3.0 RIVER THAMES INFRASTRUCTURE

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3.1 This chapter forms a new section to the TLS Report bringing together new priorities such as flood risk management and River Thames Infrastructure. There is a range of significant changes to the strategic policy context for the TLS Hampton to Kew that has been introduced since 1994. The most important of these are:

- *A range of significant changes to the strategic policy context for the TLS Hampton to Kew has been introduced since 1994. The most important of these is The London Plan – in particular policies concerning climate change adaptation (Policies 5.10-5.15), designs on London (Policies 7.1-7.10) and the Blue Ribbon Network (Policies 7.24-7.30); Draft SPG London World Heritage Sites – Guidance on Settings*
- *Thames Estuary 2100 – Consultation Document, Environment Agency, April 2009;*
- *Lower Thames Flood Risk Management Strategy Consultation Document – Environment Agency September 2009;*
- *Strategic Flood Risk Assessments*
- *European Directives*
- *River Basin Management Plan – Thames Basin District, Environment Agency and Defra, December 2009;*
- *The Flood and Water Management Act 2010;*
- *The Disability Discrimination Act 1995 (DDA) was introduced in 1996.-*
- *The original 1995 Act was modified and extended by the introduction of the Disability Discrimination Act 2005 in 2006.*
- *Thames Waterway Plan 2006-2011 – River Thames Alliance*

RIVER FLOW AND TIDAL REGIME

The Thames Basin

3.2 The River Thames rises near Kemble in Gloucestershire and drains a catchment of some 3,841 square miles. This large catchment of brooks, canals and rivers combine to form 38 main tributaries feeding the Thames between its source and Teddington Lock, the normal tidal limit.

Water flows and Abstraction

3.3 The modern-day waterworks, engine-houses, filter beds and reservoirs that today dominate the western end of Hampton and beyond came to Hampton as a result of the Metropolitan Water Act of 1852, which prohibited the taking of water from the tidal Thames because it was polluted with sewage. The Act meant that Thames river water had to be abstracted above Teddington Lock. In practical terms the first places above the lock with suitable land available for waterworks was at Seething Wells, where The Lambeth Waterworks Company completed and opened its works in 1852, and at Hampton.

3.4 The Southwark and Vauxhall, the Grand Junction and the West Middlesex Water Companies had all established works at Hampton by 1855. In 1903 these companies became part of the Metropolitan Water Board, later Thames Water Authority and then Thames Water Utilities Limited.

3.5 These works superseded the earlier water abstraction from the Grand Union Canal and later the River Thames by the Grand Junction Waterworks Company at Brentford that started operations in 1838. The site remains as the Kew Steam Engine Museum.

3.6 The legacy of the nineteenth century investment to provide water for London includes an important collection of listed buildings at Hampton and the magnificent standpipe tower and collection of pumping engines at Brentford. Thus water supply infrastructure provides a key element of the character of the River Thames at each end of the Thames Landscape Strategy Hampton to Kew and at Seething Wells.

Guidance RI 1 Celebrate the importance of the River Thames in providing a regular supply of drinking water to households and businesses in London and conserve features of historic interest resulting from the development of London's water supply in the 19th and early 20th centuries.

Effects of abstraction on water quality

3.7 High rates of water abstraction at Hampton and other locations up-river cause problems between Hampton and Kew. Low river flows reduces the dilution of effluent from the Mogden Sewage Treatment Works with an adverse effect on water quality.

Effects of abstraction on navigation

3.8 As rates of water abstraction above Teddington Weir increased during the 19th Century, as a result of the 1852 Act, water levels dropped to the extent that navigation became increasingly difficult at low tides. The Thames Conservancy built Richmond Lock and Weir to deal with this problem. Its opening in 1894 enabled navigation between Richmond and Teddington at all times by maintaining water levels above the weir at 1.72m above OD Newlyn. Navigation problems due to a combination of low river flows and low tides continue between Richmond Lock and Kew. This restricts access for pleasure steamers for parts of up to 3 days per fortnight around the periods of the low spring tides.

Wastewater and water quality

3.9 Treated wastewater is discharged into the River Thames from the Mogden Sewage Treatment Works (STW) through pipework on the bed of the river adjoining Isleworth Ait. During periods of heavy rainfall untreated sewage is discharged from Mogden STW.

3.10 The River Basin Management Plan for the Thames Basin District sets out the objective to achieve good ecological status / potential by 2015. The discharge of untreated sewage has three potential effects:

• fish kills due to reduced dissolved oxygen levels in the river;
• deposit of untreated sewage and other sewer-borne wastes in the river and along the strand line on river banks; and
• risks to human health from water-borne disease particularly for those working or taking recreation on the river.

3.11 Thames Water has started work on a £140M project to upgrade the Mogden STW. The upgrade will enable Mogden STW to treat 50 per cent more sewage than at present, so it can better cope with heavy rainfall, helping to prevent the sewage works being overloaded and discharging into the river. The Mogden Upgrade is scheduled for completion in 2013. In addition, Thames Water is bringing forward plans for the Thames Tunnel - that is a sewer that will collect storm water and sewage from combined sewer overflows that discharge into the River Thames between Hammersmith and the River Lea. There are no proposed works for the Thames Tunnel between Hampton and Kew.

3.12 Plastic bottles, bags and other debris within the flotsam and jetsam is a constant source of pollution. As well as being an aesthetic nuisance the plastics are eaten by birds, fish and mammals and when broken down into small fragments pollute the water. Thames 21 has a highly successful programme to clean up the river, whilst the TLS has pioneered new methods to manage the flotsam and jetsam that is washed onto the low lying towpaths at high tide.

The spring tides are a source of local amusment

High spring tide: The Old Deer Park - a natural floodplain in action

The Tides

3.13 Tidal changes are the net result of multiple influences that act over varying periods. The primary constituents are the Earth's rotation, the positions of Moon and the Sun relative to Earth, the Moon's altitude above the Earth, and the form of the river channel. High tides occur approximately every 12 hours and 25 minutes, that is half a tidal lunar day. Approximately twice a month around new and full moon the moon's gravitational force is increased due to the alignment of the sun. The tide's range is then at its maximum, this is called a spring tide and it is during low spring tides that boat operators can experience some navigation difficulties between Richmond and Kew. The option of dredging has been discounted due to cost and ecological considerations.

3.14 Teddington Weir is the normal tidal limit of the River Thames but on spring tides the incoming tide can top the weir such that it passes on upstream through Kingston towards Molesey. Spring tides can lead to localised flooding of the towpaths and adjoining land.

3.15 The tidal extremes have led to suggestions to build a new lock at Kew or even use the Thames Barrier to make the entire river through the capital non-tidal. Although these solutions may eliminate the vagaries of the tide, they would remove a significant part of the appeal of the river. The constant change in water level brings a dynamism and unpredictability to the landscape, much appreciated by local residents. The dramatic tidal range exacerbated by bridges and embankments provides daily evidence of London's connection to the sea and the presence of a powerful natural force running through the middle of the city. Any move towards non-tidal conditions would also have severe

implications for nature conservation in the inter-tidal zone of the river and would increase flood risk upstream of Teddington.

3.16 The existing floodplain areas, especially Syon tide meadow, the Old Deer Park and towpaths, provide a critical flood alleviation resource as part of the floodplain. Opportunities to re-instate floodable areas would greatly assist in the management of the river.

Guidance RI 2: Conserve and where possible encourage the re-instatement of floodable areas in the floodplain, both in tidal and non-tidal stretches (below and above Teddington Lock respectively).

Flood risk

3.17 The whole of the River Thames from Hampton to Kew is subject to the risk of fluvial flooding and the section between Molesey Lock to Kew is additionally subject to the risk of tidal flooding. The greatest risk of flooding is when a high spring tide coincides with high river levels resulting from periods of heavy rain. In addition to the daily tides, the Thames estuary is prone to an increase in water levels caused by a North Sea surge. Under these conditions the land close to the river (that includes land used for recreation, private gardens, agriculture, public highways and footpaths) can be inundated by water. During more extreme events property is at risk as identified in the Environment Agency Flood Maps that accompany the strategic flood risk assessments that are published by the local authorities in the TLS study area.

Prospects for future change are set out in the Thames Estuary 2100 – Consultation Document, Environment Agency, April 2009 (TE2100) and for the river between Datchet and Teddington in the Lower Thames Strategy.

3.18 These documents set out the Environment Agency's recommendations for flood risk management for fluvial Thames from Datchet to Teddington and London and the Thames estuary through to the end of the century.

3.19 To inform the development of climate change scenarios the Environment Agency commissioned scientific research with the Meteorological Office and others to improve its understanding. The Environment Agency knows that climate change could lead to increases in sea level, storm surge height and peak river flows but the question is by how much. The Environment Agency advises that the commissioned studies have helped to reduce the uncertainty in what the future might bring and have established the following key findings:

- *Sea level rise in the Thames over the next century due to thermal expansion of the oceans, melting glaciers and polar ice is likely to be between 20cm and 90cm.*
- *There remains a lot of uncertainty over the contribution of polar ice melt to increasing sea level rise. At the extreme, it may cause sea level to rise by a total of up to 2 m (including thermal expansion) – although this is thought to be highly unlikely.*

Households in the floodplain need to be informed of the flood risk

The daily fluctuations of the tide add much to the character of the river

The Thames Barrier will continue to provide protection for London but fluvial floodrisk will increase along the Arcadian Thames

• *Climate change is less likely to increase storm surge height and frequency in the North Sea than previously thought.*
• *Future peak freshwater flows for the Thames, at Kingston for instance, could increase by around 40% by 2080.*

3.20 By the year 2034, the Environment Agency may no longer be able to use the Thames Barrier for the frequent, but lower order, fluvial flood events although it will continue to provide a good level of protection against tidal and higher order fluvial flood events. Alternative ways of managing fluvial flood risk will be needed. This will mean adapting some buildings and public spaces which currently have a low standard of protection against fluvial flood. It is important that the public and businesses have confidence in, and are supportive of this approach.

Increasing flood risk will affect recreational activity in the floodplain

Strategic Flood Risk Assessments (SFRA)

3.21 Planning Policy Statement (PPS) 25: Development and Flood Risk has been developed to underpin decisions relating to future development (including urban regeneration) within areas that are subject to flood risk. In simple terms, PPS 25 requires local planning authorities to review the variation in flood risk across their district, and to steer vulnerable development (e.g. housing) towards areas of lowest risk.

Riverborne flotsam and jetsam

3.22 The aim of the SFRA is to assess flood risk so that the local authorities can appraise, manage and reduce flooding. They identify the areas of each local authority at risk from various forms of flooding and the likely impact of climate change. At the present time there are SFRAs for each of the four local authorities in the TLS area as follows:

• *Elmbridge Borough Council SFRA Level 1 December 2007 (Final)*
• *London Borough of Richmond Upon Thames SFRA Level 1 Update August 2010 (Final Report)*
• *Royal Borough of Kingston Upon Thames SFRA Level 1 December 2008 (Final)*
• *London Borough of Hounslow SFRA Level 1 Sept 2007 (Final)*

Implications for the Thames Landscape Strategy Review

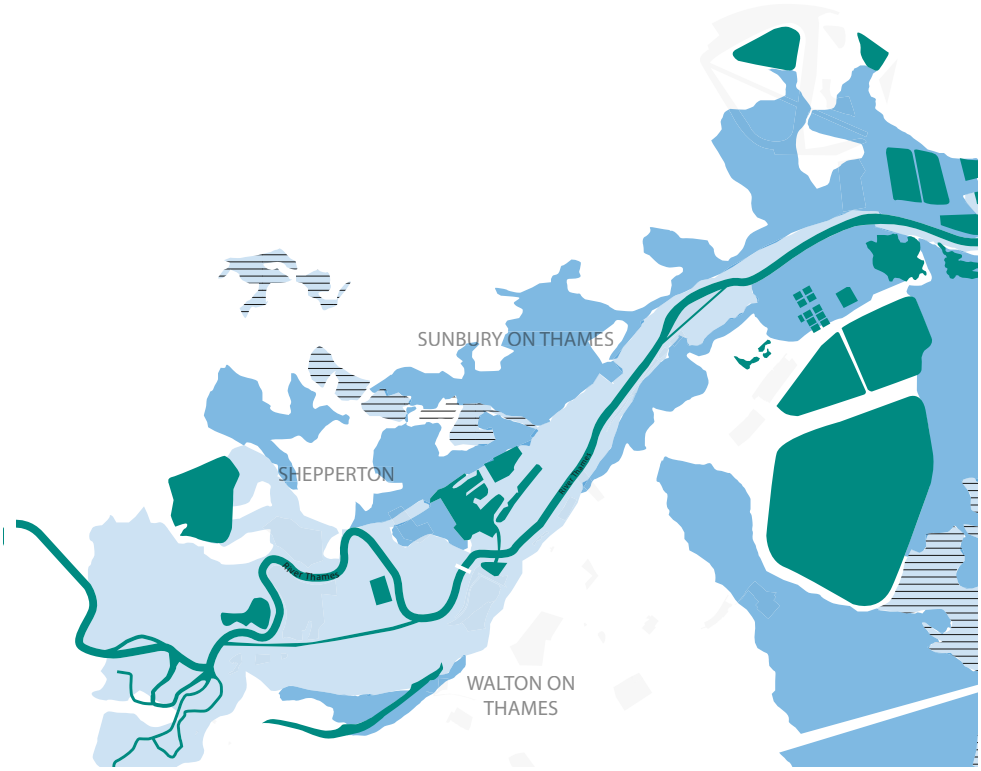
Open spaces within the floodplain will, in the future, need to be managed to take account of wetter conditions

3.23 The SFRAs indicate that the risk of river and tidal flooding can be expected to increase as a result of climate change and sea level rise. The Environment Agency has advised in the TE2100 Consultation Draft that it may no longer be able to use the Thames Barrier for the frequent, but lower order, fluvial flood events.

3.24 The implication for the TLS is the need to manage land within Zone 3B and some adjoining land in Zone 3a that has a high probability of flooding on the basis that the frequency of flood events is likely to increase. The key areas for management change are:

• *Need for dry routes and escape routes*

There is a need to provide alternative routes for pedestrians and cyclists that avoid areas that are prone to frequent flooding. Where there is no viable alternative route such as the towpath adjoining Kew Gardens


SUNBURY ON THAMES
SHEPPERTON
WALTON ON
THAMES

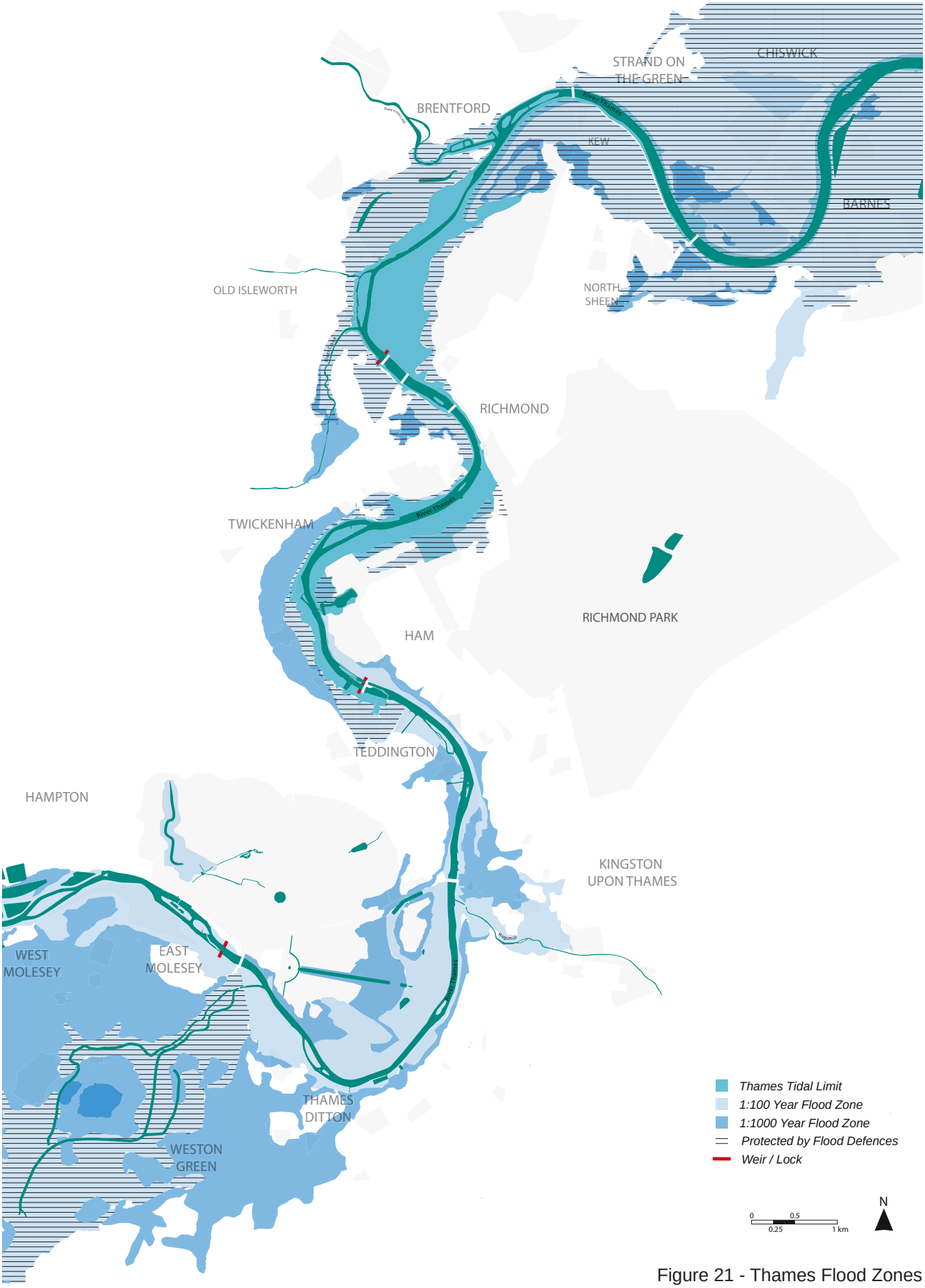


Figure 21 - Thames Flood Zones

then escape routes should be provided to avoid the risk of path users becoming cut off by rising flood waters.

• Habitat change and opportunities e.g. wet meadows
The predicted greater frequency of flooding provides the opportunity to manage land to accommodate these flood events – for example by the establishment of wet meadows in locations such as Home Park, Petersham Meadows and parts of the Old Deer Park.

• Modifications to landscape to accommodate flooding rather than defensive barriers
It is appropriate to reconsider land use and management rather than to defend existing uses against increasingly frequent flood events.

• Measures to improve safety without negative impacts on the landscape
It is important to ensure the safety of the public during flood events. The philosophy of the TLS is to bring forward positive measures of dry routes, boardwalks and links to higher ground and to avoid a plethora of warning signs that, in themselves, may offer little protection.

ACCESS AND SAFETY PROVISION

3.25 Unlike central London most of the banks between Hampton and Kew are unprotected by railings or river walls such that careful supervision is needed of children and vulnerable adults using the riverside paths. There is very limited provision of safety rings and throwing lines. These are only to be found at the locks and on some bridges.

3.26 Risks to walkers are generally low but accidents do occur to people swimming and vulnerable people jumping into the river. Another particular risk is the capsizing of small dinghies used for transfer to moored vessels, aits and boatyards. These risks are amplified when there is a strong stream due to flood water or tidal conditions.

3.27 The Environment Agency patrols the River Thames above Teddington Lock and the The Port of London Authority patrols the reaches below Teddington Lock although they are not emergency services. Teddington Lifeboat provides emergency cover between Molesey Lock and Richmond Lock and Weir. This is supplemented by the Chiswick Lifeboat that normally serves the area as far upriver as Richmond Lock and Weir.

THAMES CROSSINGS

3.28 Opportunities to cross the River Thames are provided by a variety of ferries and bridges as follows;

- *Walton Bridge*
- *Hampton Ferry*
- *Hampton Court Bridge*
- *Kingston Bridge*

Dry Routes Case Study - Douglas Meadow Boardwalk, Ham

In a particularly low lying section of the Ham towpath, the Thames Path is regularly inundated by the high tide. The new boardwalk connects the towpath with an alternative dry route (crossing over a deep tidal backwater) that can be used during wet periods. The route is linked to adjacent footpaths and the Ham Avenues.

Douglas Meadow: Footpath before work blocked by a flood

Douglas Meadow: Boardwalk after construction

Douglas Meadow Boardwalk during a flood event

Access to the Douglas Meadow Boardwalk linking the dry route to the wider footpath network

Lower Thames Flood Risk Management Strategy

The Environment Agency's Lower Thames Flood Risk Management Strategy aims to reduce flood risk to 15,000 properties between Datchet and Teddington which are currently vulnerable to a 1 in 100 year (1% annual occurrence) flood. The number at flood risk is forecast to rise to 35,000 by 2055 with the predicted climate change impacts. The strategy combines a range of measures such as building flood diversion channels and carrying out improvements works to weirs to reduce flood risk in the area.

Proposals for managing flood risk include:

- three flood diversion channels between Datchet and Shepperton;
- improvements to weirs at Sunbury, Molesey and Teddington to accept higher flood flows;
- widening Desborough Cut;
- non-engineered measures within the flood plain;
- community-based flood protection measures.

It is acknowledged that the cost of a scheme that provides such significant flood risk benefits will not be quick or cheap to implement. The present value of the scheme is £256m and over half of this (55%) would qualify for Government funding with the remaining £116m to be found from external contributions. This will involve a greater degree of partnering between the Environment Agency, Lower Thames planning authorities and also other organisations between Datchet and Teddington.

River Thames Boat Project

The Richmond Venturer - an accessible education boat based at Kingston

The River Thames Boat Project is a founder member of the TLS Community Advisory Group, representing education on the river. Since 1995 the River Thames Boat Project has been operating its specially equipped and accessible community boat the Venturer, from the Barge Dock, Canbury Wharf, Kingston, and has become a feature of Kingston's riverside. This award winning local Charity aims to give people life enhancing experiences of river and waterways environments to the benefit of their personal, social and educational development, focusing especially on children, young people, older people and those with disabilities from London and the South East. The River Thames Boat Project is unique on the Thames in providing a choice of subsidised therapeutic day trips, residential cruises and environmental education activities on board the Venturer. These are highly valued and appreciated by its wide range of client groups from disabled ex-servicemen to school groups. It has strong links with numerous local and regional community organisations and a large cohort of volunteers who assist on board the boat, in the office and at events.

Its 10 year vision is to:

- deliver lasting, life enhancing experiences on the river and waterways of South East England to a diverse range of people of all ages, abilities and background, provided they are in need
- operate from its own mooring in a secure location with an adjacent office
- be a high quality service provider, with the funds to make us financially stable in the long term.

- *Kingston Railway Bridge*
- *Teddington Lock footbridge*
- *Hammerton's Ferry*
- *Richmond Bridge*
- *Richmond Railway Bridge*
- *Twickenham Bridge*
- *Richmond Lock and Weir footbridge*
- *Kew Bridge*

3.29 While the six road bridges provide adequate accessibility for vehicles, including public transport, there are gaps in the provision of footbridges that have led to suggestions that additional crossings should be provided. Opportunities may include:

- *Cigarette Island footbridge across the River Mole*
- *Surbiton to Home Park crossing*
- *Radnor Gardens – a ferry or footbridge link to the Thames Path*
- *Enhanced river crossing at Twickenham*
- *Re-establish Isleworth Church Ferry*
- *Brentford to Kew Gardens footbridge or ferry*

Image courtesy of RBGK

Potential River crossing linking Brentford with Kew

WATER-BASED PASSENGER, TOURISM AND FREIGHT TRANSPORT NODES (BOTH EXISTING AND POTENTIAL)

3.30 Until the early nineteenth century watermen and lightermen carried passengers and goods in a variety of wherries and barges that were powered by sail and oar. Steam power was introduced around 1815 with regular steam packet services from Queenhithe to Richmond established in the early 1820s.

3.31 The development of railway services from London in the 1840s reduced the demand for passenger boat services on the Thames. Watermen exploited the ease of access provided by the railways

Passenger boat service at Teddington Lock

to increase their recreational trade by hiring Thames skiffs and the development of the pleasure steamer trade. These services continue with regular passenger boat departures from Westminster Bridge to Hampton Court with stops at Kew and Richmond that are supplemented by local services from Richmond and Kingston.

Existing commuter river services

3.32 There are no commuter river services that provide regular journeys between Hampton to Kew for journeys to work. The upriver limit of commuter river services is Putney Pier that has services operated by Thames Executive Charters into central London.

Turk's launches are a familar sight on the river

Potential commuter river services

3.33 The constraints provided by locks and shallows at Kew during low spring tides leading to long journey times make it unlikely that any viable commuter river services could be provided between Hampton and Kew.

Existing passenger ferries

3.34 Nauticalia's Ferry operates between Shepperton and Weybridge, Hampton Ferry operates from opposite the Bell Inn, Hampton to Hurst Park, daily from March to October. Hammerton's Ferry provides a link from Marble Hill House to Ham House daily from March to October and during winter weekends.

Hammerton's Ferry

Potential passenger ferry

3.35 Richmond Council has acquired the rights to Isleworth Ferry on behalf of the TLS. The existing ferry steps remain. A service here could improve links between the Kew towpath and Syon Park. A ferry from the Thames Path at Ham to Radnor Gardens would improve links to the gardens and the recently restored Strawberry Hill that is now open to the public. Alternatively this link could be provided by means of a footbridge.

Existing leisure boat services

3.36 A summary of passenger boat services is set out in Figure 3.1. Special services operate from Hampton Court station and Kingston to Hampton Court Flower Show. There can be difficulties with passages upstream of Kew Gardens during low spring tides for the reasons set out in paragraph 3.13 above and passengers are invited to check sailing times with the operator before booking.

3.37 A recent innovation was the establishment of a new landing stage using a pontoon at Hammerton's Ferry to provide access to Marble Hill and (by means of Hammerton's Ferry) to Ham House. This is not currently in operational use.

Figure 3.1 Passenger Boat Services operated between Weybridge and Kew							
JGF Passenger Boats	Walton	Cowey Sale					
Westminster Passenger Services Association (Upriver)	Westminster Millennium Pier	Kew Pier		Richmond Landing Stage			Hampton Court
Turk's Launches			Richmond St. Helena Pier		Kingston Turk's Pier	Kingston Town End Pier	Hampton Court
Parr Passenger Boats				Richmond Pier (Round trip)			
						Queen's Promenade Kingston	Hampton Court

Private hire

3.38 In addition to the scheduled services there is a range of services for private parties and other activities.

Potential leisure boat services

3.39 The existing operators run a variety of services that have been developed in response to market demand since the introduction of steamboat services in the 1820s. Opportunities to increase services are principally by extending the core summer season in sustained periods of fine weather during the spring and autumn.

Freight transport

3.40 Policy 7.26 of the London Plan says:

Development proposals :
• which increase the use of safeguarded wharves for waterborne freight transport, especially on wharves which are currently not handling freight by water, will be supported
• adjacent or opposite safeguarded wharves should be designed to minimise the potential for conflicts of use and disturbance
• close to navigable waterways should maximize water transport for bulk materials, particularly during demolition and construction phases.

3.41 There is no regular transport of freight and general goods between Hampton and Kew but water freight has an important role in delivering materials to islands in the River Thames (known as "aits" or "eyots") and to provide deliveries to and from boatyards.

3.42 Policy 7.26 of the London Plan sets out the framework for the protection of wharves to facilitate water freight trade. These currently 50 safeguarded wharves along the Thames are under review and the Safeguarded Wharves Review 2012/2012 document was available for consultation (until 7 Jan 2012). No wharves are safeguarded between Hampton and Kew but there are a number of wharves and draw docks that are important for the loading and unloading of vessels that make local trips to bring plant and materials for work on the aits or deliver materials and boats to boatyards.

3.43 Particularly important wharves / draw docks include:

- *Port Hampton Quay, Sunbury Road, Hampton – for Platts Eyot;*
- *Thames Street, Hampton – for Garrick's Ait;*
- *Summer Road, Thames Ditton;*
- *Walton Marina;*
- *Thames Ditton Marina;*
- *Eagle Wharf, Kingston*
- *Railway Wharf, Thames Side Kingston*
- *Barge Dock, Thames Side Kingston*
- *Ferry Road draw dock, Teddington;*
- *Embankment Wharf, Twickenham*
- *Church Lane draw dock, Twickenham;*
- *Riverside draw docks (2), Twickenham;*
- *River Lane draw dock, Petersham;*
- *Richmond Bridge draw dock;*
- *Water Lane draw dock, Richmond*
- *Church Street draw dock, Isleworth*
- *Temporary wharf off Dock Road, Brentford; and*
- *Kew Bridge draw dock (north side).*

Waterfront Richmond
19th Century, Ron Berryman

3.44 The National Rivers Authority Thames hydrographic survey of 1992 shows many wharves at Kingston but these have all been lost to redevelopment or are occupied by permanently moored vessels. The Brentford Waterspace Strategy Final Draft 18.10.10 prepared by British Waterways proposes a "Contemporary Urban Wharf, mixed use space providing a buffer to MSO and occasional freight wharfage" off Dock Road at Brentford. MSO Marine Construction is currently occupying this site as a wharf for the storage and despatch of pontoons for use downriver as part of a new moorings scheme. The concept of a public riverside space for occasional use as a freight wharf could be repeated elsewhere in the TLS area.

Twickenham Yacht Club

RECREATION AND MARINE INFRASTRUCTURE

The Boathouses

3.45 Domestic boathouses at the foot of private gardens contribute a unique architectural element to the river's character, particularly upstream from Twickenham. Many of the boathouses date from Edwardian times. The eccentric designs, in wood, glass and stone, rising from the edge of the river, catch the eye and relate directly to the water. The architecture of the boathouses, balconies and barge boards of the

riverside houses in places such as Broom Water, Teddington, influence the style of houses further inland. In other areas, such as Thames Eyot in Twickenham, the old boathouse, balustrade and pavilion are the only reminders of the 18th century Poulett Lodge, replaced by a block of flats in the 1930s.

3.46 Boat club houses and sheds also form an important part of the river architecture. Some are substantial two-storey brick buildings, while others are small wooden sheds or arched foundation structures for larger developments, such as the Richmond Riverside and St Helena Terrace. Even where clubhouses have been converted to new business uses, as at Lower Ham Road, the architecture still contributes to the character of the river. But the most successful situations remain where the activity and paraphernalia of boat use and repairs continue to bring the river edge alive.

3.47 A wonderful range of Victorian and Edwardian boathouses survive that is a legacy of the golden age of boating on the River Thames in punts, skiffs, launches and sailing boats. The Thames Sailing Club established in 1870 is a fine example of lightweight structure in timber and corrugated roofing sheets. Where club houses are upgraded to meet modern requirements there can be a tension between the need for a more solid structure and the delicacy and detailing of the original building.

Guidance RI 2: Conserve domestic and club boathouses along the river, with advice, grant aid and controls commensurate with the Thames Area of Special Character. Encourage the inclusion of new boathouses in future riverside re-developments.

MARINE SUPPORT FACILITIES AND INFRASTRUCTURE AND MOORINGS

The Boatyards

3.48 Boatyards are some of the most important features in the special identity, and are critical for the long-term future of its river-related life. They are also the most vulnerable. The two boatyards given as examples of traditional family-run businesses in the TLS 1994 report, Tough's at Teddington and Turk's at Kingston, have been closed for re-development. The PLA and Environment Agency commissioned Adams Hendry to research to establish Criteria to Safeguard Boatyards on the River Thames between Sunbury and Canvey Island. The report issued in February 2000 contained recommendations for safeguarding boatyards that were carried forward into the London Plan.

3.49 An update of the report prepared by Adams Hendry for the Greater London Authority in 2007 found a 20% increase in commercial vessels registered for use in London. The most significant change was a 25% increase in the number of Class 5 passenger vessels that are licensed by the Maritime and Coastguard Agency (MCA).

3.50 The TLS area has the largest concentration of boatyards in

Half a slipway at Hurst Park!

A cluster of working boatyards at Brentford

Traditional Thames rowing boats

Mark Edwards MBE at Richmond Bridge Boathouses

London and a number of them have an important role in maintaining commercial vessels as follows:

- *Eel Pie Slipways – passenger boats;*
- *Francis H Newman, (Shipyards), Swan Island – London Fire Brigade fire boats;*
- *Colliers Dry Dock, Isleworth – passenger boats;*
- *B J Wood and Sons, Dry Docks, Isleworth – passenger boats;*
- *MSO Marine Construction – British Waterways work boats and barges.*

3.51 There have been significant losses of boatyards since 1994 with demolitions that include:

- *R J Turk and Sons, Hampton Court foreshore;*
- *R J Turk and Sons, Kingston;*
- *Tough's Teddington;*
- *Petersham Boat services; and*
- *Howlett's Boatyard, Richmond*

3.52 The rate of loss has slowed since the introduction of the relevant London Plan policy. However, the policy (in the 2012 London Plan integrated into Policy 7.27) is only effective when proposals are brought forward for the change of use or redevelopment of boatyards. A number of boatyards have been lost to business uses (Class B1 or B2) that have not required the submission of a planning application.

3.53 Positive outcomes include:

- *The re-opening of Hucks Boatyard, Hampton as part of a mixed use scheme;*
- *Conversion of an arch of Richmond Bridge, owned by Richmond Council, from use as a public convenience to a boatbuilding use for the Great River Race; and*
- *the re-establishment of wooden boat building on Richmond waterfront.*

3.54 Future opportunities include bringing the disused boat sheds on Lots Ait back into use. In addition consideration should be given to re-establishing boat letting at Kingston and Hampton Court.

3.55 Without this working character the river would be a much blander place. The activity which Eel Pie Island brings to the Twickenham waterfront; the colour and energy of Swan Island; the boatbuilding on Richmond waterfront; and the industrial scale boat workshops of Brentford, Isleworth and Platt's Eyot, bring the riverside alive.

3.56 Policy 7.27 of the London Plan says that within LDFs boroughs should identify the location of waterway facilities and any opportunities for enhancing or extending facilities. Proposals should protect waterway support infrastructure such as boatyards, moorings, jetties and safety equipment etc. New infrastructure to support water dependent uses will be sought.

3.57 At Richmond Riverside, the former Castle Boathouses were rebuilt in the late 1990s as part of a mixed use scheme to provide boat storage

and workshops on the ground floor with bar/restaurant and residential above. Siting boathouses on the ground floor can be an effective way of mitigating flood risk where development takes place in Zone 3a.

Boat hire: Molesey

Guidance RI 3: Help to conserve the boatyards as viable enterprises which contribute greatly to the activity, character and use of the river.

The Houseboats

3.58 A number of boatyards are linked to houseboat communities. Houseboats at Kew, Brentford, Isleworth, St. Margarets, Thames Ditton, Hampton and East Molesey provide a special character and life on the river's edge. In places such as Tagg's Island, some of the houseboats are architectural tours de force *in their own right, dating back to the heady days of Edwardian recreation. However excessive extensions and alterations can have a detrimental effect on the character of the river.*

3.59 There are problems of servicing, water pollution and parking which lead to the communities being regulated and contained within certain areas. Houseboat moorings and location are subject to Port of London Authority licensing (on the tidal Thames), the Environment Agency on the freshwater Thames and local authority planning permission. Health and hygiene matters are regulated by the London Port Health Authority. But where the problems are resolved, the colour, design, gardens and life which the boats bring to the landscape is much richer than the strings of modern fibre-glass cruisers parked along many waterfronts.

Residential moorings at Thistleworth

Guidance RI 4: Conserve the authorised communities of houseboats along the river, regulated by planning, pollution, servicing and parking controls commensurate with the Thames Area of Special Character and Thames Corridor. Support the creation of new houseboat moorings in off-river locations with suitable facilities.

The Moorings

3.60 Boats of particular historic or aesthetic interest add to the character of the river landscape, be they moored or travelling through. Enjoyment of the landscape from the water should be encouraged, but can be a problem when moored in large numbers where the boats obscure the water from the land and crowd the channel.

Thames Ditton Marina

3.61 Moorings are particularly intrusive in front of historic buildings and vistas. Vessels moored in front of the Privy Garden at Hampton Court and Marble Hill at Twickenham, for example, detract from the historic water frontages. Illegal moorings can be a problem – at Brentford, Teddington, Kingston, Hampton, Walton and Molesey. The London Borough of Richmond is proposing to pass a byelaw to help control this activity in the borough.

3.62 Moorings in basins off the main channel, such as the Thames Marina at Seething Wells, can accommodate large numbers of boats very successfully, while still maintaining open space with nature

conservation interest on the edge of the river. Moorings have recently been created in the dock at Soaphouse Creek, Brentford and the developer Hydro Properties has put forward proposals for 60 floating residential units and a 90 berth marina on the disused part of Seething Wells.

Moored boat at Brentford

Suitable locations for new visitor moorings are suggested in the reach guidance and include Kingston, Richmond and Brentford.

Guidance LC 12: Regulate mooring to numbers and locations where they do not detract from the character of the river or intrude into historic vistas. Encourage the re-use of redundant basins off the main channel for marinas and river-related activities.

The Banks

3.63 The land meets the water in a variety of different designs along this stretch of the Thames. On the non-tidal river, for example at Hampton, gentle banks and beaches support riparian plants and nesting wildfowl. Downstream at Kew massive concrete revetments are hostile to plants, birds and humans. Along much of the river, particularly around the islands, vertical sheet piling is common and in places built development has encroached into the river channel.

Some stretches of the riverbank are continually eroded by the tides

3.64 Bank treatments need to achieve a number of objectives, some based on management of the river for navigation and flood control:

- *protection from erosion, particularly caused by tidal scour and boat wash;*
- *protection from flooding;*
- *some based on amenity and nature conservation:*
- *access and nesting sites for wildfowl;*
- *conditions for riparian vegetation to establish;*
- *access for boaters to the land and walkers to the water.*

3.65 Responsibility for the banks can be confused. In many cases the local authority or private landowner maintains the river edge, but in others the Environment Agency, PLA and even the Crown Estate has responsibility for the banks. River engineering is expensive and scenes of neglected banks are becoming widespread, be they eroded banks of granite sets or concrete panels peeling off into the water. Not only are these banks unsightly, in many cases they are unsafe.

3.66 There are general issues and conflicts to be resolved in enhancing the banks. For example bank vegetation can improve the appearance and nature conservation interest of the river edge but it may also bring problems. Overhanging trees can provide cover for nesting grebes, for example, but they can also obstruct the channel, trap litter, shed branches and their roots can undermine bank protections. Dense scrub can block the river views and access from the towpath. In each case it is important to weigh the risks and priorities.

3.67 On the Thames, consent from the Environment Agency is normally required for bank protection works.

Guidance RI 5: Maintain banks in a safe and serviceable state, while at the same time consulting with the Environment Agency, Natural England, Port of London Authority to achieve methods of protection which are attractive to wildlife and river users. Prevent any new buildings from encroaching into the river channel.

The Bridges, Locks and River Structures

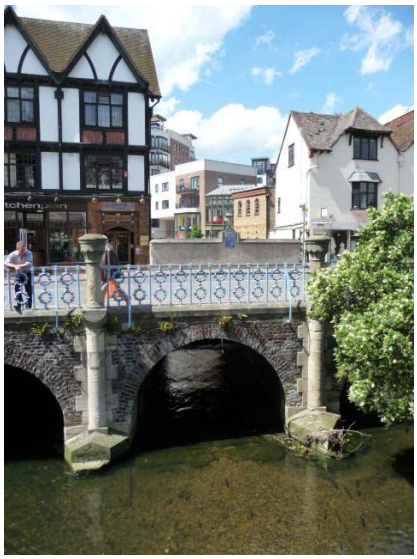
3.68 The bridges and locks which cross this stretch of the river are fine examples of architecture and river engineering, the majority are listed on account of their architectural or historic interest. Kingston Bridge (Grade II) was designed by Edward Lapidge in 1825, Richmond Bridge (Grade I) by James Paine in 1774, Kew Bridge (Grade II) by Sir John Barry in 1899, Hampton Court Bridge (Grade II) by Lutyens and Twickenham Bridge (Grade II) by Dryland and Ayrton, both in 1933. The bridges act as focal points in the landscape, dividing reaches and acting as entrances to the riverside towns.*

3.69 Each of the locks has its own particular style. At East Molesey the roofed weirs and wooded islands and banks give a sense of peaceful enclosure. The open structures and rushing water at Teddington provide more drama. And the lock and weir at Richmond (Grade II), superimposed on Richmond Railway Bridge (Grade II) and viewed against Richmond Hill, is both elegant and technically brilliant. Many of the Thames locks have proposals to install low head hydropower schemes. In this reach of the Thames the Environment Agency are in discussion with developers for a hydropower scheme on Teddington Weir.*

Draw dock, Petersham

3.70 The structures are being kept in good repair. Richmond Bridge, for example, was refurbished by the Borough in 2010 and Richmond Lock was restored in the early 1990s by the PLA at a cost of £4 million.

3.71 Pedestrian bridges also play an important part in the river architecture, particularly the iron bridges at Teddington (Grade II) and Thames Ditton. On a more humble but equally important level, the river structures of steps, stone walls, draw docks and slipways contribute to both the character and active use of the river.



The Clattern Bridge, Kingston

Guidance RI 6: Conserve the locks, bridges and river structures along the river, maintaining them in good repair, free of graffiti and, where appropriate, improving paint and lighting design.

The Major Utility Sites

3.72 Large-scale Victorian and pre-war power and water facilities occupy significant areas of the river's edge. The Seething Wells site at Surbiton covers 26.5 hectares (7 hectares between the road and the river). There are also extensive settling basins and filter beds up-stream at Hampton Water Works as described in 3.3 above. These water bodies provide some of the largest areas of open space along the river, helping to bring relief in the built environment and open distant views. The filter beds have also become habitats of nature conservation value.

Volunteers from the ETRuT clear a traditional waterman's steps of vegetation

Seething Wells, Surbiton

3.73 As utilities have been modernised and rationalised, these facilities have become redundant. The power station at Kingston has been closed down and largely redeveloped, the gas works at Brentford have been demolished and redeveloped for housing and open space. Thames Water has sold the former filter beds at Seething Wells. Some of the most prominent structures along the river and substantial areas of the river frontage have been re-developed.

Guidance RI 7: Guide re-development of the major utility sites to make the most of the amenity, river-related recreation and nature conservation potential, and in line with regional and local planning policies.

The Industrial Sites

3.74 There is little large-scale industry along this stretch of the river. The major industrial enterprises around the Brentford docks have largely closed down and the British Aerospace site at Kingston was cleared in 1993.

3.75 Warehouses at Hampton Wick and Thames Ditton have been converted to offices, though the scale and character of the architecture has remained. The Hampton Wick timber yards have been redeveloped, principally for residential apartments. Some industry has been introduced into the Seething Wells complex in Surbiton.

3.76 Infrastructure constraints, land values and economic re-structuring make this upstream section of the Thames a difficult location for large-scale industry. Only at Brentford does there remain an opportunity to retain or develop industrial uses in conjunction with residential development.

Guidance RI 8: Conserve and re-instate industrial waterfronts where possible. Guide any re-development of large-scale industrial sites to complement the scale, character and urban structure of the surrounding waterfronts and make the most of the amenity, river-related recreation and nature conservation potential. New vistas and access routes should be incorporated into redevelopment where possible and in line with existing regional and local planning policies.

The Built Recreation Sites

3.77 In addition to the redundant utility and industrial sites, there are a number of riverside built recreation facilities that have been closed down. For example, the swimming baths at Twickenham are closed, awaiting re-development.

3.78 These sites have a major effect on the urban pattern and land use, particularly on the way that the space relates and connects to the river.

Guidance RI 9: Guide re-development of built recreation sites to complement the scale, character and urban structure of the

surrounding waterfronts and make the most of the amenity, river-related recreation and nature conservation potential. New vistas and access routes should be incorporated into redevelopment where possible and in line with existing regional and local planning policies.

The Paths

3.79 This part of the river is particularly well-connected by towpaths, barge walks and footpaths. Local authorities and the Thames Path National Trail worked together to establish the Thames Path in 1996. There are opportunities to improve connections on the Thames Path, for example through Brentford.

3.80 The paths vary from paved urban embankments to rural gravel tracks. Path surfacing, lighting, signing, fencing, trees, vegetation, benches and bins all contribute to the character of the area. Path design must respond in a variety of ways to the needs of disabled access and safety. The maintenance of these public areas also affects the character. The prompt removal of litter, graffiti and vandalised elements, such as benches, indicates an important respect and attention to the landscape.

Thames Path, Ham

3.81 Much of the charm of the river walks comes from the contrast between the urban and rural stretches, and these should be emphasised by appropriate treatment of the paths and public spaces. For example, asphalt paving, concrete and sodium street lights, chain-link fencing and metal bins and benches do not fit the character of rural paths or historic villa and park waterfronts. Similarly the number, size, design and location of signing needs to reflect the character of each stretch.

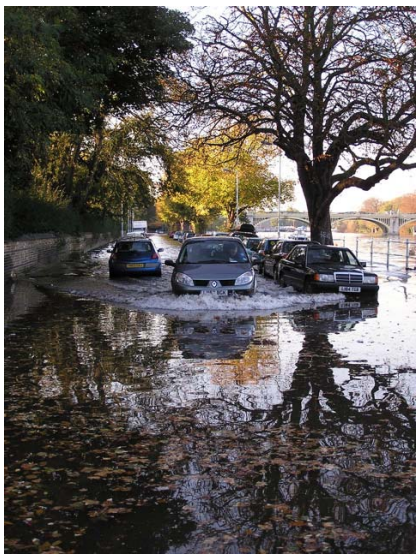
3.82 The perceived width of the path and public zone also has an effect. In urban areas where warehouses and boat sheds have needed to be close to the water's edge, frontages are sometimes as narrow as 3 metres. Continuing use of boat sheds, pubs and cafes spilling out onto the waterfront, create lively crowded spaces. Large gaps in these urban waterfronts can reduce the sense of enclosure and intimacy.

3.83 Priorities are different for the paths around areas of extensive open space, such as the Old Deer Park and Ham Lands. The public open space here can be up to a mile wide. However over the past 20 years, scrub and riparian vegetation invasion have narrowed many of these paths into tunnels. In some cases the river is blocked from view and there is no sense of the wider open space. Leafy tunnels are attractive, but they can become monotonous and even threatening.

3.84 Whilst recognising the importance of trees in the landscape, and their function in providing shade and shelter to walkers, the steady encroachment of sycamore seedlings, willow scrub and elm suckers in places over the last couple of decades is gradually changing the landscape. By obscuring the views, the scrub is blocking out the main features which people have come to enjoy - the water, the meadows and the hills. Glimpses can be revealed without massive tree removal. In many cases, it is just a question of re-instating management practices which have only recently lapsed.

3.85 Traditionally the strip between the towpath and the river would have been kept clear for pulling boats and barges although these days have now long gone. The sense of tree'd enclosure to the river can still be retained on the landward side of the path and where views are not blocked, the towpath damaged, and the diversity of ground vegetation is not compromised between the towpath and river itself. The nature conservation implications of any clearance should however always be assessed.

Guidance RI 9: Conserve and emphasise the contrasting character of the rural and urban riverside paths, while having regard to the needs of people with mobility difficulties. Design and maintain surfaces, lighting, signing, fascias, notices, fencing, benches and bins to complement the character of each path and reveal glimpses of the river and wider landscape where views are becoming obscured by recent scrub growth.



Ranelagh Drive

The Roads

3.86 This part of the Thames is distinguished by the absence of roads along its banks. Parks, gardens and historic waterfronts sweep down to the edge of the water and paths follow the river, untroubled by traffic.

3.87 In the few places where roads run parallel to the river, such as at Hampton Court Road, Portsmouth Road, Cross Deep and Brentford High Street, the river edge is buffered by Albany Gardens, Seething Wells, the Queen's Promenade, Radnor Gardens and Waterman's Park. This combination of continuous riverside pedestrian public access without vehicles is most unusual for a city and holds much of the secret to the beauty of the Thames.

3.88 Car parking on the river edge is less successfully restrained. At Ham the impact of parked cars has been reduced by tree planting. At Kew, the Royal Botanic Gardens proposes to relocate the Brentford Gate car park away from the river. The Twickenham waterfront has become dominated by parking, partly as a result of the needs of residents and businesses on Eel Pie Island.

Guidance RI 10: Conserve the unique river edge of continuous pedestrian public access, restricting vehicles and wherever possible removing car parking from the waterside. Consider the needs of people with mobility difficulties and the provision of alternative parking where necessary.

PROPOSALS IN RESPONSE TO FLOOD RISK AND CLIMATE CHANGE

3.89 The review of the TLS has been prepared in the expectation of potentially significant changes to the climate and an increased risk of flooding during the next 15 – 20 years. Reduced operation of the Thames Barrier by the Environment Agency to prevent lower order fluvial flood events could have significant effects between Kew and Molesey.

Water Related Businesses, Boathouses and Industrial Facilitites:

1. Thorneycroft
2. De la Hunty Marine
3. TMP Group
4. Otter Marine
5. Constables Boatyard
6. Hampton Ferry
7. Thames Brokerage Ltd and Tim Barfield Marine
8. Hucks Boatyard and Tim Barfield Marine
9. TW Allen and Son
10. Martin's Boat Hire
11. Parrs Trip Boat Stop
12. Turk's Pontoon
13. Westminster Passenger Services
14. Tagg's Boatyard
15. Albany Ferry
16. Geoff Cook Barge Walk Ltd
17. Ajax and Explorer Sea Scouts
18. S. Marine and Young & Blackmore
19. Thames Marina
20. Stewart Marine
21. Ravens Ait Ferry
22. Parrs Ferry
23. Parrs
24. Turk's Town End Pier
25. Turk's Pontoon
26. Cattaeno Commercial
27. Old Turk's Boathouse
28. Teddington Boat Stop
29. Teddington Lifeboat Station
30. Francis Newman Boatyard
31. Ivy Castle - boat repairs
32. Eel Pie Slipways, Phoenix Wharf
33. Twickenham Embankment potential working wharf
34. Hammerton's
35. 3 Pigeons Boathouse
36. Richmond Landing Stage
37. River Thames Visitor Centre
38. The Boat at Richmond Bridge
39. Richmond Bridge Boathouses
40. Richmond Riverside Boathouses
41. Turk's Pier
42. St Helena Terrace Boathouses
43. BJ Wood and Son
44. Lion Wharf potential
45. Isleworth potential working wharf
46. MSO Marine
47. Lot's Ait Boatyard
48. Kew Marine Ltd
49. George Wilson Marine
50. Walton Marina
51. JGF Passenger boats
52. Weybridge Marine
53. Weybridge Mariners
54. Shepperton Ferry

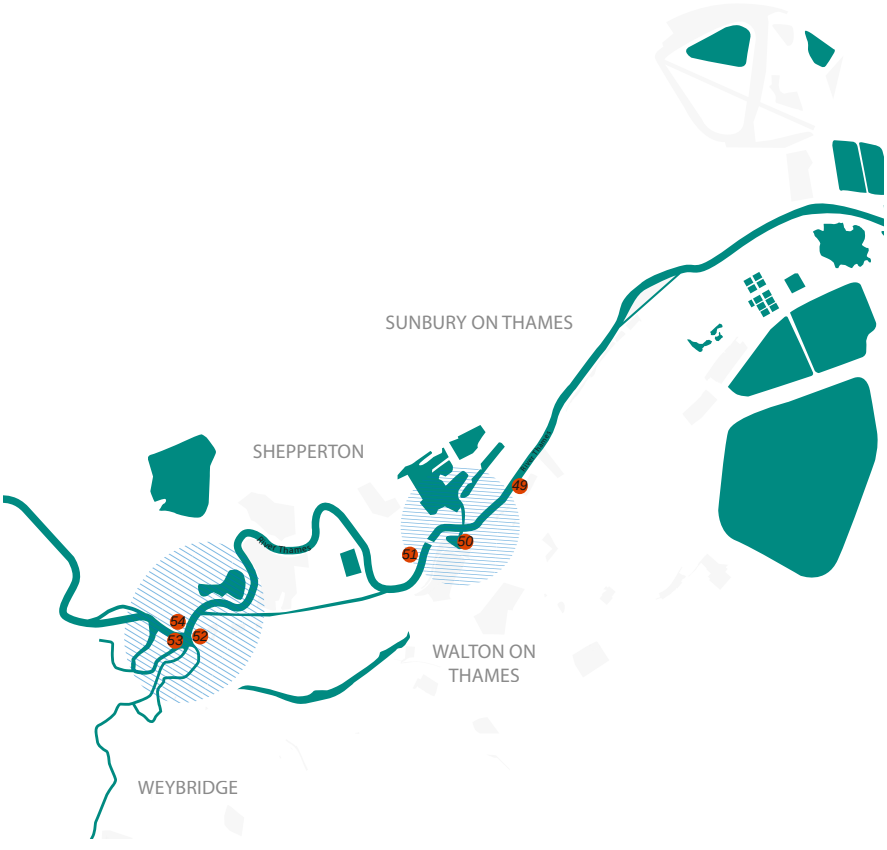


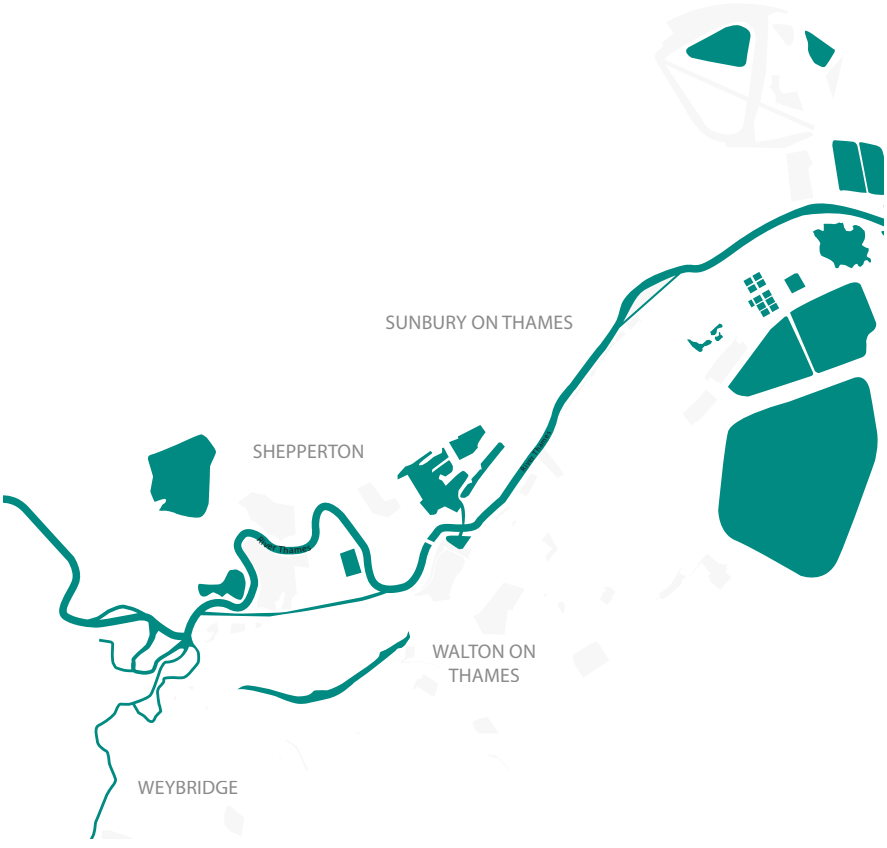
Figure 22 - Water Based Recreation

3.90 This report summarises the main proposals to improve access and landscapes over the next 15 – 20 year period to mitigate flood risk and to provide a landscape that is better adapted to more frequent inundation by flood waters. The access improvements provide safe routes on higher ground as an alternative to the towpaths that are subject to an increased risk of flooding. The proposed bridges provide better access to higher ground and will encourage better communication between communities on opposite banks of the river.

3.91 The landscape improvements could provide additional flood storage capacity and a larger area of wetland habitats that will increase biodiversity. Some landscape improvements will be promoted by the TLS and others will be carried out by partners such as Royal Botanic Gardens, Kew or private bodies. The role of the TLS Review is to provide an overarching framework so that individual measures for landscape change fit within the overall objective of responding to the predicted impacts of climate change.

3.92 The landscape improvements down river of Teddington Lock will provide more security for species reliant on wetland habitats during prolonged dry periods. This is because it would be possible to feed the wetland areas with water during the spring tides that occur at approximately two week intervals.

3.93 Upstream of Teddington Lock landscapes will be adapted to increase the amount of water retention through management measures. At Home Park in the Hampton Court Palace Paddocks area there is a proposal to link up and restore the ditch system with a series of sluices which will enable the level of water in the reedbeds to be maintained at the ideal level for a functioning reedbed habitat. This wetland habitat will provide a refuge for wildlife during droughts.



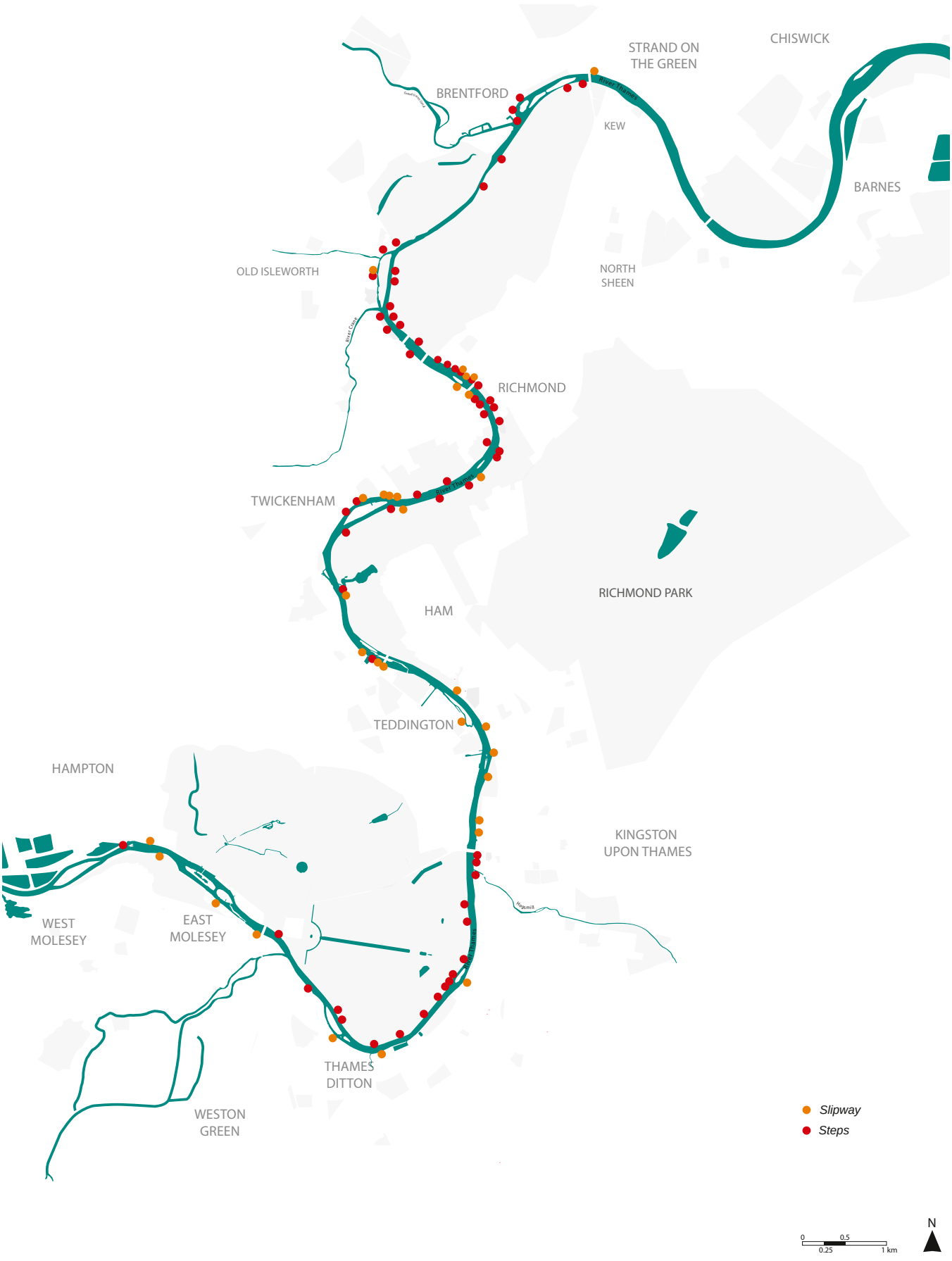


Figure 23 - Water-Based Recreation
Steps, Stairs and Slipways