eastern side will be more convenient and safer, being widened on average from 2 to 4 m. In certain stretches, it will be widened even further and be subject to specific embellishments. Along the river banks, the actions of the project will be limited to differential management of the wetlands. The open spaces will be designed by alternating management with annual cutting on the more natural, wild part, and regular mowing of the more urban areas. Clearing of exogenous species is necessary in certain places. Certain other places require planting limited to indigenous species. Openings are to be found offering windows onto the river. The creation of large wooden observation platforms overlooking the river would provide 2 stopping places to observe the local fauna and flora. On the street side, longitudinal parking spaces will be laid out with wide granite kerbstones.

Public lighting on the western side will consist of tall posts installed in the current positions plus a pedestrian console. A new lighting system with smaller pedestrian lamp posts will bring added safety to the new pavement on the eastern side.

Particular attention will be paid to the connection with the Chaigneau Bichon CDZ to the north and to the roundabout area to the south. The concrete blocks and structures could well be grassed over.

3. Measures respecting the ecosystem

Analyses of the existing vegetation

Although situated in an urban environment, the right bank of the river has kept natural plant and morphodynamic characteristics. The different stages of vegetation traditionally found along major waterways are amply represented over the entire stretch, namely from bottom to top (cf. the transect photographs): the presence of *Eleocharis* sedge, subject every day to immersion following the rise and fall of the tides, reedy marsh formations, also subject to the alternation of immersion/emersion.

Their development depends on the width of the berm, riverain vegetation the greater or lesser development of which depends on the spot (cf. map).

The trees are in contact with the water only at very high tides or when the river is in spate.

Vegetation on the top of the bank is very rarely, if ever, immersed (raising of the natural bank by the addition of stones, the presence of a low wall, etc.).

Species found: the species which do not belong to the spontaneous flora are shown in red

Berm

Yellow loosestrife (*Lysimachia vulgaris*)

Buttercup (*Ranunculus bulbosus*)

Purple loosestrife (*Lythrum salicaria*)

Umbrella grass (*Cyperus eragrostis*)

Spire reed (*Phragmites australis*)

Ribbon grass (*Phalaris arundinacea*)

Yellow flag (*Iris pseudacorus*)

Marsh mallow (*Althea officinalis*)

Comment. These are riparian habitats of particular value in terms of heritage, potentially capable of being home to *Angelica heterocarpa* (not seen in the site reconnaissance of July 19, 2005); an endemic species that must have priority (within the meaning of the «habitat» directive) as far as preservation is concerned. Its presence is highly probable given the condition of the riparian environments present on site.

Trees:

Ash (*Fraxinus angustifolia*)

Common elm (*Ulmus minor*)

Red willow (*Salix atrocinerea*)

White willow (*Salix alba*)

Purple osier (*Salix purpurea*)

Black alder (*Alnus glutinosa*)

Wild cherry (*Prunus avium*)

Box elder (*Acer negundo*)

Sycamore (*Acer pseudoplatanus*)

False acacia (*Robinia pseudoacacia*)

Ficus carica

Laurus nobilis

Comment. Typical composition of alluvial wood formations near major waterways. The value of these trees lies in the diversity of the spontaneous species. It is nonetheless a relictual formation which has in particular suffered from all the damage resulting from inappropriate forestry management (felling, destruction by gravelling, etc.) and from the presence of horticultural species escaped from nearby gardens.

Vegetation on the top of the bank: present over an uncut area and under the trees:

Nettles (*Urtica dioica*)

Birthwort (*Aristolochia clematitis*)

Brambles (*Rubus fruticosus*)

Oregano (*Origanum vulgare*)

Valerian (*Valeriana repens*)

Horsetail (*Equisetum palustre*)

Dog rose (*Rosa canina*)

Butterfly bush (*Buddleia davidii*)

Virginia creeper (*Ampelopsis*)

Dogwood (*Cornus sanguinea*)

Knapweed (*Centaurea nigra*)

Comment. Same comment as above, namely an interesting specific diversity, even if the flora remains common.

4. Impact of the project

In principle, the widening of the pavements will not directly affect any of the plant formations on the river bank proper.

It concerns either an area that has already been made artificial (gravelled opposite the Quai Numa Sensime), or the grassed strip that is regularly mown running along the line of plane trees. Consequently, the widening has no direct impact on these riparian environments. With respect to the problem of safety given the proximity of the river, it is recommended to keep the existing riverain vegetation and even to encourage its development. That solution appears distinctly preferable to any reconstitution by planting a border of shrubs. To replace that, it will be recommended to undertake management of the existing trees aimed at: maintain-



Garonne river, Bordeaux, yachts and movable docks in Lormont

ing the mixture of spontaneous species (ash, willows, elms, etc.); containing the development of the false acacia and box elder by selective felling; encouraging elms by replanting an elm-disease resistant variety.

As far as the maintenance of the grassed strips is concerned, it is preferable to mow late, after fructification, to encourage spontaneous re-seeding thus maintaining the existing diversity of the flora. The area occupied by these paths and trails is often situated in the maritime domain, property that is managed either by the French Waterways upstream or by the Bordeaux Port Authority downstream. The latter has accepted the principle of transferring management of the land required for the layout of these paths and trails to the benefit of the Urban District Council. The communes, under their jurisdiction concerning parks and gardens, architectural heritage and landing stages, act as contracting authorities for the other projects. The Bordeaux Urban District Council, Central Government, the Region and Europe are taking an active part in certain actions which makes it possible to provide the commune with up to 80% of the necessary credit lines. The Garonne Plan has been selected by the European RiverLinks Project within the framework of the Interreg III C programme – objective 2. This project consists of a partnership between the cities of Florence, Seville, Bordeaux, Bremen, Dresden and Tallinn on the theme of the enhancement of the town/river relationship. The objective is to enable an exchange of experiences and know-how between several cities and to draft a guide of recommendations for a sustainable town/river relationship. The developed projects recreate open spaces around the river while at the same time respecting, protecting and enhancing nature.

5. Fusion between the natural landscape and access to the general public

The developments already implemented on the waterfront in Bordeaux have replaced the abandoned warehouses and industrial wasteland. They have made it possible to open up unhindered views over the river and to discover one bank from the promenades situated on the opposite bank. They have been enhanced by the planting of vegetation and the creation of areas of tranquillity where city-dwellers can now come on foot or by bicycle for a welcome breath of fresh air without having to travel long distances in traffic jams.

Pollution from the tipping of waste of industrial activities neighbouring the river has been eliminated, the river banks have been restored, cleaned and made natural once again.

In the longer term, the landing stages to be installed will make it possible to organise transport facilities on the river and encourage waterway tourism.

A landing stage and river reception centre have been installed at Lormont to the north of the pathway project.

The embankments have thus become a special place to go once again, an open invitation for meeting people, discovering new pleasures and enjoying waterway tourism, and they contribute in making the city ever more enjoyable.

Summaries

The Town of Lormont, located along the Garonne river, has undertaken a project for the reclamation and enhancement of its natural spaces. The project encompasses the recovery of the river front, the development of the urban pathways and the inclusion of panoramic views of the adjoining banks. The project for the redevelopment of the river banks is **designed to establish the continuity of the pedestrian paths and bicycle trails**, impact the public spaces so as to reduce the size of the roads which are currently too wide and to **extend the perception of longitudinal parking**. The project provides for the restructuring of the bicycle trail, the enhancement and preservation of the natural spaces and the use of **appropriate lighting** to improve the **appearance and safety of roads** used for traffic. Bordeaux launched a development plan entrusted to the A'Urba town-planning agency which resulted in the adoption in 2000 of the « Garonne Plan » programme. The actions of this specific programme encompass three objectives: to establish a direct or functional link with the river (marinas, landing stages, river reception centres, river transport, etc.), to promote its discovery or re-adoption by the local population (pathways, viewpoints, outstanding buildings, etc.), to enhance the river and related natural spaces (banks, marshes, protected zones and/or expansion of wetlands, etc.). A landing stage and river reception centre have been installed at Lormont to the north of the pathway project. The embankments have thus become once again a special place to go, an open invitation for meeting people, discovering new pleasures and enjoying waterway tourism, to help make the city ever more enjoyable.

Lungo la Garonna il Comune di Lormont ha promosso un progetto di recupero e valorizzazione degli spazi portuali. Questo progetto ha come obiettivo di avvicinare la gente al lungofiume anche attraverso la realizzazione di una passeggiata panoramica pedonale e di una pista ciclabile lungo i moli adiacenti. Il progetto di recupero delle banchine è stato progettato per stabilire una continuità tra percorso pedonale e ciclabile, agendo sugli spazi pubblici in modo da ridurre lo spazio della strada carrabile che oggi è troppo ampia, tale da contenere un parcheggio longitudinale. La CUB (Comunità Urbana di Bordeaux) ha elaborato un piano quadro co-finanziato dall'Agenzia di Pianificazione Urbanistica nel programma "Piano della Garonna" approvato nel 2000. Le azioni di questo programma prevedono tre obiettivi: stabilire un diretto e funzionale contatto con il fiume (porti turistici, attracchi, piattaforme, centri d'accoglienza lungo il fiume, trasporti fluviali, ecc.) promuovere la riscoperta o riappropriazione della popolazione locale (percorsi pedonali, belvedere, costruzioni di qualità, ecc.) valorizzare il fiume e gli spazi naturali ad esse connesso (argini, zone umide, zone protette e/o di ripopolamento). Un Centro di accoglienza nautico con un'area per le esercitazioni è stato realizzato a Lormont a Nord del percorso pedonale previsto dal progetto. Così anche i moli fluviali cominciano ad essere frequentate, spesso luogo di meeting e si comincia a riscoprire un nuovo modo di fare attività ricreative e turismo, rendendo tutta la città più vivibile.

Die am Garonne-Fluss gelegene Stadt Lormont hat ein Projekt zur Wiedergewinnung und Aufwertung ihrer Naturräume durchgeführt. Das Projekt umfasst die Wiederherstellung der Flussufer, die Entwicklung des städtischen Wegenetzes unter Einschluss von Panorama-Aussichten auf die angrenzenden Ufer. Das Projekt für die Sanierung der Flussufer wurde entwickelt, um die Durchgängigkeit der Fuß- und Radwege herzustellen und den öffentlichen Raum umzugestalten. So wird der Raumanspruch von Straßen reduziert, die gegenwärtig zu breit sind und beabsichtigt, die Akzeptanz für ein geordnetes, den Flächenverhältnissen angepasstes Parken zu erhöhen. Das Projekt berücksichtigt die Neustrukturierung des Radwegenetzes, die Vergrößerung und den Schutz der Naturräume und die Verwendung einer geeigneten Straßenbeleuchtung, um das Erscheinungsbild der Stadt zu verbessern und die Sicherheit der dem öffentlichen Verkehr gewidmeten Straßen zu erhöhen. Die Stadt Bordeaux begann einen Entwicklungsplan zu erstellen und beauftragte damit die Stadtplanungsagentur A'Urba, was im Ergebnis im Jahr 2000 zur Bestätigung des Programms «Garonne Plan» führte. Die Aktivitäten dieses spezifischen Programms umfassen drei Zielstellungen: Schaffung von unmittelbaren oder funktionalen Verbindungen der Stadt mit dem Fluss (Jachthäfen, Bootsstege, Fluss-Informationszentren, Schiffsverkehr usw.), Förderung der Entdeckung und Wiederaneignung des Flusses und seiner Ufer durch die örtliche Bevölkerung (Gehwege, Aussichtspunkte, außergewöhnliche Bauwerke usw.), Aufwertung des Flusses und der ihn umgebenden, auf ihn bezogenen Naturräume (Ufer, Sumpfbereiche, Schutzzonen und / oder Vergrößerung von Feuchtgebieten usw.). Ein Bootssteg und ein Fluss-Informationszentrum wurden in Lormont nördlich des Gehweg-Projektes errichtet. Die Uferdämme wurden damit wieder zu einem attraktiven Ort; sie sind eine offene Einladung, um seinesgleichen zu treffen, neue Vergnügungen zu entdecken und auf den Fluss bezogene touristische Angebote zu genießen - und tragen dazu bei, die Stadt immer lebenswerter zu machen.

El pueblo de Lormont, situado a lo largo del río Garonne, ha iniciado un proyecto para reivindicar y mejorar sus espacios naturales. El proyecto comprende la recuperación del frente del río, el desarrollo de los senderos urbanos y la incorporación de vistas panorámicas de las riberas adyacentes. El proyecto para el re-desarrollo de las riberas de ha diseñado para **establecer una continuidad en los senderos peatonales**, en los carriles para bicicletas, **para generar un impacto en los espacios públicos de modo que se reduzcan el tamaño de las carreteras que son actualmente demasiado anchas**, y para mejorar la imagen del **aparcamiento longitudinal**. El proyecto cubre la **reestructuración de los carriles para bicicleta, la mejora y la conservación de los espacios naturales** y el uso apropiado del **alumbrado para resaltar la apariencia y para mejorar la seguridad de las vías usadas para el tráfico**. Burdeos lanzó un plan de desarrollo que le fue comisionado a la agencia de planificación urbana A'Urba, que resultó en la adopción del programa «Plan Garonne» en el año 2000. Las acciones concretas de este programa comprenden tres objetivos: establecer un lazo directo o funcional con el río (puertos deportivos, atracaderos, centros de recepción de usuarios, transporte fluvial, etc.) promover su redescubrimiento o su re-adopción por arte de la población local (senderos, miradores, edificios singulares, etc.), mejora del río y de los espacios naturales (riberas, marismas, zonas protegidas y/o expansión de humedales, etc.), se han instalado en Lormont un atracadero y un centro de recepción de usuarios, al norte del proyecto de senderos. De este modo, las riberas se han convertido, una vez más, en un lugar de atracción especial, una invitación abierta al encuentro personal, al descubrimiento de nuevos placeres y al disfrute del turismo fluvial; al mismo tiempo, ayuda a que la ciudad se disfrute de mejor manera.

Le long de la Garonne, la Commune de Lormont a engagé un projet de reconquête et de valorisation des espaces naturels. Ce projet porte sur la réappropriation de la façade fluviale, le développement des promenades urbaines et la prise en compte des vues lointaines sur les berges attenantes. Le réaménagement des berges doit établir la continuité des cheminements piétons et cycles, agir sur les espaces publics de manière à réduire l'emprise des voiries, trop larges aujourd'hui et élargir la perception du stationnement longitudinal. Le projet prévoit la restructuration de la piste cyclable, la mise en valeur et la conservation des espaces naturels, la mise en valeur et en sécurité, par un éclairage approprié, des espaces circulés. La Communauté Urbaine de Bordeaux lance un schéma d'orientation confié à l'Agence d'Urbanisme A'urba qui donna lieu à l'adoption d'un programme en 2000 « Plan Garonne », dont les actions répondent aujourd'hui à trois objectifs : être en relation directe ou fonctionnelle avec le fleuve (ports de plaisance, haltes nautiques, pontons, maisons du fleuve, transports fluviaux...), favoriser sa découverte ou sa réappropriation par la population (cheminements, belvédères, bâtiments remarquables...), mettre en valeur le fleuve et les espaces naturels liés (berges, marais, zones protégées ou/et expansion des crues...). Une halte nautique et une maison du fleuve ont déjà été réalisées à Lormont au nord du cheminement projeté. Ainsi, les bords du fleuve redeviennent des espaces privilégiés, lieux d'invitation aux rencontres, aux découvertes et au tourisme fluvial, et participent à rendre l'agglomération de Bordeaux plus rayonnante.

Garonne'i jõe ääres asuv linn nimega Lormont on ette võtnud projekti oma loodusmaastike tagasihoidmiseks ja edendamiseks. Projekt hõlmab jõe kaldajoone taastamist, linna jalgradade arendamist ja vaadete avamist vastaskaldale. Jõekallaste uuendamisprojekti on mõeldud jalgradade ja jalgrattateede võrgu tervikuks ühendamiseks, avalike ruumide mõjutamiseks, maantee kitsendamiseks, mis on praegu liiga laiad ja pikutiparkimise võimaluste avardamiseks. Projekt näeb ette jalgrattatee restruktureerimise, loodusmaastike säilitamise ja laiendamise ning sobiva valgustuse kasutamise, et parandada autoteede välisilmet ja liiklusohutust. Bordeaux käivitas linnaplaneerimisagentuuri A'Urba hooleks usaldatud arengukava, mille tulemuseks oli programmi « Garonne Plan » vastuvõtmine aastal 2000. See eriprogramm koosneb tegevustest, millega püütakse saavutada kolme eesmärki: otsese või funktsionaalse ühendusiili rajamine jõega (väikesadamad, paadisillad, külalissadamad, jõetransport jne), jõe taasavastamise ja omaksvõtmise propageerimine kohalikele elanikele (jalgrajad, vaateplatvormid, pilkupüüdvad hooned jne), jõe ja sellega seotud loodusmaastike (kaldad, sood, kaitsealad ja/või märgalade laiendamine jne) kvaliteedi tõstmine. Paadisild ja külalissadam on paigutatud jalgrajaprojektist põhja poole Lormonti. Nii on kaldapealsed saanud taas eriliseks kohaks, kuhu minna, kus üksteisega kohtuda, avastada uusi rõõme, nautida veeturismi ja aldata muuta linna veelgi nauditavamaks.

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5.3. Cascine Argingrosso (Florence)

For decades the debate concerning the largest park in Florence and the surrounding area known as Argingrosso has generated a maze of ideas and proposals which have supplied many ideas on the ways to approach such a strategic topic for the future of the city. However, there has never been a realistic proposal on how to transform this entire area.

The RiverLinks Project has tried to provide more knowledge about the present state of the Argingrosso area, underlining potentials and problems and seeking to delineate the strategic objectives appropriate for action over the next years in the context of the city.

Recent trends, including administrative ones, have emphasised that the format and prominently historic nature of the Cascine Park are values that cannot be ignored under any circumstances, whether for restoration, improvement or development.

The Cascine is Florence's Park and, as such, even the evolution of the citizens' perception has a vitally important, though intangible value. The Argingrosso area, on the other hand, symbolises the future, the natural development of the idea of a city park in communication with the urban structure which has undergone recent evolution and transformation. Through a correct balance between constructed and open space it should guarantee a Florence in line with contemporary European cities for future generations.

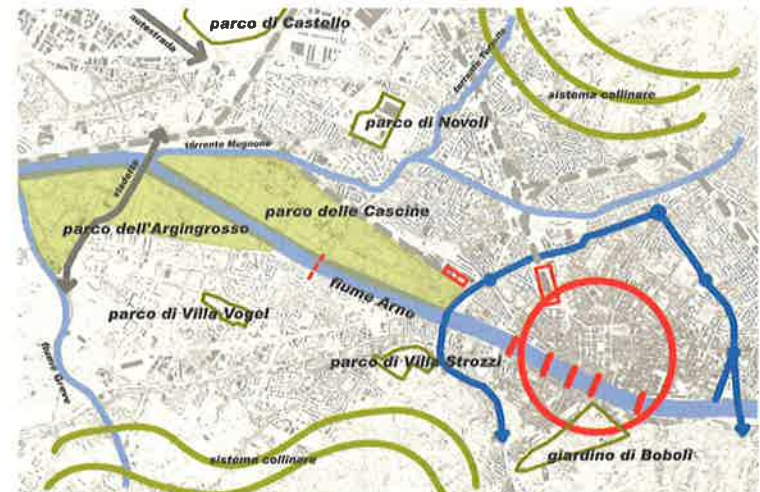
The Argingrosso area is historically linked to the River Arno regarding flood risk. A great common effort is currently underway to create a series of controlled flood storage areas alongside the river above and below Florence to avoid a repetition of the disastrous flooding such as in November 1966. A proposal for a flood storage area at Argingrosso has been made which will significantly condition the development of the site.

The RiverLinks Project concentrates on finding the most important environment and functional relations inside and outside the site. It also considers the possibility (presently under discussion) of proceeding in the future towards a metropolitan system of parks and protected areas¹ (already partly in existence), which uses the Arno as the backbone of the system.

In this sense, RiverLinks has studied the Argingrosso area to outline its principal relationships as a vast area in the city context (*see scheme*). These take into account the strategic centrality of the area in respect to its intended connection to the Cascine Park, its urban surroundings and its potential position in the construction of a network of metropolitan parks.



Project for a green belt in the north-west of the Florentine metropolitan plain



The Argingrosso area within the urban layout

¹ Regarding the work undertaken by Florence Municipality under the activity of the Urban and Metropolitan Parks Department, see G. MALIN (edited by), *Il sistema del verde nell'area metropolitana fiorentina*, Edifir, Firenze, 2004



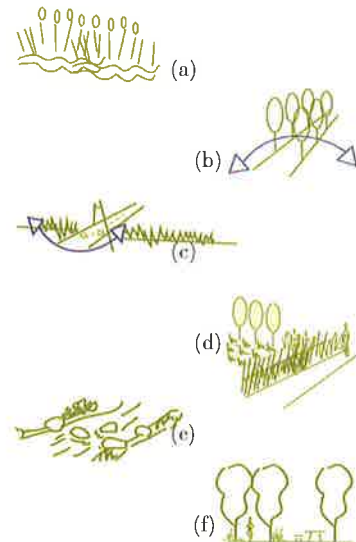
The use of Argingrosso area

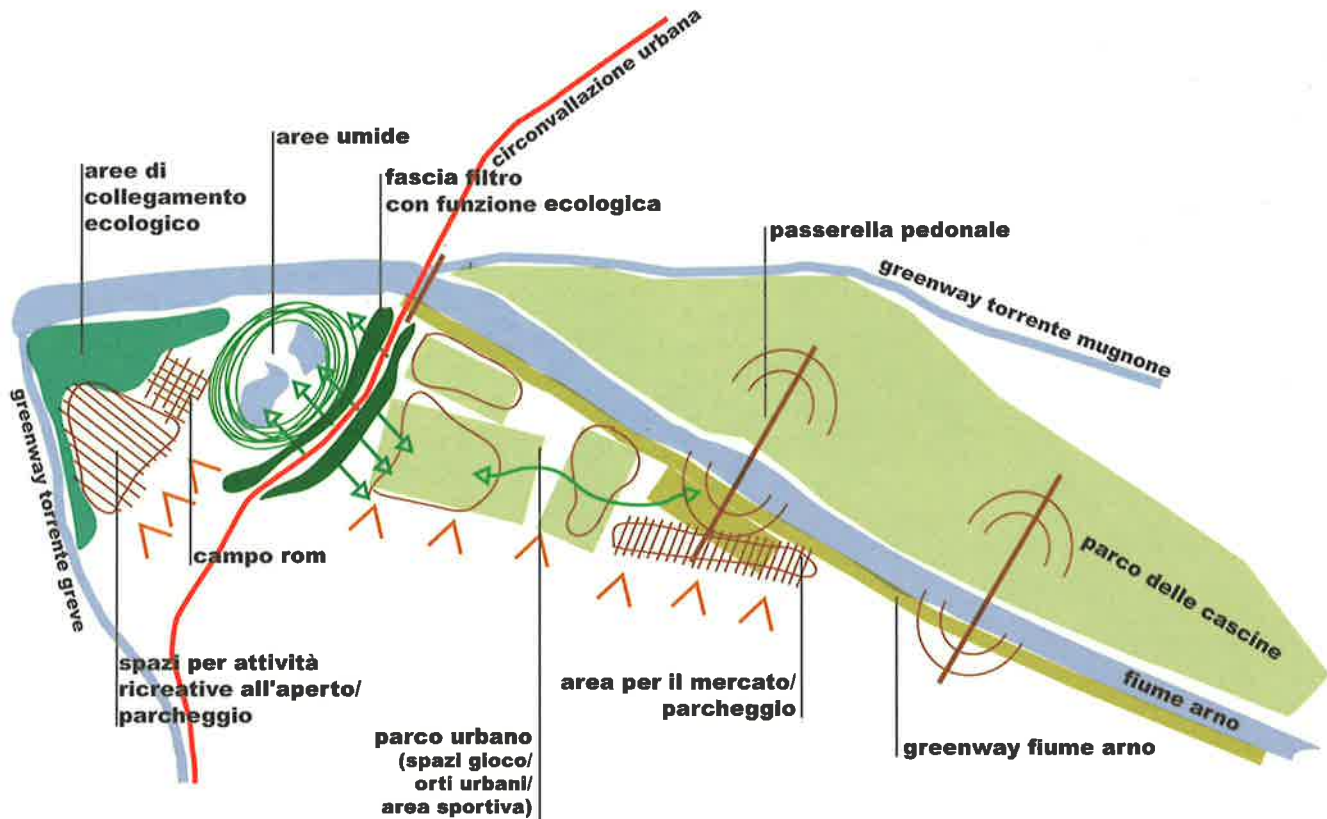
Presently the Argingrosso area serves many purposes, some of which are public and have determined an overall highly fragmented image of the area, functional as well as for its morphological and natural shapes and characteristics.

Generally, the area is seen as a sum of different parts, some of which are in a state of semi-abandon and diffused degradation, even if several public interventions recently promoted by Florence Municipality have inverted this trend towards extensive decay.

The RiverLinks Project, after comparing experiences with the other European partners, has identified several strategic criteria which should be taken into account for any future action in the Argingrosso area and which can be summarised as follows:

- ecological continuity (table a);
- preservation and improvement of the landscape and nature (table b);
- territorial permeability and continuity (table c);
- improvement of social functions (table d);
- hydraulic safety (table e);
- improvement of facilities and recreational activities (table f).





The RiverLinks Project: an idea for the future of the Argingrosso area

The general project principles to which any plan or project in the area must refer, in the transformation of the area into a great urban park of metropolitan importance functionally connected to the Cascine Park, can be summarised as follows:

- the protection, improvement or construction of the ecological connective system, involving all the elements: natural, naturalised or potentially renaturisable, defining a network of internal relationships within the park to be coordinated with the environment resources of the city;
- the conservation and upgrading of the resources and their identification not only in the areas of landscape importance but also in the proposed flood storage area in the wetlands and the components of the agricultural landscape;
- the improvement of the potentials for urban forestation interventions, as a means to reconstruct and redefine a system of

landscape values with ecological and territorial continuity;

- the maintenance of the diffused use of the existing agricultural systems, interpreted according to their relationship with their urban background;
- the guaranteed relationships between park areas and their potential connections with the open space system of the city, through precise linear elements of environmental and functional linkage;
- the upgrading of the predicted flood storage area as a way of transforming the landscape in conformity with the general improvement of the area;
- the improvement and expansion of facilities for open air recreational activities compatible with the Argingrosso environment and landscape, which can and must contribute to guarantee the fruition of the park, capable of taking on a role in relation to the Cascine Park.



G. Van Wittel, "Florence from the Cascine", XVIIth century, Florence Palatine Gallery

Merely for illustrative purposes the following diagram shows a projected scheme clarifying how some of the above principles can determine the aspect of this heterogeneous landscape area, where the relationship with the River Arno, the city and its functions, the connection with the Cascine Park, the improvement of natural resources, can provide the base for a successful project.

These simple principles aim to convey how important the Argincorso area is for Florence, and how its development can offer a formidable heritage for the future of the city.

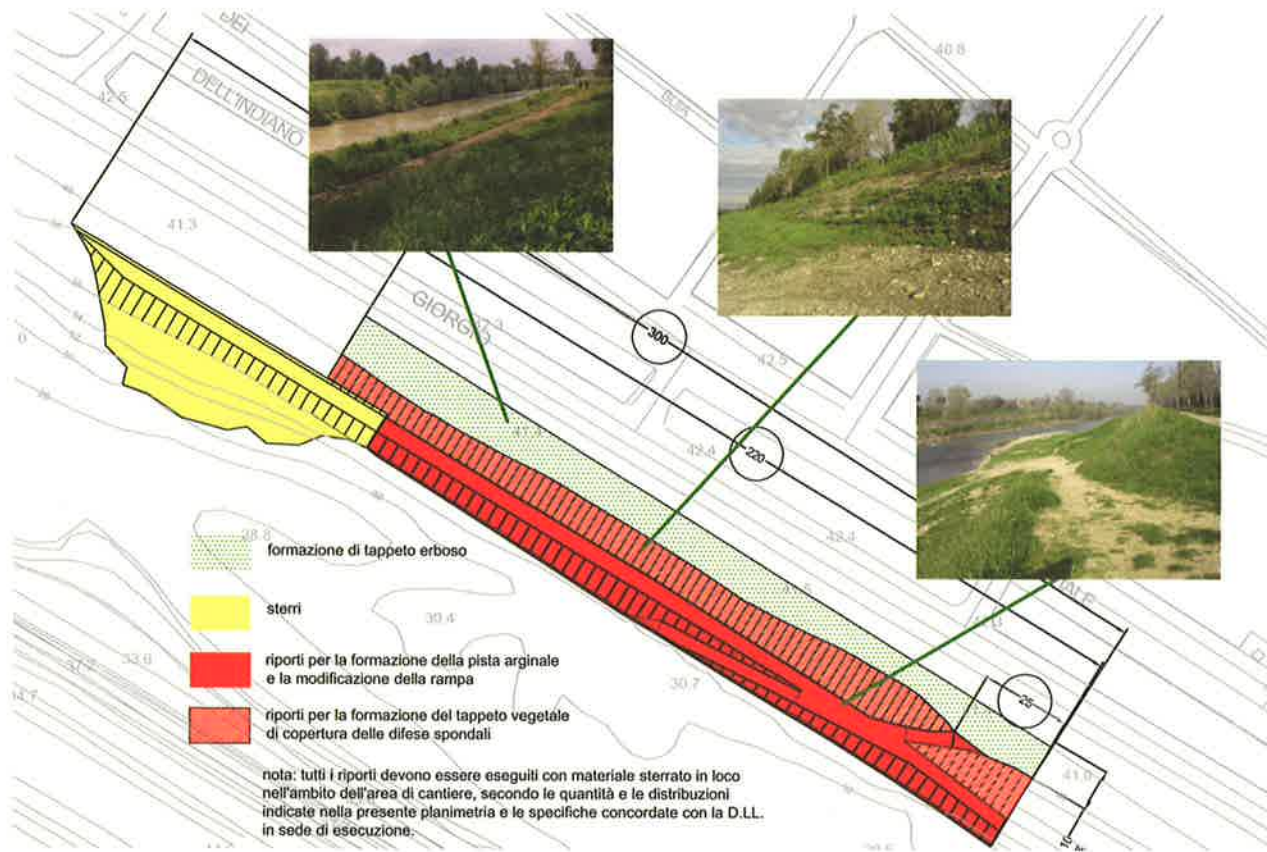
Description of the pilot project area (with plan)

1. The experimental working drawing for the right bank of the riverfront in the Cascine Park downstream from the weir in the Florentine quarter of Isolotto is part of a large area of research and experiment undertaken over recent years by the Parks Office of Florence Municipality.

The pilot scheme for Florence, for which the final project presents the developments and constitutes the necessary technical base for experimental realisation, deals with a significant stretch of the riverbank in the historic Cascine Park.



5.3.6. K.L. Frommel, "Impression of parterre and riverside", 1848, Gabinetto Disegni e Stampe of the Uffizi Gallery



The pilot project

Interventions to regulate water flow and wall building along the banks of the Arno have gradually reduced the visual relationship with the river and discouraged people from approaching it. By now the only contact that tourists and Florentines have with the River Arno is in the historic centre.

Even the famous *Promenade* in the Cascine park, along a stretch of the river, is an invitation to stroll along a wide asphalted avenue excluding access to the river banks. This area, chosen for the experiment is presently only used by fishermen, dog-walkers and joggers.

The project thus provides an opportunity to re-evaluate and balance the sensitive, fragile environment around the River Arno: a resource, at present relegated and hidden between its banks, which could once again provide a place to meet and enjoy, reconquering

the physical-spatial relationship with the city, as well as offering an attractive landscape.

2. Specific objectives of the pilot project

The application of Italian regulations concerning “hydraulic works” and the Basin Authority do not even allow limited interventions in this area. For this reason the creation of a ‘developed’ stretch can only be achieved by mowing the grass frequently and regularly. In this way an accessible, economic and durable lawn could be obtained with dimensions between 7 and 15 m which would be functional and useful. Using this simple, low-impact technique would avoid introducing unsuitable materials into this flood plain area: the path created in this way, convenient and safe, would certainly be more attractive than a paved track made from architectural materials.



Work in progress: June 2005

3. The technical measures proposed by the pilot project within the four Riverlinks themes

The definitive experimental working project in fact derives from a balance based on four groups of substantial variables:

- to improve the urban landscape structure, in this specific case an historic park; the opportunity to preserve resources and the development of suitable long-term elements;
- to improve the peculiar characteristics of the river landscape; an opportunity to conserve the ecosystem with interventions compatible with the present needs of hydraulic regulation and the development of suitable long-term elements;
- initial costs of intervention; the opportunity to adopt the constitution of the open space system with characteristics of biotic continuity, functional connection, with efficient ecosystemic and semiological rebalancing of the Florentine metropolitan landscape on a vast scale and its relative social repercussions on recreation opportunities and slow movement;
- ordinary maintenance costs; the necessity to consider the ordinary financial programming with continuity and suitable frequency; the consequent need to cut unsuitable costs; the opportunity to adopt an open space system in the city with the above-mentioned characteristics on a vast scale.



4. Comparison between the measures proposed and audit optimal practices

The particular environment of Florence and the laws imposed by the Arno Basin Authorities do not permit easy transformation of any of the examples examined by the audit but certainly a series of suggestions could improve the city-river relationship even with partial imposition.

We refer in particular to the riverside parks for recreation purposes in Lyons (Confluence and Miribel) and Strasbourg which present a useful base for experiment where the designers have identified different solutions. Lyons Mirabel for the recovery of the flood basins, to protect the natural resources and develop outdoor activities.

In this way the experiences of revitalisation of historic centres are of interest. The process begun in Turin is very similar where a strategic plan for constructing an open space system on a territorial scale has been programmed (see the Metropolitan Arno Park, from which adesion to the Riverlinks project began); as also in Rome the privileged environment was the actuation of interventions of requalification of the city and the urban landscape.

5. Focus on Local decision sharing and making

The section of the chosen area is part of the wider system of the Arno Metropolitan Park included in the strategic Plan for the next ten years. The experimentation was begun with the only resources made available by the Riverlinks project, (about 50.000 Euros) and suffered from this modest financing. The exceptional flood wave during the winter of 2005/2006 partly compromised the experiment and no more funds were forthcoming to complete the process begun under the pilot scheme.

6. Innovations included in the pilot project

According to the results of the experiment, with appropriate follow-up checks and the specifications relating to the peculiarities of the site, this experience could be extended to the requalification of the entire urban stretch of river coinciding with the historic park and applied to realities outside the metropolitan context, obviously using suitable adaptations.

Evident and substantial elements for its efficiency are fundamental to the proposal, all normally to be found in good landscape interventions. The fact that the completion of the project does not end with the closing of the worksite of the first intervention, but requires time to allow for the growth of the planned plants, is true for every landscape project and even more specifically for those which foresee guided tree renewal. The Riverlinks project expires



Impression of the project on completion; the area is ready for recreation

in June 2006, incompatible with the necessary monitoring of the completion of the experimental project by means of a suitable succession of plant growth and ordinary maintenance according to the planned forms of landscape management. For this reason the experimental project was supplied with simulations representing the state of the sites following three main time-scales: the present situation; the conditions foreseen on the closure of the worksite after the first intervention and the months immediately following; the conditions foreseen after several cycles of ordinary maintenance, with controlled natural renewal of riverside trees sparse in flood basin areas, achieving a state of balance to be checked by periodic interventions on the trees and plants.

7. Integration of the pilot project proposals into the urban framework

The experimentation area even if modest in dimensions fits into the interconnection process of open green spaces known as the Arno Metropolitan Park which figures as one of the main instruments in the organisation of the Florentine open spaces. In fact the objectives identified by the preliminary studies are based on the following elements:

- valorisation and safeguarding of the most valuable areas of landscape interest;
- prevention of unsustainable operations which tend to saturate or interrupt the ecological structures remaining in the Florentine metropolitan area;

- promotion of connecting and reinforcing interventions of the environment systems.

A plan thus conceived, should exert pressure on two basic determining components: the *waterways* and the *woodlands*, as the first components suitable to take on the role of carrying structure of the park, while the second components constitute a mosaic of areas, with high territorial covering, governed by strict and legally stable forms of protection.

8. Natural landscape and civic uses

A priority objective of the project is the use of the riverbanks by citizens without changing their natural aspect.

It is well-known that many conflicts characterise the Cascine Park today because its present increasingly important role is due to the growth of the city without a proportional development of evenly distributed open spaces or the connection and extension of the areas within it.

The surveys done during the preliminary analysis to define the project confirmed the importance and the differentiation of everyday recreation in the park. These include free activities such as walking, cycling, resting and basic sports activities such as running and roller-skating.

The presence of the river has always meant that the project area, between the edge of the right bank and Viale Washington which delimits the park, assumes a specific interest, expressing a peculiar recreational potential in the urban landscape.

For these recreational uses the flood plain areas are utilised wherever they are accessible by embankment service ramps or by riverside steps, made from wood and earth, some recently, between the weir at Isolotto and the Victory bridge.

The restricted area of deposits for sand and pebbles on the right of the river immediately below the weir emerges during low water levels, allowing access almost to the middle of the river bed. There are particular views here of the riverbed itself and the tree-lined waterfront of the park, in conditions of visual and acoustic isolation. In the whole stretch this space is the only wide area of the bank and on warm, sunny days it becomes populated, in spite of the relatively degraded conditions of the river, because it is in direct contact with the park.

It is subject to interventions of hydraulic maintenance which can be carefully integrated to improve the ecosystemic and semiological quality of the river, also for the above-mentioned recreational benefit.



Arno river, self managing of the river cost

9. Intensive use and flood protection

This problem could be resolved technically using a maintenance plan already experimented here.

The stretch of embankment involved on the right bank does not allow direct access to the river without the ramps used for hydraulic maintenance.

The grass surface does not seem to have regular maintenance and often the grass reaches such a height from spring to summer as to discourage any use of the area.

Hydraulic maintenance interventions, however, involve cutting plants down to ground level without considering any natural renewal of riverside species, impeding the growth of isolated trees or thin clumps of trees.

The foot of the bank undergoes extensive erosion which could deteriorate further with the development of recreational navigation and resulting transverse waves.

Summaries

The experimental working drawing for the right bank of the riverfront in the Cascine Park downstream from the weir in the Florentine quarter of Isolotto is part of a large area of research and experiment undertaken over recent years by the Parks Office of Florence Municipality which is using this feasibility study as an ideal example for the city's open space management. The River Arno and its tributaries thus interconnect the open spaces in the city, by means of a network of greenways and the restoration of its waterways, primarily the Arno. The pilot scheme for Florence, for which this final project constitutes the necessary technical base for experimental realisation, involves a significant stretch of the riverbank in the historic Cascine Park. It entails remodelling the land into meadows, as stipulated in the current regulations, allowing closer contact with the river and increasing recreation already practiced in this area such as jogging, fishing, walking and other compatible activities.

Il progetto esecutivo sperimentale per il lungofiume del parco delle Cascine in riva destra a valle della pescaia dell'Isolotto si inserisce in un ampio quadro di ricerca e sperimentazione in corso negli anni recenti portati avanti dall'Ufficio Tematico Parchi del Comune di Firenze, che ha nella redazione dello Studio di fattibilità del Parco Metropolitano dell'Arno il suo cardine come strumento ordinatore del sistema del verde della città. L'Arno ed i suoi affluenti diventano gli elementi di interconnessione tra gli spazi aperti della città, mediante una calibrata diffusione di greenways e la rivalutazione dei suoi corsi d'acqua, prima di tutto l'Arno. L'azione pilota per la città di Firenze, di cui il progetto esecutivo costituisce la necessaria base tecnica per l'attuazione sperimentale, è stata riferita ad un segmento significativo del lungo fiume del Parco storico delle Cascine, dove realizzare un rimodellamento del terreno seminato a prato – come le norme vigenti impongono – che consenta un più stretto rapporto con il fiume, attraverso il potenziamento delle attività ricreative che già si sviluppano in questa area: jogging, pesca, passeggiata, ed altre attività compatibili.

Die hier dokumentierte experimentelle Arbeit – ausgeführt für das rechte Arno-Ufer als die dem Fluß zugewandte Seite des Cascine-Parks unterhalb des Stauwehres im Florentiner Stadtteil Isolotto – ist Bestandteil eines weitgespannten Forschungs- und Experimentierfeldes, das in den zurückliegenden Jahren vom Parkamt der Stadt Florenz bearbeitet wurde und welches nun die vorliegende Machbarkeitsuntersuchung beispielgebend für das Management städtischer Freiräume nutzt. Der Arno-Fluss und seine Zuflüsse verbinden somit künftig die städtischen Freiräume miteinander; dies wird erreicht durch ein Netzwerk von Grünzügen und eine Sanierung der Gewässer, vorrangig des Arno. Das Florentiner Pilotvorhaben – für das das RiverLinks-Projekt abschließend die notwendigen technischen Grundlagen zur experimentellen Realisierung bereitstellt – umfasst eine erhebliche Aufweitung des Flussufers im bzw. entlang des kulturhistorisch wertvollen Cascine-Parks. Dies hat zur Folge, das geeignete, zuvor vertraglich in entsprechenden aktuellen Regelungen festgelegte Flächen zu Wiesen umgestaltet werden. Auf diese Weise wird ein engerer Kontakt mit dem Fluss ermöglicht und schon bestehende Erholungsmöglichkeiten, wie z. B. Joggen, Angeln, Wandern und andere raumverträgliche Aktivitäten werden verbessert.

Los planos experimentales para la ribera derecha del río en el Parco delle Cascine, río abajo de la presa, en el distrito Florentino de Isolotto, son parte de una zona grande de investigación y experimentación asumida durante los últimos años por la Oficina de Parques del Ayuntamiento de Florencia. Dicha oficina está usando este estudio de viabilidad como un ejemplo ideal para la gestión de las zonas abiertas de la ciudad. El río Arno y sus afluentes así interconectan los espacios abiertos de la ciudad por medio de una red de corredores verdes y de la restauración de sus vías fluviales, principalmente el Arno. La propuesta piloto para Florencia, del que este proyecto final constituye la base técnica necesaria para su realización experimental, supone una larga y significativa parte de la ribera en el histórico Parco delle Cascine. Conlleva la remodelación el terreno a praderas, como se estipula en las normas actuales, permitiendo un contacto más directo con el río y el aumento de actividades recreativas que ya se llevan a cabo en esta zona, como el footing, la pesca, caminar, y otras actividades compatibles.

Le projet expérimental d'aménagement de la berge du Parc de Cascine situé sur la rive droite de la Vallée, en aval du déversoir de l'Isolotto, s'inscrit dans un vaste programme de recherche lancé ces dernières années par l'Office des Parcs de la Municipalité de Florence, qui a fait de cette étude de faisabilité un exemple idéal de gestion des espaces verts de la ville. Le fleuve Arno et ses affluents permettent une interconnexion entre les espaces verts de la ville grâce à un réseau de voies vertes et à la restauration des cours d'eau, principalement l'Arno. Le projet pilote de Florence, dont l'aménagement final constitue la base technique indispensable à une réalisation expérimentale, inclut d'importants tronçons rectilignes de berges dans le Parc historique de Cascine. Les normes en vigueur imposent la transformation des terres cultivées en prés dans le but d'établir un rapport plus étroit avec le fleuve en augmentant les loisirs déjà pratiqués dans ce secteur tels que le jogging, la pêche, la marche et d'autres activités compatibles.

Katselised tööd jõe paremal kaldal Cascine pargi juures, mis jääb Firenze Isolotto kvartalist allavoolu, on suur uuringute ja katsetuste ala, mis kuulub Firenze linna Parkide Ametile, kes viib läbi teostavusuuringut linna avatud alade haldamiseks. Arno jõgi ja tema lisajõed ühendavad linna avatud alad läbi rohealade võrgustiku ja veeteede (laevateede) võrgustiku taastamise esmalt Arno jõel, Firenze projekti ala hõlmab märkimisväärselt ala ajaloolise Cascine pargi jõekaldast. Projekti tegevustega kaasneb jõeäärsete alade laiendamise rekreatsioonialaks, mis võimaldab lähemat kontakti jõega ja selle äärsete aladega, kus on võimalik tegelda jooksmise, kalastamise, jalutamise ning teiste sarnaste tegevustega.

5.4. Peat Harbour (Bremen)

1. The area

In Bremen the main area of the pilot project covers the Peat Harbour and the Peat Canal (Fig. 1). It is located 2.5 km north of the city centre in the vicinity (1 km) of the main railway station and next to the Trade Fair Halls with the Convention Centre and some of Bremen's best hotels. It represents the urban end of the Peat Canal that flows northwards connecting the harbour to other canal systems, to the rivers Wümmen, Hamme, Lesum and Weser and finally to communities such as Osterholz and Wörpswede in the hinterland, especially the Devil's Moor region. The Findorff district is adjacent to its left bank, the famous Bürgerpark is to the right and the Stadtwald further along. The Peat Canal is 2.6 km long overall and flows into the small river Kleine Wümmen in the northwest of the project area. It is 7 to 13 m wide in cross-section, the profile is chest-shaped and the bank revetment is mainly made of bongossi wattling, some of which is broken. The name "Peat Canal" comes from its important historic role as the main transportation route for bringing heating material from the countryside of the Devil's Moor Region into the city, particularly during the 19th century. In Bremen 80% of households were heated with peat, involving approximately 30.000 peat boat-loads a year. When sailing was not possible the boats had to be poled and towed by the moor-farmers from a towpath alongside the canal. The peat trade declined with the subsequent implementation of



Area of the pilot project

coal, gas and oil for energy and eventually the harbour was closed and cut off from the Peat Canal by a sheet pile wall. The Peat Harbour now serves as a special reservoir during heavy rainfall. If the pipes of the combined water and sewage systems are overloaded, and emergency spill-ways dump rainwater together with the untreated waste waters into it and from there into the Peat Canal, water pollution and oxygen depletion occur and fish in the harbour die. Consequently the water quality of the harbour and canal is usually one of the lowest in Bremen.

2. The objectives

Urban Development

City politics would like to promote the quality of the town quarter in Findorff using a general masterplan over the next decade. To achieve this goal the reopening and revitalisation of the Peat Harbour, one of the key areas of public interest, is vital and includes the revival of the relationship between the district and the Peat Canal. Findorff, the city district around the harbour, named after the moor commissioner Jürgen Christian Findorff (1720-92) who was particularly active in the exploitation and cultivation of Devil's Moor, would rediscover its historic roots by intensifying the peat boat traffic between the Peat Harbour and the Devil's Moor region with the famous art village Wörpswede, where the peat was harvested in the past, and other places of tourist interest such as the Bürgerpark and the Universum Science Centre. Bremen intends to encourage new developments around it with a marina, sport facilities, market, promenade, cafe/restaurant and a beer garden etc. in connection with private investment and as attractive completions of the Bürger Park recreation facilities and services. This may even create new jobs, for example in the boat building company BBV, which builds the historic peat boats for tourist use.

Environmental Quality

The second significant goal is to improve the water quality of the Peat Harbour and the Peat Canal, aiming at a good ecological potential and at satisfactory chemical conditions. Besides being

an important advancement of environmental quality it is fundamental in enhancing the attractiveness of this surface water course that provides a transition from the city to the surrounding landscape, especially for recreational activities such as boating and fishing. As far as possible the embankment of the Peat Canal should be restored ecologically to improve its quality as an amphibian and fish biotope and to offer a more pleasing aspect. The improvement of the water quality includes the minimisation of the discharge of rain water into the public combined water and sewage systems by separating the rain water runoff of some public areas from it and using it as a source of fresh water for the Peat Harbour and Canal. Hence the emergency spillways may be closed. The Bremen water act has already been altered to favour the priority of non-central rain water drainage from private areas, so that «less polluted but innocuous rainfall» should possibly be drained separately from the combined water sewer system. It is a first step in a long-term time scale to reduce the discharge of polluted waste water and to improve the quality of surface waters near the city. Thereby the effectiveness of the Bremen-Seehausen municipal waste water plant would additionally be enhanced. Thus the Peat Harbour is a demonstration project for an innovation that could be adapted to similar situations in Bremen over the next 30 years.

3. Proposed and Realised Measures

Peat Harbour Basin and Surroundings

In 2004 the rehabilitation of the Peat Harbour began. The old sheet piles along the basin walls were replaced and those separating the harbour from the Peat Canal were removed, silt and mud at the bottom were dredged. Other measures are still in the process of planning and consultation. Proposals to reconstruct the main part of the embankment: the western, northern and southern banks were designed with landing stages, the western side especially for canoes and small boats including a ramp with a slight gradient to serve as a slide for boats. The adjacent areas will be used for fair-ground and recreation. Along the northern bank a walkway will be built and it will be terraced with one step down to the landing stage for mooring peat boats. A smaller area next to the peat canal could be used for a restaurant. On the southern side along the Eickedorfer Strasse the transition from water to street level will be terraced with two steps, one planted with trees, with the exception of the



Drill flush

little square, where a flight of stairs leads pedestrians down to the water. Another significant idea was the project for the Aqua Science Centre next to the harbour which would improve public awareness of water as a very precious charge but due to shortage of space and high costs the project has been deferred for the time being.

Peat Canal

Starting at the harbour a towpath was constructed along 100 m of the west bank of the canal modelled on the historic type. A new landing stage for peat boats was built on the right bank of the Peat Canal opposite the Utbremer Strasse to link it to the Buergerpark. Another landing stage for peat boats, canoes and rowing boats was constructed on the Kuhgraben canal, 1 hour's boat ride away from the peat harbour, to connect the very successful Universum Science Centre (500.000 visitors a year), which is situated within the University campus and its surrounding technology park. The immediate environment was landscaped with playgrounds and lawns and the waterfront restructured according to ecological criteria. Other measures are still in the process of planning and consultation. Silt and mud on the bottom – an obstacle for boats – have to be removed. Part of the embankment along the southern section of the Peat Canal will be restored, replacing the bon-gossi revetment with fascines made of coconut fibre, that are pre-planted with species typical of waterside biotopes. These riparian plants should enhance the self-cleaning ability of the water. In

this way protection against erosion and ecological improvement can be provided. Broadening of the profile is proposed for two sites on the northern section of the canal, one of them forming a side branch. Here shallow water zones provide different habitats for aquatic organisms.

The estimated expenses of these measures add up to about 73.000 €.

Water Treatment

As Bremen wants to set an example for water treatment by enacting the requests of the water act, the proposed concept is to separate and collect the runoff from the large Buergerweide Square (180.000 m²) and the rooves of its buildings – Congress Centrum and AWD-Dome (formerly “Stadthalle”) – and to drain it into the Peat Harbour (Fig. 3). The Buergerweide is mainly used for car-parking and – following a 950-year tradition as one of Germany’s oldest funfairs – the Freimarkt frequently takes place there. One of its components is the AWD-Dome, a place for trade fairs, musical, cultural and sports events. With the Congress Centrum and other exhibition halls the area for these purposes was enlarged.

The concept includes realisation of the whole project in three steps: I. Examination of how and where the rainwater runoff from the rooves of the AWD-Dome and the car parking areas of the north-eastern part of the Buergerweide can be collected (amount of precipitation: about 15.000 m³ a year) and connected to the Peat Harbour;

II. Development of a strategy to collect the runoff from all the rooves of the Buergerweide, the Congress Centre, halls 3-6 and hall 7 (amount of precipitation: about 24.000 m³ a year);

III. Suggestions for the drainage of the parking spaces of the rest of the Buergerweide (amount of precipitation: about 40.000m³ a year).

Due to the significant technical and financial efforts involved steps II and III have been deferred for the time being. Regarding step I, the construction of a new surface waterway along the Holler-Allee between this street and the Buergerpark was examined, but unfortunately had to be rejected, because of technical and environmental problems. Instead, the Holler See, located in the Buergerpark in front of the Park Hotel, is intended to be used as a buffer. SBUV: RiverLinks Demonstration dossiers: Part Bremen Seite 9 (Fig. 4). From there a pipe has already been laid using a special drill-flush technique, that is not expensive and – not needing a utility trench – does not damage the environment. It runs under the Buergerpark to the Peat Harbour, so that the precipitation runoff into the Holler See can already be discharged into the basin, the water in it can be replaced and start to flow down the Peat Canal.

The AWD-Dome and the parking area according to step I already drain into the drewer tunnel (combined water – sewage) underneath the Gustav-Detjen-Allee adjacent to the east of the Buergerweide. That will be renewed and simultaneously a new drain and filter for the runoff supplying the Holler See will be



Example of the e-Democracy tool



Location of Buergerweide, Hollersee and the Peat Harbour

constructed to run parallel to it in 2007, together with a tramway reconstruction planned for this year. Then step I of the planned changes of rain water treatment will be completed.

The expenses of step I add up to about 350.000 €. Temporary measures have been implemented to improve water quality. A fine rake facility has been installed in the emergency spillway into the peat harbour, so that the mixed waste waters that will still be discharged in the case of heavy rainfall (on average once a year) are partially cleaned.

A ventilation system has been built to aerate the water inside the harbour basin: A pumping station is located 100 m downstream and transports sand-filtered water from the Peat Canal via pipes to the harbour, where ejectors mix the water with air and force the mixture into the basin.

Thus the water inside is enriched with oxygen and begins to circulate. Bremen already has a high standard of knowledge in improving water quality and in urban planning dealing with rivers and canals. Some of the measures mentioned above represent good and optimal practices, but the main part – to disconnect the precipitation drainage system from the sewer system and to discharge rain water directly into urban surface waters – is innovative.

Therefore experience still has to be acquired and comparisons with standard measures are not yet possible. The Bremen Dike Community deals with all issues of flood protection as well as the dike and canal drainage systems.



Peat boat



Holler See in front of the Park Hotel with "pipeline-planning to peat canal / peat harbour

The Peat Canal and its following canals are part of the main runoff and groundwater drainage system of the urban and agricultural areas on the right bank of the river Weser in Bremen. Drainage water is finally drawn into the river Lesum by a pumping plant.

Since the Dike Community is also responsible for the maintenance and security of the canals and their embankments with long-term experience in ecological embankment restoration, its office was consulted regarding these measures and will be responsible for realising the ones concerning the bank revetment of the Peat Canal. Here the measures will enhance the protective function of the embankment.

Decision Sharing

The whole project involved the consultation of a number of corporations, companies and other interested parties via meetings, workshops and discussion: Local politicians from Bremen-Findorff; Bremen Dike Community in the area right of the Weser; Hansewasser as the company responsible for waste water management in Bremen; Econtur as an institute working on environmental expertise and education; the management of the Buergerpark; Bremen Bootsbau Vegesack as the company responsible for the peat boats; Findorff Youth Centre; the Bremer Grossmarkt Company; BioConsult as the planning office for the ecological restoration and others.

A history workshop was performed together with the inhabitants of the Findorff district to gather more information from the archives and from senior citizens in order to get a better insight into the historic development of this harbour related area. However, the most important measure to involve the public in all design phases of the projects was the “e-Democracy Tool”.

It was an interactive homepage, developed together with the TZI (Technology Centre Informatics) of Bremen University, where all plans, suggested measures and their variations concerning the above presented EU-projects “RiverLink” and “CanalLink“, were shown on a city map.

Everything was described in texts, graphics and pictures. Visitors to the homepage were able to comment on the design variations and to rate them (marks from 1 to 5).

Both were stored in a data base. Inhabitants of Findorff without a computer were given access to the internet and the homepage at the Findorff Youth Centre internet-café.



Side branch

Summaries

The German city of Bremen focuses on the establishment of a new urban design concept, a better relationship between urban and rural areas and on new tourism opportunities by reconstructing an ancient peat harbour and boating canal and by reducing the occasional overflow of the waste water system after torrential rainfall, which causes the death of fish and the flooding of cellars, by an innovative uncoupled sewer and roadside sand filter system for rainwater runoff. The development of the Peat Harbour and Canal is a very effective measure of infrastructure improvement and service to the citizens. In addition to traditional (e.g. workshops) and legal requirements of decision sharing a new measure to involve the public in all design and action phases of the project is an interactive homepage, the "e-Democracy Tool".

La città tedesca di Brema è impegnata nella realizzazione di un progetto urbanistico volto a migliorare il rapporto fra aree urbane e aree rurali e a creare nuove opportunità per il turismo. Il progetto prevede il recupero di un antico porto-canale per il commercio della torba e per la navigazione delle barche riducendo le occasionali piene del sistema di smaltimento delle acque che avvengono dopo le precipitazioni torrenziali causando moria di pesci e allagamento dei sotterranei. Questi obiettivi saranno raggiunti grazie a un innovativo sistema fognario e di filtraggio della acqua piovana. Il progetto del porto canale della torba realizzerà un reale miglioramento dell' infrastruttura che sarà posta al servizio della cittadinanza. Oltre alle tradizionali procedure di condivisione delle decisioni previste dalla legge, un nuovo strumento per coinvolgere la cittadinanza in tutte le fasi progettuali e realizzative è costituito dalla homepage interattiva "E-democracy Tool".

Die deutsche Stadt Bremen hat den Schwerpunkt auf eine städtebauliche Aufwertung und die Verwirklichung einer neuen touristischen Beziehung zwischen dem städtischem und dem ländlichem Raum gesetzt, indem ein ehemaliger Torfhafen und Torfkanal umgestaltet und neu erschlossen wurden. In diesem Zusammenhang wurden effektive Maßnahmen ergriffen, die die Wasserqualität verbessern (z.B. Bau und Betrieb einer Belüftungsanlage). Die Umwelt- und Aufenthaltsqualität von Torfhafen und -kanal konnten durch Renaturierungs- und Umbaumaßnahmen (Landungssteg für Kanus, Spielgelegenheiten, Öffnung zum Wochenmarkt) erhöht werden. Die sehr intensiv durchgeführte Bürgerbeteiligung (z.B. workshops, meetings, e-Democracy Tools) trug entscheidend dazu bei, die Infrastruktur und die Nutzbarkeit des Hafens für die Bürger zu verbessern.

La ciudad alemana de Bremen quiere concentrarse en el establecimiento de un nuevo concepto de diseño urbanístico, la mejora de la relación entre zonas urbanas y rurales y en nuevas oportunidades de turismo. Para ello, se valdrá de la reconstrucción de un antiguo puerto de turba y un canal de barcos, así como de la reducción del desbordamiento ocasional del sistema de aguas residuales. Dicho desbordamiento se produce tras lluvias torrenciales, causa la muerte de peces y la inundación de sótanos. Para su control, se contará con un innovador sistema de alcantarillado desdoblado y un sistema de filtros de arena al borde de la carretera para el desagüe de las aguas de lluvia. El desarrollo del Puerto de Turba y el Canal son unas medidas muy eficaces para mejorar la infraestructura y el servicio a la ciudadanía. Además de los requerimientos tradicionales (por ejemplo, talleres) y legales en lo relativo a las decisiones participativas, se tomará una nueva medida para integrar al ciudadano en todas las fases de diseño y actividad del proyecto; dicha medida consiste en una página web interactiva, el "e-Democracy Tool" (Herramienta de democracia electrónica).

La ville allemande de Brême s'applique à la mise au point d'un nouveau concept d'urbanisme de la ville et à la réalisation d'une nouvelle relation touristique entre les quartiers urbains et les espaces naturels en rénovant un ancien port de tourbe et un canal de transport de tourbe, et en réduisant les débordements occasionnels, la mortalité de poissons provoquée par les pluies torrentielles ainsi que les inondations de caves par la mise en place d'un réseau d'égout et d'un système de filtration des eaux de ruissellement des routes sur des filtres de sable situés dans leurs accotements. Le réaménagement du port de tourbe et du canal constitue une mesure très efficace d'amélioration des infrastructures et du service aux citoyens. En plus des mesures habituelles de concertation et de participation du public (par exemple, des ateliers), ainsi que des exigences légales de prises de décisions, une nouvelle méthode a été adoptée : elle consiste à impliquer intensément le public dans la conception du projet et dans sa mise en œuvre par la mise en place de groupes de travail, de réunions publiques et consultations sur Internet. Cela contribue de façon décisive à améliorer les infrastructures du port et du canal ainsi que leurs services aux citoyens.

Saksa linn Bremen keskendub uue suhte loomisele linna- ja maapiirkondade vahel ning uutele turismivõimalustele, rekonstrueerides vana turbasadama ja laevatatava kanali ning vähendades kalade suremist ja keldrite üleujutamist põhjustavat roiskvee juhuslikku ülevoolu kanalisatsioonist pärast suuri sadusid uudse lahtiühendatava roiskveekollektori ja vihmavee äravooluks mõeldud teeäärse liivfiltrisüsteemi abil. Turbasadama ja kanali arendamine on väga tõhus abinõu, et parandada infrastruktuuri ja pakkuda linnakodanikele paremaid teenuseid. Lisaks traditsioonilistele (töögrupid) ja seadustest tulenevatele nõuetele otsustamise protsessis, on uue meetmena kõikidesse projekti tegevusfaasisse kaasatud ka avalikkus läbi interaktiivse kodulehekülje "e-Democracy Tool".

5.5. Paseo de la O (Sevilla)

The *Gerencia de Urbanismo* [Department of Urban Planning] has drafted the Project for Rehabilitation and Conservation for a riverside walk called *Paseo de Nuestra Señora de la O*, to conform to the guidelines of the EU RiverLinks Project.

The Project falls within the framework of the activities undertaken to improve accessibility and continuity of the walkways along the riverbank, the appropriation by citizens of the riverbanks and the creation of a façade along the river for the Triana neighbourhood elevation.

The Project develops the General Urban Masterplan, currently in effect, that describes the *Paseo* as a “green zone and open space”, the Special Protection Plan for Triana and the Special Protection Plan of Sector 27-2 describing the sector as “Port – Surface Water Area”. The Project originates with the recognition of the current set of problems: under-utilisation of the space as a green zone and for leisure activity due to its historic image as a backyard area; the proliferation of vehicles and limited accessibility from Triana; lack of perception and visual communication from either end of the bank or the docks due to overgrown vegetation and dense shrubbery; lack of continuous treatment of the pedestrian paths;

deterioration of the pavement and garden spaces; and deterioration of the urban street furniture. The selected solution attempts to respond to the environmental and historic–architectonic circumstances of the enclave, as well as the conditioning functional and urbanistic factors authorised in the existing Masterplan. The following objectives have been established: Strengthening of the Riverbank Walkway and its public character by improving the accessibility, enjoyment, and maintenance of the space.

Creation of regulations for the use of the surface water area, strengthening those related to the navigational character, and those that support ludic and sports activities. Rehabilitation of the urban landscape related to the sector, which is closely linked to the city’s history. This urban space is the consequence of the interaction between the physical medium and the activities that have historically taken place in this area.

To achieve these objectives the Project proposes the following interventions: elimination of private parking, limiting access solely to authorised garages, as well as to conservation and maintenance vehicles. The purpose of this action is to strengthen the area’s character as a recreation space, and as a site for citizens to visit. Im-

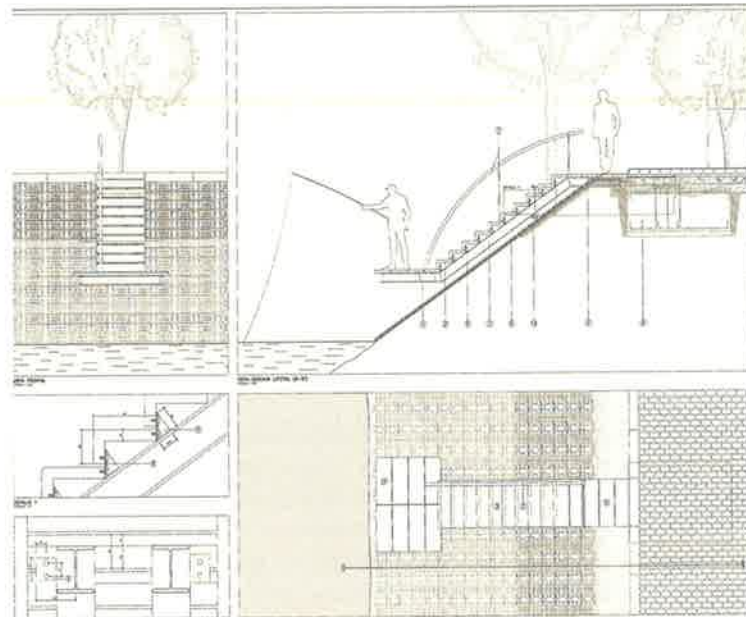


Design of the pedestrian connection between Paseo de la O and Betis street at water level



Detail of the floating platform in Paseo de la O

provement of access to each end of the Paseo where it meets the Chapina Bridge at one end and Betis Street at the other. The latter has a river level walkway that already exists along the river parallel to Betis street and requires improvement to the connecting platform below the Triana Bridge abutment. With these actions, the city seeks to improve the accessibility to the Paseo and strengthen the walkway along the river from Betis Street to the future River walk at the Isla de la Cartuja. Simplification of the existing level changes at the central section of the Paseo, which are currently excessive for its limited width, by reducing them to one, along the length of the pedestrian walkway. Renovation of the existing paving, with the intention of using it to help with wayfinding as well as to maintain its character in accordance with the evolution of the area in terms of the historic parcellation and building uses. Significant actions to improve existing landscape, including basic maintenance of trees and the vegetation covering the banks, as well as pruning and elimination of shrubbery, whose branches are considered disproportionate at numerous locations. The planting of some exemplary specimens will occur along the riverbank to infill spaces that lack vegetation. Execution of work along the length of the Paseo to strengthen ludic and athletic uses, as well as to improve boating on the water area. Included in the planned work are: the installation



Details of paving and planting in Paseo de la O

of new fishing jetties, work necessary for the future installation of piers for sports activities or boating along the length of the dock. Actions to improve network infrastructure include the complete renovation of the public streetlight installation, conduits, and new street lamps and lighting.

Sevilla. Triana y puente Isabel II.



Historic picture of the Triana neighbourhood river banks and Isabel II bridge



Historic picture of the Triana river banks

1. Pilot project

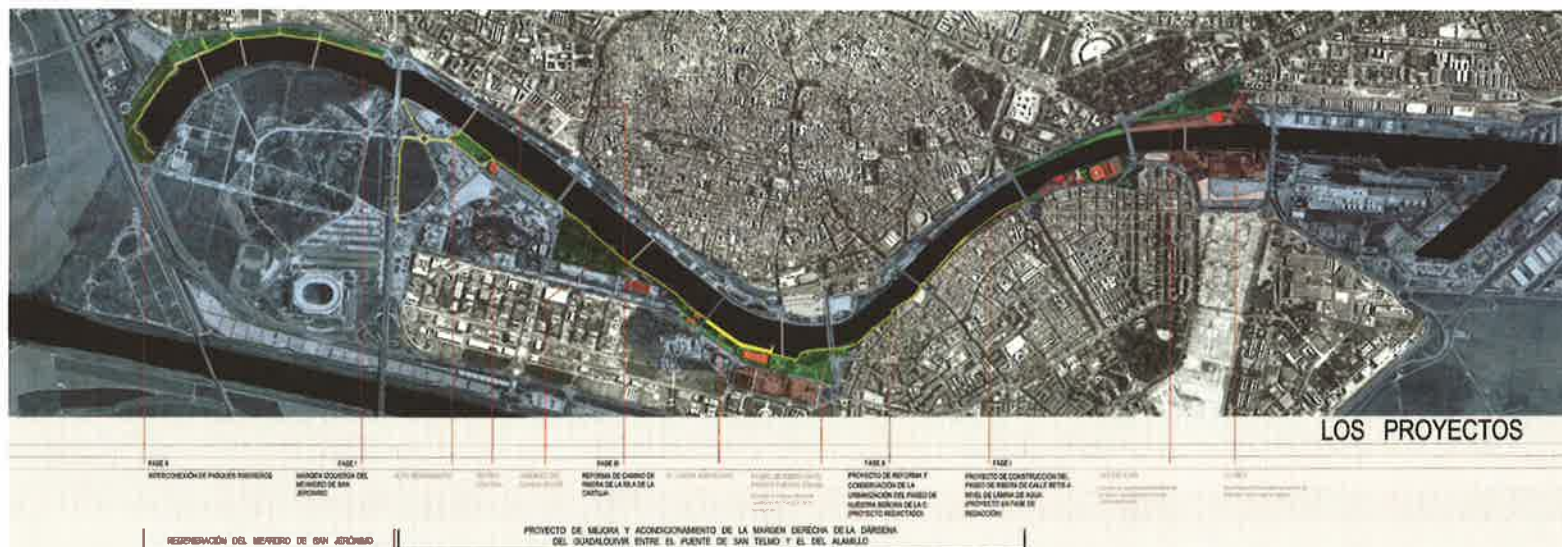
The objective of this project is the execution of work to conform with bicycle path requirements and its signage, urban street furniture, and the street lighting network. The *Gerencia de Urbanismo* [Urban Planning Department] has planned to undertake a series of actions through projects with characteristics that reform and consolidate the Guadalquivir riverbanks, and improve the accessibility and continuity of riverbank walkways that already exist or have been planned.



Historic picture of the Triana neighbourhood river banks near the Isabel II bridge

Proposal: Bicycle Path

The creation of a bicycle path has been planned in the document for Preliminary Approval of the new Urban Master Plan. This is to be accomplished by interspersing red granite paving stones with a dimension of 10x12x20 into the existing pavement. This is being carried out according to a layout described in the plan documents. The installation of bicycle racks is planned for two areas, next to the alley called Callejón de la O as well as at the Cristo de la Expiración Bridge. Simultaneously, vertical signage



The plan of Paseo de la O reclamation of open river areas



The comprehensive plan of Guadalquivir wet dock regeneration

will be placed at all the entries onto the Paseo from Castilla Street and the Chapina Plaza, as well as along the Paseo de la O itself.

Proposal: Public Street Lighting

The project proposes the inclusion of new electrical lines for street lighting and the installation of new streetlamps. The remaining subterranean infrastructures for street lighting are included in the principal project for the Paseo de la O including access chambers, conduits and streetlamp bases. The installation of new lighting sources to substitute the existing ones will give a unified image to the Triana neighbourhood elevation along the Docks of the Guadalquivir. The new lampposts are the same as those that already exist along Betis Street and are of a type called "Itálica." They are posts 5 or 7 metres high, and have either a single fixture or an arm with a double fixture, and have lamps of 50 or 100 watts.

Proposal: Urban Street Furniture.

The installation of benches with wrought-iron legs is planned. They will be of two types: one with seating and backrest made out of wooden strips and with metal legs, and one with a wooden seat without a backrest. In addition, this project includes the installation of wrought-iron bollards at the entrances to the Paseo, which will be either semi-automatic or fixed, and 30 cm. high. The bollards will be placed at each of the entrances, some with mobile elements that will permit access for vehicle owners with authorised garages, as well as emergency vehicles when access is necessary.



The old commercial port of Guadalquivir in Sevilla

Summaries

The objective of this project is the execution of work to conform with bicycle path requirements and its signage, urban street furniture, and the street lighting network. The Gerencia de Urbanismo (Urban Planning Department) has planned to undertake a series of actions through projects with characteristics that reform and consolidate the Guadalquivir riverbanks, and improve the accessibility and continuity of riverbank walkways that already exist or have been planned. Proposal, Bicycle Path: The creation of a bicycle path has been planned in the document for Preliminary Approval of the new Urban Master Plan. This is to be accomplished by interspersing red granite paving stones with a dimension of 10x12x20 into the existing pavement. This is being carried out according to a layout described in the plan documents. The installation of bicycle racks is planned for two areas, next to the alley called Callejón de la O as well as at the Cristo de la Expiración Bridge. Simultaneously, vertical signage will be placed at all the entries onto the Paseo from Castilla Street and the Chapina Plaza, as well as along the Paseo de la O itself. Proposal, Public Street Lighting: The project proposes the inclusion of new electrical lines for street lighting and the installation of new streetlamps. The remaining subterranean infrastructures for street lighting are included in the principal project for the Paseo de la O including access chambers, conduits and streetlamp bases. The installation of new lighting sources to substitute the existing ones will give a unified image to the Triana neighbourhood elevation along the Docks of the Guadalquivir. The new lampposts are the same as those that already exist along Betis Street and are of a type called "Itálica." They are posts 5 or 7 metres high, and have either a single fixture or an arm with a double fixture, and have lamps of 50 or 100 watts. Proposal, Urban Street Furniture: The installation of benches with wrought-iron legs is planned. They will be of two types: one with seating and backrest made out of wooden strips and with metal legs, and one with a wooden seat without a backrest. In addition, this project includes the installation of wrought-iron bollards at the entrances to the Paseo, which will be either semi-automatic or fixed, and 30 cm. high. The bollards will be placed at each of the entrances, some with mobile elements that will permit access for vehicle owners with authorized garages, as well as emergency vehicles when access is necessary.

L'obiettivo di questo progetto è la realizzazione di un sistema coordinato di vari elementi: pista ciclabile e pedonale, segnaletica, illuminazione pubblica ed arredo urbano. L'Ufficio Urbanistica ha pianificato una serie di azioni attraverso dei progetti che tendono a modificare e consolidare la riva del Guadalquivir e migliorare l'accessibilità e la continuità dei percorsi pedonali lungo le banchine fluviali già esistenti e progettati. Percorsi ciclabili: la creazione di un percorso ciclabile è stato previsto dal Documento preliminare al Piano Urbanistico. Questa pista ciclabile sarà realizzata in mattoni di granito rosso 10x12x20 come quello esistente. Le rastrelliere saranno poste in due aree, una vicino al Callejón de la O e l'altro al Ponte Cristo de la Expiración. Simultaneamente sarà posta una segnaletica nei seguenti punti: Paseo della calle Castilla e in Plaza de Chapina, così come Paseo de la O. Illuminazione pubblica: il progetto propone la realizzazione di una nuova linea elettrica per l'illuminazione stradale e l'installazione di nuovi lampioni. Le rimanenti infrastrutture sotterranee per la luce stradale sono state previste dal progetto principale per il Paseo de la O, compresi gli accessi alle cabine, i cavidotti e le basi dei lampioni. L'installazione delle nuove fonti di luce che vanno a sostituire quelle esistenti daranno un'immagine unitaria a Triana lungo le banchine del Guadalquivir. I nuovi lampioni sono gli stessi posti lungo la via di Betis e sono del tipo detti "Itáliche". I lampadari saranno di 5/7 metri di altezza saranno molto semplici con lampade da 50/100 watts. Arredo urbano: sono previsti due tipi di sedili: il primo con una seduta in legno e spalliera con i piedi di metallo, i secondi senza spalliera. Questo progetto prevede l'installazione in ferro battuto di paletti di 30 cm di altezza dell'ingresso del Paseo con un meccanismo semi-automatico, saranno messi anche in ciascun ingresso in modo da permettere l'accesso solo ai proprietari dei garage ed ai mezzi di soccorso.

Die Zielstellung dieses Projekts sind Aktivitäten, die die Anforderungen von Radwegen und ihrer Kennzeichnung, der Stadtmöblierung und der Straßenbeleuchtung in Übereinstimmung bringen. The Gerencia de Urbanismo (Urban Planning Department) beabsichtigt, eine Reihe von Aktivitäten projektmäßig zu verwirklichen, die dadurch charakterisiert sind, dass die Ufer des Guadalquivir-Flusses umgestaltet oder befestigt und dass Zugänglichkeit und Durchgängigkeit bestehender oder geplanter Wegeführungen verbessert werden. Vorschlag, radweg: Der Bau eines Radweges ist Bestandteil der Planungsdokumente für die vorläufige Genehmigung des neuen städtischen Bauleitplanes. Der Radweg soll verwirklicht werden, indem Pflastersteine aus rotem Granit mit den Maßen 10 x 10x 20 (in cm) entsprechend einem in den Plandokumenten beschriebenen Entwurf in den vorhandenen Gehweg eingefügt werden. Die Errichtung von Fahrrad-Abstellanlagen ist an 2 Standorten geplant, in Nähe der Allee Callejón de la O und der Brücke Cristo de la Expiración. Gleichzeitig wird eine vertikale Kennzeichnung vorgenommen an allen Zugängen auf den Paseo von der Castilla- Straße und dem Chapina-Platz als auch entlang des Paseo de la O selbst. Vorschlag, strassenbeleuchtung: Das Projekt schlägt die Verlegung neuer Stromkabel für die Straßenbeleuchtung und die Installation neuer Straßenlampen vor. Die restlichen unterirdischen Infrastrukturen für die Straßenbeleuchtung sind bereits in dem Generalprojekt für den Paseo de la O enthalten, z. B. Netzzugangsanlagen, Leitungen und die Straßenlampenfundamente. Mit der Installation neuer Lichtquellen, die die bestehenden Lampen ersetzen, wird ein einheitliches Erscheinungsbild entlang der Dockanlagen am Guadalquivir-Fluss gegenüber dem benachbarten, höher gelegenen Stadtteil Triana erreicht werden. Die neuen Laternenpfähle sind die gleichen wie die schon existierenden vom Typ „Itálica“ entlang der Betis-Strasse. Sie sind 5 oder 7 m hoch und besitzen Fassungen entweder für eine oder zwei Lampen mit einer Leistung von 50 oder 100 W. Vorschlag, stadtmöblierung: Geplant wird das Aufstellen von Bänken mit schmiedeeisernen Füßen; ein Typ mit Sitzen und Rückenlehnen aus Holzbrettern und mit Metallfüßen, ein zweiter mit Holzsitzen ohne Rückenlehne. Zusätzlich beinhaltet das Projekt die Installation von schmiedeeisernen, 30 cm hohen Pollern an den Zugängen zum Paseo, die entweder halbautomatisch ausgeführt oder fest installiert werden. Die Poller werden an jedem Zugang platziert, einige mit mobilen Vorrichtungen, die die Zufahrt für Fahrzeugbesitzer mit offiziellen Garagen oder falls erforderlich auch für Rettungsfahrzeuge gestattet.

El objeto de este proyecto es la ejecución de las obras de conformación y señalización del carril - bici, del mobiliario urbano y de la red de alumbrado público, que la Gerencia de Urbanismo tiene previsto para la ejecución de una serie de actuaciones, mediante proyectos de obras tendentes a la reforma y consolidación de las márgenes del Guadalquivir, y a mejorar la accesibilidad y continuidad de los caminos de ribera existentes o proyectados. Propuesta, Carril - Bici: se proyecta la delimitación del carril bici previsto en el documento de Aprobación Inicial del nuevo Plan General. Ello se llevará a cabo intercalando piezas de adoquín granítico rojo de medidas 10.12.20 en la pavimentación existente. Todo ello, según el trazado previsto en la documentación planimétrica. Se prevé la instalación de aparcamientos para bicicletas en dos zonas, anexas al Callejón de la O y al Puente del Cristo de la Expiración. Igualmente, se incluye la señalización vertical en todos los accesos al Paseo desde la calle Castilla y plaza de Chapina, así como en el propio Paseo de la O. Propuesta, Alumbrado Público: el proyecto contempla la ejecución de las nuevas líneas eléctricas de alumbrado público y las instalaciones de nuevas farolas. El resto de infraestructura subterránea de alumbrado público; arquetas, canalizaciones y basamentos, está incluido en el proyecto principal del Paseo de la O. Los nuevos puntos de luz proyectados en sustitución de los existentes, dan una imagen unitaria al frente trianero de la Dársena del Guadalquivir, manteniendo la imagen de los colocados en la calle Betis, es decir puntos de luz del tipo "Itálica" con báculos de 5 ó 7 mts., sencillos o de doble brazo, y luminarias para lámparas de 100 ó 50 vatios. Propuesta, Mobiliario Urbano: se prevé la instalación de bancos con pies de fundición y de dos tipos distintos: con asiento y respaldo de laminas de madera tratada y con pies de acero y asiento de madera sin respaldo. Asimismo, se incluye en este proyecto la instalación de marmolillos de fundición en los accesos al Paseo, serán semiautomáticos y fijos, de 30 cms. de altura. Se ubicarán en cada una de las zonas, algunos elementos de carácter móvil, de manera que se permita el acceso a los propietarios de vehículos que dispongan de garajes autorizados, así como a los de emergencia, en el caso de que fuera necesario.

L'objectif de ce projet est la réalisation de travaux pour permettre de répondre aux exigences d'une piste cyclable et sa signalétique, du mobilier urbain et de l'éclairage public. Le Département de Planification Urbain «Gerencia de Urbanismo» a planifié la mise en œuvre d'une série d'actions par des projets dont les caractéristiques modifient et consolident les berges du Guadalquivir afin d'améliorer l'accessibilité et d'assurer la continuité des cheminements piétons existants en bord de fleuve. Proposition, piste cyclable: la création d'une piste cyclable a été projetée dans le document du nouveau Plan d'Urbanisme directeur. Elle sera réalisée en mélangeant des pavés de granit rouge de dimension 10 x 12 x 20 dans le trottoir existant. La mise en œuvre est précisée dans les documents annexés au Plan. L'installation de supports de vélos est projetée dans deux secteurs : à côté de l'allée «Callejo» ainsi que dans le Pont «Cristo Expiraci de la O». Simultanément, la signalisation verticale sera mise en place à toutes les entrées sur le Paseo de la rue Castilla et de la Place Chapina ainsi que le long du Paseo «O» lui-même. Proposition, éclairage public de la voie: le projet prévoit la réalisation de nouvelles lignes électriques pour l'éclairage de la voie et l'installation de nouvelles lampes. L'enfouissement de lignes électriques existantes est compris dans le projet principal pour le Paseo «O» en incluant les regards de visite, les gaines et les supports des lampes. L'installation de nouvelles sources d'éclairage en remplacement de l'existant donnera une image unifiée des abords du quartier Triana le long des docks du Guadalquivir. Les nouveaux luminaires sont les mêmes que ceux existant déjà le long de la rue Betis et dont le modèle est appelé «Itálica». Les lampadaires ont 5 à 7 mètres de haut et sont d'un montage simple avec un ou deux bras et supportent des lampes de 50 ou 100 watts. Proposition, mobilier urbain: l'installation de barres avec des pieds en fer forgé est projetée. Il y en aura de deux types : un, avec le siège et le dossier faits de bois brut ainsi que des pieds en métal, l'autre avec uniquement un siège en bois sans dossier. De plus, ce projet inclut l'installation de bollards en fer forgé aux entrées du Paseo qui seront semi automatiques ou fixes à 30 cm de hauteur. Ce type de bollard sera installé à chacune des entrées, certains seront constitués d'éléments mobiles afin de permettre aux propriétaires de véhicules d'accéder à des garages, ainsi qu'aux véhicules de secours pour lesquels l'accès reste nécessaire.

Kokkuvõte: Selle projekti eesmärk on tööde teostamine saavutamaks jalgrattateede ning nende graafilise tähistuse, tänavafurnituuri ja valgustuse vastavus nõuetele. Gerencia de Urbanismo (Linnaplaneerimise Amet) on kavatsenud ellu viia sellele reformile iseloomulike projektide raames rida tegevusi ja kindlustada Guadalquiviri jõe kaldaid, et parandada olemasolevate või kavandatud jõeäärsete jalgteede läbitavust ja katkematust. Ettepanek, jalgrattatee: Jalgrattatee rajamine on ette nähtud linna uue generaalsoo plaani eelnõus. Selleks tuleb olemasolevasse sillutisse lisada punasest graniidist plaate mõõtmetega 10x12x20. See teostatakse vastavalt planeeringudokumentides kirjeldatud kujundusele. Jalgrattaraame on kavas paigaldada kahte piirkonda: Callejón de la O allee lähedale ja silla nimega Cristo de la Expiración juurde. Samal ajal paigutatakse vertikaalmärgistus kõigisse kohtadesse, kust Castilla tänavalt ja Chapina väljakult pääseb Paseole, samuti piki Paseo de la O'd ennast. Ettepanek, tänavavalgustus: Projektis tehakse ettepanek rajada tänavavalgustuseks uued elektriliinid ja paigaldada uued tänavavalgustid. Ülejäänud maa-alused infrastruktuurid, mis on mõeldud tänavavalgustuseks, sisalduvad Paseo de la O põhiprojektis, sealhulgas juurdepääsukambrid, kaablikanalid ja tänavavalgustite alused. Uute valgusallikate paigaldamine olemasolevate asemele ühtlustab linnapilti Triana ümbruse kõrgendikust kuni Guadalquiviri dokkideni. Uued laternapostid on samasugused nagu need, mis ääristavad praegu Betis-tänavat, ehk niinimetatud „Itálica“ tüüpi. Need postid on 5 või 7 meetri kõrgused, ühe või kahe haruga ja 50- või 100-vatiste lampidega. Ettepanek, tänavafurnituur: Kavast on paigaldada sepiarauast jalgadega pingid. Pinke on kaht tüüpi: üks puitleppidest istme ja seljatoega ning metalljalgadega ja teine puitleppidest, kuid ilma seljatoeta. Lisaks hõlmab see projekt 30 cm kõrguste sepiarauast tõkkepõstide paigaldamise Paseo sissepääsude juurde. Postid on kas liikumatud või poolautomaatsed ja need paigutatakse kõigi sissepääsude juurde. Osa poste on varustatud mobiilsete elementidega, mis võimaldavad vastava loaga sõidukiomanike juurdepääsu oma garaazidele ning vajaduse korral alarmsõidukite ligipääsu.

5.6. Inner city (Dresden)

1. Introduction

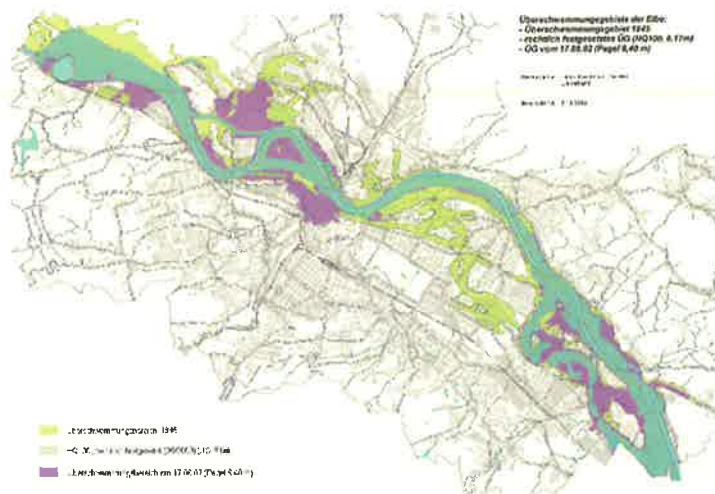
(by Christian Korndörfer - Head of the Environmental Office of the City of Dresden)

The old inner city of Dresden was the part of the town that was most badly hit by the flood events in August 2002. Already during the night between 12th August and 13th August 2002, the Weisseritz creek had become a torrent in this area and caused severe damage to the fully equipped functional and mechanical rooms of

the Semper Opera House and the Saxon Parliament Building as well as to the storage rooms of the Zwinger galleries, the Cathedral and the Drama Theatre. Within four days, the Elbe River then rose to even higher water levels to aggravate the damage¹. The high groundwater table hindered the progress of post-flood damage removal operations for several months and delayed the reconstruction works of *Frauenkirche* church and its surrounding quarters. Here, in the very heart of the city, between the mediaeval Moritz monument and the modern Congress Centre, where the history

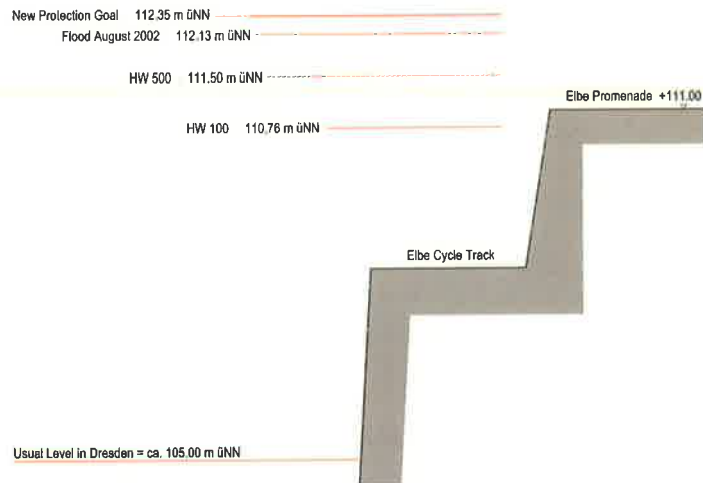


The Elbe river and its banks in Dresden became a UNESCO world cultural heritage site in 2005; they represent the natural surroundings of the city (Landeshauptstadt Dresden, Umweltamt)



Flood areas of the Elbe river in 1845 (now at 890 cm gauge Dresden; green), 2000 (theoretically at 817 cm gauge Dresden and restricted by law; blue) and 2002 (in fact at 940 cm at gauge Dresden; pink) (Landeshauptstadt Dresden, Umweltamt)

of Dresden is more visible than anywhere else in the town, flood control measures – according to the objectives of the RiverLinks project – need to be very careful and to pay special attention to the aspects of urban development, open space planning and monument preservation. The difficult task now is to meet these monument objectives but *nevertheless* to provide efficient and easy-to-handle means of flood protection with a minimum risk of failure.



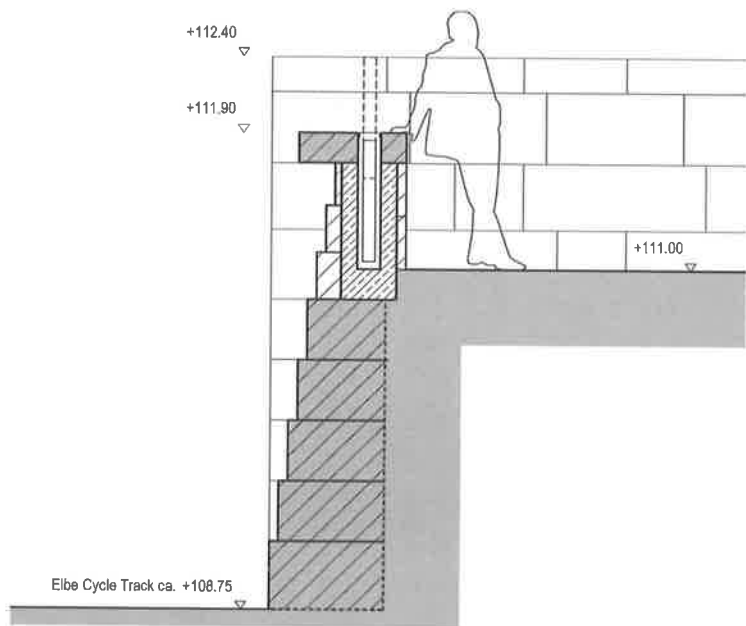
Current state of flood protection for the historical old town and 'Wilsdruffer Vorstadt' city districts, May 2005; schematic picture with different elevations (Peter Kulka Architektur Dresden GmbH)

Risk assessment for mobile flood protection systems

In 2003, everything seemed very clear. We would take the same action as Cologne or Prague² and set up mobile barriers for flood protection west of Augustus bridge. The interventions and visible changes to the historic buildings would be minimal and the remaining problems, e.g. flood control along the old embankment wall, would be solvable. That was the basis for the preliminary design³.



Central part of the planned protection line for the 'Historical old town' and 'Wilsdruffer Vorstadt' city districts, as from May 2005 with stationary (red) and mobile (green) elements (Peter Kulka Architektur Dresden GmbH)



Planned protection for the *Historical old town* and *Wilsdruffer Vorstadt* city districts (May 2005): Schematic picture with different elevations, mobile parts are integrated with the static parts (Peter Kulka Architektur Dresden GmbH)

However, the analysis of the suitability of our preliminary design and assessment of the associated risks, submitted by Prof. Erik Pasche from the Technical University of Hamburg-Harburg in March 2004, had quite a sobering effect⁴. The logistic requirements are high, yet controllable. However, the lack of structural stability of the mobile barrier wall, which will attain a height of up to 4 metres in certain sections, is considered to be an unacceptable risk of failure in case of flotsam impact, overflowing waters and subsidence (risk of underwater and erosion-induced ground failure). The foundation support is made up of century-old rubble from former buildings. This assessment has led to the conclusion that it is absolutely necessary to optimise the flood control route and minimise the proportion of mobile barrier elements in favour of permanent walls.

One proposal for solving this issue was to move the flood barrier line away from the riverbank and to integrate the functional building of the Semper Opera House, the Saxon Parliament Building and, if appropriate, the Congress Centre into the barrier system. But this proposal is faced with technical problems regarding the foundations of the buildings, the buoyancy safety and the operating regime of groundwater lowering plants. On the other hand, these schemes

have met with strong opposition among building owners as well as from town planning and monument preservation offices.

Thus another solution of this problem had to be found, especially against the background of the general objectives of the RiverLinks project to develop or ensure existing excellent interfaces between the city and the river.

Flood control design enhancing monuments and townscape

To come up with an approvable design, it was necessary to develop a solution that clearly reduces the risk of failure associated with mobile barriers and will not impair the appearance and functionality of the existing valuable buildings and structures. For this purpose, an urban development study was commissioned from the renowned architect Peter Kulka, who had already been successfully committed to the riverside architecture of Dresden with the New Saxon Parliament Building⁵.

To protect the old city from high waters using mainly permanent structures, Kulka takes up and follows the idea of a fortified city. Dresden's fortifications have protected the old inner city not only during armed conflicts but also in times of high waters. Part of the fortifications have survived as Bruhl Terrace and can be reused for flood protection at reasonable cost. The fortification structures themselves are basically suitable for this purpose. What still gives reason for concern is the inhomogeneous subsoil, because data is still insufficient. Investigations are underway.

The Semper Opera House, Zwinger galleries, Parliament Building and Congress Centre are located west of the old fortress and would be unprotected in 20-year flood events or worse. So we are planning to build a solid flood protection wall west of the small Bastion Castle, which lies in between the fortress and the unprotected buildings and will be abandoned in the case of high waters. The light-coloured sandstone ashlar used for the wall corresponds to the material of the existing embankment walls and fortification structures (see the pictures of target state in this dossier).

The flood walls in the first section will be of approximately the same height as the existing railing, which will be replaced by a parapet. The height extension of the existing embankment wall could be visible as a new layer in this section.

The wall sections for the Parliament Building and the Congress Centre are farther west than this point. There, the height of the existing railing is no longer sufficient to ensure the required flood control height of 9.24 m + 0.40 m free board. So the wall design must be such that mobile elements can be placed on top of the solid para-



Detailed view of flood protection for the 'historical old town' and 'Wilsdruffer Vorstadt' city districts, current state, May 2005 (Peter Kulka Architektur Dresden GmbH)

pet according to a given water level. The solid wall in this section must follow the existing historic embankment wall in terms of surface finish, ashlar format and joint pattern.

The westernmost part of this section is formed by the terrace of the Congress Centre, which was completed only after the 2002 flood. The embankment wall along the Congress Centre will follow a specific route around the building to give necessary room for access in the event of fire. Kulka's proposal meets town planning goals while adding functional value. The flood barrier line follows a southern route around the Congress Centre. A flood gate protects *Ostra-Strasse* street as the extension of the old city abutment of *Marienbrücke* bridge. This abutment forms the boundary with the flood barrier line for the downstream *Friedrichstadt* quarter.

The use of mobile barriers is limited to what is necessary for shutting off penetrations in the fortifications such as roads, stairs etc. and for height extensions of the permanent flood protection walls in the area of the Parliament Building and the Congress Centre.

Interaction between the flood protection wall and groundwater

The thick Pleistocene deposits in the area of the old city of Dresden form an aquifer communicating with the Elbe river. In flood situations, river water flows into the aquifer against the groundwater inflow from the land side by raising the water table. The levels measured in August 2002 went up to 3.00 metres above the highest groundwater table ever recorded. This means an immediate danger for the structural stability of the buildings in

this area. Powerful groundwater lowering plants are intended to counteract this danger⁶. The routing of the flood protection wall directly along the river bank reduces the degree of interaction between the barrier system and the groundwater lowering plants, because the seepage paths to these plants are clearly longer. In flood situations, the pressure differential is enormous, e.g. at the *Ständehaus* building. A flood protection wall always means significant changes in groundwater flows. This is true both for the Baroque-style area with *Frauenkirche*, the Cathedral, the *Zwinger* ensemble, the Semper Opera House, and for modern architecture such as the Saxon Parliament Building. Well coordinated operation of the lowering plants is necessary to guarantee the structural stability of both the buildings and the flood wall system. For this purpose, the town administration is currently setting up a groundwater monitoring system with automatic data transfer in order to allow the environmental office to coordinate the regimes of the privately operated pumps in times of high waters.

Hydraulic consequences

The construction of a permanent barrier wall for flood prevention in the old city of Dresden has repercussions for the discharge capacity of the Elbe river. The estimated level increase in a 100-year event (HQ100) is 3 to 5 cm. To make up for this level increase, the city of Dresden is currently demolishing an obsolete railway bridge and removing a 2.00 metre thick layer of sediment deposits in the flood water flow profile. This will provide full compensa-



Detailed view of the flood protection for the 'historical old town' and 'Wilsdruffer Vorstadt' city districts, target state (Peter Kulka Architektur Dresden GmbH)

tion for the flow changes and thus fulfil an essential condition for the approvability of the barrier system.

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- ³ PROWA INGENIEURE DRESDEN GMBH IM AUFTRAG DER LANDESHAUPTSTADT DRESDEN, UMWELTAMT, *Temporäre Hochwasserschutzmaßnahmen zum*

Schutz der Wilsdruffer Vorstadt und der Altstadt vor Hochwasser der Elbe und Weißeritz. Grundlagenermittlung und Vorplanung, Dresden, June 2003.

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- ⁶ INGENIEURBÜRO DDC IM AUFTRAG DES FREISTAATES SACHSEN, SIB, *Hochwasserschutz für die gefährdete Bausubstanz des VHBA Dresden*, Dresden, 2002.



Detailed view of flood protection for the 'historical old town' and 'Wilsdruffer Vorstadt' city districts, current state, May 2005 (Peter Kulka Architektur Dresden GmbH)

2. Pilot project

(by Frank Frenzel - Environmental Office of the City of Dresden, responsible for RiverLinks pilot project)

Description of the area of the pilot project

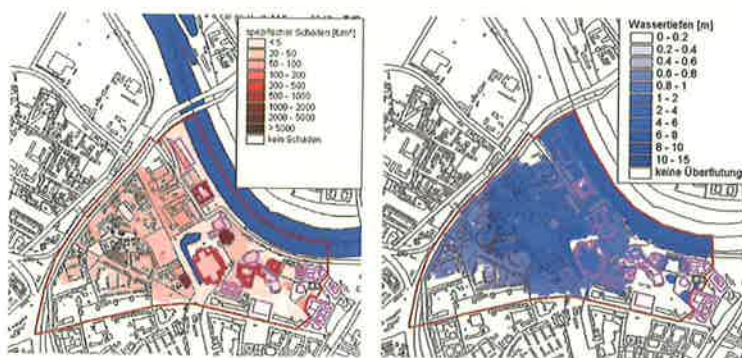
The Dresden RiverLinks pilot project is part of an “action package” for the improvement of flood protection for the inner city, which has to be completed before December 2007. The pilot project – a flood protection system for the ‘historic old town’ and ‘Wilsdruffer Vorstadt’ inner city districts against the flooding of the river Elbe – is the most advanced of these “actions”.

The territory concerned – the RiverLinks pilot site – is the area flooded by the river Elbe in August 2002 within the forementioned inner city districts. The most important historic buildings as well as the residences of most of the political and cultural institutions of the Free State of Saxony and the City of Dresden are concentrated within these city districts. This flooded area covers approximately 92 ha; the damage potential in the case of the August 2002 flood (by the river Elbe) amounts to approximately 185 Million €.

Specification of the objectives of the pilot project

General

Avoidance of flood damage, caused by a 100-yearly flood event of the Elbe river and the corresponding groundwater increase by a



Pilot site: Specific damage potential (€/m²) of the inner city in the flooded areas (by the Elbe river) at a water level of 9,40 m gauge Dresden (flood crest in August 2002) (Landeshauptstadt Dresden, Umweltamt (risk and feasibility study, March 2004))

Pilot site: Flooded areas and water depths in the inner city in the case of a 100-year flood event (corresponds to water level of 9,24 m at gauge Dresden) (Landeshauptstadt Dresden, Umweltamt (risk and feasibility study, March 2004))

flood protection system for the inner city of Dresden which does not disturb urban development and is compatible with open and green spaces and urban features (functional as well as aesthetic relations).

Design floods (protection targets) for the flood protection of the inner city of Dresden

- A 100-yearly flood event of the Elbe river, characterised by a streamflow of 4.350 m³/s = 9,24 m at gauge Dresden-Augustusbrücke (subject of the RiverLinks pilot project), or
- A 200-yearly flood event of the Weisseritz river and a 100-yearly flood event of the Kaitzbach urban brook (not the subject of the pilot project).

Both cases are related to heavy rainfall (one-year event) within the flood-protected area.

Description of the technical measures proposed by the pilot project within the RiverLinks thematics

The protection line (whole length approx. 2000 m) uses mainly existing walls on the left river bank, the remains of the historic fortification. Thus mobile system parts are necessary in little more than 5% of the whole length.

The protection level ensured by the permanent system parts is 9,17 m at gauge Dresden, that is 23 cm below the flood crest at 17.08.2002. An option is also planned to increase the protection level by mobile upper parts to 9,64 m at gauge Dresden, that is 24 cm above the flood crest at 17.08.2002. A water level of 9,64 m at gauge Dresden corresponds to a 100-yearly flood event (9,24 m at gauge Dresden) plus 0,40 m freeboard. For further details see the introduction text.

Intersections to RiverLinks thematics

Natural ecosystems of the Elbe river and on the Elbe banks are not affected by the protection system.

The protection system will be completely a visually and functionally compatible part of the cultural landscape of the city, because it will use remains of the historic fortification extensively.

Existing pathways and cycle tracks as well as viewpoints and optical axes are not affected, but underlined by the protection system.

The protection system will be a durable part of the infrastructures of the inner city and thus an essential service to citizens and enterprises due to avoidance of flood damage.

Boating and other river activities in the project site are not affected by the protection system (except during flood events).



Flooding in the historical old town – Semper opera house and Zwinger - by Elbe river at 17.08.2002 (Landeshauptstadt Dresden, Umweltamt)

Comparison between the proposed measures and optimal audit practices

The Dresden pilot project had to evolve other solutions than those found for flood control measures in the audited cities Cologne, Regensburg and Prague [2]. The most essential difference to the measures in these cities is the minimisation of the proportion of mobile barrier elements in favour of permanent walls. For details see introduction, chapter 2 – risk assessment for mobile flood protection systems.

Focus on local decision sharing and making during the pilot project development

According to the decisions of the City Council of Dresden made in May 2004 and February 2005 for the realisation of the “Dresden programme for the improvement of urban flood protection” – the “Plan Hochwasservorsorge Dresden” – the pilot project has to be conducted in the framework of the overall “action package” for the inner city until December 2007.

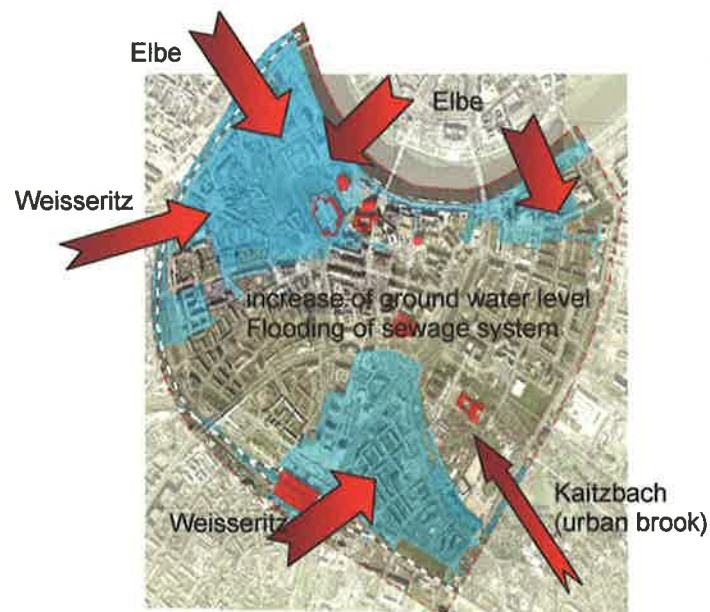
An important agreement has been concorded between the City of Dresden and the Technical board on dams (Landestalsperrenver-

waltung) of the Free State of Saxony in March 2005 about the improvement of flood protection in the framework of the forementioned “action package” for the ‘historic old town and Wilsdruffer Vorstadt’ city districts including the fixing of cost-sharing. Furthermore, decisions by Dresden City Council have been made regarding all the investigations (e.g. risk and feasibility study) and milestones in planning the protection system. Information on planning results was given to the city district council and all owners of real estates affected by the protection system. Some articles in local newspapers as well as lectures held on symposia on flood control reported the progress of the pilot project.

Indicating the innovations included in the pilot project

The mainly stationary flood control system significantly reduces total costs as well as the risk of breakdown, thus the costs for the installation and the maintenance of the mobile system components, necessary for the closure of streets and pathways only, can be lowered.

Aesthetic (view axes) and functional relations as well as urban features are not notably affected by the protection system.



Multiple flood danger for the inner city of Dresden (within the River-Links pilot site) (Landeshauptstadt Dresden, Umweltamt)

Historic and other buildings are not part of the protection line and the tree row on the existing walls remains untouched. Pathways and cycle tracks as well as subsurface lines are mostly behind the protection line.

Integration of the pilot project proposals into the urban framework / systems

The Dresden RiverLinks pilot project is the most advanced part of the “action package” for the improvement of flood protection for the inner city, that means the coordinated planning and realisation of 11 different measures of technical flood protection and the improvement of streamflow conditions to achieve a higher protection level against Elbe flooding for the ‘historic old town’, ‘Wilsdruffer Vorstadt’ and ‘Friedrichstadt’ inner city districts till December 2007.

This “action package” for the inner city – regarding the Elbe river – consists of a protection system for the ‘historic old town’ and ‘Wilsdruffer Vorstadt’ city districts: the Dresden RiverLinks pilot project, a protection system for the nearby ‘Friedrichstadt’ city district (the western neighbour of the ‘historic old town’ and ‘Wilsdruffer Vorstadt’ city districts) the improvement of streamflow conditions in the Kaditz flood channel, the Ostragehege flood channel and on the Elbe river banks (meadows) by restoration of channel beds resp. original flood profiles. This includes the removal of long-term sediments, the demolition of disused bridges and buildings, the flood-adapted rebuilding of sport grounds in the Ostragehege flood channel (e.g. easily removable fences) better flood protection against groundwater increase by monitoring and protection against rapidly increasing groundwater levels for individual structures (especially for historic buildings).

Merging of natural landscape and civic uses

The existing relationship of the natural ecosystems of the Elbe river and its banks with civic uses is not affected or disturbed by the pilot project. The protection system will be completely part of the cultural landscape of the city.

The planning of the protection system has to take into account the status of the Elbe river valley as a part of the UNESCO World Cultural Heritage and has to consider the restrictions and demands associated with this status. Furthermore the planning of the RiverLinks pilot project has to consider the status of the Elbe meadows as a landscape conservation area (ensured by national law) and as FFH

guideline protected areas as well as the problem of retention volume balancing.

Evaluation of the compatibility between intensive uses and river flood protection

See the above chapter 8 and the introduction text

Additional information

General information about the City of Dresden and the flood events in August 2002

Dresden is situated in the south-eastern part of the Free State of Saxony, which not only borders on other German regions (Bavaria, Thuringia, Saxony-Anhalt and Brandenburg), but also on the Czech Republic and Poland. The city lies in a marked widening of the Elbe valley. The foothills of the Eastern Erzgebirge Mountains, the Lusatian Granite Uplands and the Elbe Sandstone Mountains characterise the delightful surroundings of the Saxon capital. With 63% of its area devoted to woods and open spaces, Dresden can be considered one of the greenest cities in Europe. The flood area with restrictions by law along the river Elbe covers 2.708 ha (of which 211 ha contains buildings).

Population: 487199 inhabitants (with main residence, as from 31.12.2005)

Total area: 328,3 km²

Highest point: 383 m a.s.l.

Lowest point: 101 m a.s.l.

Length of the city border: 134 km

Length of the river Elbe within the territory of the city: 30 km

Bridges across the river Elbe: 9

Four flood events in Dresden in August 2002

12./13.08.2002: Flood caused by many urban brooks and the river Lockwitz;

13.08./14.08.2002: Flooding in the city centre and the main railway station by the river Weisseritz;

14.08. till 22.08.2002: Flood of the river Elbe;

since 16.08.2002: Long-lasting flood of groundwater up to 4 m more than the highest groundwater level ever measured.

Weak points in the Dresden water system and flood control

Errors in the design of the riverbeds

Obstacles to the stream flow



Elba river Dresden, historical central area

Cross- and parallel streams

Failure of the forecasting and warning scheme

Defects in dykes and riverbeds

Building development in flood-prone areas

The “Plan Hochwasservorsorge Dresden”: Dresden Programme for the Improvement of Urban Flood Protection

This programme – according to decisions of the City Council in May 2004 and February 2005 – has to be elaborated as the basic planning document for urban flood control and prevention until June 2006 under the responsibility of the Environmental Office with the following general objectives.

The territories concerned are the total flooded areas by urban brooks, the rivers Weisseritz, Lockwitz and Elbe and the ground water as well as the sewerage in August 2002 within the territory of the City of Dresden.

1. Decrease in volume of flood damage by

- Reduction in / Restriction of damage potential, mainly by stopping development in areas endangered by flood and by “flood adapted” master planning
- Reduction in / Restriction of the risk of damage, mainly by improving retention or water-carrying capacity, by improving flood forecasting and defence and by a City programme to manage the effects of climatic change (long-term aspects)

2. Water system of urban brooks and the Lockwitz river

- Immediate repair work
- Permanent and better maintenance
- Keeping the banks free by law
- Watershed management in better accordance with natural conditions and their changes
- Removal of illegal buildings near the brooks
- Realisation of existing development planning for the water courses

3. The Weisseritz river

- Immediate repair work to the riverbed
- Protection of the main station and the city centre
- Extension of the existing riverbed
- Widening of the existing bridges
- Improvement of retention and stream flow conditions
- Guarantee of an emergency spillway in the course of the Weisseritz historic riverbed

4. The Elbe river

- Improvement of retention and stream flow conditions
- Construction (enlargement, raising) and improvement of dikes
- Ban of new urban development in flood areas restricted by law
- Flood protection of the inner city and other highly endangered city districts by permanent and temporary floodwalls
- Improvement of flood forecasting and warning
- Special flood protection for important public buildings

5. The groundwater

- Definition of new standard groundwater levels for important buildings
- Protection of buildings against buoyancy mainly by passive measures (controlled basement flooding)
- Protection of historic buildings by drainage of groundwater

6. Intersections to other flood-related plans and actions

- Plan of flood disaster management; Responsibility: Office for fire fighting and disaster management of the City of Dresden
- Flood protection measures for sewage plants and sewerage, Responsibility: Stadtentwaesserung Dresden GmbH
- Flood protection planning and measures for the rivers Elbe, Weisseritz and Lockwitz on the territory of the City of Dresden

- den; Responsibility: Technical authority on dams (Landestalsperrenverwaltung) as the responsible authority of the Free State of Saxony
- Special, individual flood protection for important public buildings; Responsibility: owner
- Flood protection for municipalities in the neighbourhood of the City of Dresden as described in the document “Hochwasserschutzkonzeption Elbe (stream-km 0,0 – 123,8)”; Responsibility: Free State of Saxony
- Flood protection planning in the whole Elbe river basin according to the document “Hochwasserschutz-Aktionsplan Elbe”, which contains proposals for measures along the Elbe river in the Czech Republic and in Germany from the spring to the estuary; Responsibility: International commission on protection of the river Elbe (Internationale Kommission zum Schutz der Elbe)

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Summaries

The City of Dresden, represented by the Environmental Office, proposes in the framework of the RiverLinks project both its expertise on strategic planning – the “Plan Hochwasservorsorge Dresden” (“Dresden Flood Precaution Plan”) – and on planning and realising concrete flood control measures. The direct project item is the planning of a protection system against flooding by the Elbe river (protection target HQ100) for the inner city districts ‘historic old town’ and ‘Wilsdruffer Vorstadt’ in the area of conflict of urban development, open space planning and the experiences of the flood of the Elbe river in August 2002. During the RiverLinks project basic investigations and first planning steps were carried out; the approved planning began in January 2006. The whole protection system will be completed by 2008. The integration of the existing fortification structures and the deliberate extension of the idea of the fortified city in the form of a solid flood protection wall made of appropriate material and ashlar formats will clearly reduce the risks and meet the acceptance criteria of town planners, monument conservationists, politicians, users of the areas endangered by flood and the inhabitants. The parapet, the visible parts of which will be made of light-coloured sandstone ashlar, will be provided with additional mobile elements only where necessary for height extension and for filling penetrations. The major benefits are the low risk of failure from collisions with ships and flotsam and the fact that the mobile barrier extensions need to be installed only at (rare) very high water levels.

La città di Dresda, rappresentata dall'Ufficio per l'ambiente, offre nelle linee fondamentali del progetto RiverLinks la sua esperienza nella pianificazione strategica – Piano per la prevenzione delle inondazioni – e nella pianificazione e realizzazione di concrete misure per il controllo delle inondazioni. Oggetto del piano è la progettazione di un sistema di protezione contro le inondazioni provocate dall'Elba nei distretti storici della città facendo tesoro dell'esperienza dell'inondazione dell'Elba verificatasi nell'agosto del 2002. Nel corso della stesura del progetto sono state eseguite le indagini di base e i primi passi della pianificazione; la pianificazione approvata è iniziata nel gennaio 2006. L'intero sistema di protezione sarà completato entro il 2008. L'integrazione delle fortificazioni esistenti e l'estensione dell'idea di città fortificata nella forma di un solido muro di protezione contro fatto di materiale appropriato e blocchi di pietra ridurrà i rischi soddisfacendo le richieste di urbanisti, conservatori di monumenti, politici e utilizzatori delle aree a rischio di inondazione. Il parapetto, le parti visibili del quale saranno realizzate in blocchi di pietra arenaria chiara, sarà fornito di elementi mobili addizionali solo se necessario per l'estensione in altezza e per. I benefici maggiori sono il basso rischio di rottura per collisione di navi e cargo e il fatto che le estensioni mobili hanno bisogno di essere installate solo nei casi (rari) di acqua molto alta.

Die Stadt Dresden, vertreten durch das Umweltamt, bringt im Rahmen des RiverLinks-Projektes ihre Kompetenz sowohl hinsichtlich strategischer Planung – „Plan Hochwasservorsorge Dresden“ – als auch der Planung und Realisierung konkreter Hochwasserschutzmaßnahmen ein. Der unmittelbare Projektgegenstand ist die Planung eines Schutzsystems gegen Hochwasser der Elbe (Schutzziel HQ100) für die im Zentrum gelegenen Stadtteile ‚Historische Altstadt‘ und ‚Wilsdruffer Vorstadt‘ im Spannungsfeld von Stadtentwicklung, Freiraumplanung und den Erfahrungen des Elbe-Hochwasser im August 2002. Im Zeitraum des RiverLinks-Projektes wurden Grundlagenuntersuchungen und erste planerische Schritte durchgeführt; im Januar 2006 begann die Genehmigungsplanung. Das gesamte Schutzsystem wird bis 2008 realisiert werden. Die Einbeziehung bestehender Festungsanlagen und die bewusste Fortführung des Gedankens der befestigten Stadt in Form einer massiven, mit entsprechendem Material und Zuschnitt ausgeführten Hochwasserschutzwand reduziert die Risiken deutlich und findet Akzeptanz bei Stadtplanern, Denkmalschützern, der Politik, den Nutzern der flutgefährdeten Flächen und den Bewohnern. Die in ihren sichtbaren Teilen aus massivem Quadersandstein ausgeführte Brüstung wird nur dort, wo es notwendig ist, in der Höhe und bei der Querung von Wegeverbindungen durch mobile Elemente ergänzt. Wesentliche Vorteile sind das geringe Versagensrisiko bei Schiffs- und Treibgutprall und die Tatsache, dass die mobilen Aufsatzteile erst bei (seltenen) sehr hohen Wasserständen montiert werden müssen.

La Ciudad de Dresden, representada por la Oficina de Medio Ambiente, propone, dentro del marco del proyecto RiverLinks, su experiencia tanto en planificación estratégica – el “Plan Hochwasservorsorge Dresden” (“Plan de Dresden de Prevención de Inundaciones”) – como en la planificación y realización de medidas de control de inundaciones. Lo específico de este proyecto es la planificación de un sistema de protección contra inundaciones del río Elbe (objetivo de protección HQ100) para los distritos del interior de la ciudad “casco histórico” y para el ‘Wilsdruffer Vorstadt’, en el área de conflictos de desarrollo urbano, planificación de espacios abiertos, y la experiencia de la inundación del río Elbe de agosto de 2002. Durante el proyecto RiverLinks se llevaron a cabo una serie de investigaciones básicas y las primeras etapas de la planificación. La planificación aprobada empezó en enero de 2006. El sistema de protección integral será completado en el año 2008. La integración de las estructuras de fortificación y la extensión intencional de la ciudad fortificada en la forma de una sólida pared de protección contra inundaciones hecha de material apropiado y en formato de sillar reducen claramente los riesgos y cumplen el criterio de urbanistas, conservacionistas de monumentos, políticos, usuarios de las zonas en peligro de inundaciones, y de los habitantes. El parapeto, cuyas partes visibles serán construidas con sillares de arenisca de color claro, tendrá elementos móviles adicionales sólo donde sea necesario bien para alzar la pared, bien para rellenar las posibles filtraciones. Los principales beneficios serán la disminución del riesgo de colapso por colisión de barcos o restos flotantes, y el hecho que la alzada de las barreras móviles sólo se efectuarán cuando las aguas estén muy subidas (cosa que suele ser poco común).

La Ville de Dresde, représentée par le Bureau de l'Environnement, apporte dans le cadre du projet Riverlinks, son expérience en matière de planification (Le Plan de Protection contre les Inondations de Dresde), et de mesures concrètes contre les crues. Depuis 2002, et compte tenu des expériences passées, l'objectif du projet, est la mise en place d'un système de protection contre les crues centennales de la rivière de l'Elbe pour les quartiers sinistrés de la vieille ville historique et du faubourg Wilsdruffer dans un contexte délicat de développement urbain et de planification d'espaces libres. Durant le projet Riverlinks, des enquêtes préliminaires ont été menées et des avant-projets ont été dressés. La réalisation du planning d'approbation a débuté en janvier 2006. La mise en place du système complet de protection contre les crues sera effective jusqu'en 2008. L'intégration des structures de fortification existantes et a été réalisée avec la volonté de prolonger l'idée de ville fortifiée. L'aménagement d'un mur de protection contre les inondations, à la fois solide, de même nature et de même forme que les matériaux existants, réduit significativement les risques et respecte les critères d'intégration imposés par les urbanistes, les conservateurs des monuments historiques, les décideurs politiques et les usagers et les habitants de ces quartiers mis en danger par les inondations. Le parapet, dont les parties visibles sont de en grès sera complété, lorsque cela est nécessaire, par la mise en place d'éléments mobiles afin d'augmenter la hauteur des seuils et d'empêcher les infiltrations d'eau. Les avantages principaux sont: un faible risque de fissures en cas de (à vérifier) collision avec les bateaux et des épaves flottantes et les extensions de murs de protection mobiles ne devront être installés qu'exceptionnellement lors de niveaux de marées très hautes.

Dresdeni linn, mida esindab Keskkonna Amet käsitleb RiverLinks projekti raames strateegilist planeerimist töötades välja "Dresdeni üleujutuse vastaste abinõude plaani" kui ka konkreetsete, plaanist tulenevate abinõude elluviimist. Projekti tegevuste käigus tegeldakse üleujutuste vastaste kaitseüsteemide kavandamisega Elbe jõe üleujutuste vastu. Kesklinn, ajalooline vanalinn ja Wilsdrufferi eeslinn on alad, mida 2002 aasta augustis tabas üleujutus Elbe jõe poolt. RiverLinks projekti raames viidi läbi esimesed uuringud ja esimesed planeeringu järgsed tegevused viidi ellu; heakskiidetud planeerimistegevus algas 2006 aasta jaanuaris. Kogu kaitseüsteemi väljatöötamine on kavas lõpetada 2008 aastal. Olemasolevate kaitsekindlustuste ja sobivast materjalist kaitseehitiste integreerimine peab vähendama üleujutuse riske ja vastama kriteeriumidele, millega on rahul linnaplaneerijad, vanade ehitiste säilitajad, poliitikud, üleujutusohutike alade kasutajad ja kohalikud elanikud. Kaitsevalli nähtavad osad, mis koosnevad heledast liivakivist, varustatakse liikuvate osadega nendes kohtades, kus oleks vajalik üleujutuse puhul kaitsevalli kõrgust muuta. Peamine kasutegur on laevade ja ujuvlasti kokkupõrgete riski maandamine ning teadmine, et liikuvaid barjääre on vajalik paigutada vaid väga kõrge veetaseme juures.

6.

A sustainable future for European river cities



As an Interreg project, RiverLinks principally promoted inter-regional exchange of experience and collegial elaboration of joint tools and methods, together with existing optimal practices assessment and pilot projects experimenting their application. The results are available for all interested parties and published in the www.riverlinks.org web site, in this Manual and in the analytical publication “A selection of advanced river cities in Europe, Firenze 2005. The background of the RiverLinks experience is defined by several milestones in the European Commission policy concerning sustainable development of cities and environmental safeguards, such as the study “Europe 2000+”, the “European Spatial Development Plan”, the EC Communication “A strategy for sustainable development of cities” n° 60/2004.

The RiverLinks contribution to a sustainable urban development of European river cities, tackled the present strong trend towards urban regeneration, highlighting the potentials corresponding to urban river fronts, pointing out the necessity of a safeguarding policy for specific environmental values, suggesting an integrated approach and a convergence of energies for scale economies, and introducing the opportunity of a European network of river cities permitting mutual support, exchange of experiences and collegial promotion of common interests.

This contribution can be summarised in the following recommendations, resulting from the RiverLinks experiences.

Developing potentials

European river cities own a unique potential to qualify and strengthen their development visions and plans: their rivers. Urban river fronts are much more intensive and influential for a city, than sea fronts or lake fronts, and this is due to significant historic and cultural legacies, to a tied spatial cohesion and to a long term interdependency in fortune or misfortune. Rivers cross cities from one end to another and touch several neighbourhoods, historic centres, suburbs, parks, industrial areas, residential areas and are considered to supply the umbilical link with hinterlands.

Rivers should not be considered as a limit for cities, since on the other bank there is always the same city and not water (sea fronts) or countryside (lake fronts). Rivers are a part of the city and not another adjacent territorial element to be dealt with.

Rivers can be considered as a leading potential for urban developments, a qualifying variable and consolidating catalyst.

Several cities are presently developing river areas using specific approaches that could be classified between two opposing options: hard developments, moving urban quantities along free river areas, creating new urban blocks; and light developments, creating qualities around ideal river environments.

Safeguarding values

Rivers are sensitive ecosystems representing high biodiversity value for a city, and offer environmental values, natural or anthropical, strictly related to economic and cultural history. The relationship between citizens and their river is part of urban history, a social and personal affair, that consolidated reciprocal respect and interaction over the centuries. A correct planning approach for river urban developments should consider such sensitive values and promote their safekeeping and preservation. If the 19th century marked side developments building docks and platforms, and the 20th century developed motorways and parking areas along rivers, nowadays the environmental approach should overcome rigidity and fatal errors, reintroducing endogenous criteria and working around rivers reshaping the city along a filtering and mediating environmental linearity. Developing urban river areas should not be like other urban zones. Natural elements related to the water should constitute a principal guideline for defining visions, and the decision making process should clearly address a high degree of respect for safety and environmental parameters. Such recommendations, emerging from the militant RiverLinks experience, can guarantee a distinguished quality for city-river interfaces, add sustainability value to developments, promote citizens' acceptability and life quality, together with economic growth and increased urban marketing.

Integrating energies

A planning approach for upgraded city river interfaces intends to tackle a multitude of disciplinary approaches and involves several decision-making boards. A specific integrated tool should be used to permit synergies between participants and introduce a large scale territorial approach. RiverLinks assessed the case of the “Plan Garrone” in Bordeaux and of the “Arno River Park” in Florence. Both are large scale tools dealing with several organisations with the aim of sharing a decision making process to

solve conflicts. Such tools can guarantee wise riverside development management, balancing development with environmental values and producing a mixture of executive plans and projects in a harmonious unifying principle, under the main issue of the river. Scale economies can be achieved by an integrated approach and major effectiveness can be obtained by consensual decision making. Converging investments towards shared objectives can strengthen results of energies spent, merging together river hydraulic measures for safety, environmental improvement interventions, urban development, cultural and conservation activities, enterprise exploitation, urban marketing, communication strategies and economic growth policies.

Featuring a large European RiverLinks network

The RiverLinks partnership, created with the support of the InterregIII South Community Initiative, is looking forward to obtaining a performing European profile in order to promote sustainability of the network and deepen effectiveness of pilot projects, joint results and recommendations produced.

In this perspective a large European audit was performed during the first stage of this project involving fifteen more European cities that, together with the six network members, elaborated an optimal practice guide, published in 2005, including technical descriptions of major successful city – river developments.

A web site www.riverlinks.org supported publicity and visibility of the network performances and strengthened the exchange of experiences and mutual collaboration of cities. A major European event, “InterregIII Legacy”, organised in Brussels on April 2006, together with other European organisations, permitted RiverLinks to connect with other Interreg projects, to accelerate and enlarge networking in cities, share methods of interregional cooperation between cities, promote common visions for ERDF future programming and contribute to strengthen involvement of cities in the regional policy of the European Commission.

The final RiverLinks Conference in Florence in June 2006, closed InterregIII activities and opened a shared perspective to keep networking and collaborating, improving local and European performances for a successful river - city interface.

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Appendix

1. Partner references

Partner 1 (coordinator)
Comune di Firenze Direzione Ambiente
Giovanni Malin
Environnement department director
Villa di Rusciano
Via Benedetto Fortini, 37
50100 Firenze (Italy)
Tel +39 055 262 5363
Fax +39 055 262 5356
e-mail direz.ambiente@comune.fi.it

Giorgio Risicarìs
City Factory European Research & Development
Via Goito, 12
50133 Firenze (Italy)
Tel +39 055 587202
Fax +39 055 5416465
e-mail grisica@tin.it

Partner 2
Communauté Urbaine de Bordeaux
Jean-François Guérin
Joelle Beysseresse
Esplanade Charles de Gaulle
33076 Bordeaux (France)
Tel +33 5 56998484
Fax +33 5 56998802
e-mail jfguer@cu-bordeaux.fr jbeysseresse@cu-bordeaux.fr

Partner 3
Der Senator fuer Bau und Umwelt Bremen
Hans-Peter Weigel Biologiedirektor
Detlev Soeffler Referent
Ansgaritorstrasse 2
28195 Bremen (Germany)
Tel +49 421 361 5535
Fax +49 496 5535
e-mail Hans-Peter.Weigel@umwelt.bremen.de
Detlev.Soeffler@bau.bremen.de

Partner 4
Gerencia de Urbanismo. Ayuntamiento de Sevilla
Francisco Javier Pando Sastre
Maria Luisa Diaz Borrego
Avenida de Carlos III, s/n. Isla de la Cartuja
41092 Sevilla (España)
Tel +34954480214
Fax +34954480280
e-mail fjps@urbanismo-sevilla.org LDB@urbanismo-sevilla.org

Partner 5
Pirita Linnaosa Valitsus
Enno Tamm, Mayor
Siim Sarapuu
Merivälja tee, 24
11911 Tallinn (Estonia)
Tel +376457600
Fax +376457609
e-mail siim.sarapuu@tta.ee

Partner 6
Landeshauptstadt Dresden, Umweltamt
Frank Frenzel
Postfach (Port Box) 12 00 20
1001 Dresden (Germany)
Tel +49 351 4886164 /210
Fax +49 351 4886202
e-mail ffrenzel@dresden.de

Appendix

2. Meetings references



Kick-off Meeting

Comune di Firenze
Florence 9-10.10.2003
Palagio Parte Guelfa

Opening session local participants

Giovanni Malin, Direttore Ufficio Tematico e di Progetto
“Parchi Urbani e Metropolitani” del Comune di Firenze
Giuseppe Matulli, Vice Sindaco del Comune di Firenze
Piero Certosi, Vice Presidente della Provincia di Firenze
Tommaso Franci, Assessore all’Ambiente Regione Toscana
Vincenzo Bugliani, Assessore all’Ambiente del Comune di Firenze
Simone Tani, Assessore ai finanziamenti comunitari del Comune di Firenze
Gianni Biagi, Assessore all’Urbanistica del Comune di Firenze
Giorio Riscaris, *Sfide e prospettive di RiverLinks*
Gino Fantozzi, Regione Toscana Interreg responsible
Aleksandar Vucicevic, Beograd



Second Partners' Meeting

Der Senator für Bau, Umwelt und Verkehr Bremen
Bremen 29-30.01.2004
Schweizerhaus im Bürgerpark

Opening session local participants

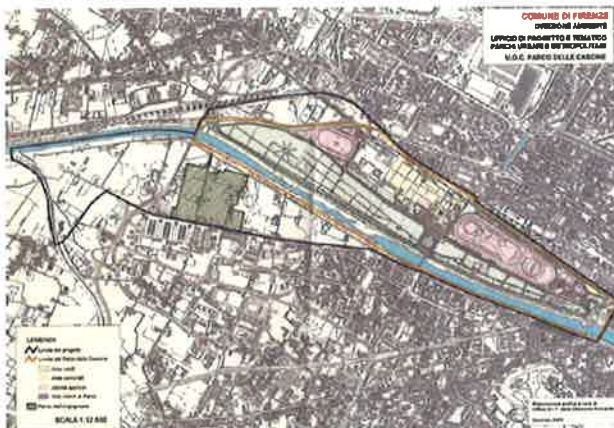
The Senator for buildings, environment and traffic, Mr. J. Eckhoff



Second partners meeting, Bremen, opening session. Mr. J. Eckhoff on the floor



Second partners meeting, Bremen, working session in the Schweizerhaus of Bürgerpark



The Cascine – Argingrosso RiverLinks pilot project area



Technical visit in the peat harbour, RiverLinks pilot site of Bremen



Technical visit of RiverLinks partners in the peat harbour Bremen



PIRITA LINNAOSA
VALITSUS

Third Partners' Meeting

RiverLinks Pirita river valley park 1st Workshop

Pirita District Administration Tallinn

Tallinn/Pirita 27-29.05.2004

Tallinn Botanical Garden

Opening session and workshop local participants

Peep Aaviksoo, Tallinn City Government, deputy mayor

Priidu Riskok, Ministry of Internal Affairs, head of regional development department

Marie C. Habermusch, L'Ambassade de France en Estonie

Kalev Kallo, Head of Lasnamäe District Administration

Eero Mikenberg, Port of Tartu

Kadri Jäätma, Estonian Labour Market Board

Maarika Liivamägi, Euro Rscg Worldwide

Maria Hansar, Embassy of France in Estonia

Raido Rüütel, Tallinn Dome Church, member of Board

Voitto Korhonen, Handi Boat

Sergey Babichenko, AS Ldi

Mrs Ülle Rajasalu, Mayor of Pirita District



The Pirita river valley master plan (Tallinn)



Pirita river valley (Tallinn) sky shoot



Pirita river valley (Tallinn) sky shoot



RiverLinks Pirita river valley park 1st Workshop in the Tallinn Botanical Garden. Presentation of the Plan from Mrs Heli Luts



RiverLinks Pirita river valley park 1st Workshop. Working on RiverLinks suggestions



RiverLinks Pirita river valley park 1st Workshop in the Tallinn Botanical Garden. Opening session

Fourth Partners' Meeting

Gerencia de Urbanismo Sevilla
 Sevilla 11-12.10.2004
 Hotel Plaza de Armas



RiverLinks Sevilla working session



RiverLinks Sevilla technical visit in the RiverLinks pilot site, Paseo de la O



RiverLinks, Sevilla technical visit in the Guadalquivir river banks

Fifth partners meeting

City of Dresden
 Umweltamt – Environmental Protection Division
 Dresden 10-11.03.2005
 Hotel "Elbflorenz" Dresden

Opening session local participants

Mr. Dirk Hilbert, Mayor, Head of Economy branch of the City of Dresden,
 Mr. Joern Timm, Head of the City department for European and international affairs,



Fifth partners meeting, Dresden, opening session. Mr Dirk Hilbert, Mayor and Mr Giovanni Malin



Fifth partners meeting, Dresden, Mr Raimund Meyer-Robben exposing the Flood Protection Plan of Dresden



Fifth partners meeting, Dresden, working session



Technical visit in the central Elba river area of Dresden, RiverLinks pilot site



Fifth partners meeting, Dresden, working session

Sixth partners meeting

Communauté Urbaine de Bordeaux
Bordeaux 23-24-25.06.2005

Opening session local participants

Mr Vincent Feltesse, Vice President of the Communauté Urbaine de Bordeaux (CUB), responsible for Environmental issues.



RiverLinks technical visit to the RiverLinks pilot site in Lormont, Bordeaux. Meeting with local boards



Sixth RiverLinks partners meeting in Bordeaux



RiverLinks technical visit to Lormont, Bordeaux. Presentation of the RiverLinks pilot project



Sixth RiverLinks partners meeting in Bordeaux Mr Giovanni Malin and Mr Giorgio Risicaris



RiverLinks to « La fête du fleuve », Bordeaux : The Plan Garrone project panel



PIRITA LINNAOSA
VALITSUS

Seventh RiverLinks Partners' meeting
RiverLinks project poster Exhibition
RiverLinks Pirita river valley park 2nd Workshop
 Pirita district City of Tallinn
 Pirita Tallinn 6-7.10.2005

Opening session and workshop local participants

Mr Enno Tamm, Pirita district Mayor

Katrin Savomägi

Tiina Müürisepp

Jekaterina Sibul

Tiina Tallinn

Kärt Talimaa

Anna Semjonova

Andra Jansen

Karri Tiigisaar

Rita Krabi

Toomas Pöld

Heiki Kalberg

Heli Merimaa

Helle Vilu



Seventh RiverLinks Partners' meeting in Tallinn Pirita. Mr Giovanni Malin RiverLinks coordinator and Mr. Enno Tamm Mayor of Pirita District



Seventh RiverLinks Partners' meeting in Tallinn Pirita. Opening session



RiverLinks Pirita river valley park 2nd Workshop



RiverLinks project poster Exhibition in Maarjamäe Loss, Pirita Tallinn



RiverLinks project poster Exhibition in Maarjamäe Loss, Pirita Tallinn. Opening by Mr Enno Tamm



RiverLinks partners visiting the Pirita River valley, RiverLinks pilot site

Eighth Partners' Meeting

Communauté Urbaine de Bordeaux - Communauté Urbaine Grand Lyon

Lyon 09-10.02.2006

Hôtel de Communauté 20, rue du Lac

Opening session local participants and technical visits

M. Jean Villien Chef de mission/Mission Ecologie

Technical visit: Sem Lyon Confluence. Exposing Mr. Benoît Bardet

Technical visit: «Berges du Rhône 2006». Exposing Mrs Isabelle Sibeu communication responsible, concepthor, works director

Technical visit: Miribel-Jonage Grand Parc and Anneau bleu. Exposing Mr. Olivier Pillonel engineer



“Lyon Confluence” project area



Eighth RiverLinks Lyon working meeting in the Communauté Urbaine de Grand Lyon



Eighth RiverLinks Lyon working meeting in the Communauté Urbaine de Grand Lyon



RiverLinks Lyon, technical visit of partners to the Miribel-Jonage park



RiverLinks Lyon technical visit to the “Miribel-Jonage” park



RiverLinks technical visit to the “Lyon Confluence” project info point. Exposition of the project by Mr Benoît Barde



RiverLinks Lyon technical visit to the “Berges du Rhône 2006” info centre. Presentation of the operation by Mrs Isabelle Sibeu.

Participants

Coordinator

Giovanni Malin

Coordinator consultant

Giorgio Risicarì “City Factory. European Research and Development”

Bordeaux

Jean-François Guérin

Joëlle Beysseresse

Bremen

Weigel Hans-Peter

Soeffler Detlev

Stefan Boltz

Susanne Osterkamp

Bernd Schneider

Raimund Meyer-Robben

Dresden

Frank Frenzel

Tanja Schön

Katja Schulz

Frank Wache

Firenze

Biagio Guccione

Andrea Meli

Catia Lenzi

Enrica Campus

Debora Agostini

Angelica Giribaldi

with

Anna Lambertini

Laura Ferrari

Gabriele Paolinelli

Silvia Martelli

Michela Saragoni

Sevilla

Francisco Javier Pando Sastre

Maria Luisa Diaz Borrego

Ibon Areso

Tallin

1st phase

Triinu Rajasalu

Ülle Rajasalu

Heli Luts

Janar Vilde

Kaia Otti

2nd phase

Enno Tamm

Siim Sarapuu

Rita Krabi

The rediscovery of a closer link between many cities and their rivers in Europe has provoked a series of positive reactions in city reclamation, many of which have been studied by the participants of the RiverLinks project, already described in the publication *A selection of Advanced River Cities in Europe...a good practice guide*, in which 16 European case studies are described, chosen for their original solutions to the city-river relationship. A more attentive exploration of the above cases and particularly the experimentation of new solutions used by the various pilot projects showed that these rivers require different rather than univocal or simplified solutions, some of which have been implemented by Riverlinks partners:

1. A new, innovative type of flood protection which does not exclude the city/river relationship (Dresden);
2. A new design and conception of river banks for recreation (Seville, Bordeaux, Bremen, Florence);
3. The river seen as the seminal element for a nature park, with high ecological value, but also accessible for public enjoyment (Pirita);
4. Flood storage areas designed with greater understanding, creating an opportunity for landscape improvement in the areas involved (Florence);
5. The possibility of using navigation for traditional tourism (BateauBus) developed and reinterpreted in many ways (Bordeaux);
6. The possibility of using navigation for normal commuter movement (Bordeaux);
7. The improvement of water quality (Bremen);
8. Urban renewal programmes, as already experimented for derelict industrial or port areas, taking advantage of their centrality (Seville, Bremen);
9. The river used as a link between its banks rather than as a fracturing element (Pirita, Seville);
10. An element of interconnection between open spaces (Florence, Bordeaux, Seville).

The points listed above emphasise the problems which obviously are never faced separately but always as a whole. The presence of a river certainly offers a great opportunity to resolve the forementioned points organically.



Pirita Linnaosa Valistus
Tallinn



Communité Urbaine
de Bordeaux



Der Senator für Bau
Umwelt und Verkehr



Comune di Firenze



Ayuntamiento de Sevilla



Landeshauptstadt Dresden

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