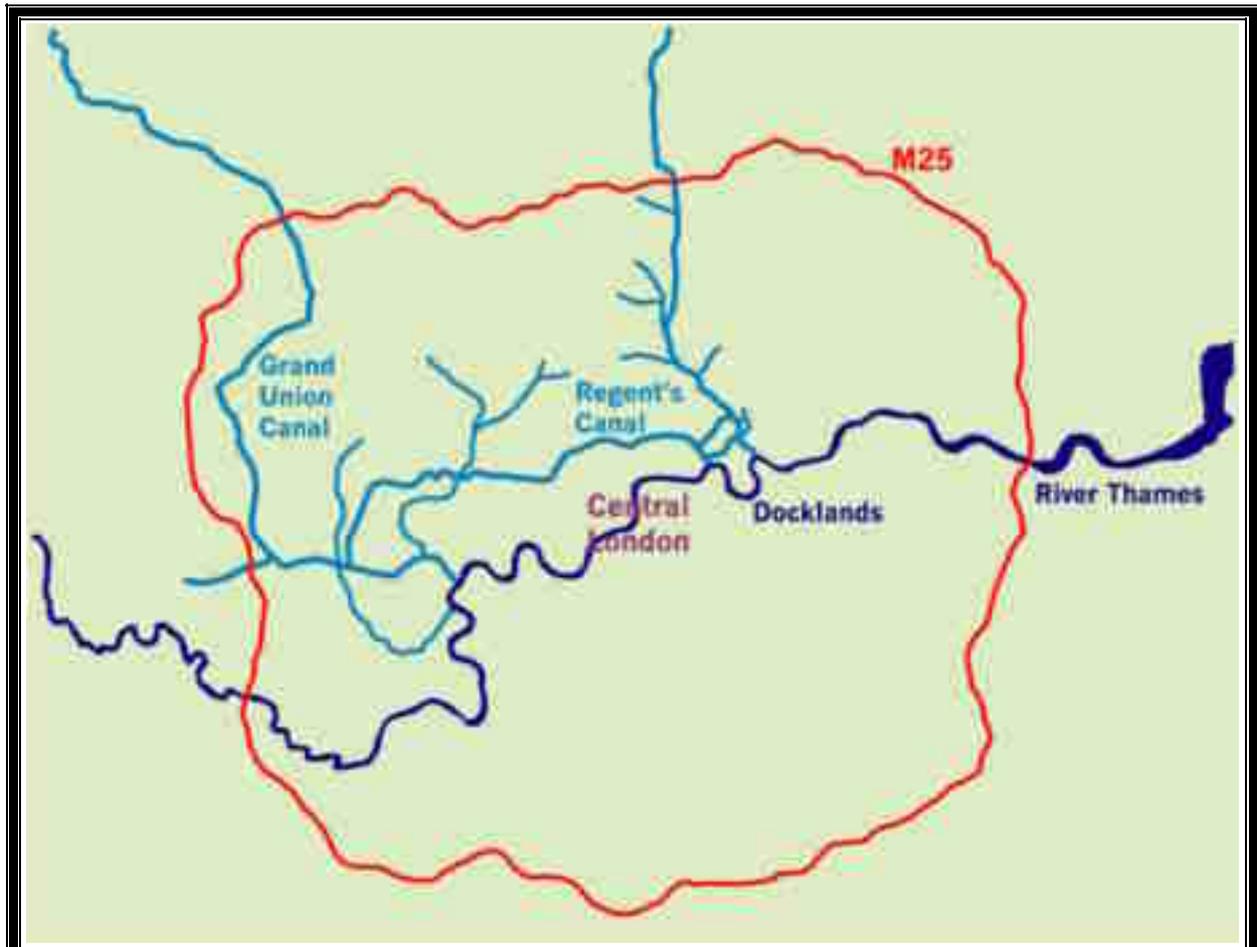


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# Under Lock and Quay

## Reducing Criminal Opportunity by Design



**A Guide to  
Waterside Development  
and Improvement  
in London**





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**Appendix 1: SUMMARY OF CURRENT CRIME PREVENTION LITERATURE AND INITIATIVES**

**Appendix 2 : BRITISH WATERWAYS GUIDANCE NOTE ON BRIDGE DESIGN**



**Mark Bensted**  
London Regional Director  
British Waterways

*British Waterways is responsible for 80 miles of canals, rivers and docks in London and some 2,000 miles nationally. London's waterways are a unique resource contributing greatly to the quality of life of London as a place to live, work, visit and enjoy and they increasingly act as a focus for regeneration and development.*

*Unfortunately, crime and anti-social behaviour have become a feature of society today and sadly the waterway environment is no exception.*

*Through the successful collaboration between British Waterways and the Metropolitan Police, "Under Lock and Quay" provides guidance on the most appropriate and effective ways of designing out opportunities for criminal activity and reducing fear of crime in both existing and new developments adjoining our urban waterways.*

*"Under Lock and Quay is both an informative and comprehensive document providing a valuable reference for all professionals involved in waterside development and improvement. The guidance is based upon sound research and reinforces the fact that crime not only impacts upon people and buildings, but on a wide variety of built environments. It is an excellent example of how organisations can work in partnership to defeat crime and I have no doubt that a continued working relationship between British Waterways and the Police Service will result in safer and more secure waterway environments for everyone to enjoy."*



**Michael Todd**  
Deputy Assistant Commissioner  
Chairman of the Association of Chief  
Police Officers  
Crime Prevention by Design Group

This document was launched at the National Architectural Liaison Officers and Crime Prevention Design Advisors Conference on 4 May 2000. The printing of this document has been supported by London's Waterway Partnership.

**Under Lock and Quay** 

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**Foreword** 

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London's Waterways are an accessible cultural and environmental asset which also act as a catalyst for regeneration and inward investment. They are playing an increasingly important role in the capital's tourism industry as well as becoming popular for residential, commercial and leisure development, all of which impact substantially on the patterns of movement along the waterways and the growing number of different users. There is a growing national awareness of the added value and commercial betterment of development alongside water, and recent major schemes have demonstrated the success and potential for future development.

There is a real opportunity to capitalise on this resource and British Waterways are striving to improve access to, and enhance the vitality of, the waterway network. It is important therefore that issues relating to crime and the fear of crime are tackled using positive and long-term solutions which are in keeping with the built and natural heritage of this historic transport network to encourage greater and safer use of waterside facilities.

Inland waterways are an integral part of London's natural and industrial heritage as well as having a vital social role to play through the provision of publicly accessible areas for informal recreation and educational purposes. However, British Waterways and the Metropolitan Police recognise that the linear nature of the waterways, particularly canals which have a limited number of crossing points, often result in segregation of waterside areas from their surroundings and increased opportunity for criminal activities to occur. It is often the fear of crime rather than actual danger itself which discourages people from venturing along the towing path.

Safety and security issues are inextricably bound up with enhancement, conservation and development, yet addressing the problem is often done on an ad-hoc basis once development is complete. This leads to ineffective and inappropriate treatment which can have two negative impacts upon the waterway environment:

- creates an environment which can be inadvertently perceived as being unsafe; or
- changes the historic character of the waterway irrevocably as to make it less desirable to visit.

Therefore, British Waterways and the Metropolitan Police are of the view that design measures to improve security should ideally be included at the planning stage as part of an integral approach to new development, regeneration, and environmental improvement schemes in order to design out crime.

British Waterways and the Metropolitan Police strongly believe that through good design practice and good working relationships with local planning authorities and designers, the levels of waterside related crime can be substantially reduced.

"Under Lock and Quay" seeks to combine good waterside design practices and crime prevention measures based on a clear understanding of the issues involved, as well as the needs and concerns associated with the different users and uses of London's waterways. It also builds upon the wealth of literature issued individually by the Metropolitan Police and British Waterways regarding crime prevention and waterside design respectively.

## **Under Lock and Quay**

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“Under Lock and Quay” presents general design principles rather than absolute solutions so as to be applicable across a wide range of sites and projects, and should be read in conjunction with other relevant literature published by British Waterways and the Metropolitan Police. Examination of the problems and solutions affecting different towing path and waterway users are presented in tabular form for convenience.

The information contained within this document is aimed at local planning authorities, developers, the Metropolitan Police and British Waterways, all of whom have a vested interest in waterside safety and the success of waterside development schemes, and all of whom have direct influence on the design of such sites.

It is hoped that the London Boroughs will use this document as an advisory document in the preparation of development plan policies and development briefs and as a material consideration in the negotiation and determination of planning applications.

This Document relates specifically to the crimes encountered along London’s canals and navigations, but the majority of problems and solutions proposed are applicable to waterways in all inner city areas.

However, it should be noted that this document does not offer guidance for the River Thames corridor, where many of the problems and issues are of a very different scale and scope.

## 1 INTRODUCTION

### 1.1 Purpose of Document

The purpose of this document is three fold:

- as an advisory document for the London Borough Councils when preparing development briefs and development plan policies for the creation of safe, active, attractive and accessible waterside developments which conserve and enhance the waterside character;
- as a material consideration in the negotiation and determination of planning applications by London Borough Councils;
- as a tool to assist developers and their design teams in designing waterside developments which address the issue of crime prevention at the initial design stages in order to successfully reconcile the visual quality of a development with the need for crime prevention to create sustainable development.

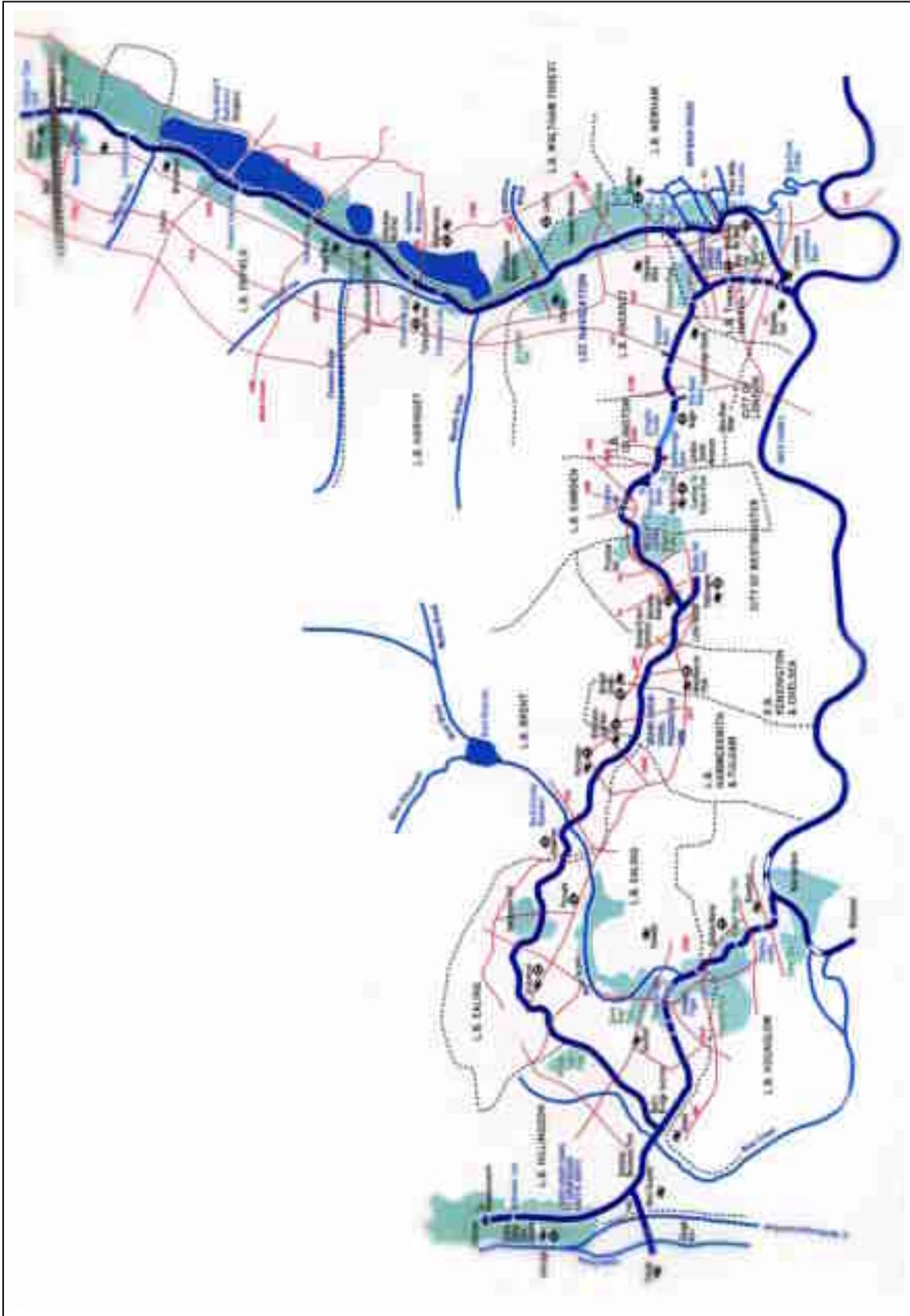
### 1.2 Scope and Aims of Document

The scope of this document is the water and land associated with London's canals and navigations, excluding the River Thames. It is not restricted to the area of land owned by British Waterways, but includes adjacent land and developments which impact upon the waterway corridor.

The document aims to:

- identify the nature of criminal activity along the waterways
- the causes of the crime and fear of crime
- provide guidance on the most appropriate and effective ways of dealing with crime prevention in new and existing developments given the unique and historic context of London's waterway corridors.

London's waterways transcend the administrative boundaries of the London Boroughs and therefore consistency in the approach to design and crime prevention needs to be achieved. It is hoped that each of the London Boroughs will adopt this document as Supplementary Planning Guidance.



**Figure 1.1 :** Plan showing the inland waterway network transcending a number of different London Boroughs' administrative areas within British Waterways' London Region.

## 2 BACKGROUND

### 2.1 London's Waterways Today

London's waterways pass through a broad variety of landscape types from tranquil parks and woodland to Georgian and contemporary residential and commercial developments, as well as stark industrial areas.

Despite the rapid rise in development throughout the 1980s and 1990s, the character of the waterways has largely been retained through planning controls (such as the listing of historic buildings and structures, the designation of Conservation Areas and Tree Preservation Orders), which serve to protect important waterway features and promote the retention, refurbishment and re-use of historic buildings.

Waterway character has also been perpetuated through good design practices, including:

- the careful conservation and integration of existing historic features into new development schemes;
- the use of traditional materials and re-use of original site materials where appropriate;
- attention to the scale of retained buildings and structures, in the design of new developments;
- appreciation of traditional architectural solutions to help overcome issues of security, access, etc;
- preservation of the sense of enclosure and intimacy of the canal corridor.

Though there are obviously exceptions where large-scale development has changed the character of a waterway in a positive way, the need to conserve character and heritage must be a primary consideration to all waterway design and development proposals, from both aesthetic and operational perspectives.

Crime prevention measures should reflect the character of the environment or building to which they relate and be designed in such a way that they do not compromise the specific waterway requirements.

## 2.2 Crime and Waterways

Crime is a common occurrence throughout the country and is associated with all types of development from residential through to commercial uses, public open spaces and private property alike. Whilst the nature of criminal activity is comparable in all these situations, the causes, frequency and severity of criminal activity may vary significantly.

This document concentrates specifically on criminal activity in association with London's urban waterway network, where the towpaths and associated spaces often create an environment suitable for crime.

On initial investigation of police records, it appears that crime along the waterways is relatively minor when compared to that experienced in adjacent areas. However, police records will not always reflect true levels of waterside related crime due to under reporting and the method by which crimes are reported.

Firstly, levels of crime are based solely on those incidences which are reported to the Metropolitan Police, and more often than not offences such as graffiti, threatening behaviour and vandalism are never reported.

Secondly, offences such as burglary of buildings adjacent to the waterside, where access is gained from the towing path, will normally be recorded by the street address rather than by waterside location. The relationship between the crime and the access point is therefore less apparent.

Finally the information recorded may be biased in favour of a particular crime, for example, drug dealing. This is not a true assessment of the type and volumes of crime occurring at a site but a reflection of Metropolitan Police commitment to clear away the drug problem.

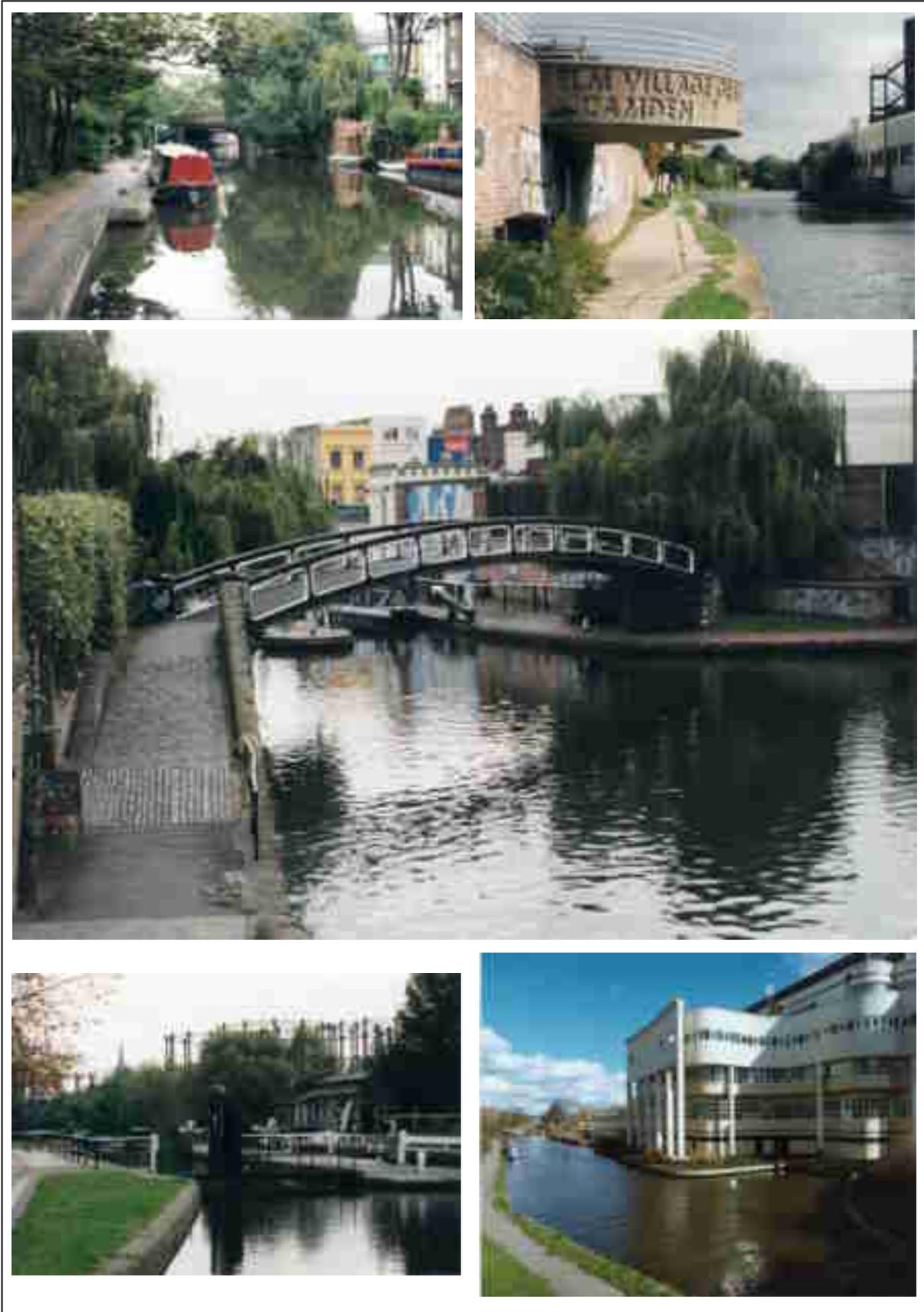
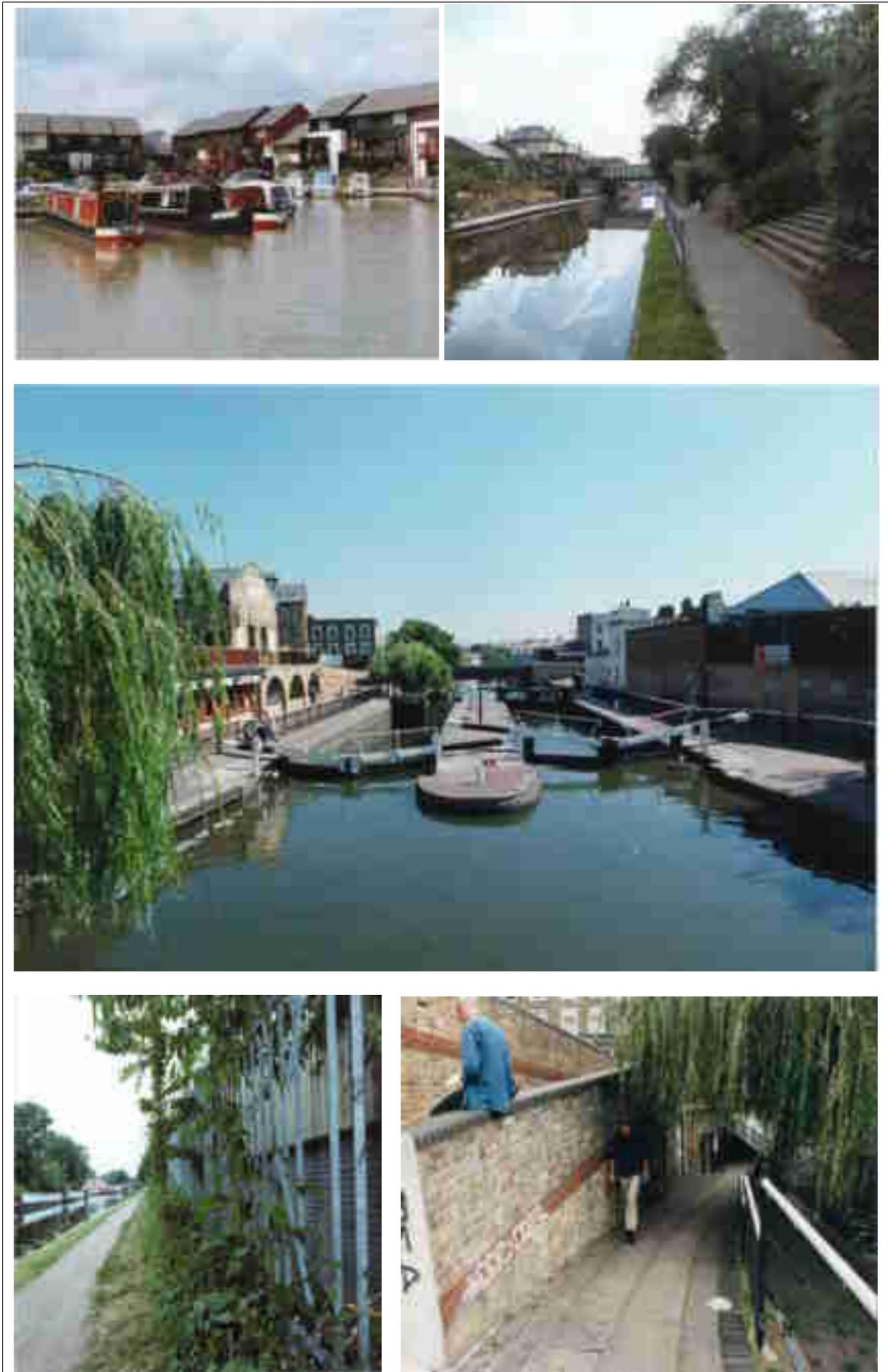


Figure 2.1 : Images of London's Waterways

**Under Lock and Quay**

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**Background**

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### 2.3 British Waterways' Statutory Duties and Responsibilities

British Waterways' own and manage the Grand Union Canal, Paddington Arm, Regents Canal, Lee and Stort Navigations as well as the Isle of Dogs waterspace.

British Waterways has statutory duties to maintain the structural integrity of the waterway network and to maintain water levels for navigation purposes. It also has duties under the British Waterways Act, 1995, to protect and safeguard the heritage and environment of the inland canal and river navigations. This Act also places general environmental and recreational duties, including public access, on British Waterways.

British Waterways was granted statutory consultee status for planning applications in July 1997 and has a direct interest in all waterside development.

In 1999, British Waterways launched a major public consultation to help determine the future direction of the national waterway network. This sought to establish "Partnership with the People" and suggested a new Waterway Trust could be formed to help guide and fund new waterway initiatives. The role of many potential partners, both public and private, will therefore be important in the future development of British Waterways.

### 2.4 Role and Function of the Police Crime Prevention Design Team

Crime Prevention Design Advisors (CPDA) and Architectural Liaison Officers (ALO) are experienced police officers specialising in the relationship between crime and the environment. There is a CPDA or ALO appointed to every regional police force, each with invaluable knowledge of criminal activities within the area, as well as access to criminal analysis programmes.

It is the role of the CPDA and ALO to encourage professionals such as architects and local authority planners to tackle crime in a structured way at the design stage when it is most effective in terms of cost and crime reduction.

The CPDA and ALO are able to supply a developer with a crime profile and demographic knowledge of a site.

A summary of current crime prevention literature and initiatives are described in Appendix 1.

## 3 RELEVANT POLICY FRAMEWORK

British Waterways and the Metropolitan Police have produced this document to guide the London Boroughs in light of the following legislation, policy statements and initiatives.

### 3.1 DoE Circular No 5/94 Planning Out Crime (February 1994)

This circular gives advice to local authorities, developers and designers about planning considerations relating to crime prevention. The circular stresses that **once a development has been completed, the main opportunity to incorporate crime prevention measures has been lost.** Furthermore, this circular advocates crime prevention is capable of being a material consideration in the determination of planning applications.

### 3.2 Crime and Disorder Act 1998, Section 17

**Section 17** requires all local authorities, including joint authorities, Police Authorities, National Park authorities and the Broads Authority to consider crime and disorder reduction while exercising all their duties.

Furthermore, this places a statutory requirement on local authorities (and the police with other agencies and the community) to work together at district level to develop and implement strategies for reducing crime and disorder in the area.

Although, British Waterways has no statutory requirement placed upon the organisation, British Waterways is committed to work with the London boroughs and the Metropolitan Police to reduce crime and disorder along waterways. British Waterways is also committed to developing both public and private partnerships and intends to extend its "partnership approach" with the voluntary sector to bring improvements to and promote the safe use of London's waterways.

### 3.3 Government's recently announced Plans and Pledges for Inland Waterways

The Deputy Prime Minister, John Prescott, recently expressed the view that inland waterways:

*"have enormous potential not only for contributing to an integrated transport system, but also as a catalyst for urban and rural regeneration and for stimulating leisure and tourism" and "we need to ensure that British Waterways is best placed to unlock the potential of the waterways".*

In the Government's recent paper "Unlocking the Potential .... A New Future for British Waterways" inland waterways are seen as valuable part of the national heritage. The Government is committed to ensuring that they are recognised as a valuable public asset and that their full potential is secured.

### 3.4 Current Agenda 21 Initiatives

The London Boroughs have been developing Local Agenda 21 programmes to achieve a more sustainable pattern of development for the next century, following the British Government signing the declaration at the United Nations' Conference on Environment and Development (the Earth Summit) held in Rio de Janeiro in 1992. Some London Boroughs have established task forces to consider Agenda 21 issues and to develop a series of action plans including schedules of indicators, in order to provide a comprehensive borough-wide programme of action. Protection, improvement and re-use of urban waterways are being included as actions within emerging action plans.

### 3.5 Recent Government Publications on Sustainable Development and Sustainable Urban Communities

The Government is committed to an urban renaissance. National planning guidance and other policy statements focus and emphasise the importance of the following principles in contributing to the achievement of sustainable development and sustainable urban communities:

- Urban regeneration and the re-use of under-utilised urban land, **water**, and buildings, and previously developed urban land (particularly for residential use);
- Improving the quality of life through the creation and improvement of urban neighbourhoods. Revitalisation of urban areas to create attractive places to live and foster a strong sense of community as well as public safety;
- Improvement of the quality of the built environment and adoption of key urban design principles;
- Protection of open spaces with recreational and amenity value in urban areas and urban fringe areas;
- Conservation of the historic, natural and water environment;
- Importance of protecting, promoting and enhancing local distinctiveness;
- Fully integrated transport systems, promoting alternative sustainable modes of transport to road transport, making it easier and safer to walk and cycle, as well as providing "Access for All". The Government has been promoting the role of the inland waterways, to be fully considered in relation to cycling, walking, public transport (eg waterbuses), access for disabled people, as well as freight transport.
- Concept of mixed use development which generates natural surveillance and policing;
- High quality design for new development and refurbishment of existing buildings;
- Importance of planning and designing out crime.

**British Waterways and the Metropolitan Police recognise that there should be a balanced approach to design which attempts to reconcile the visual quality of a development with the need for crime**

**prevention. It is very important that crime prevention measures do not have an adverse affect on the historic fabric and environment of London's waterways.**

### 3.6 Recent London Waterway Initiatives

In recent years, a number of initiatives have developed to promote and improve London's waterways as a safe and attractive public amenity.

The London Canals Committee was established in 1966 as a co-ordinating body for canalside matters. It is made up of nine canalside Boroughs together with British Waterways, Lee Valley Regional Park Authority, Inland Waterway Association and other canal interest organisations. The Committee promotes the development of London's canals and canalside for recreation, navigation and related activities consistent with its continued commercial use. Canalside Boroughs have undertaken works to improve the environment and accessibility of the canal network.

More recently London's Waterway Partnership has been established to co-ordinate the seven year London-wide Single Regeneration Budget initiative 1997 – 2004 "London's Waterways, A Catalyst for Regeneration" for the improvement of London's waterways.

London's Waterway Partnership is a London-wide strategic alliance of the public and private sector centred on 50 miles of canal and river corridor.

*"The Partnership's shared vision is that London's waterway network becomes a focus for economic and environmental regeneration, linking centres of vibrant commercial activity with areas of urban tranquillity and open space, building on the existence of a rich and varied working waterway heritage."*

The partners include:

- British Waterways
- Environment Agency
- Lee Valley Regional Park Authority
- London Tourist Board
- Groundwork
- Thames Water
- 15 London Boroughs
- A wide range of other private, voluntary and public sector organisations

The five key themes of the SRB initiative are:

- "Developing Business and Employment Opportunities"
- "Developing Tourism and Leisure"
- "Addressing the Quality of the Water Corridor"
- "Focussing on Local Communities" to generate community pride and ownership in order to increase security and reduce vandalism, enhance the visitor experience and support tourism development. The programme concentrates on three main areas:
  - Education and Delivering Skills;
  - Community Capacity Building Initiatives;

- Community Safety Awareness looks at waterside stretches which people consider difficult or threatening. Areas along the Regent's Canal will be redesigned to improve people's sense of security.
- "Creating Strategic Links" – landscapes and boundaries, security and access will feature prominently within this programme.

In parallel with the work of London's Waterway Partnership, British Waterways have prepared a number of detailed actions plans and canal corridor studies to identify a range of improvements and initiatives along the capital's waterways. Examples include the London Borough of Enfield Study and a detailed Action Plan for the Regents Canal. These studies help to identify partners and funding and include examples of proposals and design ideas. British Waterways is also working closely with other regeneration teams and strategic action plans for Kings Cross and Hackney Wick have been prepared to support locally focussed SRB projects. These studies act as catalysts for the improvement of the waterways, with a key objective being a safe, attractive and well planned environment for locals and visitors alike. Further such work is planned, and will compliment this document.

A number of canal focus groups are developing within London. British Waterways, local authorities, the Metropolitan Police, Groundwork and community interest organisations and representatives meet to consider issues and actions associated with opportunities to improve and protect the canal and its environment. An example is the Friends of Regents Canal – Camden focus group. Priorities for action have been guided by a community safety and crime audit for the canal undertaken by the Crime Prevention Design Advisor. The audit has included recommendations for reducing crime and reducing fear of crime, for example by the designing out of hidden corners and the introduction of windows on the waterway plus the removal of features such as graffiti which gives the impression to a visitor/user that the area is uncared for, unsupervised and antisocial activities are taking place unhindered.

Also arising from such focus groups are "Adopt-a-Canal" and "Waterway Watch" schemes where the local community, working closely with British Waterways, looks after and helps to improve particular stretches of canalside. This work has included training opportunities for young unemployed. Through the Thames 21 Initiative action teams from the probation service are also getting involved in canalside improvements focusing on reducing fear of crime and, at the same time, enabling the development of a more responsible attitude and understanding of environmental management and community safety issues. This initiative is funded by the London Waterways Partnership.

Access for people with disabilities is now incorporated within British Waterways' corporate policy and as a result British Waterways is working in partnership with the Field Fare Trust to develop new initiatives and have produced a guidance document entitled "Waterways Access for All" which applies waterways access for all principles in the context of good design practice, heritage management and environmental code of practice appraisals.

## 4 TYPES OF CRIME ENCOUNTERED

This chapter examines the broad areas of criminal activity which affect London's waterways, whom they affect, why they occur and the factors which need to be considered in relation to the specific qualities and requirements of the waterway environment. It concludes with four basic objectives which can significantly minimise the problems associated with existing and potential levels of waterway crime.

### 4.1 Types of Crime to be Addressed

The nature, frequency and severity of criminal activity will be partially dependent on the character, location, reputation and use of the site/stretch of waterway itself, and may vary at different times of day.

Although figures are not specifically available for waterways, it should be noted that only 15% of criminal acts are pre-planned, with the remaining 85% being opportunistic.

The nature of criminal activity to be considered can broadly be divided into two categories.

- **Crime Against Property**

Such crimes include:

- anti social behaviour
- vandalism/wilful damage
- graffiti
- arson
- theft
- burglary
- illegal tipping

- **Crime Against Persons**

Such crimes include:

- mugging/assault/rape
- theft
- threatening and anti social behaviour
- indecent exposure

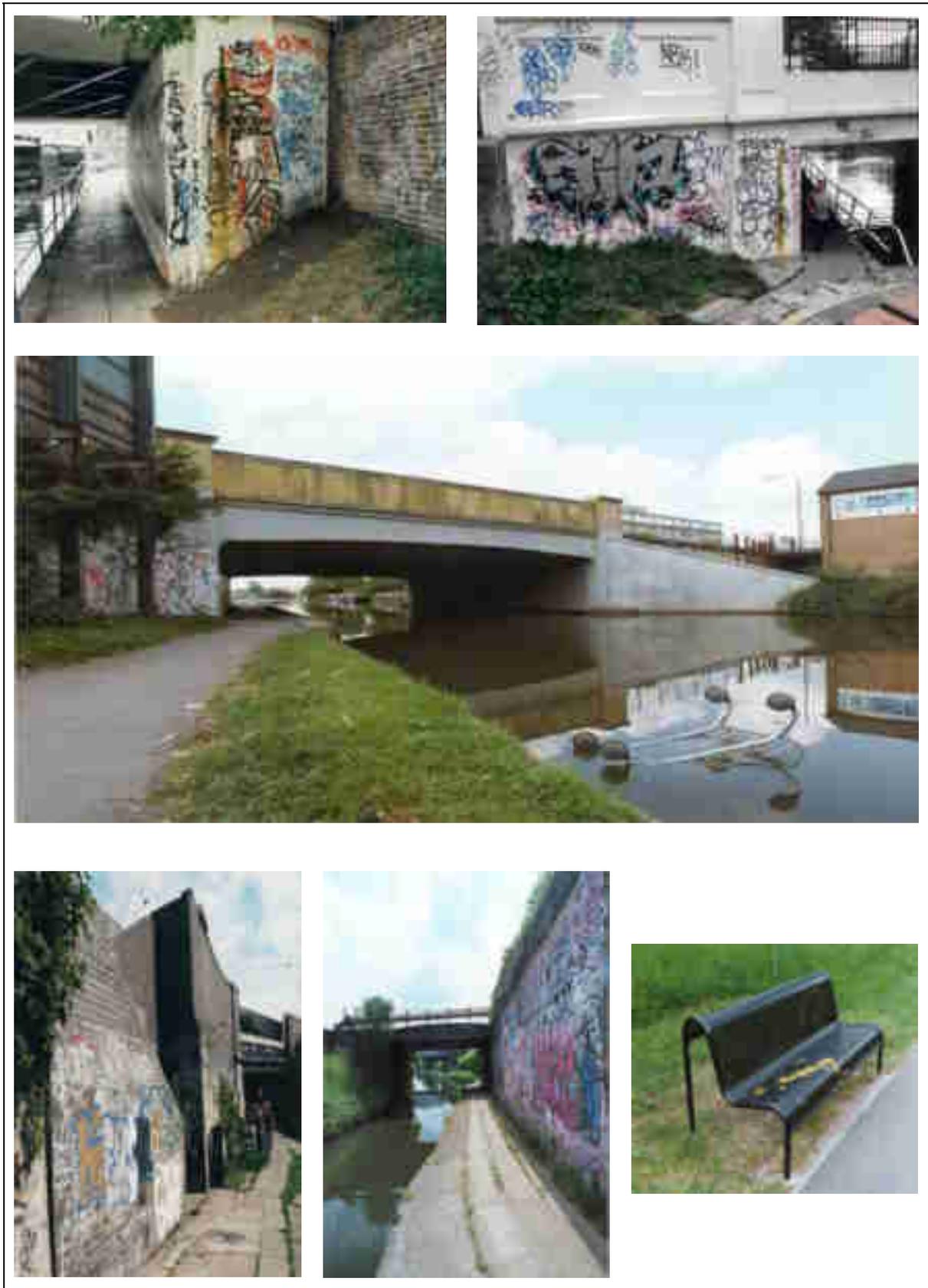
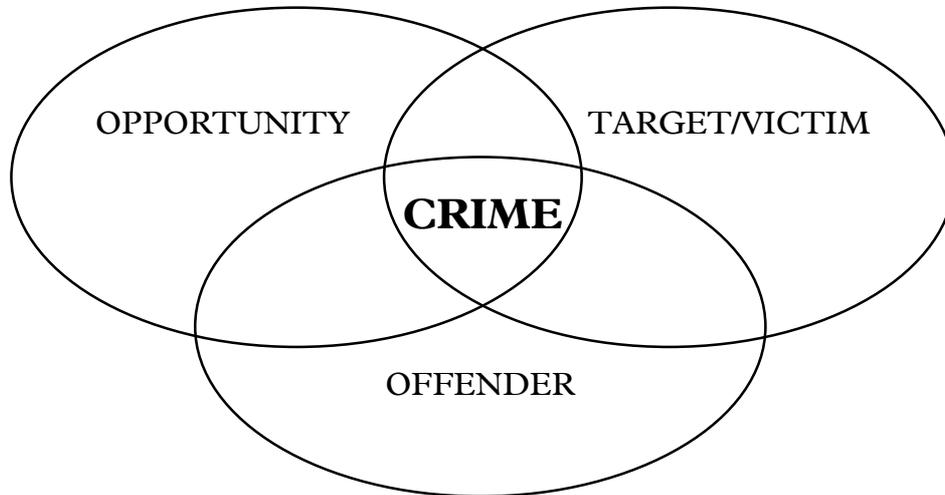


Figure 4.1 : *Examples of Graffiti*

## 4.2 The Causes of Crime

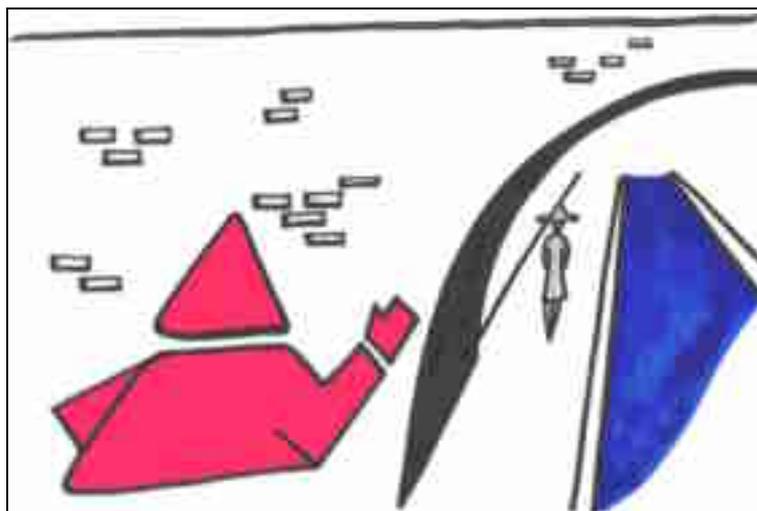
In order to appreciate the reasons which lead to criminal activity, it is important to understand the crime equation as illustrated below:



The diagram shows that if a crime is to be committed, there needs to be a potential target or victim, an offender and an opportunity. By removing one of these three factors, a crime cannot be committed.

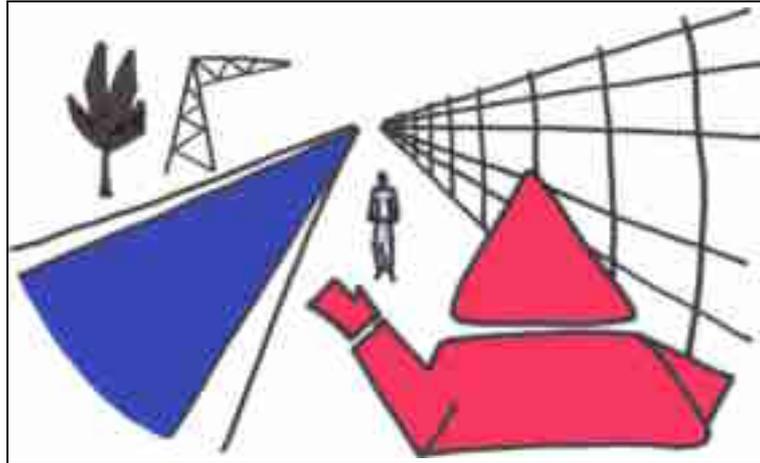
The tables contained in Chapter 5 illustrate the relationship between the environment, victim and offender.

Opportunities for crime adjacent to waterways can present themselves in a number of ways, and the following illustrations show some typical examples:



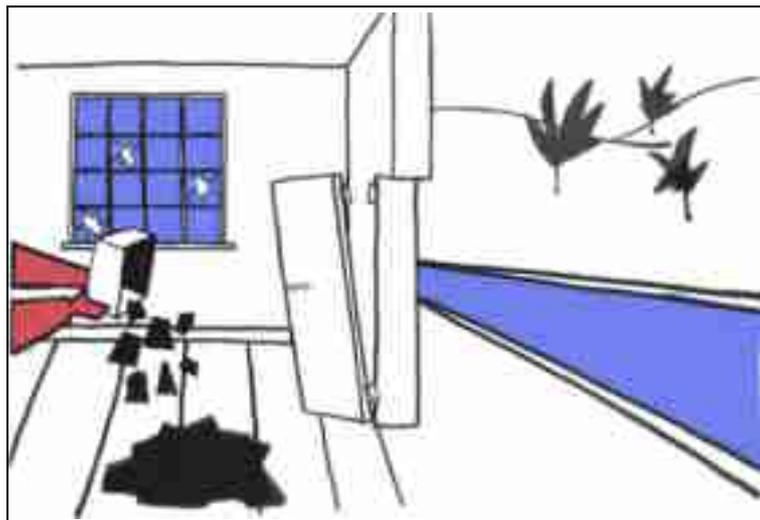
**Figure 4.2 :** *Blind Spots*

Blind spots where the offender can lurk unnoticed eg vegetation, dog legs, tunnels and derelict buildings, dark corners, recesses and shaded areas.



**Figure 4.3 :** *Confined or Restricted Spaces*

Confined or restricted spaces where victims have little or no option for escape eg towing paths and narrow alleyways with limited crossing points.

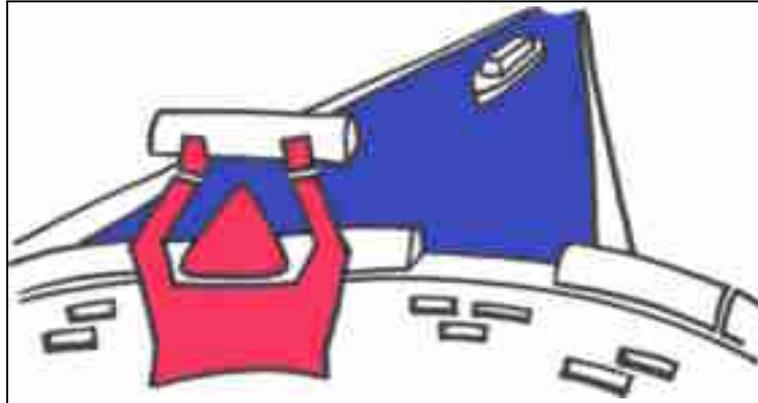


**Figure 4.4 :** *Isolated Areas*

Isolated areas that lack informal surveillance and allow the offender to unlawfully enter a property, tip unwanted material and vandalise property unnoticed.

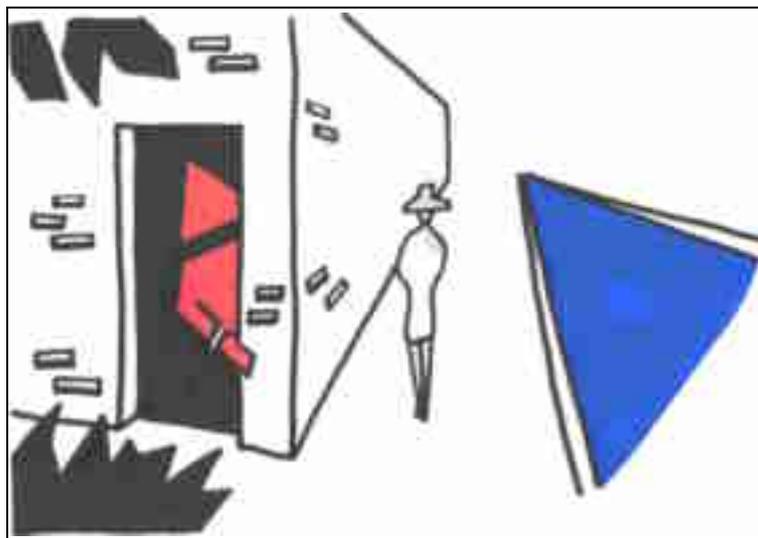
## Under Lock and Quay

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**Figure 4.5 :** *Misuse of Site Materials and Surfaces*

Site materials and features such as loose coping and paving, hanging baskets that are easily dismantled and can be used as missiles or surfaces which are ideal for graffiti.



**Figure 4.6 :** *Poorly Maintained, Vacant or Derelict Sites and Buildings*

A poorly maintained or derelict site may be perceived as dangerous and therefore avoided by potential site users. Lack of informal site surveillance may result in a rapid decline resulting in increased opportunity for criminal activity.

By addressing the issues illustrated it is possible to begin to remove or at least take control of the opportunity for crime and thus reduce the frequency with which criminal activity occurs on London's waterways.

### 4.3 Reducing Criminal Activity

In order to reduce the opportunities for criminal activity and the fear of crime, the following four objectives must be considered in relation to London's waterways:

- **Ensure the waterway user is comfortable in the Environment**

For example, this can be achieved by:

- Giving the waterway and towing path user full visual surveillance and awareness of the waterway corridor;
- Creating waterside spaces and environments that are user friendly and in which a visitor feels confident and comfortable;
- Creating sufficient numbers of clearly marked or visible access points and bridges.

- **Ensure High Levels of Visual Surveillance along the Waterway**

Informal surveillance by waterside users, boaters, anglers, passers by, adjacent residential and business users

Organised yet informal surveillance through schemes such as neighbourhood watch, boat watch etc.

- **Instil a Sense of Ownership/Understanding of the Waterway Environment**

Much criminal activity, eg vandalism, graffiti and wilful damage, results from a lack of interest and respect for the waterway environment. Community action groups which actively work towards improving the waterway environment can help create a sense of local ownership and pride which can potentially reduce the levels of criminal activity. There are already many such groups with a keen interest in London's waterways and their enthusiasm should be encouraged. Both British Waterways and the Metropolitan Police undertake education programmes in conjunction with schools.

- **Remove the Means to Commit the Crime**

Land uses adjacent to London's canals are extremely varied and can unfortunately form a source of materials used by criminals or offenders, eg bricks, metal posts, graffiti tolerant walls, inflammable structures and poorly maintained paving. Through careful selection of site furniture and materials, as well as increased liaison with landowners and businesses, the incidence of vandalism and damage may be substantially reduced.

Using these four objectives, the following methods of combating waterway crime are discussed in subsequent chapters.

- Appropriate design solutions for different waterway and towing path user groups as well as for different types of waterway structures and furniture (Chapter 5)
- Tackling crime through the design and planning process (Chapters 6-9)
- Managing crime (Chapter 10)
- Tackling crime through community awareness and participation (Chapter 11)
- Tackling crime through site maintenance/management.

Although there is an element of overlap between each, and a combination of all five methods may ultimately prove the most effective way of reducing the problem of waterway crime, this document concentrates on the methods of tackling crime through the design and planning process.

Chapters 6-9 are not intended to provide absolute solutions to a particular crime problem, but set out design principles which can be applied across a wide variety of sites and development types.

## 5 WATERWAY USE

As the use and function of London's waterways has changed, the range of waterway users has correspondingly changed and grown. A broad indication of today's users is outlined below:

### 5.1 Towing Path Users

- pedestrian commuters travelling to and from work
- hikers/walkers/joggers
- dog walkers
- cyclists
- anglers
- tourists
- shoppers
- naturalists
- historians

### 5.2 Waterway Users

- residential boaters
- long term moorers
- short term/visitor moorers
- rowers and canoeists
- trip boats and ferries
- restaurant, retail, hotel and conference boats.

### 5.3 Problems and Solutions

The following tables examine:

- each waterway user group's specific requirements, the security issues encountered and appropriate design solutions to overcome these associated problems (pages 20-21);
- waterway structures and furniture, their impact upon users, problems encountered and appropriate design solutions to overcome these associated problems (pages 22-25).

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USER GROUP	USER REQUIREMENTS
<b>TOWING PATH USERS</b>	
<b>Walkers, dog walkers, naturalists and bird watchers</b>	<ul style="list-style-type: none"> <li>• Attractive environment in which to walk, open spaces, medium and long distance views</li> <li>• Peace and tranquillity</li> </ul>
<b>Anglers</b>	<ul style="list-style-type: none"> <li>• Quiet location, lack of disturbance</li> <li>• Medium and long distance views</li> <li>• Space to set up equipment</li> <li>• Good fish stocks</li> </ul>
<b>Recreational cyclists</b>	<ul style="list-style-type: none"> <li>• Sufficient width of towing path to allow cycling</li> <li>• All-weather surface to towing path</li> <li>• Ease of access to and from the towing path</li> </ul>
<b>Commuters, tourists, shoppers</b>	<ul style="list-style-type: none"> <li>• All-weather surface to towing path</li> <li>• Ease of access to and from the waterside</li> </ul>
<b>WATERWAY USERS</b>	
<b>Visiting Boaters</b>	<ul style="list-style-type: none"> <li>• Safe place to moor craft, perhaps overnight</li> <li>• Ease of access to local facilities eg pubs, restaurants, shops</li> <li>• Ease of access to waterway facilities eg sanitary stations, pump out, diesel supplies</li> </ul>
<b>Long term moorers (boats moored for casual and infrequent use)</b>	<ul style="list-style-type: none"> <li>• Safe place to moor craft and leave unattended for long periods</li> <li>• Ease of access to waterway facilities eg sanitary stations, pump out, diesel supplies</li> </ul>
<b>Residential Boaters</b>	<ul style="list-style-type: none"> <li>• Degree of privacy and tranquillity without formal segregation</li> <li>• Attractive home environment</li> <li>• Ease of access to local facilities eg shops etc.</li> <li>• Ease of access to waterway facilities eg sanitary stations, pump out, diesel supplies</li> </ul>

PROBLEMS ENCOUNTERED	SOLUTION
<ul style="list-style-type: none"> <li>Walkers and anglers frequent isolated locations with lack of surveillance and means of summoning help</li> </ul>	<ul style="list-style-type: none"> <li>Frequent access points and signage from towing path to local areas</li> <li>Information boards and maps indicating access points, walkers location, nearest public phone etc.</li> </ul>
<ul style="list-style-type: none"> <li>Walkers and anglers frequent isolated locations with lack of surveillance and means of summoning help</li> </ul>	<ul style="list-style-type: none"> <li>Space for anglers to set up equipment separate from the main line of the towing path</li> <li>Close proximity of car parking facility</li> </ul>
<ul style="list-style-type: none"> <li>Theft of bicycles from destination points</li> </ul>	<ul style="list-style-type: none"> <li>Provision of vandal proof cycle racks in areas of high visual surveillance</li> </ul>
<ul style="list-style-type: none"> <li>Use of towing path after dark</li> </ul>	<ul style="list-style-type: none"> <li>Light key areas of the towing path where pedestrian activity is high and ambient lighting is low</li> <li>Ensure mixed use development to surrounding area to maximise surveillance</li> </ul>
<ul style="list-style-type: none"> <li>Visiting boaters may frequent high risk sites where they are unaware of potential danger</li> <li>Unauthorised access to boats, vandalism and theft</li> </ul>	<ul style="list-style-type: none"> <li>Locate moorings where visual surveillance is high eg adjacent to residential area or residential boats</li> <li>Light moorings</li> <li>Install signage to local facilities</li> </ul>
<ul style="list-style-type: none"> <li>Unauthorised access to boats, vandalism and theft</li> </ul>	<ul style="list-style-type: none"> <li>Ensure high levels of visual surveillance by siting moorings adjacent to residential boaters or adjacent to residential and mixed use development</li> </ul>
<ul style="list-style-type: none"> <li>Boats are usually moored adjacent to towing paths and therefore easily accessed by the general public</li> <li>Boats are susceptible to attack due to low level security</li> </ul>	<ul style="list-style-type: none"> <li>Ensure high levels of visual surveillance by grouping residential boats together or siting adjacent to residential development (mixed use developments are not always appropriate due to noise levels) to promote mutual and natural surveillance between boats and residential dwellings</li> <li>Look at opportunities for locating residential moorings on offside of waterway</li> </ul>

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USER GROUP	USER REQUIREMENTS
<b>WATERWAY STRUCTURES</b>	
<b>Locks and sluices</b>	<ul style="list-style-type: none"> <li>• Unrestricted access to lockside for boaters i.e. no railings to waters edge</li> <li>• Mooring for craft waiting to access lock</li> <li>• Sufficient space for siting and maintenance of lock machinery</li> </ul>
<b>Marinas and mooring basins</b>	<ul style="list-style-type: none"> <li>• High levels of security</li> <li>• Good boaters facilities eg sanitary station, washing/drying facilities etc.</li> <li>• Tranquil environment</li> <li>• Access to local facilities</li> </ul>
<b>Sanitary stations</b>	<ul style="list-style-type: none"> <li>• Clearly visible from the waterway</li> <li>• Easy access for boaters from the waterside</li> <li>• Reserved mooring for boats using the facility</li> </ul>
<b>Waterside car parks</b>	<ul style="list-style-type: none"> <li>• Sufficiently close to the users waterside destination and to provide visual surveillance from the waterside without creating unattractive views from the waterway</li> </ul>

PROBLEMS ENCOUNTERED	SOLUTION
<ul style="list-style-type: none"> <li>• Interference and damage to lock equipment</li> <li>• Potential safety risk to pedestrians due to lack of waterside railings</li> </ul>	<ul style="list-style-type: none"> <li>• Install lighting to lock area</li> <li>• Locate operational equipment away from pedestrian access points</li> <li>• Where possible restrict pedestrian access outside office hours eg install lockable gates to overbridges which can only be opened by BW key holders</li> <li>• Locate harbourmasters buildings where required adjacent to locks for surveillance</li> </ul>
<ul style="list-style-type: none"> <li>• Unauthorised access to boaters facilities</li> <li>• Vandalism, damage and theft from vacant boats</li> <li>• Theft and vandalism of moorers vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Maximise visual surveillance of the marina/basin. For larger marinas, consider the appointment of a live-in site manager. Smaller marinas/basins may be sited within existing or proposed residential areas. All marinas should carry a mix of mooring types including residential boats which provide permanent surveillance</li> <li>• Implement discreet security controls eg swipe card access to marina/basin site from main access road, with separate car parking facility for visitors. Locate moorings on finger pontoons away from marina edges preferably off single arm with swipe card access</li> <li>• Locate car parking facilities in small groups close to their associated moorings with good visual surveillance</li> </ul>
<ul style="list-style-type: none"> <li>• Unauthorised use of facilities</li> <li>• Vandalism to building and facilities</li> <li>• Potential hiding place for offenders and undesirables</li> </ul>	<ul style="list-style-type: none"> <li>• Restrict access through use of swipe cards</li> <li>• Design building carefully to reduce potential for hiding places (refer to the Public Conveniences Problem Reduction Guide)</li> <li>• Locate facilities where visible from wide area or adjacent to marina manager or harbour masters quarters</li> <li>• Install lighting to improve visibility at night</li> </ul>
<ul style="list-style-type: none"> <li>• Vandalism and theft of unattended vehicles</li> <li>• Attacks on pedestrians returning to their vehicles particularly after dark</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to guidance set out in the Secure Car Parks Award Scheme</li> <li>• Improve visual surveillance of the car park. For large car parks introduce on site manager</li> <li>• Site car parks close to areas of pedestrian activity and introduce low level planting to partially screen cars from waterside</li> <li>• Introduce lighting to heavily used car parks particularly those associated with commuter activity</li> </ul>

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USER GROUP	USER REQUIREMENTS
<b>Bridges and tunnels</b>	<ul style="list-style-type: none"><li>• Many are historic and/or listed structures to be retained and conserved</li><li>• Provision of amenity lighting to adequately illuminate the towing path and bridge undercrofts</li></ul>
<b>Benches</b>	<ul style="list-style-type: none"><li>• Located at appropriate intervals and at key viewing points along the waterside</li></ul>
<b>Litterbins</b>	<ul style="list-style-type: none"><li>• Located in areas of high pedestrian activity in association with retail and food outlets</li></ul>
<b>Lighting</b>	<ul style="list-style-type: none"><li>• Of sufficient lux level to achieve desired effect whilst minimising glare to surrounding area</li></ul>

PROBLEMS ENCOUNTERED	SOLUTION
<ul style="list-style-type: none"> <li>• The abutments of bridges and tunnels are blind spots where offenders lurk unnoticed</li> <li>• The dark nature of such structures compounds the limited visual range of the site user</li> <li>• Graffiti and vandalism</li> <li>• Location of other undesirable activities</li> </ul>	<ul style="list-style-type: none"> <li>• Improve visibility and reduce the potential for offenders to lurk, through the careful siting of new bridges and tunnels and the design of abutments</li> <li>• Reduce the opportunity for offenders to lurk at the blind spots of existing bridges and tunnels through the planting of thorny shrubs</li> <li>• Install lighting to the offside of bridges and tunnels where necessary (see below)</li> <li>• Where structures are painted introduce graffiti resistant paint, alternatively retain a rough surface finish to the structure to deter graffiti. Where listing of a structure precludes any changes in materials, implement a thorough maintenance and management regime to keep the structure clean</li> <li>• In areas where the nature and level of crime is severe, consider restricting access beneath the bridge and through the tunnel after dark</li> </ul>
<ul style="list-style-type: none"> <li>• Vandalism</li> <li>• Arson</li> <li>• Graffiti</li> <li>• Misuse by vagrants</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce levels of vandalism through specification of fire resistant materials and anti graffiti surfaces. Specify quality products that are difficult/impossible to dismantle</li> <li>• Keep benches and seating to a minimum to reduce potential to misuse</li> <li>• Avoid misuse through the specification of single seats, curved benches, backless seats and arm rests across the centreline of long benches</li> </ul>
<ul style="list-style-type: none"> <li>• Potential for concealing incendiary device</li> <li>• Arson</li> </ul>	<ul style="list-style-type: none"> <li>• Specify litterbins only where absolutely necessary and ensure that if needed they are of sufficient capacity to accommodate expected litter levels. Ensure that servicing of litterbins is sufficient to meet litter requirements</li> <li>• Omit bins altogether in high profile areas</li> <li>• Bins to be constructed using fire resistant materials and anti graffiti paint and of sufficient quality that dismantling is difficult/impossible</li> </ul>
<ul style="list-style-type: none"> <li>• Vandalism</li> <li>• Encourages people to use areas of the waterside which are potentially dangerous even when lit</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce potential vandalism by locating lighting to underside of bridges and tunnels on the offside and use recessed lighting attached to buildings or walls or set into the towing path</li> <li>• Use lighting only where absolutely essential eg busy commuter routes where there is additional site surveillance.</li> </ul>

## 6 DESIGN GUIDELINES FOR WATERSIDE DEVELOPMENT

The unique qualities of the built and natural heritage of London's waterway corridors means that measures to improve site security and safety should be tailored to meet the specific requirements of each individual site.

**It should never be assumed that a successful solution can be universally applied. Neither should it be assumed that the same solution to a particular problem is appropriate along an entire waterway or even a selected length.**

By its very nature, London's waterway network is linear in character with a limited number of crossing points and is often segregated from existing road and footpath networks. It is frequently perceived as a private environment not really designed for free and easy public access. Therefore, for the potential of the waterway to be fully exploited, this perception needs to change and new development often provides the opportunity.

Development of land adjacent to London's waterways needs to adopt the key urban design principles of permeability, variety, vitality, legibility, visual appropriateness and richness to create accessible, safe and attractive environments which:

- have a strong sense of place, and create safe and active edges to the waterside;
- respect the townscape and topography, relate to the waterside and continue to promote the human scale of the waterways;
- ensure pedestrian comfort and easy access to facilities.

The principles of good urban design should extend onto the waterway itself and future waterside development needs to ensure that any new development is considered holistically with the opportunities for waterbased residential, leisure and commercial development to ensure life and vitality to the waterspace and towing path. The opportunities to create or extend mooring basins and marinas as well as to utilise the waterway by introducing residential and visitor moorings, trade boats and floating restaurants which also generate natural surveillance and policing of both the waterspace and the adjacent development should always be considered. These improvements and facilities could be secured through planning obligations.

Emphasis needs to be placed on site planning, design layout and orientation to solve problems of security and safety. The following qualities are required to ensure that any new building will fit harmoniously into any waterway corridor and thus should form the basis for any assessment criteria.

**Siting and Orientation** of new buildings should positively address the waterway. The height of buildings needs to be related to the set back from the water's edge to achieve a sense of enclosure without being oppressive or intimidating.

**Massing** relates to the height, bulk and silhouette of a building. The height of a new building should respect the height of existing waterside buildings and its bulk should not greatly exceed the bulk of adjoining waterside buildings.

**Scale** any new waterside building must be of human scale at ground level and should respect the scale of existing waterside buildings and the waterway itself.

**Barriers and boundary treatments** are used to define all external spaces and are often the single most important design detail affecting the use of a site and associated levels of criminal activity. For example, the design and location of a boundary treatment or barrier will affect:

- the area which can be seen by the public
- the ease with which offenders can unlawfully enter a building or property
- the level of site surveillance from adjacent land or properties
- the visitors perception of the waterway corridor.

Furthermore, the form of a boundary or barrier will be dependent upon its function. The design of waterside boundaries will be influenced by:

- the function of the boundary
- the character of the site
- the nature of criminal activities occurring at the site
- existing boundary treatments in the area.

It is important that all these factors are considered in relation to London's waterways and their surrounding uses, in order to:

- retain waterside character
- reduce the need for excessive security measures
- increase the levels of visual surveillance
- reduce opportunity for unlawful entry into property.

**Siting and orientation of new development, appropriate boundary treatment and access issues are often different for the towing path side from the offside.**

The following sections examine four waterside development types and the appropriate use of orientation, massing, form and boundary treatment in relation to their waterside setting on both the towing path side and the offside:

- residential development
- waterfront mixed use development
- industrial development
- moorings, marina developments and associated facilities.

## 6.1 Residential Development

There is a growing national awareness of the added value and commercial betterment of waterside residential developments. A study by Willis & Garrod at the University of Newcastle, in March 1994, revealed that new residential property built by the water commands a 19% premium value over and above that of equivalent property elsewhere. This premium extends to properties at some distance away from the water. Therefore, there is substantial potential to promote waterside brownfield sites in urban areas for residential development.

London's waterways can contribute to raising the density of development by introducing:

- high density waterside residential developments as the built form relationship with historic urban waterways tend to be characterised by dense urban grain and strong sense of enclosure created by four to six storeys high buildings
- permanent residential moorings as part of waterside residential development.

High density requires good urban design, therefore, emphasis needs to be placed on site planning, design layout and orientation to solve problems of security and safety.

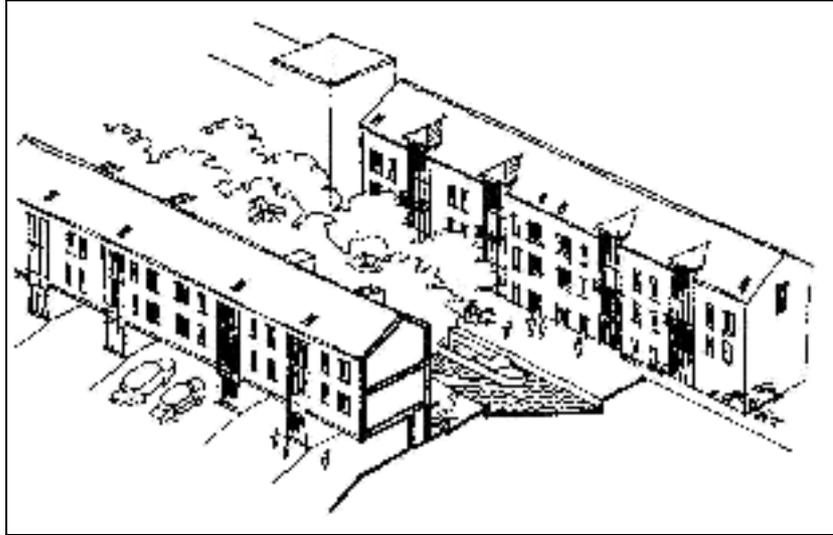
Siting and orientation of dwellings, appropriate boundary treatment and access issues are different for new waterside residential schemes on the towing path side than from new schemes on the offside.

### Towing Path Side

Rear and side elevations of dwellings and rear and back gardens fronting onto the towing path and the waterway create inward looking development, which makes limited use of the waterside frontage and therefore minimises opportunities to generate natural surveillance and policing. Extensive lengths of fencing and car parking areas fronting the waterway are considered inappropriate.

All new residential development should be orientated to positively address the waterway on the towing path side in order to create an attractive, interesting and active frontage to the waterway, which would generate natural surveillance and policing. Introduction of front doors or balconies on waterside elevations can generate natural surveillance and policing of the towing path.

The most appropriate design approach is to consider residential development with secured and overlooked rear service and parking areas with semi-private access to the frontage for waterside developments.



**Figure 6.1** : Sketch illustrating residential development positively addressing a waterway and generating natural surveillance and policing of the waterspace.

New waterside residential developments on the towing path side should include the creation and improvement of existing access points to the towing path and the improvement of the towing path itself for pedestrians and cyclists as an integral part of the scheme.



**Figure 6.2** : Photograph illustrating the creation of an access point to the towing path as an integral part of the residential development.

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Generally waterside residential development should avoid the construction of roadways adjacent to the waterway. However where the site configuration requires the construction of roadways adjacent to the waterway, then it is important that:

- the layout does not result in the dwellings being set too far back from the towing path and water's edge beyond thus divorcing the development from the waterway. This arrangement will destroy the visual and physical relationship between the dwellings and the water's edge resulting in the towing path not being overlooked;
- any access road constructed adjacent to the waterway should incorporate the towing path and its environs as an integral part of the scheme e.g. an informal shared surface, where appropriate incorporating the towing path to a maximum width of 4 metres. The access road and towing path should be both paved in a material sympathetic to the setting.



**Figure 6.3** : *Photographs illustrate how the effect of incorporating and excluding the towing path as an integral part of the scheme can encourage and discourage the use of the towing path.*

### Offside

All new residential development should be orientated to front the waterway on the offside wherever possible. However, where the configuration of a site on the offside does not permit the houses to be orientated to front the waterway, then it is crucial that:

- there should be no walkway to the rear of residential properties. This will enable the waterway to act as a “moat” to back gardens. It is important to ensure that the water edge areas are “owned” to avoid security problems as well as problems of neglect;
- inherent conflict between the waterway (which by its nature is part of the public realm) and back gardens onto the waterside, which function for most people as a private secluded outdoor space, is resolved.

In these cases boundary design is very important. Full height walling or fencing installed by a developer or in the future by the householders is considered to be inappropriate boundary treatment for such an environment.

Use of imaginative landscaping and level changes to create waterside terraces with the option of private moorings is one example of a design concept which achieves rear garden privacy as well as an attractive water frontage. A waterside terrace could contribute to the vitality of the waterway corridor and provide an attractive view of the residential properties from the towing path. Any private moorings would however require British Waterways’ agreement.

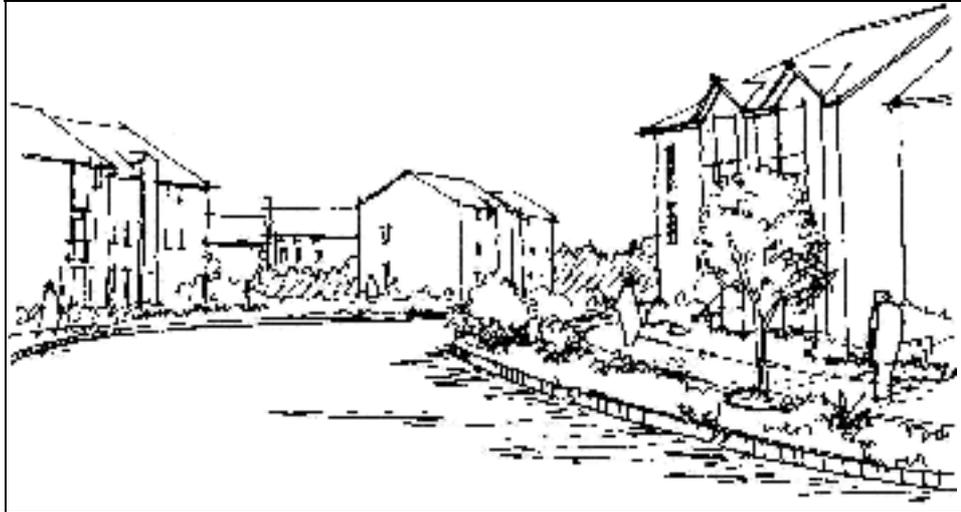


**Figure 6.4** : *Photograph illustrates inappropriate siting and orientation of dwellings as well as inappropriate boundary treatment in a waterway setting. The boundary treatment generates low levels of natural surveillance and policing and devalues the waterway environment for all users.*

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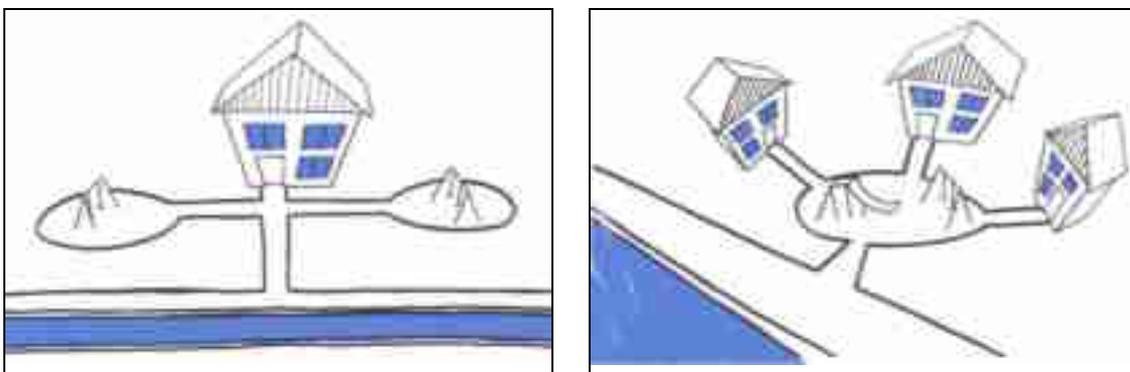
New waterside residential developments on the offside should consider bridge crossings linking new development with the towing path network as an integral part of the scheme, as opposed to creating a second walkway (with a dead end) on the offside.



**Figure 6.5** : Sketch illustrates appropriate siting and orientation for waterside residential development. The dwellings on the offside (right hand side) have semi private pedestrian access to the waterside with secured and overlooked rear service and parking access. The high levels of visual surveillance from the building combined with restricted public access reduces the need for high level security barriers and the dwellings can therefore open onto the waterside. A development that fronts directly onto the waterside would achieve the same objectives with the added security of the water preventing access. The apartment blocks on the towing path side (left hand side) benefit from vehicular access and parking within a secured and overlooked rear courtyard. This arrangement enables pedestrian access to the apartments via the towing path and minimises vehicular intrusion onto the waterside.

### Waterside Amenity Space

Waterside amenity space should only be provided where the dwellings are orientated to front the waterway, in order to ensure that there would be a level of natural surveillance and policing of the amenity space.



**Figure 6.6** : Sketches illustrate appropriate siting of waterside amenity space.

### 6.2 Waterfront Mixed Use Development

In the experience of British Waterways and the Metropolitan Police most successful, safe and sustainable urban waterside areas are mixed use developments which:

- Provide a balanced mix of uses including 18/24 hour use (ie some of the buildings will always be occupied, or in use). This diversity of uses will enhance the safety of a waterway as a route, extend the length of time when there is activity in the buildings and generate greater numbers of people next to the waterway who will informally observe public activity.
- Treat the waterway as a “pedestrianised street” with buildings and linked public spaces with active edges overlooking the waterways which are accessed from the towing path.
- Ensure that new buildings are orientated to front the waterway with direct access from the towing path with windows at towing path level and external seating areas overlooking the waterway therefore providing natural surveillance and policing.
- Relate height of buildings to set back from waters edge to ensure pedestrian comfort. Although, waterway corridors are often characterised by groups of historic buildings which form a “canyon” (ie where the buildings rise sheer out of the water on the offside and the buildings are to the rear of the towing path), subject to planning and conservation constraints, the use of arcading or the installation of additional lighting or windows at towing path level should be considered when refurbishing and redeveloping these existing buildings. Very strong sense of enclosure should be avoided in new development as the waterway corridor becomes oppressive and is perceived as unsafe. In these instances developers should also consider additional and appropriate access points or waterway crossings to improve safety.
- Establish good pedestrian circulation within the development and provide strong and direct linkages and connections to places beyond it.
- Introduce water-based leisure and commercial development to ensure life and vitality to the waterspace and towing path, e.g. opportunity to introduce visitor moorings, trade boats etc.
- Introduce lighting to illuminate the towing path, access points and undercrofts of bridges to new waterfront developments with 18/24 hour uses to improve safety.
- Construct new bridges to maintain pedestrian circulation and routes where particular uses or development located on the offside prevents public access from the towing path.
- Make the towing path an integral part of the development which is upgraded or even widened to ensure that increased numbers can be accommodated safely as part of the scheme. Access improvements and creation of new access points should also form part of the development scheme.
- Design the scheme to have pedestrian generating activities located along the waterfront. The visual and physical presence of people in the buildings and spaces adjacent to the canal and people frequently entering and leaving the

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buildings encourage people to walk this stretch of canal because there is natural surveillance and policing.

- Introduce ways of opening up views of the waterfront eg lower or replace bridge parapets.



Figure 6.7 : Images of Brindley Place, Birmingham.

Brindley Place in Birmingham is a very good example of a mixed use development creating an activity node within the waterway corridor. This scheme adopted the key principles of urban design resulting in the creation of a safe, accessible and attractive environment which has a strong sense of place, active edges to the waterspace and provides easy access for pedestrians to facilities. The following qualities have contributed to the creation of this safe waterside environment:

- Brindley Place treats the canal as a “pedestrianised street” with buildings and spaces overlooking the water which are accessed from the towing path.
- Towing path is an integral part of the development and was upgraded as part the scheme.
- The scheme was designed to have pedestrian generating activities located along the waterfront.
- Buildings orientated to address the canal with direct access from the towing path, windows at towing path level and external seating areas overlooking the canal. The siting, orientation and uses of the buildings creates active edges to the waterspace and a defensible overlooked towing path.
- The diversity of the uses enhance the safety of the canal as a route, extend the length of time when there is activity in the buildings and generates greater numbers of people next to the canal.
- Traditional canalside enclosure has been maintained without being oppressive.
- Access points to the towing path from the city centre are high profile, well defined and of high environmental quality.
- Installation of CCTV, lighting and security patrols.

## 6.3 Industrial Development

New industrial development should aim to contribute to the enhancement of the visual quality of the waterway corridor by screening unsightly views as well as creating a secure environment.

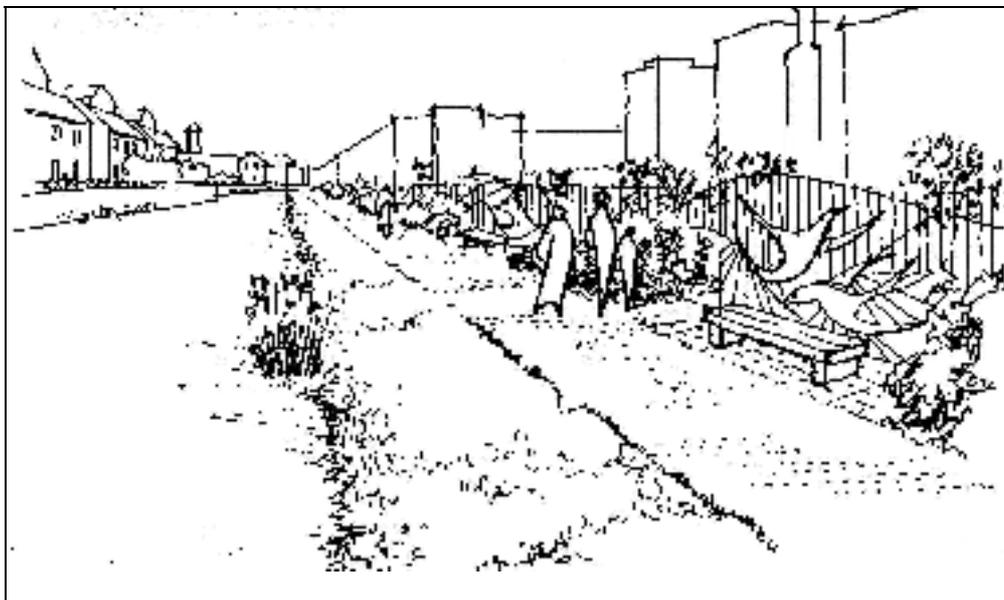
Many existing industrial uses adjacent to the waterway present unattractive or ugly facades to the waterside. New industrial development should be sited and orientated to positively address the waterway. Where site configurations are restrictive resulting in new development turning its back on the waterway with the service yard, external storage and car parking areas being sited adjacent to the waterside these areas need to be screened in order to improve visual appearance and to provide site security.

Such features adversely affect the public's perception of the waterway and the use of attractive screening barriers is therefore desirable in raising the profile of a site.

The effectiveness of such boundaries will depend on their:

- location in relation to the waterway corridor;
- dimensions in relation to the building or development being screened.

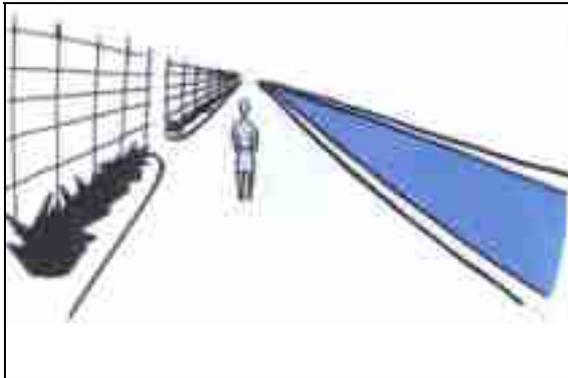
It is not always necessary to fully screen unattractive development or views particularly if it is large scale. It may be sufficient to provide a feature to detract from the view, as shown in the illustrative example below.



**Figure 6.8** : *An example of the use of public art in the design of security fencing.*

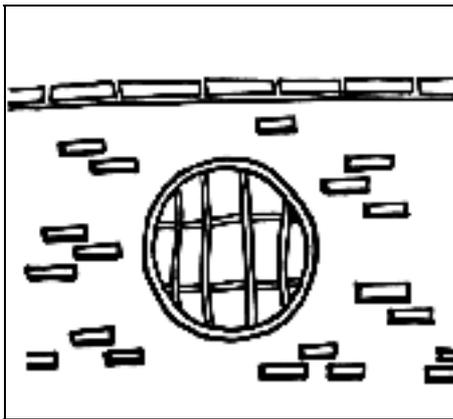
The scale of some industrial developments is such that installation of a full height screen to hide the view would be more detrimental to the visitors' perception of the site. A sculptured wall or security fencing could be constructed which would present a coherent frontage to the waterside. Low level waterside planting could be used to soften the edge of the wall.

Screens do not need to be impenetrable structures such as walls, close-boarded fencing etc. For example:



**Figure 6.9** : *An example of the fencing or railings combined with dense planting allowing glimpses through but make it difficult to climb.*

The use of “prickly” defensive planting can help deter casual intrusion as well as visually enhance high security fencing system. Advice on the design and planning of soft landscaping adjacent to the waterside is provided in section 9.1.



**Figure 6.10** : *An example of walling with “feature” railing panels allow limited views through.*

### Security Barriers

For many industrial uses adjacent to the waterway, security is a major issue, for one of the following reasons:

- the activity undertaken constitutes a public safety hazard eg a power station, chemical plant, railway line etc.
- the building/development is a private property or contains desirable commodities eg computer equipment
- the business undertaken requires high security eg financial institution.

In order to deter unlawful entry into the above developments high level barriers that lack potential hand and footholds are required, eg no cross ties or bars.

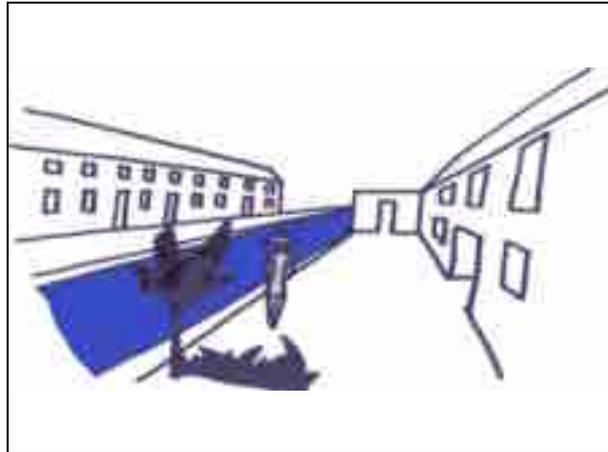
Boundary treatments, particularly security boundaries, should be specified only where absolutely essential. Their design should be in keeping with the environment in which they are positioned.

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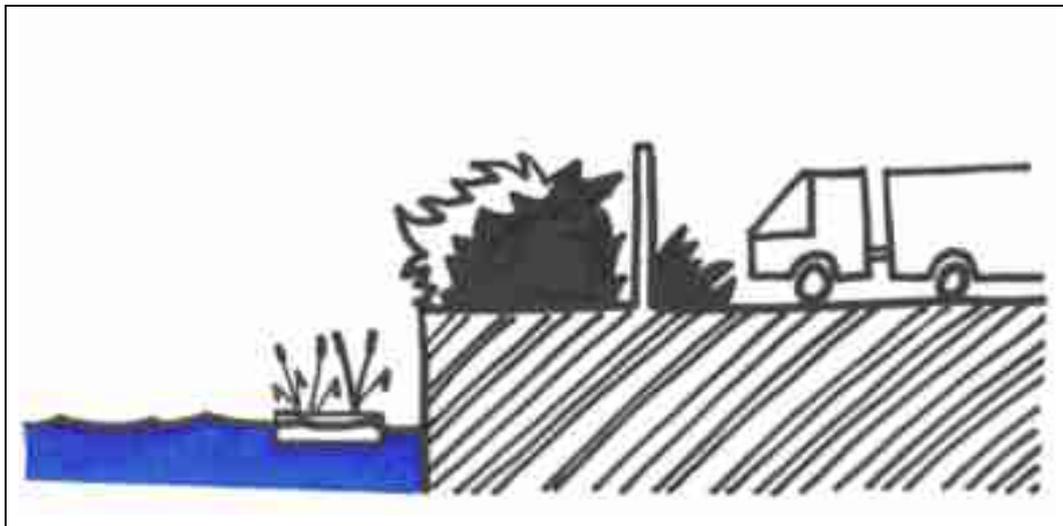
It is preferable for the security barrier to be set well back from the adjacent towing path to reduce the sense of entrapment experienced by the towing path user, caught between the boundary and waters edge.

Wherever possible shrub planting should be specified in conjunction with the barrier to help integrate it into the surroundings and soften its impact. High level planting should be located on the “secure” side of the barrier to prevent its use as a foothold.



**Figure 6.11** : Sketch illustrates how a building façade itself can act as a security barrier.

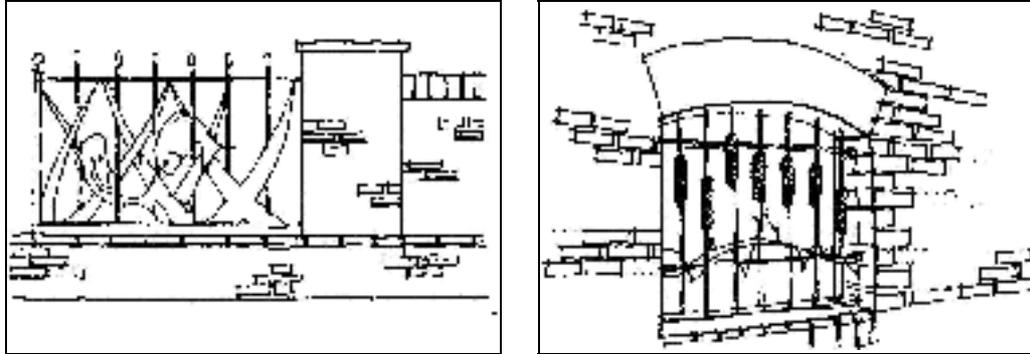
To be successful there should be no ground level access to the waterside and modification to the waterside windows ie laminated glass, no cills or ledges, etc. This solution is preferable as it creates an interesting waterside elevation and reduces clutter of materials. It is also in keeping with more traditional measures for waterside security.



**Figure 6.12** : Sketch cross section illustrates how to screen car parking and servicing areas on the offside.

For premises on the offside of the waterway much can be done to use the water as a moat, since access is denied without recourse to a fence. Above eye level fencing sited behind a substantial planting screen with a high proportion of thorny shrubs can be a very effective physical and visual barrier. Land modelling and deterrent planting can provide additional protection.

Public art has an important role to play in the design of barriers and boundary treatments. The use of unique solutions to boundary treatments adds an element of creativity to an essentially functional site element, as well as character and a sense of place to the waterside are shown below:



**Figure 6.13** : *Sketches illustrate good examples of public art in association with boundary treatments.*

The public art theme used in the design of the boundary treatment along a stretch of waterway may be carried through in the design of site furniture eg benches, bollards and lighting to give cohesion to the site and strengthen waterside character.

### **The Use of Intrusion Deterrents to Boundary Treatments**

It is often the case that features such as spikes, barbed wire, glass and other intrusion deterrents are installed to the tops of existing walls, fencing and railings adjacent to the waterway. Their presence implies that a site is dangerous or vulnerable and adversely affects a visitor's perception of an area. Installation of such features below 2 metres must be signposted.

Their use is an ad hoc response to a particular problem (usually intrusion) and implies that the initial choice of boundary treatment is inadequate to deal with the nature and severity of the problems encountered at the site.

However, it is important to stress that security measures taken by building owners are considered in the context of the risk to the users of the waterway. The use of revolving “cacti” spikes or razor tape should only be suggested as a last resort for parapets of walls, tops of fencing and railings above 2 metres in existing premises with particular problems or within an extremely high-risk area.

Where absolutely necessary, finials should be designed as an integral part of the boundary treatment, prior to manufacture and installation. A more subtle response to the problem will thereby be achieved such as the installation of high level security fencing with blunted rod finials which make it difficult to climb, eg mild steel railings with associated planting to help screen the impact of the fence.

## 6.4 Moorings, Marina Developments and Associated Facilities

### Types of Moorings

British Waterways encourage a wide variety of water based activities which complement the uses on the land, and add vitality and interest to the surrounding area.

The numbers and mix of craft is determined by the existing as well as the predicted future demand for moorings, the physical constraints of the waterway or waterspace and the need to complement the adjacent waterside environment . The different types of moorings, e.g. visitor, residential and long term, each have their varying waterspace access, servicing and security requirements.

Integration of mooring requirements, including servicing, car parking and access arrangements, with land based uses within the main development area is essential.

### Common Security Issues Relating to Boats

- **Moored boats** are vulnerable in urban areas to theft and break-ins.
- **Throwing missiles** such as stones, bricks, etc from bridges and other elevated public areas onto passing boats and at towing path users. Boats make a particularly attractive target and therefore, moorings should not be located within 30 m of a road, railway bridge or footbridge.
- **Tying up:** Mooring rings are preferable to bollards as these reduce the temptation of offenders to let a boat adrift.

### Visitor Moorings

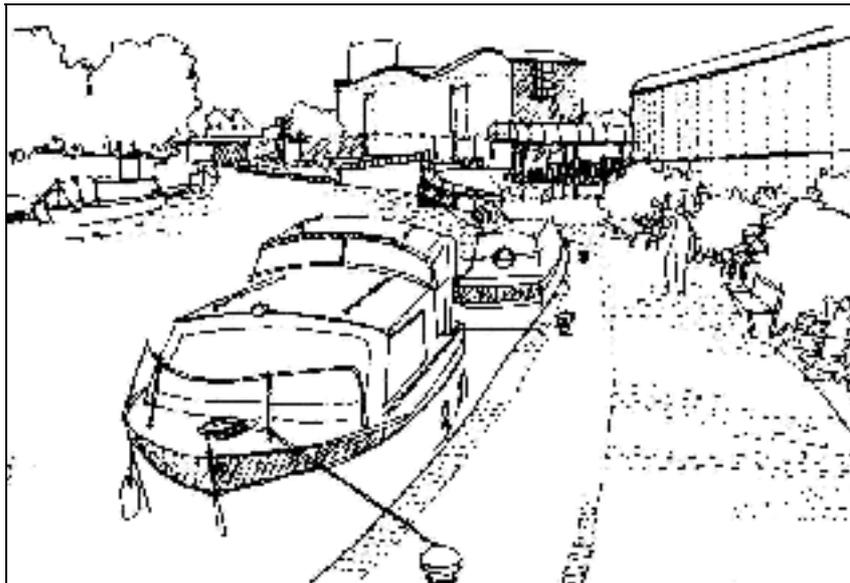
Visiting boaters have the right to moor at any point on the towing path side of a waterway subject to it not being a threat to navigational safety. The design of the waterside environment can be an encouragement or a deterrent to boaters to moor, and can influence the prevention of crime.

Boaters generally stop for the following reasons:

- to moor over night
- to visit necessary waterway service facilities
- to buy provisions
- to stop to eat
- to visit waterside and local attractions
- to explore the wider area

All these purposes have different security issues which need consideration. For example, boaters looking for an overnight mooring will want peace and quiet, and so may try to avoid areas of particularly high activity and lighting.

Those buying provisions will need good pedestrian access. The development of supermarkets on the canal side offers the opportunity for specifically designed visitor moorings. Over looking of the canal from the store, provides informal surveillance for the canal and increases activity along the canal by encouraging people to use it as a means of access to the store. Twenty four hour shopping is enhancing this benefit further.



**Figure 6.14** : *Sketch of visitor mooring at Sainsbury at Kensal Green. Entrance canopy extends to the back of towing path.*

When providing visitor moorings the following issues need to be taken into account:

- the majority of visiting boaters will be strangers to an area, thus any decision to moor will be based upon their initial perceptions of the immediate environment from the water. Incidences affecting personal safety and boat security will be communicated between boaters, resulting in avoidance of particular waterway locations;
- new developments along the canal provide an opportunity for creating secure visitor moorings as an integral part of their design. This should be encouraged as buildings which overlook the waterway, generate activity and provide natural surveillance and policing of the moorings.

In certain areas where perceived and actual personal safety and boat security are an issue British Waterways has introduced visitor moorings on the offside with controlled access in an attempt to encourage boaters to moor.

## Long Term and Residential Moorings

Long term and residential moorings can be provided either as “on-line” or “off-line” moorings. On-line mooring are those where boats are moored on the waterway. Off-line moorings are those situated in a marina, mooring basin or lay-by. Generally, an offside location offers a greater opportunity to create secure moorings with a single gated access point than the provision of moorings on the towing path side.

The needs of these types of mooring are different to visitor moorings. Boats on long-term moorings may be left unoccupied for substantial periods of time, making the boats vulnerable to planned crime. Unsecured paraphernalia on these boats and the ability to gain vehicular access to the mooring site increases their vulnerability. Therefore the following issues need to be addressed:

- control of both vehicular and pedestrian access to the boats;
- a degree of site supervision eg presence of residential boats within a mooring site, to act as a caretaker and security guard;
- secure storage arrangements for high risk items such as gas bottles and diesel and for paraphernalia such as bikes;
- good site management can act as a deterrent.

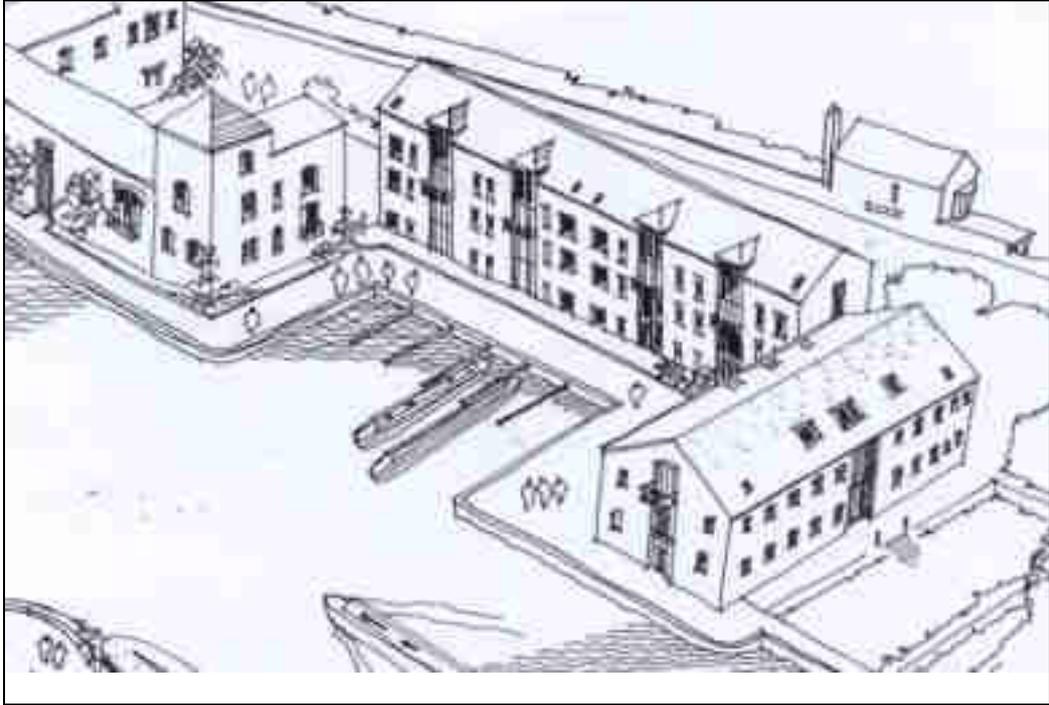
## Marinas

Marina developments can either be:

- stand alone large scale marina developments. These developments tend to provide waterside facilities such as safe mooring, services, shop/office/chandlery/sales, maintenance/repairs, stores for gas bottles and fuel, wet dock/dry dock, refuse arrangements, parking/winter hardstanding, slipway/boatyard, clubhouse, harbourmaster/manager etc;
- a small mooring basin component accommodating residential and/or visitor moorings within an overall development scheme with residential and commercial leisure uses sited to overlook the waterbody will provide mutual natural surveillance and policing. There is a need to design holistically so that each component co-exists with the other uses.

Where mooring basins form the focus for a larger development the security issues for boaters are more complicated than a stand-alone marina development. Key considerations that will affect the security of moorings in a mooring basin that forms the focus for a larger development are:

- siting and orientation of buildings to overlook the mooring basin;
- the design and use of the waterside spaces which form the interface between the adjacent built development and the mooring basin;
- the configuration of the basin and the design of the moorings need to form an integral part of the overall development scheme to ensure that security issues related to moorings are addressed at the outset.



**Figure 6.15** : Sketch illustrating a mixed use development with a mooring basin component



**Figure 6.16** : A Photograph of Battlebridge Basin, King's Cross. The Metropolitan police and the London Borough have worked with the resident boaters and occupants to introduce restricted access to the basin.

When providing marina developments including small mooring basins the following issues need to be taken into account:

- **Design of the site** to ensure misuse and abuse is minimised. It is crucial that security issues related to marinas are addressed at the planning and design stages of the development in order to avoid the subsequent need for a comprehensive package of “bolt on” security measures, eg security gates, fences, grilles, padlocks, etc. Experience has shown that these are likely to form a hostile environment that attracts crime rather than deterring it. Lighting and signage to help define both publicly accessible areas and private areas is essential and therefore, should be carefully planned and designed;

- **Site Management Strategy.** The management, ownership, scale and location of a marina are just as fundamental to their success as are aspects of their design and planning. It is crucial that a site management strategy is developed at the outset to ensure that maintenance responsibilities are clearly defined, particularly for mixed-use developments in multi ownership/occupation;
- **Maintenance Regimes.** Poor or lack of site management and maintenance can detract from the appearance of the development. The perception of no site supervision and maintenance increases the vulnerability of the site becoming subject to criminal damage. For example, wind blown rubbish can have a greater impact and is more difficult to clear up once it gets into the water. It may be the responsibility of the mooring management, but come from a waterside business;
- **Production of a Waterspace Strategy** for the whole site is often recommended at the outset of design. This allows issues relating to the interaction between all the site occupants to be addressed properly. Security issues should be a major element of this.
- **Control of access on to the site**
- **Control of access on to the boats.** This can be done by ensuring a single point of access on to a group of finger jetties.

It is recommended that specialist marina/mooring basin planning and layout advice be sought from Waterway Environment Services to ensure optimum use of the waterspace and to minimise the environmental and ecological impact of any new proposal, eg siting and configuration of the water space, design of jetty layout and land-based facilities.

British Waterways has devised the waterspace strategy concept as a design tool to:

- inform the developers and their design team by identifying the range of uses a particular waterspace can support and to identify the land based implications of such uses;
- explore the options and identify a balanced mix of mutually supporting uses;
- design a purpose made strategy that is flexible enough to accommodate changes in the land based development brief but provide a base level solution that ensures life and vitality to the waterspace and surrounding public spaces.

The benefit of this approach is that the “added value” of the waterspace is fully explored and safety and security issues are addressed at the outset of the design process.

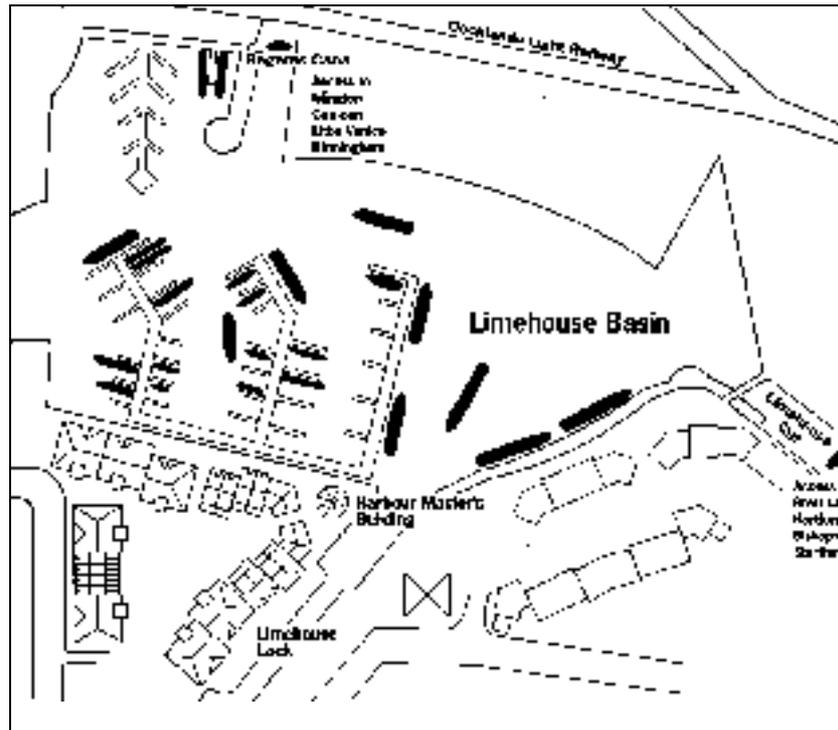


Figure 6.17 : Sketch illustrating mooring layout, Limehouse Basin Marina

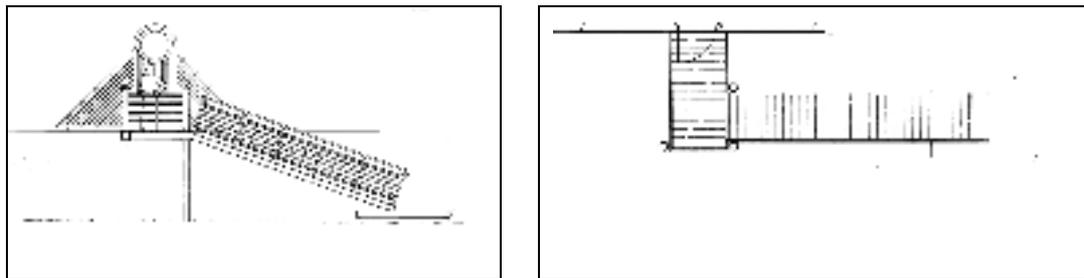


Figure 6.18 : Elevation and plan of entrance gateway and access arrangements too floating jetties at Limehouse Basin. The boats are moored on finger jetties with a single gated point of access, forming a private zone and allowing the water to act as a moat to secure the boats.

## Sanitary Stations

Sanitary stations provide facilities for boaters such as refuse and effluent disposal, provision of water, toilets and showers. Such facilities tend to be housed either in a small building or enclosure. If sited in an isolated location that is not overlooked by either boats or other built developments can make these facilities vulnerable to abuse. The preferred approach is to incorporate boaters' facilities as an integral part of a larger development.

When designing sanitary stations the following issues need to be taken into account:

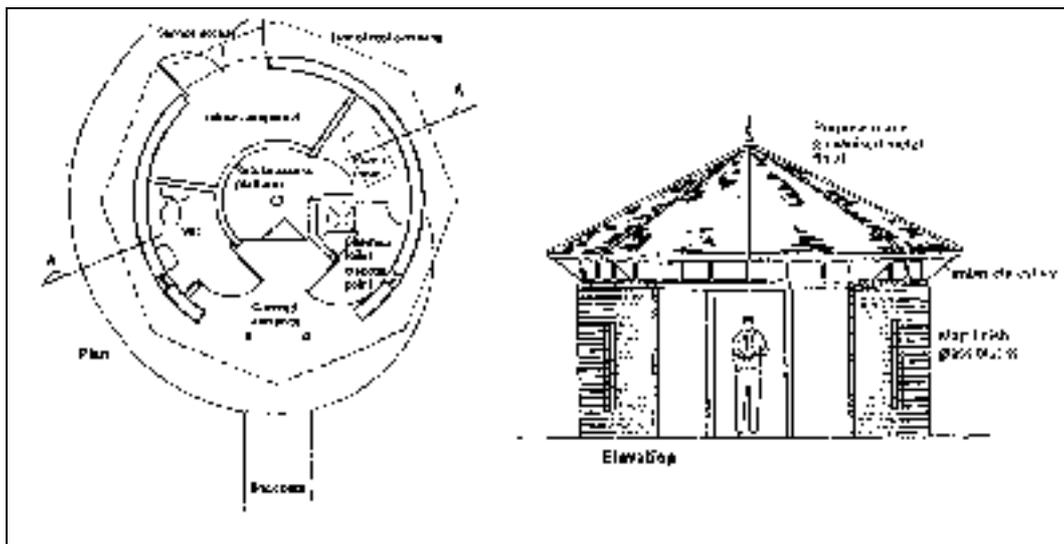
- **siting and orientation** of facility buildings in order to maximise opportunities for informal surveillance. Where there is no other built development exists within the vicinity of the sanitary station it is important

## Under Lock and Quay

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that firstly, the building entrance should be highly visible facing onto the waterway. Secondly, the building is sited in an open area to maximise visibility for users and to minimise risk of concealment and ambush;

- **building layout** to minimise risk of abuse, eg highly visible single access point. Vulnerable features like pipes, toilet cisterns and heaters should be hidden from public access;
- **building design** to prevent unauthorised access through eg low level window and ventilation openings;
- **building construction** – use of robust building materials.



**Figure 6.19** : *Elevation and plan of sanitary station at Coventry Canal Basin. Simple building configuration with a single point of access, overhanging eaves and small windows at high level discourage unauthorised access. External timber cladding attached to a block inner skin can easily be replaced if damaged.*

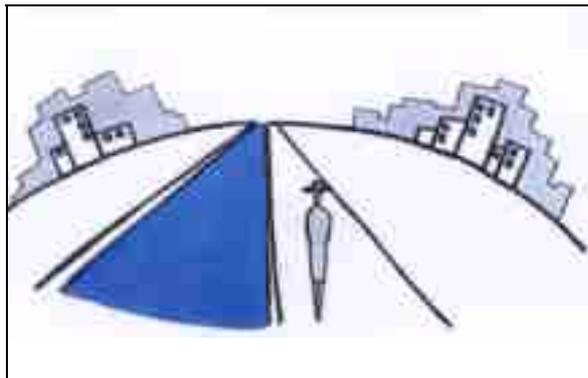
## **7 PUBLIC OPEN SPACE ADJACENT TO WATERWAYS**

The relationship between waterside open space and built form will have a major influence on the users' perception of towing path safety and therefore on the level of towing path use. The following factors affect a person's perception of the towing path and character of the waterway as a safe and attractive environment:

- degree of enclosure;
- the public and private interface between the towing path and the adjacent development;
- position of building entrances and window openings;
- building use and activities.

### **7.1 Towing Path Enclosure**

This section examines towing path enclosure affected by different height/width ratios. Enclosure is affected by the continuity of adjacent built form (determined by level differences, building heights and building lines) as well as by the nature of the towing path and its width and alignment.



**Figure 7.1 :** *Sketch example of a towing path environment with no sense of enclosure.*

*There is a disproportionately large area of open space compared to built development. The towing path user feels vulnerable and 'over exposed' and the sense of waterside enclosure is destroyed.*

In this situation the vast expanse of open space means that it is difficult for the towing path user to have a full visual appreciation of the space. The distance to the nearest site exit is greatly increased, whilst the range of surveillance from adjacent buildings is greatly reduced. The towing path user is effectively exposed to attack.



**Figure 7.2 :** *Sketch example of a towing path environment with a very strong sense of enclosure.*

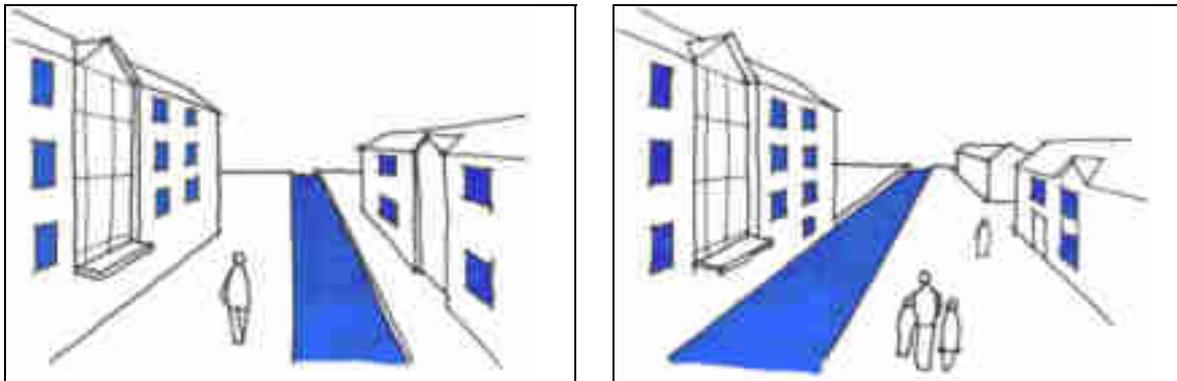
*The towing path is narrow with continuous high buildings sited to the back of the towing path. The towing path user is overpowered by the built form and experiences feelings of entrapment contributed to by obscure sight lines.*

## Under Lock and Quay

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This situation is typical of many historic areas of London's waterway network. Industrial buildings and warehouses were often built rising sheer out of the water on the offside and sited at the back of the towing path resulting in very strong sense of enclosure with the towing path overshadowed by the buildings themselves. A balance now needs to be achieved between the character of the waterway and towing path user comfort including perceived safety.

The narrow area for manoeuvre created by such development types results in a "no escape" option for potential victims who are thus prone to attack. This is often compounded by high-level security measures such as fencing and railings in association with built development and limited access points at right angles to the towing path.



**Figure 7.3 :** *Sketch examples of towing path environments where the towing path width and the scale of built development maintains the traditional waterside enclosure without being oppressive and provides the towing path user with good visual appreciation of their surroundings.*

### 7.2 Key Design Requirements for Generating Natural Surveillance

The following design requirements need to be achieved in order to give the site visitor good visual appreciation of their surroundings:

- the creation of linked and functional open spaces, eg seating areas and children's play areas. The dimension of each space needs to be designed to allow the site user to feel in control of that environment;
- non-continuous building lines resulting in the built form being punctuated by open space that is overlooked and has active edges. This allows for a variable width of towing path and a less dominant, uniform area of paving to the waterside frontage;
- waterside development should overlook green and open spaces in order to provide natural surveillance and policing;
- access points at regular intervals linking the towing path to the built development which are clearly visible by the towing path user giving reassurance that easy exit points are available.

Advice on the design and planning of soft landscaping appropriate for open spaces adjacent to the waterside is referred to in section 9.1.

# 8 DESIGN GUIDELINES FOR CREATING AND IMPROVING WATERWAY ACCESS

## 8.1 Access Points

Access to the towing path is generally restricted to pedestrians, although there are locations where limited access for cycles, operational and emergency vehicles is allowed.

The nature and location of waterside access points are important indicators to the waterway user of the environment they are about to enter and strongly contribute to the extent to which an area is used. For example, potential site users are less likely to use narrow, dark, sinuous accesses leading from areas of derelict land than those where visibility and visual surveillance are high.

However, part of the appeal of the waterside environment is the relative seclusion combined with the promise of unexpected views. A compromise therefore needs to be reached between the safety and security of site users and the retention of this element of waterway character.

In designing waterway access routes, the following points should be considered:

### Types of Access

Access to the waterway may take two forms:

- physical access where the site user can gain access to the waterside, eg via the towing path. This is only possible where land ownership permits;
- visual access whereby viewing points are created to the waterside from key locations, but physical access is denied.

A combination of visual and physical access is desirable along a stretch of waterway to create a variety of long, medium and short distance views that retain the unexpected and intimate qualities of the waterside environment.

### Location

Access points should:

- connect two points of activity eg a housing estate or car park, with a waterside focal point eg a bridge. Access points should not connect an area of derelict or vacant waterside land to a residential area;
- relate to bus stops, tube/railway stations and other public transport services;
- formalise existing desire lines where appropriate.

## Width and Form

Access points should:

- be sufficiently wide to allow the waterside user unobstructed views to their destination point. The preference is for access routes to be at 90° to the waterway where appropriate to accommodate this visual range;
- be of straight alignment and lacking kinks, curves and pinch joints;
- accommodate a splayed entrance point on to the waterside for maximum visibility;
- accommodate vehicle/cycle barriers where appropriate;
- not be designed in conjunction with seating areas where undesirables may lurk out of visual range.

## Number and Frequency

The number and frequency of access points will be dependent upon the waterside location and adjacent land uses (access through industrial/commercial premises for example, is not desirable). Access points should be sign posted giving the direction, distance and expected time to the next nearest access points in either direction based on a 3 mph walking speed.

## Boundary Treatments

Boundary treatments to waterside access points should:

- be appropriate to their waterside setting, eg use of traditional materials and form;
- allow for good visual range of the site user, without compromising the security of adjacent land uses;
- be subject to strict design and maintenance agreements between the owners of the access and the adjacent land. This will ensure repairs are undertaken regularly, unofficial accesses are stopped up and additions such as barbed wire are avoided;
- be devoid of doorways or alcoves where potential offenders could lurk unseen;
- screen existing service yards and external storage areas and prevent access to rear of industrial and commercial premises.

## Lighting

Lighting encourages use of the waterside after dark and an assessment should be made for each individual site as to whether 24 hour access is appropriate.

Descriptions of appropriate different uses and forms of amenity lighting are included in section 9.2.

### **Access for Emergency and Operations**

The heritage of the waterways, where accesses are narrow, means that access for emergency vehicles is not always possible.

From a safety viewpoint, access for police, ambulances and fire engines is desirable, providing that a satisfactory method of reporting and locating crime along the towing path can be achieved.

Proposed development schemes should accommodate access for emergency vehicles, and include demountable or removable bollards to prevent access by other vehicles. However, consideration must be given to design and installation of demountable and removable bollards to ensure that these features cannot be easily dismantled and used as missiles. The route should be integrated as part of the overall scheme ie it should be multifunctional whilst free from obstructions.

Where alteration to an existing access is not possible due to planning constraints (listed buildings etc) the use of motorbikes etc. might need to be considered by the Metropolitan Police and paramedics.

Issues regarding siting and design of signage are addressed in section 9.3.

## **8.2 Bridges**

The proposed siting of any proposed bridge should not be determined solely by considering the needs of the scheme which has engendered the bridge proposal, but also the effect of the proposed bridge on the waterway corridor. The effect of any bridge on the waterway corridor should include consideration of the following:

- navigational needs;
- environmental, visual and landscape impact on the navigation corridor;
- needs of the towing path users.

British Waterways have produced a Guidance Note on Bridge Design, which is included in Appendix 2.

# 9 WATERSIDE PLANTING, LIGHTING, FURNITURE AND HARD SURFACING

## 9.1 Planting

Planting is an essential feature of the waterside environment and may be effectively employed in deterring criminal activities; for example the use of dense masses of prickly plants such as Cotoneaster and Berberis can discourage illegal access into buildings and over fences (refer to chapter 6). However, poorly designed landscapes may provide the perfect cover for crimes to be committed eg cover for an ambush or burglary.

In the specification of planting, the following should be considered.

### Species

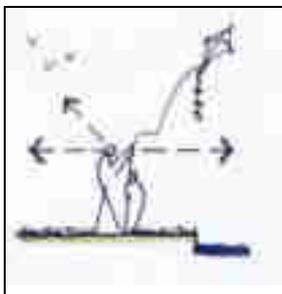
- native plants should be specified where possible;
- prickly species such as Cotoneaster, Berberis and Ilex (holly) should be planted densely to discourage illegal access to buildings.

### Siting

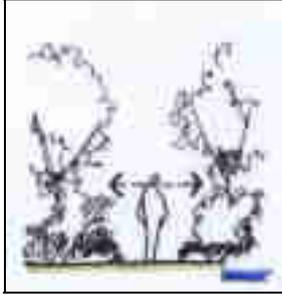
Planting should be used:

- in association with buildings to deter access, eg under windows;
- in association with security fences (on the opposite side of the fence to the footpath/road to prevent it being used as a hand or foothold) to help minimise the impact of the fencing;
- at suitable distances away from footpaths and other access points to prevent the creation of blind spots;
- at a safe distance away from seating areas to allow the site user maximum visibility.

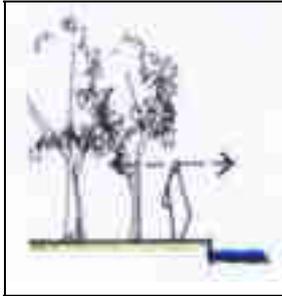
### Form



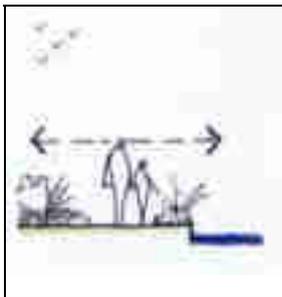
*Open grass areas maximise visibility for site users, and minimise opportunities for concealment and ambush, but they are not always desirable.*



*Dense planting above eye level creates maximum opportunities for concealment and ambush and also a sense of unease for the site user due to severely reduced visibility.*



*Tree avenues create an attractive landscape feature and allow views through.*



*Planting below eye level allows the site user full visual range. However visibility may be reduced through inadequate maintenance allowing the planting to grow out of control. (See below).*

**Figure 9.1 :** *Sketches of different planting forms.*

### Existing Planting

Wherever possible, existing vegetation should be retained and incorporated into the proposed landscape scheme unless its retention would cause the creation of a blind spot or hiding place. Where existing vegetation has a negative impact but is covered by a Tree Preservation Order, consultation with the Local Authority is essential to ascertain the options available.

### Maintenance

Maintenance is vital to the success of a landscape scheme or public open space and a maintenance agreement (detailing proposed operations and funding arrangements) should be in place prior to planting works commencing on site. Lack of maintenance will undoubtedly result in a lack of respect and therefore accelerated deterioration of an area.

Maintenance should include (as appropriate) operations such as grass cutting, hedge trimming, replacement of dead or defective planting, pruning of trees and removal of dead or dangerous branches, pruning of vegetation to keep it below a certain height etc.

Maintenance programmes should cover the period of plant establishment, usually 3-5 years depending on local authority requirements. This should then be followed by a long term management programme which picks up on the maintenance operations previously undertaken.

The selection of low maintenance shrub and tree species can contribute to keeping the maintenance of planted areas to a minimum.

## 9.2 Lighting

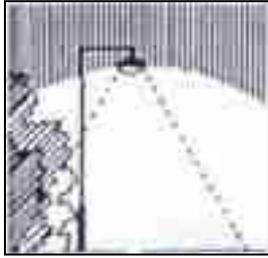
Whilst waterside lighting may be an operational requirement in locations such as locksides, encouraging access to the waterway after dark may increase levels of criminal activity that would not otherwise occur. This problem is compounded by the non-continuous nature of lighting along stretches of towing path. A careful assessment of the requirement for lighting should therefore be undertaken prior to specification.

### Siting and Design Issues

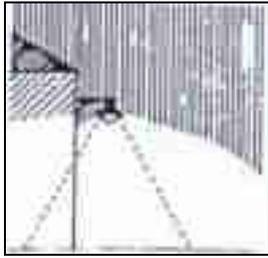
Issues to be considered in the siting and design of waterside lighting:

- Assess the requirement for lighting
  - is there sufficient use of the site after dusk to warrant a lighting scheme (summer and winter uses to be considered)?
  - should access to the waterside be encouraged after dark and is the lighting scheme comprehensive or does it literally stop half way along the towing path leaving the site user in the dark?
  - is lighting required 24 hours a day (tunnels etc.)?
  - is the existing lighting provision sufficient or is there potential to modify existing lighting to meet requirements?
- What level of lighting is required?
  - are there any local authority restrictions on lux levels?
  - minimising problems of glare to adjacent land uses and boaters
  - CCTV requirements for lighting
- Which style of lighting to specify?
  - consider vandal resistant structures in problem areas
  - reduce the clutter of structures on site through the specification of wall mounted or recessed units
  - if stand alone are specified, the method of installation should be adequate to prevent dismantling and should comply with manufacturer instructions
- Siting of lighting units
  - could the lighting units be located 'out of reach' of vandals eg on the offside of the waterway, high level lighting on buildings or structures
- Costs
  - who will pay for the lighting, electricity supply, repairs and maintenance?

## Different uses and forms of amenity lighting

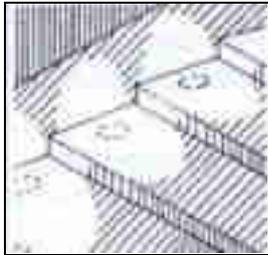
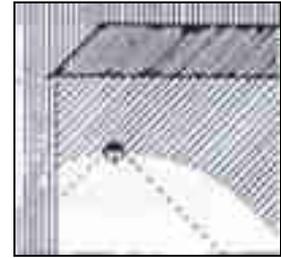


**Column Lighting** – will rarely be suitable in the waterway environment, but some public quaysides may be lit in this way. Care should be taken to avoid a municipal appearance by selecting a sympathetic design of light fitting, height of column and quality of light. The location of the columns should be carefully considered to avoid conflict with the different uses of the canal corridor

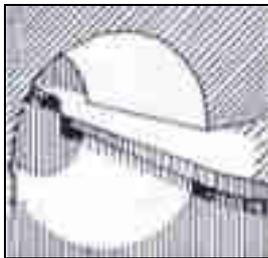


**Wall mounted** – wherever possible, necessary space lighting should be attached to existing buildings or walls rather than columns to avoid clutter.

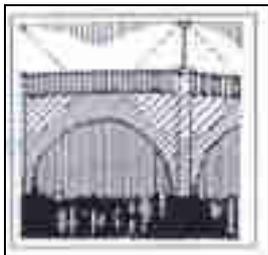
**Bulk head lights** – can highlight a building entrance and help to light a route but will not light large areas.



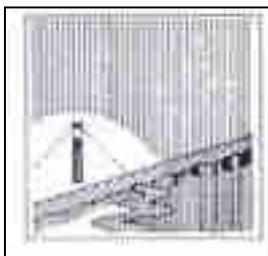
**Recessed lighting** – can be useful to accentuate steps and routes, and as up-lighting to highlight interesting features, but will not light larger areas. Recessed lighting is often preferred in withstanding vandalism.



**Bridge undercrofts** – can be lit in urban areas on busier urban towing path routes to improve safety. The light fittings should be vandal resistant and are better located on the offside of the waterway, ensuring that the lighting level is sufficient to adequately light the towing path.



**Bridge Lighting** – new lighting should be selected and located to enhance bridge design and to light at street level and access points to towing path. This may be done as an artwork.



**Bollard lights** – are not intended to light large areas but to accentuate certain points such as steps, path intersections, jetties and so on. They can aid orientation and contribute to a safe water's edge in areas where public use is very likely after dark. In areas prone to vandalism, bollards may not be suitable. To minimise glare, refractors or louvres should be used in the light fitting to direct/diffuse the light. This is particularly important where bollards are used near boat moorings.

### 9.3 Waterside Furniture

Site furniture is prone to abuse in the following ways:

- vandalism and graffiti;
- dismantling and use of components as missiles;
- arson attacks.

All items of furniture specified in areas of high criminal activity should be robustly constructed/manufactured and securely installed preferably using below ground fixing following manufacturer advice. Where incineration is also a problem fire resistant materials should be employed.

The specification of site furniture should be consistent along a specific stretch of waterway to give the area a sense of cohesion.

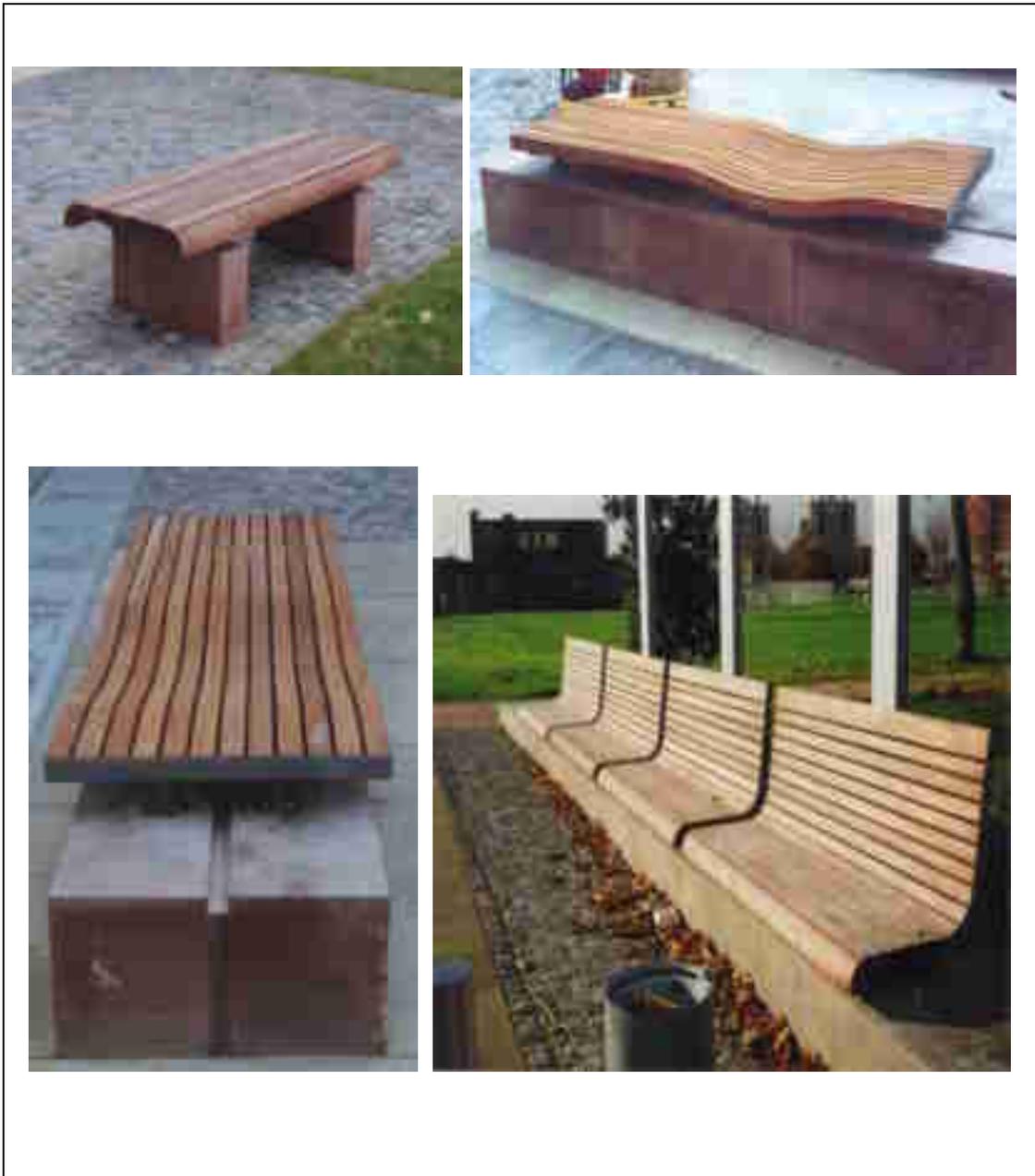
#### Seating

Seating is desirable in many waterside locations particularly in association with an attractive view or a popular meeting place. Seating may be formal eg park bench style seating, or informal eg the top of a low level wall. Informal seating may often be designed into a scheme inadvertently.

Inappropriate design of seating whether formal or informal can lead to problems of loitering and use of the seat as a sleeping place creating a general sense of unease for site users. In order to prevent such problems arising the following design details should be considered:

- the use of backless seats or benches;
- specification of arm rests along the sides and middle of the seat;
- specification of individual seats rather than bench style seating;
- careful scrutiny of drawings to assess inadvertently designed seating, highlight and eliminate potential loitering problems using divisions along the length of the seat etc as above.

Planting in association with seating areas should be low growing and maintained at a low level in order to preserve the user's visual range.



**Figure 9.1 :** *Photographs of seating products that have been specially designed and constructed to withstand vandalism. The structure of each bench is focused on strength, durability and low maintenance. (Photographs kindly provided by Pendlewood Fine Furniture)*

## Litterbins

Careful consideration should be given to the requirement for litterbins along the waterway. Litterbins often pose additional problems in terms of:

- servicing - regular rubbish collections are necessary to prevent a site becoming untidy and neglected;
- criminal damage by arson;
- potential deposition of incendiary devices.

In specifying litterbins along the waterway consideration should be given to:

- Location
  - the ease of access for refuse collectors and their vehicles;
  - the proximity of important buildings and other important structures such as electricity sub stations, cables etc;
- Specification
  - use of non-flammable materials
  - in the event of the explosion of an incendiary device a litterbin should be designed to direct the force of the blast upwards.

## Signage

Signage is particularly beneficial on long stretches of waterway with no particular landmarks and gives the waterway user's confidence in knowing their location in relation to roads, landmarks, access points etc.

Issues to be considered in the design of waterside signage include:

- The type of information to be displayed
  - distance to nearest telephone;
  - distance to nearest access point or road (kilometres with miles in brackets) with approximate timings, eg 3 miles per hour;
- Siting of signage
  - a consistent approach to the location of signage should be employed along the waterway;
  - signage should be specified as an integral feature of existing or proposed structures eg railings, walls or buildings to help reduce clutter and deter vandalism.
- Design of signage
  - a consistent approach to the style and lettering of signs should be adopted along the waterway;
  - where signage is to be used on a British Waterways' site, reference should be made to the British Waterways Corporate Design Manual.

### Public Art

Public Art can contribute to the visual enhancement of the waterway and create a sense of place as well as an unique identity.

The contribution of public art to a project may be expressed in a wide variety of ways, e.g. directional signs and interpretation panels, waterside furniture, fencing and boundaries and gateway/landmark features. Waterside furniture and other manufactured features such as seating, lighting, bollards, litterbins etc, can be designed in a distinctive manner, that will introduce character, local distinctiveness and interest into conventional and functional furniture and signs. Past experience has demonstrated that the key to the most effective public art comes from involving artist(s) in decision making from the initial design stages and from involving the community as this can aid in the adoption of a development or an improvement within an area.



**Figure 9.1** : *Photograph of Ironwork which provides an attractive element within the brickwork and allows limited views through.*

Issues to be considered in the siting and design of waterside public art:

- permanent artwork must be durable, easy to remove in the event of emergency and as maintenance free as possible;
- waterside art should be located carefully in relation to the towing path, lockside areas and other operational/functional elements;
- siting, scale, form, design and materials of waterside art must enhance both the historic built fabric and the landscape character of the waterway;
- siting should form an important part of the design, either being an integral part of a functional element or fitting; and
- use of robust and non-flammable materials.

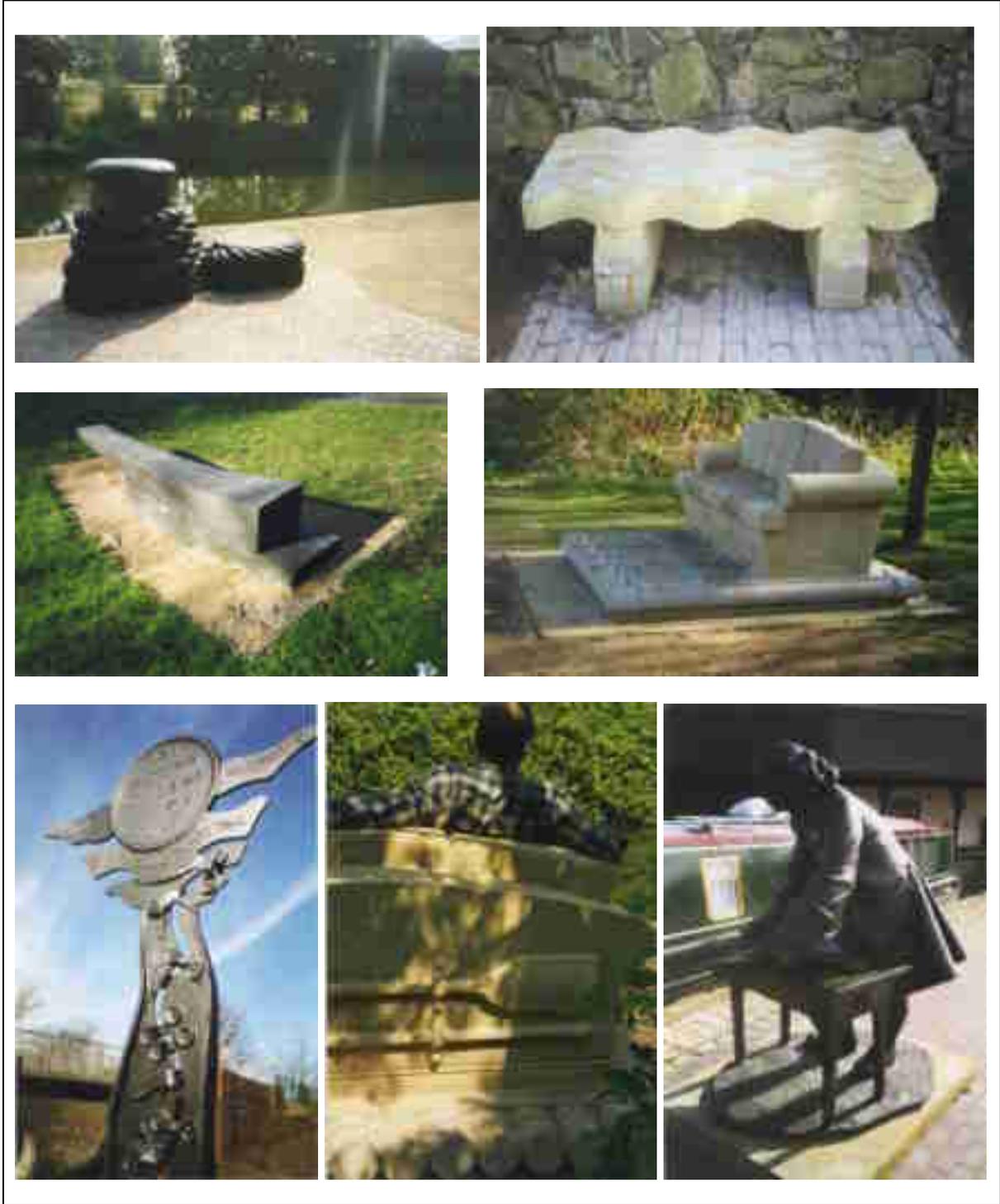


Figure 9.2 : Photographs of Arts Lottery Project, Coventry Canal.

### Vehicle/Motorcycle Barriers

Although British Waterways encourages the use of the towing path for leisure cycling, in many instances the towing path is of insufficient width to accommodate more than pedestrian traffic.

British Waterways prohibits the use of the towing path by motor cycles and vehicles. Therefore, vehicle and/or motorcycle barriers are introduced along the towing path at key access points. Such features are in the form of bollards, gates, or s-shaped barriers which allow free flow of pedestrian traffic, but deter access for selected user groups.

There is a tendency however for the area around cycle/motorcycle barriers to be badly damaged and where possible barriers should be attached to adjacent structures to prevent bikers driving/cycling around the side of barriers.

Conflicts may arise where vehicles in general are not permitted, but access for emergency vehicles is vital (refer to chapter 8). This is true of most areas of waterside, resulting in the requirements for demountable barriers or lockable gates, with keys held by appointed personnel. In this instance such barriers along a given stretch of waterway will need to be opened by a single key or be easily identified by the emergency services, for example through the use of reference numbers.

Barriers which allow operational access should be set back from the road to create a lay-by into which vehicles can pull off road whilst the barrier is unlocked/locked.

## 9.4 Hard Surfacing

Hard surfacing along the waterway falls into two categories:

- rigid unit surfacing such as brick, granite setts, stone slabs, concrete blocks, etc;
- flexible surfacing such as hoggin, asphalt, bitumen etc.

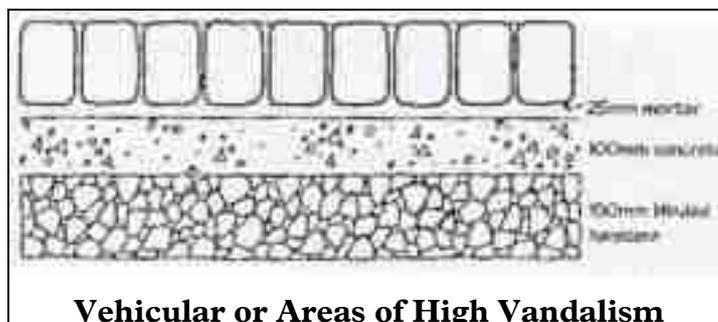
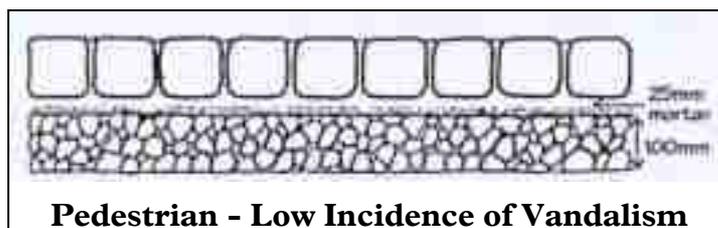
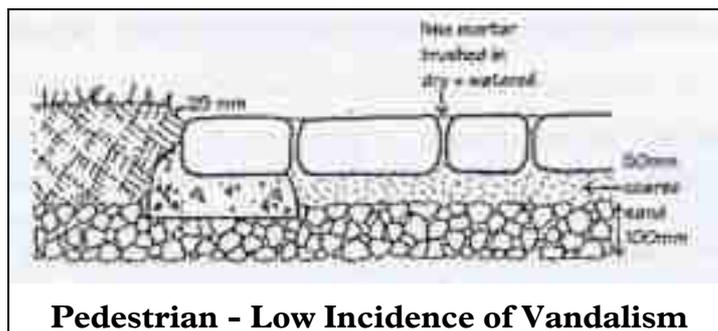
The specification and design of a surface should be specific to its use and capable of withstanding the maximum load it is likely to bear eg fire engine, lorry etc. Failure to do so will result in damage and the appearance of neglect.

Materials such as brick, granite and stone are traditionally associated with the London's waterways and their use is to be encouraged in helping to conserve waterway heritage and particularly in conservation areas, within the curtilage of listed structures or in locations that would affect the setting of listed and historic structures. Traditional bonding patterns and mortar mixes should also be used as illustrated overleaf.

Rigid unit materials are more easily dismantled than flexible surfaces and this obviously poses the problem of theft of materials from site and their use as missiles. In areas of criminal activity where the heritage of a site demands the use of traditional materials, the specification for bonding should be altered to give extra strength and cohesion to the surface as illustrated below.

Examples of good practice for the specification of unit paving are shown below:

## Stone Setts



**Figure 9.3 :** Sketch cross sections illustrating different laying and jointing methods for stone setts.

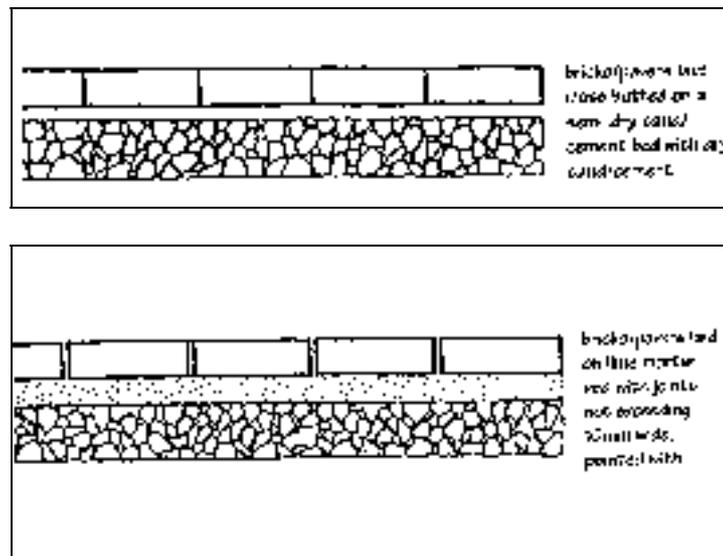
Stone setts have been traditionally used in those areas where usable stone naturally occurs, but were also transported to other areas such as London at a later date when a wider transport network was developed.

Stone setts should be laid on a coarse sand bed, or semi-dry cement/sand mortar, or mortar depending on the location and function. Additionally, a base of concrete may be used where extra strength is required, eg

- where setts are forming a narrow band or edging;
- where heavy vehicles will traffic;
- where there is a high incidence of vandalism.

Joints should be as narrow as the pointing method allows.

### Brick Paving



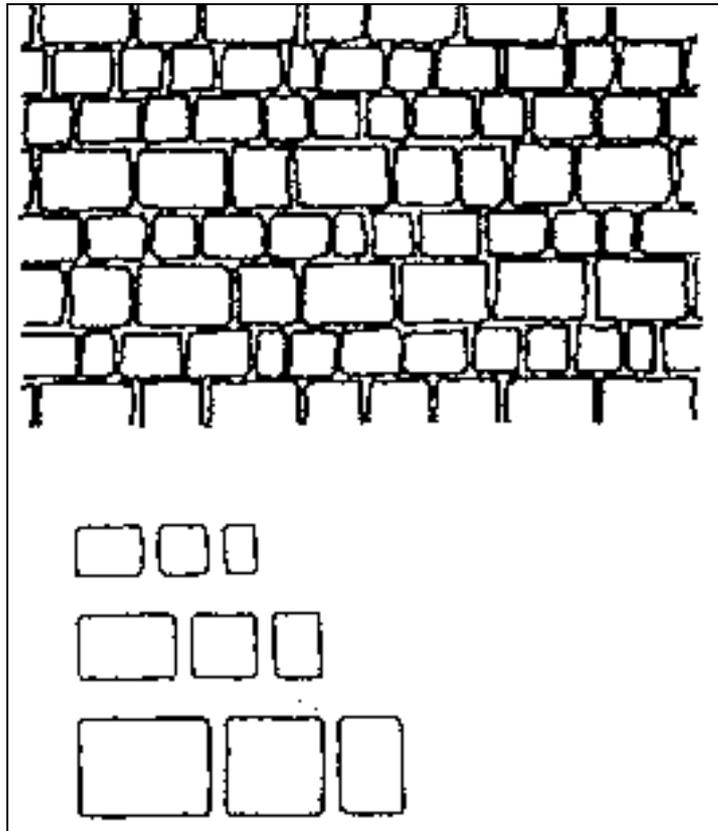
**Figure 9.4 :** *Sketch cross sections illustrating different laying and jointing methods for brick paving.*

Brick paving has traditionally been used where stone was not readily available for surfacing areas of more intensive use – lock quadrants, bridge ramps, etc. Brick paviors should be laid close butted with sand or dry mortar brushed into the joints. However, brick paviors with chamfered edges should not be used as the paviors give a “municipal” appearance which is at odds with the historic, functional canal construction.

Bonding patterns should reflect the simple, utilitarian character of the historic canal environment and avoid decorative paving patterns (eg not herringbone or basket weave).

In areas where vandalism is a problem or ground movement is very likely, it may be necessary to lay the brick paving on a concrete foundation with a mortar bed.

### Concrete Block Paving



**Figure 9.5 :** *Sketch showing different sized concrete brick paving blocks that can be used together to give a coursed random appearance.*

Concrete block paving can be useful and cost effective on larger areas of paving in areas where use of original materials is less critical. Care should be taken to choose a product that is similar to or complements original materials both in colour and texture in order to ensure that the new material is sympathetic with the historic character and fabric of the waterway corridor.

To avoid a uniform “municipal” appearance there should be a variation in unit size.

Large areas of concrete block paving should generally be avoided, but where criminal activity is extremely high, there may be no other alternative than to substitute traditional paving for a flexible surface material.

### 10 **ROLE AND IMPORTANCE OF UNITARY DEVELOPMENT PLANS, LOCAL IMPLEMENTATION PLANS, PLANNING APPLICATIONS, AND MAINTENANCE AGREEMENTS**

Once a development has been completed, the main opportunity to incorporate crime prevention measures to eliminate or reduce criminal activity have been lost. Safety and security considerations need to be evaluated at the outset of any project, and at every stage of the design process thereafter. British Waterways and the Metropolitan Police are of the view that safety considerations begin at the Local Plan Policy level. It is, therefore, crucial that the London Borough Councils:

- consider the guidance contained in this document when preparing development briefs, development plan policies and future local implementation plans;
- consider the guidance contained in this document in the negotiation and determination of planning applications;
- refer developers and their design teams to this document in order to assist them in designing waterside developments.

In preparing development plans and future local implementation plans as well as in determining planning applications the London Boroughs should consider the opportunities to:

- encourage the use of the towing path as both a potential commuter and recreational route;
- seek to include the towing path within the planning application boundary of waterside development sites;
- ensure new waterside developments on the towing path side, particularly residential include the creation and improvement of existing access points to the towing path and the improvement of the towing path itself for pedestrians and cyclists as an integral part of any waterside development proposals;
- ensure new waterside residential developments on the offside, particularly residential include bridge crossings where appropriate to link new development with the towing path to encourage its use as a recreational route for pedestrians and cyclists (rather than creating a walkway on the offside) as an integral part of any waterside site development proposals;
- ensure new waterside developments utilise the waterspace to accommodate trade boats, visitor and residential moorings and recreational uses, e.g. create or extend mooring basins and marinas as well as provision of boating facilities, etc;
- safeguard and encourage the development of residential and visitor moorings, marinas and other boating facilities;

- encourage the conversion of redundant waterside buildings for residential use and mixed uses including residential;
- protect and promote the amenity value of inland waterways within urban areas;
- encourage new waterside residential developments to utilise the waterspace for water recreation uses.

In preparing development plans and in determining planning applications for waterside sites, the London Boroughs should also consider the opportunities to encourage access to and use of the towing path through:

- siting and orientation of new buildings which positively address the waterway;
- design which ensures that any new waterside buildings must be of human scale at ground level whilst respecting the scale of existing waterside buildings and the waterway itself;
- appropriate use of barriers and boundary treatments (as they are often the single most important design detail affecting the use of a site and associated levels of criminal activity).

In cases where the towing path is not included within the planning application boundary of waterside development sites, access improvements on the towing path side and offside, should be either achieved through conditions or secured through planning obligations.

Furthermore, the following opportunities related to waterside development sites could be secured through planning obligations in order to encourage the use of towing paths and waterways, which will generate natural surveillance and policing:

- the creation and improvement of existing access points to the towing path and the improvement of the towing path itself for pedestrians and cyclists;
- commuted sums to assist in a waterway enhancement scheme in the vicinity of an application site;
- works to ensure that off-site landscaping occurs, and agreement given for the use of British Waterways' land;
- creation or extension of mooring basins and marinas;
- provision of boating facilities;
- introduction of boundary improvements;
- reinstatement of waterway walls affected by development;
- inclusion of commuted sums for ongoing maintenance of the towing path as a sustainable route, together with running costs for water buses and passenger boats.

The boundary with the waterway forms the public and private interface and has a major influence on the perception of the environment. As stated in section 3.5 the DETR are encouraging the use of the towing path and waterway networks for walking, cycling and public transport.

Where possible, waterside areas should become an integral part of adjoining developments and as such their management should be considered in the context of the development as a whole.

British Waterways and other canal owners receive no specific central grant funding to invest in and maintain towing paths. Therefore British Waterways are dependent upon maintenance agreements with the London Boroughs and external funding for access and towing path enhancement works as part of urban regeneration schemes and recreational initiatives. The latter schemes generally cover capital costs only and provide no revenue support for ongoing management costs. **Management and ongoing maintenance are key issues relating to London's long-term use of the towing path network as safe and sustainable routes.** Therefore, there is a need to encourage the London Boroughs to:

- enter into maintenance agreements with British Waterways;
- ensure all waterside development sites include access and towing path improvements as an integral part of the proposals within the planning application, transport assessment and green transport plan;
- ensure ongoing maintenance of the towing path forms an integral part of an overall site management plan and associated maintenance regimes through planning condition or planning obligations.

Waterside areas are now becoming an integral part of adjoining developments and as such their management has to be considered in the context of the development as a whole.

It is also hoped that the London Boroughs will use this document as an advisory document in the preparation of development plan policies and development briefs and as a material consideration in the negotiation and determination of planning applications.

## 11 MANAGING CRIME

Crime and anti-social behaviour is not only affected through design, it is also affected by how a site or area is managed. The success of this management itself is reliant upon how well the site is designed. The following areas should be addressed:

### Maintenance Regimes

Keeping a site free from graffiti, litter, broken glass, abandoned bicycles and cars etc, can raise the profile of a site and encourage respect for an area. Boundaries should be kept in a clean well maintained state and a development should make it clear from the start whose responsibility it is to maintain specific boundaries. Issues such as broken lighting and windows should be addressed immediately giving the impression that the site is in use or under surveillance all the time. Structures should be kept as clean and presentable as possible with graffiti removed as fast as possible so as not to encourage further incidents.

Ideally each development should be issued with a maintenance document which is agreed to as part of the lease/ownership and which has the ability to be enforced.

### Gate Closures and Locks



At present there is an inconsistent approach taken to managing access onto the towing paths with some London Boroughs locking the gated access to the towing path at night and others leaving the gates unlocked. This leads to some instances of dead end effects where users have to turn back or clamber over fences in order to get out and others are unsure as to whether to commit themselves to using the path at all.

This can be addressed by developing London wide timing strategies where gates are locked at the same or very similar times and this fact is widely advertised. These would cover not only the London Boroughs but larger or public developments which have access onto the waterway.

**Figure 11.1** : *Photographic example of gated access*

### **The Use of Closed Circuit Television (CCTV)**

CCTV is a formal way of managing crime on watersides and is usually employed in extreme circumstances where other less formal levels of surveillance are insufficient in deterring or reducing the levels of criminal activity. A number of factors need to be considered in specifying the use of CCTV:

- have other more preferable methods of crime prevention been tried and tested at the site?
- is the frequency and severity of crime sufficient to warrant such measures?
- who will fund the cost of, monitor and manage such an operation?
- how can the system be installed without either detracting from the historic waterside character or cluttering up the site? Can the cameras be attached to existing buildings (consider the limitation which will be imposed where listed buildings are concerned)
- is CCTV appropriate to the location of the site? eg CCTV is not appropriate in predominantly vegetated or rural locations.

It is important to remember that CCTV should only be used as a tool within an integrated security system.

### 12 COMMUNITY AWARENESS AND PARTICIPATION

A very powerful and useful tool in tackling crime is the community itself.

Community based projects can take the form of:

- consultation with community groups, residents associations etc. during the design stage of the scheme;
- formation of working groups for the implementation of a scheme;
- involvement in community and public art projects;
- recruiting local residents in the maintenance of a scheme eg maintenance of vegetation, Boat Watch, residential boat groups (CHUG - Canal in Hackney User Group);
- Neighbourhood Watch Schemes.

The aim of community involvement is to instil a sense of ownership and pride in a site and hopefully suppress the desire by members of the community to wilfully damage or destroy the waterway environment. A balance needs to be drawn however, as involving the community can often be a complex and long winded route to designing and implementing a scheme and can frustrate the commercial demands of developers and their clients.

London's Waterway Partnership employ Community Project Managers who work with the community and interested groups, act as a local point of contact and help to develop initiatives and projects which will create and sustain a safer waterway environment in London.

### 13 CONCLUSIONS AND RECOMMENDATIONS

Crime and anti-social behaviour is an unavoidable feature of our society, however it is one that can to the greater part be controlled. The waterways through their nature and usage present opportunities for crime to happen, not only to the detriment of the waterway users but also the surrounding land users and the local community in general.

Throughout this document there are examples of good and bad practice in the treatment of waterside sites both existing and future developments. However, the overriding theme in order to design out crime is the need for early consultation and the inclusion of design measures at the planning stage as part of an integral approach to new development and improvement schemes, rather than ad hoc measures being implemented once a development has been completed.

Developers and local planning authorities, in consultation with the CPDA's, ALO's and British Waterways have a crucial role in ensuring that potential to eliminate or reduce crime is maximised while safeguarding and enhancing the historic fabric and visual quality of the waterway environment. It is hoped that this document encourages such practices to the benefit of all.

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### SUMMARY OF CURRENT CRIME PREVENTION LITERATURE AND INITIATIVES

#### Review of Literature

The Police Service as a whole are instrumental in publishing literature and launching initiatives and schemes to help combat crime throughout the UK. The literature issued is aimed at a wide range of user groups from school children and homeowners through to planners and architects, and this is reflected in the format and style of the literature itself.

The documentation published is prescriptive giving positive and practical guidance on improving safety and security, in some cases with direct reference to waterways eg:

- **Boat Mark** - produced in conjunction with the British Marine Industries Federation, which gives information regarding marking of boat fixtures and fittings for easy tracing in the event of theft.
- **Get Wise** - produced by the Police and aimed at children. It gives appropriate action to be taken in the event of an accident adjacent to water.

Several documents/initiatives are of particular relevance to the issue of reducing crime through design along the waterways:-

#### Secured by Design (SBD)

This is a major police initiative that has been running for over 10 years. The objective of the scheme is to achieve a good overall standard of security for a variety of building types and their immediate environment (including design of soft landscaping and lighting schemes) which will help deter criminal and anti social behaviour within their curtilage. A minimum standard is therefore set for certain building features eg windows and doors must comply with the relevant British Standards for enhanced security. Different standards are applicable to residential, commercial multi-storey buildings and sheltered accommodation.

Some local authorities refer to these guidelines in their development plans and, for certain buildings insist upon compliance with this initiative.

In anticipation of increased use of these guidelines, it is envisaged that a national centre is to be established to co-ordinate and run these schemes.

The SBD initiative should be read in conjunction with this document, and considered in relation to all waterside development.

Further information, including design guidelines can be found on the SBD web site ([www.securedbydesign.com](http://www.securedbydesign.com)).

#### The Secured Car Parks Award Scheme

This scheme was launched by the Association of Chief Police Officers in 1992, and is sponsored and administered by the Association of British Insurers and the Automobile Association.

# Under Lock and Quay

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It gives guidance to car park owners, operators and developers on establishing and maintaining a safe, secure car park facility.

The document sets out a list of criteria to be met and looks at a number of ways in which crime levels can be reduced, for example, through surveillance, lighting, signage, access, layout and management practices.

The owner or operator undertakes a self-assessment against the set criteria which is subsequently reviewed by a police officer and, subject to outcome, an award can be claimed. The scheme helps focus attention on a facility which is often dangerous but overlooked.

This document is relevant to car parks located adjacent to waterside areas.

## Defensive Planting

Several guides have been produced by the police regarding the role that planting has to play in deterring crime. Guidance ranges from technical literature for use by developers and local authorities in the design of large scale landscape schemes, to glossy pamphlets regarding effective garden design, aimed at the general public.

The guidance lists species of plants which can be used effectively and also details measures to prevent planting, turf etc. being stolen from a garden or public area. This information should be considered in relation to waterside planting schemes in association with residential, commercial and industrial developments to reduce the overuse of more traditional crime reduction techniques such as barriers, barbed wire and finials.

## Public Conveniences Problem Reduction Guide

This document is published by the Staffordshire Police Crime Reduction and Community Safety Unit.

Through the use of case studies, the document highlights problems encountered with this type of facility alongside examples of good practice where potential problems have been reduced through design measures. It also addresses issues of disabled access and gives a self checklist to ensure certain criteria are met.

The Public Conveniences Problem Reduction Guide is particularly applicable to sanitary station design along the waterways and should be cross referenced with the information contained in this document.

It should be noted that the above review of literature and initiatives barely scratches the surface of documentation, experience and advice available from the CPDA and ALO. Local Planning Authorities should encourage potential applicants to make early contact and liaise with the Metropolitan Police during pre planning application submissions particularly with regard to major waterside development schemes.

### BRITISH WATERWAYS GUIDANCE NOTE ON BRIDGE DESIGN

Bridge crossings over London's waterways, particularly those poorly designed have the potential to affect both formal and informal waterway recreation as well as the wider leisure and tourism industry.

As a result, British Waterways will only consider a highway or rail bridge over waterways in the event that no alternative infrastructure improvements are proven feasible.

Any proposed location for a new bridge should not be determined solely by considering the needs of the scheme which has engendered the bridge proposal but also the effect of the proposed bridge on the waterway corridor. The impact of any bridge on the waterway corridor should include consideration of the following:

- navigational needs;
- environmental, visual and landscape impact on the waterway corridor;
- bridge design and aesthetics; and
- needs of towing path users.

#### Navigational Needs

A skew bridge would generally be considered unacceptable as it would extend the length of straight navigation beneath the bridge. Any bridge should be perpendicular, unless it can be proven to there are good reasons not to.

Navigational clearance needs to be established. These will vary from navigation to navigation and from site to site owing to considerations of craft dimensions, one or two way boat workings, horizontal alignment and visibility, proximity to other structures, dredging and other maintenance activities. British Waterways strongly recommend that the guidance note advises developers to contact British Waterways' London Regional Office (020 7432 8300) at an early stage to define the following:

- Headroom over navigation
- Headroom over towing path
- Navigation width
- Towing path width
- Navigation depth
- Forward visibility for navigators and towing path users.

Any highway bridge crossing will need to clear the navigation in a single span and the towing path must pass under the same span as the navigation. Piers within the waterway would be considered unacceptable to British Waterways. Any footbridge design must have the ability to convey floodwater without hindrance. Furthermore, any changes to existing bridge parapets must take into account flood defence requirements.

# Under Lock and Quay

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## Environmental, Visual and Landscape Impact on the Waterway Corridor

The impact of the bridge on the waterway environment will require detailed consultation with British Waterways. Not only are bridge aesthetics of great importance but also the setting of the bridge on the local and wider landscape must be considered.

- London's waterways create linear corridors. Bridges are seen by waterway users as part of a sequence of structures, most of which are contemporary with the construction of the canal. Bridges are viewed at leisure by users whether travelling on foot at walking pace, from a boat, fishing at close quarters or from a distance.
- British Waterways recognise that an open parapet on a road bridge would allow road users to view the navigation and have the advantage of a weight saving over masonry parapet. However, British Waterways are concerned that appropriate attention is paid to screening views of vehicles. This could be achieved by incorporating into the bridge design a decorative parapet detail which acts as a visual screen or distracts the eye away from the vehicles crossing over the bridge.
- With regards to setting, equally important as to how the new structure usually connects to existing features. Junctions that neither meet in the vertical nor the horizontal plane wherever possible. The wing wall directions should generally be parallel to the transport mode being carried across the navigation. Consideration needs to be given to surfaces both beneath and above new bridges, respecting the character and scale of the existing environment. Civil engineering works associated with bank piling and protection need to be similarly integrated with the original canal bank. Adequate land must be allocated to achieve the ramp and supporting bank to run parallel to the navigation.
- High embankments are inappropriate being visible at great distance and creating an impact that can be wholly intrusive.
- Planting should be integral with the design of the bridge and should seek not just to replace removed vegetation but to enhance the total waterway scene.

## Bridge Design and Aesthetics

When considering the aesthetics of the bridge there are two main options:

- a striking dramatic contemporary structure may well be appropriate and capable of representing the heritage of the future; or
- a low key design reflecting the scale, style, material, proportions and heritage of the waterway as a whole.

In either case British Waterways requires a high quality, well designed and detailed proposal.

The construction of the canal network marked a period of astonishing innovation in engineering and architectural design, using new materials such as cast iron. Therefore, British Waterways believes that opportunity now exists to apply similar ingenuity to the design of new bridge structures. Such a philosophy extends beyond the simple substitution of modern materials for old but requires a fresh approach. However, all design solutions should be derived from a contextual analysis of the setting, the use and future potential of the waterway for leisure and tourism purposes and of course an understanding of the hydrological requirements of the water over which it is passing. It is crucial to build in sympathy with the historic character and fabric of a waterway in order to enhance the waterway environment, ie the appropriate aesthetics for any new bridge crossings over any waterway must integrate the new respectfully with the old, reflecting the scale, style, material, proportions and heritage of the waterway as a whole. However, this requirement does not preclude new high quality contemporary design solutions nor does it call for a pastiche of historic road or footbridges.

A cursory look to the past can be very informative in designing for the future. Key issues relate to scale, mass, form, shape, height, depth of deck, span, symmetry, proportion and solid to void relationship.

Footbridges over water do not need to comply with the technical requirements for road bridges, and therefore have much more freedom of design.

Developers are strongly advised to contact British Waterways in order to obtain the fullest information on Codes of Practice for works affecting British Waterways. Aspects which will need to be discussed with British Waterways at an early stage with regard to bridge aesthetics include:

- **Scale, style, proportions and massing**
- **Materials and facings** - should generally be in keeping with those found locally. There is, however, a presumption towards an appropriate brick or stone, with the facing material and bond pattern reflecting the local vernacular.
- **Colour**
- **Architectural features** such as string courses, pilasters, pilaster caps and patterned brickwork. It is important that the bridge expresses its structural form and that such architectural features are inherent in the design and not “add-on extras”. an arched bridge would be preferred as traditional waterway bridges have curvature. Adding fake historical detail would be unacceptable to British Waterways on design and safety terms. Therefore, a beam bridge with false arch facades would be considered unacceptable as, i.e. an arch built onto the face of a flat box section bridge can be lethal for a boater who has adjusted to a square headroom beneath the dark soffit, suddenly has to duck to avoid an arch on merging into bright sunlight.

## Needs of Towing Path Users

Safety and security considerations for the towing path users and boaters must be evaluated at the outset of any project, and at every stage of the design process thereafter.

- Any bridge design proposals should provide direct pedestrian access to the towing path from the bridge. However, it is preferable that there be no pedestrian access to offside abutments of canal bridge in order to prevent graffiti.
- The environmental quality of the underside of any bridge must be attractive and not intimidating nor oppressive for towing path users and boaters. There should be no 'dead areas' prone to vandalism on towing paths under bridges. All canal and river bridges will generally be seen by slow-moving viewers, principally on the water or along the towing path. The bridge soffit is visually important as it is seen by pedestrians and boat users as they pass underneath. Forms of structure which give visual interest on the soffit should therefore be chosen and the quantity and quality of detail are very important. Surface texture and modelling are necessary and natural materials such as stone, brick and timber are particularly appropriate for river and canal bridges.
- The towing path under the bridge should be surfaced in material consistent with the character of the waterway.
- British Waterways do not generally encourage bridge designers to incorporate ledges and holes suitable as nest/roost sites for birds as these can:
  - be used by drug dealers to hide their deals/packages;
  - detrimentally affect the environmental quality of the underside of any bridge for towing path users and boaters. Bat boxes can be designed and used where appropriate.
- The noise impact upon the waterway environment resulting from a new road bridge crossing must be considered. If noise levels are too great mitigation measures must be introduced.

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