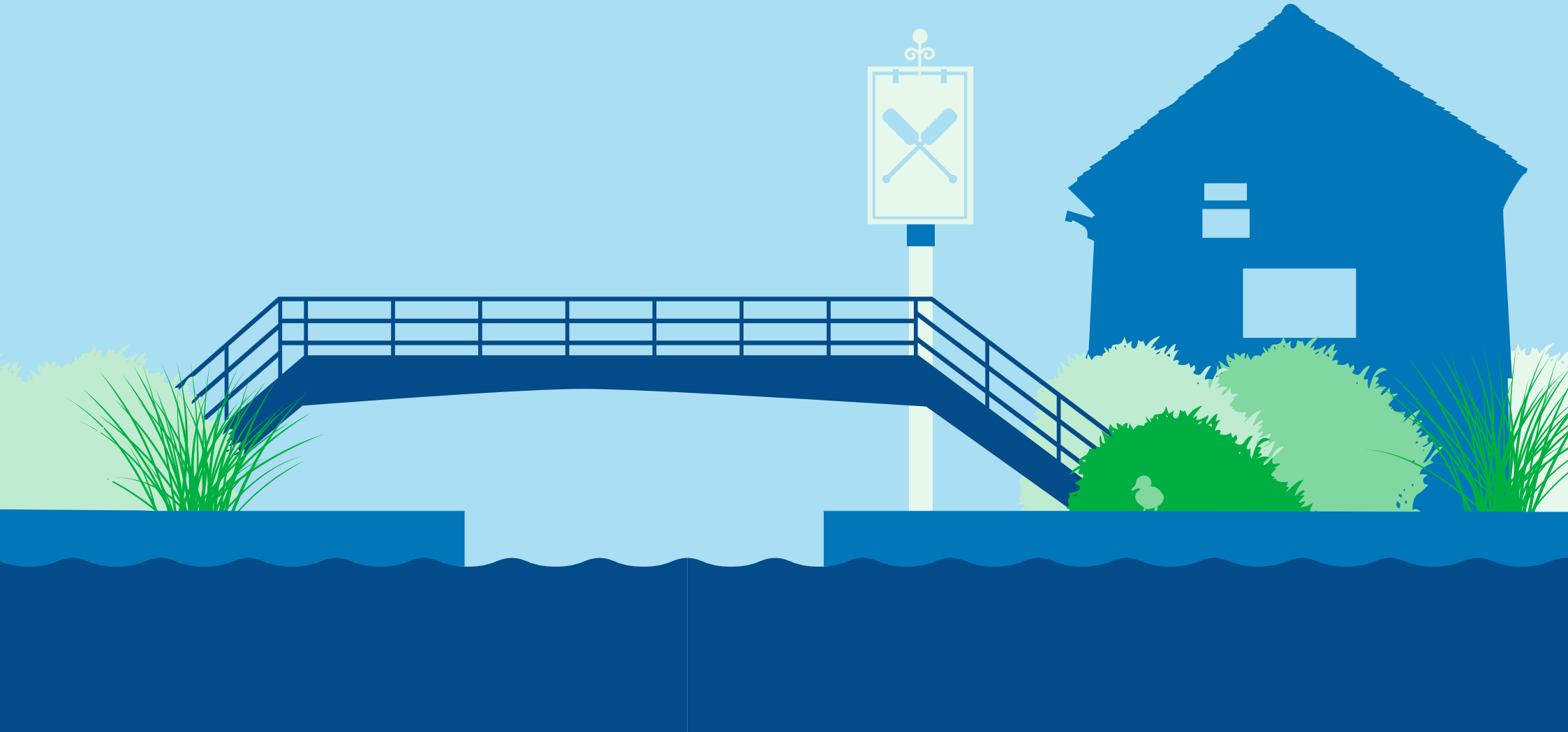
Design Handbook

Medway Navigation

Environment Agency



Contents

Introduction

1 Introduction
3 Purpose of the Medway Navigation Design Handbook
4 Consultation
5 Aims and Objectives
6 Legal Duties
6 What is Good Design?
6 Design Life
8 Access for All
8 Environmental Sustainability
11 Enhance Biodiversity
11 Risk Assessment
11 Construction Design and Management
12 Safety by Design
12 Design Element Sheets
13 Is Planning Permission Required?
15 Carbon Reduction

Site Planning

18 Site Planning
19 Site Planning Check List
19 Site Layouts
19 Integrated Lock Sites
19 Separated Lock Sites
20 East Lock: Integrated Lock & Sluice Example
21 Porter's Lock: Separated Lock & Sluice Example
22 Porter's Sluice: Separated Lock & Sluice Example
23 Site Components
23 The Towpath
23 The Lockside
23 Sluice Structures
23 Mooring Platforms
24 Mooring Planning Issues
24 Bridges
24 Lock Islands
25 Landscape and Ecology
25 Mature Trees
25 Tree and Vegetation
26 Climate
27 Recreation
27 Access and Circulation
27 Ancillary Facilities
27 Hydrological

Contents

Lock Chamber Refurbishment

29 Anatomy of a Lock
30 Lock Character Refurbishment
30 Lock Character Appraisal
30 Aesthetics
30 Lock Chamber Fixtures
31 Materials
31 Brick Facing
32 Engineering Brick
33 Concrete Copings
34 Concrete Gunite Facing
35 Timber Fixtures
37 Lockside Design Considerations
37 Locksides
38 Lock Quadrants
40 Lockside Mooring Bollards
43 Indicative Lockside Bollard Layout
44 Lock Staircases
46 Egress Ladders
48 Safety Accessories

Moorings

50 Background
50 Lock Moorings
50 Onshore Moorings
51 Offshore Moorings
51 Alignment
51 Length
51 Materials
52 Steps
52 Decking
52 Ancillary Facilities
53 Offshore Moorings
54 Canoeing
55 What Should Designers Consider?
55 Further Sources of Information
56 River Moorings
56 Timber Staging
56 Pile Capping
57 Cladding
57 Riser Posts
58 Residential Moorings
58 Integration of Residential Moorings
58 Planning Consent
58 Controlling the Appearance of Boats
59 Site Location
59 Standard of Facilities
59 Management Issues

Contents

Towpath

61 Background
61 Towpath Surfaces
61 Sealed Surfaces
61 Concrete (cast in situ)
63 Brick Paving
64 Stone Setts
65 Concrete Blocks
66 Bound Gravel
66 Sealed Gravel
67 Unsealed Surfaces
68 Compacted Crushed Stone
68 Crushed Stone (Hoggin)
69 Rolled Gravel and Shingle
69 Bitumen Macadam & Chippings
70 Designers Check List
70 Further Sources of Information

Surfaces for Accessibility

72 Background
72 Types of Path
73 Standards and Specifications
74 What Should Designers Consider?
74 Further Sources of Information

Navigation Edges

76 Background
76 Bank Erosion
76 Bank Stabilisation
77 Survey
77 Landscape
77 Biodiversity
77 Heritage
77 Recreation
77 Safety
77 Maintenance and Costs
78 Riverbank Stabilisation Techniques
78 Structural Revetments and Piling
79 Sheet Steel Piling
80 Examples of Navigation Edge Treatment
81 Riverbank Stabilisation Techniques
81 Concrete Bagwork
81 Concrete Edges
81 Vegetated Edges
81 Natural State
82 Backstop Planting
82 Reed Planting
83 Willow Spiling
83 Biodegradable Seed Blankets
83 Revetment Fabrics
83 Soil Filled Matting
83 Soil Reinforcement Grids

Contents

Navigation Edges

84 Means of Escape
84 Safety Booms
85 Structural Revetment and Piling
85 Summary of Potential Uses

Boundaries and Gates

87 Background
88 Fence Posts
88 Post Fixing
89 Arris Rails
89 Post and Wire Fencing
91 Metal Railings
93 Security Fencing
94 Retaining Walls
95 Timber Crib Walls
96 Boundary Improvement Campaigns
97 Guidelines for Timber Field Gates
97 Timber Field Gates
99 Gate Fixing Considerations
100 Management Issues
100 What Should Designers Consider?
100 Further Sources of Information

Steps, Ramps and Handrails

102 Steps
102 Standards and Specifications
103 Stepped Ramps
103 What Should Designers Consider?
104 Background
104 Ramps
104 When to Use?
105 Gradients
105 Standards and Specifications
105 What Should Designers Consider?
106 Further Sources of Information
107 Background
107 Standards and Specifications
108 Handrails
108 What Should Designers Consider?
109 Further Sources of Information

Contents

Waterside Furniture

111 Background
111 Types of Seating
113 Location of Seating Areas
113 Surfacing Around Furniture

Lighting

115 Background
115 Potential Lighting Locations

Angling

118 Background
118 General Angling Requirements
119 Ecology
119 Access and Car Parking
120 Wheelchair Access
121 What Should Designers Consider?
121 Further Sources of Information

Car Parking

123 Background
123 Determining the need for Provision
123 Standards and Specifications
124 Access
124 Safe Pedestrian Routes
124 Signage
124 Ticket Machines
124 Surfacing
125 Planting
125 Cycle Provision
125 Security
125 Key Points
127 What Should Designers Consider?
127 Further Sources of Information

Contents

Colour and Finishes

129 Background
129 Cast Iron
129 Steel
129 Galvanising
130 Locksides
130 Painting Steel
130 Sluice Structures
131 Elements of a Lock Gate
132 Sheet Steel Piling
133 Tropical Hardwoods
133 Temperate Hardwoods
133 Preservative Treatments
133 Protective Stains

Planting

135 Planting Context
137 Native Species
137 Sources of Nursery Stock
137 Planting – Check List
138 Hedgerows
138 Hedgerow Planting
138 Species Selection
139 Planting Whips
139 Standard and Larger Feathered Trees
139 Staking Feathered or Larger Standard Trees
140 Wildflower Establishment
140 Choosing Species Mixes
140 Seeding
140 Management
141 New Planting on ‘River Cliffs’
141 Existing Woodland on ‘River Cliffs’
142 Trees Near Structures
142 Planting Near the River
143 New Development and Planting
144 Establishment of Marginal Plants
144 Suitable Species

Contents

Signage

146 Background
146 Signage Principles
146 Signage Hierarchy
147 Category 1
147 Category 2
147 Category 3
147 Category 4
147 Totem Poles
148 Specification
148 Application
148 Use of Totem Poles and Pictograms
149 Example of Existing Signage at East Lock

Appendix

151 National Planning Policies
151 Local Planning Policies
156 Summary of Key Planning Policies – March 2024
166 Key to Acronyms

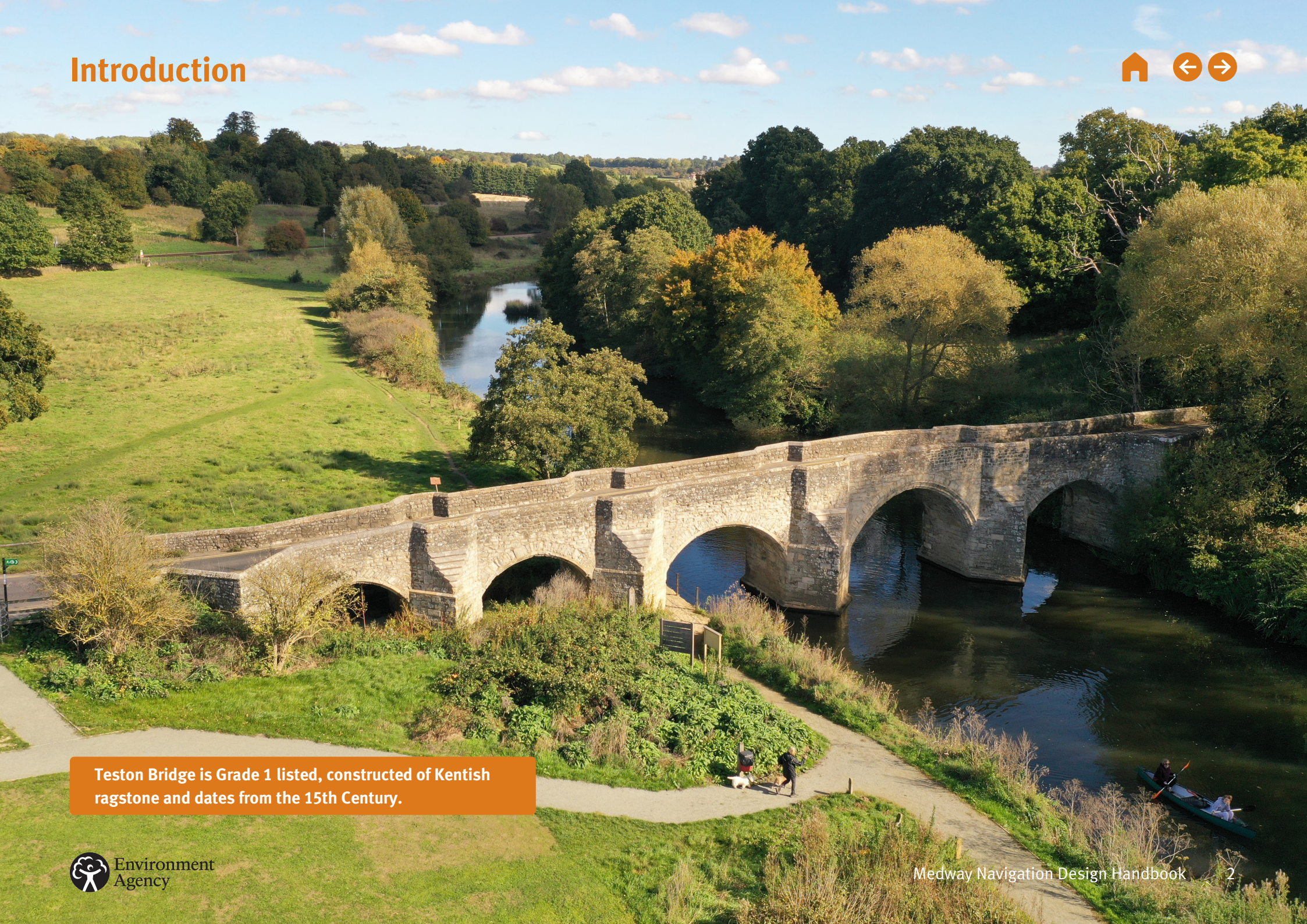
Introduction

The Upper Medway Navigation contributes to Kent's living historic landscape, which through functional engineering has created a resource of great aesthetic and ecological value. The navigation is valued for its richness and diversity, creating its own identity through its original form and palette of materials, providing a common thread through the sequence of changing landscapes.

The Navigation comprises of a 19 mile (31km) freshwater section of the River Medway. It stretches from the footbridge known as Friendship Bridge immediately downstream of the Leigh Flood Storage Area, to the west of Tonbridge to Allington Lock, the river's tidal limit, to the North of Maidstone.

As the current incumbent navigation authority, the Environment Agency (EA) is entrusted with the responsibility for the ongoing preservation and maintenance of the navigation. We take this responsibility with the utmost seriousness and are committed to upholding the highest standards. Consequently, we have renewed the design handbook to assist all interested parties in adhering to strict standards and guidelines.

Introduction



Teston Bridge is Grade 1 listed, constructed of Kentish ragstone and dates from the 15th Century.

Environment Agency

Introduction

Purpose of the Medway Navigation Design Handbook

The purpose of this Medway Navigation Design Handbook (MNDH) is to guide the Environment Agency and its partners to protect and enhance the environment of the Medway Navigation, by promoting a strong identity through good design and best practice. In order to do this we must develop good design and sustainability to be considered from the outset of any project and in the management of existing assets.

The MNDH is the Environment Agency's in-house reference for practical design, planning, implementation and management of landscape works along the Navigation. Its principle target audience is the Environment Agency's staff; its local authority partners, stakeholders, design consultants, user groups and contractors appointed to manage and maintain the navigation corridor. It covers a range of commonly occurring design issues and offers a checklist approach with indicative solutions.

The MNDH is a valuable and versatile resource, which can support a wide range of professionals and interest groups beyond its primary audience, notably:

Academics, Education and Researchers:
The handbook can serve as an educational resource at universities and research institutions studying environmental management, landscape architecture, and civil engineering. It will raise awareness of the importance of environmental design and influence future initiatives by demonstrating best practice and compiling successful case studies in the preservation and enhancement of the Medway Navigation.

Urban Planners and Developers:
The handbook will inform professionals involved in urban development and waterway infrastructure projects, serving as a basis to influence local policy with practical design and environmental management solutions, to ensure integration with the planning processes.

Promoting Environmental Sustainability, NGOs and Advocacy Groups:
Organisations focused on conservation and sustainable development could use the handbook to inform projects and their advocacy. This would assist in emphasing sustainable design principles and practices which minimise environmental impact, enhance biodiversity, and promote the health of the river ecosystem.

Community Groups and Volunteers:
Local communities involved in conservation or environmental enhancement projects would find the handbook's guidance and solutions helpful.

Introduction

Purpose of the Medway Navigation Design Handbook

The Upper Medway Navigation has a distinct character and palette of materials. The Design Handbook will assist in defining the essential characteristics of the river – its 'local distinctiveness', its conservation, which contribute to a diverse range of enhancements and recreational opportunities.

This guide does not contain all the regulations and guidance which governs the design and implementation of landscape works. To do so would be to repeat the valued work of other organisations and result in a large and overly detailed document. Its function is to act as an introduction to the typical features and to direct the reader to more specific and detailed information. Ultimately, design notes and details should be specifically tailored to each project and its location.

This guide will also be available to the general public on our website to further promote the development of safe and appropriate design.

N.B. The detail drawings are for guidance only, not for construction purposes and should not be issued as such.

Consultation

The client for the handbook is the Environment Agency's Upper Medway Navigation Team, who has consulted other EA Navigations and internal departments to promote consistency across the EA waterways, together with the Medway River Users Association.

Introduction

The Handbook sets out the following aims and objectives and should be seen in the context of Environment Agency's Upper Medway Customer Charter: Go to link

Aims

- To revise the Medway Design Handbook 2007 and promote the value of good design in all aspects of developing the wider Medway Navigation.
- To define the navigation's essential characteristics, its historic landscapes and cultural inheritance.
- Comply with navigational, environmental and recreational obligations, providing sound practical advice relating to the variety of situations found along the navigation.

Objectives

- The new handbook will be holistic, user friendly, and present in a fresh modern approach to the principles of landscape design in a range of typical scenarios, which preserves and enhances the navigation's value and appeal.
- To protect and enhance the navigation, its landscape, heritage and ecology, contributing to a diverse range of recreational opportunities, which are accessible to people of all abilities and assist in improving their health, wellbeing, quality of life and appreciation of the natural environment.
- Maintain the use of traditional crafts, skills, local materials and styles, together with the best modern materials and methods to achieve an environmentally sound solution, appropriate to modern use.
- Encourage community participation and foster a sense of ownership by involving local residents, stakeholders, and users in the design and management processes.
- Integrate sustainability practices and climate resilience strategies to ensure the navigation and its surroundings can adapt to environmental changes and challenges.
- Embrace innovative design solutions and technologies to enhance the user experience and manage the navigation effectively.
- Address safety and security considerations to protect users and maintain a safe environment along the navigation.
- Develop educational programs and materials to raise awareness about the navigation's history, ecological significance, and the importance of its preservation.

Introduction

Legal Duties

Under the Environment Acts of 1995 and 2021, the Agency is committed to showcasing exceptional environmental design. The 1995 Act emphasises that the primary goal of the Environment Agency is to protect and enhance the environment while contributing to sustainable development.

To achieve this, the Agency focuses on:

- **Conserving and enhancing natural beauty and amenities. Protecting flora and fauna.**
- **Encouraging recreational use of water and related land.**
- **Preserving historic buildings and sites.**
- **Enhancing landscape character.**
- **Utilising local materials and styles whenever possible.**
- **Taking extensive measures to identify and avoid damage to valuable flora, fauna, and geological features.**

What is good design?

Good design is in harmony with its environment and visual context, it serves its function, is robust, vandal resistant and cost effective. It minimises future maintenance and is appropriate to heritage and wildlife. Wherever possible minimum environmental impact should be achieved, whilst integrating risk management to meet reasonable health and safety criteria.

Design Life

When planning a construction project, it's crucial to consider the entire lifespan of the structure, from initial build to maintenance and eventual demolition. This holistic approach ensures the design life and overall costs are accurately assessed from the start. Early planning of maintenance schedules and effective repair work are key to achieving the intended design life.
For river-related structures, the designed lifespan can vary widely, from a minimum of 25 years to up to 125 years for major structures like highway bridges.

The goal in selecting an appropriate design life is to align it with economic logic, ensuring every component of the structure meets at least the minimum lifespan. This prevents early failure of one part from disproportionately affecting the overall serviceability and maintenance costs.

Estimating the design life of materials and structures can be challenging, especially with new materials. However, considering whole life maintenance costs is essential for the economic justification of a project. This balance ensures capital and maintenance costs are in harmony. For instance, a structure with low initial costs might have high maintenance expenses, but there could be compelling environmental or heritage reasons for choosing specific materials or construction techniques.



The River Medway is popular with cruisers upstream of Maidstone.



Lower Castle Field slipway provides easy access to the river for canoes and paddleboards, being the upstream start of the River Medway Trail.



Angling is a popular pastime along the river.



An example of a historic 'barge' bollard dating from 1911.



A Dutch barge board, part of the many examples of craft seen on the river.



'The Old Boat,' café boat. Maidstone Riverside.

Introduction

Access for All

The Environment Act 1995/2021 Code of Practice on Conservation, Access and Recreation states the Environment Agency has a duty to preserve freedom of public access in the countryside and consider the effect any proposals relating to their own functions would have on the freedom of access. In incorporating the principle of ‘Access for All,’ the Environment Agency wishes to encourage more people to discover and enjoy the benefits of the natural environment providing safe and well designed access wherever possible.

The Medway Valley forms the backdrop to a wide range of community recreational activities, including angling, boating, cycling and walking. The principle of ‘Access for All’ establishes a commitment by setting out a balance between operational needs, the safe management of flood protection assets, public rights of way and accessible waterway environments. Within this Handbook there are a variety of standard approaches and design advice covering a range of frequently encountered access situations.

The Equalities Act 2010 puts extra responsibilities on service providers to ensure they are not discriminating against disabled people. The Environment Agency has published its own document: ‘Access for All’ Design Guide, published in September 2012, to ensure the 'Outdoor Accessibility Guidance' by Sensory Trust standards and guidelines are adopted.

Environmental Sustainability

As a statutory regulator the Environment Agency must take a strong lead in ensuring all its operations meet the highest environmental sustainability criteria, and has the ambitious aim of becoming Carbon Neutral by 2030.

Environment Agency: reaching net zero update (January 2024) - GOV.UK
Go to link

In support of this goal, all teams, including the Navigation Team, which already has robust guidelines in place for carbon-neutral management, will work cohesively to achieve this objective.

Introduction

For the Agency to meet its obligations it needs to reduce consumption of energy, change its working practices and selection of raw materials, including wood, metals and plastics. The following notes offer guidance in this respect.

- **Reduce Consumption:**
  Minimise energy usage by avoiding over-design and specifying materials. Use locally produced and less processed materials to cut down on transportation energy.
- **Reuse and Recycle:**
  Wherever possible, use reclaimed products for reuse or recycling.
- **Sustainable Materials:**
  Use renewable materials from sustainably managed sources instead of non-renewable ones.
- **Non-Hazardous Materials:**
  Specify non-hazardous, non-polluting materials to avoid environmental harm.
- **Minimise Waste and Pollution:**
  Aim to reduce waste and pollution during construction, use, alteration, and future demolition stages.
- **Green Energy:**
  Transition to renewable energy sources like solar, wind, or hydro power for all operations.
- **Energy Efficiency:**
  Implement energy-efficient practices such as LED lighting, smart heating systems, and energy-efficient appliances.
- **Sustainable Transport:**
  Encourage the use of electric vehicles, carpooling, public transport, or even cycling and walking for commuting and official travel.
- **Employee Engagement:**
  Educate and engage employees in sustainability practices, creating a culture of environmental responsibility.
- **Green Infrastructure:**
  Integrate green roofs, walls, and rain gardens into buildings to improve air quality, reduce heat, and manage stormwater.
- **Digital Transformation:**
  Reduce paper usage by transitioning to digital documentation and communication.
- **Sustainable Procurement:**
  Develop a sustainable procurement policy that prioritises eco-friendly suppliers and products.
- **Waste Reduction:**
  Implement rigorous recycling programmes and strategies to reduce waste, such as composting organic waste.
- **Water Conservation:**
  Introduce water-saving fixtures and practices to reduce water usage, such as water meters.
- **Biodiversity Enhancement:**
  Create or support projects that protect and enhance local biodiversity, such as planting native species and protecting natural habitats.
  The Navigation Team has ecological site management plans for all our navigation land holdings.

By adhering to these guidelines, the Environment Agency, along with its Navigation Team, will significantly reduce its carbon footprint and lead by example in the journey towards a sustainable future.



An oak tree overhangs a rural stretch of the river.



Grade 1 listed medieval bridge. East Farleigh.



Paddle wheel mechanism, an example of retained heritage. Town Lock, Tonbridge.



Tutscham Oil Mill ruins. Teston Lock.



The River Medway flows through the centre of Maidstone, as here at the Town Bridge.



An example of WWII pill box, part of the 'Ironside' stop line along the river.

Enhance Biodiversity

For the River Medway as an important green corridor:

- The Environment Agency seeks to maximise opportunities for enhancing provision for habitat and wildlife though all operations.
- Link to County Biodiversity Action Plans through local Wildlife Trusts etc.
- Check the Wildlife Site Register as part of the preliminary audit for a project.
- Ensure landscape planting uses nursery stock from locally indigenous sources, in order to keep the local range of species variation.

Risk Assessment

The Environment Agency owns, manages, or operates a large range of assets. These vary in size and function, from unoccupied monitoring stations to occupied large-scale multifunctional sites.

- **We have an asset management strategy** and operate an asset management system.
- **We have a legal 'general duty of care'** to members of the public who interact with our assets as well as a moral duty not to cause them harm.

Public safety must be considered at the design and construction stage of new assets and is reconsidered when the asset is refurbished. Construction of new and refurbishment of assets should follow the guidance in the Environment Agency's Safety Health Environment and Wellbeing Code of Practice (SHEWCOP) .

Construction Design and Management

The Construction (Design and Management) Regulations 2015 (CDM) is crucial for ensuring health and safety in construction projects. By placing duties on clients, designers, and contractors, the regulations promote a holistic approach to managing safety throughout the entire project lifecycle. This includes:

- Conception, Design, and Planning: Integrating safety considerations right from the start.
- On-Site Works: Ensuring that safety is managed effectively during actual construction.
- Maintenance and Repair: Managing safety even after the construction is complete.
- Demolition and Removal: Safeguarding health and safety during end-of-life processes of a project.

The main goal of the CDM Regulations is to minimise potential hazards by:

- Establishing a comprehensive safety management plan.
- Identifying and designing out potential hazards.
- Implementing appropriate precautions when hazards cannot be completely designed out.

Even for construction work that falls outside the specific scope of CDM, adopting the recommended safety measures is beneficial for overall safety and compliance. This ensures a consistent and robust approach to health and safety across all construction activities.

Introduction

Safety by Design

Design proposals within the Navigation environment need to create safe, accessible and attractive environments. Safety and security works should be designed and located in a way, which does not compromise the waterway's historic landscape. In the early 2000's British Waterways in conjunction with the Metropolitan Police developed a set of design guidelines 'Under Lock and Quay,' which aimed to help reduce criminal opportunities by design on the London Waterways. It is still available as a download from the Canal and River Trust: Go to link

Engagement projects, particularly in urban areas, which involve the local community in design and implementation is often a way of tackling vandalism and fly tipping.

Design Element Sheets

The examples provided are indicative solutions designed to maintain consistency in detail and identity. However, it's crucial to remember that every site is unique and deserves a bespoke, design-led approach.

The design objectives and principles for locks, sluices, and other structures have been shaped by operational needs in collaboration with the Medway Navigation Waterways Team. The key objective is to highlight the lock and sluice structures as features of public interest.

The following section presents a collection of 'design elements'. These sheets are meant to be illustrative, capturing the most important points for each design element. They serve as a starting point for developing proposals.

Each sheet outlines the main considerations and provides links to more specific and detailed information, such as relevant British Standards and existing guidance. The topics covered on each sheet include:

- **Background**
- **When to Use?**
- **Standards and Specifications**
- **What Should Designers Consider?**
- **Further Sources of Information**

Depending on the design element, these topics may be further broken down to explain their use. Most topics are derived from the Navigation, showcasing how each design feature can be applied. Most projects will need to incorporate several of these design elements.

By compiling them into one document, we can take a strategic view from the start of a project. This process will ultimately lead to the development of more sustainable and accessible assets.

Is Planning Permission Required?

When undertaking any project along the Medway Navigation it is necessary to assess whether the proposed works require planning permission.

It is necessary to determine whether the works are within the definition of development. Whether they benefit from Permitted Development Rights. If there is any doubt, it is best to check with the relevant planning department at Tonbridge & Malling or Maidstone Council.

Section 55 of the Town and Country Planning Act 1990 defines 'development' as 'the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any building or other land.'

Many types of development benefit from Permitted Development Rights and therefore do not need planning permission. These are set out in the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) Go to link. In some cases it will depend on whether the Environment Agency is undertaking the works itself or by a third party. Works by third parties are

The Environment Agency can use its permitted development rights to undertake navigation projects, under **Part 8 Class B (b)**, which covers projects:

'in connection with the embarking, disembarking, loading, discharging or transport of passengers, livestock or goods at a dock, pier or harbour, or with the movement of traffic by canal or inland navigation or by any railway forming part of the undertaking.'

PART 8 Transport related development

Class B – dock, pier, harbour, water transport, canal or inland navigation undertakings.

Permitted development

B. Development on operational land by statutory undertakers or their lessees in respect of dock, pier, harbour, water transport, or canal or inland navigation undertakings, required:

(a) For the purposes of shipping, or
(b) In connection with the embarking, disembarking, loading, discharging or transport of passengers, livestock or goods at a dock, pier or harbour, or with the movement of traffic by canal or inland navigation or by any railway forming part of the undertaking.

Development not permitted

B.1 Development is not permitted by Class B if it consists of or includes:

(a) The construction or erection of a hotel, or of a bridge or other building not required in connection with the handling of traffic; or
(b) The construction or erection otherwise than wholly within the limits of a dock, pier or harbour of:
(i) An educational building, or
(ii) A car park, shop, restaurant, garage, petrol filling station or other building provided under transport legislation.

Interpretation of Class B

B.2 For the purposes of Class B:

(a) References to the construction or erection of any building or structure include references to the reconstruction or alteration of a building or structure where its design or external appearance would be materially affected, and
(b) The reference to operational land includes land designated by an order made under section 14 or 16 of the Harbours Act 1964 (orders for securing harbour efficiency etc., and orders conferring powers for improvement, construction etc., of harbours), and which has come into force, whether or not the order was subject to the provisions of the Statutory Orders (Special Procedure) Act 1945.

Source: Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended)

more likely to need planning permission and may also require the consent of the Agency under the Environmental Permitting (England and Wales) Regulations 2010 if within 8m of the river.

If the local authority determines the navigation works are likely to cause significant impact, then an Environmental Impact Assessment (EIA) will be required. Planning permission would be required and the project would need to be screened. This usually includes works such as lock refurbishments, lay-bys or canoe portages.

Bank protection works will still be undertaken under Part 13 of the Land Drainage Act 1991 and should be screened under the Land Drainage Regulations. These works are likely to be non-statutory and a proportionate application of the Operational Instructions will ensure environmental issues and opportunities are adequately managed.

There is no strict definition of 'Operational Land' so the Agency takes the view that land is operational land if:

i) It is already in use as land where it carries out its undertaking,

OR

ii) It is land in which an interest is held for that purpose where it was acquired before 6/12/1968 for the purpose of the predecessor bodies' undertaking.

In respect of **(i)** this would comprise of land the Agency already uses for its functions. It does not cover land which it decides to use, but has never used it for its functions in the past. In other words it could not use a surplus field somewhere which happens to be spare. If on the other hand the field was alongside a watercourse and is currently or has been used, for operational purposes, then permitted development rights would be attached.

However the situation is slightly different if the Agency holds an interest in the land. **(ii)** refers to land which has not been used for the purpose of carrying out the undertaking in the past, but may be so used in future provided it was acquired before December 6 1968. The 'interest' must be either a 'legal or equitable interest' and would include ownership or a lease or licence.

Even if the land where the works are to take place fall within either **(i)** or **(ii)** above it may still be considered not to be 'operational land' if, in respect of its nature and situation it is comparable with land in general rather than land which is used or in which interests are held for the purpose of carrying on statutory undertakings.

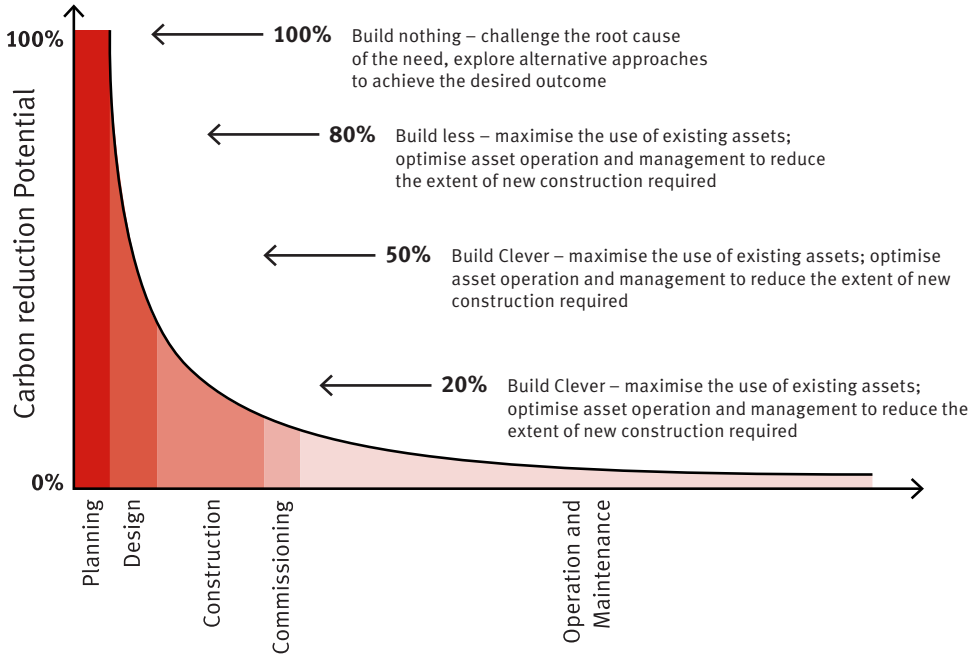
This arguably excludes vast tracts of land used in flood defences and the strips adjoining main rivers from being operational land because they have more in common with land in general (for example public access). This would mean that the Agency cannot rely on this particular permitted development right, unless the part of a flood defence or riparian strip required was different to land in general (i.e. obviously used for Agency operations rather than as, for example, a footpath).

Carbon Reduction

One of the four priority themes detailed in e:Mission2030 is responding to the climate emergency, which includes a commitment to become a Net Zero Carbon organisation by 2030. The Environment Agency is seeking to reduce the carbon emitted from its own activities and supply chain by at least 45% with any remaining carbon captured using verifiable approaches to offsetting. The adoption of low carbon methods and selection of materials is critical in managing the carbon footprint of our navigation projects and helps us move towards our Net Zero Carbon ambition. In order to achieve Net Zero Carbon, we need to maximise the amount of carbon reduction and minimise the amount of carbon offset. In contributing to achieving Net Zero by 2030. The following principles could be applied to selected Upper Medway Navigation projects:

- Carbon reduction should be considered on all projects.
- Carbon reduction should be considered as part of the decision-making and set as a Critical Success Factor on appropriate projects.
- Low carbon materials should be considered as part of construction and maintenance programmes, but must not degrade the historic integrity of the construction or the local distinctiveness of the landscape character.
- All construction sites should be low carbon – net zero site facilities must be standard and site visits kept to a minimum.
- We must minimise construction waste to landfill – re-use and recycling materials as much as possible.
- New navigation assets must be low carbon in operation – achieved by passive design and the use of renewable power.

The biggest carbon savings can be secured at the early stages of the project lifecycle (ie appraisal and early design) as indicated in the following diagram:



Carbon reduction curve

Carbon Reduction

At the inception stage, the project team should consider alternative options alongside traditional engineered solutions, which may require less construction works. Promoting alternative solutions may result in significant carbon reduction and bring benefits for people and wildlife. Rather than building new or re-building navigation assets we should be looking at repairing and maximising the life of the asset, whilst maintaining the aesthetics and integrity of the structure. Repairing the asset and bringing it back up to the design standard will use considerably less material and hence far less carbon.

Where construction works are necessary, then consideration of the carbon of materials is fundamental to achieving carbon reduction. By just focussing on construction materials alone, the amount of carbon reduction will be relatively small, but a saving nonetheless. Reductions using low carbon products can be the result of the material itself but also the energy used to produce the materials, transportation of the material to site, operation of the asset during its lifetime, decommissioning and replacement of the asset.

Low carbon construction materials are becoming increasingly prevalent and competitively priced and include such things as low carbon concrete, low carbon block paving, low carbon concrete blocks, low carbon steel sheet piling, however, as mentioned earlier, the historic integrity of the environment, its local distinctiveness or the landscape character must not be degraded.

Site Planning

Environment Agency

Medway Navigation Design Handbook



Site Planning

The role of site planning is to provide a strategic overview of the spatial organisation of a lock or sluice and its environment. The process should lead to the preparation of a masterplan and management strategy, which is based upon the site's landscape character, heritage and ecology together with operational requirements of users and the public.

The aims of site planning are:

- To identify the key landscape and heritage features together with the ecological sensitivities and future management proposals to enhance the site.
- To identify the circulation requirements, in order to reduce potential conflicts between land and water based activity, or recreation and operational access.
- To establish the best possible physical and visual integration of the new proposals.

These aims can be achieved through a coordinated approach to site planning which combines experience and expertise in landscape design, ecology, recreation, navigation and engineering issues throughout the various stages of the project.

Site Planning

Site Planning Check List

1. Liaison with interested parties and site users to develop a brief, and ensure relevant needs are anticipated and catered for.
2. Survey of site conditions to identify opportunities and constraints, together with establishing the exact position and condition of the site's legal boundaries.
3. Preparation of site masterplan accompanied by management proposals providing operational, landscape and ecology enhancements.
4. Preparation of detailed site planning and design options for specific proposals to assist in selection of the optimum design solution.

Site Layouts

In general terms the lock and sluice sites of the Upper Medway Navigation can be classified into two types of site layout. Both of these layouts have distinct characteristics.

Integrated Lock Sites

These sites form a 'set piece' where lock, sluice and canoe/fish pass are located close together forming an integrated scene with an open aspect bounded by a backdrop of trees or in the case of Town Lock, Tonbridge, a built up area. Consequently, the coordination of colour and materials, together with access, circulation, screening and planting become important issues. Site management is simplified by the 'compact' nature of the layout which favours security and surveillance. Examples of this type of lock and sluice arrangement are: Town Lock, Eldridge's Lock, East Lock, Oak Weir Lock, Sluice Weir Lock, Teston Lock, East Farleigh Lock & Allington Lock.

Separated Lock Sites

Separated sites are sites where the lock and sluice structures are isolated from each other. Land ownership is often complex and can impose constraints on site management and potential access.

The lock cut and sluice stream create long narrow corridors and in the case of Porter's Lock and Sluice, with mature vegetation screening the structures from wider landscape. Infrastructure works need to be sensitively designed as they tend to become a visual focus within the small scale of the lock or sluice enclosure.

Similarly, bank protection works assume a higher profile, as in the approaches to Hampstead Lock. It is important to establish bank protection measures, which enhance the aesthetic appeal and encourage marginal vegetation in order to mitigate the bank protection.

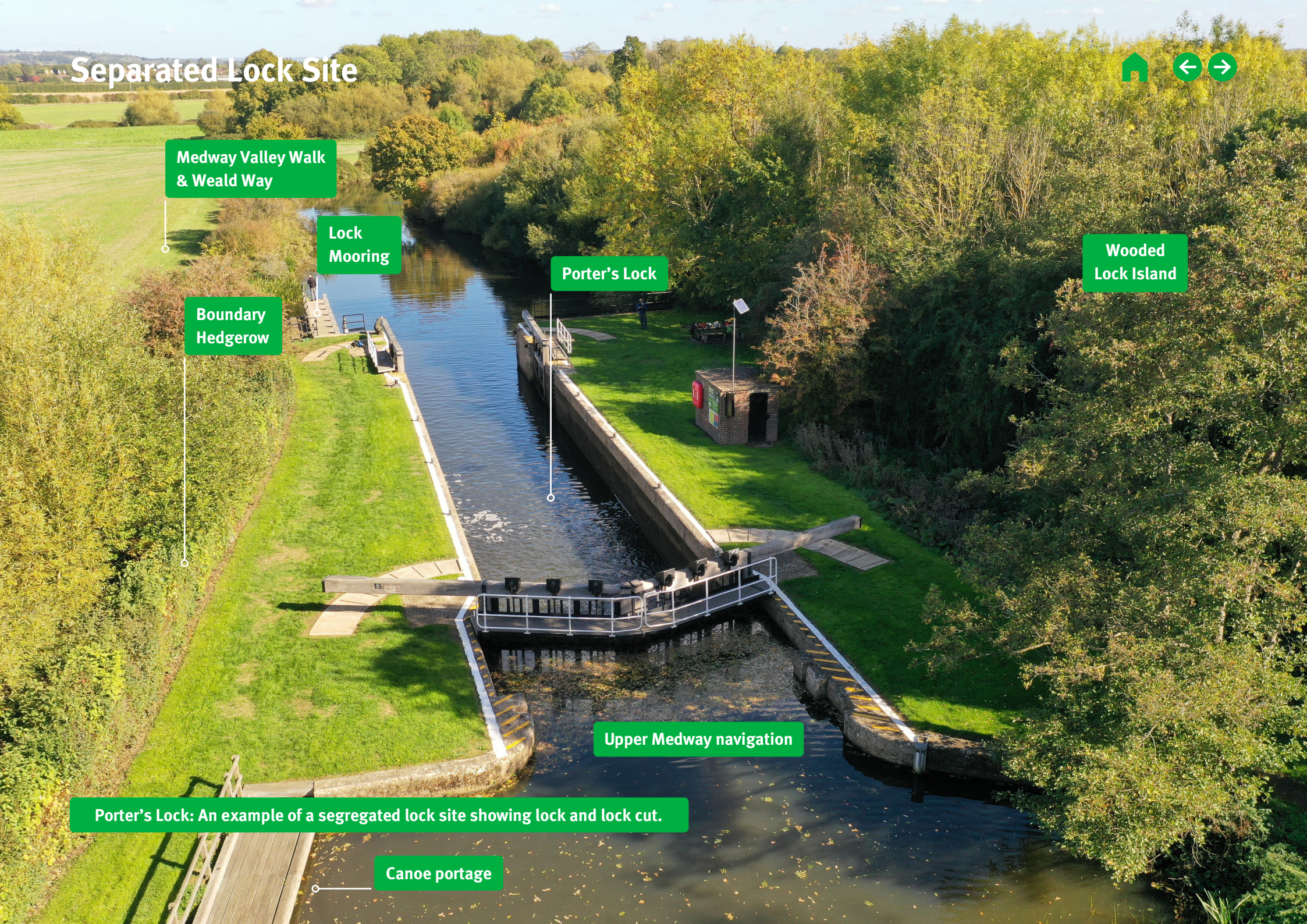
Examples of this type of lock and sluice arrangement are: Porter's Lock & Hampstead Lock.

Integrated Lock Site



East Lock: An example of an integrated lock site showing, sluice, fish/canoe pass and lock.

Separated Lock Site



Porter's Lock: An example of a segregated lock site showing lock and lock cut.

Separated Sluice Site



Site Planning

Site Components

The following provide an overview of key features which combine to create unique environments at lock sites. The descriptions also include a summary of important user requirements and planning considerations.

The Towpath

The towpath has a history and integrity of its own and is a significant part of the Medway Valley Walk. At a local level the towpath is a pedestrian 'gateway' to the Navigation. Where accessibility, interpretation, seating and viewpoints should be integrated to welcome visitors.

The Lockside

The approach to lockside design varies with chamber size, level of use and urban or rural location. The materials used should always reinforce the local distinctiveness of the waterway and have historical references to the original materials of the Navigation's construction.

The lock chamber is a functional area dedicated to the efficient and safe passage of boat traffic, while the lockside is a focus for boating activity and acts as a draw to the non-boating public and provides opportunities for information and interpretation. Patterns of circulation help define public and operational space and reduce conflicts between boating, maintenance and recreation.



Example of an active lockside. East Farleigh Lock.

The site planning issues concern:

- Physical obstructions to the view from the lock and implications for safety/security and surveillance.
- Ground conditions and accessibility for vehicles and pedestrians, including changes of level.
- Boundary improvements should be considered as part of enhancements to the whole lockside.
- The design of paving, seating, planting etc. should enhance the identity and accessibility.
- Existing historical artefacts should be retained – barge bollards, guardrails, signs, paddle gear etc.
- Signage should be minimised and grouped rationally to avoid visual clutter.

Sluice Structures

The sluice structures on the Upper Medway Navigation are large dominant structures within fenced off compounds, providing little visual appeal. They require careful planning in terms of their capacity, scale and composition. Replacement structures at East Farleigh and Teston are planned.

The sluice/weir stream is characterised by mature bankside trees and marginal aquatic vegetation. Immediately below the sluice, banks are subject to erosion by currents generated in the sluice pool. Environmentally sensitive bank treatments are required to stabilise the natural bank edge, which are popular angling locations.

Mooring platforms

Mooring platforms at the head and tail of locks are significant operational structures which allow craft to moor temporarily while waiting to enter a lock. Safety and operational factors favour 'Onshore' mooring platforms built into the bank at the head of locks, while tail moorings are usually a jetty or 'Offshore' moorings.

Site Planning

Mooring planning issues

- Siting mooring structures to minimise disturbance to bankside vegetation.
- The height of freeboard of the structure, which influences access and visual impact.
- Integration of lock moorings with canoe portage.
- Use of alternative designs such as the freestanding ‘offshore moorings.’

Permanent moorings require a constructed mooring edge. These facilities need to be planned sensitively to ensure a proportion of the ‘natural’ bank edge is left undeveloped.



‘Onshore’ mooring & canoe portage. Eldridge’s Lock.

Bridges

Footbridges can provide a positive contribution to the character of a lock site by virtue of scale, materials and individual detailing. Accommodation bridges and towpath bridges on the river, have a number of impacts on site planning considerations.

- Provision of adequate headroom for boat traffic, which has implications for the scale and visual impact of the structure.
- Access arrangements for vehicular and pedestrian approach ramps and steps.
- Siting to ensure clear visibility where piers could obstruct the navigation.



The Medway Valley Walk crosses at Sluice Weir Lock.

Lock Islands

In most cases lock islands are large enough to support an ‘oasis’ of relatively undisturbed vegetation containing trees, shrubs and flora which can be managed to provide a refuge for wildlife. The island’s banks should be defined using bioengineering techniques to provide vegetated banks. This will further provide a sense of enclosure to the lock structures, whilst providing screening to the fenced compounds of the sluices.



Medway backwater. Porter’s Lock island to the right.

Landscape and Ecology

The landscape and ecology needs to be considered as part of any site planning and can potentially impose significant constraints. The main factors, which influence the landscape character of the area, need to be assessed in order to integrate the structure with its environment.

Note: surrounding land uses define the visual context of the lockside.
Note: the major viewpoints to and from the structures.
Note: the principal traditional building materials in the area e.g. use of local brick, timber, ironwork, colour and finishes.

Assess the need and potential for amenity enhancement planting. For example, structure planting to the perimeter of the site to create shelter or new planting to reinforce existing vegetation.

An assessment should be undertaken to identify landscape character and important habitats present:

- **Adjacent land** – proximity of unimproved grassland, woodland, marsh, hedgerow trees and shrubs etc. Disturbance through access, construction, spoil disposal, storage of materials may be unacceptable.
- **Bankside habitats** – conservation value of bankside trees, shrubs and ground flora; also morphological features such as cliffs, beaches, bays, terraces etc.
- **Marginal habitats** – immediately above or below water level.

A detailed assessment of types of plant species and the habitats they provide may be necessary. For example, some species provide much better bird nesting locations.

- **Aquatic habitats** – submerged shelves, pools, riffles and stands of aquatic vegetation.
- **Trees** – all trees close to the proposed works should be individually assessed by a qualified arboroculturalist. The survey will provide details on the value of each tree, and appropriate management procedures.

Habitats should be assesed in terms of their local, regional and national importance; the assessment should automatically take into account any statutory sites such as SSSI's.

Disturbance to important sites should be avoided but equally, opportunities to create appropriate habitats should be sought whenever possible.

Mature Trees

Medway lock sites contain a valuable collection of mature trees where native or naturalised species occur in groups or as individual specimens. Species most often found include Oak (Quercus robur) and Ash (Fraxinus excelsior). These trees with extensive canopy and root systems have impacts on site planning.

Tree canopies which are managed appropriately, benefit the microclimate and aspect of the site by creating shelter in winter and shade in summer.

Root systems should be kept intact and protected. Any new works should avoid excavation, compaction, laying of sealed surfaces or alteration of water table levels within the root zone.

Trees and Vegetation

Locksides can provide opportunities to conserve or establish a range of management practices where natural and cultivated vegetation can provide wildlife and educational benefits.

For example:

- Coppice woodland/wildflower meadow
- Aquatic plant beds
- Orchard/fruit trees
- Structure Planting

Planting for shelter and screening purposes should be substantial enough to respond to site character and the wider landscape setting, by creating backdrops and framing views, rather than simply attempting to obscure or disguise structures.

Climate

The River Medway flows through a broad valley, exposed to varying conditions, with most sites having characteristic weather patterns.

Note: exposure to the prevailing wind directions (SW-NE), ‘cross winds’ and ‘following winds’ can make manoeuvring of craft difficult along the river corridor, which may require shelter belt planting.

North facing sites along shady and enclosed reaches can create uncomfortable frost and fog pockets; damp conditions can make surfaces slippery and accelerate timber rot. Retention of existing vegetation and/or carefully planned planting can considerably improve the local microclimate.



Mature trees flank the downstream approach to East Lock.

Recreation

The issues requiring careful planning to assist site management for recreation concern safety, security and compatible uses. The distribution of activity and recreation sites should be balanced to reduce conflicts between incompatible activities. Boundaries between public and operational spaces should be well defined to increase security, allowing for easy surveillance, and discouraging vandalism. Provide information on accessible areas and ensure access caters for the safety of all visitors.

Access & Circulation

The hierarchy of access routes at lock sites is a key influence on the safe and efficient operation of lock sites.

- Direct links are made between operational facilities, the lock, sluice, moorings and ancillary services.
- Vehicular and pedestrian routes can be segregated to avoid potentially hazardous situations and improve security.
- Informal footpaths can be planned to avoid sensitive areas of conservation value.

Ancillary Facilities

These comprise facilities for boat users, which normally requires service runs carrying water and electricity to be planned and installed. The routing of these services needs to allow for direct access to moorings and for facilities to be grouped together reducing visual impact.

Works which are most frequently associated with lock and sluice sites include:

- Navigation or lock moorings
- Modifications or refurbishment of existing locks
- Facilities Buildings and ancillary works
- Bank protection.
- Bridges

Survey results will identify constraints and opportunities to enhance the site.

Hydrological

The nature of seasonal variance in river flows and levels upstream and downstream of lock and sluice sites should be established.

- Standard water levels at the lock head (SHWL), lock tail (STWL) and the average flood water level (FWL) will indicate the required freeboard for lock moorings.
- The survey of the river channel bed profile will show channel width and normal water depths to indicate whether dredging is necessary to retain adequate width of navigable channel.
- Assessment of hazardous areas generated by sluice streams and lock operations
- Lock island head - sluice stream flow across lock approach.
- Head of lock - drawdown when lock is filled.
- Tail of lock - turbulence when lock is emptied depending upon size/depth of lock chamber.
- Sluice tail – push of sluice stream cross currents.
- River bends – generate strong ‘throw’ cross currents.

Each lock site will have its individual hazard/problem areas; these include cross currents, back eddies and debris or silt deposition areas.

Navigation staff will identify the main hazard areas, which will influence the location and design of mooring structures.

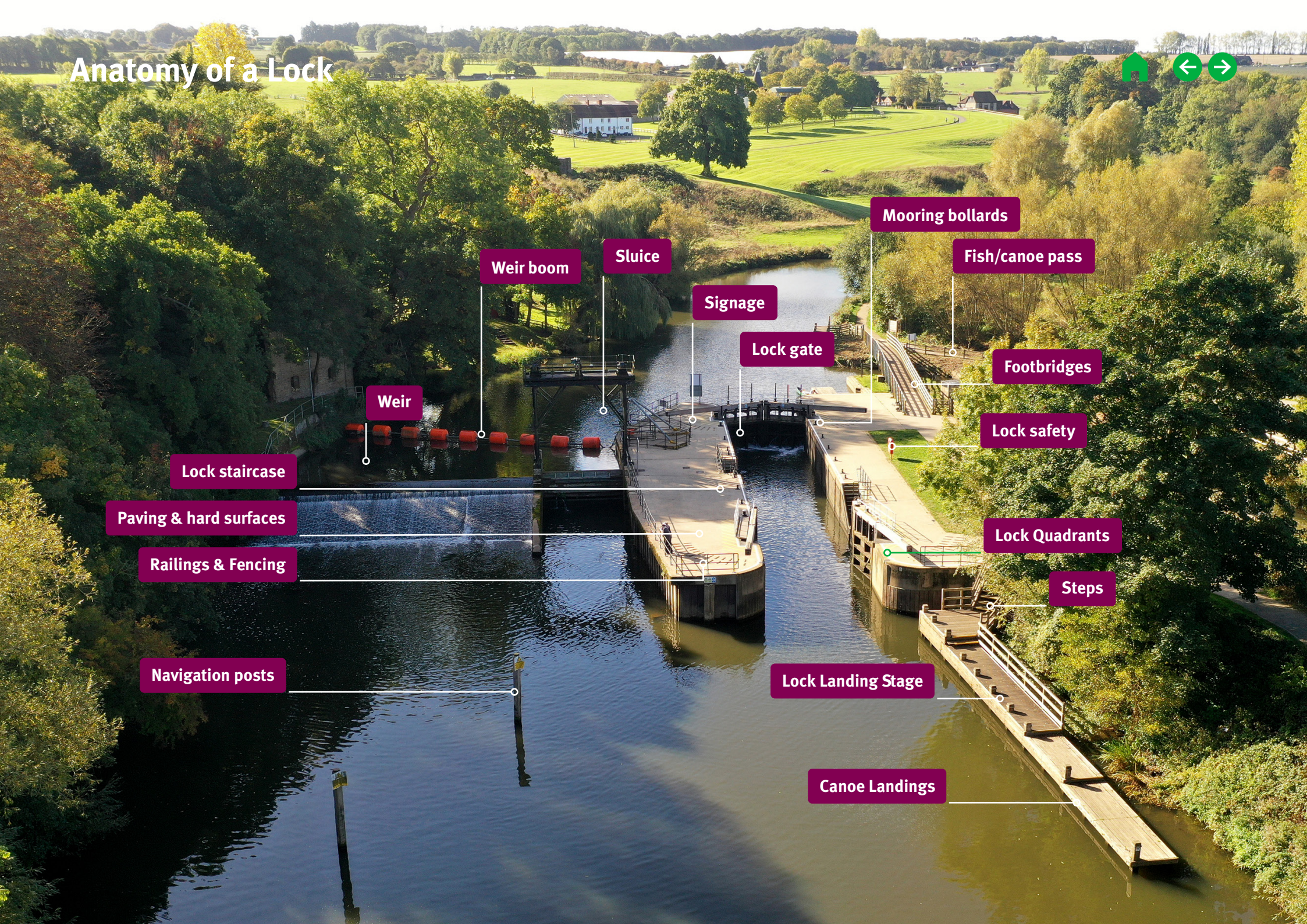
Lock Chamber Refurbishment

Environment Agency

Medway Navigation Design Handbook



Anatomy of a Lock



Lock Chamber Refurbishment

Lock Chamber Refurbishment

At the start of a lock chamber refurbishment project, a chamber appraisal provides a framework for specific refurbishment works. The appraisal will include:

- A survey of existing conditions and materials.
- A schedule of features likely to be affected.

Refurbishment proposals should combine both operational and conservation objectives into a 'refurbishment strategy' which promotes sensitive techniques and selective use of materials. The three main strategies may be combined to form an 'overall strategy' for an individual lock refurbishment.

1. Total reinstatement to match existing

Where the existing facing on the chamber wall is concrete, the strategy is straight forward, however reinstatement of imperial sized bricks or stonework involves high labour and materials costs. Therefore, selective reinstatement or reuse of these materials is preferable. Lock wingwalls and bullnoses are particularly important areas for reinstatement in the original materials as they are visually prominent parts of the lock chamber.

2. Partial reinstatement to match existing

Specific areas of deteriorated brick or stone facings may be reinstated with matching materials whilst the remainder can be cleaned and repointed. 'Matching materials' should be comparable in dimensions, durability and colour to originals; samples should be provided for comparison. The boundary edge between new work and existing facings should be as discreet as possible.

3. Total replacement with a new treatment

A chamber, which has deteriorated throughout will require voids to be filled and grouted. The existing walls may be pared back to accept the thickness of a new facing material so the critical width of the lock is retained.

It is unusual for a chamber to be totally refaced in brick or stone. More often chamber walls are refaced in concrete (e.g. gunite). The smooth floated finish over a large panel area offers little visual interest. Fixtures, which can be retained or reinstated such as timber fendering help to relieve an otherwise bland treatment.

Lock Character Appraisal

A lock character appraisal complements a refurbishment project and is based on the following criteria:

- Regional variations in traditional construction materials found in the Medway Valley and the extent to which lock sites reflect those variations.
- Repeated characteristics between locks. When a number of consecutive locks have significant features in common, these features develop a 'character bond' between locks. Conversely, an absence of any serial character tends to emphasis the individuality of each lock.
- Significant heritage features associated with each lock site. Rare or unique combinations of heritage features which deserve special conservation status and make a substantial contribution to lock character.

Aesthetics

Lock aesthetics is concerned with the treatment of those features which provide landscape character:

Surfaces: Chamber walls, copings and quadrants which have texture, colour and reflective qualities in sunlight and against water.

Lock Gates: Material and details, particularly the tail gates, above water and tactile elements.

Linear components: Copings, rails and steps influenced by light and shade which define the shape of the lock.

Point components: Bollards, posts and chains contribute pattern and perspective.

Colour: The spectrum of colour in the river scene is generated by contrasts between hard materials and vegetation subjected to weathering and seasonal variations.

Lock chamber fixtures

These components are selected primarily for operational and safety purposes. Decisions on whether to retain or replace existing fixtures tend to overlook the contribution they make to the lock aesthetics and character (e.g. historic paddle gear, barge bollards and vertical timber fendering). Fixtures which fulfill such a dual role should co-exist with more recent innovations in lock operation and safety, despite possible longer term maintenance commitments.

Lock Chamber Refurbishment

Materials

The lock chamber is a hostile environment for materials. Continual saturation, weathering and frequent boat impacts demand materials to be robust, function well and look good over a long period of time. Most materials used on the river have been 'tried and tested' and their life expectancy is anticipated accurately to plan for future maintenance.

A problem exists where new or improved materials are being experimented. Contacts with dependable sources of materials such as hardwood timbers, imperial sized bricks and granite copings has diminished, while the procurement of quality materials such as tropical hardwoods are less assured. These problems can be overcome in the short-term by careful research on the source of reclaimed materials and applying strict specifications to materials supplied, comparing samples where appropriate. In the long-term the maintenance cycle for materials can be assessed more accurately and contracts made with dependable suppliers.

Brick Facing

Use and appearance

Smooth, hard bricks are durable and drain water quickly from walls; they do not attract rapid algae growth and are easily washed. Brickwork weathers well and retains attractive colouring over its lifetime. Damaged areas are easily replaced and fixtures can be accommodated.

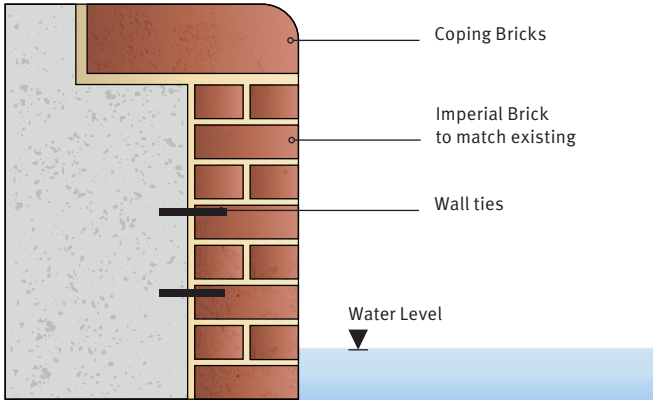
Specification Notes

Original bricks: smooth blue engineering bricks made to the larger imperial size with slight variations in individual brick dimensions, (approximately 230 x 110 x 80mm).

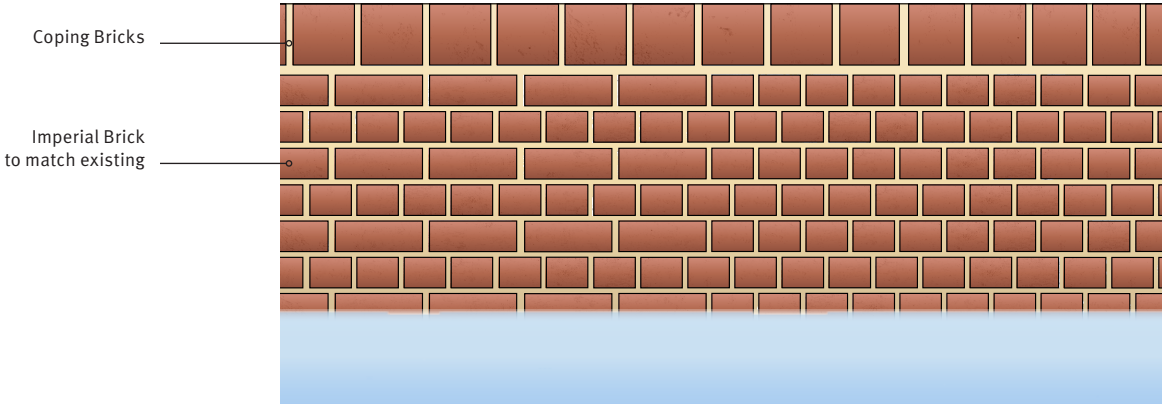
New bricks: class A or B smooth blue brindle engineering bricks with water absorption less than 7%.
Sizes available 215 x 102.5 x 65mm.

Use reclaimed plain gault engineering bricks for edging, treads and detailing, which will reinforce the industrial heritage of the structures.

Copings: large blue single bullnose coping blocks to engineering standard. 480 x 155 x 155mm radius copings used for lock bullnoses and wing walls, tapered to suit. Available only by special order with selected brick companies, therefore copings which can be reclaimed from other sites are valuable stock.



Section: Brick Bullnose Wall



Brick Bullnose Wall

Engineering Brick

Use and appearance

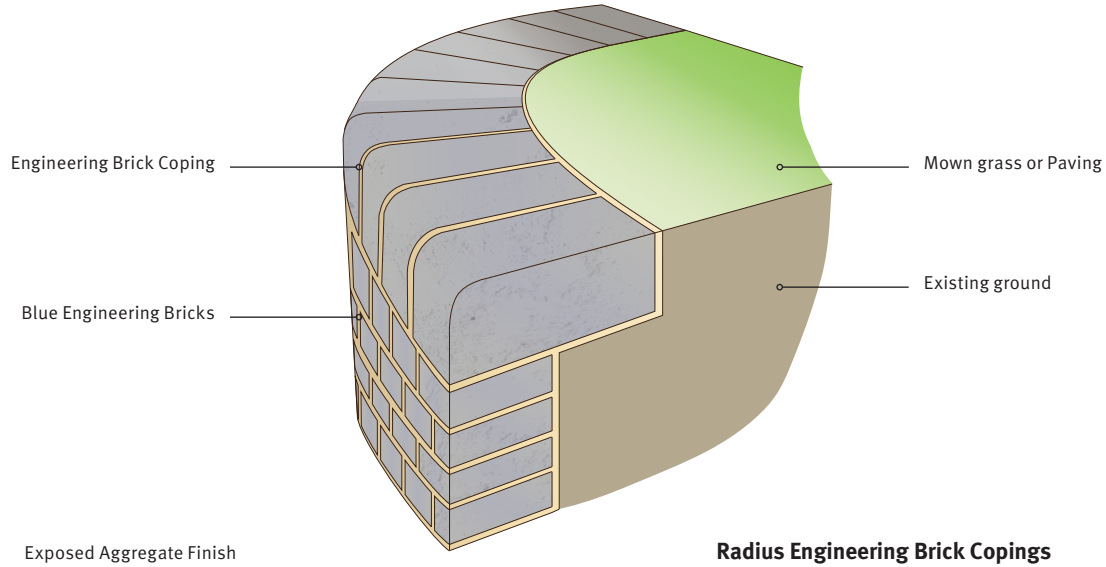
Most manufacturers offer a choice of aggregates and cements providing the opportunity to influence the appearance of the concrete blockwork. The effect of weathering on concrete blocks is an important consideration. Neutral colours such as greys/buffs weather better due to the content of natural aggregates. Artificial pigments tend to bleach away rapidly. Surface textures for concrete blocks can also be chosen carefully to match or contrast with existing structures. 'Cast' or 'sawn' blocks given a smooth finish can create a formal 'ashlar' appearance when bonded with narrow joints.

Specification Notes

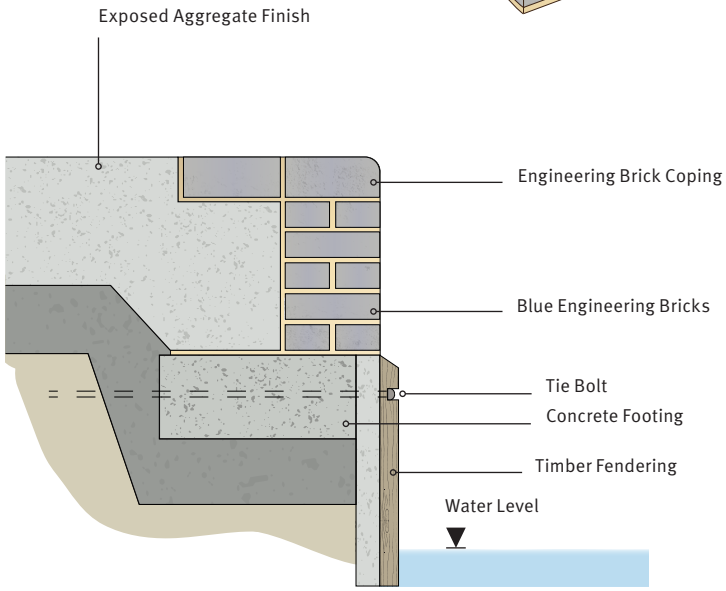
Concrete blocks are proprietary materials available in a diverse range of unit sizes and colours. Therefore, careful consideration of all characteristics is essential. Dense aggregate blocks are required (1500 x 2100 kg/m3) to the required crushing strength.

Smooth textured blocks are liable to develop superficial micro cracks whilst the open texture blocks are less likely to suffer from frost damage.

Unit sizes vary, however dimensions in the order of 440 x 215 - 350mm to appropriate specified thicknesses are suitable for river situations. The manufacturers recommendations should always be considered in relation to a specific project.



Radius Engineering Brick Copings



Engineering Brick Coping with Timber Fendering



Eldridge's Lock: Opportunity for brickwork together with large copings to be used, in place of rendering, above the fendering of the lock bullnose.

Concrete Copings

Use and appearance

Concrete coping has been used extensively at Medway locks in place of brick or granite, being consistent with the 1911-14 rebuilds. Where this is the case the capping is a substantial size comparable to stone copings. The coping to chamber walls needs to be of larger proportions and appropriate scale, which makes the surface finish especially important. Two finishes are appropriate:

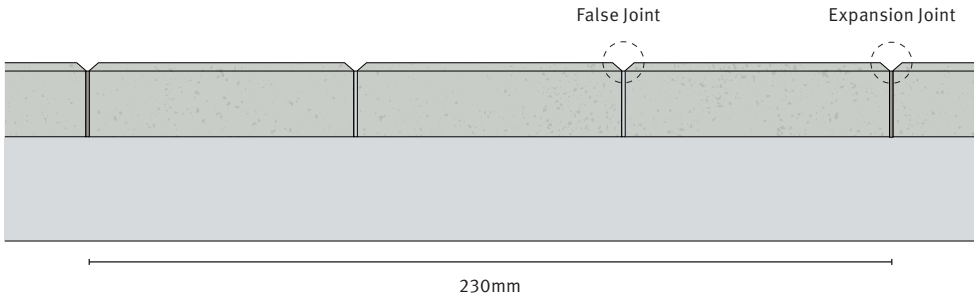
- Exposed aggregate finishes where the mix contains a dark grey stone aggregate lightly exposed to create a textured surface. Brushed finish. The surface is wire brushed prior to the concrete setting hard to create a textured finish, which drains surface water efficiently.
- Long lengths of concrete coping require expansion joints at approximately every 4.0 metres. The scale of continuous coping can be effectively broken down into visual block units by creating 'false joints' at appropriate centres between 1200 and 1400mm in length with the edges of the false joints chamfered to prevent chipping.

Specification Notes

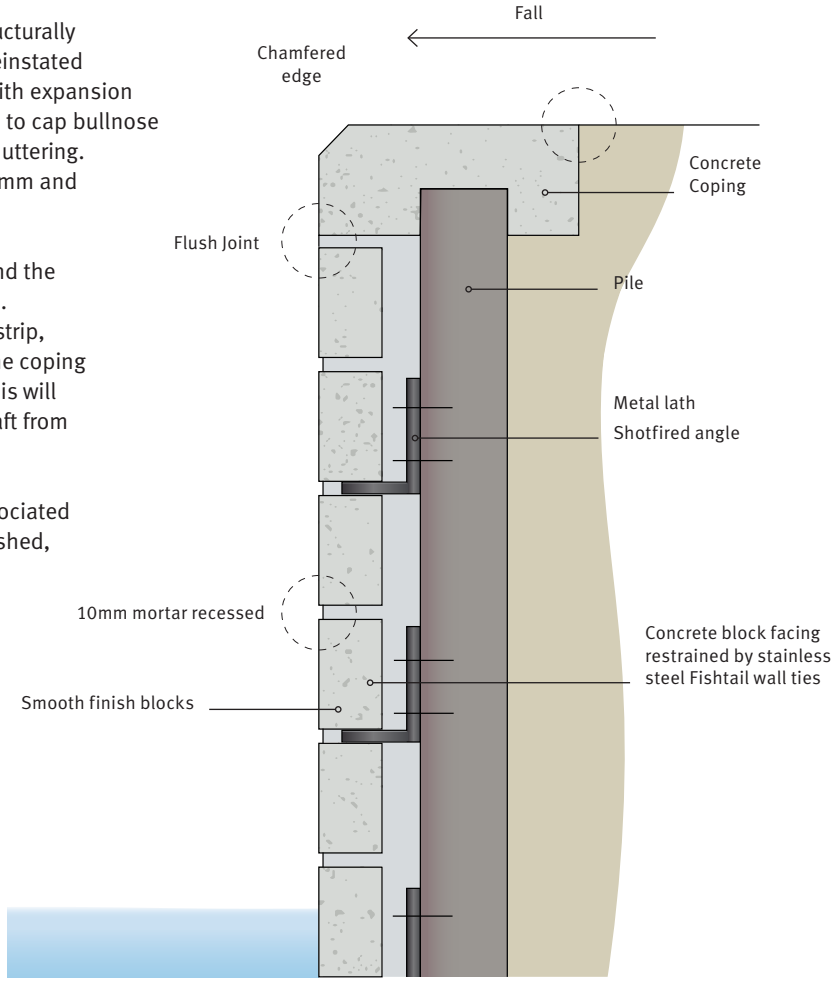
Reinforced in situ concrete coping strips are structurally tied into new pile edges or integrated into the reinstated chamber wall. The concrete is of C40 strength with expansion joints placed at 4.0 metre intervals. Where used to cap bullnose walls the curvature of the radii is formed with shuttering. The width of the copings are approximately 400mm and 300mm deep.

Usually the corner of the coping is chamfered and the surface falls gently towards the chamfered edge.
All copings are to comprise of a timber rubbing strip, to a natural finish, which is flush to the top of the coping stone but projects out into the lock chamber. This will provide a rubbing strip to prevent damage to craft from the coping.

The lock chamber concrete copings and the associated concrete surfacing should be straight brush finished, perpendicular to the waterway edge.



Concrete Copings to Chamber or Wingwalls



Concrete Block Facing

Concrete Gunite Facing

Use and Appearance

The existing lock chambers are concrete lined with a concrete coping. Concrete gunite render is a practical material with which to face a lock chamber wall. Once the structural wall has been scaled to prevent water seepage from behind, the render will create a tough ‘skin’ and present a consistent appearance, masking the usual ‘mosaic’ of materials beneath.

Unlike brick and stone facing, gunite is not 'naturally' attractive. When applied onto the surface, the render has a rough texture. A smooth finish is usually given to create a surface less susceptible to collecting dirt suspended in the water.

A sheet of smooth gunite render presents a bland, monolithic appearance. Where the thickness of render allows, it is possible to scribe into the gunite to give the visual effect of blockwork. Careful attention to detail proportions and absolute regularity in the scribing operation is essential for the effect to be convincing.

A proprietary concrete render sealant with a clear finish may be applied to the gunite surface to prevent rapid build up of dirt or algae.

Other details may be employed to provide visual relief to the rendered wall. Where in character, brickwork surrounds to grab chain recesses can be incorporated into the wall to highlight their location.

Key points to be considered if the gunite option is chosen for chamber wall reinstatement:

- Gunite application is confined wherever possible to within the chamber, and lock wing walls and bull noses are reinstated using the original materials.
- Where practical, as many of the original timber fixtures within the chamber are retained or reinstated.
- Where appropriate additional detailing in brick is used to provide visual relief and interest.

Specification Notes

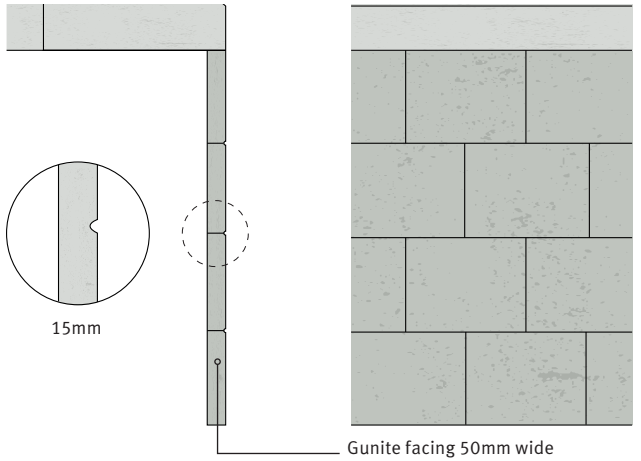
Gunite is a concrete (sand/cement) render of very dense consistency which dries extremely hard with strong adhesive qualities. Opportunity to vary the critical specification is severely limited by practical constraints, as any additives or pigments may compromise the mix of cement/water.

Gunite is usually applied to lock chamber walls in large panel areas which have undergone substantial preparation to receive the render.

Where the wall has to be pared back to accept the new thickness of render, the specification should state clearly the existing features to be retained or reinstated. These include timber edge beams and rubbing strakes, which provide useful edges for the gunite application.



Hampstead Lock: Example of unscribed concrete gunite render the use of gunite on the lock bullnose should be avoided.



Scribed gunite facing ‘blockwork Effect’

Timber Fixtures

Use and appearance

Timber post and beam fixtures act as fenders and restraints to protect the lock walls and add to the visual character and variety of an individual design. The qualities of hardwood timbers are ideal for lock fixtures. They are naturally dense and durable, do not readily absorb moisture and are resilient to heavy impacts. Once in place the timbers will weather down gradually to an attractive grey appearance.

Fixtures include:

Vertical timber rubbing strakes bolted into the chamber wall at 3.0 metre centres, standing 60mm proud of the wall, to fend boats off the chamber wall.

Horizontal timber edgebeams. Continuous rectangular section beam running along the top edge of the chamber provides a fender edge to boat hulls. A similar beam runs against the edge of the steps at lock stairwells.

Lock bullnose and wing wall fenders. Vertical posts bolted into the walls strategically located to fend off boats at potential impact points.

Specification Notes

The extremely exacting conditions within the lock environment demand the selective use of high quality hardwoods for reinstatement of timber fixtures.

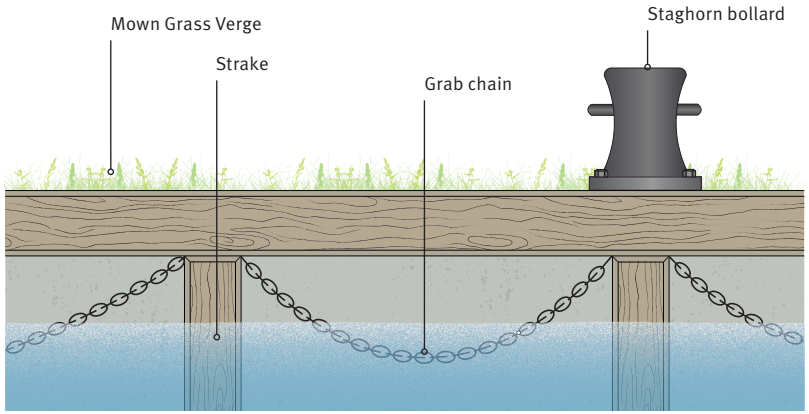
The quality of hardwood timber is directly related to cost. To procure the highest quality materials it is necessary to specify 100% heartwood. Inferior timber will not perform so well or last as long.



Eldridge's Lock: Example of timber fendering and Gunite render within the lock chamber. The fendering provides an edge to the concrete surfacing.

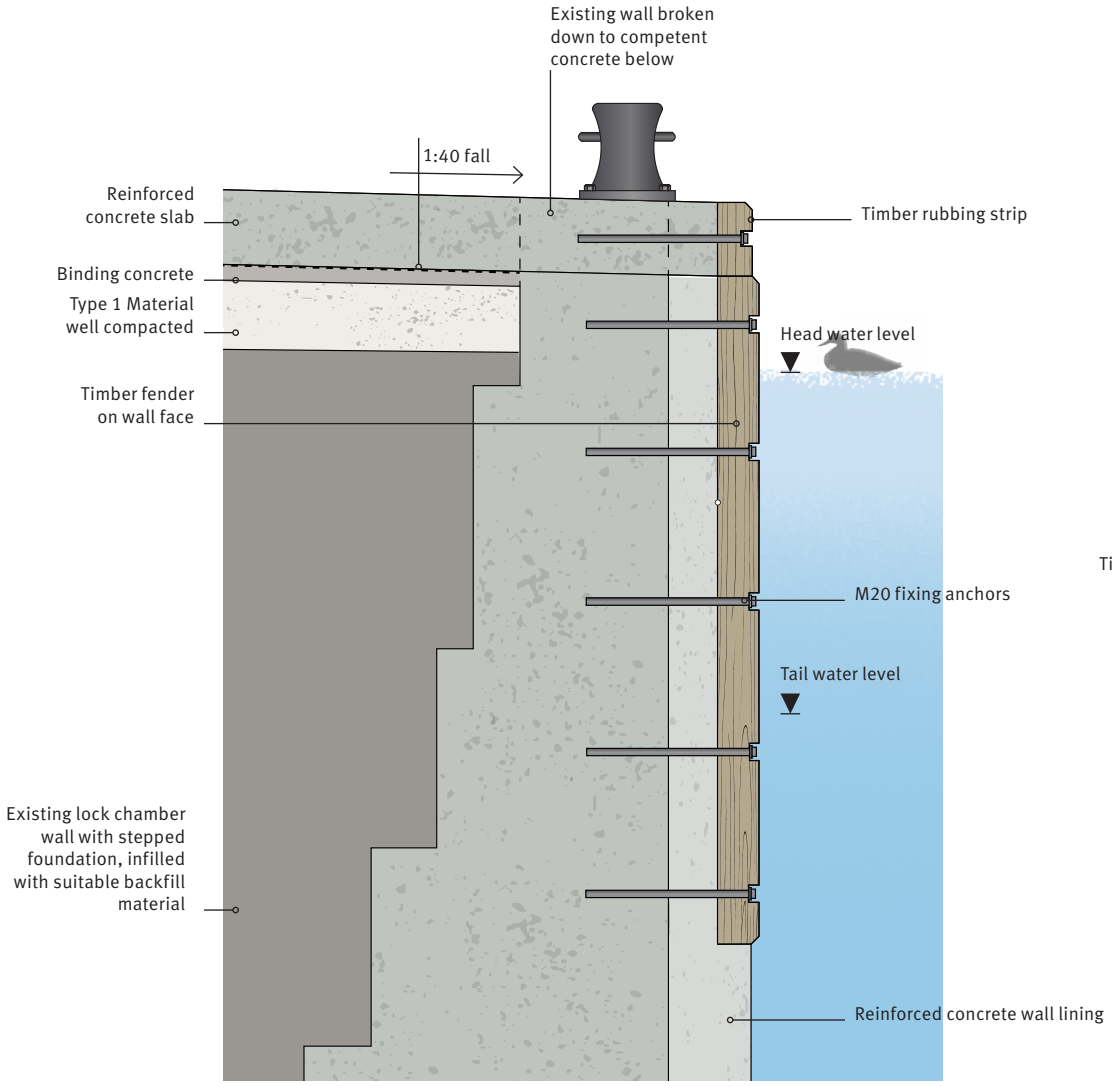


Eldridge's Lock: Example of timber fendering to lock bullnose, which assists in fendering off potential impacts from boats.

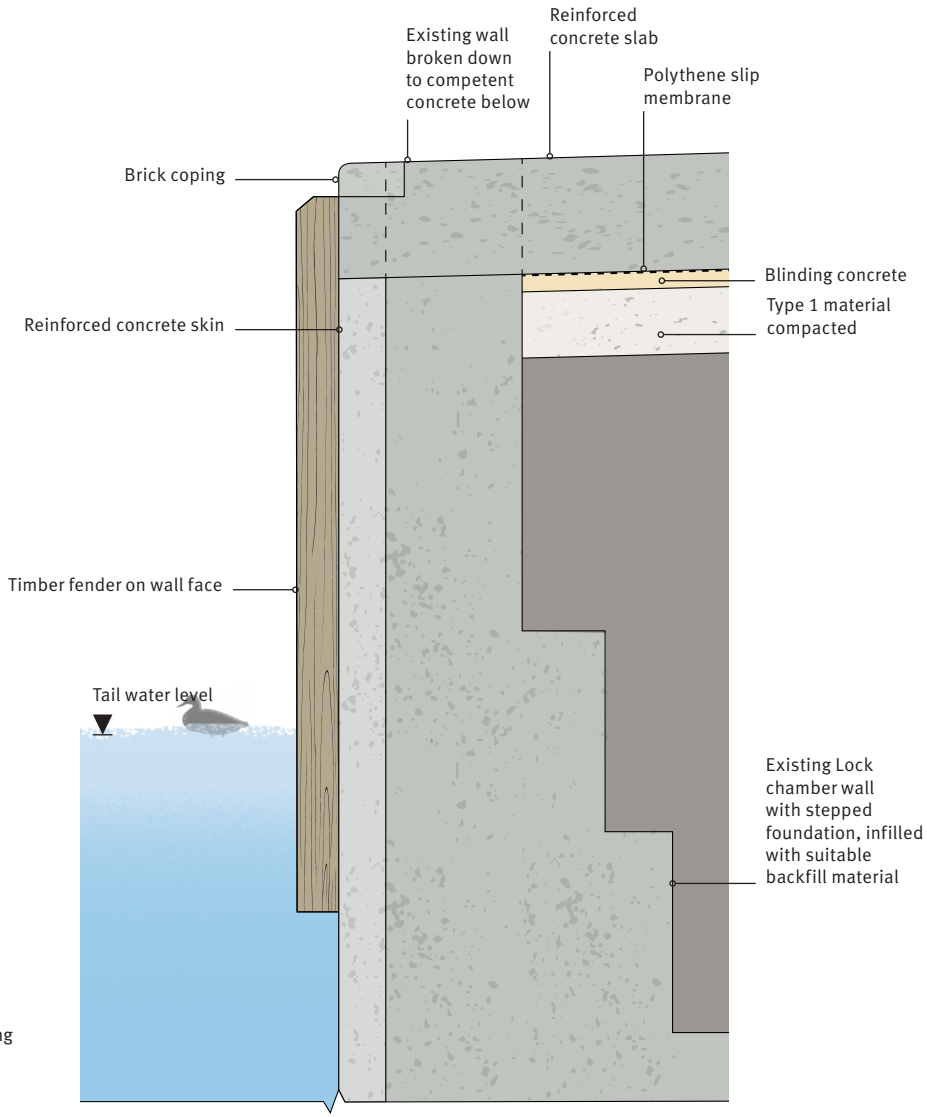


Elevation of timber fendering set within the lock chamber.

Lock Chamber Refurbishment



Section showing typical timber fendering within the lock chamber.



Section showing typical timber fendering to lock bullnose.

Lock Chamber Refurbishment

Lockside Design Considerations

In this section; the 'lockside' refers to the immediate vicinity of the lock chamber – an area with strict operational requirements. The lockside area receives intense use from the boating public. When reinstatement works are being undertaken to improve the operational and access arrangements, opportunities exist to enhance the visual character of lockside components.

A primary consideration is to provide safe, well defined access where changes in level are carefully detailed and appropriate selected materials help reinforce the Navigation's character. An example is the reinstatement of lock quadrant surfaces and push treads, which make a positive contribution to the lockside character and help to interpret the historic context of the lock.

The requirement for reduced maintenance commitments is considered in the choice of durable materials and sound detailing to facilitate ongoing maintenance tasks.

Retaining a grass sward around the lock chamber is important and should be encouraged where ever possible in order to maintain the rural character of the Navigation.

Locksides

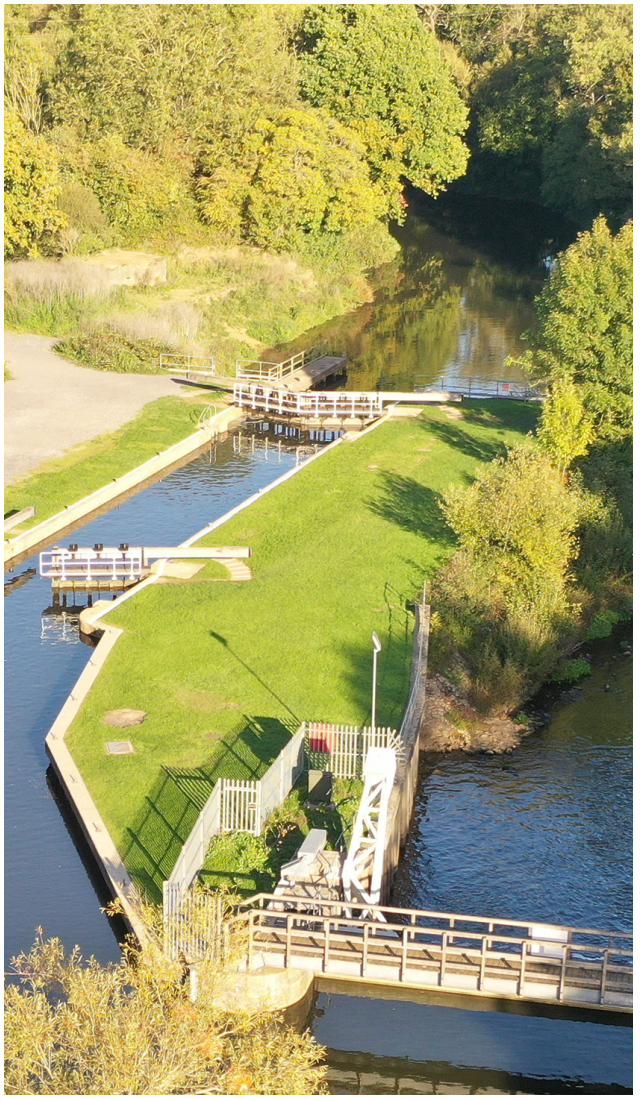
Locksides are heavily used by boaters getting on and off their boats. Reinstatement works often involve widening the walkway to achieve the required standards of a minimum of one metre wide, which includes around stairwells.

In recent refurbishments of Medway locksides, concrete has been used to surface for lock walkways due to its following attributes:

- It can be laid in situ with reinforcement mesh to project against differential settlement.
- Colour, tone and textural finishes can be used to achieve an appropriate visual appearance to match with existing concrete or stonework.
- The neutral appearance of concrete can be used to complement brickwork trim or hardwood edges.
- Concrete surfaces drain well, have good non-slip qualities, and withstand wear and attack from salt during the winter.

Example Locksides

- Eldridge's, Heritage, Teston and East Farleigh are example locks where the lockside have been surfaced in concrete. Existing concrete or granite block coping have been retained and the extra required width to the walkway constructed as an insitu concrete slab with a brushed finish applied across the width of the walkway, creating a consistent texture.
- Where the walkway has a brick retaining wall, to its rear, with a timber edgebeam against the chamber, the walkway should be constructed in concrete given a brushed finish. A 'soldier course' of brick laid flat should be used to define bollard positions and expansion joints placed midway between those positions. Bricks should match those used in the wall construction.



Sluice Weir Lock complex.

Lock Chamber Refurbishment

Lock Quadrants

Lock quadrants or 'push treads' are a design element, which help to define the navigation, by the choice of materials, detailing, usage and historic context, which reflects the identity and character of the lockside.

The lock quadrant is the surface area contained within the arc of the lock gate balance beam. They are important features of the lockside and are designed to assist the manual operation of the lock gates. The surface treatments are designed to cope with frequent and robust use of the area which otherwise would become eroded and dangerous.

To aid operation a band of 'heel grips' is set into the surface of the quadrant, which follows exactly the arc of the balance beam to assist leverage in opening and closing the gates. The need for additional paving depends on the degree of wear e.g. an urban lock as at Town Lock, Tonbridge or Hampstead Lock will require a completely paved quadrant and possibly also a paved lockside, whereas a remote rural lock may only need the heel grip band.

Where the quadrant is set within a grass lockside the concrete surface area behind the gate quoins should be reduced in depth to allow the grass to re-establish over the concrete within the arc of the quadrant.

The 'push tread' bands are set out on an arc centred on the heelpost with the heel grips set on radii of 100. New brick heel grip bands should be constructed with engineering bricks to match the colour and texture of the original bricks, and laid on edge, with the heel grips raised 25mm above the surface.

Surface treatment consists of a concrete slab laid to a 1:40 fall with a medium exposed aggregate finish. Brick on edge detailing defines the outer edge of the quadrant.

The colour of the quadrant base should match the concrete coping of the lock chamber, with the concrete infill carefully brushed finished to provide a raised detail parallel with the radii.

As a principle a 100mm thick concrete strip foundation laid on a base of 100mm MOT Type 1 compacted stone with a firm and even surface, blinded with sand should help prevent differential movement. This is particularly required for the tail gate quadrants, located on ground which has been substantially raised.



Rural lock quadrant at Eldridge's Lock.



Urban lock quadrant at Hampstead Lock.

Lock Chamber Refurbishment

Lock Quadrants

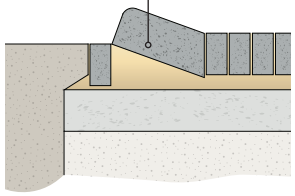


Oak Weir Lock: Reduce concrete height behind quoin and grass over.

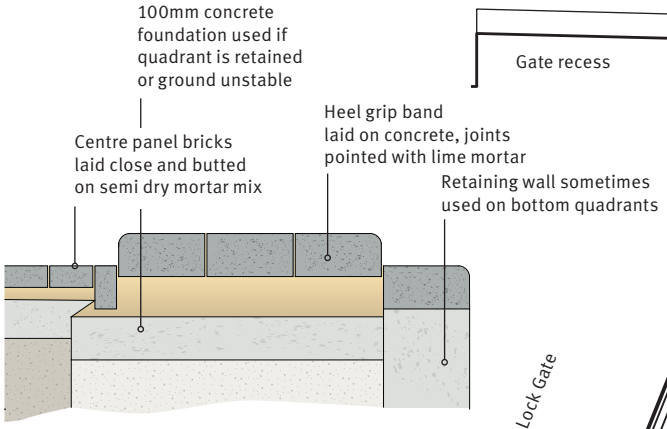
Where the quadrant is set within grass locksides the concrete behind the gate quoins should be reduced to allow the grass to re-establish over the concrete within the arc of the quadrant.

Appropriate treatment at:

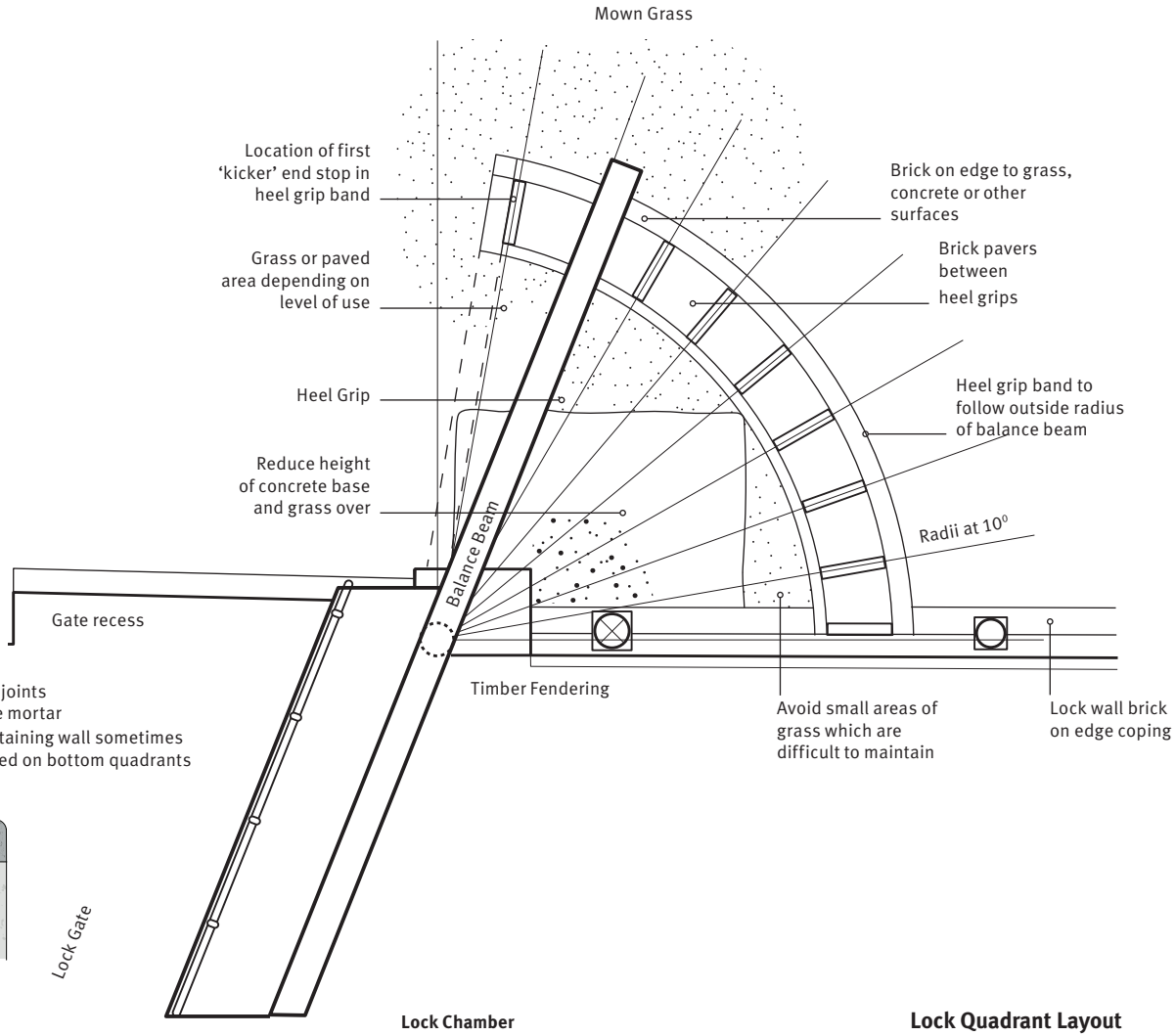
Porter's Lock
East Lock
Oak Weir Lock
Sluice Weir Lock



'Push Tread' end stop detail



Section through typical 'Push Tread' detail



Lock Chamber

Lock Quadrant Layout

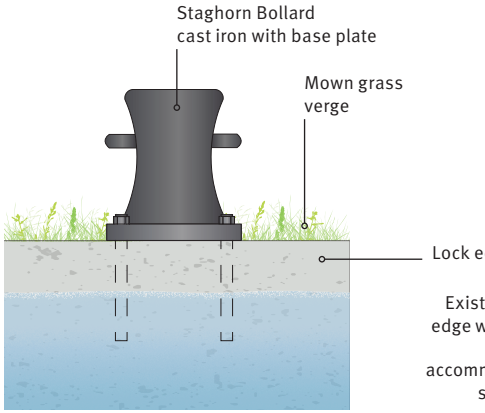
Lockside Mooring Bollards

Mooring bollards or rings are an essential part of the fabric of the Navigation and are designed and spaced to suit the sizes of boats using the Navigation. Historically, these would have been for loading/unloading at wharves, overnight stops and temporary moorings at locks to facilitate the ease of rope handling.

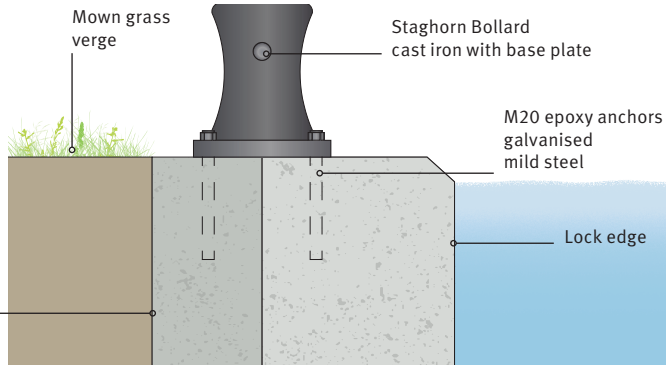
Bollards are part of the Navigation's history, showing the passages of time with rope wear, and made out of materials to hand. Care should be taken when refurbishing locksides or moorings not to sweep away these layers of history, as the type and style of bollards is one of the elements which contribute to the 'local distinctiveness' of the Navigation e.g. the 'Barge Posts' date from the 1911 refurbishment, and should be retained as heritage features.

Generally, bollards are used at temporary moorings such as at locks or service points, and rings are used at overnight or longer-term moorings.

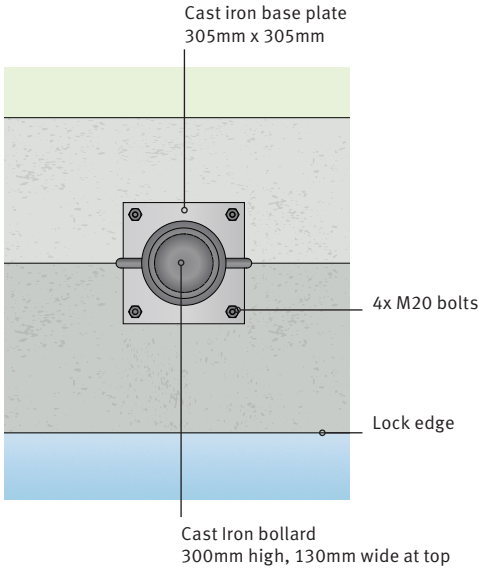
When installing new bollards, the characteristic style of the navigation should be followed. Re-castings are available for a number of original cast iron bollards such as the 'Staghorn' Bollard. Lock chamber bollards should be spaced at 3.0m centres and in pairs either side of the chamber. It is important to preserve a symmetry and visual integrity of the lockside by matching up the bollard positions with the rubbing strakes or grab chain recesses.



Elevation: 'Staghorn' Bollard.



'Staghorn' Bollard.



Plan: 'Staghorn' Bollard.



'Staghorn' Bollard – Painted Black.

Lockside Mooring Bollards

When bollards or rings are set in concrete, the amount of concrete visible at the surface should be minimised with a brick trim, which makes mowing or strimming easier.

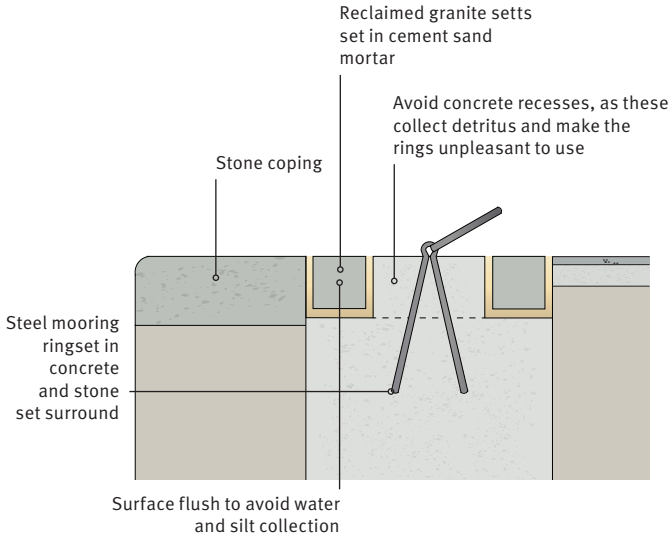
In rural locations, simple, large section timber posts may be all that is required, set into the ground to a depth which avoids the need to use concrete, with a rammed earth infill to the hole. This solution can have the least environmental impact in terms of materials and energy, as well as being historically appropriate.



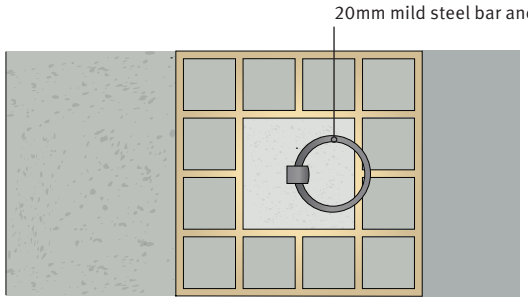
Original 'Barge Post' dates from 1911 and the refurbishment of the Navigation.



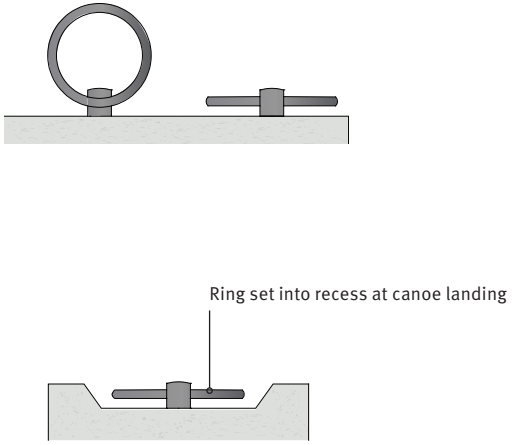
Original 'Barge Posts', painted white and new Staghorn Bollard, painted black.



Section: Steel mooring ring set in stone set surround



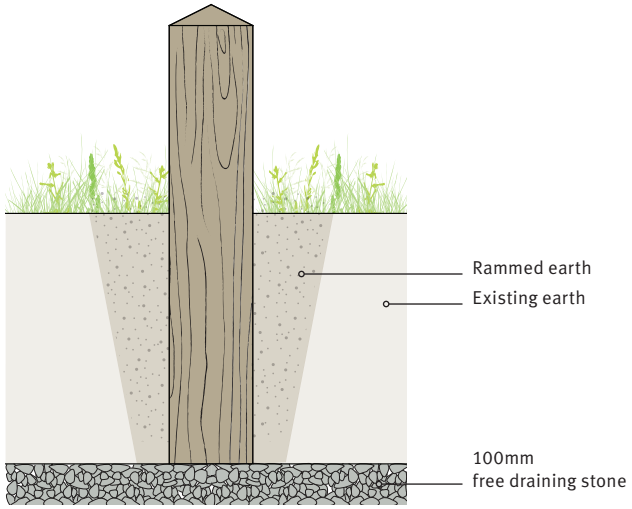
Plan: Steel mooring ring set in stone set surround

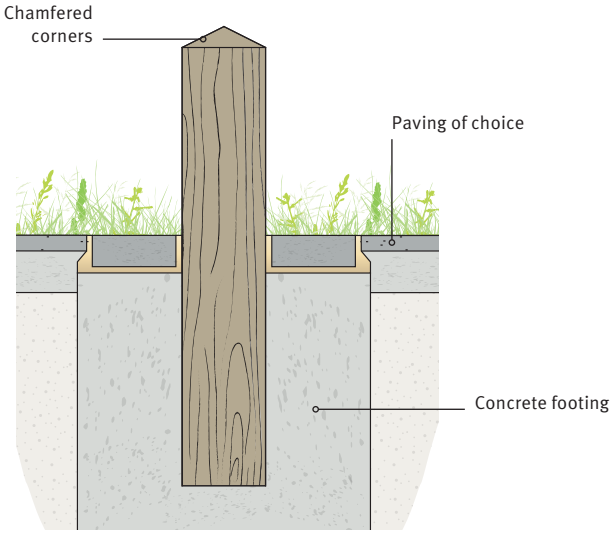


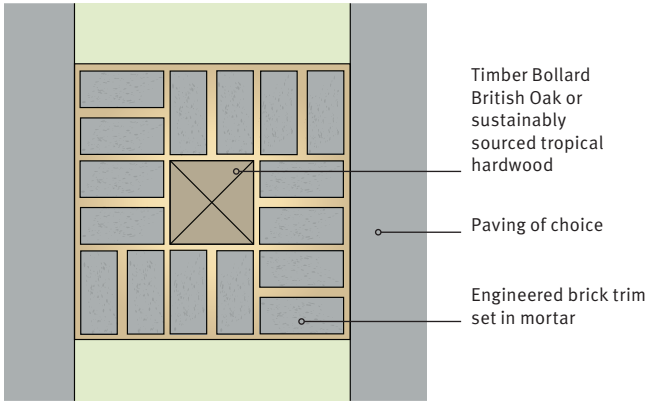
Section: Canoe ring

Lock Chamber Refurbishment

Lockside Mooring Bollards







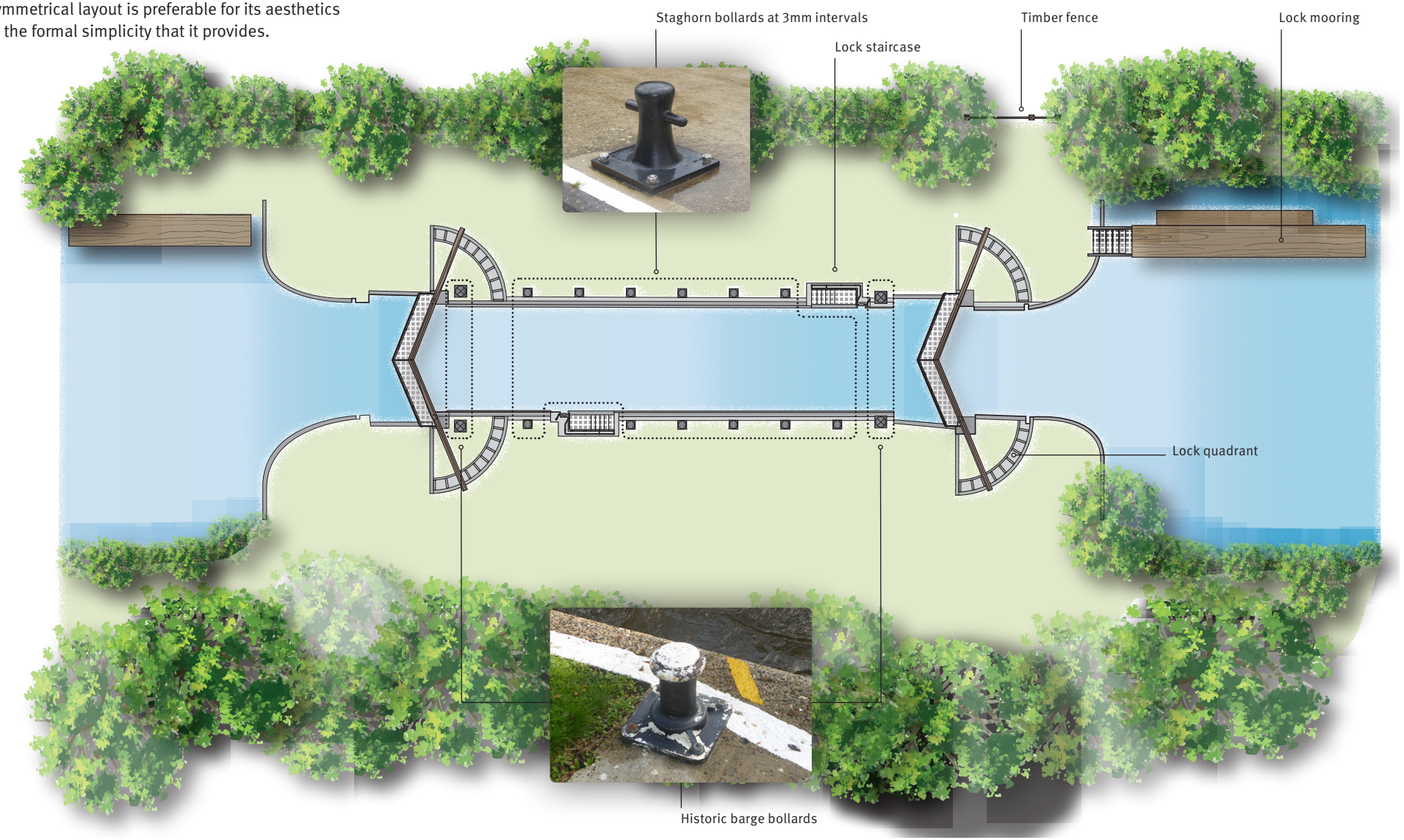


Timber mooring bollard, Wey Navigation. Guildford.

Lock Chamber Refurbishment

Indicative Lockside Bollard Layout

A symmetrical layout is preferable for its aesthetics and the formal simplicity that it provides.



Lock Chamber Refurbishment

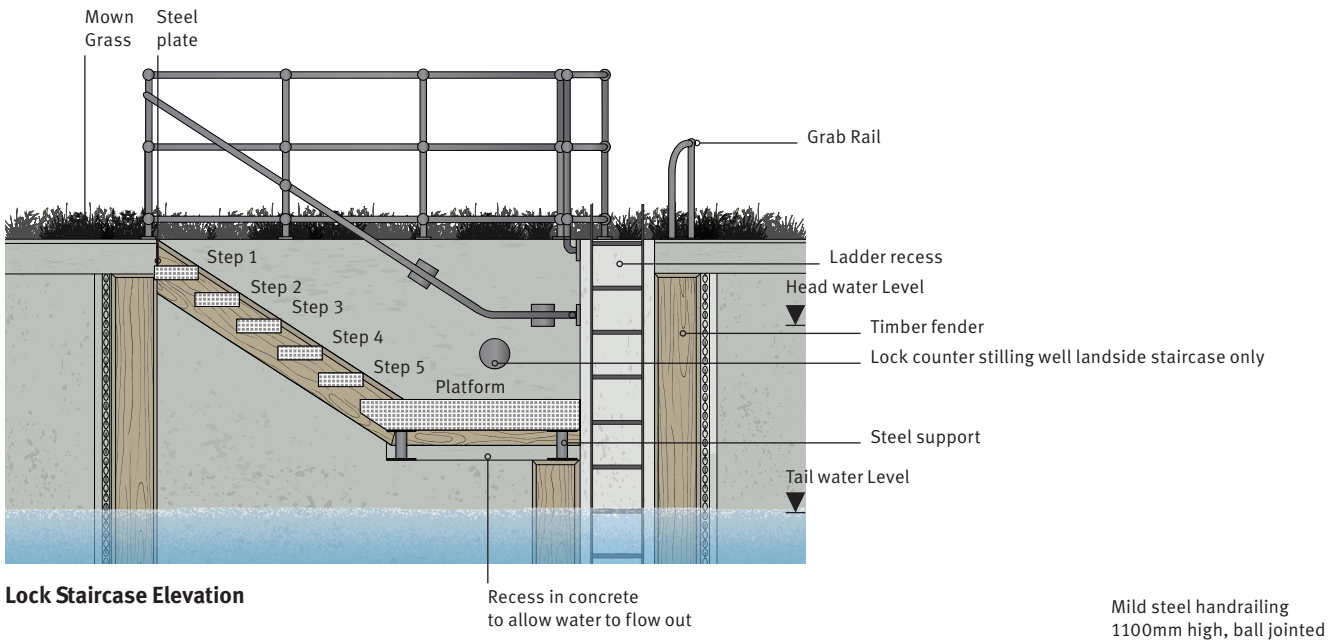
Lock Staircases

Lock stairwell railings protect boaters from falling into the lock stairwells from the locksides. They should be constructed of galvanised tubular steel 40mm diameter, with ball socket joints and painted black.

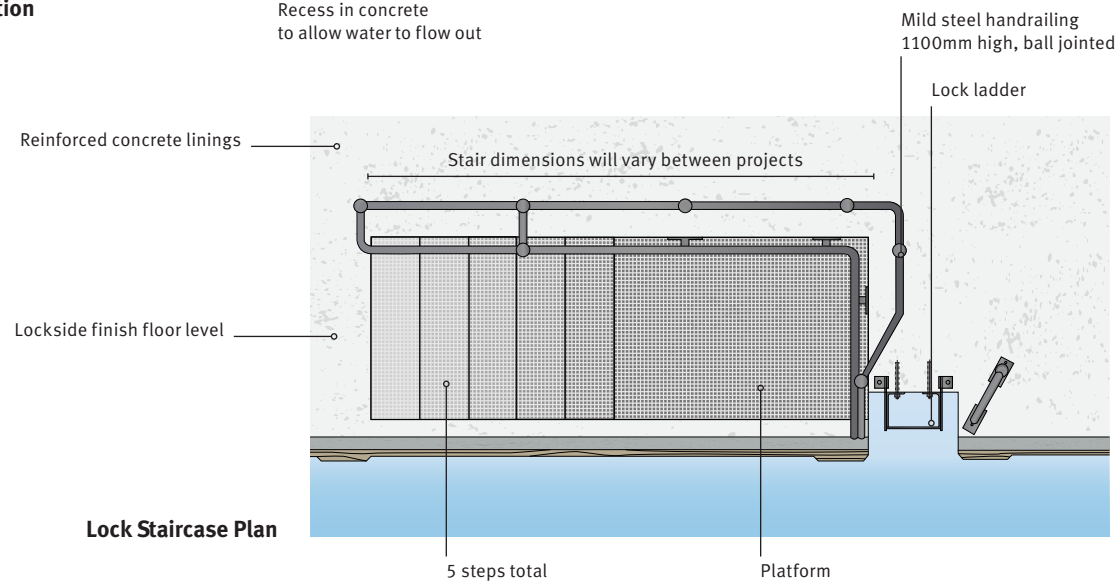
The visually recessive metal railings complement the existing lockside furniture of timber balance beams, lock gate walkway handrails and cast iron mooring bollards.



East Farleigh Lock: Staircase Railings.



Lock Staircase Elevation



Lock Staircase Plan

Lock Chamber Refurbishment

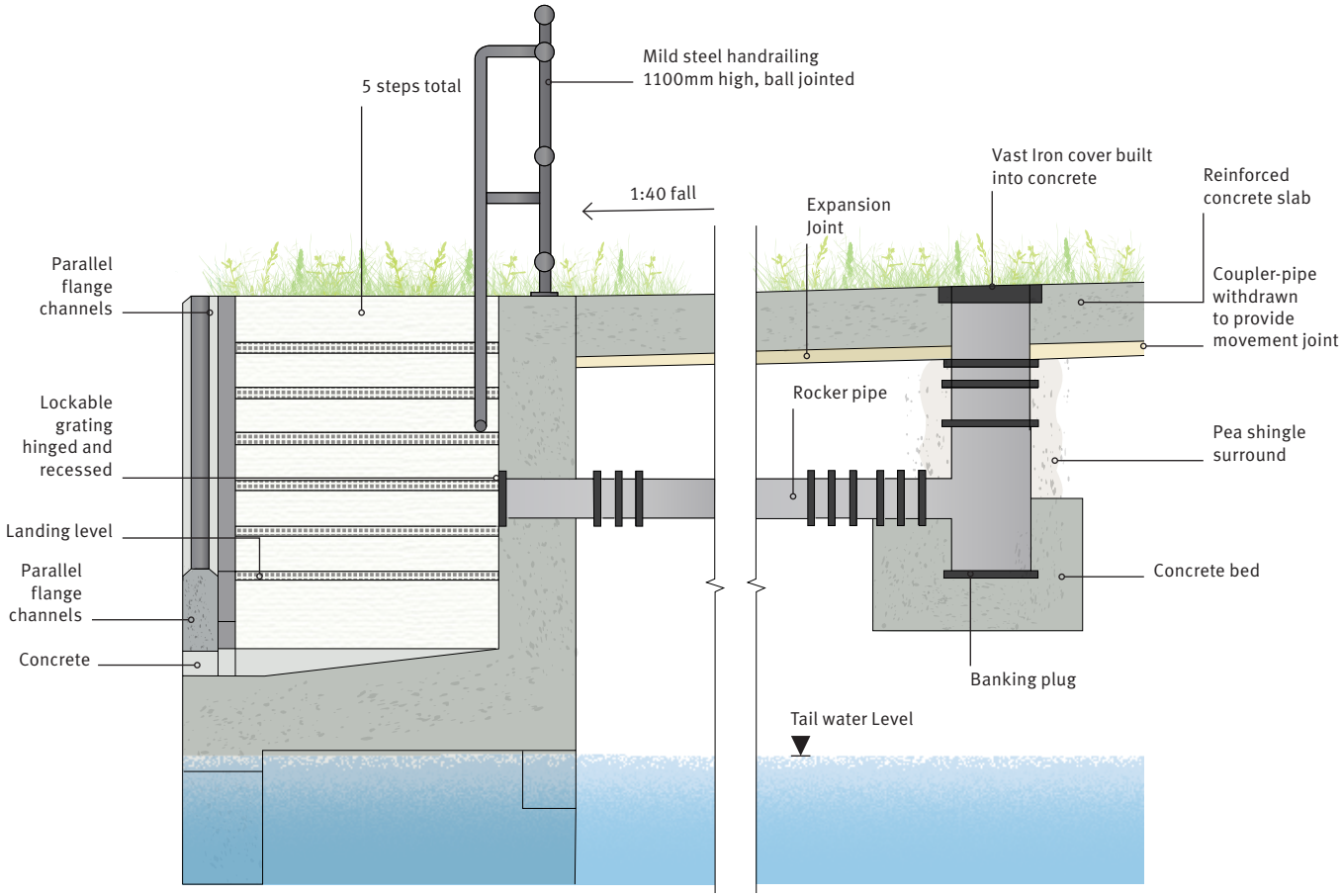
Lock Staircases



Teston Lock staircase.



East Farleigh Lock staircase.



Lock Staircase Section.

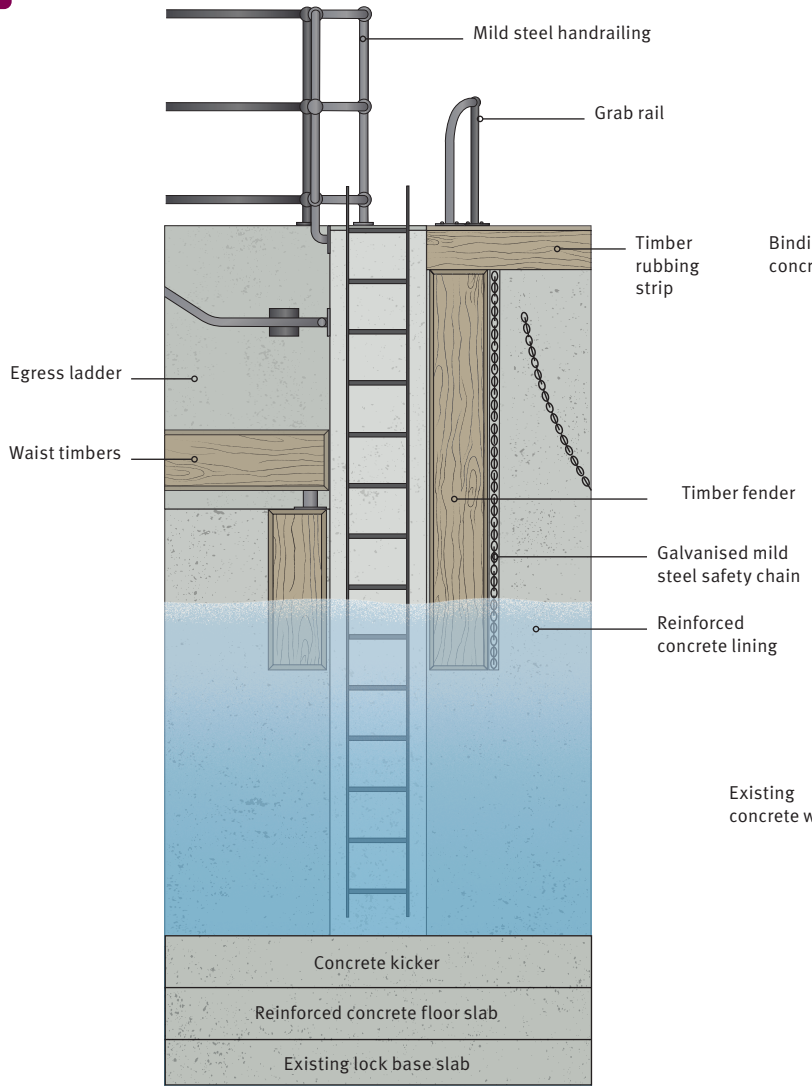
Egress Ladders

Egress ladders and grab rails provide access back to the lockside if a boater should accidentally fall in. They are installed within the locks chamber either as part of the lock stairwell or if the chamber has no stairwells then two per lock, preferably diagonally opposite each other.

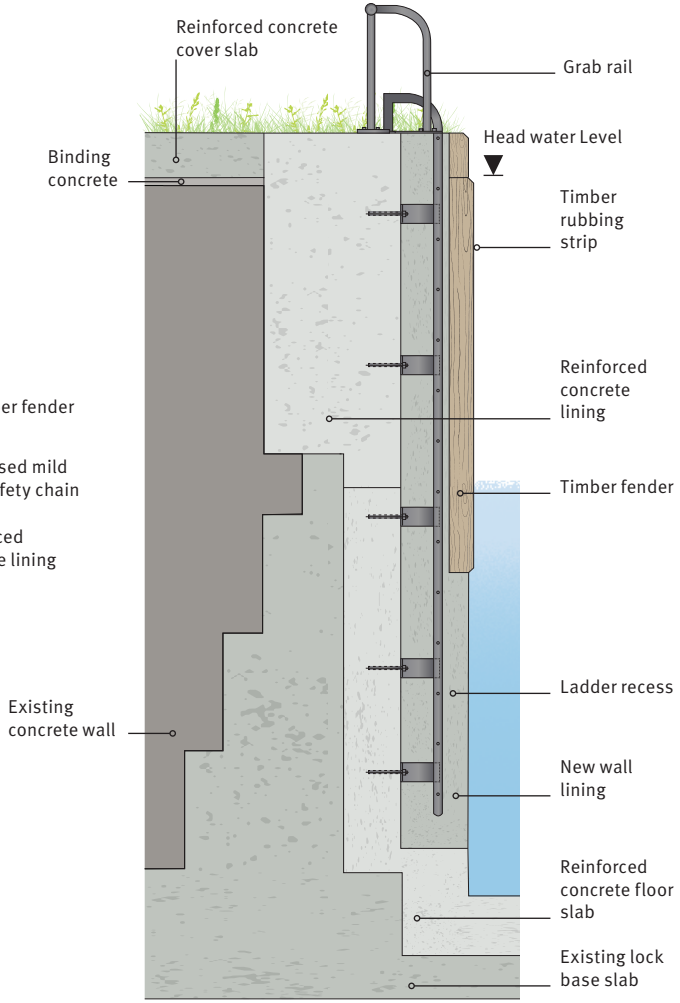
The egress ladders should be positioned:

- Not to obstruct boats.
- In a recess of approximately 500 mm width and 200 mm depth.
- The down-stream ladder can be installed in the upstream corner of the lock gate recess.
- If the lock chamber has rubbing strakes which are a minimum of 150 mm proud of the chamber wall, sufficient to act as a guard, then the ladder can be secured directly to the lock wall next to a strake. Another rubbing timber will then be required to act as a guard against boats coming in the opposite direction, 500 mm from the first. It is important to make sure the width of the lock is not reduced so as to restrict the capacity of the chamber.

The hooped handrails should be painted white to provide maximum visibility from the water. In some cases it may be possible to integrate a grab rail with another structure, e.g. a grab rail could be a continuation of the stairwell handrail, where the ball socket joint would match other structures around the lockside. Ladders should be positioned at 30m intervals along the length of all lock moorings, including at either end.



Elevation: Egress Ladder.



Section: Egress Ladder.

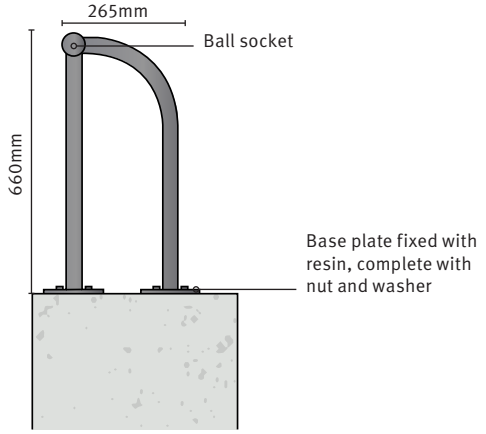
Egress Ladders



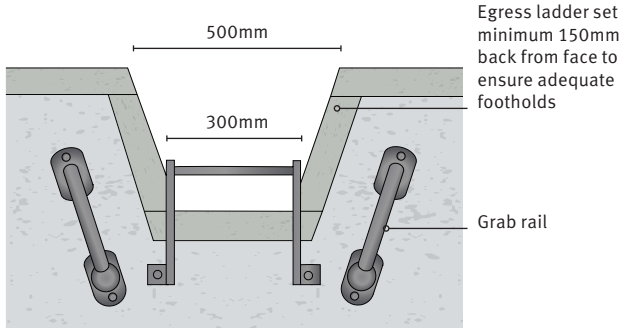
Hooped handrails should be painted white to provide maximum visibility from the water.



Example egress post, used where space is confined, River Thames.



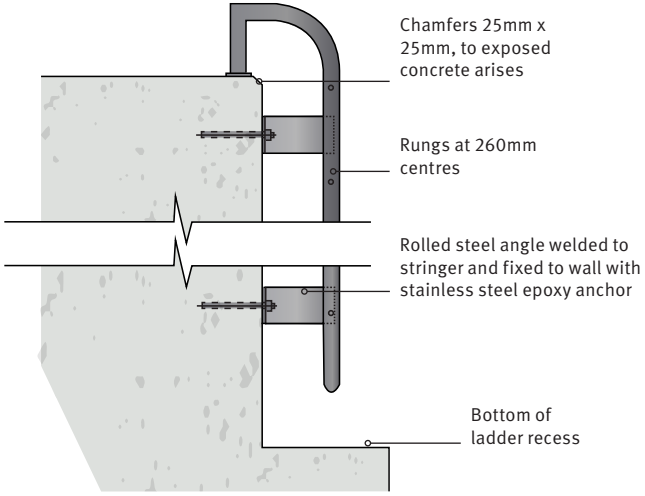
Example of Egress Ladder Grab Rail.



Plan of egress ladder and rail set-up.



Example of a lock egress ladder handrail at Sluice Weir Lock. The handrail is fixed the wrong way round. All egress ladders need to be checked throughout the navigation and fixed correctly.



Example of Egress Ladder Fixing.

Lock Chamber Refurbishment

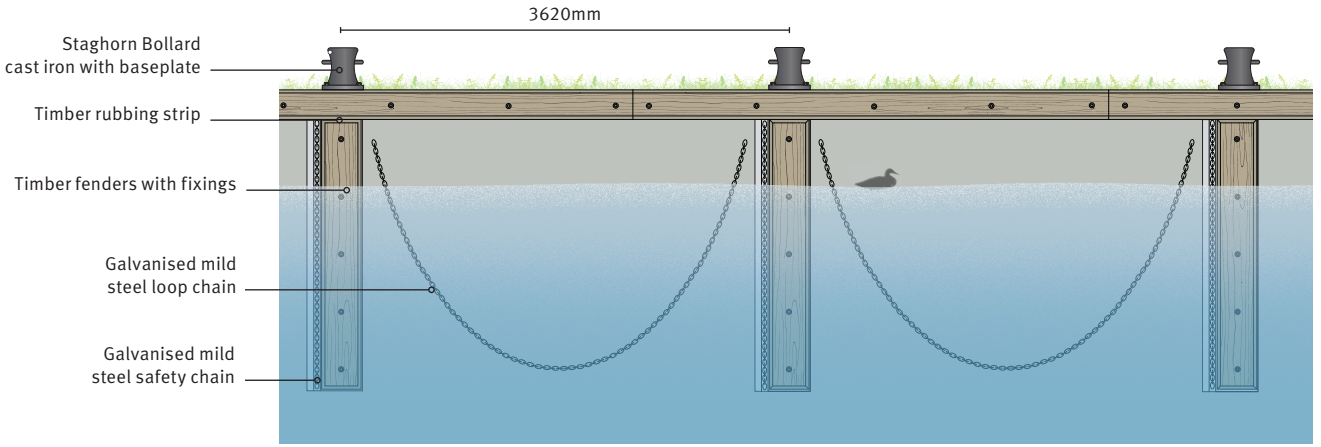
Safety Accessories

Grab Chains

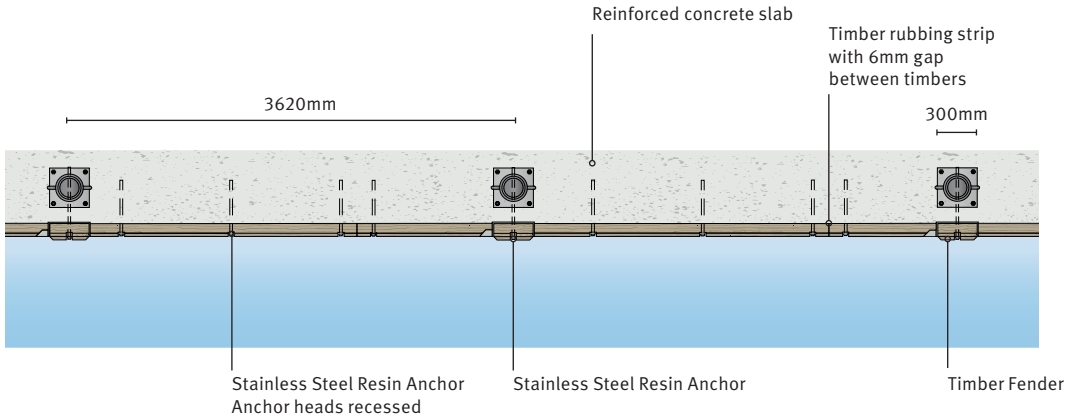
Within the lock chamber horizontally slung chains, secured just under the rubbing board provides assistance if a boater falls into the lock chamber. The chain should be fixed in a staggered relationship to the bollard positions and at their lowest point hang 150mm below the standard water level.



Grab chain detail Porter's Lock.



Lock Fendering and Grab Chains.



Example of lock fendering and grab chain layout.

Moorings

Environment Agency

Medway Navigation Design Handbook

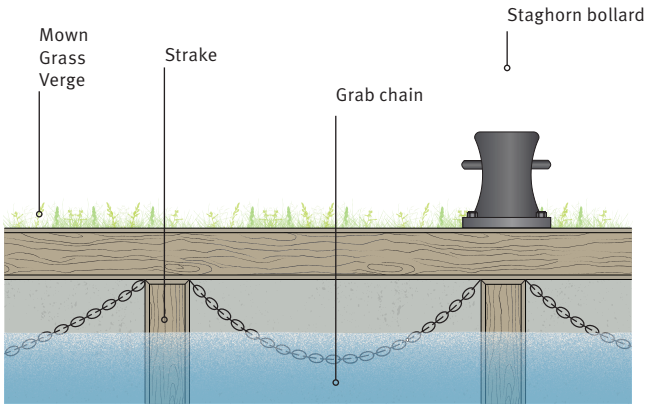


Moorings

Background

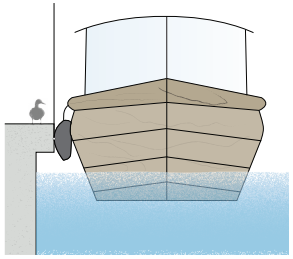
The activity of mooring requires basic skills in manoeuvring craft against the mooring edge in variable stream and wind conditions, to enable the craft to be securely moored and for its crew to safely step ashore. A characteristic of all craft, whatever the size, is they are built to horizontal lines and whether the hulls are rounded or angular in profile they all present a horizontal edge to the mooring.

Moorings with a variable freeboard should therefore have vertical components (strakes) to make contact with the hull of various sizes of craft. Some boats employ adjustable fenders, raised or lowered to protect the hull against different mooring edges.

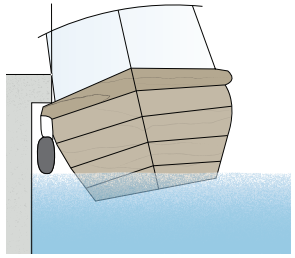


Verticle timber strakes protect craft.

Strakes are square section timbers fixed vertically at intervals against masonary or steel piled edge. Fixed below and flush with the horizontal rubbing strip strakes are designed to protect the chamber wall and prevent craft becoming trapped under the rubbing strip.



Mooring edge providing full contact with fenders.



Mooring edge too high craft can become trapped beneath the copping.

Mooring edge components:

Walkway: Level landing to allow safe access to and from craft and handling from the shore.

Mooring device: Bollards or rings to which mooring ropes are secured. Sizes vary to provide for different weight of craft. (e.g. the Staghorn Bollard).

Rubbing strip: Timber rail which presents a kind edge for boat fenders to lie against.

Freeboard: Height between the walkway surface and the standard water level. The freeboard should fulfil four main objectives:

- Ensure the walkway is above usual flood water levels.
- Allow boat fenders to make full contact with the rubbing strip.
- Provide convenient access for persons transferring from boat to shore.
- Be the minimum height required to reduce the visual impact of the mooring structure.

Lock Moorings

Lock moorings are an important feature on the Upper Medway Navigation and an essential facility for negotiating locks. The type and location of a mooring should respond to the river stream, prevailing wind conditions, location and lock layout.There are two types of lock mooring structures. ‘Onshore’ moorings at the lock head and ‘Offshore’ moorings at the lock tail.

Onshore Moorings

Onshore moorings are either built into, or as an extension to the existing shoreline, allowing boaters easy access on to shore. Onshore moorings require careful planning to ensure they do not have detrimental effects on bankside vegetation.



Onshore Moorings incorporating canoe portage at the head of Porter’s Lock.

Moorings

Offshore Moorings

Offshore moorings extend as a jetty into the river and are located downstream of the lock. They have an advantage of reducing the disturbance of bankside vegetation and integrating moorings and canoe portage platforms.

The standard freeboard height for head lock moorings should normally be approximately 500mm and for tail lock moorings up to 750mm to allow for greater fluctuations in water levels.



Offshore Moorings incorporating canoe portage at the tail of Teston Lock.

Alignment

Ideally the mooring alignment should be straight, directed towards the lock, situated in 'calm' water and out of the river stream. This provides a straight mooring edge, which makes the manoeuvring to and from the mooring considerable easier and safer.

Other considerations include:

- A mooring which is located on a bend in the river should ideally be situated on the inside of the bend, where the stream is slower.
- Sharp changes in direction should be avoided as craft will be damaged.
- A lock mooring with a curved alignment on a river bend should follow a consistent, convex line to assist boat manoeuvribility and access.

Length

The extent of the mooring should cater for the full range of craft using the lock. The mooring length should provide for the capacity required during normal conditions and for the number of craft accommodated by the lock.

A 'flotilla' of boats arriving simultaneously will create demand for mooring space. Where extra capacity is required for short busy periods, then to avoid a continuous length of constructed river edge the Navigation should encourage the culture of craft lying alongside another craft, which reduces the impact of lock mooring structures.

Materials

Traditionally offshore moorings, situated below the tail gates were constructed using Greenheart piles. Today pressure treated Douglas Fir, a robust and readily available softwood which weathers well, provides an acceptable alternative for both the piles and connecting beams. A natural 'weathered' finish is favoured with a non-solvent based, translucent stain will help to reduce the effects of initial weathering.
The head of the piles should be protected by a galvanised capping band with the four corners of each pile being chamferred to present a 'kind' edge to mooring warps.



Example of materials used in the onshore mooring at Oak Weir Lock – showing the galvanised capping band to the pile.

Steps

An open steel grating is proposed for the step treads that connect the offshore structure to the lock. This grating provides a functional treatment that is suitable for attachment to existing structures. It is especially appropriate for locations that are not highly visible or are in an elevated position.



Example of 'offshore' mooring where the decking will be changed to an open steel grating for the steps and GRP open mesh for the decking. Sluice Weir Lock.

Decking

The existing timber decking is being replaced on both onshore and offshore moorings in favour of 38mm Dura Grating, a heavy duty GRP open mesh grating panel system. The system provides a hardwearing and robust grating, which is finished with an abrasive anti-slip surface finish for added safety underfoot.

Ancillary Facilities

The main facilities which require considerations are:

- Pump out facilities and waterpoints which require direct access adjacent to the mooring edge. They are best located on their own mooring as at Tonbridge, Yalding and Allington.
- Facilities buildings and refuse facilities should have a clearly marked route from the mooring, which must be accessible for people with restricted physical capabilities. Ideally these facilities will be located in the vicinity of the pump out/ waterpoint, and benefit visually from being grouped together.
- Canoe portages/landings require direct mooring access with a low freeboard. This should be located close to the lock head and tail on the same side to avoid canoeists having to cross the lock gates. Steps set behind the canoe landing may be required to provide access to the towpath.



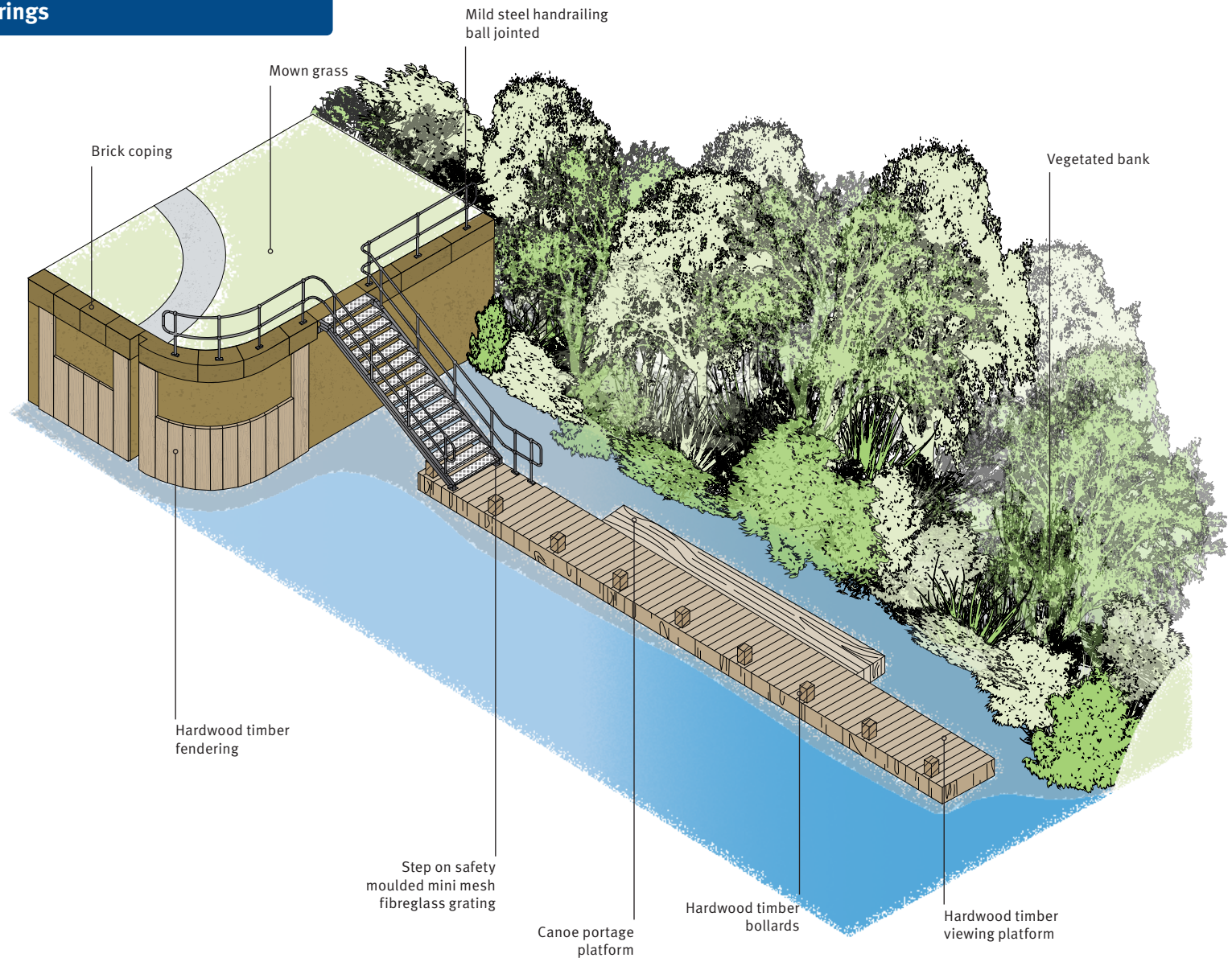
Allington facilities buildings and pump out moorings.



Example of heavy duty GRP 38mm Dura open mesh grating used at Allington facilities moorings.

Moorings

Offshore Moorings



Moorings

Canoeing

The River Medway Trail provides an 18 mile route from Tonbridge to Allington Lock for canoes, kayaks and paddle boarders. The Trail is graded easy and can be canoed in a couple of days. There are a number of campsites and launch points along the river. To assist in transitting the locks there are canoe portage platforms both above and below the lock chamber. At seven of the locks, fish and canoe passes have been combined to aid passage past the lock.



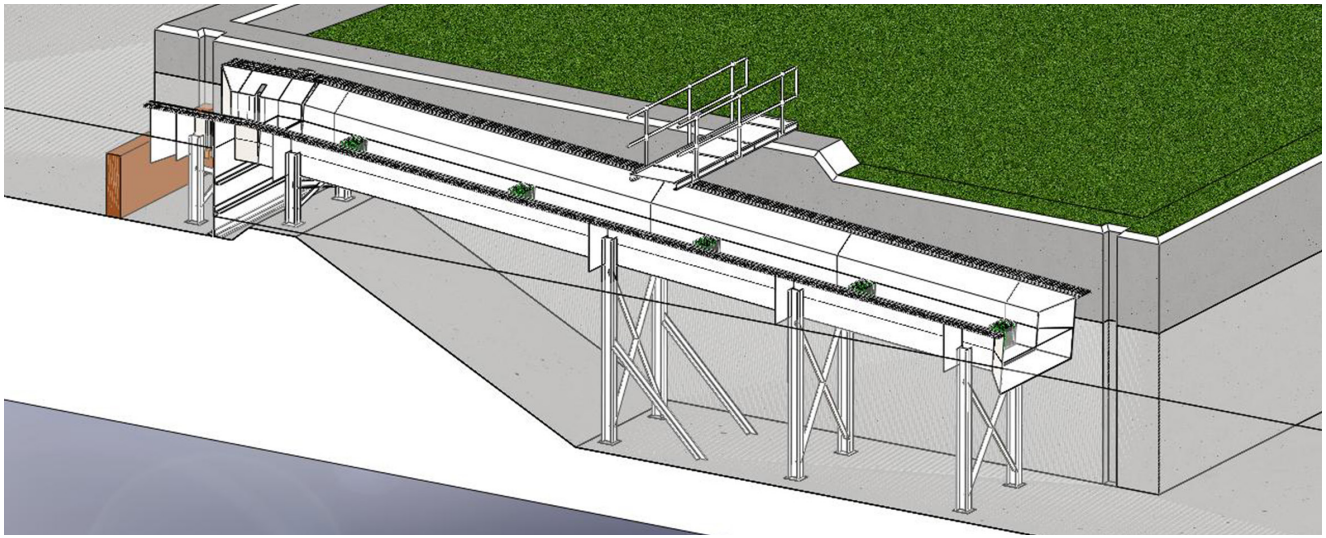
Example of canoe portage constructed as part of the downstream 'offshore' mooring. Eldridges Lock.



Porter's Sluice canoe and fish pass under construction.



Porter's Sluice canoe and fish pass showing the brushes which form the fish pass and support the canoe on descent.



Working drawing of Porter's Sluice canoe and fish pass.

Moorings

What should designers consider?

1. Is there a right of access for canoes?
2. What form of launching is appropriate for the site?
3. What types of canoes or Stand Up Paddleboards (SUP) are likely to be used?
4. Is it possible to achieve a fully accessible launch point? – Close to the car park, level footpaths, accessible gradients down to the water and disabled toilet/changing facilities?
5. Who are the intended users? Abled bodied, visually impaired, disabled users.
6. What are the most appropriate materials for the level of use and landscape character?
7. Is there suitable car parking nearby?
8. Is there an existing canoe launching point which can be used as a template.
9. Can locally resourced or recycled materials be used?
10. Who will manage, maintain and promote the facility?

Further sources of information

British Canoeing (BC)
The leading body within the UK promoting canoeing as a sport. The organisation has a number of initiatives aimed at promoting the sport to disabled people.
Go to link

River Medway Canoe Trail
For updates on river conditions or camping opportunities.
Go to link

GoPaddle
The GoPaddle website provides a comprehensive review of the river under its River Pages.
Go to link

Canoe and Kayak Handbook:
Handbook of the British Canoe Union.
Chapter 10 – 'Inclusive Canoeing and Kayaking' details the varying requirements of disabled canoeists.

Canoeing for Disabled People by Geoff Smedley
This book can be purchased from the British Canoeing.

EZ Launch for Kayaks and Canoes
A modular launch point system with accessible transfer for kayaks and canoes designed for people with disabilities. It also includes a transfer bench for wheelchair users to aid access.
Go to link

Fieldfare Trust
Specific consideration of promoting disabled access in the countryside - A Good Practice Guide to Countryside Access for Disabled People – available to buy online from the Fieldfare Trust.
Go to link

Moorings

River Moorings

Many of the considerations which influence lock mooring design also apply to linear river moorings, although the latter do not normally receive the intensity of use. Where moorings are proposed for isolated stretches of river it should be possible to integrate them sensitively with the existing bankside conditions and avoid disturbance of marginal habitats or mature trees. The design of moorings and bank stabilisation techniques can be combined to create sensitive treatments which prevent the riverbanks from having an overdeveloped appearance, particularly within a rural landscape.

There are a number of ways to achieve this:

- The total number of moorings required can be broken down into separate short lengths to accommodate small groups of boats.
- The breaks between moorings can be planned to coincide with existing bankside and marginal aquatic vegetation which help to screen the linear moorings.
- A backdrop of mature trees can help reduce the scale and visual impact of linear moorings. Trees in close proximity to moorings should be inspected by a qualified arboriculturist and potentially hazardous overhanging branches identified and removed.
- The appearance of 'Onshore' mooring can be made more informal by keeping walkway width to a minimum (1m), and where appropriate, sympathetic surface treatments such as mown grass, well compacted crushed stone or sealed gravel can be used behind a timber or concrete coping.
- In all cases where piled edges are used to retain the bank, freeboards should be kept to a minimum height with an appropriate capping and cladding option applied, in order to reduce visual intrusion.

Timber Staging

Timber staging is particularly attractive where on-shore landing stages allow water to flow underneath. Normally, bank revetment such as sheet piling is required at the rear of the landing stage, with the mooring edge, constructed in timber braced against the revetment. Where a mooring structure is subject to flood conditions the supporting posts can be extended vertically to the appropriate height and detailed as riser posts.

Pile Capping

The piles should be capped with a material, which relates to the proposed surfacing. The capping has an important visual and functional role:

- The piles should be capped with a material, which relates to the proposed surfacing.
- The capping demarcates the waterside edge and so highlights the potential hazard area.
- The capping material should have a textured quality providing a non-slip/skid surface for boaters' use.
- Protects the piled edge from impact damage and provides effective drainage of surface water run-off into the river.
- Bollards, rings and 'rubbing strips' can be fixed onto the capping material, so they are easily identified and located at consistent intervals.
- Concrete capping can be detailed to create visual 'relief' and 'texture' by use of profiling and shadow lines to mask the piled edge.

The materials used for capping should be carefully selected and detailed:

- Concrete can look very stark and takes a long time to weather down. An exposed aggregate finish using washed river gravel as the bulk aggregate will successfully 'age' and provide a textured surface.
- Brick relates well to adjacent brick structures (walls, steps, paths, etc). Engineering bricks should be used with a water absorption rating of less than 10%. Blue single bullnose bricks laid on a mortar bed create an appropriate wharf appearance.
- Timber capping is an appropriate material for straight lengths without angles. The timber should be either hardwood or pressure impregnated softwood treated with a natural finish stain. Good quality timber is essential and should be planed smooth and laid heartwood down with fixing screws countersunk to ensure the effects of initial weathering do not cause splintering and cracking. Countersunk holes should be sealed with an appropriate waterproof filler.
- At low key sites a strongly defined capping may not be required. In these situations the walkway surface could continue right up to the rubbing strip.

Moorings

Cladding

Freeboards in excess of 450mm will generally require the face of the piles to be clad, preferably with timber. Cladding consists of either horizontal rails and/or vertical ‘strake posts’ bolted onto the piles above water level. These components should be clean and free of projections to enable craft to moor safely against the piled edge.

Riser Posts

These posts set at regular intervals along the mooring are vertical extensions of the rubbing strakes. Their height is related to the average flood levels in order for craft to be held off the mooring and prevented from over-riding the walkway in times of flood. In the past, riser posts have been constructed of solid timber as part of the mooring structure which resulted in problems where regular renewal was required due to impact damage.

Two alternative options:

Timber clad steel posts
An alternative consists of a steel universal beam structurally integrated with the steel piling. The exposed sides of the beam are fitted with timber cladding bolted through. If damaged the timbers can be replaced.

Riser posts with sliding rings
At long term moorings where riser posts are required the universal beam posts can be fitted with vertical bars welded to either side of the post, with a steel mooring ring attached to each bar. During flood conditions the ring will slide up the bar and allow craft to rise freely to avoid the possibility of mooring ropes and craft being damaged.



Example of linear river moorings creating a ‘wall of boats’ between the towpath and the river.



Riser Posts: Posts installed along the length of moorings to prevent boats over-riding the walkway during flood conditions.



Pontoon anchored by riser posts allow moored craft to rise independently of the riser posts in flood conditions.

Moorings

Residential Moorings

Encouraging residential use of the water puts life into town centres by adding colour and diversity with people living, working and enjoying their environment. People usually choose to live on a waterway because of the character, history, and the beauty of the natural environment. Many live on historic craft, which are equally as important as listed riverside structures. Permanent residents have a vested interest in keeping their environment clean and safe, acting as caretakers, inhibiting vandalism and theft, deterring littering and antisocial behaviour.

Security of tenure is one of the essential ingredients for a successful residential mooring development with permanent approved moorings. Towpath moorings are not suitable for permanent houseboats, which should be located off the mainline of the navigation, leaving towpath moorings free for overnight stops. Many unofficial moorings are badly maintained as the residents have no security of tenure and do not invest the required time and money to maintain the mooring. Unofficial sites not designed as permanent houseboat moorings lack the necessary basic facilities and are difficult to manage.

Integration of Residential Moorings

Historic wharves can be used for residential moorings which can provide new mixed developments with a sense of place and added security.



Example of a residential mooring. East Farleigh.



Example of a historic craft being used as a residential mooring. River Medway.

Planning Consent

The use of a mooring for residential purposes rather than for leisure is seen as a change of use for planning purposes. Therefore, planning consent is required for all aspects of residential moorings, from site layout, access roads, all built facilities, landscape and associated engineering works.

When applying for planning permission for residential moorings within an existing boatyard or marina development, a statement on future management and maintenance of the site should be included, together with the provision for a ‘caretaker boat’ as part of the proposals.

Controlling the appearance of boats

As the Navigation Authority the Environment Agency should control the form and construction of residential boats, which can be controlled if necessary by:

- Covenants on a lease, for mooring rights, or land based facilities
- Clauses in a mooring agreement
- Whether a boat is visually appropriate depends on its location, size, height, material of construction and colour.

Moorings

Site Location

The following checklist is useful for assessing residential mooring schemes:

- Does the proposed development contribute positively to the character of the River Medway?
- Is there a conflict with the local development plan?
- Is the overall impact on the environment acceptable?
- Does the existing ground level and conditions effect the cost of excavation and the site's financial viability.
- Is the site on the off-side or on the towpath side?
- Is the site appropriate for, ie linear moorings or a marina.
- Are the proposals compatible with other water and land users?
- Is there the necessary space available for all the proposed facilities?
- Are there other boating facilities nearby?
- Is there easy access to the navigation channel?
- Sites need to be safe and secure and capable of being managed, serviced and maintained.
- Is access available for construction, road or water?
- Are there other amenities nearby, shops, public transport, entertainment etc?
- Signage and information needs to be consistent and discreet.

Standard of Facilities

A range of appropriate facilities needs to be provided as not all residential boat owners have the same requirements. The provision of the following facilities should be included where possible in any new residential mooring scheme:

Direct access to the bank or a pontoon
Access may in some cases be required for disabled people, children, elderly users, and parents with prams, etc.

Drinking water provision
Individual water points for each boat with all pipe work installed to BS specifications with frost protection, meters and local water company requirements.

Mains electricity
The electricity supply should be a flexible armoured cable between the shore, pontoon and the boat. It should be as short as possible so not to be trapped or trail in the water. It should be individually metered with overload and earth leakage protection. Overhead cables should be avoided as they are unsightly and are susceptible to snagging.

Sewage disposal
One of the following should be available at any residential mooring scheme. A chemical toilet disposal point or a holding tank pump out service. Direct link to mains drainage is usually for permanently moored craft and is via a macerator pumped system, which also caters for 'grey water' disposal.

Vehicle access and parking
For each boat to follow local authority standards, including access for emergency services to comply with statutory requirements.

Provision of mooring bollards and rings
Along a securely protected bank or pontoon to include lifebelts, safety equipment, emergency lighting and a means of escape along safe routes.

Fire hydrants and a potential water supply for fire services.
Moorings should be designed to reduce the possibility of fire spreading between boats and there should be a contingency plan to move a boat on fire away from other boats.

Storage space
A store is important if boats are to be well maintained and kept free from clutter i.e. one lockable store per boat.

Rubbish and recycling disposal point
With means of collection by local authority.

Management Issues

On-going site management needs to be addressed at the design stage and the appropriate mechanisms established within the Environment Agency's lease/mooring agreement to ensure the overall integrated maintenance of the site. Consistent terms, relating to use and storage on the site, permitted and non-permitted boat maintenance activities and any conditions relating to noise, disturbance and visual impacts, e.g. security lighting should be addressed at the outset.

Towpath

Environment Agency

Medway Navigation Design Handbook



Towpath

Background

Originally the towpath of the Navigation was constructed for two horses to pass, with surfaces 'improved' where necessary, to give a harder wearing surface using materials to hand. Today the towpath has to accommodate a range of users from walkers, cyclists, anglers, moorings and a place to sit, providing 'Access for All.'

Repairing eroded riverside paths is not the statutory duty of the Environment Agency, as long as they are deemed 'open and fit for use.' However, designing a path and its surface to withstand erosion in the first instance saves expense in the long term.

The intensity of use and ground conditions will obviously determine whether a surface treatment is needed. If a location is 'urban' or 'rural' is not necessarily a key factor, as often the rural landscape character within an urban environment is valued by both people and wildlife. It is the level and types of current uses and the relationship to the original historic fabric of the Navigation, which influences the surface treatment, management and design approach.

In isolated areas, a grass towpath surface can be maintained with an appropriate mowing regime, whereas a busy location will require a more durable surface. Paving can be used to differentiate areas of use e.g. to denote the functional urban lockside from the towpath.

Towpath Surfaces

The treatment of towpath surfaces has a significant visual impact on the riverside and should reflect the local venacular and quality of materials used in nearby surfaces and structures.



Macadam towpath section adjacent to new development. River Medway. Maidstone.

Sealed Surfaces

Sealed surfaces require a fall to shed water efficiently and prevent puddling. Where surface water cannot be shed directly into the river or planted area, drainage infrastructure will be required. In situ concrete and bound macadam treatments allow the use of various colours and size of natural stone aggregates to create varying textures and neutral colours.

Unit surfaces, such as clay bricks, concrete blocks or stone setts can be used either as trim or edges to areas of concrete or bound macadam.

Concrete (cast in situ)



In situ cast concrete with a brushed finish is defined by a yellow brick edging. Hampstead Lock.

Concrete is a versatile durable material, sympathetic to both rural and urban locations and easily cast into irregular shapes. The appearance benefits from an exposed aggregate brushed or tooled finish both to 'age' the new concrete and provide a textured 'non-slip' surface.

Concrete can be used effectively with brick paving as trim or edging, which has been used at a number of Medway locksides.

Concrete (cast in situ)

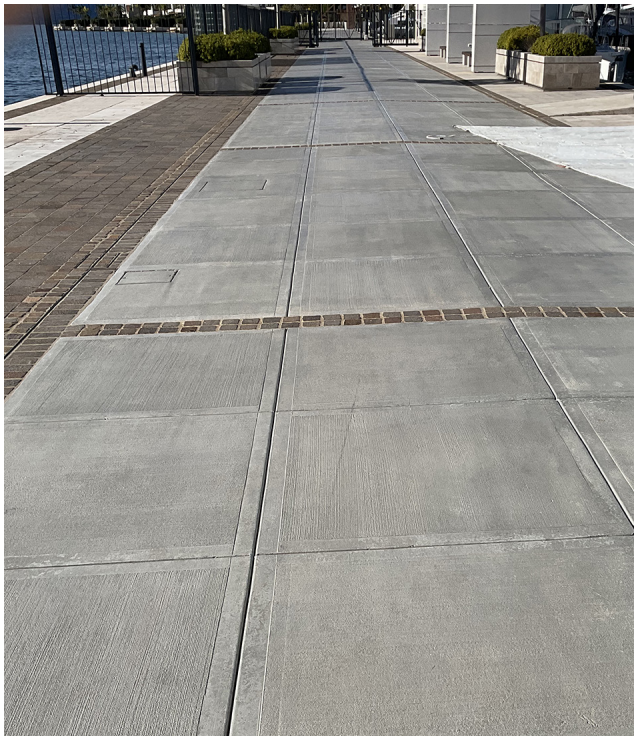
Use and appearance

A textured finish is particularly suitable for small scale work such as locksides, pedestrian walkways, ramps and restricted areas of hardstanding. The concrete can be laid in situ and be given a surface texture by hand, where space for mechanical plant is confined. These textures when applied have good non-slip qualities and allow the surface to drain easily with the fall. Brushed Finish: When the concrete is still 'green' a texture is applied with a stiff bristled broom drawn across the surface, as consistently as possible, in the direction of fall.

Concrete is laid as individual areas separated by expansion joints which can be used to accommodate brick or stone trim to reduce the scale of large expanses of concrete.



An example of a slipway, where a textured concrete finish has been used to provide grip and drainage.



In situ cast concrete laid with expansion joints, brick trim and brushed finish surfacing.

Specification Notes

The finished appearance depends upon the colour of the concrete as well as the texture. Use of grey stone aggregates such as limestones and grit stones together with a dark sand or pulverised fuel ash (PFA) can help to darken the tone of the new concrete.

The cement mix incorporates a quantity of natural coloured sand (without pigments) will enhance the appearance of the graded aggregate. Sulphate resistant cement tends to have a darker tone which is preferable to 'white cement.'

The aggregate should be of well graded stones ranging from 20–30mm, preferably of angular shape and locally sourced. Granites and hard limestones are ideal and can be mixed with local gravels to introduce local colours. Rounded pebbles are not recommended as they tend to get polished smooth with use.

The method of exposing the aggregate should be applied consistently over the whole surface to match a previously approved sample.

Brick Paving

Brick paving Is a more formal treatment introducing colour, texture and pattern with brick bond and jointing. Suitable for suburban/urban situations with brickwork already on site. E.g. Tonbridge Lock.

Use and appearance

Traditionally brick paving has been used to surface areas of more intensive use, where stone was not readily available. Often used on edge for areas of heavy wear and tear, e.g. heal grip bands, lock edges and access points. Where brick structures exist on site or within the immediate vicinity, areas of brick paving can be introduced.

Specification Notes

Original 'Imperial' bricks are usually larger, and wear differently to modern bricks. Where possible existing brickwork should be retained and repaired with reclaimed bricks to match existing. Where new brick paving is laid, clay engineering class bricks with a water absorbency of less than 7% are suitable for pedestrian areas with a minimum recommended cross fall of 1:50 to ensure 'Access for All.' Engineering bricks or brick pavers should have full frost resistance and low salt content to BS EN 1344, Nov 2013. Clay pavers have a micro texture providing non-slip qualities and sizes should be 215 × 102.5 × 65 or 50mm to reflect original bricks.

The most suitable colours for paving are the 'multibrindle' type which blend red/blue or yellow/ brown colours within individual bricks to create warm attractive surfaces. Bonding patterns should reflect the simple, utilitarian character of the Navigation and avoid decorative paving patterns such as herringbone or basket weave. Stretcher bond is the most appropriate. Depending on the location, bricks can be laid close butted either on sand with sand brushed into the joints or on a semi-dry 'thick' mortar bed with dry sand/cement mortar brushed into the joints.



The surfacing of the lockside reflects the brick construction of the surrounding development. Stretcher bond would be a more traditional pattern rather than the existing basket weave.

In areas where ground movement is likely, especially at lock sites, it may be necessary to lay the brick paving on a concrete foundation with a mortar bed.

Bricks pavers with chamfered edges should be avoided as they give a 'municipal' appearance, which is at odds with the functional heritage of the Navigation.

Edge restraints should consist of brick on edge, bedded and haunched in mortar. The formation specified for paved areas should allow a fall of 1:50 for surface drainage into planted areas or soakaway.

Stone Setts

Traditionally stone setts were used on waterway regions where stone occurs naturally. As the waterway network expanded they were transported to other regions, including London and the south-east.

Use and appearance

Granite sett paving is a premium product and can be used as for ‘decorative treatment.’ The different types of stone have particular character and careful selection is required to ensure their use to aid the visual transition between areas of contrasting materials.

Specification Notes

Reclaimed granite, limestone and sandstone setts are available, with new generally being imported. Colours vary from grey to pinks and greens with reclaimed setts often being polished dark by previous use. A single line of setts do not provide a satisfactory edge detail, where three or five courses laid in ‘stretcher bond’ creates a visual impact.

Laying/jointing

Setts should be laid on a firm concrete foundation and properly haunched and pointed in mortar. This provides extra strength, e.g. where setts are forming a narrow edging band or in trafficked areas. Joints should be as narrow as the pointing allows - close butted or a maximum of 10mm where mortar is brushed in dry and watered. No cut setts to be laid within 400mm of the corners and a maximum of 2 cut setts to be used if necessary per course. Cross fall – minimum 1:60. Relevant BS 7533-101 August 2021.



An example of three courses of stone setts, laid in stretcher bond, creates a visual impact. Maidstone Riverside.

Concrete Blocks

Concrete block paving is a cost effective alternative for large paving areas where use of brick or stone setts is less critical. Wherever possible, original materials should be used, particularly in Conservation Areas and in association with listed structures. Care should be taken to choose a product, which is similar to or complements traditional materials both in colour and texture.

Use and appearance

The concrete block system is an appropriate treatment for strictly functional surfaces which need to be durable and presentable. Concrete paving blocks can give an appearance similar to stone setts, but provide easier access for people with reduced mobility and wheelchairs.

To avoid a uniform 'municipal' appearance there should be a variation in unit size and edges without chamfers. A tumbled finish to the edges can give a weathered appearance, which assists new paving to blend with existing materials.

The variation in size of the units allows for a random laying pattern with large areas of paving being avoided. Where service runs are installed, with care the surface can be reinstated to achieve an undisturbed appearance. Elaborate interlocking block systems should be avoided.

Porous concrete block paving system enables infiltration of run-off water, which is important for storm water drainage control.

Specification Notes

Concrete blocks should be of rectangular shape with a length width ratio of 2:1 (e.g. 210 x 105 x 65mm). This shape allows the blocks to be laid in 'stretch bond.'

The blocks are consolidated between square block or special canted edge restraints where a kerb is required and laid to a surface fall of 1:40.

Colours range from brindle (or a percentage mixture) which recede, or the Cream/Buff pigments which are brighter and help to lighten dark spaces.

Bound Gravel

Bound gravel is suitable for both formal and informal surroundings. It depends upon the colour and texture of aggregate for effect. The compacted aggregate is bound with a bituminous emulsion to give a darker tone or a clear synthetic binder which will show the natural colouring of the chosen aggregate.

Sealed Gravel

Use and appearance

Used for pedestrian areas and footpaths in the vicinity of the lock where an informal appearance is required together with the durability and non-skid qualities. The treatment is particularly suitable for small or awkward areas where materials can be consolidated with a vibrating plate machine.

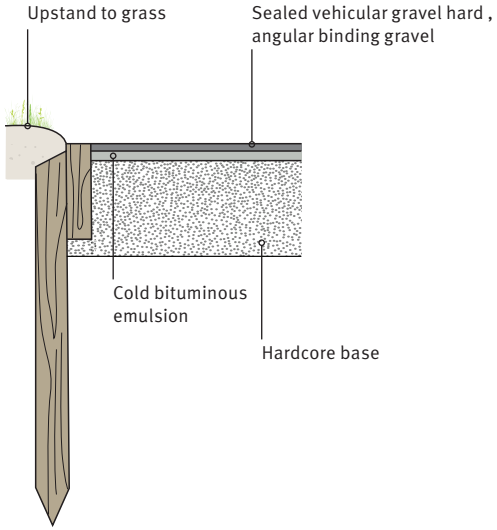
Specification Notes

The chippings should be locally sourced, preferably limestones, gritstones or granite of 20 mm single size spread over a layer of cold bitumen emulsion and rolled to form a 30-40mm wearing course. A base course of well consolidated graded limestone aggregate will be required and designed according to existing ground conditions to form a crossfall of 1:60.

Weed and moss growth should be removed from the sub-grade to ensure future decomposition does not effect the stability of the surface.



Example of a sealed gravel surface. Allington Lock.



Sealed gravel section.

Unsealed Surfaces

Unsealed surfaces require an edge to which loose materials can be compacted and kept to a tight bond. However, standard concrete edges, can introduce an inappropriate suburban character and with gradual erosion of material can lead to an upstand and potential trip hazard.

On towpaths the base course can be extended slightly into the verge either side to provide a stronger construction. Temporary edge boards are used during construction and removed as adjacent soil is backfilled. Occasionally permanent edge boards will be needed in more unstable conditions. They should be set below the level of the surrounding soil to allow for settlement and to encourage grass to encroach into the edges of the path.

Unsealed surfaces allow rainwater to percolate through the aggregate and soak away gradually into the ground. This is a practical treatment for areas surrounding mature trees or planted beds as it allows water and air to penetrate to the root zone.

Unbound compacted stone surfaces create an informal and visually pleasing appearance although proper specification is critical to achieve a robust finish, requiring only occasional reinstatement of worn areas.



Example of an unsealed gravel surface. Tonbridge Riverside.

Compacted Crushed Stones

Use and appearance

Crushed stone surfaces are suitable for informal rural pathways or lengths of towpath, which receive heavy footfall. The alignment of the path can be easily varied to avoid obstacles such as mature trees, and the path edges made informal by allowing grass to 'bleed' over the edges.

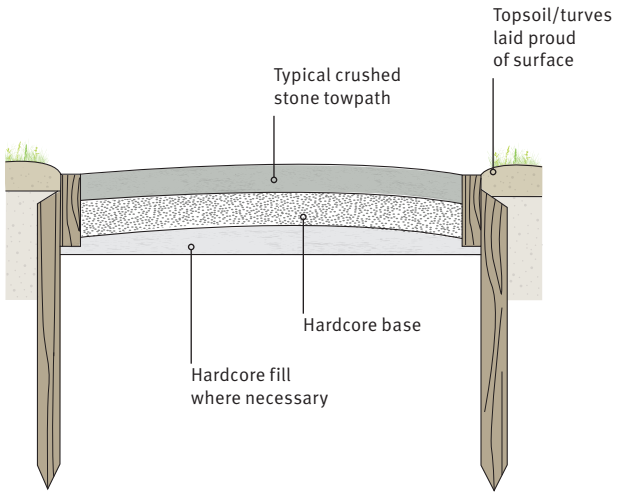
Specification Notes

The crushed stone aggregate should be grey limestone (25mm – dust). The material should be spread and rolled while wet in 25mm layers to form a well consolidated base and wearing course. A final layer of 6mm - dust fines should help to form a hard, sealed surface resilient to pedestrian and cycle traffic. The formation and sub-base should be designed to accommodate ground conditions and provide a surface crossfall of 1:60.

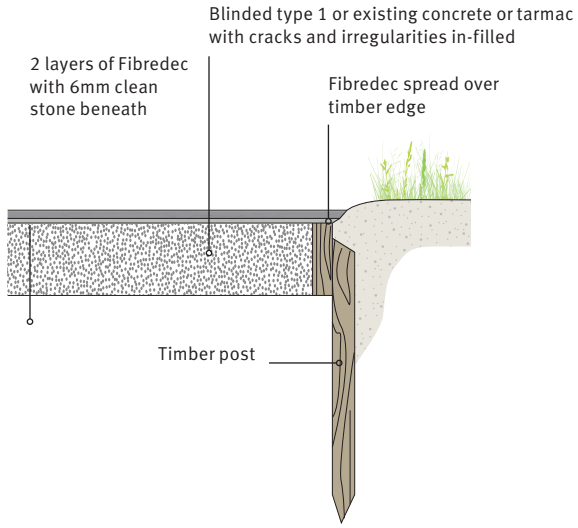
Crushed Stone (Hoggin)

An informal treatment particularly suitable for rural locations. A crushed limestone aggregate is graded from 25mm to dust, when rolled the fines form a well bound and compacted surface which can withstand regular use and occasional flooding.

Permanent edge restraints are not always required, as they can create potential trip hazards. Temporary edge boards can be used during construction and removed after compaction.



Typical crushed stone towpath section.



Typical crushed stone towpath section.

Rolled Gravel and Shingle

Use and appearance

This treatment is attractive and functional in lightly trafficked ‘non-operational’ areas such as parking spaces amongst trees or rural lockside areas where grass will not establish effectively. The surface material is durable when laid over a well consolidated base, and is particularly useful in the close proximity of trees, as air and water is allowed to penetrate to the root systems.

Specification Notes

Single sized (6mm) stone chippings will tolerate light pedestrian use. To avoid erosion and rutting of the surface it is essential the base material is well consolidated, and the surface dressing contains enough fines to act as a binder when rolled.

Bitumen Macadam & Chippings

Use and appearance

Suitable for busy pedestrian routes and lightly trafficked vehicular areas or parking areas. A top dressing of small stone aggregate bound into the wearing course enhances the surface texture and colour, creating a more informal effect.

Specification Notes

The aggregates should be of locally sourced medium textured graded limestones, bound with bitumen to form the wearing course.

The surface dressing should consist of uncoated limestone or granite fine aggregates, spread and rolled into the wearing course and bound with a ‘cut back’ bitumen. Some of the dressing aggregate will remain loose on the surface, and this is acceptable where vehicles are not travelling at high speeds. Sub base and base course construction should be designed according to expected use. A fall of 1:60 to the finished surface is required.



Example of Bitumen Macadam towpath. Maidstone Riverside.

Designers Check List

1. Who are the likely users?
2. What level of access will be expected by the public?
3. What type of path surface is most appropriate for the users in this location (Urban/rural)?
4. Is it in keeping with the landscape character?
5. Are there any physical constraints to building a path such as services or trees?
6. What environmental conditions will the path have to withstand?
7. Is surface water run-off or floodwater an erosion concern?
8. Is there a requirement for frost damage prevention?
9. What are the maintenance implications of the surface material proposed?
10. How easy is it to repair the surface?
11. Is there an alternative access route which meets the relevant access standards?
12. Can recycled, site generated or locally sourced materials be used?

Further Sources of Information

Building Regulations
Access To and Use of Buildings, Document M
(This document was last updated 1 October 2024: Go to link.
Regulations relate specifically to access to a building but should be used as a best practice guide when considering surface and footpath design in general.

Fieldfare Trust
Countryside for All Good Practice Guide - A guide to disabled people's access in the countryside. This guide is specifically aimed at rural landscapes and open countryside situations.

Department for Transport
Inclusive Mobility, A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure (December 2021).
Go to link

Department for Transport
Guidance on the Use of Tactile Paving Surfaces
(December 2021).
Go to link

Sustrans
Traffic Free Routes and Greenways Design Guide
- Sharing of paths
- Path specification details

Go to link

Visitor Safety Group
External Pedestrian Path Surfaces
Recommendations regarding path surfaces.
Go to link

Fix the Fells
Initiative considering factors that affect footpath erosion and developing techniques used to repair and prevent erosion.
Go to link

Surfaces for Accessibility

Medway Navigation Design Handbook

Environment Agency



Surfaces for Accessibility

Background

The public's perception of the type of access available in an urban setting is different to that of a rural one. Visitors to the river, who have restricted physical capabilities, are often discouraged when they experience or anticipate awkward access situations.

Types of path

The table overleaf is taken from the Fieldfare Trust's: Countryside for All Good Practice Guide and is an initial reference when considering what type of path will be most appropriate for a given situation.

	Path	Path Widths	Width Restrictions	Barriers	Maximum Distances Between Passing Places
Urban & Formal Landscapes	Hard, firm and smooth surface with very few loose stones - no bigger than 5mm	1200mm (EA recommend 2000mm)	At least 815mm for no more than 300mm along the path 1000mm for no more than 1600mm along the path	There should be no steps, stiles and hedges or walls to restrict access	50 metres
Urban Fringe & Managed Landscapes	Hard and firm surface with very few loose stones - no bigger than 10mm	1200mm	At least 815mm for no more than 300mm along the path 1000mm for no more than 1600mm along the path	See urban and formal landscapes	100 metres
Rural & Working Landscapes	Hard and firm with some loose stones and chippings not covering the whole surface - The stones should be no bigger than 10mm	1000mm	At least 815mm for no more than 300mm along the path 1000mm for no more than 1600mm along the path	See urban and formal landscapes	150 metres
Open Countryside	People expect to make their own way, not to have this environment changed to provide access. If paths and trails are provided in this setting, they should meet the standard for rural and working landscapes.				

Surfaces for Accessibility

Standards and Specifications

Grip and friction
Surfaces should be firm, obstacle free, durable, slip resistant in wet and dry conditions and not constructed of reflective materials.

Cross-falls
Footpath cross-falls should be limited to disperse surface water. If the cross-fall runs towards a road it can be dangerous, as wheelchair users will tend to edge down across the fall. The Environment Agency recommends maximum cross-fall is 1:40.

Ease of wheeled access
The following widths should be adhered to when considering wheeled access.

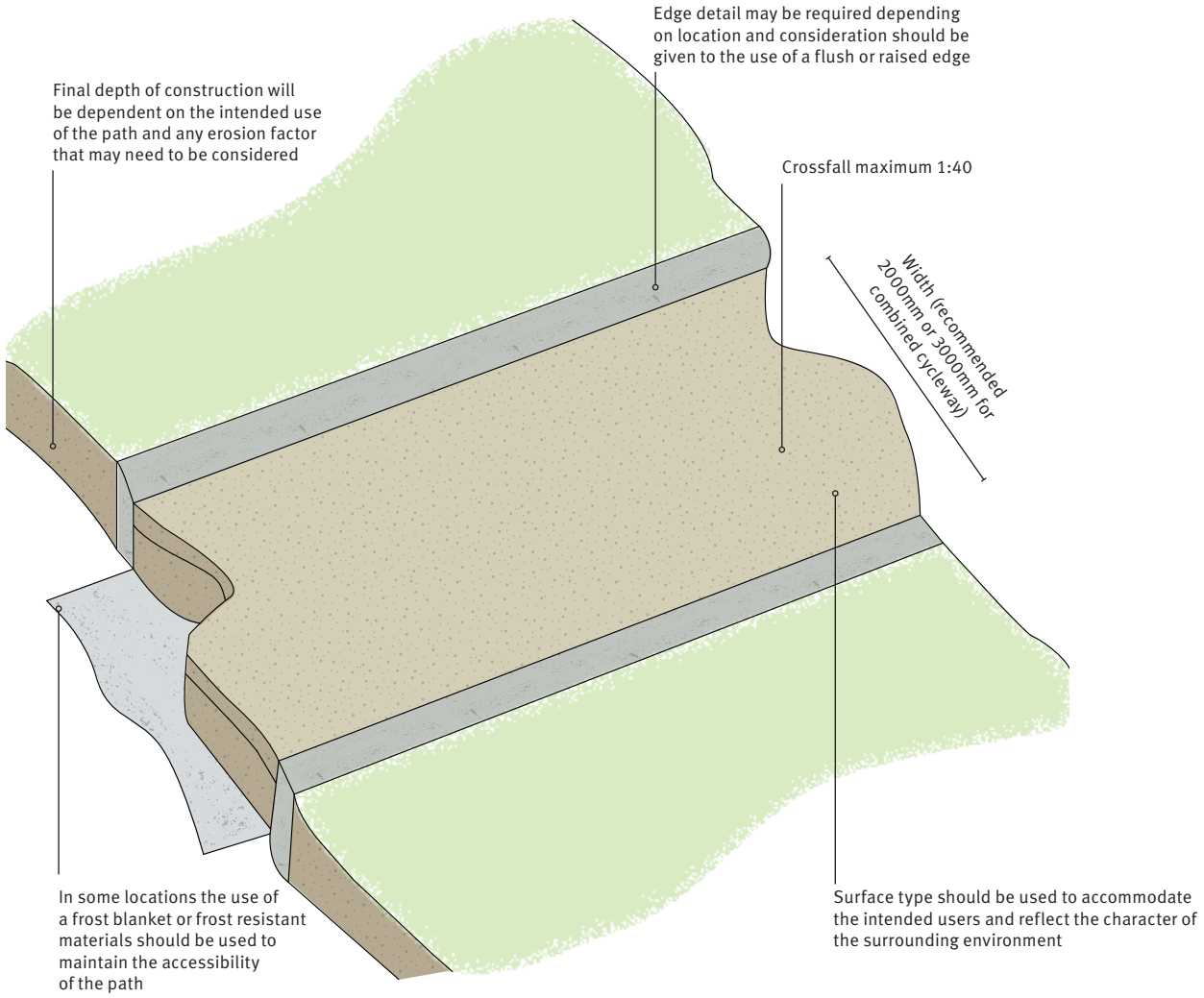
- Recommended clear width: 2000mm
- Minimum width: 1200mm

NB: If a route is to be less than the 'recommended clear width' then an allowance for wheelchair passing places at regular intervals (minimum 50m) should be made.

Hazard warning paving on footpaths
A contrasting surface underfoot alerts visually impaired people to a nearby hazard or information.

Materials
The materials chosen for a path surface should be appropriate to its location and and sourced locally. When choosing a path surface, the following three factors should be considered:

- Durability
- Smoothness
- Appearance



Detail of Footpath Construction.

Surfaces for Accessibility

What should designers consider?

1. What level of access will be expected by the public (Urban/rural)?
2. Is there an alternative route to improve access?
3. Who are the likely users?
4. What type of path is most appropriate for this location?
5. What is the most appropriate surface material?
6. Is it in keeping with the landscape character?
7. What environmental conditions will the path have to withstand?
8. Are there any physical constraints, such as services or trees?
9. Is surface water run-off or floodwater an erosion concern?
10. Is there a requirement for frost damage prevention?
11. How easy is it to repair the surface?
12. What are the maintenance implications of the surface material?
13. What maintenance budget/operations exist at present?
14. Can recycled, site generated or locally sourced materials be used?

Further sources of information

Highways Agency
Design Manual for Roads and Bridges (DMRB)
Volume 7 Section 2 Part 5 Pavement and Footway Design specifically relates to the design and specification of surfaces.
Go to link

Sustrans
Traffic Free Routes and Greenways Design Guide, Sharing of Paths and Path specification details.
Go to link

Fix the Fells
An initiative in the Lake District aiming to repair and replace eroded footpaths. Their website details a number of techniques ('path repair techniques') which can be used to protect the surface of footpaths from erosion.
Go to link

Visitor Safety Group
Information and recommendations for path surfaces.
Go to link

Navigation Edges

Environment Agency

Medway Navigation Design Handbook



Navigation Edges

Background

The Environment Agency through its statutory duty to further biodiversity and enhancement of natural and historical features has the opportunity to promote ecological bank protection methods for conservation, recreation or heritage benefit. Robust edge construction and bank protection is an essential requirement to resist erosion. Over the centuries the banks along the River Medway have predominately remained 'natural earth.' Where moorings or wharves occur, they have traditionally been constructed of brick or timber. However, in recent decades there has been an increase in the use of steel and concrete, which is often out of keeping with the local landscape character and harmful to both the environment and wildlife.



Typical section of rural riverbank along the River Medway.

Bank Erosion

There are three significant causes of bank erosion and damage at the 'wash line' in normal river levels.

River Flow
Higher rates of erosion occur where the stream has a greater energy, on the outside of the river bends and within weirpools – especially where bank materials are susceptible to erosion and not bound by vegetation.

Rapid erosion is indicated by soil being washed away after undercutting or by slumping. A sloping beach of deposited material may form at the base of the bank. This is a natural form of adjustment and the bank may well stabilise.

Boat Wash
The magnitude of waves caused by boat wash is a function of a boats speed, its distance from the riverbank and depth of water. Boat wash is more concentrated on the inside of river bends where waves approaching perpendicular to an earth bank erode a notch at the normal river levels.

Riparian Activities
Walking, angling, canoeing, mooring and grazing animals can all accelerate erosion, particularly when a sloping bank is already formed. The consequences of these overall activities need to be addressed through appropriate management strategies as part of bank protection measures.

Bank Stabilisation

In resisting erosion there may be several overriding engineering considerations determining which approach is taken. The following factors influence the degree of protection required and assist in the selection of the most appropriate techniques.

- Survey in relation to function – Lock, moorings etc
- Landscape – Visual impact
- Biodiversity – Impact and enhancement opportunities
- Heritage – Historical precedence
- Recreation
- Safety – Risks to users
- Maintenance and Costs

The chosen technique should have features to enhance the ease of escape from the river for both people and wildlife.



Example of riverbank erosion along the River Medway.

Navigation Edges

Survey

An initial survey should establish whether erosion is occurring and its extent, rate and anticipated effects on the surrounding land. Some locations can tolerate a degree of erosion to stabilise, while others cannot accommodate the loss of land. The survey should assess the state of the wash line at the normal river level, and the nature of the ground, which is regularly flooded above the wash line. A graded bank will be treated differently from a vertical edge where space is restricted.

Consideration should be given to how either end of a new length of vertical protection will be tied into the existing bank. The end points are most vulnerable where back eddies occur which exploit any weakness in the bank. Well established existing reed and bankside vegetation can provide a robust buffer and shelving treatments are able to absorb transferred wash effectively.

Landscape

The stabilisation method should reflect and complement the area's landscape character, whether it is rural, urban, or part of a conservation area. Natural edges need to be kept intact or reinstated in rural situations. In urban locations hard revetments, if required, should relate to existing structures. Too many different solutions look visually confusing; rationalisation of proposals and their degree of success should be reviewed together with how mature trees and vegetation can help reduce the scale and visual impact of new bank stabilisation projects.

Biodiversity

The river's banks are important and rich habitats for wildlife. Where trees and shrubs exist within the bank their locations often exhibit the least erosion due to the binding effect of their roots. Good arboriculture and tree surgery can often save bankside trees, which are in danger of collapsing into the river. Aquatic plants within the river, grass and wildflower swards on the banks should be maintained and enhanced as they constitute an important ecological buffer zone between the river and surrounding land uses. Opportunities to diversify the wildlife should be incorporated into the proposals and include the provision of wildfowl access to the river.
The creation of calm pools out of the river stream provides valuable cover for fish and invertebrates.

Heritage

Care must be taken throughout the design process to ensure the physical and visual impacts on built heritage and archaeology are minimised.

Early consultation of the relevant Historic Environment record will indicate any known heritage assets and help assess the likelihood of potential archaeology. Go to link

Recreation

Where riparian activities occur, the bank protection measures can help manage access to the water's edge, and therefore need to be sufficiently robust and tailored to allow for specific access requirements or positively discourage them.

Facilities may include angling pegs, moorings, canoe landings and pedestrian access to the towpath. Inevitably, most of these facilities have maintenance and safety implications where they are built into bank protection treatments.

Safety

Where recreation features are incorporated, safety measures are of particular importance. These include such details as: a clear river edge, definition for pedestrian access and protection against sloping banks. If access to the water's edge is made formal, a set of steps with handrail and textured treads should be installed. In addition, the depth of the water at the river's edge should be made as shallow as possible.

Maintenance and Costs

In general, the more complex the structural composition of the proposed technique the more expensive capital costs will be per metre of bank protection. Organic and composite treatments, which aim to establish a vegetated natural riverbank, are relatively cost effective, although planting and seeding requires regular maintenance over the first five year period of establishment.

Structural treatments incur high initial capital costs whilst ongoing maintenance is minimal; however long term costs for repairs and replacements can be substantial. A solution, which is natural and sustainable over the long term, is preferred, especially for long lengths of protected edge.

Navigation Edges

Riverbank Stabilisation Techniques

Bank protection treatments fall into three broad categories defined by the nature of the materials employed.

The following details are intended to indicate suitable techniques. In some situations a combination of techniques will be appropriate.

Structural Revetments and Piling
Use of rigid manufactured materials to reinforce and retain banks (with or without allowance for colonisation by vegetation).

Composite
Use of organic and flexible synthetic materials in combination to establish a reinforced natural treatment.

Organic
Use of live vegetation - with or without biodegradable reinforcement to establish a naturally sustainable protection.

Structural Revetments and Piling

Masonry Walls
There are several sections of brick and concrete walls at lock, weir and wharf sites. Wherever possible these features should be reinstated or replaced with original or similar materials. Often original bricks and copings can be salvaged from the river.

Brick Edges
During the original construction of the Navigation, brickworks would have been established close to the river to take advantage of the natural Medway clays. As the Navigation became established, locally sourced bricks were used for further construction and repairs, with bricks being brought to the site by barge.

Where brickwork is used sparingly for a new hard edge, at a lock bullnose or wharf, it is usually as cladding to disguise reinforced concrete or steel piling. Above the water line it provides a more aesthetically and historically appropriate wall. The type of bricks chosen should match as far as possible the local vernacular, reinforcing the industrial heritage of the navigation's structures.

Timber Edges
Timber piling has been extensively used as an economical and aesthetically more acceptable solution to steel sheet piling. It is light but strong and has good impact and shock resistance, forming a good mooring fender, as it is relatively easily repaired or replaced.

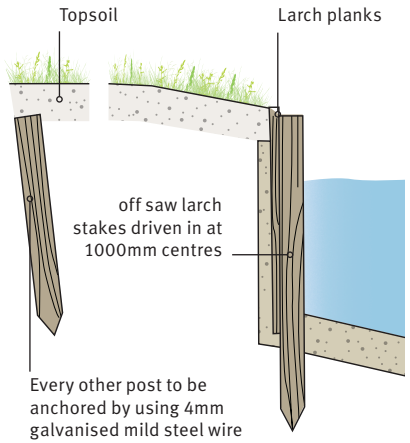
The use of timber is best suited to more formal lengths of the river associated with parks and gardens or spaces where public activity occurs, requiring occasional access to the river edge or informal mooring.

The freeboard above water level should be kept to a minimum with sharp changes in direction avoided. The most commonly used softwoods are treated (spruce, pine, Douglas fir and Larch).

Timber piling, which extends above the water level is vulnerable to decay at normal river levels, although timber preservatives allow weathering in due course.



Example of timber piling on the River Medway.



Section of timber camp-shedding.

Sheet Steel Piling

Steel piling can be driven into unstable ground and is a popular solution to bank repairs where a hard edge is required. However, it is not the ideal solution from visual and ecological perspectives. Creating a hard visual line at the water line, and a vertical edge, which is hostile for the establishment of marginal vegetation and difficult for wildlife to escape the river.

Environmentally, steel piling has significant disadvantages creating a sterile environment lacking biodiversity, visually obtrusive with access for construction pile driving rigs often conflicting with tree and shrub canopies. The piled river edge is where new sheet steel piling has to be used, the original bank should be assessed for water voles and an appropriate method used to retain access to their holes.

In most cases it should be possible to mitigate the industrial appearance of sheet piling by use of appropriate materials to cap and clad the construction. Cladding should be both practical and in keeping, sitting at eye level tends to draw attention away from the more functional treatments of the piling.

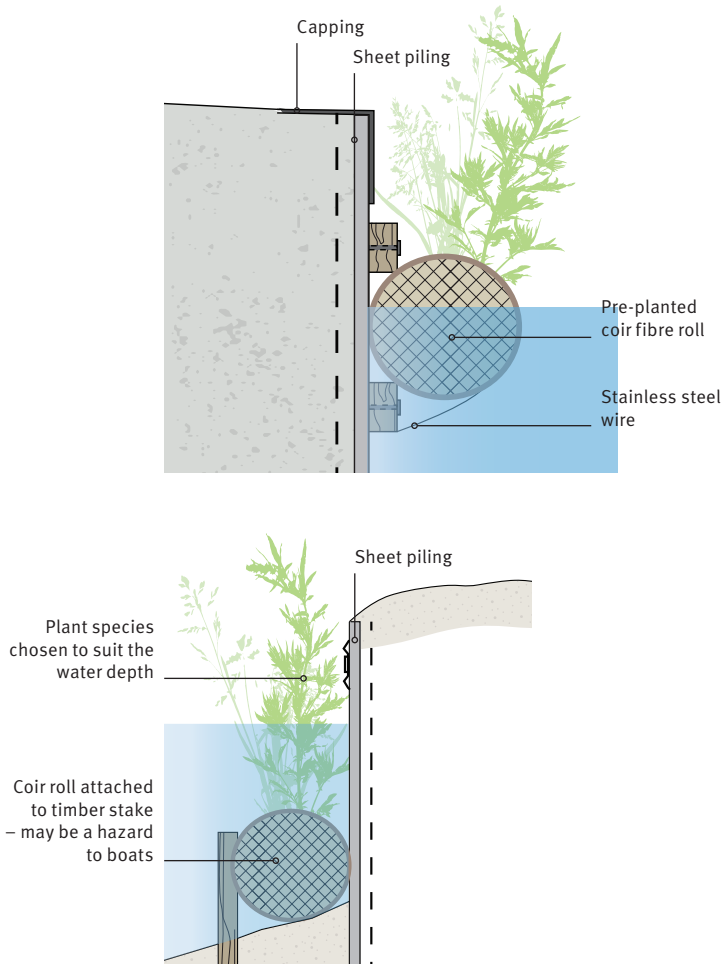
A framework of timber rails and strakes are a traditional cladding for walls where boats moor in fluctuating water levels. For walls, which rise above general boating activity, upper level cladding in brickwork can be appropriately detailed to blend with adjacent structures.



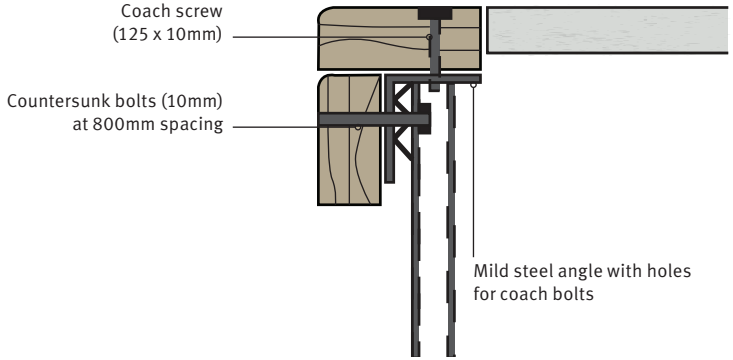
Example of timber cladding and vegetation mitigating the visual effect of sheet steel piling, below Tonbridge Castle.

Navigation Edges

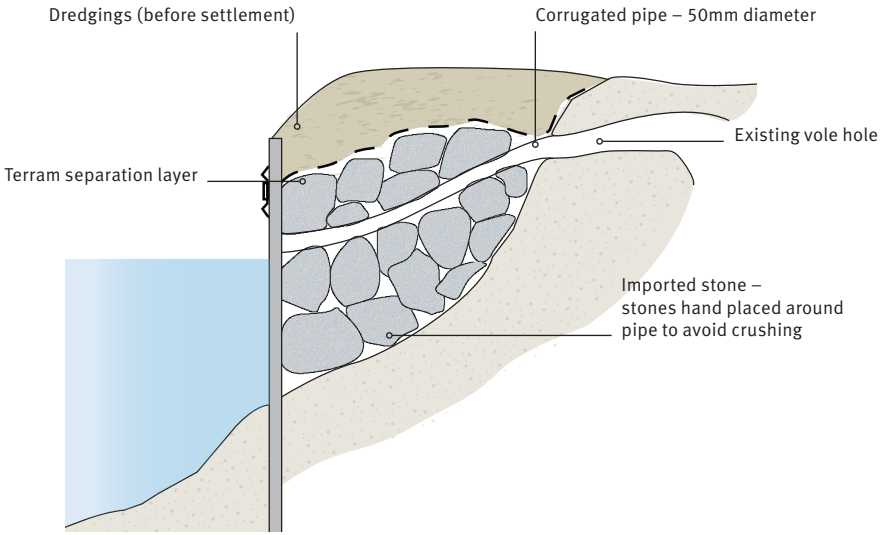
Examples of Navigation Edge Treatment



Two examples of using pre-planted coir fibre rolls to establish vegetation against existing sheet steel piling.



Timber capping and fendering to existing sheet steel piling.



Modifications to existing sheet steel piling can accommodate watervole access.

Navigation Edges

Riverbank Stabilisation Techniques

In less formal locations where the piling is driven to a radius, such as at the head of a lock island, a more rustic cladding of vertical round timbers together with shrub planting behind can be used. Shrub planting, groundcover and aquatic plants provide biodiversity and act as visual foil to the piling. The use of pre-planted coir fibre rolls is an example of aiding the establishment of marginal aquatic vegetation against sheet steel piling. The roll is secured at the base of the piling with timber stakes, which allows the vegetation to root into the silt of the riverbed.

Concrete Bagwork

Bagwork is an inexpensive and simple technique. Usually, it has been employed to repair collapsed lengths of washed out riverbank. The bags should be of hessian rather than polypropylene so when the hessian has rotted away the concrete blocks can weather down. Bagwork should not be extended more than 300mm above water level and where possible, shrub and reed planting will help to mitigate and protect the bagwork.

Concrete Edges

The concrete waterway walls should only be used when absolutely necessary, usually where there has been instability of the riverbank.

Where concrete is used as a waterway wall coping, it may be desirable to imitate the appearance of texture and size of the original copings. Exposed aggregate finishes and careful choice of colour and size of the aggregate can greatly improve the appearance of in-situ concrete.

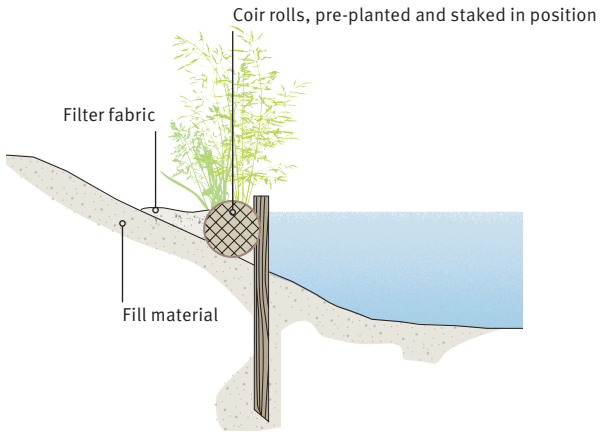
Vegetated Edges

Bank protection techniques, which use native vegetation, are often the most appropriate solutions to bank erosion, which restores the integrity of the riverbank as a habitat zone. Alders are able to reinforce the riverbank by spreading their roots laterally underwater. Reeds, if well established, are tolerant to boat wash and dissipate energy before damage can be done to the bank, while acting as a nitrate 'sink' helping to prevent algal blooms.

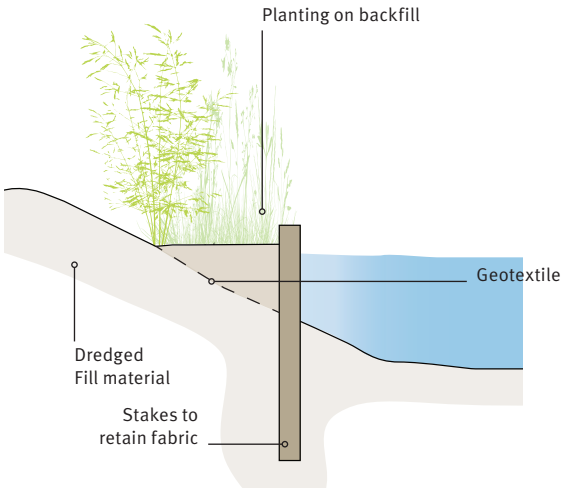
The details shown here indicate various methods for re-establishing native emergent vegetation as part of bank stabilisation. Geotextiles such as 'Nicospan' are used to retain dredged material and biodegradable mats/rolls used to establish vegetation more effectively.

Natural State

In reaches where there is low energy flow and the riverbank is not eroding rapidly and there is adequate land. Then it is desirable to allow the bank to remain in its natural state especially where a beach or shelf has developed. This should be retained and monitored.



Retained coir fibre rolls.



Geotextile pockets.

Navigation Edges

Backstop Planting

Where there is not adequate space to allow natural earth banks to erode, a belt of trees and shrub planting can be set back one or two metres from the eroding edge. In time they become established and their dense root mat will prevent further erosion and provide shelter and cover for wildlife. The species selected should be found locally growing along the river.

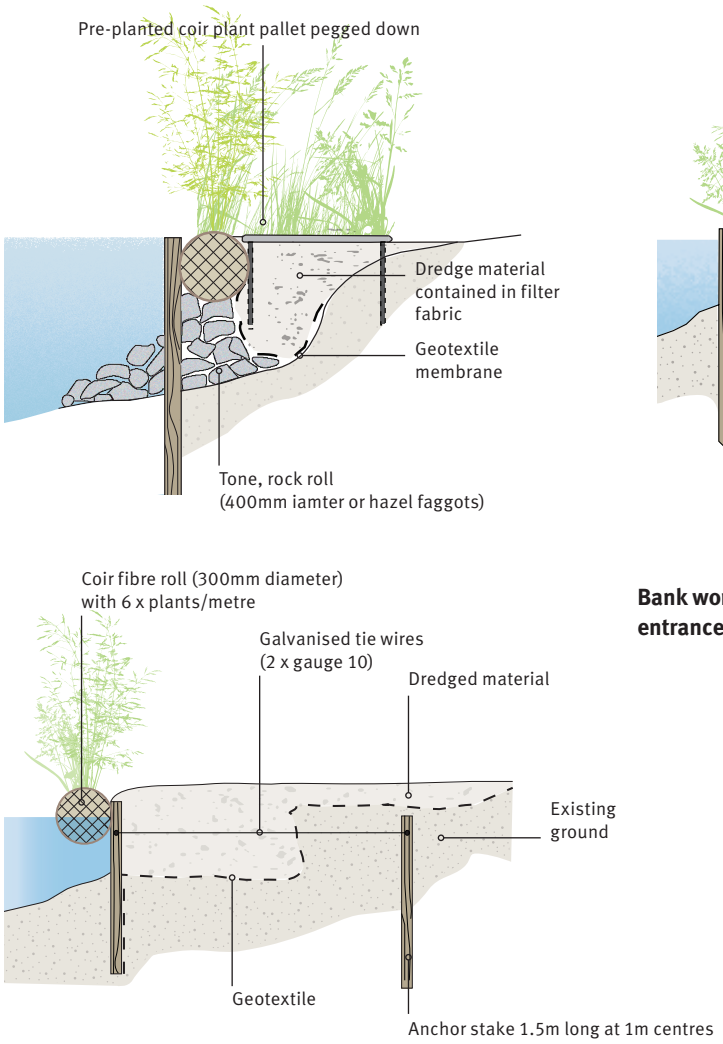
Reed Planting

Reeds are very effective at absorbing boat wash. However, they do require stable conditions in which to establish. This often requires the employment of biodegradable or synthetic protection or reinforcements.

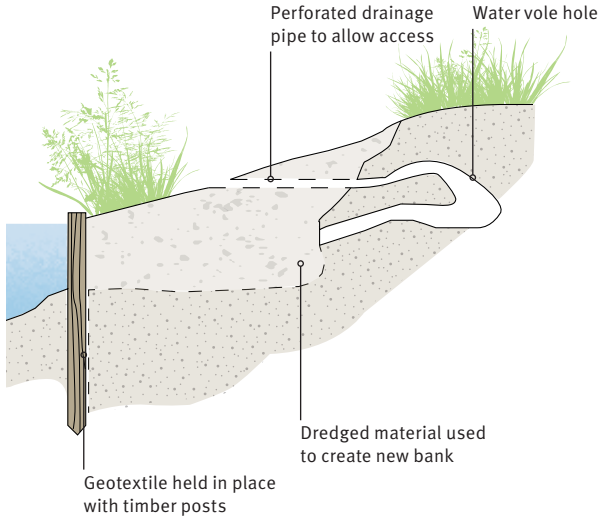
Normally, reed rhizomes are planted at 300mm below normal water level into a level or slightly sloping shelf in one of the following conditions.

- Directly into material forming the bed of the shelf (reeds are vulnerable to wash until established).
- Into biodegradable bags filled with dredged material and pinned down into the bed of the shelf.
- Into biodegradable coir fibre rolls staked down into the bed of the shelf.

A planting shelf can be either formed by the bed of the channel or retained below water level by vertical revetment. Once established the reed bed can, where appropriate, be allowed to spread naturally (to up to 1 metre depth).



Two examples for re-establishing native emergent vegetation as part of bank stabilisation.



Bank works using retained dredged material creates new entrances for water vole holes.

Navigation Edges

Willow Spiling

A willow fence can be constructed using materials locally available to provide a robust vertical protection, which will retain a bank up to 1 metre in height. Willow stakes are driven into the riverbed, and recently cropped, vigorous young willow withies are woven in between the stakes. In two or three seasons a dense growth of shoots will have created a well vegetated protection which will require cutting back at regular intervals.

Willow spiling should be carefully located as growth may encroach some distance into the channel and cast considerable shade. Grazing will drastically inhibit growth wherever the willow shoots are accessible to sheep or cattle.

Biodegradable Seed Blankets

In the construction of a newly graded bank, the top layer of soil can be stabilised by pegging down a proprietary pre-seeded blanket of coir fibre or straw. When properly anchored, the blanket can withstand occasional flooding and provide insulated conditions for grass and wildflower seed to germinate. Shrubs can be planted into the blanket to add diversity.

This technique is most appropriate for substantial lengths of bank where it will not be disturbed and receives plenty of light.

Revetment Fabrics

For situations which require a vertical retained edge without the use of a rigid piling, the use of fabrics can be a sensitive solution. The fabric is stretched between bracing stakes and supported at 500mm centres by intermediate stakes.

Ideally the height of the retained edge should be a maximum of 500mm, with 150mm to 200mm exposed above normal water level. Grass can be encouraged to grow through the perforated fabric by placing turves against the rear of the revetment and firmly backfilling. Where the area is accessible to the public a timber rail should be fixed against the top of each stake to protect the fabric. The treatment is particularly appropriate for lock approaches where there may be reduced channel widths to allow reed planting in front of the revetment.

Soil Filled Matting

Sloping banks above the washline often require a robust form of stabilisation to allow a grass/wildflower sward to establish which will be resilient to more severe flood conditions. 'In-soil' synthetic mats can provide that protection so long as the grass roots become well integrated with the mat and prevent it from becoming exposed, which render the mat ineffective and visually intrusive. The technique is best used in locations where it can be easily inspected at regular intervals.

Soil Reinforcement Grids

Flexible reinforcement grids spread the weight of the fill material and can be used effectively to retain and stabilise steeply graded slopes above the normal water level. The reinforced banks withstand occasional flooding and if a grass sward is established on the face of the batter the protection is made resilient to scour by floodwater.

Normally the bank is built up over a firm base of granular fill retained by camp-shedding. Turves are trapped behind the grids and against the soil backfill. The technique is suitable for construction of steeper banks designed to deter access to the waters edge.

Navigation Edges

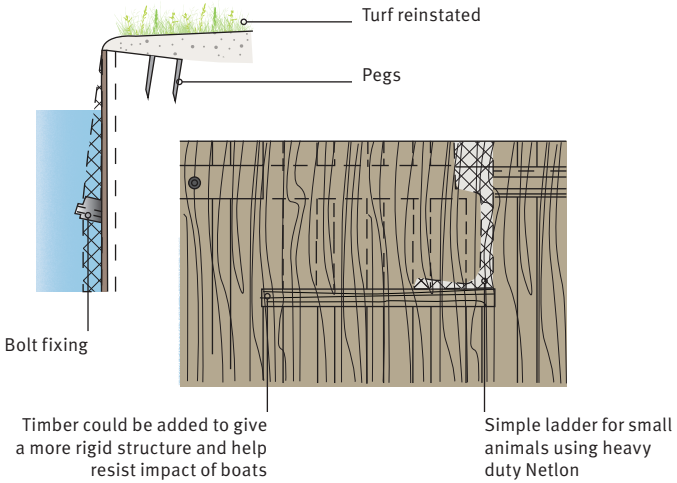
Means of Escape

On steep sided sections of the Navigation, particularly in urban locations, grab chains should provide a means of escape and enable a person to hold, keeping their head above water as they work their way along to an access ladder. A local risk assessment should be carried out to determine an appropriate level of provision. All locks should have grab chains and lock ladders provided.

Animal drownings are a common occurrence along sections of the river with steep sided banks. Specially designed means of escape for a variety of wildlife should be provided where possible as part of new protection works. Ideally, a means of escape should be designed to serve both humans and wildlife. Structures can be installed to reduce the incidence of animal drownings. The simplest is an animal ladder, which like a rope ladder, is firmly attached to the top of the river wall and trails into the water. A coated wire mesh or geotextiles can be used. Wildlife ramps are not new, modern ramps vary from simple structures to more elaborate robust designs according to their use. The bottom of the ladder or ramp should be 50cm below the water level at all times. A slope of 35-45° is recommended. Where they are constructed as part of a piling programme, ramps should be installed at least every 250-300m.



Example of timber fendering with grab chains. Allington Lock.



Example of 'ladder' attached to timber camp-shedding, using heavy duty Netlon, allows small animals to escape.

Safety Booms



An Example of Bolina Watercraft Safety Boom. Town lock, Tonbridge.

The Bolina safety boom system was developed with the assistance of the EA Waterway team. Please refer to the data sheets for more information:

Bolina Watercraft Safety Boom
Go to link

Bolina Ropes Safety Boom
Go to link

Navigation Edges

Structural Revetment and Piling

These techniques, which use hard materials, should only be used where a 'natural' solution is inappropriate. Hard edges can create problems by deflecting wash and so transferring erosion downstream. Construction works can damage existing vegetation and the finished treatments can look visually intrusive. The following details are primarily concerned with mitigation measures, which can make these techniques more acceptable.

These include:

- Assessing the landscape character of the backdrop to the site. (Scale and existing materials);
- Opportunities for encouraging vegetation growth within or over the proposed structures;
- Consideration of how to create a weathered appearance without compromising the integrity of the new structure.

Summary of Potential Uses

Natural Cliff Banks
Open meadows – subject to grazing and recreation activity. Unstable banks can be protected with backstop planting or reed planting.

Willow Spiling
Enclosed meadows – provides a well vegetated buffer against arable fields and shelter in open areas. Useful protection between existing bankside trees.

Fabric Revetment
Narrow lock cuts – straight uninterrupted lengths with restricted public access. Requires planting behind with low freeboard.

Concrete Bagwall
Urban sites – localised repairs to river bank where not exposed to wide views. Low freeboard. Planting to mask concrete.

Timber Camp-shedding
Formal urban sites – e.g. parks, gardens and occasional moorings. Suitable for straight or slightly curved lengths of bank.

Steel Sheet Piles with shrubs and reed planting
Sluice/flood defences – in well vegetated sites of conservation interest. Restrict public access. Use of shrub/aquatic plants to mask sheet piling.

Sheet piles clad with timber
Urban sites – where public access is restricted. Solid parapet increases height and enclosure of river wall.

Seed Blankets/Coir Fibre Rolls
Rural sites – with sensitive conservation interest offer a biodegradable protection to allow establishment of shrubs and grass/wildflower sward together with aquatics.

Soil Filled Matting
Rural/urban sites – with conservation interest. A more robust protection against erosion allows plant establishment as above.

Soil Reinforcement Mesh
Rural/urban sites – with open banks where steeper banks are required. Not suitable for tree/shrub planting. Grass/wildflower mix recommended.

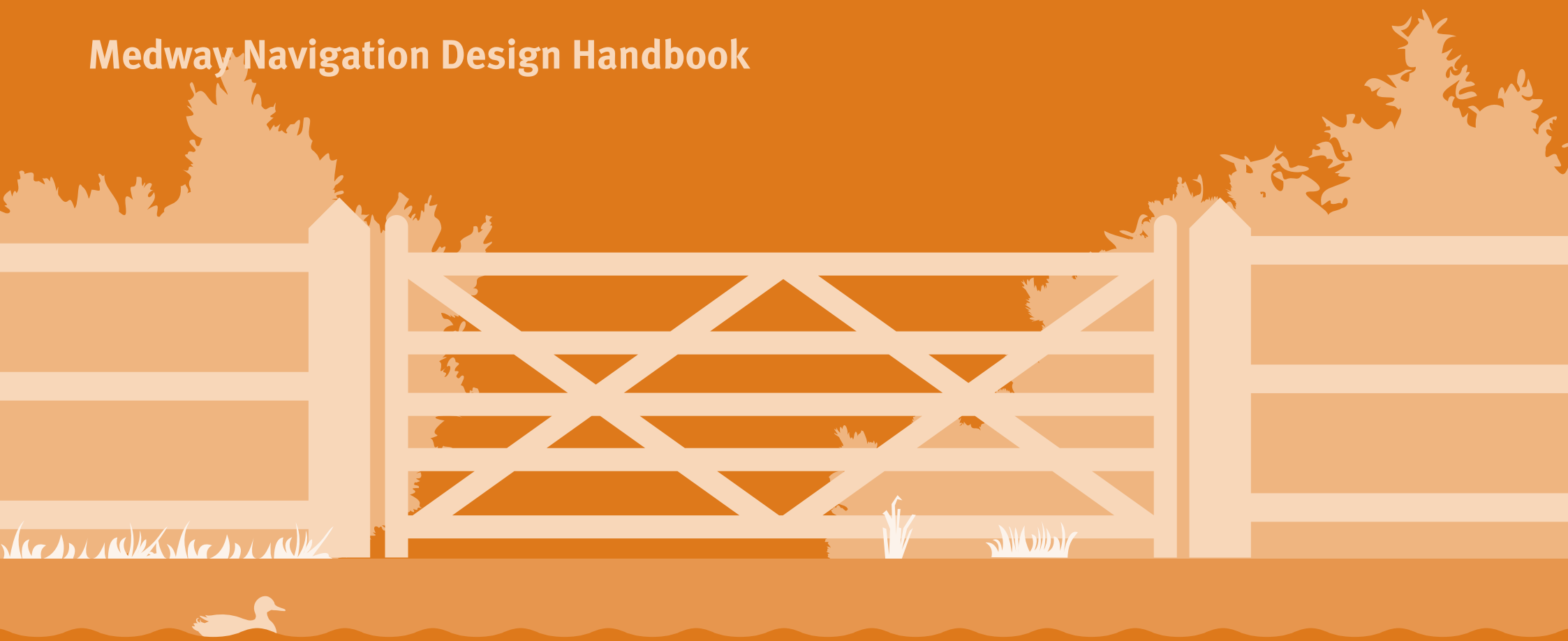
Concrete Bagwork or Stone Work
Urban sites – localised works units laid to a baiter to encourage colonisation by plants eg seedlings and lichens

Stone or Stockwork
Formal urban sites – battered edge discourages mooring and weathers easily.

Boundaries and Gates

Environment Agency

Medway Navigation Design Handbook



Boundaries and Gates

Background

The Medway Valley's boundaries and enclosures, help to shape the character of the Medway Navigation. Boundaries are the interface between the river corridor and surrounding land uses, where a positive relationship should be encouraged. Boundaries should be varied and attractive reflecting the landscape through which the river flows. When repairing an existing boundary or planning a new one, the proposals should relate to the river's landscape character, the pattern of openness and enclosure and the retension of important views.

In urban areas, boundaries are often required for security, privacy and screening, which needs to be balanced with aesthetic considerations. Often there is potential for more subtle boundary methods: e.g. low level planting, changes in level or surface material.

In the countryside, boundaries can offer shelter and containment with hedgerows and woodland forming important elements of the river's historic landscape and ecology. Boundaries fulfil a number of different functions:

To define, screen and prevent access, leading to a number of different design solutions. Traditional types of boundary which are strong, simple and straightforward, are best suited, emphasising the robust characteristics of the Navigation.

Typical uses of fencing are:

Protective e.g. Separating an urban towpath from a lockside or bridge ramp.

Boundary e.g. Towpath, post and wire stock-proof fence or hedgerow.

Screen e.g. Around compounds or car parks.

Security e.g. Around EA yards or riverside business premises.

Before repairing or replacing a fence or installing a new one, consider the following points:

Where fences are part of the original river fabric, these should be restored.

If restoration is not viable due to the extent of decay, the fence should be replaced as near to the original as possible.

Check whether the fence is part of a listed structure or in a conservation area, which may affect what can be done.

Listed Structures:

- Any fence attached to the structure is automatically part of the listing and will need consent to change.
- Any fence 'within the curtilage' of the structure before 1948 is included in the listing.
- Alteration or removal of a fence affecting the 'setting' of a listed structure may need consent.

Conservation Areas:

- Demolition, alteration and installation of fences
- Over 2m high (1m if adjacent to a highway)
- Need consent from the local authority.
- Specific requirements for materials, colour etc., may be included in an 'article 4 direction' from the local authority regardless of the fence height.

Clarify the function of a new fence, so not to over specify, determine the design choice and assess the measures to deter vandalism.

Assess the intended life of the fence and the likely degree of maintenance.

The appearance of the fence must suit the location.

The fair face of the boundary treatment should face the Navigation.

Consult user groups and adjoining landowners.

Carry out a risk assessment to determine the need for a new fence. Ensure legal aspects of erecting safety fencing are fully covered.

BS 1722 applies to various forms of fencing.

- BS 1722-5:2006 Fences. Specification for close-boarded fences and wooden palisade fences (+A1:2018).
- BS 1722-7:2006: Specification for wooden post and rail fences.

Fence Posts

Post and rail fences normally have main posts set in dug holes and smaller intermediate posts driven into the ground to strengthen the rails. As a guide, posts should be set at 2.7m spacing for a mortised fence, and 1.8m spacing for a nailed fence. Posts should be set into the ground to a depth of 600mm (450mm with concrete) for fences up to a 1m high and 750mm (650mm with concrete) for fences up to 1.8m high. Chamfered edges should be used in the detailing of post tops and rails, with a simple pencil groove added to the top of the post.

Post Fixing

Choice of materials and method for fixing structures into the ground are often dictated by a preference for reduced future maintenance commitments. Visual considerations are equally important as inappropriate fixings can compromise the appearance of an otherwise attractive structure. Timber posts are often set into continuous hard surfaces. In these situations it may be necessary to set posts into permanent floor fixings, simplifying replacement if the post is damaged.

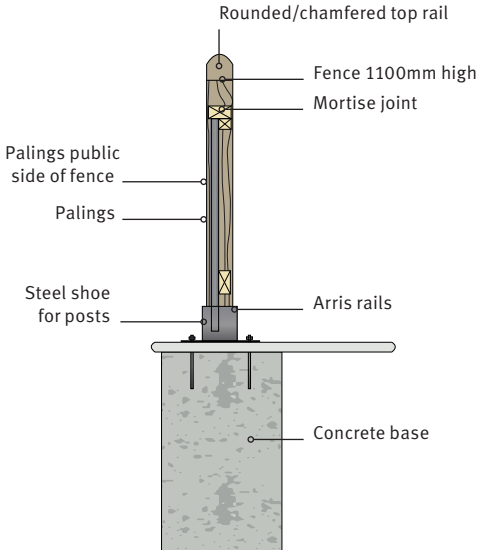
There are two fixings available for this purpose: A concrete post set into the surface, which allows for a timber post to be attached. Concrete post fixings are acceptable when used discreetly, out of view e.g. against a hedge. A cast metal shoe attached to the surface, which allows for a timber post. Shoes must provide for drainage of water at the base of the post.



Concrete grandfather posts. Goring Lock.



Timber fencing with steel shoe fixing. Goring Lock.

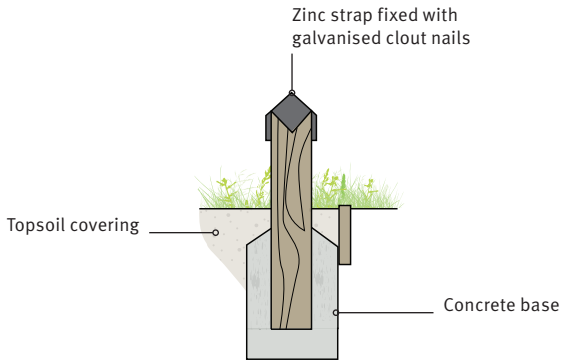


Section: Steel Shoe Fixing to Timber Post

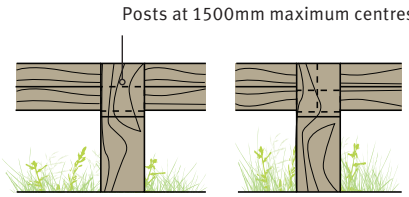
Boundaries and Gates

Arris Rails

Timber arris rail are typical of many waterway locations.
A low knee rail is used to define footpaths and planting areas.



Section: Timber Arris Rail

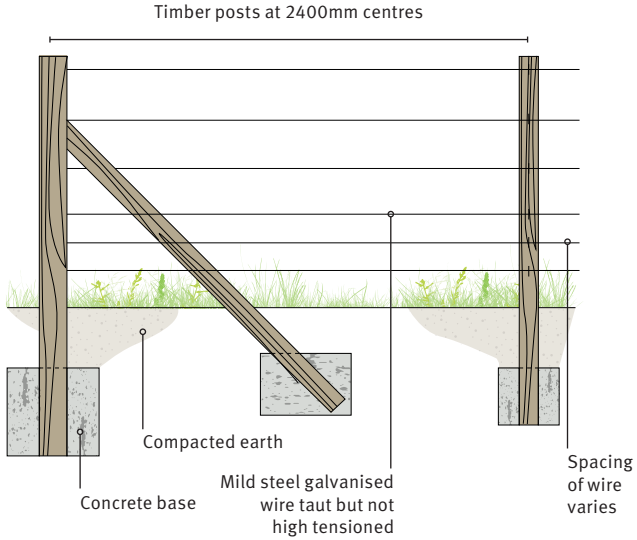


Elevation: Timber Arris Rail

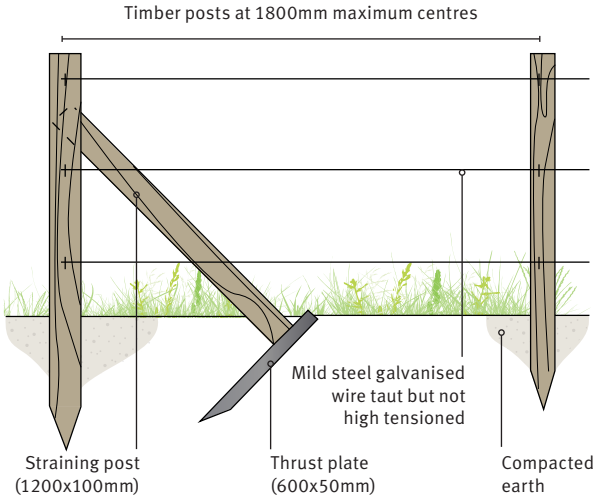
Post & Wire Fencing

Post and wire fencing is normally used as part of a boundary hedgerow, where a stock proof barrier is required at the back of the towpath. A chestnut paling fence can be strained just as single wires or netting, and provides a good temporary protective fence around new planting. The advantages of strained wire fencing are its relative low-cost and versatility. Barbed wire should not be used on towing path boundary fences or other areas where it is likely to be a hazard to the public.

A post and wire fence consists of wire stretched between two or more large posts called straining posts, with stakes to stiffen the fence and keep the wires at the correct distance apart.



Elevation: Stock-proof fence for new hedging.



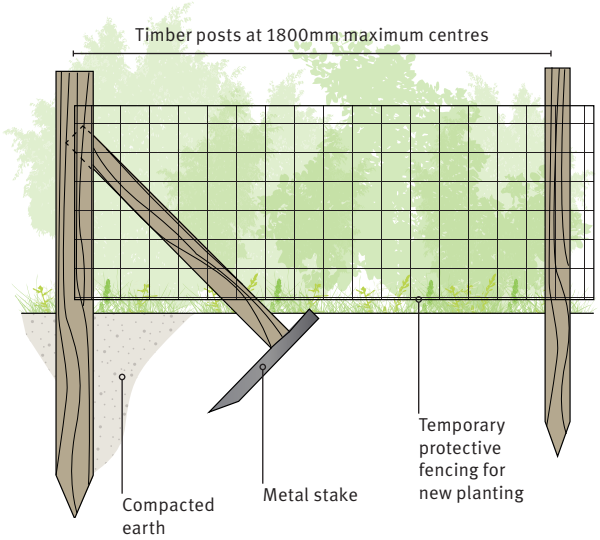
Elevation: Boundary fence for hedging, not stock-proof.

Depending on the type of timber used, preservative treatment and the location, fences should either be left unstained or stained black using an exterior stain which is harmless to humans, animals and plants both during application and when dry. Painting timber fences is not recommended as without a very high level of maintenance, the waterproof 'skin' will encourage rot if water penetrates the surface.

Post & Wire Fencing

The straining posts are generally set into dug holes to a depth which equals the height above ground, or less if a concrete foundation is used. The intermediate stakes are driven into the ground to a depth one third the length of the post. Round posts are more durable, with the sapwood intact around the heartwood, and are generally softwood pressure treated with preservative. The weight and galvanising of the wire, and the location will also determine the life of the fence.

Explore opportunities for planting in front of the fence. The type of planting will need to be chosen carefully to avoid reducing the degree of security, and to ensure the ecology of the river corridor is enhanced.



Elevation: Temporary protective fence for new planting.



Example post and wire fence at Eldridge's Lock.

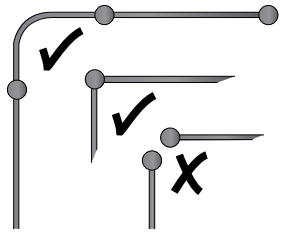
Metal Railings

Metal post and rail systems are often used as protective fencing in busy public areas at locksides. They take the form of a stout tubular section with horizontal rails supported by steel posts, giving a strong, simple and robust appearance. Waterside railings should be ball jointed with smooth topped posts to avoid snagging ropes and warps, a functional characteristic of waterway design.

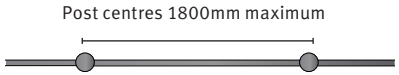
Grades of metals, section dimensions and properties must be to the relevant British Standard and appropriate for the purpose. All welded joints should be buffed smooth. Where galvanising is specified, fabrication should be entirely complete prior to galvanising.

BS 1722-8:2006 Fences. Specification for mild steel (low carbon steel) continuous bar railing. Painting: Lockside metal railings should be painted black, with black uprights and fittings, with lock gate walkway painted white.

Plan at corners.



Plan.



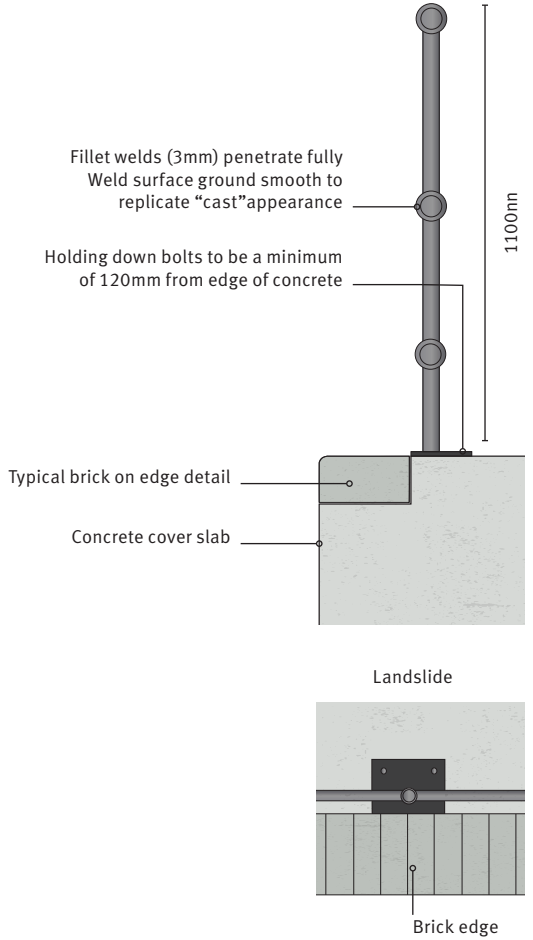
General principles of railing details.



Example metal ball jointed railings at East Farleigh Lock.



Example lock staircase railings at East Farleigh Lock.



Example metal ball jointed railings detail at East Farleigh Lock.

Metal Railings

Vertical bar railings are generally found on the boundaries of the river corridor to define public and private spaces. In some locations railings are associated with original Navigation buildings. E.g. Allington Lock House.

There are many standard railing designs, in addition to historic one off designs. New railings are generally of mild steel and consist of round or square section solid vertical metal bars with flat top and bottom rails in either rigid or self-adjusting forms to accommodate slopes. They can be obtained in readymade panels. The tops to the vertical bars, available in a variety of designs, should be kept simple, unless the railings are part of an adjoining park, which has its own identity.

Standard railing heights range from 1200mm to 2100mm. Space between vertical members should not be more than 100mm. Suppliers recommendations for methods of setting in the ground should be followed.

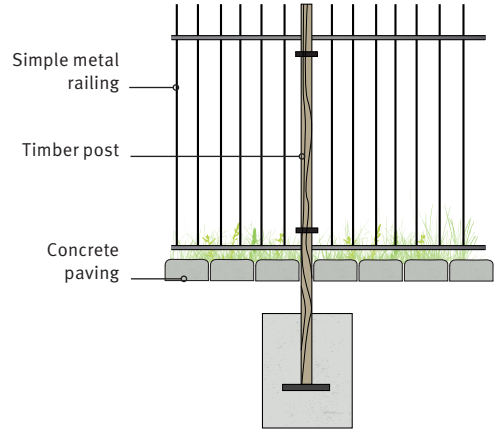
BS 1722-9:2006 Fences. Specification for mild steel (low carbon steel) fences with round or square verticals and flat horizontal rails.

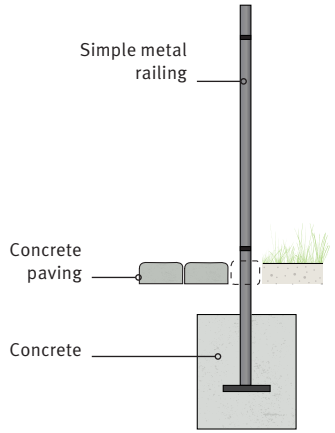


Example metal ball jointed lock gate railings at East Farleigh Lock.



Example of vertical bar railings defining the public space of Allington Lockside from the private Lock House garden.





Example of simple metal railing, Allington Lock House.

Security Fencing

Security fencing can have a visually significant impact on a waterway. Every opportunity should be taken to improve the river's boundaries, both visually and in their security. Frequently waterway boundaries reflect their perceived role as the vulnerable 'back door' to commercial and residential properties, separated by tall, visually intimidating fencing. Aggressive approaches to fencing design, with razor wire or rotating baffles, detract significantly from the river environment.

Steel palisade fencing can be visually obtrusive, particularly if installed galvanised and unpainted. Painting existing palisade fencing matt black, helps to reduce its impact, blending with vegetation throughout the seasons. Where fencing meets the water's edge, careful consideration is required to avoid unsatisfactory ad-hoc additions of barbed wire or barbed steel extensions.

Security fencing should be visually permeable to minimise its impact, with industrial activity visible from the river corridor. Planting compatible with the river's local ecology can be used to soften the effect of security fencing, but should not reduce its effectiveness.

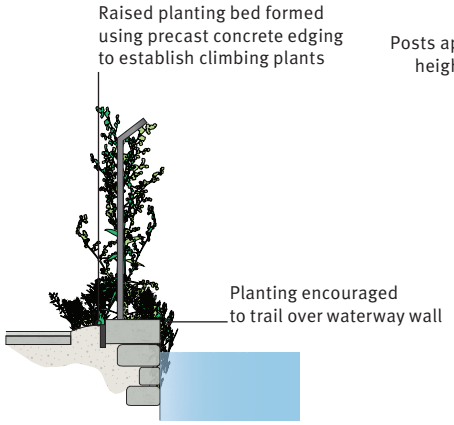
Where a secure perimeter is required the 358 Weld Mesh Security system provides a climb resistant mesh as well as high visual permeability making it less obtrusive. It is supplied in panels 2.5 or 3 metres long and powder coated in matt black. Different degrees of security can be supplied depending on the thickness of the wire used in the construction of the panels and the panel height.



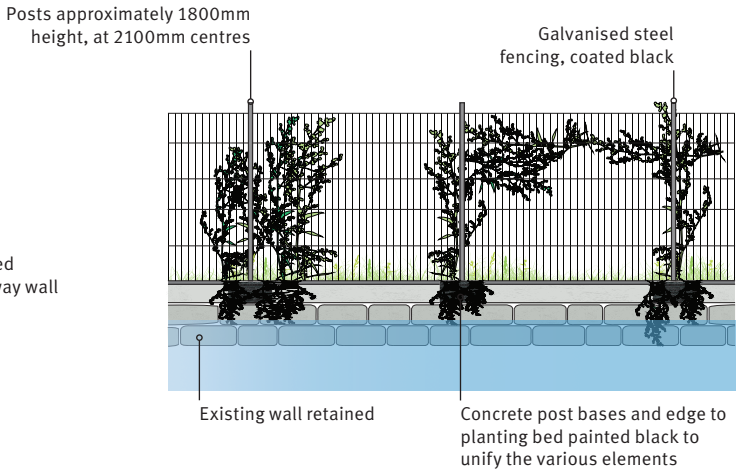
Example of 358 Weld Mesh security fencing in matt black, visual permeability and less obtrusive throughout the seasons.



Example timber cladding attached to security fencing around EA compound. Yalding.



Example security fencing and planting – section.



Example security fencing and planting – Elevation.

Retaining Walls

Traditionally retaining walls are associated with the original construction of the Navigation as part of locksides, embankments or bridge ramps etc. New retaining walls may be needed to accommodate new access and facilities or constraining adjoining land uses. However, solutions which avoid the use of retaining walls should be investigated in the first instance.

The subgrade and soil profile will determine the design of the retaining wall needed, and all designs are to be reviewed by a structural engineer. There are three types of construction:

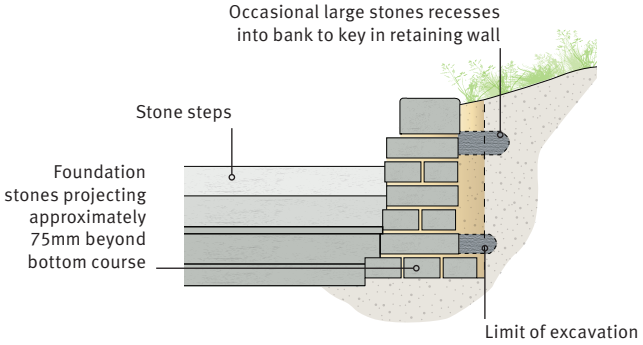
Gravity Walls - dependant on their mass, which can be rigid or flexible; Cantilevered Walls - reinforced concrete and/or masonry construction; and Crib Walls.

Rigid walls constructed of concrete and/or masonry, sometimes reinforced, are normally associated with other structures such as buildings or bridges. Flexible construction includes gabions and crib walls etc., which can tolerate some differential settlement without being significantly affected. This form of construction is visually suitable for informal locations, becoming vegetated over time. Timber can be used for low retaining walls and can be appropriate where a retaining structure is required. Second hand timber railway sleepers have been successfully used on a number of waterways where durability and strength is necessary.

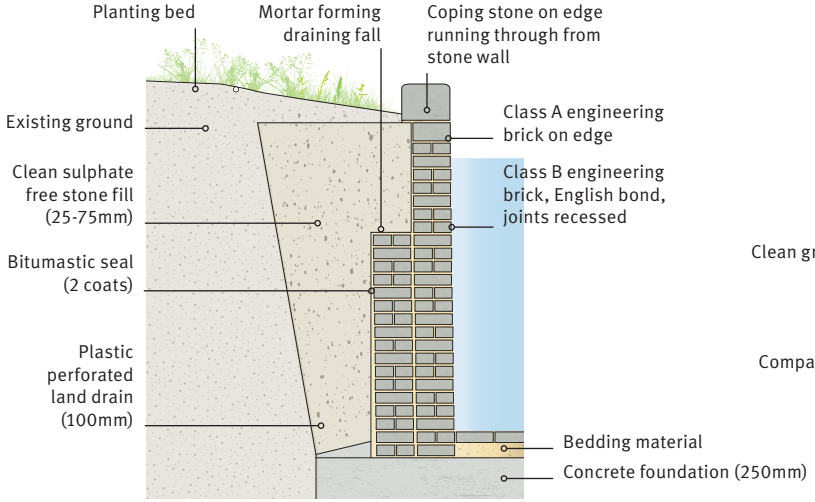
Retaining walls must have sufficient footings to eliminate the possibility of overturning or differential settlement relative to the lock chamber wall. They must be robust enough to withstand the pressures imposed on them by having piers at regular intervals and weep holes to remove water pressure.

Brickwork should be engineering class bricks (water absorption less than 7%) laid to English or Flemish garden wall bond and flush pointed. Coping bricks should be yellow gault stocks on edge, with a single bullnose to the face of the wall.

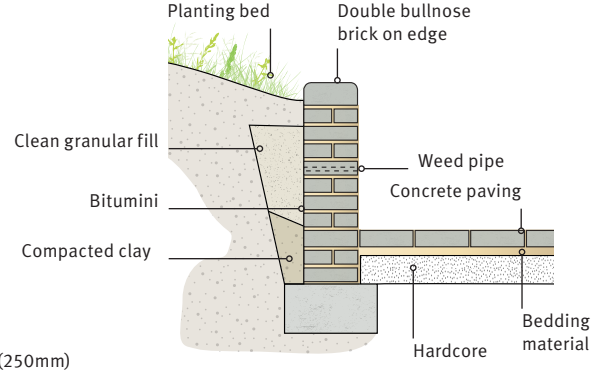
Where appropriate, special shapes should be used to achieve a neat, robust detail (i.e. stopends to single bullnose copings, external returns at corners).



Section: Typical stone retaining wall.



Section: Typical high brick retaining wall.



Section: Typical brick retaining wall.

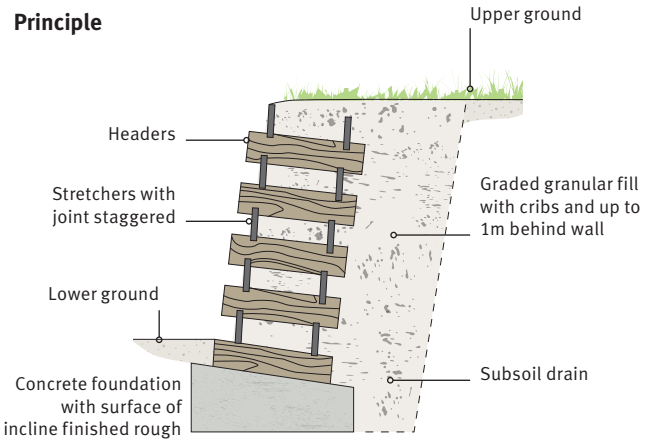
Timber Crib Walls



Example of a Timber Crib Wall.

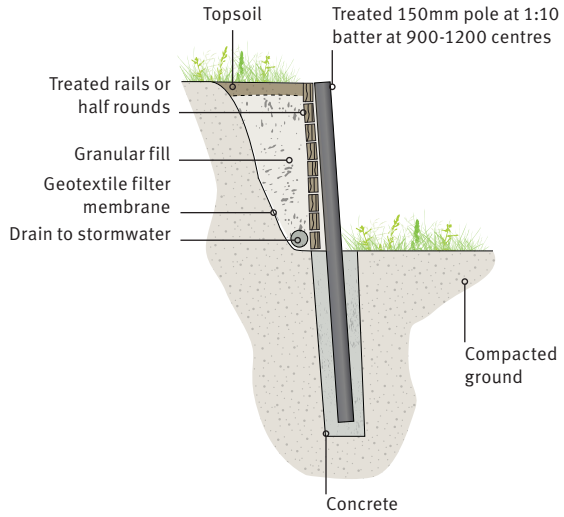
The timber units to make crib walls are called stretchers and headers. Stretchers run the length of the wall. Headers run from the front to the back of the wall. The stretchers and headers lock into each other using notches built into the headers.

Principle



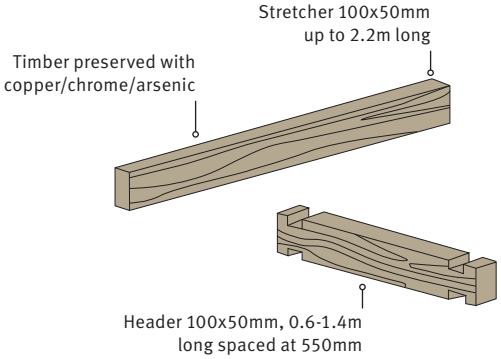
*Note: height limited to 10m with timber

Typical Section of a Timber Crib Wall.

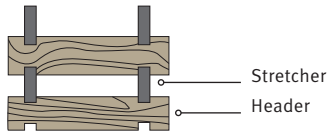


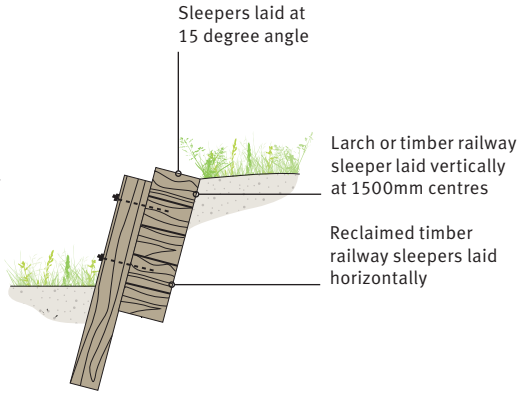
Cantilevered Pole Retaining Wall.

Components



Crib Wall Components.





Section: Typical timber retaining wall.

Boundaries and Gates

Boundary Improvement Campaigns

Boundary improvement campaigns have been launched as partnership projects with neighbouring riverside businesses, to help bring about a number of small scale improvements. Though 'low key' improvements, boundaries can be carefully designed to provide environmental improvements, which have included recreation, moorings and establishment of native species. The improvements can be built into existing maintenance budgets or by improving working procedures, without extra cost to the landowner.

Significant improvements can often be made by rationalising the range in styles of fences which exist on site. Where structures are considered inappropriate or even redundant then such opportunities should be taken to reassess fencing arrangements. Consideration should be given to juxtapositioning of fences or rails with similar functions. Ideally there should be strong continuity in design, unless function dictates a definite contrast in style.



Opportunity for a boundary and river bank campaign along the west bank of the River Medway. Maidstone Town Centre.

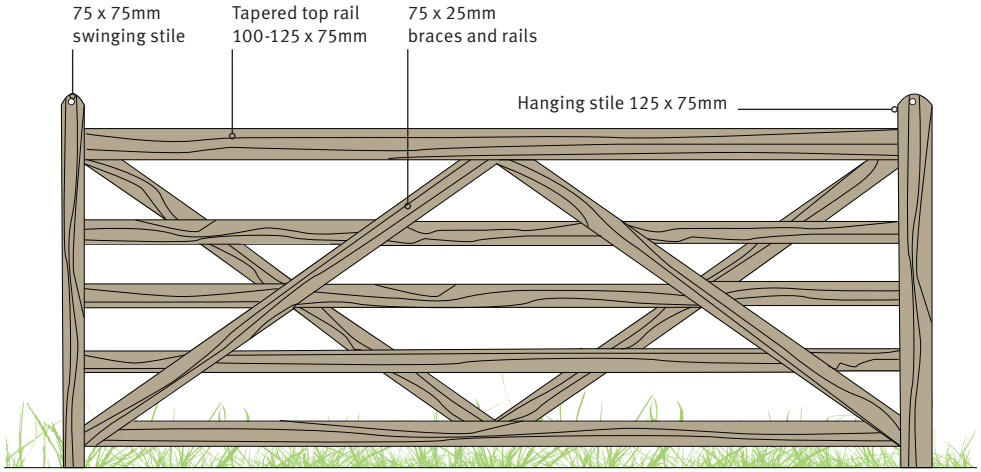
Guidelines for timber field gates

Timber field gates are characteristic of field openings but are often used in other locations where a rural character is appropriate. Most field gates are diamond braced which allows them to be hung from either side, although better quality gates have a larger hanging stile for strength and the top rail is tapered to reduce the weight. They are usually hung to open both ways (greater than 90^0) for ease of use and should be set back from the highway to avoid vehicles stopping in the road, while openning the gate.

Field gates are generally made of softwood pressure treated with preservative, but can also be of Oak which needs no treatment. They should be left unstained unless they are in a more formal location when they can be stained black.



Example of a diamond braced timber field gate.



Typical diamond braced timber field gate.

Timber Field Gates

To be manufactured in treated softwood to BS/201 (BS 3470 1975) standards.

Typical field gate sizes are:
- Overall height: 1.3m,

Width as required:
- Typical field gate widths are: 1200mm, 1800mm, 2400mm, 3000mm, 3600mm. Where the opening is wider than 3600mm a double gate should be used.
- Rail and brace crossings to be fully bolted with galvanized bolts.
- Hanging stiles to be 125mm x 75mm, top rails 125mm or 100mm x 75mm, cross braces 75mm x 25mm, shutting stile 75mm x 75mm.
- Ironmongery to be galvanised, and to consist of a fully bolted standard top band, an adjustable bottom band, standard hook and bolt.

Wooden Posts
Wooden posts Treated softwood with weathered tops.

3600mm or 3000mm gates:
- Hanging post: 2.4m x 175 mm x 175mm.
- Slaming post: 2.1m x 150mm x 150mm.

1800mm or 1200mm gates:
- Hanging post: 2.1m x 150mm x 150mm.
- Slaming post: 2.1m x 150mm x 150mm.

All wooden gateposts must be securely set into the ground and abut to adjacent straining posts.

Boundaries and Gates

All gates must correspond in height to the adjacent fence line and be hung and clapped independently of the adjoining fence line i.e. the hanging post must not be used as an end strainer.

Gateposts will either be set not less than 900mm into the ground and surrounded with concrete not less than 450 x 450 x 600mm deep; or, where ground conditions are suitable, erected without concrete surrounds to be set at least 1100mm below the ground surface with the soil compacted around the posts in 150mm layers.

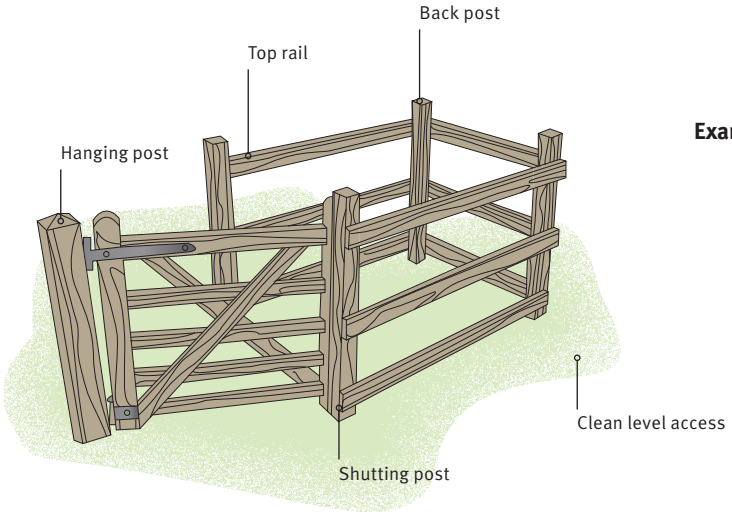
Some users will be put off using a footpath by the prospect of having to open a large field gate to gain access. The introduction of a pedestrian gate alongside a larger field gate will open up a footpath to a wider range of users. Large, traditional kissing gates allows access for a variety of users whilst preventing the escape of livestock from the adjoining fields.

The National Key Scheme (NKS) sometimes referred to as RADAR keys, offers disabled people independent access and can be used to open footpath gates.

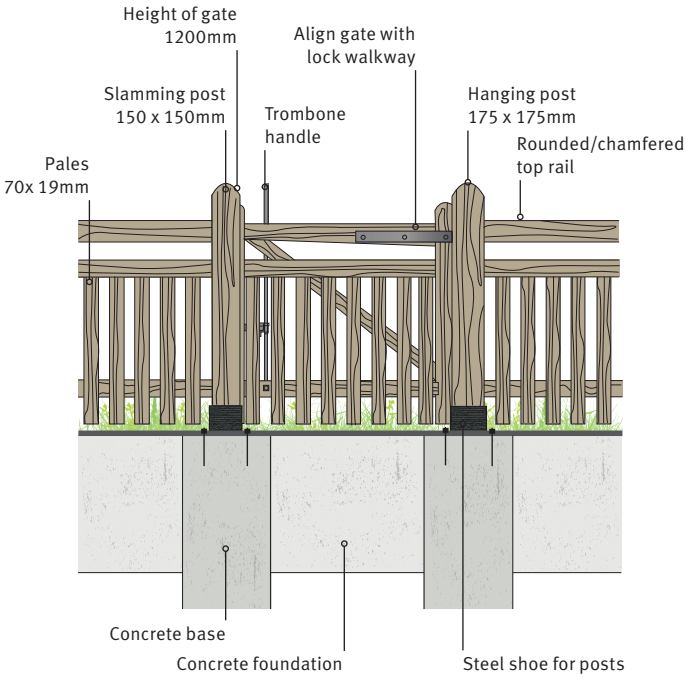
When to use?
At control points where land ownership, security or livestock management require the ability to define a secure area, while allowing public access. It should be noted, the use of stiles as access control points is not recommended.

Who are the users?
All the following users need to be considered:

- Pedestrians and dog walkers
- People with pushchairs/'off -road' buggies
- Wheelchairs and motorised mobility scooters
- Cyclists
- Horse riders
- EA Maintenance
- Landowners



Example of timber kissing gate.



Example of pedestrian timber gate.

Gate Fixing Considerations

- Hang one hinge 'upside–down' to deter theft.
- What level should latches be set at? Consider wheelchair users and horseriders.
- Is there space to allow wheeled users to access through the gate.
- Be aware of finger traps at hinges and slamming posts.
- Does it require a soft close hinge or closing pad to reduce slamming noise?

Gate type	Dimensions	User considerations
Field gate	3000–3600mm wide	Allows access for all with suitable latches and approach areas
Pedestrian gate	1000mm wide	Allows access for all with suitable latches including motorbikes and motor scooters but not horse riders
Bridle gate	1525mm wide	Allows access for all with suitable latches including motorbikes and motor scooters and horse riders
Small Kissing gate	1000mm wide × 1000mm deep	Allows access for pedestrians and cyclists if they up end their bikes within the box
Medium Kissing gate	1200mm wide × 1200 – 1400mm deep	Allows access for all with suitable latches but space restricts motorbikes and horse riders.
Large Kissing gate	1500mm wide × 1400 – 1900mm deep	Allows access for all with suitable latches apart from horse riders.
Gates in deer fencing	at least 2000mm high	To prevent deer jumping over at a low point

Table of gate types and their potential users.

Boundaries and Gates

Management Issues

Promotion of access: Is the route of recreational significance?

Public Rights of Way: Consent is required for closure or temporary realignment from the local authority.

Inspection/Maintenance: Who will take responsibility for inspection and maintenance?

Vandalism and theft: Gate fixings to be welded in place to deter theft.

Livestock: Fencing design appropriate for livestock e.g. mesh at lower levels for lambs, high gates for horses and deer.

Emergency access: Shared keys, consultation before installation.

Standards, Specifications and Specialist Suppliers
BS5709:2018 – Gaps, Gates and Stiles: dimensioning and positioning data.

Defra: Authorising structures (gaps, gates & stiles) on rights of way gives guidance primarily to Local Authorities as to what consents and development control rights they hold over the designated access points.

What should designers consider?

1. Who are the likely users?
2. Type of gate – traditional or kissing gate?
3. Public Rights of Way – who has a legal right to use the path?
4. Layout – compliance with BS5709:2018
5. Security – permanently open, ability to lock, RADAR key, latch and catch systems?
6. Self closing – sprung closing, weighted or not?
7. Material – timber or steel?
8. Opening width – pedestrian, cyclists, mobility vehicle, maintenance or farm vehicle?
9. Height – low for pedestrians and wheelchairs, higher for horse riders and control of larger livestock.
10. Access – type of surface for erosion control.
11. Land-use – what foreseeable land-uses are there?
12. Vandalism – choice of materials and how is the gate hung?
13. Public safety – moving parts, hinges, catches, latches and closers.
14. Can recycled, site generated or locally sourced materials be used?

Further sources of information

Pittecroft Trust User Guides
Simplified guides to BS5709:2018 and Defra's Authorising Structures (gaps, gates & stiles) on Rights of Way.
Go to link

Woodland Trust Community
A series of specifications and guides relating to access and woodland management.
Go to link

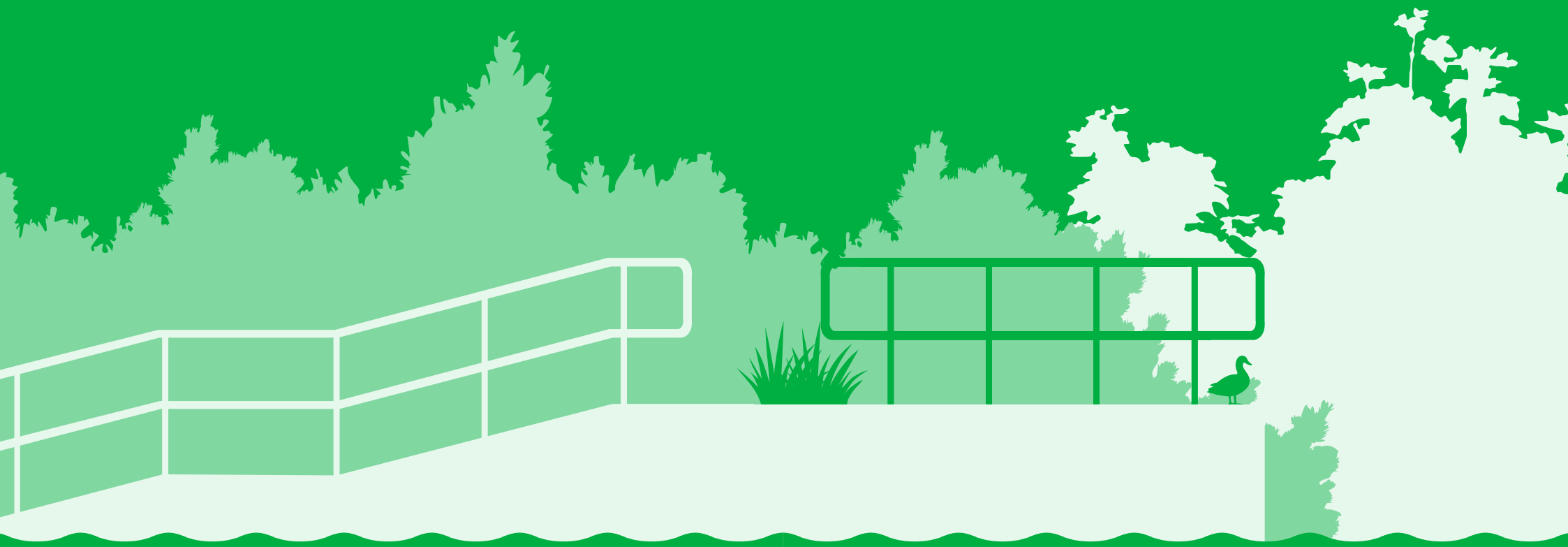
Fieldfare Trust
Specific consideration of promoting disabled access in the countryside - A Good Practice Guide to Countryside Access for Disabled People – available to buy online from the Fieldfare Trust.
Go to link

Centre Wire Ltd
Suppier of gates and other access products.
Go to link

Steps, Ramps and Handrails

Environment Agency

Medway Navigation Design Handbook



Steps, Ramps and Handrails

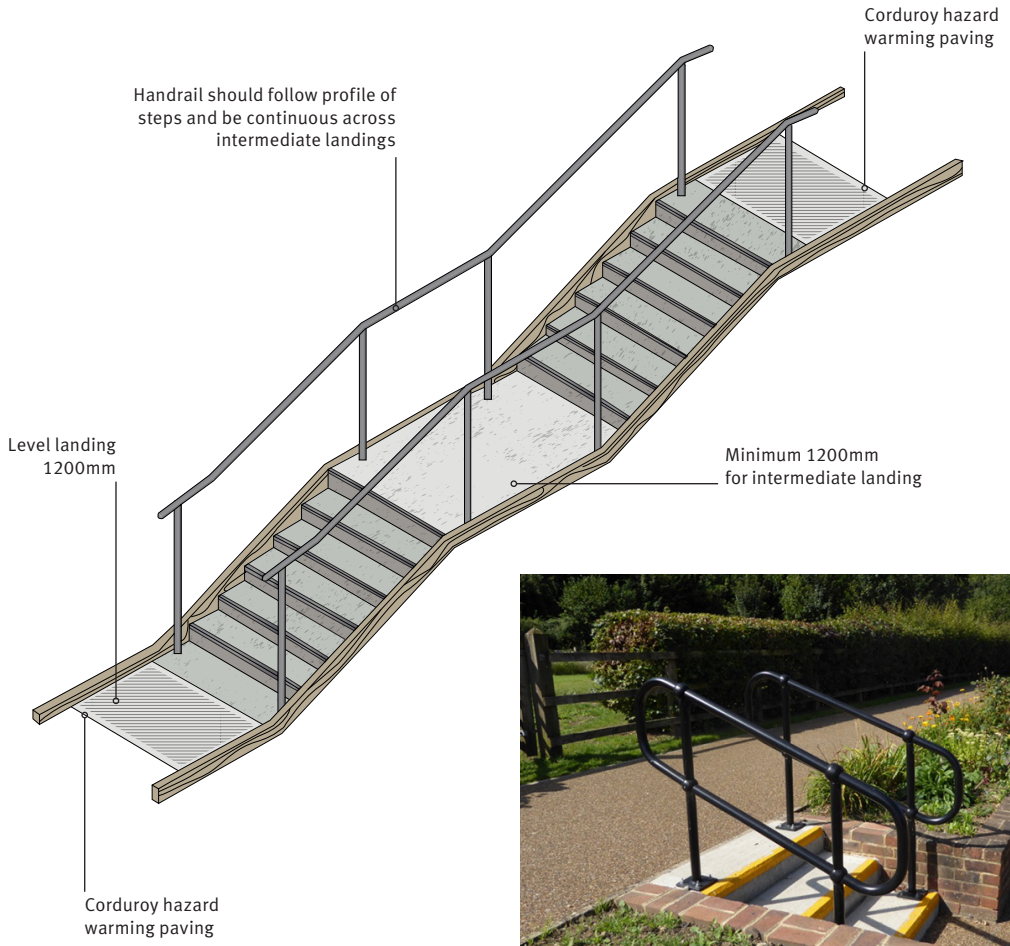
Steps

Steps should be designed to assist mobility impaired people. Single steps and changes in level which are less than 150mm should be avoided unless caused by a kerb line where drop kerbs should be used at identifiable crossing points. The use of steps in lieu of a level access or a ramp will be easier to justify in rural or open countryside situations, as the level of access expected is reduced compared to more urban environments.

Standards and Specifications

Riser and Treads: Guidance on the most suitable riser heights and tread depths varies depending on the guidance consulted and the context of the site. Building Regulations 2015, Document M, Access To and Use of Buildings (This document was last updated 1 October 2024: Go to link) states risers should be between 150 and 170mm in height and treads should be between 280 and 425mm deep. All steps in a flight should have the same tread height and riser depth. It may be appropriate in more rural environments to relax the maximum riser and tread dimensions. In these situations a maximum riser height of 250mm and a maximum tread depth of 1000mm is acceptable.

Treads should be constructed using non-slip materials which remain non-slip when wet or muddy. Treads with a smooth, round nosing, slightly angled towards the riser are preferable. Protruding or open treads should be avoided as they present trip hazards.



Example of a step detail (Part M of Building Regulations).

Example of lockside steps. Allington Lock.

Steps, Ramps and Handrails

Treatment of step noses: A nose that visually contrasts with the rest of the step will help visually impaired users. Guidance indicates a contrasting strip, 55mm wide, on the riser and tread is sufficient.

Handrails: Handrails should be provided along both sides of steps.

Height and Landings: As a general rule any single flight of steps should not have a total rise exceeding 2000mm. If this rise is exceeded then landings should be inserted at intervals of 2000mm as a minimum. The provision of landings at the top and bottom of steps to accommodate any necessary tactile paving should be considered. The inclusion of a ramp and separate steps offers the best solution in terms of access as it accommodates all potential users.

Width: Steps should be a minimum of 1200mm in width. It may be possible to reduce the width in remote locations where the need for inclusive access is less critical.

Drainage: To prevent Health and Safety issues arising, drainage of individual steps needs to be considered. The top, bottom and intermediary landings should also be well drained to reduce the risk of water ponding and ice forming.

Cycle troughs: To assist cyclists at specific locations along Maidstone's Riverside, cycle troughs can be fitted to allow cyclists to wheel their bike up or down the existing flights of steps.

Stepped Ramps

In certain circumstances it may be preferable to use stepped ramps. These are often used in woodland or rural locations to improve access, but are not suitable for wheelchair access. In these situations the use of an informal access solution is more appropriate and often more cost effective.

Stepped ramps are usually found in rural locations where access expectations are reduced and where physical constraints exist.

What should designers consider?

1. Is there an alternative route that would negate the need for stepped access?
2. What is the total rise of steps and are intermediate landings required?
3. Is there sufficient room for the recommended dimensions including any landings and tactile paving?
4. Does the situation require steps that are fully compliant with current Building Regulations or can they be used as best practice? i.e. is the situation urban, rural or open countryside?
5. Is there tactile hazard warning paving to the top and bottom of the steps?
6. Has a contrasting nosing been applied to the steps?
7. Can recycled, site generated or locally sourced materials be used?



Example of a cycle trough, which could be fitted to the steps along Maidstone Riverside, to allow cyclists to wheel their bikes up and down the steps.

Steps, Ramps and Handrails

Background

Where possible the need for steps should be minimised and alternative routes considered, however, in certain circumstances the need for steps is unavoidable. In these cases care must be taken to ensure they comply with the relevant standards. Where possible steps and ramps should accommodate all users. If there is only room or budget for one solution then a ramp should take preference.

Consideration of the specific site circumstances and the level of required access provision should decide whether to use steps or a ramp. Although ramps should take preference ahead of steps, many countryside visitors, including some ambulant disabled people, find steps safer and easier to use.

Ramps

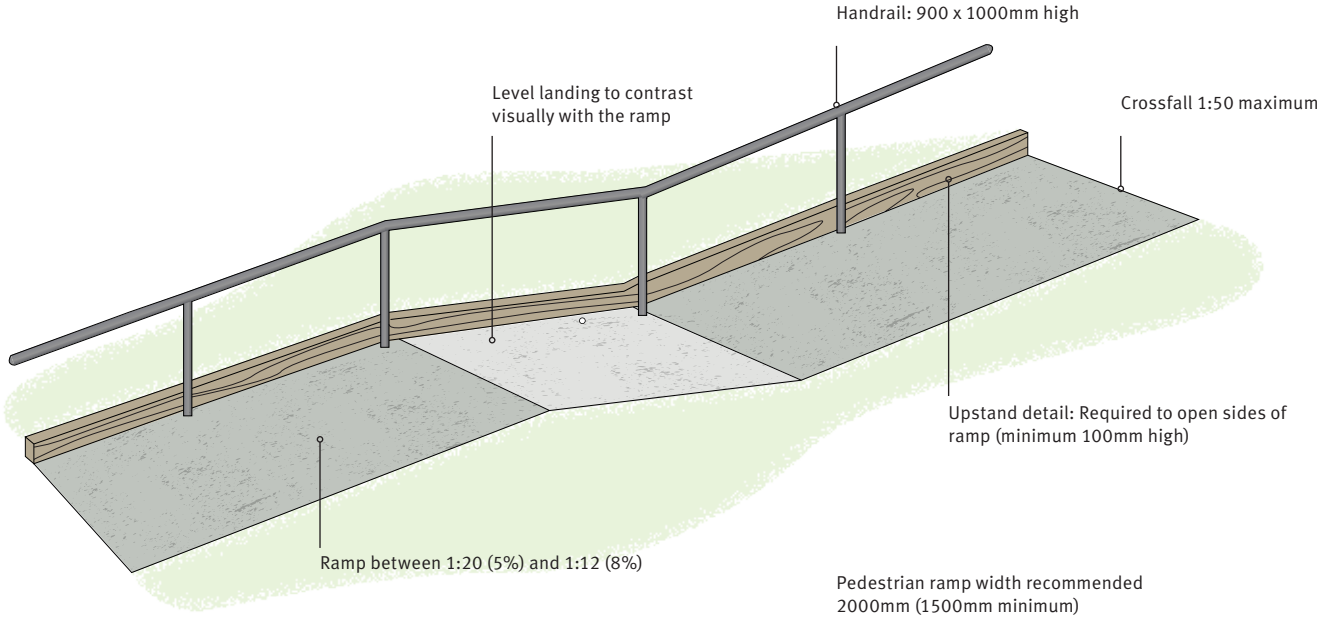
Ramps are required to accommodate wheeled users, aid the ambulant disabled and people with limited stamina.

Ramp alignment: Ramps should be intuitive and sited to provide direct access. Users will be frustrated when forced to walk a roundabout route and will create desire lines. In practice, steep terrain or ground conditions may justify a slight deviation in direction, and longer route, which should be kept to a minimum.

When to use?

The table overleaf indicates maximum ramp lengths between landings in different settings. Maximum ramp lengths in the built environment can be found in Part M of the Building Regulations.

The Regulations describe a ramp as a gradient, which is more than 1:20 (5%) and less than 1:12 (8.3%). When such a situation exists, level landings of at least 1800mm wide and 1800mm long should be provided at intervals along the ramp to act as resting points.



Typical ramp detail (Part M of Building Regulations).

Pedestrian ramp width recommended 2000mm (1500mm minimum)

Vehicle ramp width recommended (3500mm minimum)

When both are required, ramps should be separate to increase safety and only when space is restricted.

Steps, Ramps and Handrails

Gradients

Gradient	Urban & Formal Landscapes Max. distance between landings for 750mm vertical climb	Urban Fringe & Formal Managed Landscapes Max. distance between landings for 830mm vertical climb	Rural & Working Landscapes Max. distance between landings for 950mm vertical climb
1:20 (5%)	15 m	16.60 m	19.00 m
1:18 (5.5%)	13.5 m	14.94 m	17.10 m
1:16 (6.2%)	12 m	13.28 m	15.20 m
1:14 (7%)	10.5 m	11.62 m	13.30 m
1:12 (8.3%)	9 m	9.96 m	11.40 m
1:10 (10%)			9.5 m

The table is taken from the Countryside for All Good Practice Guide and applies to countryside environments.

Standards and Specifications

Surfaces: A ramp surface should be non-slip, and of sufficient width to accommodate a maximum cross-fall of 1:50. Cross falls in excess of this can present difficulties of balance for wheelchair users and some ambulant disabled people.

Edgings: Where possible an upstand of 100mm, usually in the form of a kerb, should be provided on any open side of a ramp. The upstand should contrast visually with the ramp surface to be easily detectable to the visually impaired.

Landings: Landings should be provided at intervals and at the foot and head of the ramp. The number needed is dependent on the gradient of the ramp. They should be level and have a maximum gradient of 1:50 along their length. The width of the ramp should match the landings. Landing widths differ depending on the design of the ramp and their location. Further information is given in the table above and in Part M of the Building Regulations.

Seating: In rural environments where a long length of ramp is required the inclusion of seating at landings should be considered. This will accommodate the needs of people with limited stamina, but should not unduly narrow the width of the ramp.

Handrails: Handrails on a ramp act in a number of ways; as a potential means of propulsion, as an aid to balance and as a safety barrier. At least one handrail should be provided as a minimum.

What should designers consider?

1. Who are the intended users? Bikes, wheelchair users and buggies, as well as pedestrians.
2. Is there an alternative route which does not require a ramp?
3. Is the gradient proposed steeper than 1:20, and so requires a ramp?
4. Is there enough space to provide both a ramp and steps?
5. Can the ramp be turned into a feature within its setting.
6. Is there sufficient room for the required width and length of ramp (including landings and handrails) to achieve the required gradient?
7. Is the proposed surface material of sufficient non-slip value?
8. Can recycled, site generated or locally sourced materials be used?

Steps, Ramps and Handrails

Further sources of information

Building Regulations
Access To and Use of Buildings, Document M (Last updated June 2021) Regulations relate specifically to access to a building but should be used as a best practice guide when considering surface and footpath design in general.
Go to link

English Heritage
Easy Access to Historic Landscapes
A guide produced to help property owners and managers make historic landscapes more accessible to visitors.
Go to link

Scottish Natural Heritage Countryside Access Design Guide
A web based guide specifically aimed at improving access to the countryside. The guide contains a number of downloadable PDF design and construction information sheets detailing different step solutions for countryside settings.
Go to link

Fieldfare Trust
Fieldfare Trust: Countryside for All Good Practice Guide.
A guide to disabled people's access in the countryside.
This guide is specifically aimed at rural landscapes and open countryside situations. The Guide is available as a download:
Go to link

Department for Transport
Inclusive Mobility, A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure (December 2021)
Go to link

Department for Transport
Guidance on the Use of Tactile Paving Surfaces
(December 2021)
Go to link

Steps, Ramps and Handrails

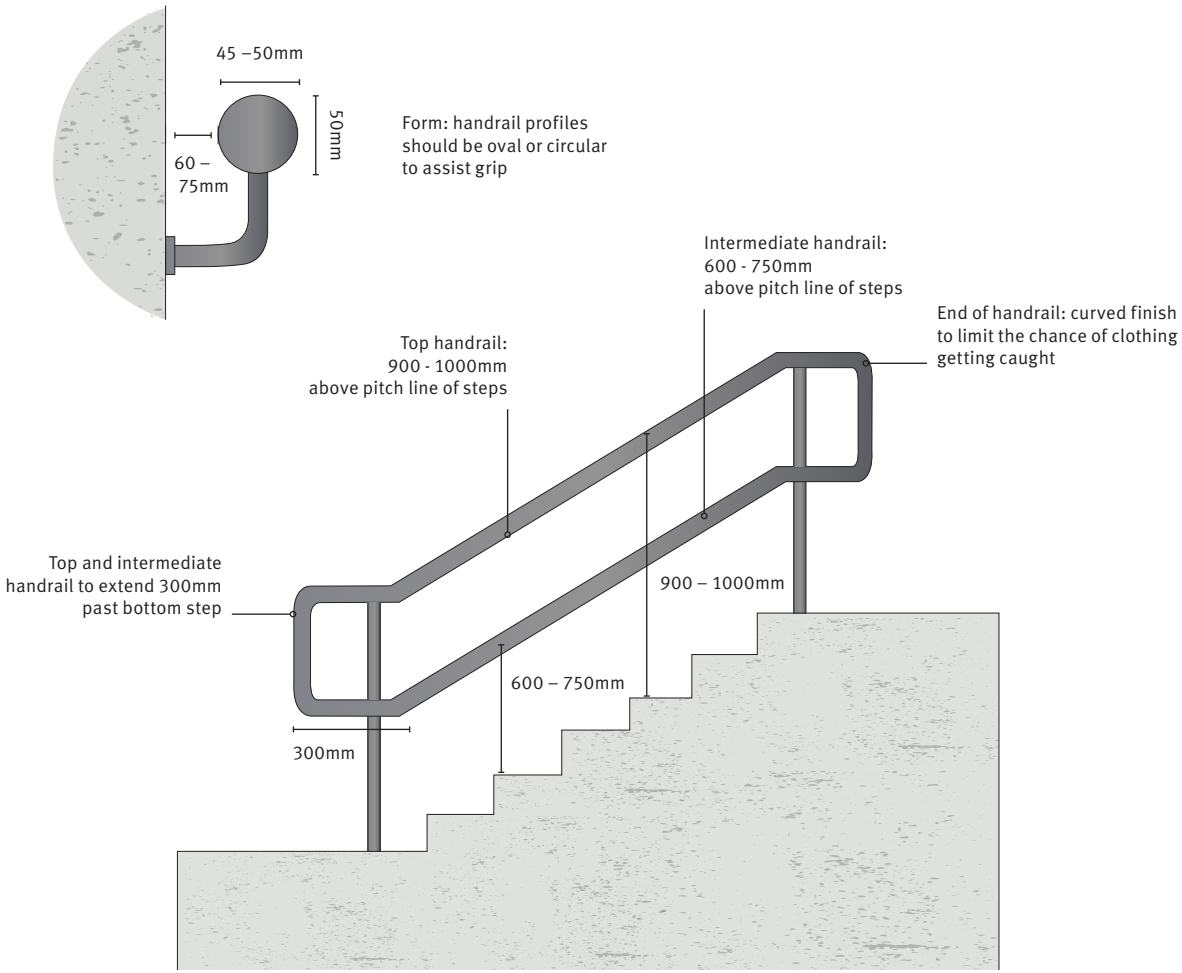
Background

Handrail design and construction will be influenced by its intended use, with handrails providing protection to steep slopes and drops requiring a more robust design.

As a general rule a handrail should be provided along steps and ramps. This becomes a legal requirement in situations which assist access to a building. A number of rails at different heights should be included to accommodate a range of expected users. Handrails are required on raised boardwalks and bridges. In these situations the handrail should be designed to act as a barrier and to facilitate access.

Standards and Specifications

Position: Handrails should be positioned so they do not reduce the clear width of the ramp or steps beyond the minimum requirements. Guidance recommends between 900mm and 1000mm above the ramp or nose line of the steps. Consideration should be given to a secondary handrail at a lower height to accommodate children and wheelchair users on ramps, with recommended height ranges of 600 to 750mm. When a handrail is adjacent to a wall or fence Part M Building Regulations 2015, (This document was last updated 1 October 2024: Go to link. Access To and Use of Buildings recommends a minimum clear gap of 60 to 75mm should be provided so hand grip is not impeded. Anything greater risks hands or arms getting wedged between the wall and the handrail.



Example of a step detail (Part M of Building Regulations).

Steps, Ramps and Handrails

Handrails

Form: A handrail should follow the pitch line of the ramp or flight of steps including any landings. It should extend beyond the start and finish of the ramp or steps by 300mm and finished in such a way that limits the chances of clothes getting caught. Curved ends, within the waterway context, help to prevent ropes and warps becoming caught on the handrail. Ideally the profile of the handrail should be oval or circular to assist grip with a diameter of 40 to 50mm.

Materials: The choice of material will have an impact on what form the handrail will take. The material selected should reflect the surrounding landscape character and be comfortable to touch, easy to grip, non-abrasive, does not retain heat or cold and provide the necessary support.

Visibility: On approach a handrail should be clearly visible. It should provide a visual contrast with the surrounding environment without being highly reflective.

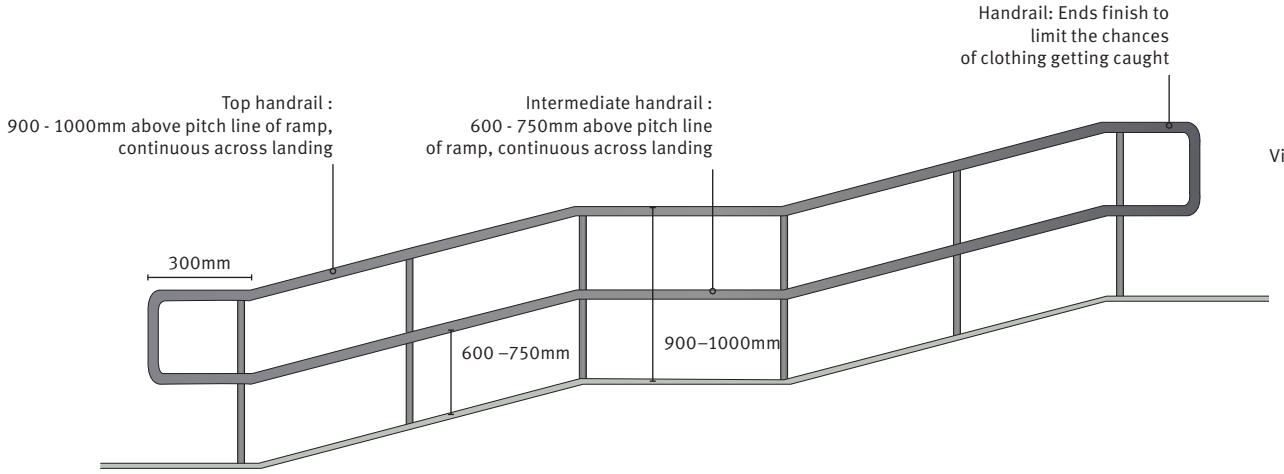
Fixing: Fixings should be designed so they do not protrude beyond the surface of the handrail and cause injury. The surface should remain smooth and comfortable to touch along its full length.

Rubbish Trap: Try to avoid rubbish traps forming at the base of handrail posts where debris cannot be easily removed.

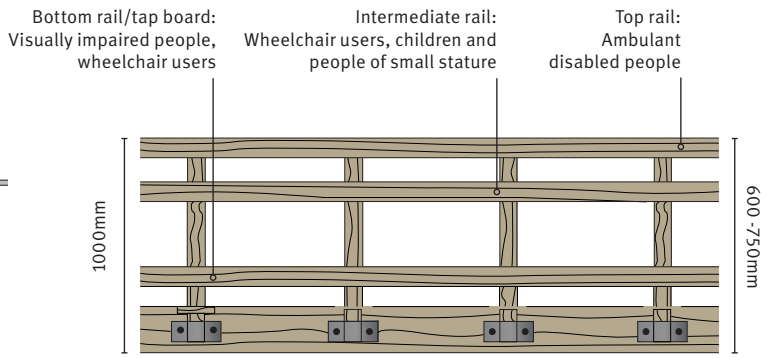
Cycle rails: Barriers adjacent to cycleways should follow BS 7818:1995 Specification for pedestrian restraint systems in metal which recommends a higher rail to act as a parapet. Such rails be set at 1.15m above ground level for pedestrians and 1.4m for cyclists.

What should designers consider?

1. What level of access will be expected by the public (Urban/rural)?
2. Is the installation of a handrail required in this location?
3. Is the proposed handrail being used purely to ease access or as a security/safety barrier as well?
4. Is there sufficient room to install a handrail and maintain the minimum clear step or ramp width requirements?
5. What is the best material to use for the handrail taking into consideration the surrounding landscape character and the comfort of the user?
6. Can recycled, site generated or locally sourced materials be used?



Elevation: Handrail and ramp.



Elevation: Handrail to a deck.

Steps, Ramps and Handrails

Further sources of information

Building Regulations
Access To and Use of Buildings, Document M (This document was last updated 1 October 2024: Go to link) Regulations relate specifically to access to a building but should be used as a best practice guide when considering surface and footpath design in general.

Scottish Natural Heritage Countryside Access Design Guide
A web based guide specifically aimed at improving access to the countryside. The guide contains a number of downloadable PDF design and construction information sheets detailing different step solutions for countryside settings.
Go to link

Fieldfare Trust
Fieldfare Trust: Countryside for All Good Practice Guide. A guide to disabled people's access in the countryside. This guide is specifically aimed at rural landscapes and open countryside situations. The Guide is available as a download:
Go to link

Department for Transport
Inclusive Mobility, A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure (December 2021)
Go to link

Department for Transport
Guidance on the Use of Tactile Paving Surfaces (December 2021)
Go to link

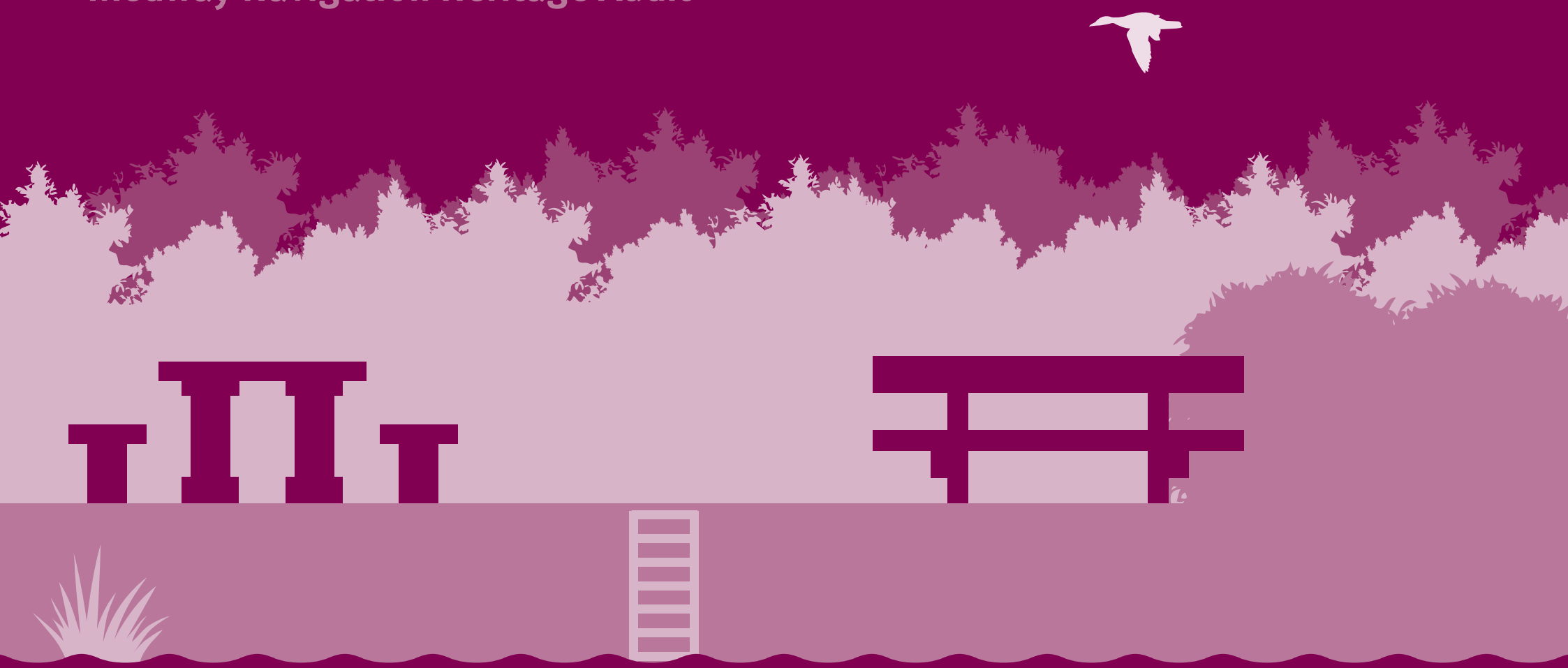
English Heritage
Easy Access to Historic Landscapes
A guide assist in making historic landscapes more accessible .
Go to link

Sustrans
Traffic Free Routes and Greenways Design Guide, Sharing of Paths and Path specification details.
Go to link

Waterside Furniture

Environment Agency

Medway Navigation Heritage Audit



Waterside Furniture

Background

The Medway Navigation has a distinct post industrial character, softened through time by vegetation, usage and change of use. This should be reflected in the vocabulary of its waterside furniture, rather than a nostalgic idea of 'heritage' or that of a municipal park.

In this section 'waterside furniture' is associated with informal use of the towpath and locksides, rather than items traditionally part of the functional navigation.

It includes:

- Seats/benches
- Lighting

The desire to provide for the needs of all river users should be balanced with the aim to restrict the proliferation of riverside furniture which may conflict with the original function of the Navigation. In recent years there has been a drive to protect local character by de-cluttering urban areas of unnecessary furniture, limiting urbanisation in rural areas and reducing maintenance.

When designing or selecting waterside furniture important considerations should be:

- Simplicity of design and the robustness of materials.
- The river's linear form and the variety of river landscapes.
- These considerations should help provide the basis of a common palette which recognises the river's 'local distinctiveness' and is robust enough to cope with potential vandalism, fire damage, graffiti, physical force and dismantling.

Types of seating

Seating/benches should be simple, robust and have strong ground fixings to resist vandalism. Seats should have a seat height of 450-520mm above ground level. If possible a mixture of seating types should be provided including benches with and without arm rests (wheelchair users find it easier to transfer onto a seat without arm rests).

In the more rural sections of the river, it may be appropriate to introduce informal seating, where solutions can help interpret their surroundings. In these instances the reuse of materials such as old lock balance beams could be considered. The use of 'public art', particularly in the design of seating, can be a successful approach for areas of urban regeneration where better links with the river and neighbouring communities is desired.



Eastgate Cast iron Seat, Broxap BX2020 – AV. Allington Lock.



Woodscape Timber Seat.



Woodscape Type 2 Timber Bench.

Waterside Furniture

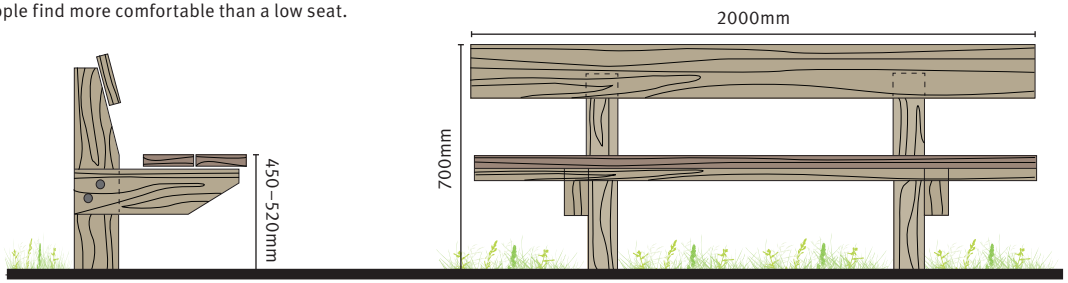


Example of riverside seating being used as public art. Maidstone.

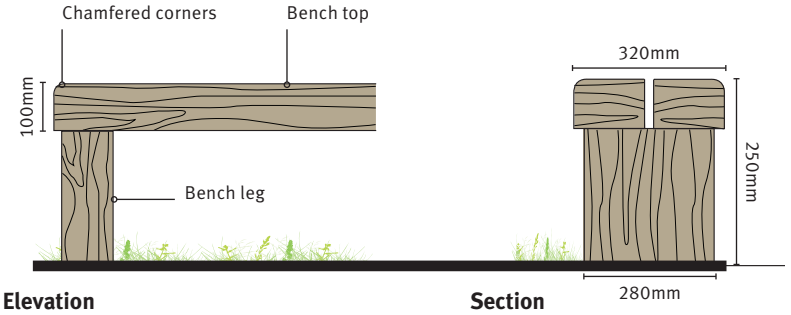


Example of simple rustic picnic bench. Porter's Lock.

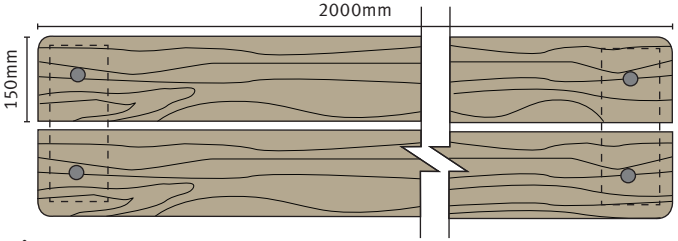
*The back is at the right height to function as a perch which some elderly people find more comfortable than a low seat.



Elevation: Basic seat dimensions



Elevation **Section**



Section

Waterside Furniture

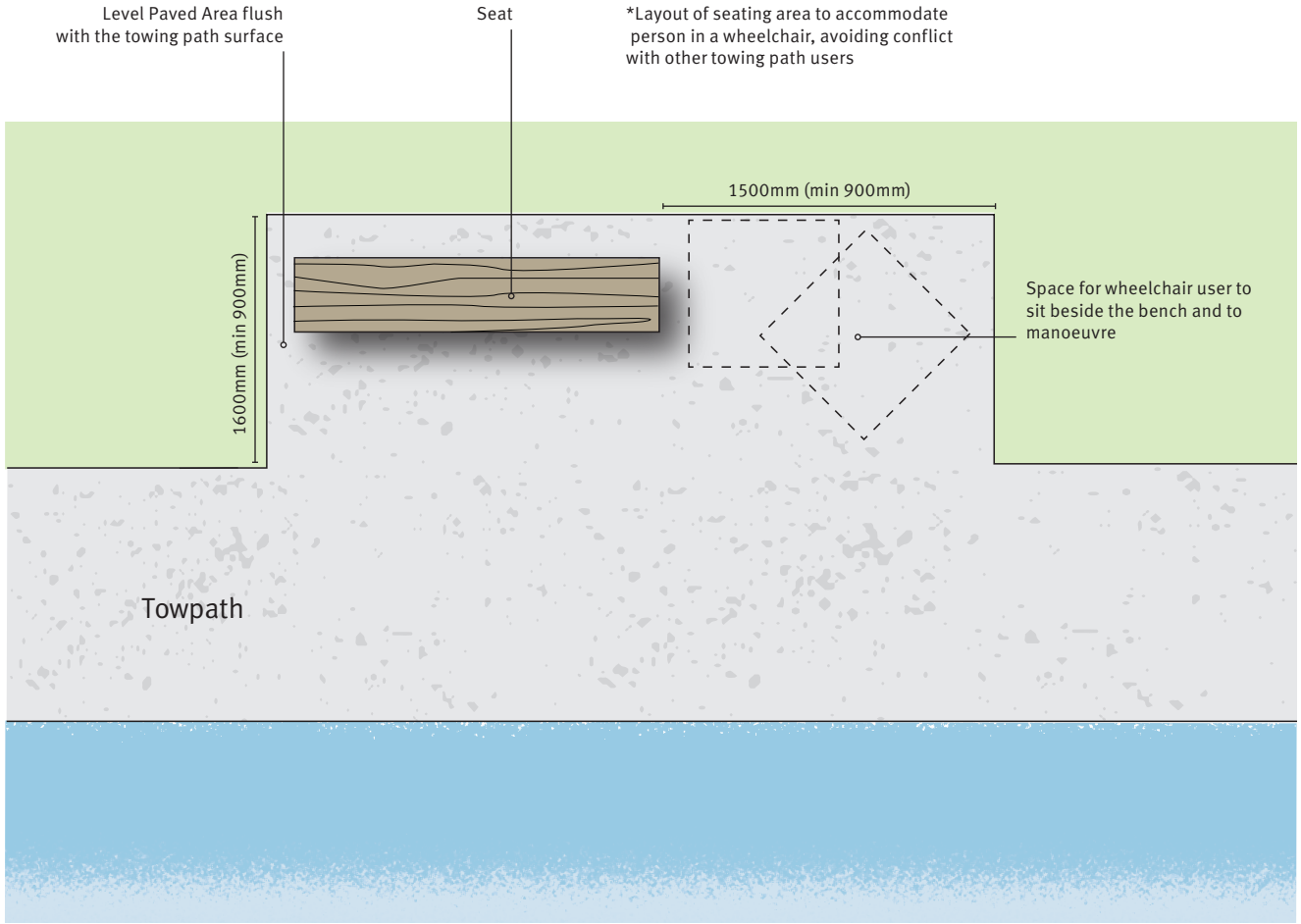
Location of Seating Areas

The requirement and location of furniture needs to be considered to simplify its provision, avoid visual clutter and ensure items are well used and appreciated. Depending on the situation seating areas should be discrete, located at regular intervals to benefit from a view or where shelter is provided.

Locating a seat close to an access point will encourage ambulant disabled or elderly people greater access to the river, particularly at Tonbridge's Town Lock, Teston, East Farleigh, Maidstone Riverside and Allington Locks. Seating areas should incorporate provision for wheelchairs and set back from the towpath by at least 600mm to allow free passage. Furniture should not be located on the riverside of the towing path as it has the potential to cause a hazard to boaters and river access.

Surfacing around furniture

The surface around furniture should be firm and durable. Compacted fines are promoted over tarmac and concrete surfaces in urban areas with grass in rural locations. The surface should be flush with the main pedestrian route and free from any obstructions which may act as trip hazards. Ideally crossfalls are less than 1:35 to allow for wheelchair users.

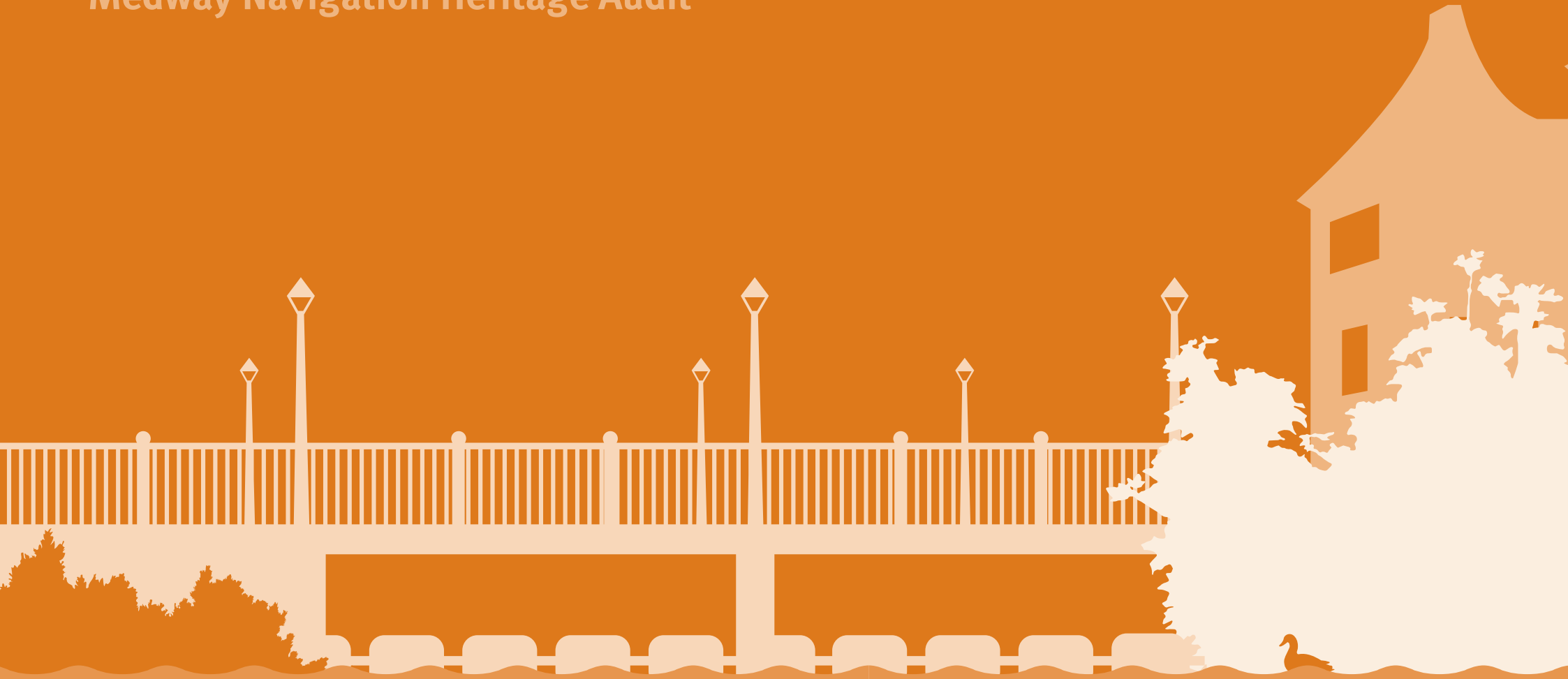


Seating layout to accommodate wheelchair users, avoiding conflict with other wheelchair users.

Lighting

Environment Agency

Medway Navigation Heritage Audit



Lighting

Background

This section considers amenity lighting as part of riverside 'street furniture.' The Environment Agency does not promote riverside lighting and does not have a duty to light the towpath. Generally lighting is out of character, especially in the river's more rural tranquil locations. However, lighting may be appropriate in specific mooring locations as a safety measure or in urban locations, such as Maidstone and Tonbridge where there is extended evening use and lighting makes a positive contribution to the riverside environment.

Lighting should be planned to ensure it is located and designed to meet a clearly identified need. Light pollution has become a prominent environmental concern with regards to the impact on ecology and local character. The design and performance of lighting should be integrated with the location, the space and the activities to be lit, avoiding the disadvantages, such as intrusion from glare, urban clutter, vandalism and maintenance issues. To minimise glare, refractors or louvres can be fitted to direct or diffuse the light.

To prevent light spillage, lighting can be specified at a low height to provide the required level of illumination. If overhead lighting is required, this should be sympathetic in character and attached to existing buildings or structures to reduce clutter.

Potential lighting locations

A specialist lighting designer should be consulted to ensure the integration of the proposed lighting scheme into the river landscape. The benefits of undertaking such considerations are in providing a high quality public realm, which adds to the river's sense of place.

Considerations where lighting might be used:

- Busy urban public towpath routes through Tonbridge and Maidstone.
- Semi urban locksides – Tonbridge Town Lock, Anchor Sluice, Hampstead Lock, East Farleigh Bridge and Allington Lock.
- Permanent moorings and marinas.
- Under and over bridge lighting in urban areas – Tonbridge and Maidstone.
- Highlighting urban landmark structures.
- Security – buildings and yards.
- Light as art – festivals, events and celebrations.

Issues
Before installation, there should be consultation with local residents and user groups. Planning consent may be needed, particularly in Conservation Areas. to approve both the lighting levels and design of the fittings.
Exterior fittings, which are seen mostly during the day, should be discrete, simple, robust and relate to their surroundings both in scale and style.
Ensure there is a clear maintenance responsibilty. If the local authority is maintaining the lighting, they may have very tight requirements on the installation and design.

Technical & Safety Issues
Light fittings should meet all the relevant British Standards (BS 5649:1982) and (BS 5649-5:1982) for lighting columns, base compartments and cableways. Installation should follow the latest IEE regulations.

Energy saving
Low energy fittings should be used where possible. Lighting should be directed to ensure the light is focused where needed, so outputs can be minimised in achieving the required light levels. Solar powered fittings - security and street lighting are available and may be appropriate.

Quality of Light
Warm white light produced by high pressure sodium lights is preferred. This may conflict with function, as high pressure sodium will not function as movement sensing lighting as it has a long warm up time and delay for cooling before it can come on again.



Example of bridge lighting. Tonbridge Town Bridge.

Lighting

Potential Lighting locations

1. Wall mounted fittings: Wherever possible, lighting should be attached to existing buildings or walls rather than columns to avoid the need to introduce a new structure to the riverside.

2. Column Lighting: If no existing structure is available to attach a light fitting or where bollards will not provide the required level of lighting. Care should be taken to avoid a municipal appearance by selecting a sympathetic design of fitting and light quality, with the location of the columns considered not to conflict with riverside uses.

3. Pinpoint Lights: Highlight the entrance of a building to light a route, but will not light large areas. The fittings should be discrete, simple and minimise impact. They should be vandal proof with tamper resistant fixings and located out of reach.

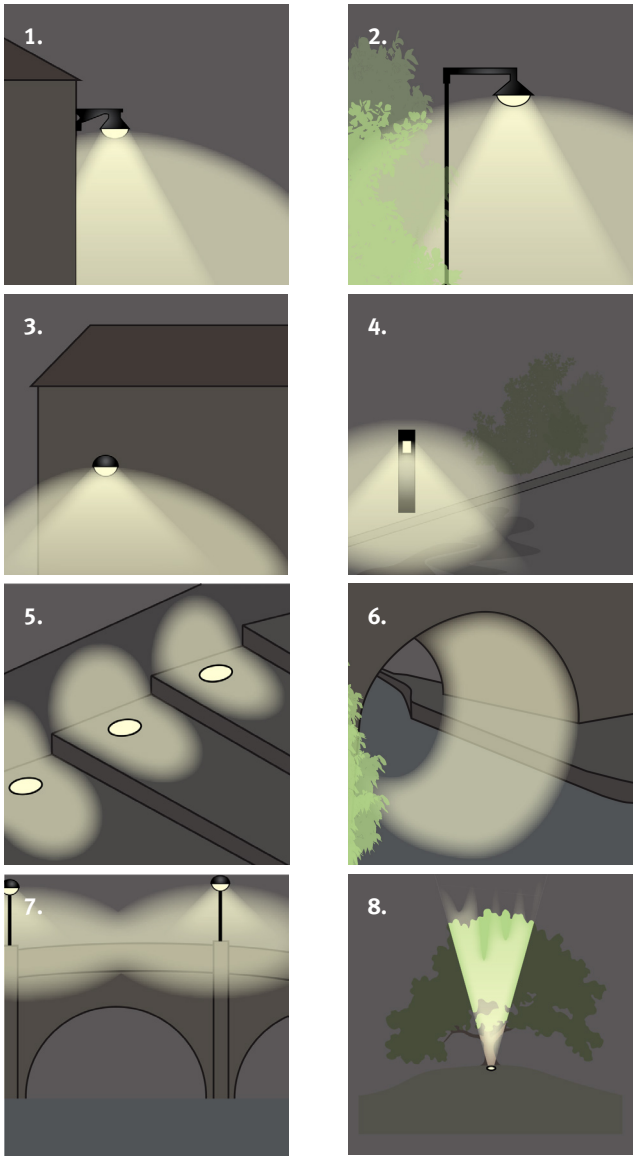
4. Bollard Lights: Should be simple, robust and vandal proof. There are not intended to light large areas, but accentuate certain points such as access steps, path intersections, jetties and so on. They can aid orientation and contribute to a safe waters' edge. This is particularly important where bollards are used on mooring pontoons.

5. Recessed Lighting: Can be useful to accentuate steps and routes, and as up-lighting to highlight features.

6. Bridge Undercrofts: Can be lit in urban areas on busier urban towpath routes to improve safety. The light fittings should be vandal resistant with lighting levels sufficient to adequately light the towpath. E.g. Maidstone Riverside.

7. Bridge Lighting: Urban bridges originally had lighting as an integral part of the bridge, such as Tonbridge and Maidstone bridges. Low energy lighting should be selected and located to enhance the bridge design and contribute to the river as well as a functional part of the wider streetscape.

8. Special Effects Lighting as Art: To highlight architectural features, structures, trees or special theatrical events. At Allington Sluice there is potential to highlight the recessed features on the formwork to the sluice towers.

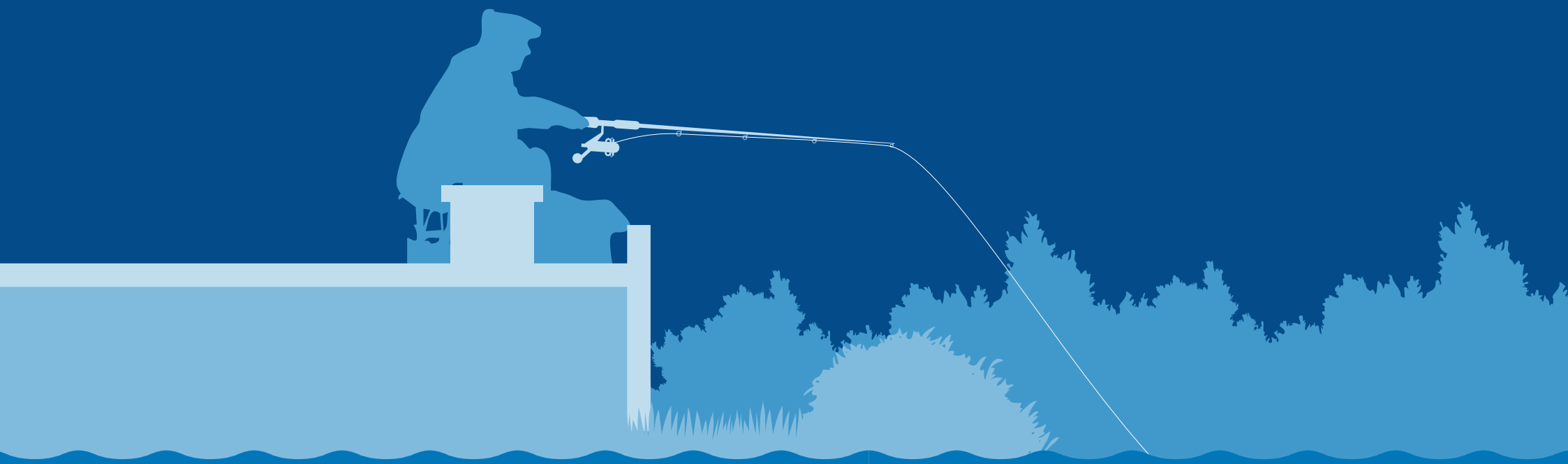


Angling

Environment Agency

Medway Navigation Heritage Audit

2007 Revised 2024



Angling

Background

Angling is one of the most popular forms of recreation in the UK enjoyed by an estimated 1 million people. The Environment Agency is responsible for the development of fishing in England and Wales. Anyone over the age of 12, fishing in freshwater must have a valid Environment Agency rod licence.

Angling is a major activity on the River Medway, which has been fished by anglers for centuries. Traditionally anglers have accepted a 'take it as you find it' attitude, provided the river is well stocked. In considering specific design issues for angling, this handbook addresses on-line fishing, which is undertaken from the riverbank rather than a separate off-line lake.

An important issue with on-line fishing is the interaction between the anglers and other waterway and towpath users. The Medway Valley Way, the river towpath and its margins are often narrow and confined by hedgerows, fences or walls etc. Anglers require a reasonable amount of space to sit and lay out their equipment, which can encroach onto the towpath and potentially creates conflict with other towpath users.

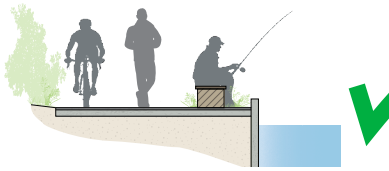
Project planning issues

- Who owns the angling rights?
- Adjacent land ownership?
- Access to the site (vehicular and pedestrian)?
- Operational constraints
- Planning Designations
- Highway issues

General Angling Requirements

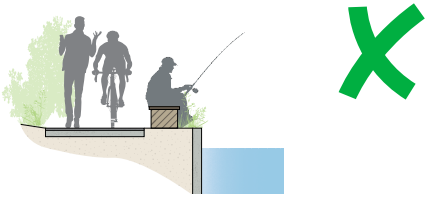
To provide the optimum angling facilities, timber platforms are required at individual fishing pegs. The platform gives the angler and their equipment a solid base, providing a degree of privacy.

- Optimum size for a fishing platform is 2m long by 1.0–1.5m in width.
- Position the finished deck level to accomodate particularly high or low annual water levels.
- Upstands should be fixed around the edge of the platform to prevent wheelchairs etc. rolling off the edge, and to contain the angler's equipment.
- Boards across the deck should be butt jointed to prevent items falling through the deck.
- Consider providing brackets for rod rests, nets etc.
- Fishing pegs should be spaced at 9–12m centres.
- Aim to have 10m clear water in front of every peg.
- Optimum water depth around 1.5–3m.
- Impact on the navigable width of the channel.
- Other waterway uses need to be considered, with angling prohibited at lock approaches and landings and mooring sites etc.
- Overhead powerlines require clear signage to prevent fishing beneath.



–Adequate space for shared use by cyclists and walkers
conflicts will still occur with pole anglers etc
– Dedicated angling pegs in the verge to be surfaced to match the towing path
–Wide verge (1500mm) provides space for anglers off the towing path

Adequate space for shared use by walkers, cyclists and anglers.



– Any narrowing of the towing path can cause conflicts of use
– Narrow verge = anglers and equipment spilling onto towing path

Narrowing of the towpath can cause conflicts in use.

Angling

Ecology

Any locally significant wildlife sites need to be considered and may need a stand off zone to protect them from the disturbance of intensive angling.

Bank profiles should fall gently away to 1.8m allowing marginal emergent aquatic vegetation to establish, and improved safety by removing deep water close to the riverbank.

Increasing marginal aquatic vegetation between fishing pegs benefits wildlife and provides seclusion and cover for anglers. Sympathetic management of the terrestrial habitats associated with a fishery can increase aesthetic and wildlife value.



Fishing matches, anglers are evenly spread along a length of riverbank.

Access and car parking

The British Disabled Angling Association is the leading authority on the provision of access to fisheries. Their two guides, provide clear and practical advice.

Level access should be provided between the access track or deck and the angling platform, to allow disabled access. It is acknowledged on-line river fisheries may not be fully accessible at all locations. However, this should not stop consideration of trying to develop a number of fully accessible fishing pegs.

The importance of the landscape framework becomes increasingly important to create the correct setting and screening for an anglers car park. Access to on-line fishing pegs often requires a lengthy walk carrying equipment from limited car parking or access points. Designs should aim to keep walking distances to an acceptable level, without causing detrimental impact on the landscape.

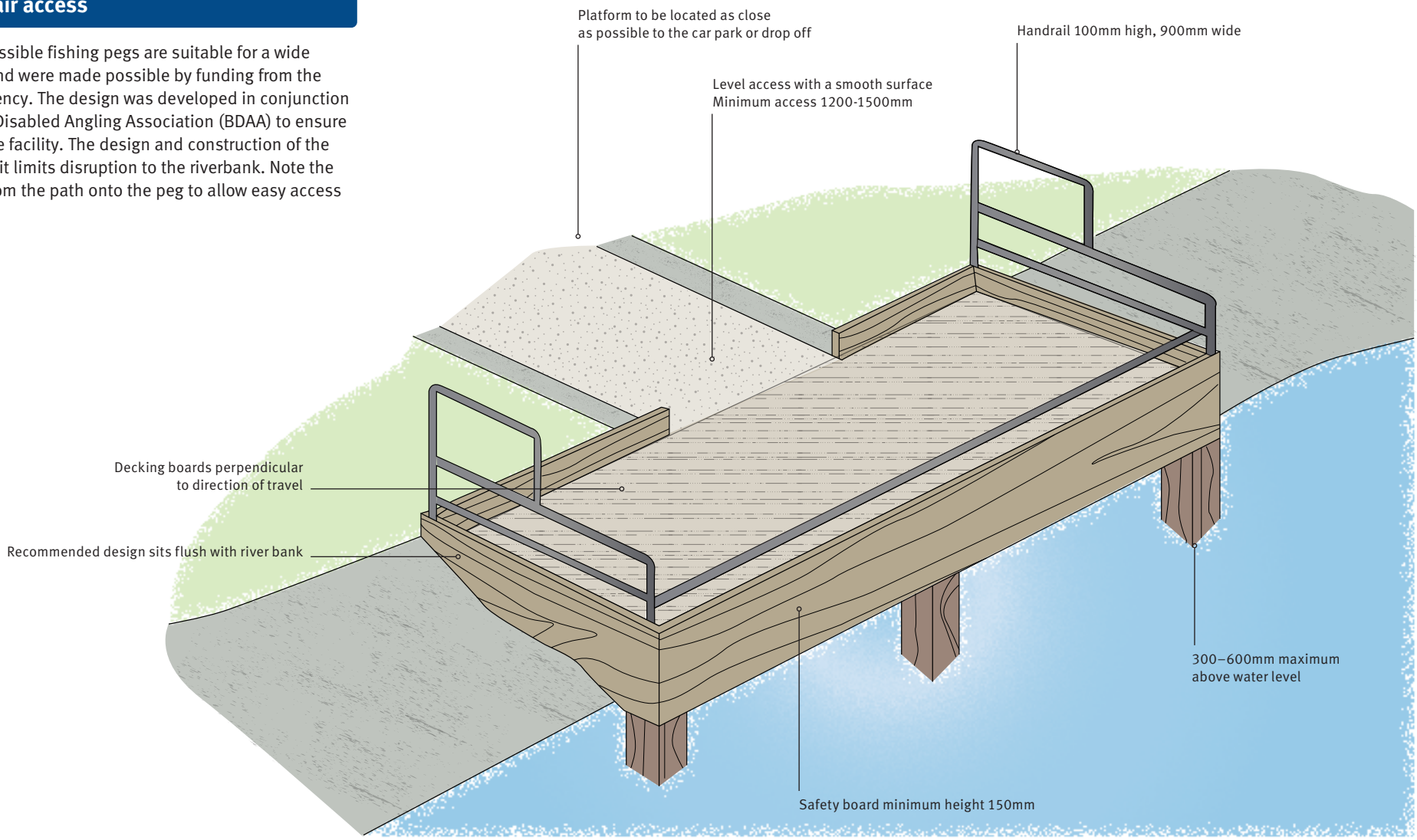
- Consider the local road infrastructure and anticipate local concerns.
- Security is a concern of anglers who may be away from their cars for many hours.
- Hard landscaping in rural locations should be kept to the absolute minimum and artificial lighting avoided.



Typical Medway angling location.

Wheelchair access

Wheelchair accessible fishing pegs are suitable for a wide range of users and were made possible by funding from the Environment Agency. The design was developed in conjunction with the British Disabled Angling Association (BDAA) to ensure a fully accessible facility. The design and construction of the peg is such that it limits disruption to the riverbank. Note the level gradient from the path onto the peg to allow easy access for wheelchairs.



Example of a fishing peg which provides wheelchair access.

Angling

Platform type	Dimensions
Single platform/swim/peg	1800 x 1800mm wide
Double platform	4000 x 1800mm wide
Coaching training platform	8000 x 1800mm wide

Features	Dimensions	User considerations
Handrails	950 x 1000mm high diameter 45–50mm	Handrails of 950–1000mm high requires a middle safety rail of 500mm high.
Knee bar	450–500mm high	
Wheelchair bump stop	150mm high	along all sides extending overwater or open ground
Approach to platform	1:15 gradient best practice	1:12 acceptable
Height off water	300–600mm	Consideration of summer and winter water levels

Factors to consider in the design of timber angling platforms

What should designers consider?

1. What is the best angling location?
2. Is the route to the fishing peg accessible from a car park or access point?
3. Will the fishing peg be subject to flooding?
4. Is there sufficient distance between pegs?
5. Is there sufficient space for pole fishing and to layout of tackle around the peg?
6. Is signage appropriate to give priority to disabled users?
7. Are larger pegs required for parent and children, disabled and carer, group teaching?
8. Is the proposed site in a stable position in terms of slope stability and channel width?
9. Are there any powercables, wires or overhanging branches which can snag lines whilst casting?
10. Are the fishing pegs visually intrusive and is there sufficient shelter/cover to help screen anglers?
11. Who is responsible for the peg and is there access for maintenance?
12. Can recycled, site generated or locally sourced materials be used?

Further sources of information

The British Disabled Angling Association
The BDAA have published an Access Guide Pack detailing the design of accessible fishing pegs – Access Guidelines for Fisheries and Access Guidelines of Fisheries Technical Information.
Go to link

The Institute of Fisheries Management
Go to link



On narrow sections of the river extra long match poles can form a hazard to navigation.

Car Parking

Environment Agency

Medway Navigation Heritage Audit



Car Parking

Background

The Environment Agency encourages people to use alternative modes of transport other than the car, with the promotion of long distance walks, cycle paths and rail links. However, in ensuring the principle of 'access for all,' parking provision at key access points along the river is required. Parking provision should accommodate the needs of a range of different users making access for disabled, the elderly and families.

In the more rural areas car parking provision should be low key and serve a range of activities, including: angling, walking, canoeing, picnic sites and EA maintenance vehicles. The guidance in this document covers the design of these small car parks.

Determining the need for provision

The planning and design of car parking is crucial to the preservation and enhancement of the river corridor. The need for a car park will depend on the number of visitors expected, the nature of the site and space available.

A comprehensive assessment of car parking provision should be undertaken of popular visitor locations.

Considerations should include:

- Is there an existing problem caused by unauthorised or disorganised parking which suggests a need for a 'formalised' approach?
- What impacts would a new car park have, on both the existing site and within the wider landscape?
- Assess the capacity and sensitivity of the site for change and the visual and environmental impacts of the proposals.
- Does the surrounding landscape offer scope for mitigating the impact of the car park?
- Where practicable, assess the capacity of existing nearby car parks and consider shared use.
- Consider alternatives such as utilising public transport routes or existing 'hubs' of activity e.g. Wateringbury, Teston and East Farleigh, local railway stations located close to the river.

Standards and Specifications

Kent County Council's Design Guide, Movement and Connectivity, Parking Standards adopted in spring of 2022 gives guidance on specific parking standards:

- Standard car parking space: 4800 x 2400mm
- Disabled car parking space: 6000 x 4800mm (including 1200mm hatching to both sides and front boundary of the space).
- Sizes of parking bays (These are minimum sizes and greater widths benefit all users).

The number of accessible parking spaces, which should be provided is based on the total number of parking spaces available:

Total Parking Spaces	Accessible Parking Spaces
1–25	1
26–50	2
51–75	3
76–100	4

The Building Regulations states that disabled parking bays should not be more than 50m from a building entrance. This requirement can also be applied in more rural and open countryside situations when considering distances to access points and facilities.

Car Parking

Access

The Highway Authority standards should be consulted and good visibility splays provided at the point of access on to the public road.

Safe Pedestrian Routes

Safe access routes should be considered as part of the car park design. The route should be level with a minimum width of 1200mm and where possible 1500mm to allow wheelchair users to pass. Pedestrian routes and disabled bays should be clearly marked either on the surface of the car park or with signage.

Signage

Ideally the location of disabled spaces should be marked on the entrance together with general information on parking charges, opening and closing times and emergency numbers.

Ticket Machines

Where the use of ticket machines is required then provision should be made for disabled people. A machine should be located adjacent to the disabled bays and have controls set between 750-1200mm above ground level.

Surfacing

Consideration should be given to the choice and arrangement of surface materials. Large expanses of uniform hard surfacing should be avoided which sterilise the space. This is particularly relevant in Conservation Areas. A change of materials, at entrance points and footpaths, would help to differentiate between spaces and use.

The car park surface should be level, smooth, and free from loose stones. There are no set standards governing which colours should be used to differentiate between types of parking spaces and pedestrian routes. When coloured markings are used they should contrast with the general surface colour of the car park.

Wherever possible, locally resourced materials should be specified. Permeable surface materials should be used where possible to minimise storm water drainage load and increase infiltration to the groundwater. Use of unbound material should be considered in relation to the level of use and gradients to avoid excessive wear and erosion.

Crushed Stone is the most commonly used material for small rural car parks, and should be locally sourced. Graded suitable reclaimed materials may be appropriate if they can be locally sourced.

Block paving is generally only appropriate for small areas where the surfacing needs to relate to surrounding buildings, such as a yard. In larger more formal car parks, block paving may be used sparingly to denote specific areas. It is generally not suitable for rural car parks or on a large scale.

Bituminous surfaces · Tarmac does not generally give an appropriate character in rural areas. Sealed gravel gives an improved appearance combined with a more hard wearing surface than an unbound material.

Porous Asphalt surfacing to BS EN 13108-7:2016 Bituminous mixtures - material specifications. Porous asphalt.



Gravel surfacing with Geogrid reinforcement. Allington Lock.

Car Parking

Planting

Native planting should be proposed around the car park perimeter to mitigate its impact and within the site to help break up large surfaced areas.

Wherever possible, the design of new car parks should avoid existing trees. Where new surfacing or other construction cannot be avoided near an existing tree, guidance from BS 5837:2012 Trees in relation to design, demolition and construction should be followed to ensure the continued health of the tree.

Trees have a relatively shallow but wide spreading root system radiating out from the tree for a distance equivalent to the tree's height, possibly 20m or more. Most of the roots are within the top 1m of the soil.

BS 5837:2012 recommends the soil around a tree should be left undisturbed for a distance from the trunk equivalent to the canopy of the tree.

Within the protected zone:

- No digging must take place
- Roots must not be severed
- Soil must not be compacted, allowing oxygen to diffuse into the soil.

Where laying a surface within these zones, no digging or compaction of the soil should take place and construction should be above the existing soil surface using a geogrid, with a paving formation which maximises the diffusion of oxygen to the roots.

Cycle provision

Provision for secure cycle parking at certain locations should be considered. Consult local cycling groups to determine requirement.

Security

The requirement for car park security should be considered i.e. use of security fencing, lockable gates, height restriction bars, removable bollards and lighting.

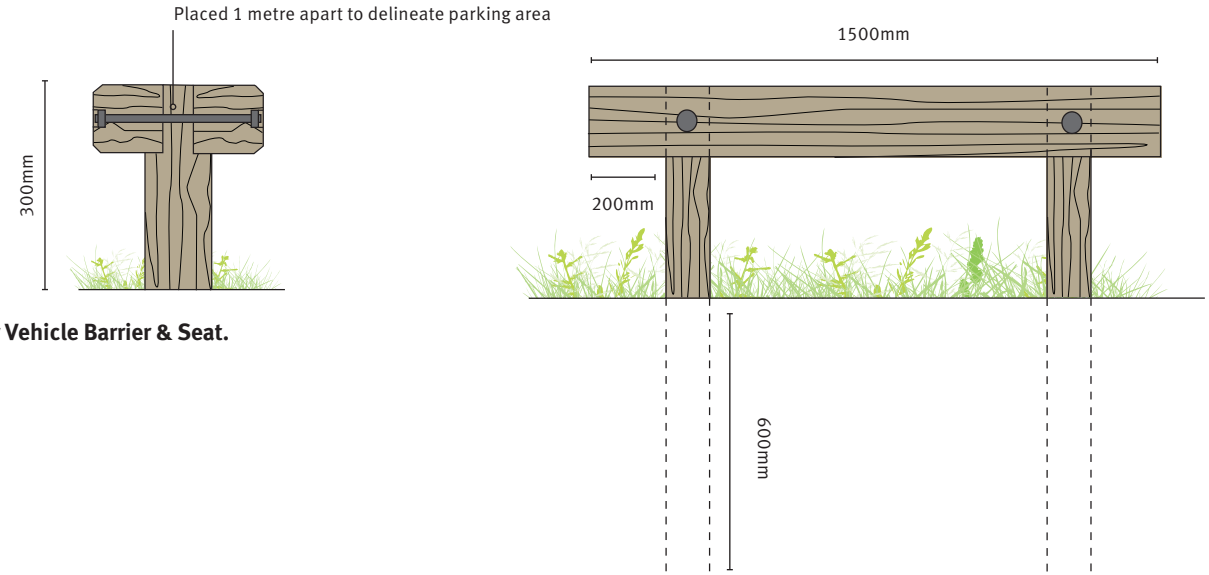


Example of extra long parking spaces to accommodate for vehicles with trailers. Allington Slipway.

Key points

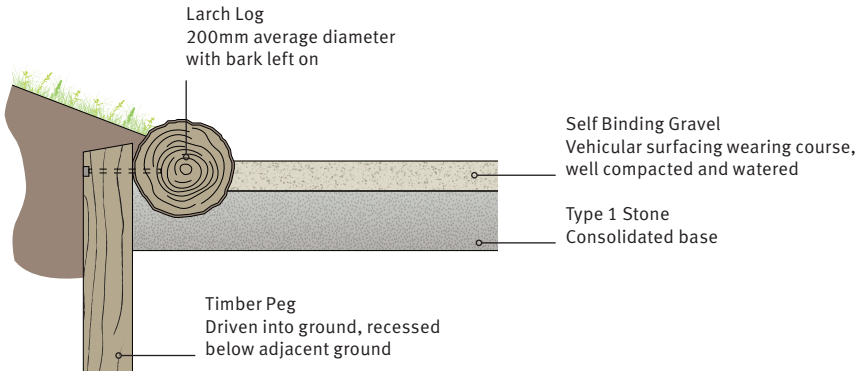
- Larger bays are required for people with limited mobility to enable easy access to their cars.
- Accessible bays should be clearly located from the car park entrance.
- Disabled bays should be clearly identified and as close as possible to facilities.
- Bays need to be wide enough for car doors to be opened fully – 3600mm is recommended. If space is limited provide shared space 1200mm wide between two standard bays.
- Safe pedestrian access routes should be built in to car park design.
- The car park surface should be level, smooth, even and free from loose stones.
- End bays should have a minimum of 1200mm free space next to them for safe access.

Car Parking

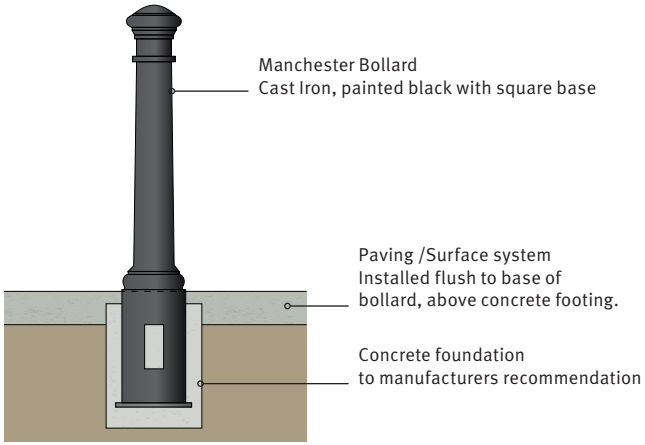


Timber Vehicle Barrier & Seat.

Example of extra long parking spaces to accommodate for vehicles with trailers, Allington Slipway.



Timber Log Edge Restraint.



Section: Manchester Bollard.



Example of Manchester Bollard. Yalding Wharf.

Car Parking

What should designers consider?

1. Does the site require a car park?

2. Do the proposals require planning permission? In most cases planning permission will be required where there is a change of use (of the existing land) and where access on to a highway is required.

3. Does the Local Authority have specific requirements for car parks, including number of disabled spaces?

4. Are the disabled spaces located as close as possible to the related facilities?

5. Have drop-kerbs or ramps been included to allow disabled access to the associated facilities?

6. Can the area available provide the required spaces as set by the Local Authority?

7. Is there an opportunity to incorporate sustainable drainage systems (SUDs) in the car park design?

8. Consider the intended use of the car park and its setting, what are the most suitable surfacing materials?

9. Can recycled, site generated or locally sourced materials be used?

Further sources of information

Car Parking
Kent County Council's Kent Design Guide, Movement and Connectivity, Parking Standards adopted in spring of 2022.

Kent County Council's Car Park Standards Guidance is available as a download from the Council's website.
Go to link

Building Regulations
Access To and Use of Buildings, Document M (Last updated 1 October 2024: Go to link) Regulations relate specifically to parking standards when considering building access, but should be used as best practice when considering general parking provision in other situations.
Go to link

Fieldfare Trust
Fieldfare Trust: Countryside for All Good Practice Guide.
A guide to disabled people's access in the countryside.
This guide is specifically aimed at rural landscapes and open countryside situations. The Guide is available as a download:
Go to link

Metric Handbook Planning & Design Data
Part 4 – Design for the Vehicle
Offers guidance on the layout of car parks and the different configurations available including minimum road widths and parking bay sizes.

Department for Transport
- Inclusive Mobility, A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure.

Go to link

- Guidance on the Use of Tactile Paving Surfaces

Go to link

BS 8300-1:2018 Design of an accessible and inclusive built environment. External environment – code of practice.

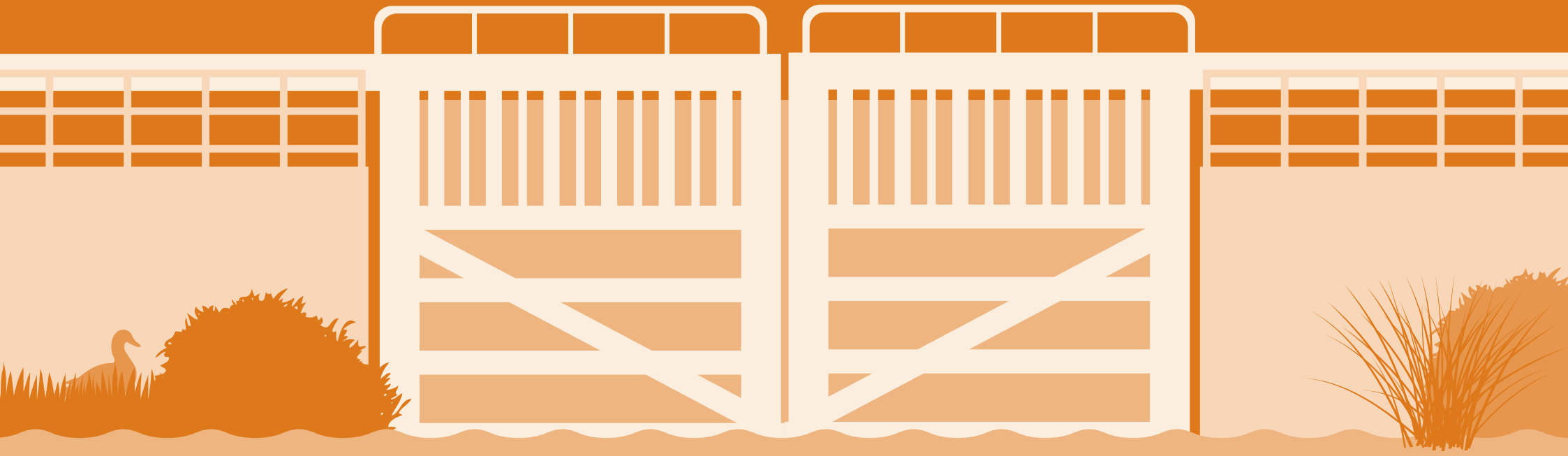
BS EN 13108-7:2016 Bituminous mixtures – material specifications. Porous asphalt.

BS 5837:2012 Trees in relation to design, demolition and construction

Colour & Finishes

Environment Agency

Medway Navigation Heritage Audit



Colour & Finishes

Background

The river landscape presents a backdrop of colours and textures, which changes with the seasons. Within this context it is appropriate to adopt a strategic approach for the use of colours, materials and finishes which is both practical and sensitive.

The main objectives of the strategy are:

- To promote use of natural finishes to timbers which weather elegantly and therefore help to reduce future maintenance commitments.
- To use specified colours consistently throughout the Navigation to improve safety and define an identity, which focuses on lock and sluice sites.
- To take advantage of specific opportunities to enhance the appearance of selected structures using colour schemes which relate to their individual settings.

For practical and aesthetic reasons, these guidelines promote the use of timber for many structures and fixtures associated with the Navigation. The exacting river environment demands careful choice of timber type, detailing and use of appropriate treatments or finishes to ensure future maintenance commitments are kept to a reasonable level.

Cast Iron

Old bollards, posts and rails or historic mechanical gear should be retained as part of the Navigation's narrative. Normally the accumulated rust and corrosion residue can be removed easily by brushing or blast cleaning on or off site.

Treatments should consist of the following:

- Remove all rust, dirt and grease.
- 2 coats Metal Primer *
- 2 coats High Gloss Finish or
- 1 coat of silicone-rich Hammer Finish paint (brush or spray application)

* Primers containing red lead should not be used.



The impact of recent development softened by planting and existing riverside vegetation.

Steel

In the river environment mild steel posts and rails need to be fully protected from corrosive elements. This requires the use of a high performance paint coating system, galvanising, or both.

Galvanising

Raw steelwork should be thoroughly cleaned free of mill scale, oil and grease. Hot dip galvanise should be to EN ISO 1461. Freshly galvanised work should be quenched in a passivating solution to produce a surface suitable for painting.



Painted mild steel railings within the lockside environment.

Colour & Finishes

Locksides

Traditionally the timber balance beams have been left unpainted and allowed to develop their natural patina. The metal band at the ends of balance beams should be painted black, which historically has been the practice throughout the Navigation. Lockgate handrails, on gangways crossing the lock gates should be painted white. Lock escape ladder handrails should also be painted white to aid visibility.

Construction

- Galvanised tubular steel 40mm diameter with ball socket joints,



Lockgate and lock escape ladder handrails should be painted white.

Painting Steel

All steel to be blast cleaned to BS 7079:2009 and surfaces dusted off, followed by:

- 1 coat Zinc Phosphate Primer.
- 1 coat undercoat.
- 2 coats Chlorinated Rubber Finish paint.

Painting newly galvanised steel. Dirt or grease to be removed from the surface with a detergent solution followed by:

- Apply wash of passivating solution (galvanised surface to turn black to indicate satisfactory treatment).
- 1 coat Zinc Phosphate Primer.
- 2 coats Chlorinated Rubber Finish paint.

Note: Weathered galvanised steel can be primed direct once the surfaces have been thoroughly cleaned of dirt and grease.



Sluice gate security fencing, painted light grey to match machinery and differentiate between Navigation and water control structures.

Sluice Structures

To aid identity and differentiate between publicly accessible locks and associated navigation structures, which leave timber elements untreated with metalwork painted black and the non-public accessible sluice and control structures which are to be painted light grey.

- Sluice structures paint light grey RAL 7035

The light grey paint used at East Farleigh Sluice helps to reduce the impact on the skyline and provides an engineered formality to the structures which is distinct in comparison to the function and character of the adjacent lock structure.

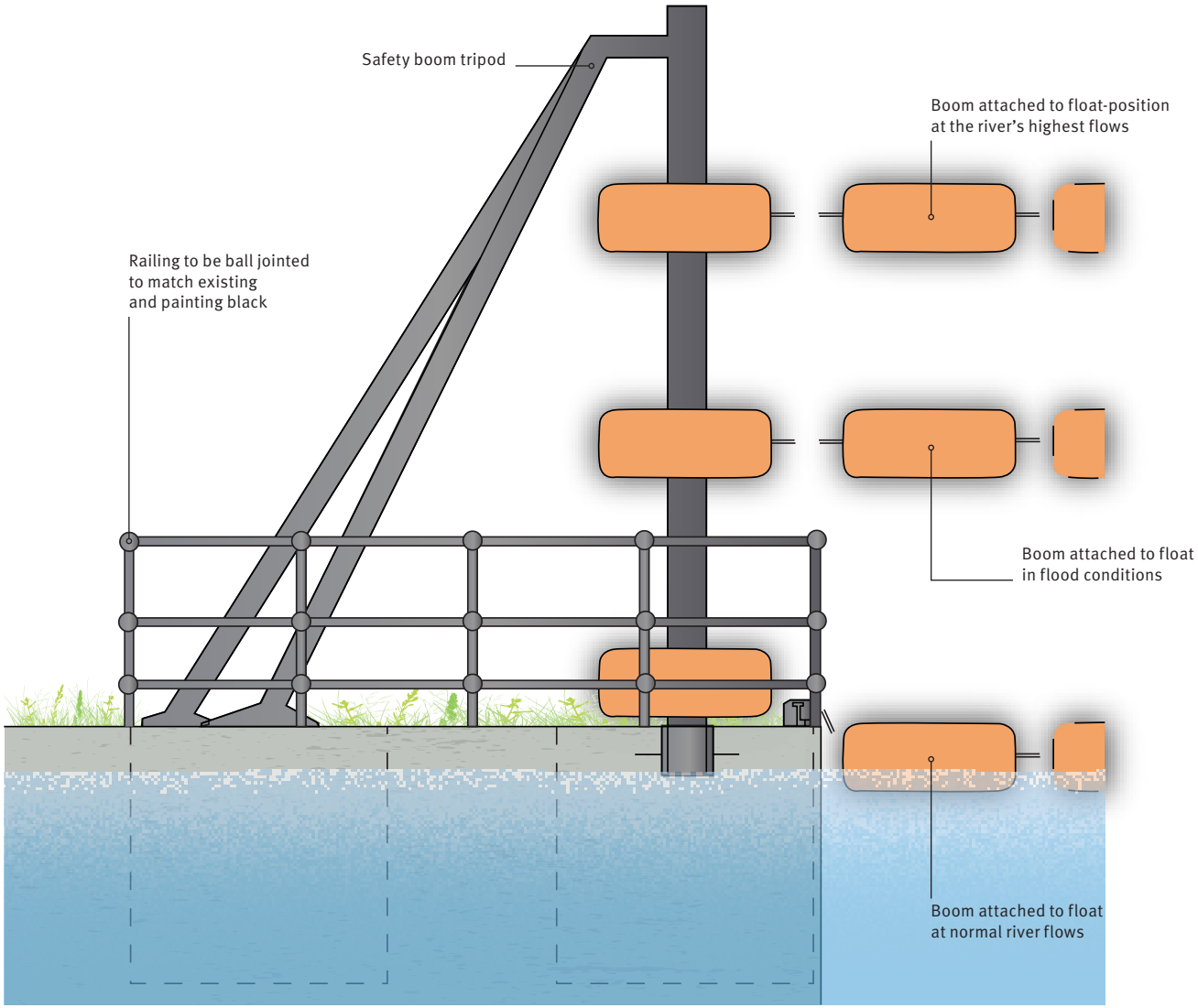
The radial gate structures which occur at the locks upstream of Teston Lock should also be painted light grey to reinforce their formality as engineered structures and visual distinction from the lock structures.



Sluice gate security fencing, painted light grey to match machinery and differentiate between Navigation and water control structures.

Colour & Finishes





Safety Boom Tripod to be painted light grey RAL 7035 to match sluice and water control structures.

Sheet Steel Piling

Existing or proposed sheet piling should be painted dark grey or poly powder coated to RAL 7036 (Platinum).

Lock and Mooring Locations

At lock and mooring locations sheet steel piling should be painted dark grey with a timber lattice framework. The timber lattice will provide protection to vessels and visually mitigate the impact of the piling's hard edge.

Sluice Structures

At sluice structures the sheet piling should be painted dark grey with no timber cladding. This will give visual functionality and formality to the piling and provide consistency throughout the character of the Navigation.



Sheet steel piling to be painted dark grey in order to help mitigate its impact.

Tropical Hardwoods

Refer to EA policy on the use of imported tropical hardwoods. Previously timber has been salvaged from timber jetties or sea defences (groynes) and made accessible for reuse.

- Re-use sections of existing hardwood timbers which are in good repair. Potential opportunity exists to reuse timbers from Admiralty Jetty, Rye Harbour.
- Use alternative home grown temperate hardwoods or softwood timbers treated with preservative to enhance durability.
- Use of steel members for construction purposes in combination with temperate hardwood or softwood cladding.

Temperate Hardwoods

Temperate timbers have the advantages of availability, economical costs and workability. They are suitable for a wide range of applications when appropriately treated with preservative and given consideration to structure detailing. Both hardwoods and softwoods benefit from impregnation with preservative, particularly when placed in contact with the ground or water and they eventually weather down to a silver grey appearance.

Detailing should counter adverse effects, for example:

- Minimise direct exposure of end grain to weathering elements.
- Provide adequate ventilation around timbers to aid drying out; also allow for some movement in joints due to expansion and contraction.

Preservative Treatments

Temperate timbers should be treated by vacuum pressure impregnation with preservative to significantly enhance durability against soft rot, fungal decay and insect larvae.

The treatment should be specified by reference to the type of timber and performance required, to ensure adequate strength and impregnation of preservative is achieved. Other important considerations are:

- The pre-treatment moisture content of seasoned timbers should be 18% maximum. The timbers should not be installed until 48 hours after treatment, when the preservatives have become fixed.
- The timbers should be in their final form, including joints and weathered ends prior to treatment.
- Metal fixings used with treated timber should be galvanised or of stainless steel to prevent corrosion of fixings.

Proprietary systems are available which incorporate pigmentations within the preservative.

Protective Stains

Protective stains may be used to supplement the impregnated preservatives to provide a water repellent proactive surface. This allows moisture to escape from the timber and retards the weathering effects of sun and rain, particularly with vulnerable new timbers.

Appropriate woodstains have a translucent finish, which allows the grain of the wood to show through. Prior to application to impregnated timbers, residue surface salts should be removed with a stiff brush to avoid possible discolouration. Stains can be reapplied at intervals or allowed to fade as the timber weathers, depending on the site circumstances.

Two types of translucent stain may be considered:

- Water based stains, when dry are harmless to wildlife and plants even when periodically submerged in water. These stains are particularly suitable for sawn timber as the increased absorption of stain considerably lengthens the maintenance interval.
- Organic solvent based stains of low to medium build are more suitable as a decorative finish to timbers which are unlikely to be submerged. The stains are suitable for sawn or planed timber, particularly a hardwood such as Oak. In both cases the manufacturers instructions should be consulted prior to application.

Planting

Medway Navigation Heritage Audit



Planting

Planting context

This section looks at the design of new planting within the river landscape. The Medway Valley forms an important ‘green link’ for wildlife through towns and areas of intensively managed agriculture. Since the decline of commercial boat traffic and the subsequent change in maintenance, vegetation has grown up throughout the length of the Navigation, which today is as much a part of the river landscape as the original engineering structures.

In addition to being fundamental to the river landscape and ecological diversity, native planting provides:

- The delineation of the landscape by hedgerows and woodlands.
- Shelter to the river for navigation and recreation.
- Attractive spaces for people to enjoy, by focusing views and providing enclosure.
- Wildlife habitat creation.
- A living screen to unattractive riverside land uses.

In proposing new planting, the Medway Valley’s linear landscape, its historic pattern of enclosure, the surrounding land uses and ecology should be respected and enhanced. Planting can supplement and strengthen existing vegetation and integrate disparate elements by providing a backdrop or screen, adding interest and variety.



Typical River Medway location with overhanging oak tree and bankside vegetation.

Planting context

The Environment Agency is in a position to initiate and influence planting schemes in partnership with other agencies and landowners. This is crucial in developing an overall vision for the river's landscape. Defining spaces and 'place making' are important aspects to enhance the character, enjoyment and function of the river corridor.

Function of the proposed planting

Hedgerows
- Define the Navigation's towpath.
- Reinstate a stock-proof barrier.
- Enhance wildlife corridors to provide shelter.
- Follow local traditional practices to ensure new hedges connect with the surrounding hedgerow structure.

Woodland/copses
- To enhance the landscape and wildlife.
- Establish native woodlands in field corners.
- Small areas of unviable agricultural land, creating coppice woodlands or shelter belts etc.

Orchards
- Reinstate at suitable locations, linked to local communities, for the conservation of Kent's local varieties and landscape character.

Specimen trees
- Individual trees at access points and seating areas. Potentially, will require a higher level of maintenance for establishment, as they are often targets of vandalism.
- Lock cottage gardens (Allington Lock).
- Follow a simple approach and plant perennials, herbs and possibly vegetables.

Screen planting
- Plant for shelter or noise, living woven willow 'walls,' or anti-vandal thorny planting, shrubs and climbers in urban locations.
- Amenity tree and shrub planting.
- Around seating areas in urban locations. This should be predominantly native, but can be supplemented with ornamental varieties, blending with the local river character.
- Emergent aquatic planting.
- Ecological and visual enhancement of the riverbank using green engineering techniques to help establishment of native species.

Wildflower and grass establishment
- Wildflower mixes can be part of diversifying existing amenity grass swards for habitat creation and reinstatement after construction work. Avoid standard amenity grass mixtures which result in uniform, species poor grassland with few opportunities for natural colonisation and diversity.

Habitat Creation
- Refer specialist on Biodiversity Net Gain advice.

Historic Landscapes
- Specific features of the surrounding landscape, are historically important to conserve e.g. oat houses, brickworks and the network of pill boxes, which should inform planting or management practices.

Planting

Native species

Native plant species support a greater number of invertebrate species than non-native species and therefore make a greater contribution to the ecological richness and diversity. Planting within the Medway Valley should be native to the specific location, although non-native varieties of trees and shrubs can make useful additions in urban areas e.g. Tonbridge or Maidstone riversides. Where non-native species are used, choose varieties with similar forms and habits to native species to compliment their river setting.

Sources of nursery stock

Native sources of plant material with local provenance should be specified wherever possible, and certainly near SSSI's and Sites of Nature Conservation Importance. In certain circumstances it is important to use plants of local provenance such as hybrid Black Poplar, which is widespread along Kent rivers, including the Medway.

Plant material should comply with BS 3936:1992 Nursey Stock. Specification for trees and shrubs to ensure the plants healthy condition.

Planting – checklist

Is planting really necessary?
Could the site be left to naturally regenerate, or is there an identified requirement e.g. 'place making,' functional use, visual effect or soil stabilisation etc?

Does the proposed planting need a design?
A drawing will aid site assessment, communicating the design, assist planting operations and act as a record for future maintenance purposes.

Ensure appropriateness
Relate the type of planting to the local landscape character and check the Ecological Survey and Landscape Assessment information of a particular stretch of river.

What species will be successful?
Carry out a site assessment, including the site's aspect, existing vegetation, soil pH and drainage.

Plant material of local provenance
Is the site adjacent to a SSSI or other area of nature conservation importance?

Engineering constraints?
Is the type or location of the proposed planting near a structure which could be vulnerable to root damage?

Underground or overhead services?
Are there any services in the vicinity which could be damaged by the planting or affected by tree growth in the future?

Grazing animals?
Is the proposed planting likely to be grazed or damaged by animals and need protection during establishment?

Productive planting
Are there opportunities for the planting to be productive in other ways, such as coppice woodland or orchards?

Is the area prone to vandalism?
This may determine both the planting method (e.g. using mass whip planting rather than larger nursery stock) and the extent to which local communities are involved. Encouraging children and their parents to take part in the planting, may be the key to success in some locations.

Maintenance for establishment
Ensure there is adequate maintenance for establishment (3 years minimum). New areas of planting are clearly built into the routine programme of waterway staff and contractors to avoid destruction by strimming.

Planting

Hedgerows

Traditionally towpath hedgerows have been maintained as stock proof boundaries. The widespread removal of hedgerows through modern farming practices, has resulted in the remaining towpath hedgerows, assuming a greater importance, by providing green corridors for wildlife.

Management
The retention of towpath hedgerows and their method of management adds greatly to the river's variety, interest and wildlife value. Local management methods and techniques should be followed to rejuvenate neglected hedgerows.

Hedgerow Assessment
Before a new hedgerow is planted or before management of an existing, an assessment should be undertaken to ensure the works will contribute to the river's landscape and ecological value.

The following points should be considered:

- The state and age structure of hedgerow trees.
- The hedge's context and function of adjacent land.
- The hedgerows spatial context.
- Visual importance, from within the river corridor and the wider landscape.
- Past management practices.

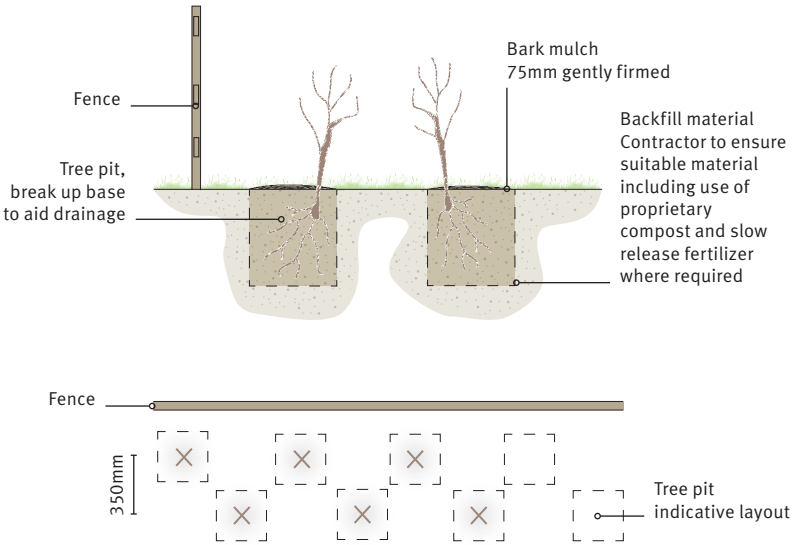
Hedgerow Planting

The most common way of establishing a hedgerow is the double staggered row, which quickly forms a stock proof barrier and ensures a good supply of pleacher stems for laying. A double row can be planted in either a single or double trench. An exception to the double row planting technique is for Holly, which should be planted in a single row with at least 300mm spacing between plants.

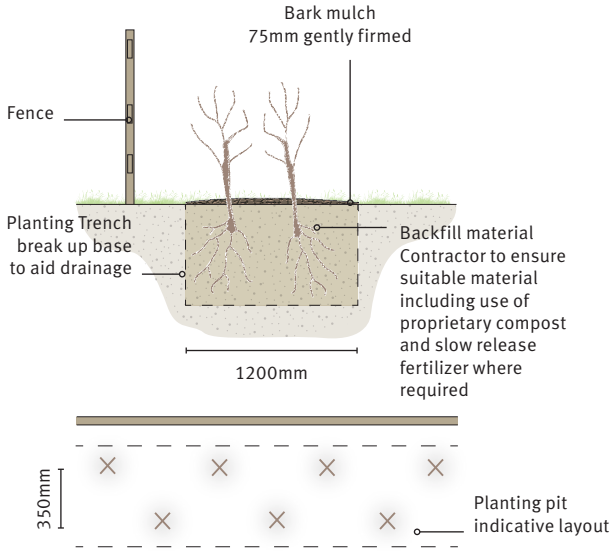
Species Selection

A simple mix of native and locally occurring species is recommended for a new hedgerow, depending on the location, function and soil type. For a mixed indigenous hedge, common species are Hawthorn, Blackthorn, Field Maple, Dogwood and Hazel, which can be successfully laid using traditional hedge management methods. Where gaps occur, 1-2 species should be used to infill up to 10m, and 4 species for longer lengths. Overtime, other species will self-seed into the hedgerow.

Pit planting in a double staggered row



Trench Planting in a double staggered row



Typical River Medway location with overhanging oak tree and bankside vegetation.

Planting

Planting whips

Planting whips, feathered trees and shrubs

- Plant whip with 600mm spiral guard with optional 1m cane.
- Plant shrub with 600mm high Tubex shelter with 25x25x1200mm softwood timber stake.

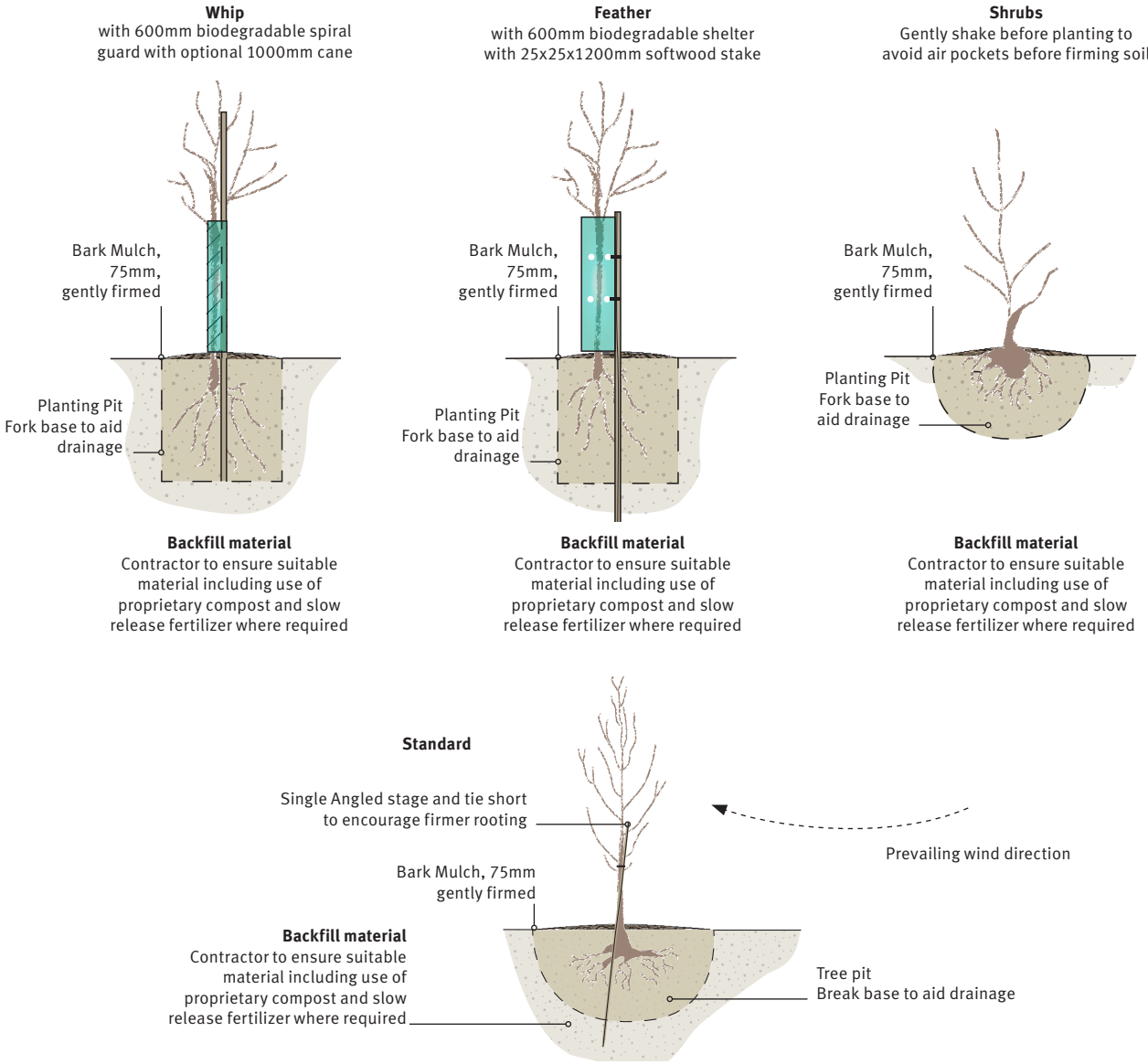
Standard and Larger feathered trees

This provides for a more immediate effect. However, smaller nursery stock is more cost effective and usually more successful in the long term. They require less maintenance, create a more natural appearance, and are less vulnerable to vandals.

Extra heavy standards and semi-mature nursery stock will rarely be planted except in formal urban settings with the appropriate maintenance regime.

Staking standard or larger feathered trees

Ensure the correct type of stake – use smooth, round peeled stakes, not square or with protrusions. Tree and shrub guards will be needed in areas where damage from rabbits is likely, unless a rabbit proof fence is constructed. Where vandalism is a concern planting should be undertaken using thorny and spiky plants. Where tree planting for example cannot be undertaken, the young trees should be protected with a nurse crop of robust shrubs.



Planting

Wildflower Establishment

To prevent soil erosion it is important to achieve a vegetative cover quickly following construction or maintenance works. If the site is not visually sensitive it is better to leave to naturally regenerate.

Where it is necessary to establish a sward to stabilise a bank quickly, use grass species which are less aggressive (i.e. not Perennial Rye mixtures) so local wildflower species can gradually establish from the surrounding seed bank. In urban areas, where surrounding seed banks are limited, it may be beneficial to establish wildflower areas, which would be characteristic of the area. Low fertility soil is ideal for species diversity, and conventional and expensive topsoiling is both unnecessary and damaging to 'meadow' establishment.
Care should be taken if seeding or planting near a SSSI or other sites of nature conservation, it is important to only use seeds or plants of local provenance.

Choosing species mixes

The seed mix and its species composition should be influenced by the site's soil type and drainage. Standard seed mixes are designed to suit broad types of location such as 'wet meadows and clay.' Where local provenance is required at more sensitive sites, local seed collection is desirable for growing on before planting.

Seeding

When reinstating a large area, establishment by seed is the easiest and most cost effective way to achieve a grass or wildflower 'meadow.'

Sowing should take place between late March and early October. Rates are generally 3-5g/m^2, but should be to the suppliers' recommendations. Seeds should be covered with soil or compost to a depth of approximately 5mm and protected from animals.

Planting into an existing sward, wildflowers are often planted as 'plugs,' a modular system of producing a large number of small plants, reducing cost and facilitating relatively quick establishment.

When planting plugs, the ground should be prepared by removing the existing vegetation in the immediate area. It is better to plant in groups of the same species (5-10). Plants should be planted at densities of 3-5 plants/m^2 initially. The root ball should be buried in the planting hole and sand and compost used as a mulch to prevent the plants drying out. Fertiliser should not be added, as this will encourage competing invasive species.

Planting is best undertaken between September and May, but preferably in Autumn, provided the soil is not frozen or waterlogged. From late May to September, only plant where watering is possible, or in damp soils.

Management

During the planting's first year of establishment, a first cut in spring is essential to remove grasses before they become tall enough to harbour slugs.

On going management will require mowing and removal of new grass growth once each year, the minimum requirement for survival of a wide range of species. The timing of mowing will vary between sites, dependent on the species mix, but should be consistent from year to year. On more fertile soils, more frequent mowing may be necessary for the first five years.

- A May-June cut will selectively weaken the most vigorous grasses leaving a tidy appearance in summer and giving the maximum period for late flowering species to set seed.
- A July cut enables many spring and early summer species to seed, and the vegetation remains short and tidy during the summer months, allowing some species to flower for a second time in the autumn.
- A September/October cut ensures the maximum time for plants to flower and set seed, but large volumes of standing or flattened vegetation may then need to be removed.

New planting on ‘river cliffs’

‘River cliffs’ are striking features of the Medway corridor and are often covered by woodland. Vegetation plays an essential part in slope stability, but there are examples of wooded embankments which have caused difficulties. Care should be taken in the selection of species, planting and on going management. When considering new planting the following points should be considered:

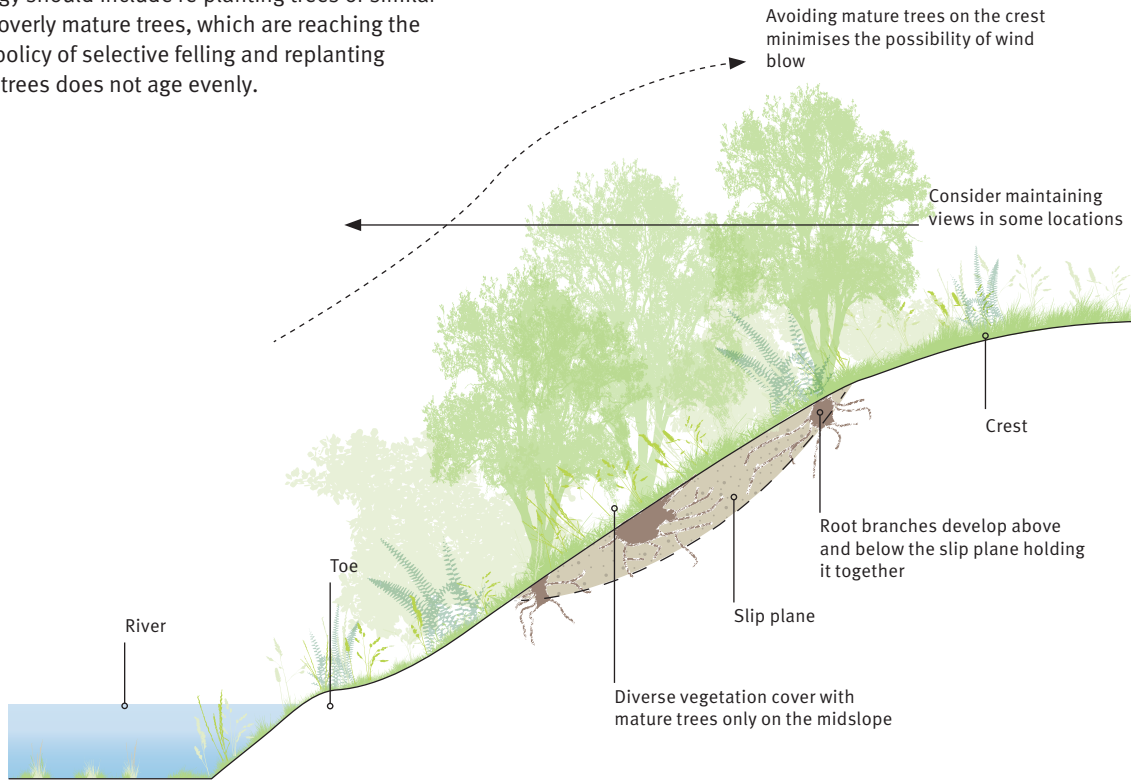
- Ensure a slope stability analysis and condition survey is undertaken.
- Allow access for future supervision and inspections. The Inspecting Engineer may require vegetation to be cleared. A phased coppice regime should be implemented to benefit landscape and wildlife.
- Trees can be planted if the slope has a high factor of safety against failure which is not likely to be reduced in the future. Species should be selected with characteristics to minimise problems and assist in slope stability.
- Assess the character of the river location to ensure important views are maintained.
- Check the ecological status of the existing vegetation on the embankment or riverside.

Existing woodland on ‘river cliffs’

The management of woodland, which has naturally regenerated is essential to avoid slope failures. Trees reduce the moisture content of the soil and assist in the stability of embankments, both from the protection of the slope, by their canopies and the moisture take up through their roots.

It is recommended trees on a river slope are managed to maintain the present tree size and distribution, ensuring they are not allowed to fully mature on the crest or toe of the slope. This approach is intended to maintain the existing soil moisture content and not cause the soil to expand or shrink.

The species and condition of the trees should be reviewed regularly to ensure there are no large trees which are likely to drop branches and fell adjacent trees. Ash are particularly susceptible to splitting at forks and dropping large branches. Oak also tends to drop large branches when mature. A tree replacement strategy should include re-planting trees of similar species to replace overly mature trees, which are reaching the end of their life. A policy of selective felling and replanting ensures a stand of trees does not age evenly.



Planting

Trees near structures

When constructing in an area already planted with trees, foundations will need to be designed to resist the pressures of root growth. Root damage to structures can happen in the following ways:

- Damage to the river bank when a large tree is blown over and the root ball is pulled out of the bank.
- The formation of leakage paths in the river bank when a tree dies and the roots decay.
- Damage due to the reduction of moisture content in the soil will lead to shrinkage and settlement of a structure. This is more severe in shrinkable clays, and is dependent on the species and size of the tree.
- Damage to a structure due to the penetration of growing roots or the pressure causing blockages in drains and ducts.

Existing structures with inadequate foundations can be dealt with by providing a root containment barrier which encircles the tree.

Planting near the river

Improving visibility of the Navigation and public safety can be achieved by opening sightlines both along the waterway and from neighbouring properties. Tree planting close to the Navigation is possible where the riverbank is stable, there is no danger of leakage and the soil is not shrinkable clay. Species with invasive root systems such as Willow and Poplar should be avoided.

Shallow rooted shrubs should be kept at least 2m away from less stable riverbanks and minor structures such as manholes, sluices, pavings, steps etc. to avoid root damage.



Tree and vegetation management on a typical river cliff. Downstream of Sluice Weir Lock.

Planting

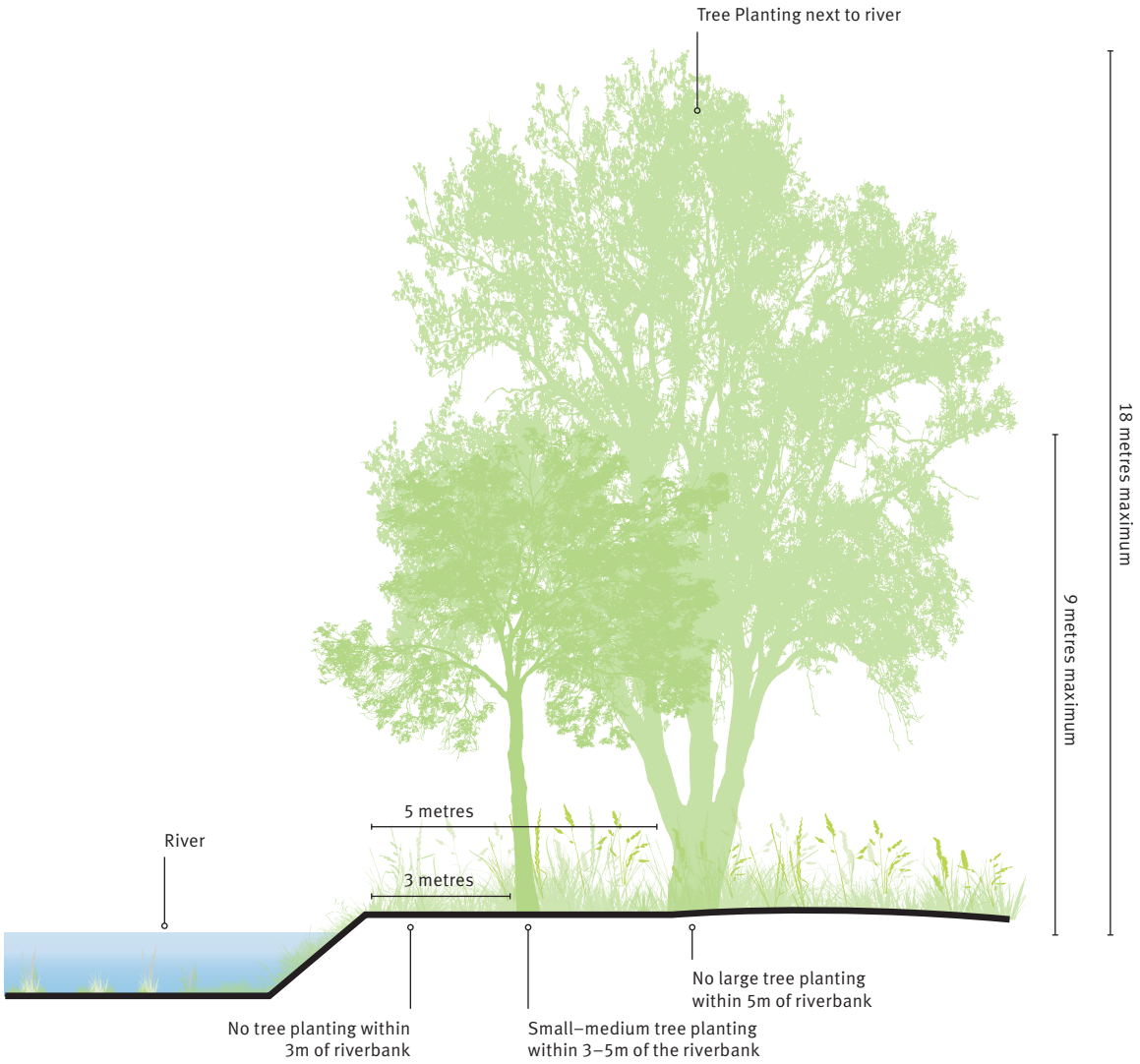
New development and planting

Planting can help soften a new development within its surrounding landscape or townscape, by reinforcing established landscape patterns and screening adjoining land.

The character of the Navigation in the urban areas of Tonbridge and Maidstone is principally green, with mature trees, hedgerows, gardens and natural regeneration on adjacent land. As development brings about wider landscape change, new planting is essential both to reinforce the existing character and to enhance ecological value.

Checklist for new development planting:

- Existing trees and vegetation which make a contribution to the river landscape should be retained where possible.
- New riverside development should be accompanied by a landscape scheme and appropriate maintenance and management plans.
- Structure planting should be locally occurring native species and used to integrate buildings into the riverscape, framing views and creating a sense of place.
- Where development or industrial sites do not contribute to the river environment, they should be adequately screened with planting. This should be a minimum width of 3 metres of native tree and shrub planting.



Establishment of Marginal plants

Marginal plants contribute to ecological diversity and play a vital part in protecting and re-stabilising eroded banks. Well established vegetation can help prevent erosion of river banks by boat wash by dissipating wave energy and stabilising silt.

Marginal emergent planting can contribute to improved water quality, especially when related to incoming sources of water and bankside reeds have been shown to act as a nitrate sink.

Methods of establishing:
Early Spring is the best time of the year for transplanting, when regeneration has just started. For new planting, emergent water plants should be planted in same species groups (e.g. 5-10) when planting mixed stands. In nature most water plants usually form clumps of the same species rather than randomly mixing. Plant spacing is not critical as spread is usually quite rapid.

Pre-planted coir rolls or coir plant pallets can be used to establish new planting where the planting medium has been or is likely to be eroded. Opportunities for using suitable plant material removed from routine dredging operations should be sought. Transplanting of local existing vegetation should be done in approximately 0.5/1m^2 clumps with a bucket dredger.

Suitable species

The following species are commonly used for planting in reinstatement schemes:

Acarus calamus
Sweet Flag
Caltha palustris
Marsh Marigold
Carex riparia Greater
Pond Sedge
Carex acutiformis
Lesser Pond Sedge
Carex pendula
Weeping Sedge
Iris pseudacorus
Yellow Iris
Juncus inflexus
Hard Rush
Myosotis scorpiodes
Water Forget Me Not
Phalaris arundinacea
Reed Canary Grass
Phragmites communis
Norfolk/Common Reed
Mentha aquatic
Water Mint
Sagittaria
Arrowhead
Veronica beccabunga
Brooklime

A typical planting mix for coir rolls supplied at 6 or 8 plants per linear metre:

Iris pseudacorus
Yellow Iris
Carex (riparia or acutiformis)
Greater/Lesser Pond Sedge
Phalaris arundinacea
Reed Canary Grass

The planting will be more successful if the coir roll has been pre-planted at the supplier's nursery so the roots are strongly established before installation.

Aggressive easily established species such as Typha and Glyceria can grow in water up to 1m deep. These species are not normally planted and establish from the surrounding flora (water >1.5m does hold them back). Iris can be planted in mixed species groups as it is not so aggressive. Sagittaria should be planted in shallow water in front of other planted species to allow it to grow out into the water where it will develop as a partially submerged plant.

Carex pendula and Juncus inflexus should be planted in permanently damp ground at the edge where they will not dry out but will only be inundated for short periods.

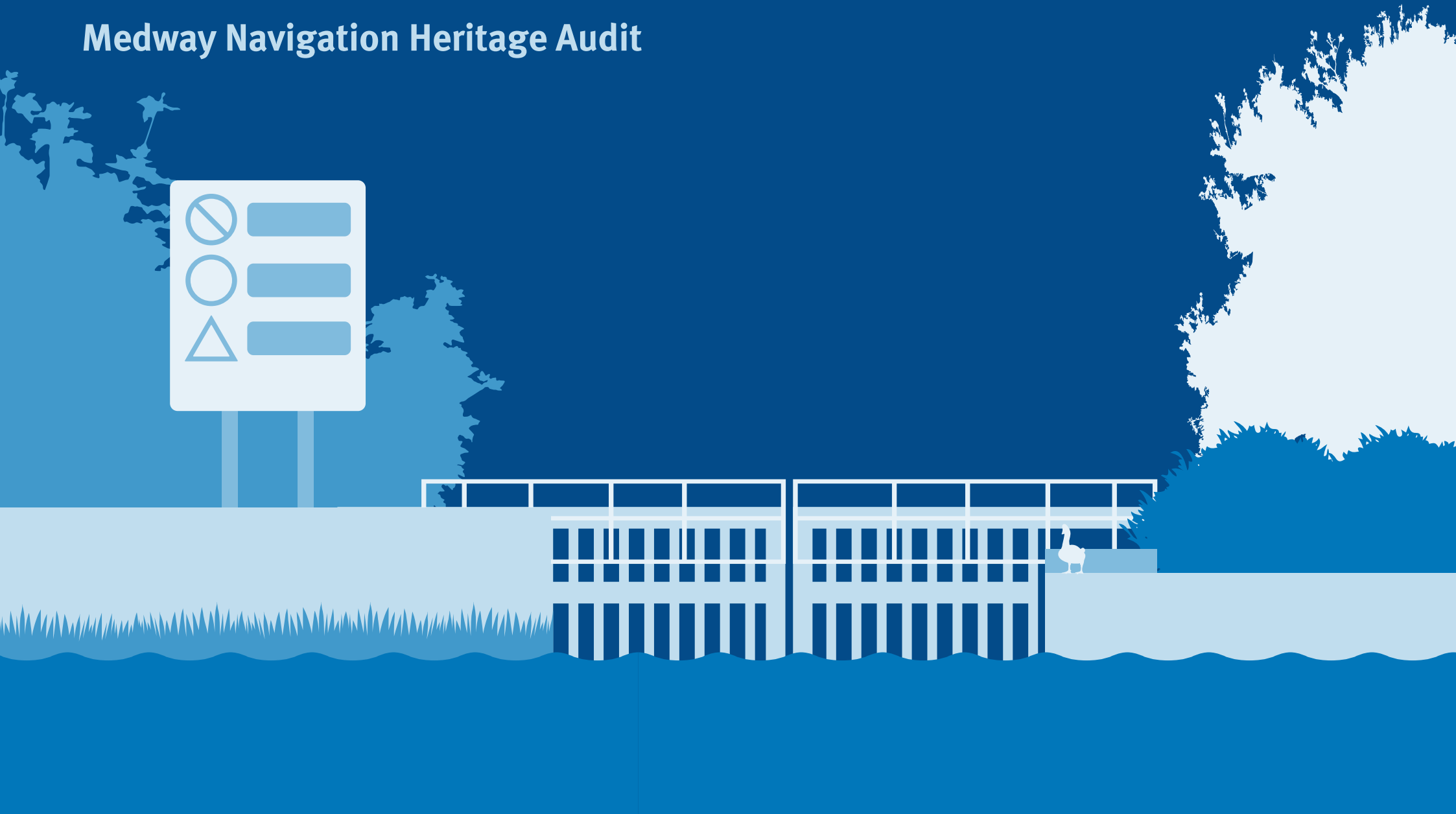
Mentha aquatica is easy to grow; and can be planted in shallow or damp ground. Companion plants such as Veronica beccabunga (Brooklime) and Myosotis scorpiodes (Water forget me not) can also be planted.

Caltha palustris should be planted in permanently damp ground where occasional but not permanent inundation may occur. It is a wet grassland plant and has been widely lost by meadow drainage. However, care should be taken and native British seed sourced as horticultural cultivars are available.

Signage

Environment Agency

Medway Navigation Heritage Audit



Signage

Background

The Environment Agency waterway signage system is an important part of the Agency's brand, and as a method of communication influences the public's perception of the organisation. The Medway Navigation signage system should raise awareness of the Environment Agency's position as the navigation authority in a clear, distinctive and positive way.

- Environment Agency: Using our Corporate Identity - Signage, LIT14200

Signage should welcome people and emphasise the benefits of a location. It must be polite, straightforward and immediately understandable, particularly where there is a risk to people's safety. It should avoid appearing negative or restrictive. Icons alongside wording communicate 'caution', 'warning' or 'restrictive' information.

Information should be directed at all types of user and be interesting and informative. Signage should be positioned at a height where its intended audience can easily read it. Ensure all isolated signs are maintained to a high standard.

Third Party signs such as Angling Club, Boat Trip/Boat Hire when erected on Environment Agency land, must either have consent and be produced in accordance with Environment Agency guidelines and format. The use of the planning system can help control off-site signs which negatively effect the river environment.

Signage principles

Signage should be rationalised to reinforce landscape character and prevent visual clutter. The following Principles have been developed with regards to the Environment Agency Signage Guidelines - 'Using our corporate identity – Signage' and 'Public Safety Risk Assessment of Assets – Signage Guidance.'

The overriding thought to bear in mind:

- 'Is a sign really the answer or are there any better ways to give information, solve a problem, advise or keep users safe?'

Used logically, following a process of evaluation to ensure signs are used effectively and only when and where necessary.

- Signage should be environmentally friendly and minimise the impact on the river landscape.
- By grouping signs together it should be possible to reduce the visual clutter of health and safety signage, which becomes unnecessarily intrusive and results in 'signage fatigue.'
- If a sign needs text, use everyday language and avoid using acronyms and abbreviations.
- Use capitals and lowercase as it is easier to read.
- Locate signs where most appropriate, eg. at decision points or changes in direction.
- Signage should be used for the benefit of all users of the Navigation.

Signage Hierarchy

A signage hierarchy offers greater flexibility in size and type of signs, it assists in the decision making of what information a sign should contain, its size, materials and location. A limited use of colour helps to create a waterway brand and distinguish between welcome and information signs and those which have a safety or prohibitive function.

The Signage Hierarchy defines four categories of signs:

Category 1. Welcome & Identification
Primarily for Environment Agency offices, locksides and entry points. In rural locations, pictograms of facilities can be included to avoid duplication.

Category 2. Location and Direction
This category covers most of the remaining signs, the key feature being increased flexibility in reducing the size of the sign by omitting the Environment Agency logo and use of Totem Poles and pictograms. These have been successful at combining several messages with minimum impact in both rural and urban locations.

Category 3. User Safety
In warning users of hazards, yellow (Pantone 116c) highlights the main text in line with other safety signs in general use.

Category 4. Prohibitive Signs
As above, the use of red (Pantone 385c) highlights what is not permitted and reflects the red border and deletion bar commonly found on other prohibitive signs.

Signage

Category 1

'Welcome signs' are important in areas which are highly visible to the general public. Location and ongoing maintenance is of paramount importance. When adding a new sign or information cabinet, it may be necessary to relocate existing signs and cabinets to the same height to form a balanced group. Where possible, combine signs with other structures, mount signs together in a harmonious group on walls, railings or buildings. Remove or replace damaged/ vandalised signs as a matter of priority.

A welcome cabinet can be used to display local information on circular walks, boat trips, places of interest etc. as well as important safety information eg. notice to mariner's, emergency stoppages, towpath closures etc. Information boards and other signage should be presented clearly to cater for differing learning styles, with a high balance of imagery and use of Braille at locations with high visitor numbers such as at Allington, Teston and Town Lock.

Category 2

Locate signage where it will not obstruct the towpath, the lockside or cause a hazard to the reader or other users. Do not block 'sight lines' or long distance views. All signs should be specifically located to be as visually unobtrusive as possible, whilst being effective. If a sign is updated or replaced, the old one must be removed. Signs should only contain information which is relevant to the situation eg. Mooring and user facilities. The blank reverse of signs should not face the river. As a principle, do not fix new signs to bridge walls, it's preferable to retain or repair the old sign. Older signs, which have historical significance should be kept and maintained in good condition.

Category 3

Specific warning signs should be provided as a result of a public safety risk assessment (PSRA) to warn of obvious or hidden hazards. Use Yellow Pantone 116c to highlight a safety warning. Safety signs should be erected as near to the actual problem area as possible. To guide emergency services the 'What Three Words' and National Grid Reference should be included when a medium or high-risk is identified. Long term warning signs should be positioned where they give sufficient notice eg. time to slow down or use an alternative route. Ensure the sign and its position adheres to relevant Health and Safety Regulations.

Category 4

As above, the use of red (Pantone 385c) highlights what is not permitted and reflects the red border and deletion bar. Prohibitive pictograms, such as 'No Fishing', should be erected on Totem Poles as near to the actual problem area as possible.

Totem Poles

Wherever possible, use Totem Poles and pictogram to convey a message. Do not use words and pictures to say the same thing. Use Totem Poles and pictograms to combine mooring information together with other informative or prohibitive messages. Totem Poles should be used to mark each end of a mooring location.

Footpath routes may be colour coded onto low Totem Poles. Use more than one side of the Totem Pole to convey relevant information if necessary, but make sure they are visible and the information is correct in each direction.

Angling club signs are erected by the local club but must be produced according to Environment Agency format. On rural stretches, you may need to occasionally remind the user where they are and give reassuring safety messages.

Signage

Specification

The posts are made from 20cm x 15cm UK produced Douglas fir and tanalized to saturation and supplied with tops cut to an angle of 45°.

In urban locations posts should be coated black, on delivery, using Sadolin Superdec. In rural locations it is recommended not to coat the posts but leave the timber to weather naturally and give a more rustic feel.

Sadolin Superdec is a water based opaque timber stain which follows COSHH regulations and is safe to use in a plant, animal or human environment. The product is temperature and humidity sensitive and the manufacturer's recommendations must be followed.

- Colour - Black No 32.
- Coverage - 6 to 8 sqm per litre.

Application

Apply 2 coats of Superdec to posts before placing in the ground. Ensure exposed end grains are treated to saturation.Allow 24 hours drying time between coats. Be particularly careful when retouching posts on site. Make sure there is no possible danger of spillage into the water.

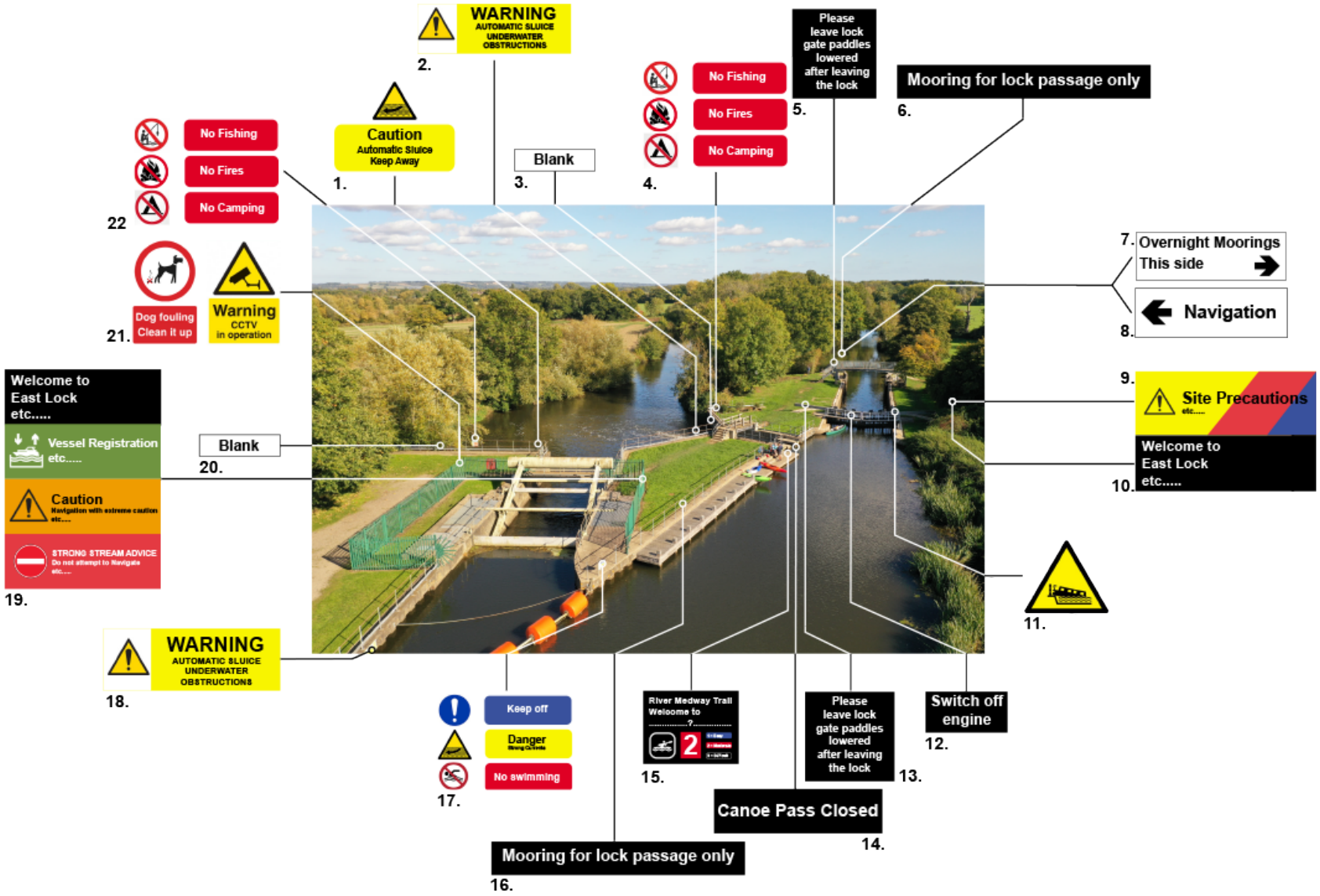
Attach pictogram tiles on site after retouched areas are dry. The tiles should be secured using four clutch screws with plastic screw covers to match the colour of the sign. Standard fixings should be avoided as this allows for unwanted removal of the sign.

Use of Totem Poles and Pictograms

Pictograms should follow the guidance set out in 'Navigation Signs and Symbols - An Industry Standard for UK Inland Waterway' produces by the Association of Inland Navigation Authorities (AINA).
Go to link

Pictogram tiles (size 170mm x 170mm) made from 11 gauge powder coated aluminum should be fixed to the Totem Poles. Lettering on pictogram tiles should be Monotype News Gothic. The Totem Poles come in 3.3m timber lengths. The height of the totems will depend on the scale of the site, the type of ground the posts are to go into and visibility to people who will use the information (normally between 1 and 1.5 metres above ground). For moorings the recommended formula: two thirds above ground to one third below, to give a height of approximately 2 metres above ground level. This is recommended in order for the pictograms to be seen above moored boats.

Example of existing signage at East Lock



Appendix

Environment Agency

Planning Policy Review



Planning Policy Review

National Planning Policies

National Planning Policy Framework December 2023 Go to link

The Framework sets out the Government's planning policies for England and how they should be applied. It covers how local authorities should develop their Local Plans and the key factors which need to be considered in determining planning applications. The principal aim of the framework is to achieve sustainable development.

There are 3 main objectives – economic, social and environmental.

Paragraph 11: Includes a presumption in favour of sustainable development. Developments should be approved in accordance with an up-to-date development plan, and, in the absence of a plan, unless they affect areas or assets of particular importance, or the harm from allowing a development would significantly and demonstrably outweigh the benefits eg Green Belt, AONB (now National Landscape).

The Framework promotes a 'plan-led' system, requiring the preparation of a Local Plan setting out its policies and making decisions in accordance with the plan.

Chapter 12: Relates to achieving well-designed and beautiful places. Paragraphs 131–141 set out the Government's approach to design issues, clearly putting the onus on local authorities to develop design guides for their local area. Paragraph 135 sets out a number of useful criteria to consider when undertaking a new project.

Chapter 13: Relates to Green Belt land (applies between Tonbridge and Yalding). Paragraph 143 sets out the five purposes of Green Belt land. Paragraphs 152 - 156 give guidance to local authorities on how they should address development proposals in the Green Belt. These paragraphs are particularly relevant where a new building is proposed or an existing building is to be extended.

Chapter 14: Addresses climate change and flood risk. New developments are expected to reduce vulnerability to climate change and help to reduce greenhouse gas emissions. Renewable and low carbon energy sources are encouraged.

Chapters 15 and 16: Relate to conserving and enhancing the natural and historic environment respectively. They set out processes to protect and enhance landscape character and to ensure that biodiversity and heritage assets are protected during the planning process. Enhancements are expected to be incorporated where possible.

Planning Practice Guidance Go to link

This online resource adds more detail to some of the issues raised in the Framework.

Local Planning Policies

Maidstone Local Plan Review 2021 – 2038 Go to link

The Council has recently adopted a review of the Local Plan. The final consultation stage was undertaken from October to December 2021 and it was submitted to the Secretary of State for independent examination on 31 March 2022. The Plan was approved for adoption by the Council in March 2024 and will cover the period to 2038.

The Council's Vision for the Borough is:

'A vibrant, prosperous, urban and rural community at the heart of Kent where everyone can realise their potential.'

The Spatial Vision is:

'Maidstone: A borough open to embracing growth which provides improved infrastructure, economic opportunity and prosperity, along with services, spaces, and homes for our communities, while addressing biodiversity and climate change challenges and protecting our heritage, natural and cultural assets.

The Spatial Objectives include the following:

2. Maintenance of the distinct character and identity of villages and the urban area;

3. Protection of the built and natural heritage, including the Kent Downs National Landscape and its setting, the setting of the High Weald National Landscape and areas of local landscape value;

4. Ensuring development adequately mitigates and adapts to climate change, whilst addressing the issues of flooding, water supply and the need for dependable infrastructure for the removal of sewerage and wastewater;

5. Protection and enhancement of biodiversity, and protection and promotion of the multi-functional nature of the borough's open spaces, rivers and other watercourses;

11. Ensuring that all new development is built to a high standard of sustainable design and construction.

Planning Policy Review

The Plan includes a number of Strategic and Development Management policies which would be of relevance along the Medway.

Maidstone Landscape Character Assessment Supplement (MBC 2012) Go to link

This document sets out saved sections from the Landscape Character Assessment and Landscape Guidelines 2000. It suggests appropriate planting mixes for different parts of the Borough.

Maidstone Green and Blue Infrastructure Strategy (MBC 2016)
Go to link

The role of the strategy is to promote, guide and co-ordinate investment in Maidstone Borough's green and blue infrastructure over the next 20 years.

The EA is a partner and the Strategy contains a 20-year Vision for greener, healthier, attractive towns and villages, sustainably connected to a rich tapestry of distinctive landscapes, wildlife habitats and waterways – valued, enjoyed and cared for by local people.

There are seven key themes in the Strategy:

1. Mitigating and adapting to climate change;
2. Integrating sustainable movement and access for all;
3. Promoting a distinctive townscape and landscape;
4. Maintaining and enhancing biodiversity, water and air quality;
5. Providing opportunities for sport, recreation, quiet enjoyment and health;
6. Retaining and enhancing a quality environment for investment and through development; and
7. Providing community involvement and opportunities for education.

Green and blue infrastructure includes 'green corridors', including river corridors, river and canal banks, cycleways, bridleways and rights of way.

Climate Change and Biodiversity in Maidstone (MBC 2020)
Go to link

This strategy builds on one of the Council's strategic priorities to be 'Safe, Clean and Green' and sets out aims to address climate change and biodiversity loss. The Council has committed to becoming carbon-neutral by 2030.

Tonbridge & Malling Local Plan Core Strategy (2007)
Go to link

The Core Strategy sets out the long-term development strategy and strategic planning policies for Tonbridge and Malling. It contains the following Vision Statement:

'To make Tonbridge and Malling Borough a safe and excellent place to live, work and visit for existing and future generations. To make it a place where its natural beauty, biodiversity, historic environment and public places are valued, protected or enhanced; where the built environment is sustainable, properly served and of high quality; and housing, economic and social needs of all sectors of society are met and reconciled with any environmental conflicts.'

The Aims which are of relevance to the Medway include:

Aim 1 – To ensure that new development is achieved in accordance with the principles of sustainability;

(e) Conserving, and wherever possible enhancing, the natural and historic environment and local diversity;

Aim 2 – To establish a spatial context to guide new development and co-ordinate the transport and community infrastructure needed to serve the development;

(b) Protecting the Green Belt and Strategic Gap and maintaining the separation and individual identity of settlements;

(c) Avoiding the adverse effects of development in areas of significance for landscape or nature conservation, areas at risk of flooding, important historic assets and the best and most versatile agricultural land;

Aim 3 – To ensure new development and other actions result in a high quality environment;

(b) Maintaining or enhancing local distinctiveness;

(c) Requiring a high standard of design of buildings and spaces in new developments;

(d) Providing landscaping and new open space, including natural greenspace and amenity planting, and enhancement of biodiversity and existing open spaces;

(h) Protecting and enhancing public access for all to the Borough's natural and historic heritage in a managed way which recognises the fragility of these resources;

(i) Providing art in major development schemes and in the public realm generally.

Planning Policy Review

Tonbridge & Malling Development Land Applications DPD (2008) Go to link

The document identifies small housing sites at East Peckham, Tonbridge and Wateringbury and employment sites at East Peckham and Tonbridge.

Tonbridge Central Area Action Plan (2008) Go to link

This sets out a more detailed plan for development in Tonbridge Town Centre. It includes proposals for public realm enhancements along the south bank of the Medway and housing development adjacent to the Medway at Cannon Lane, Gas Works, Lyons Crescent and River Walk West.

Tonbridge & Malling Managing Development and the Environment DPD (2010) Go to link

This document includes a suite of policies that reflect the local distinctiveness of the Borough. These policies are used to assess and determine planning applications and to ensure that environmental quality is maintained and enhanced, whilst preserving a sense of place.

Amongst the main characteristics of Tonbridge and Malling is: 'The River Medway passes through both of these areas and large parts of the Borough lie within the flood plain and are of significant biodiversity interest.'

Policy CC3 relates to sustainable drainage and seeks to protect the water environment from new developments.

Tonbridge & Malling Local Plan Review Go to link

The Council is currently in the process of reviewing the Local Plan and developing a new Plan to cover the period up to 2040. The first consultation document was published in September 2022.

At the time of writing (March 2024), the latest consultation was on Issues and Options, seeking the views of interested parties on a vision, strategic matters and various options for development. It is proposed to include policies on Green Belt, natural environment, historic environment and design, but no policies have yet been developed. It is very unlikely the Plan will be used for planning application decisions until it is much more developed. It will only have full weight once it is adopted.

The 2022 consultation was accompanied by an Interim Sustainability Appraisal Report. This confirms that the emerging plan will be tested against a number of Sustainability Appraisal Objectives.

Neighbourhood Plans

There are currently no 'made' Neighbourhood Plans affecting the Medway Navigation. The only Plan in progress relates to the parish of Yalding. The Neighbourhood area was approved in 2018, but there has been no formal consultation document produced. A Vision and a set of objectives have been developed, which include priorities to protect the local environment and address flooding.

Conservation Areas

There are several Conservation Areas based on settlements along the river. These will need to be taken into account if they are affected by any proposals. The relevant Conservation Areas at East Farleigh, Maidstone, Teston, Wateringbury, Yalding and Tonbridge. Maidstone All Saints, Maidstone Town Centre, Yalding and Tonbridge have undertaken Conservation Area Appraisals.

Kent Minerals and Waste Local Plan 2013-30 (adopted 2020) Go to link

This Plan sets out policies in relation to minerals and waste developments up to 2030. It contains a policy, DM10, relating to the protection of the water environment. Currently there is only one sandstone gravel quarry within the Medway corridor.

National Design Guide (MHCLG 2021) Go to link

This sets out the Government's guidance on creating high quality buildings and places and how this should be achieved through the planning system. It is designed to inform development proposals and their assessment by local planning authorities. It supports paragraph 130 of the National Planning Policy Framework which states that poor design should be refused.

The Guide identifies 10 characteristics of well-designed places:

- Context – enhances the surroundings.
- Identity – attractive and distinctive.
- Built form – a coherent pattern of development.
- Movement – accessible and easy to move around.
- Nature – enhanced and optimised.
- Public spaces – safe, social and inclusive.
- Uses – mixed and integrated.
- Homes and buildings – functional, healthy and sustainable.
- Resources – efficient and resilient.
- Lifespan – made to last.

National Model Design Code (MHCLG 2021) Go to link

This document seeks to support the National Design Guide in applying the ten characteristics by providing guidance on the development of more detailed design codes, guides and policies. Local authorities are expected to prepare their own design guides or codes.

Planning Policy Review

The Code seeks to set a baseline standard of design quality and to address design issues in an integrated way. Some of the key issues to be addressed are as follows:

- How the design of new development should enhance the health and wellbeing of local communities and create safe, inclusive, accessible and active environments;
- How landscape, green infrastructure and biodiversity should be approached including the importance of streets being tree-lined;
- The environmental performance of place and buildings ensuring they contribute to net zero targets;
- The layout of new development, including infrastructure and street pattern;
- The factors to be considered when determining whether façades of buildings are of sufficiently high quality and;
- That developments should take account of local vernacular, character, heritage, architecture and materials.

Kent Design Guide (Kent County Council 2005)
Go to link

This was produced by the Kent Design Initiative which is a partnership of all of Kent's local authorities, professional organisations, developers, communities and interest groups. The Guide has been adopted by Tonbridge and Malling District Council and Maidstone Borough Council as a Supplementary Planning Document to support the implementation of their Local Plans.

The Guide suggests 'Good Design' means:
- Enriching existing character – reinforcing local patterns of development and landscape while not ruling out innovation.
- Diversity – making places with variety in the form of buildings, in materials and in the mixture of uses.
- Understandable places – having a clarity of form and layout which is easy to comprehend.
- Achieving a pride of place – development with attractive, lively and pleasant public spaces which draw people together and create a sense of place.
- Easy movement – easy to get to and move through; routes which are safe and welcoming.
- Enduring and flexible places – built to last and energy efficient according to the intended use but with the ability to be easily used for another purpose.

Rivers and Waterways Policy Documents

Environment Agency: EA2025 creating a better place (EA 2020)
Go to link

This plan sets out how the Environment Agency will work towards a healthier, greener and more prosperous future. The plan sets out 3 long term goals:
- A nation resilient to climate change
- Healthy air, land and water
- Green growth and a sustainable future

There are three guiding principles:
- Put people and wildlife first: our goal is to create a better place for them.
- 80/20: we will focus on the 20% that makes 80% of the difference.
- Support local priorities: every place and community has its own needs.

Waterways for Today (IWA 2022)
Go to link

This report sets out the benefits of maintenance and regeneration of navigable waterways. 12 key benefits are identified under the headings Economic, Natural & Built Environment, Local Communities and Improving People's Lives. The benefits are supported by a number of case studies.

Waterways and Wellbeing (CRT 2022)
Go to link

This presents the results of a survey by the Canal and River Trust into the social and economic value of waterways.

Other Relevant Documents

A Green Future: Our 25 Year Plan to Improve the Environment (HM Government 2018)
Go to link

This Plan 'sets out government action to help the natural world regain and retain good health. It aims to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats. It calls for an approach to agriculture, forestry, land use and fishing which puts the environment first.'

The goals which are most appropriate to the River Medway are achieving clean and plentiful water; thriving plants and wildlife; and a reduced risk of harm from environmental hazards such as flooding and drought.

Planning Policy Review

Ten Point Plan for a Green Industrial Revolution (HM Government 2020)
Go to link

This sets out the Government's proposed approach to achieving net zero carbon by 2050. The two points of most relevance to the River Medway are:

- Green public transport, cycling and walking
- Protecting our natural environment

Environment Act 2021
Go to link

The Environment Act sets out the UK's framework for environmental protection and includes new laws relating to nature protection, water quality, clean air and waste reduction. It provides powers to set binding targets relating to these areas of policy. The main sections of relevance to the Medway are Part 5 relating to water and Part 6 relating to nature and biodiversity.

The Act strengthens the duties on public bodies to conserve and enhance biodiversity and makes Biodiversity Net Gain mandatory within the planning process. It also introduces a requirement to prepare and publish Local Nature Recovery Strategies.

Biodiversity Net Gain
Go to link

Biodiversity Net Gain (BNG) has been mandatory for new planning applications since 12 February 2024. It is a mechanism that demonstrates that habitats for wildlife are left in a measurably better state than they were before the development. BNG has introduced a mechanism for measuring biodiversity value in standardised biodiversity units. The biodiversity score will depend on the size, quality, location and type of habitat. After development, the site is required to have an increased score of at least 10%. The assessment process is quite technical and best undertaken by a qualified ecologist.

In Maidstone Borough the requirement is for a 20% net gain, made up of a statutory 10% and an additional local 10%.
Go to link

In Tonbridge and Malling District the requirement is for 10%
Go to link

BNG can be achieved through on-site units, off-site units and statutory biodiversity credits, although the latter should be a last resort. Given the open nature of much of the Medway corridor, it is likely that on-site enhancements would be preferable in most cases. It is expected that the habitats created will be managed for at least 30 years.

Levelling Up the United Kingdom White Paper 2022
Go to link

The White Paper proposed some reforms to the planning system in England. This included promoting the concept of incorporating 'beauty' into the built environment, developing local design codes, and the simplification and shortening of local plans.

Levelling-up and Regeneration Act 2023
Go to link

This Act has legislated for a number of planning reforms. The main changes that will impact on the Medway are proposals for Local Plans to concentrate on 'locally specific' matters and for 'Environmental Outcome Reports' to replace Environmental Impact Assessments and Sustainability Appraisals. Local Planning Authorities will also be required to prepare district-wide design codes.

Kent and Medway Economic Framework (KMEP 2024)
Go to link

This Framework sets out a medium-term strategy for building a more productive, sustainable and inclusive economy. One of the five key Ambitions relates to creating diverse, distinctive and vibrant places. This focusses on 'maximising the potential of Kent and Medway's distinctiveness and its unique characteristics – and the specific characteristics and opportunities of towns and communities across the county.' This incorporates the importance of nature, heritage and leisure as a focus of the visitor economy and to the local quality of life.

There are 3 Action Areas of particular relevance to the Medway:

Action Area 19: Developing Kent's rural economy

Action Area 20: Valuing the natural and historic environment

Action Area 21: Developing the visitor economy

Visit Kent Strategy 2021-2024 (Go to Places)
Go to link

The Strategy sets out proposals to rebuild, grow and sustain the visitor economy in Kent and Medway following the Covid-19 pandemic. It sets out local priorities for growth, jobs, skills, the environment, communities, health and wellbeing, sustainable development and regeneration.

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
National Planning Policy Framework Go to link	HMG	2024	**Para 8** sets out the 3 sustainability objectives – economic, social and environmental. **Para 11** includes a presumption in favour of sustainable development. **Para 47** requires applications to be determined in accordance with the development plan unless material considerations indicate otherwise. **Para 102** encourages a network of high quality open spaces for sport and physical activity. **Para 126** encourages the creation of high quality, beautiful and sustainable buildings and places. **Para 132** requires Local Plans to set out a clear design vision and expectations. **Para 135** sets out a number of design criteria for new developments. **Para 143** sets out the 5 purposes of the Green Belt. **Paras 152 –156** give guidance to local authorities on how they should address development proposals in the Green Belt. **Para 167** requires all plans to apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change.
Planning Practice Guidance Go to link	HMG	2024	This guidance supports the policies in the Framework.

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Maidstone Local Plan Review 2012-2038 Go to link	MBC	2024	**Policy LPRSS1** section 15 recognises the importance of the green and blue network being conserved and enhanced. **Policy LPRSP1** relates to Maidstone Town Centre and sub-section 2a requires development to respond to the river's setting and maintain and enhance public access. **Policy LPRSP7** identifies East Farleigh and Yalding as larger villages where the historic environment is to be protected, conserved and enhanced, and where it is important to the resist the loss of green spaces and create new ones. **Policy LPRSP9** relates to development in the countryside. Sub-section 7 requires the Medway Valley to be conserved and enhanced as a landscape of local value. **Paras 7.131 – 7.135** set out the positive outcomes that could be achieved for green and blue infrastructure. **Policy LPRSP14A** relates to the natural environment and requires development to respond to the effects of climate change, deliver a 20% biodiversity net gain and protect landscape character. It also seeks to protect ground and surface waters from pollution and to promote nature recovery. **Policy LPRSP14B** sets out priorities for protection and enhancement of the historic environment. **Policy LPRSP14C** promotes mitigation and adaptation to climate change. **Paras 7.172 – 7.177** set out the Council's approach to design. **Policy LPRSP15** sets out principles of good design. The following Development Management Policies may also be of use: **LPRTLR1** Mooring facilities and boatyards; **LPRENV 1** Development affecting heritage assets; **LPRQD 1** Sustainable design; **LPRQD 2** External lighting; and **LPRQD 4** Design principles in the countryside.
Maidstone Landscape Character Assessment Supplement Go to link	MBC	2012	This document sets out saved sections from the Landscape Character Assessment and Landscape Guidelines 2000. **Page 22** sets out recommended planting mixes for the Medway Valley between Maidstone and Wateringbury. **Page 92**, the Rivers, River Corridors and Ponds Section, states that development should enhance the distinctive landscape character, recreational and nature conservation interest.

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Maidstone Green and Blue Infrastructure Strategy Go to link	MBC	2016	The **20-Year Vision** and the **7 Key Themes** are of relevance to the water environment along the Medway Navigation
Climate Change and Biodiversity in Maidstone Go to link	MBC	2020	Amongst the Actions in the Strategy are: • Active travel and green transportation • Decarbonising and insulating homes and buildings • Generating renewable energy • Reducing waste • Adapting to climate change • Enhancing and increasing biodiversity
Tonbridge & Malling Local Plan Core Strategy Go to link	TMDC	2007	**Policy CP1** sets out criteria required for new developments, including creating a high-quality sustainable environment, protecting and enhancing the natural and historic environment. **Policy CP3** includes a requirement to apply national Green Belt Policy generally on land to the west of the A228. **Policy CP6** seeks to restrict development that would harm the setting or character of a settlement. **Policy CP10** seeks to control development in floodplains and to ensure that any development is the subject of a flood risk assessment and is designed to mitigate the effects of flooding. **Policy CP14** restricts development in the countryside, but does make some allowance for developments that are predominantly open recreation uses together with essential built infrastructure. **Policy CP23** sets out policies for Tonbridge Town Centre, including sustainable developments to maximise the use of the waterfront with the provision of environmental enhancements and public spaces. **Policy CP24** encourages high quality design for new developments and specifically requires the conservation and enhancement of the environment within river corridors, including the landscape, water environment and wildlife habitats. **Policy CP25** addresses compensatory measures where there would be material harm to a natural or historic resource.

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Tonbridge & Malling Development Land Applications DPD Go to link	TMDC	2008	The document identifies small housing sites at East Peckham, Tonbridge and Wateringbury and employment sites at East Peckham and Tonbridge.
Tonbridge Central Area Action Plan Go to link	TMDC	2008	**Policy TCA11** Development Allocations includes the following adjacent to the Medway – Cannon Lane – on north bank of the Medway Gas Works – on south bank of the Medway Lyons Crescent – on north bank of the Medway River Walk West – on south bank of the Medway
Managing Development and the Environment Go to link	TMDC	2010	The policies in this document seek to protect the environment from new developments. They outline in detail matters to be addressed in the determination of planning applications. The key policies of relevance are: **CC3** – Adaptation – Sustainable Drainage **NE1** – Local Sites of Wildlife, Geological and Geomorphological Interest **NE2** – Habitat Networks **NE3** – Impact of development on Biodiversity **NE4** – Trees, Hedgerows and Woodland **SQ1** – Landscape And Townscape Protection And Enhancement **SQ2** – Locally Listed Buildings **SQ5** – Water Supply And Quality **DC1** – Re-Use Of Rural Buildings **DC2** – Replacement Of Rural Buildings **DC3** – Farm Diversification **DC5** – Tourism And Leisure In Rural Areas **DC6** – Rural Lanes **OS1** – Protection of Open Spaces

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Tonbridge & Malling Local Plan Review Go to link	TMDC	Ongoing	The 2022 Issues and Options consultation document does not contain any policies. The following Sustainability Appraisal objectives, against which the plan will be tested, are likely to be directly relevant to the Medway and its corridor: **SA Objective 2** – To improve equality and access to community facilities and services **SA Objective 4** – To encourage sustainable economic growth, business development, and economic inclusion across the borough **SA Objective 5** – To protect and enhance biodiversity and geodiversity **SA Objective 6** – To protect and enhance the borough's landscape and townscape character and quality **SA Objective 7** – To protect and enhance the cultural heritage resource **SA Objective 8** – To protect and enhance the quality of water features and resources **SA Objective 9** – To conserve and enhance soil resources and guard against land contamination **SA Objective 10** – To reduce greenhouse gas emissions so as to minimise climate change **SA Objective 11** – To improve adaptation to climate change so as to minimise its impact
Neighbourhood Plans	MBC	Ongoing	**Yalding** – Neighbourhood Area approved in 2018. A Vision and a set of objectives have been developed, which include priorities to protect the local environment and address flooding.
Conservation Areas	MBC & TMDC		**East Farleigh** – Lower Road – not immediately adjacent to the river **Maidstone** – All Saints Conservation Area Appraisal dated 2003 Go to link **Maidstone Town Centre** – not immediately adjacent to the river. Has a Conservation Area Appraisal and Management Plan dated 2021 Go to link **Teston** – not immediately adjacent to the river **Wateringbury** – Conservation Area Appraisal to be prepared in due course **Yalding** has a Conservation Area Appraisal and Management Plan dated August 2021 Go to link **Tonbridge** has a Conservation Area Appraisal dated 2009 Go to link

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Kent Minerals and Waste Local Plan 2013-30 Go to link	KCC	2020	**Policy DM 10** sets out criteria for determining planning applications affecting the water environment. All minerals and waste proposals must include measures to ensure the achievement of both no deterioration and improved ecological status of all waterbodies within the site and/or hydrologically connected to the site. **Para 5.2.4** relates to the one sandstone quarry site in the Medway Valley.
National Design Guide Go to link	MHCLG	2021	10 characteristics of well-designed places: • Context – enhances the surroundings. • Identity – attractive and distinctive. • Built form – a coherent pattern of development. • Movement – accessible and easy to move around. • Nature – enhanced and optimised. • Public spaces – safe, social and inclusive. • Uses – mixed and integrated. • Homes and buildings – functional, healthy and sustainable. • Resources – efficient and resilient. • Lifespan – made to last.

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
National Model Design Code Go to link	MHCLG	2021	The Code seeks to set a baseline standard of design quality and to address design issues in an integrated way. Some of the key issues to be addressed are as follows: • How the design of new development should enhance the health and wellbeing of local communities and create safe, inclusive, accessible and active environments; • How landscape, green infrastructure and biodiversity should be approached including the importance of streets being tree-lined; • The environmental performance of place and buildings ensuring they contribute to net zero targets; • The layout of new development, including infrastructure and street pattern; • The factors to be considered when determining whether façades of buildings are of sufficiently high quality and; • That developments should take account of local vernacular, character, heritage, architecture and materials.
Kent Design Guide Go to link	KCC	2005	**Page 14** sets out what the partnership considers that 'Good Design' means – 'Design' covers a range of factors that shape our interaction with the built environment. 'Good Design' is about creating attractive and successful places that work well. Design is a subjective issue, but most would agree that well-designed developments are those that add something positive to the environment and enrich the lives of those who live in, work in or visit them.'

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
EA2025 Creating a Better Place Go to link	EA	2020	Our 5 Year Aims: 1. By 2025 we will have created more climate resilient places and infrastructure, by ensuring the nation is prepared for flooding, coastal change and drought 2. By 2025 we will be a stronger leader on climate adaptation and resilience, encouraging others to act now on the climate emergency and invest in adaptation 3. By 2025 we will be ready for bigger, more frequent incidents and will support those at risk to be more resilient 4. By 2025 air will be cleaner and healthier 5. By 2025 rivers, lakes, groundwater and coasts will have better water quality and will be better places for people and wildlife 6. By 2025 nature and land will be better protected and enhanced 7. By 2025 we will achieve cleaner, greener growth by supporting businesses and communities to make good choices, through our roles as a regulator, adviser and operator 8. By 2025 we will have cut waste crime and helped develop a circular economy 9. By 2025 we will be on track to deliver our sustainable business commitments, including to be net zero by 2030
Waterways for Today Go to link	IWA	2022	12 key benefits of maintenance and regeneration of waterways: Benefit 1 – Contributing to the country's economic recovery Benefit 2 – Increased spend in local communities Benefit 3 – Savings to the NHS and social care budgets Benefit 4 – Protecting and improving the natural environment Benefit 5 – Waterways heritage for future generations Benefit 6 – Sustainability - Planning for resilience and climate change Benefit 7 – Connecting communities Benefit 8 – Education and young people Benefit 9 – Jobs, training and apprenticeships Benefit 10 – Improved physical health Benefit 11 – Improved mental health and wellbeing Benefit 12 – Creating better places to live

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Waterways and Wellbeing Go to link	CRT	2022	Includes no specific policies.
A Green Future: Our 25 Year Plan to Improve the Environment Go to link	HMG	2018	The Plan includes the following policies relating to the water environment: • Expanding the use of natural flood management systems • Putting in place more sustainable drainage systems • Making 'at risk' properties more resilient to flooding • Reforming our approach to water abstraction • Increasing water supply and incentivising water efficiency and less personal use • Creating more green infrastructure • Planting more trees in and around our towns and cities • Reducing the impact of wastewater • Minimising the risk of chemical contamination in our water • Ensuring we continue to maintain clean recreational waters and warning about temporary pollution We will achieve clean and plentiful water by: • Improving at least ¾ of our waters to be close to their natural state as soon as practicable by: • Reducing abstraction of water from rivers and groundwater, ensuring the proportion of water bodies with enough water to support environmental standards increases from 82% to 90% for surface water bodies and from 72% to 77% for groundwater bodies. • Reaching or exceeding objectives for rivers, lakes, coastal and ground waters that are specially protected, whether for biodiversity or drinking water as per our River Basin Management Plans. • Supporting OFWAT's ambitions on leakage, minimising the amount of water lost through leakage year on year, with water companies expected to reduce leakage by at least an average of 15% by 2025. • Minimising by 2030 the harmful bacteria in our designated bathing waters and continuing to improve the cleanliness of our waters. We will make sure that potential bathers are warned of any short-term pollution risks.

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Environment Act 2021 Go to link	HMG	2021	The Environment Act sets out the UK's framework for environmental protection and includes new laws relating to nature protection, water quality, clean air and waste reduction. It provides powers to set binding targets relating to these areas of policy. The main sections of relevance are Part 5 relating to water and Part 6 relating to nature and biodiversity.
Biodiversity Net Gain Go to link	HMG	2023	• Biodiversity Net Gain (BNG) has been mandatory for new planning applications since 12 February 2024. • In Maidstone Borough the requirement is for a 20% net gain, made up of a statutory 10% and an additional local 10%. Go to link • In Tonbridge and Malling District the requirement is for 10% Go to link • BNG can be achieved through on-site units, off-site units and statutory biodiversity credits, although the latter should be a last resort. Given the open nature of much of the Medway corridor, it is likely that on-site enhancements would be preferable in most cases. It is expected that the habitats created will be managed for at least 30 years. Go to Link
Ten Point Plan for a Green Industrial Revolution Go to link	HMG	2020	The two points of most relevance to the Medway are: • Green public transport, cycling and walking. • Protecting our natural environment.
Levelling Up the United Kingdom White Paper Go to link	HMG	2022	The White Paper proposed some reforms to the planning system in England. This included promoting the concept of incorporating 'beauty' into the built environment, developing local design codes, and the simplification and shortening of local plans.
Levelling-up and Regeneration Act 2023 Go to link	HMG	2023	This Act has legislated for a number of planning reforms. The main changes that will impact on the Medway are proposals for Local Plans to concentrate on 'locally specific' matters and for 'Environmental Outcome Reports' to replace Environmental Impact Assessments and Sustainability Appraisals. Local Planning Authorities will also be required to prepare district-wide design codes.

Summary of Key Planning Policies – March 2024

Document	Published by	Date	Key Policies and Paragraphs
Kent and Medway Economic Framework Go to link	KMEP	2024	This Plan sets out a medium-term strategy for rebuilding a sustainable economy after the Covid-19 pandemic. One of the three key principles relates to creating Greener Futures (building a more sustainable, lower carbon economy);
Visit Kent Strategy 2021-2024 Go to link	Go To Places	2021	Visit Kent is the official Destination Management Organisation (DMO) for Kent and Medway, responsible for championing the county's visitor economy which is worth over £4.1 billion and supports more than 81,000 jobs. **Vision:** To be a world class destination management team that delivers innovative and desirable places for visitors, residents and businesses. **Mission:** To build and grow innovative and desirable places that enrich people's lives through our collaboration, insights and expertise.

Key to acronyms:	
HMG	His Majesty's Government
MHCLG	Ministry of Housing, Communities and Local Government
EA	Environment Agency
MBC	Maidstone Borough Council
TMDC	Tonbridge & Malling District Council
KCC	Kent County Council
CRT	Canal and River Trust
KMEP	Kent and Medway Economic Partnership
IWA	Inland Waterways Association