

## River of Life River Thames



'Thames' is one of the most ancient words in the English language. The Romans called the river Tamesis possibly from the Celtic word 'tam' meaning smooth and 'isa' meaning running water but some think the name has deeper roots tracing back to the Sanskrit 'tamasa' meaning 'dark river' or 'dark water'.

Measuring a mere 215 miles (346 km) from source to mouth, the Thames is modest in scale. But put quite simply, without the River Thames there would have been no London.

The source of the river is at about a mile north of the village of Kemble in Gloucestershire. From here the Thames flows slowly

and gently through rich agricultural land to Oxford (where it is called the 'Isis'), then on to Reading, Henley-on-Thames, Marlow, Windsor, Staines and London.



The Thames enters London beyond Hampton Court. The extent of its tidal reach is at Teddington Lock, some 20 miles from London Bridge. Downriver from there, the river flows through flat low-lying lands to Tilbury, Gravesend and Canvey Island. The mouth of the Thames is at Yantlet Creek by Sheerness. The picture on the left shows the Thames from central London looking east with the distinctive loop of the Isle of Dogs in the foreground.

The Thames is 42 miles in length in Greater London and within this area, the river is linked to the Grand Union Canal and the Regent's Canal joined by a dozen or so tributaries that feed into the Thames. Some are visible like the Lea, the Ravenbourne and the Wandle. Others, like the Tyburn, Effra and Fleet have been built over and are now 'lost', but still run beneath the surface of the city.

## River of Life Exotic Visitors



The Thames has been visited by fish that are unusual to its habitat for hundreds of years. In 2007 alone, over 100 marine mammals were spotted in the Thames including Harbour Porpoise, Bottlenosed Dolphin, Common and Grey Seals. Most of these exotics have been seen in East London around Canary Wharf, Millwall Docks and by the

Thames Barrier Canary Wharf, Millwall Docks and by the Thames Barrier. However, some have made their way as far upstream as Richmond in West London.



Chinese Mitten Crabs (left), named for their hairy claws, are thought to have escaped from the holds of Oriental ships in the docks in the 1930s. They took a long time to become established, possibly because of the river's polluted state but since the early 1990s, their numbers have mushroomed. The crabs are considered a delicacy in their native south-east Asia, where they fetch up to £40 a kilo and are steamed and cooked with soy sauce. Environmentalists regard them as a menace because they burrow deep into muddy riverbanks causing them to collapse.

Zebra Mussels are another invader. This Russian species, with distinctive stripes, can reach up to 5cm in length and breed quickly, blocking water intakes and robbing other species of food. They cling to any hard surface and their 'cementing nature' can cause problems on items such as storm drains and boat propeller blades. American Signal Crayfish are also increasing dramatically in number. They are believed to have been dumped by a restaurant in the 1960s and are now abundant and threatening the smaller native crayfish.

A poignant and highly publicized struggle for life took place on the Thames on 20 January 2006 when a five metre Bottlenose Whale was spotted near Lambeth Bridge. The sighting was extremely unusual because this type of whale is generally found in deep sea waters. The unfortunate whale, which normally lives in the Arctic Ocean, swam all the way up the Thames to Central London. 24 hour news crews reported the incident blow by blow but unfortunately the whale died during attempts to return it to the sea.

# Polluted River The City's Muck



In the 1850s, the Thames passing through central London was a foul sewer. The water in the Thames was black and produced a smell like rotten eggs. The hot summer of 1858 was known as The Great Stink and so foul was the stench that Members of Parliament demanded a solution.

The engineer Sir Joseph Bazalgette came forward with a design for a network of 85 miles of new sewers to intercept the many smaller sewers that ran into the Thames and take the city's muck to the east of London by force of gravity where it would discharge into the Thames well clear of the metropolis. From there, Bazalgette said, the tides would wash the filth out to sea.

But there was a problem. How to build the new large sewers without demolishing half the city? The answer was to bury the pipes at the river's edge and then cover them by building out over the foreshore. The planners decided to make the most of these new embankments and so tunnels for the underground railway were also incorporated into the scheme. There were new roads at ground level too and new public parks at Victoria Embankment Gardens.

There were other advantages too: the embankments cleared riverside factories and slum dwellings and added a flood defence mechanism. It was urban redevelopment on a massive scale. Victoria Embankment was completed 1864-70 and Chelsea Embankment was completed 1871-1874.

Bazalgette not only helped to clear the horrendous smell from the Thames, he also provided a place to promenade beside the river. The new embankments opened up city centre views of the river for the very first time although at this time a new pollutant, the steam engine, was blotting the landscape.

The new sewage scheme was not a total success. The muck pouring into the Thames in east London at Crossness and Beckton was not being carried out to sea by the action of the tides as was predicted. Huge mud-banks built up around the outlets. To solve the problem, solid waste was separated from liquid, which was piped out into the deep waters of the estuary. The solids were loaded on to one of six sludge vessels, nicknamed 'Bovril Boats', and dumped at sea. This practice continued unchanged until 1998.

These days, the sludge is treated to remove harmful substances and then 60% is recycled as fertilizer (called Thamesgrow) and 37% is incinerated and the electricity generated is fed back into the National Grid. Even the ash created in this process is recycled - it is made into breeze blocks for the construction industry.



# Polluted River River Life



Fish from the Thames were an important source of food and amongst the catch salmon was prolific. By the turn of the 19th century nearly 3,000 salmon per year were being sold in London's fish markets. However, within forty years, the Thames had become so polluted that commercial fishing had all but ended. In June 1833 the last salmon was caught on the Thames, and from 1850 to 1970 the river was said to be incapable of supporting marine life; the river was dead.

But since the closure of London's docks in the 1970s a remarkable recovery has taken place. In 1974, salmon returned to the Thames for the first time. A scheme was launched aimed at restoring a self-sustaining

salmon population, the fish were reared and introduced into the river and salmon ladders were built to enable them to travel upstream. Improvement has followed improvement and today, the Thames claims to be one of the cleanest metropolitan rivers in the world and home to over 120 species of fish.

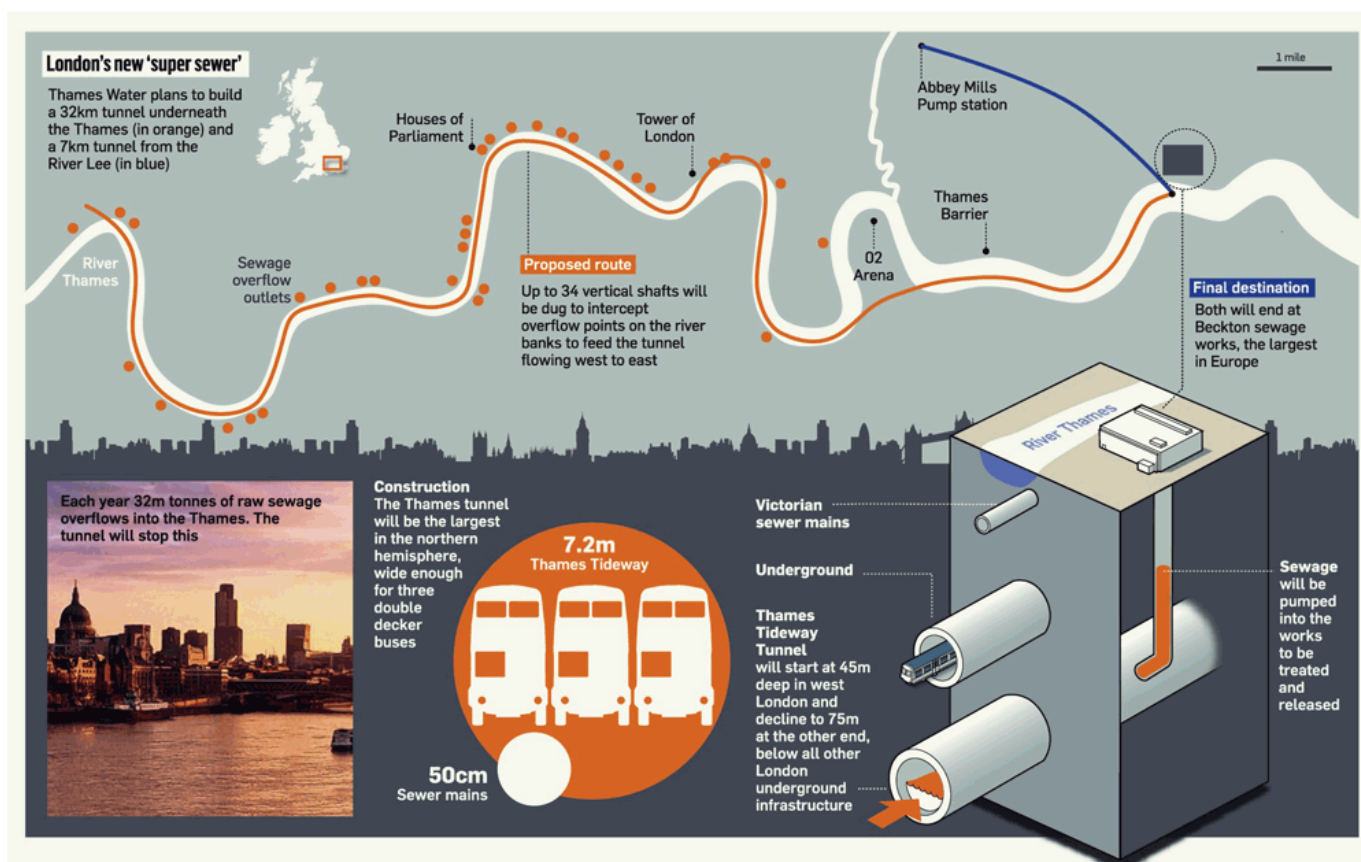
Eels were also part of the staple diet for those living close to the Thames. Like salmon, eels are a litmus test for the quality of a river's environment and these days, now that the river has been cleaned up, eels are returning to the Thames in ever greater numbers. There are half a dozen commercial eel fishermen catching about thirteen tons a year but rather than feed the local market, most eels go to Holland to be smoked. The Thames eel pictured below left weighed in at 3lb 5oz.



Eel pies are a peculiar London invention. At the end of the 15th century, Henry VII patronized an eel pie stand on a river island en route from London to Windsor and, during his son Henry VIII's reign, the first pie of the season was ceremoniously take up river to Hampton Court. The little river island (it is only 200m from end to end) became known as Eel Pie Island. Over the years, the island became a favoured place for men to house their mistresses. In the 1950s and 60s the main building on the island, Eel Pie Hotel, hosted The Rolling Stones, Pink Floyd, The Who, Rod Stewart and Eric Clapton. The music attracted a hippy set and that boosted the island's reputation for unconventional and alternative lifestyles. One of the River Thames' last fully functioning boatyards is still based on Eel Pie Island.

Swans have long been associated with the Thames and they provide the river with a distinctly British ritual. Once a year, since the 15th century, there has been a ceremony, called Swan Upping, to count the swans on the Thames and confirm the number belonging to the King or Queen of England and to mark those that don't.

# Polluted River Overflowing Pipes



Much of London is still served by Sir Joseph Bazalgette's Victorian combined drainage system. This means that both domestic waste water and rain water from roads and roofs flow into the same pipes. A significant amount of rain water used to be absorbed into the ground, but more roads and the trend for paving over front gardens has led to the majority of this now running directly into the sewage system. After particularly heavy rain the volume of run-off can overwhelm the antiquated pipes and the system overloads. To prevent dirty water from backing-up on to roads and into houses, an order is given to release the overflow directly into the Thames. This has been happening up to sixty times a year dumping 32 million tons of sewage including human waste and sanitary products directly into the river.



The Environment Agency owns two specially equipped vessels that are sent to the worst effected areas. Incredibly, the Thames Bubbler (left) and the Thames Vitality are usually deployed between 25 and 30 times a year. The discharges leave unsightly sewage on the Thames beaches, posing a threat to those people who walk on the foreshore or row on the river.

After years of lobbying, the government has finally given the go ahead to solve this problem by building a vast 32km interceptor tunnel, The Tideway Tunnel will be built at a depth of between 45-75m beneath the Thames at a cost of £1.5 billion. Its 7m diameter pipe will have a much bigger capacity than the existing system and take the sewage overflow from Hammersmith to Beckton for treatment. The tunnel should be completed by 2020.

# Resourceful River Water on Tap



In 1994, London's water supply was made more secure with the completion of the Thames Water Ring Main, a fifty mile long tunnel at a depth of 40m that circles London and links its five major water treatment centres. Today, about 1,000 million gallons a day or 65% of the daily requirement is taken from the Thames and pumped around the Ring Main and then fed via 50,000 miles of pipes to supply London's water needs. Dirty water is fed back through sewage pipes, treated and 940 million gallons of cleaned effluent is poured back into the river. It is said that a drop of water that falls at the source of the Thames will be drunk, urinated, purified and reintroduced into the Thames eight times before it reaches the North Sea.

Thames Water still has a massive challenge to replace old and crumbling pipes. In 2004, 43% of the water running through London's water pipes was lost through leakage. In the years to come, water will become an ever more valuable asset. Thames Water claims it will replace ancient stock and stop the leaks, but the task is massive. Over 80% of the 18,750 miles of water supply pipes in London are over 100 years old and Thames Water has agreed to replace just 850 miles before 2010.

London is a thirsty city and seems to need ever more water. The average amount of water that each person consumes a day has increased by 10% over the last ten years. In 2007, the average for London was 166 litres per head per day whereas in rural areas the average can be as low as 139.

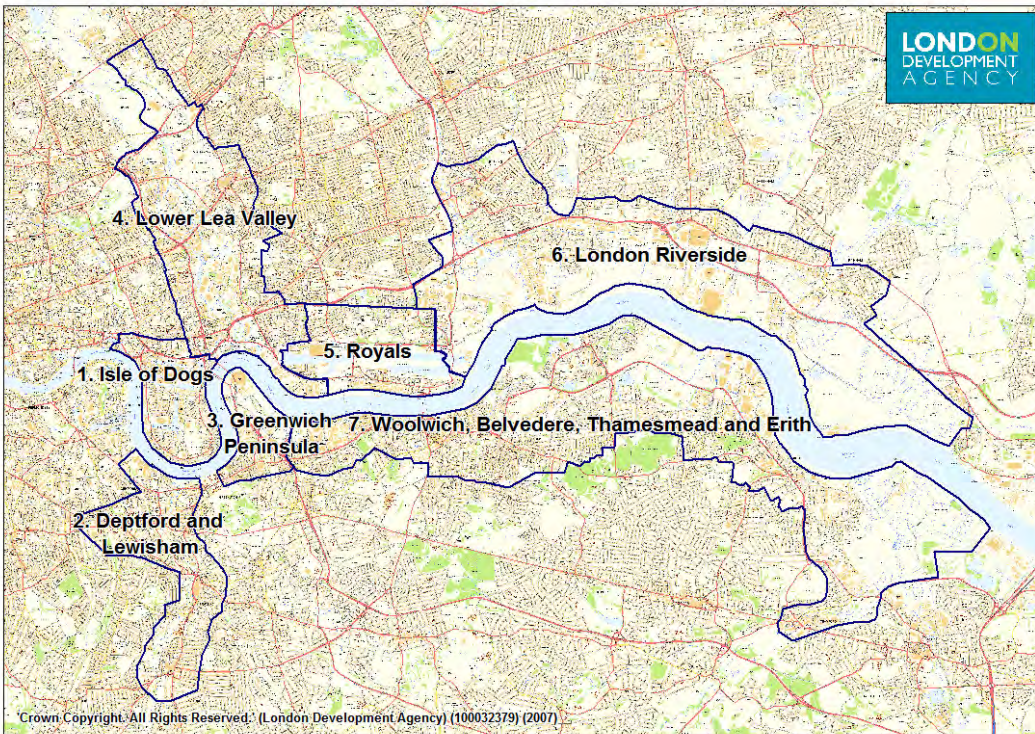
To cope with this increased demand, a new desalination plant was given the go ahead in July 2007 by London City Airport and further reservoirs are proposed in Kent, Oxfordshire and in North London too. The new desalination plant will convert brackish water from the Thames estuary into drinking water and could supply enough water for a million people a day. A good thing too since this number and more will soon be living in the proposed Thames Gateway area. Thames Water is also hoping to extract more water from sewage plants, purify it and pump it back into our drinking water pipes. This unappetising process is called effluent re-use.



Environmentalists are encouraging people to make more of rainwater. More than a third of the water we use in our houses goes to flushing our toilets. This water does not have to be purified and is an ideal use for filtered rainwater. Such water could also be used for washing up and watering the garden. Rainwater collection schemes not only reduce the need for piped water they also reduce the risk of flooding from heavy rains.

Ultimately people will have to be educated to use less water. The Environment Agency thinks that the introduction of water meters (75% of all London homes will have water meters within the next ten years) and the use of water-efficient fittings at home (like low-flush toilets) will bring down London average water consumption down by up to 20%.

# Resourceful River Flood



With so much of London built on the floodplain, or on reclaimed marshland; it's not surprising that the city has had its fair share of floods. The building of weirs, locks and embankments has protected land and allowed it to be drained. But it has also made the river narrower and deeper. The current now runs faster and the tides rise higher. The defences have reduced the risk of localized inundation and made the risk of a devastating flood ever more acute.

The tides rise and fall twice daily, varying the water level in the Thames by between four to seven metres between low water and high water at London Bridge. The tidal effects of the river in Roman times were felt only as far as Westminster whereas today, it is tidal as far upriver as Teddington in west London, some 55 miles from its mouth.

Tides can vary in strength as the lunar cycle waxes and wanes and they can also be amplified by the position of the earth in relation to the sun. The twice daily 'flood tide' (water coming in from the North Sea) lasts for about 6 hours whereas the 'ebb tide' (water going out to sea) lasts for about 6½ hours. The 'neap tide', which occurs when the moon is one quarter or three quarters full, is the weakest tide; the 'spring tide', which occurs during new moon and full moon, is the strongest tide and can draw huge quantities of water into the Thames.



The UK's government has recently announced its ambition to build 120,000 new homes and create a quarter of a million jobs in the Thames Gateway area (see map above). However, 90% of this development will be built below sea level. Some think that we should take advice from the Dutch and build these new houses on stilts. There's been some lateral thinking on flood defence too. Rather than building ever higher barriers to keep the rising flood waters out, town planners now seem to accept that localized flooding will be a feature of the new Thames Gateway area. To prevent damage to houses and other infrastructure, they are integrating large areas of public open space into which flood waters can be easily diverted. These parks, called a 'green grid', would sponge up the excess water, acting like water meadows, and so save the adjacent built-up areas.

# Resourceful River The Barrier

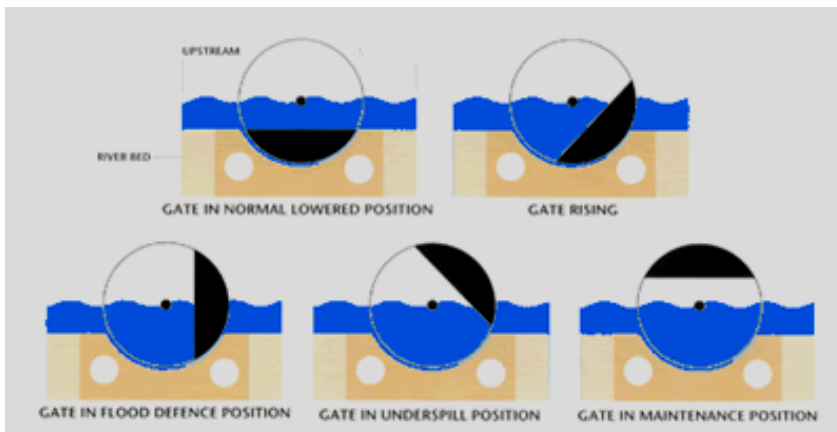


Constructed between 1974 and 1982, the Thames Barrier is the world's largest navigable flood barrier and some consider it to be the eighth wonder of the world. A flood defence barrier was considered to be imperative because high water levels at London Bridge have risen by almost a metre per century, due to global warming and the embanking of the river.

The Barrier's design is ingenious. It had

to be constructed in such a way as to allow oceangoing vessels to pass through it, yet also be an effective defence against surging tides. The Barrier's distinctive piers support a huge length of steel cylinder, like a pipe cut lengthwise, which lays flat on the riverbed when inactive and then is rotated on its axis to create a dam when flood waters threaten.

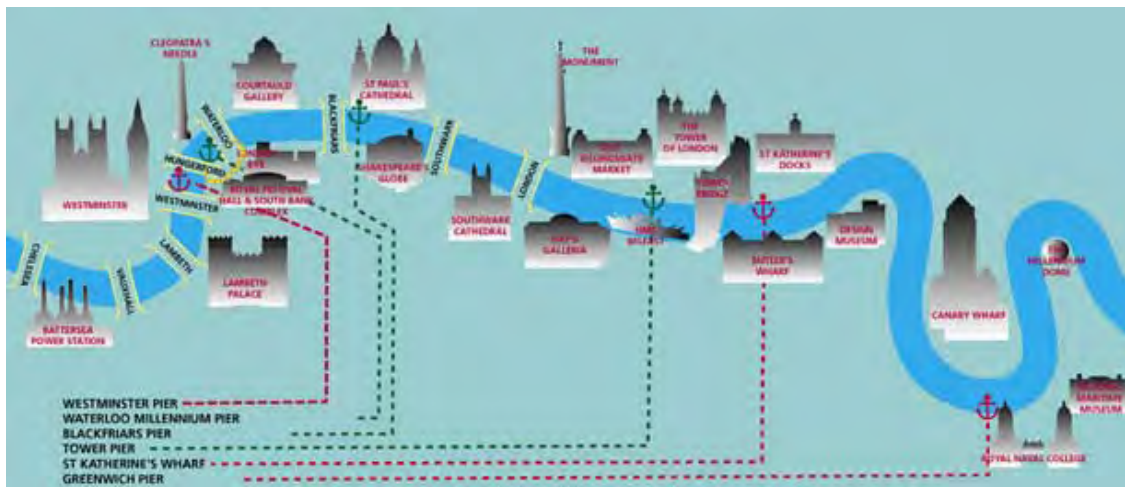
The Thames Barrier is part of an integrated system of defences stretching from Teddington in West London to Shoeburyness in the estuary. London is also protected by over three hundred kilometres of flood walls, embankments and many small gates and barriers.



Worryingly, the number of times each year that the barrier is raised to avoid the risk of flooding is increasing. Its designers envisaged once or twice a year with a maximum capacity of forty. However, up to July 2007, it has had to operate 103 times in the twenty three years since it opened.

The government's new forecast is for the barrier to operate between ten and twenty times a year up until 2010 and between twenty and thirty five times a year between 2010 and 2020. This means that in about 2030 the barrier will be pushed beyond its design capacity.

# Working River River Bus



Thames Clippers operates a comprehensive and fast boat service for commuters in central London between Westminster and Greenwich with occasional services to Woolwich. And Thames Executive Charters operates a limited, high-

speed service between Putney and Blackfriars. All the other passenger boats on the Thames offer tourist 'cruises' where the emphasis is on sightseeing rather than speed of service. Thames Clippers started out in 1999 with just 2 boats carrying around 200 passengers a day. On a good weekend these days they carry over 30,000 people.

One major problem for expanding the river bus service is the difficulty of securing more stopping times on the piers. Of the 23 piers along the current commuting route between Putney and Woolwich Arsenal, 8 are owned by the Mayor of London, 11 are in private hands and 4 are owned by various public bodies. Tourist river cruise operators have long term contracts with pier-owners for landing times for their vessels. But with many of the slots already allocated, the new commuter services are finding it difficult to obtain landing times. The Mayor of London acknowledges that with existing piers at capacity there is a strong argument not just for building new piers but also for investing in the existing infrastructure and extending current piers to increase capacity.

River commuter travel is now included on the popular Oyster Pre-Pay system and, with further river services promised, the delights of travelling by water look set to enjoy a revival. In fact, the developers at Battersea Power Station are proposing a river bus service every 15 minutes between 6am and midnight which they estimate will carry more than 4 million people a year once it is up and running - currently just over ½ million people a year commute on the river. A fast river bus service should also feature as part of the Thames Gateway development. There are fewer speed restrictions on the river east of London Bridge so for the people who live there river travel may well be the fastest public transport option into town.



The Thames river cruise remains one of London's finest tourist offers and over 2½ million passengers a year (about one in ten visitors to London) enjoy a trip upriver to Richmond or downriver to Greenwich. The commentary on board makes the experience not only educational but highly enjoyable too.

# Working River Docks



For almost two thousand years, the Thames was England's gateway to the sea and the river used to be a hectic, working environment with thousands of boats and barges plying trade. Now all is relatively calm and quiet, most river activity is connected with sport or leisure and the Thames is considered to be an underused resource.

From the 1800s there was 170 years of

massive growth in the docks upon which much of London's prosperity was based and then there was rapid decline. By the end of the 20th century, most of the docks were closed. Their demise was mostly due to changing practices in the shipping industry - the development of specialized vessels of every increasing tonnage (for example, to carry liquid fuels), the growth of roll-on roll-off (ro-ro) ships and, particularly, 'containerisation'. Container ships could carry more cargo, could be loaded and unloaded by a tenth of the manpower and in a tenth of the time of a conventional ship.

When closure came, it came quick. 1968 was West India Dock's busiest year yet by 1980 the docks were closed and by 1983 the last commercial ship had left the Isle of Dogs. The social impact of these closures was devastating. Unemployment rose by up to 20% around the docks and the population in these areas declined as people moved to find work elsewhere. When the docks closed the property developers moved in and converted the wharves and warehouses into office buildings and expensive flats.



By the mid-1990s the West India Dock area had been reinvented as Canary Wharf (above), a massive financial complex and in the process, the whole demographic of the area changed. By 2002, Canary Wharf alone had a working population of over 55,000 people and property prices had increased more than tenfold. These new jobs were in the financial sector, unsuited to the unemployed ex-dockers and the prices of the new flats were well beyond their means. Effectively, they were squeezed out of the area.

Today, there is huge potential for taking certain sorts of freight off the road networks and transporting it by river. Such a shift would seem to make environmental sense too. However, these days the majority of the river's freight is waste and aggregates and Cory Environmental handles most of it. The skilful way the tug and crew turn their huge train of barges mid-river and land them on their moorings is one of the river's greatest pieces of choreography.

# Working River Today's Port



Although there are still some 75 docking facilities on the tidal Thames, Tilbury is by far and away the most significant. At the time when London's city centre docks were being phased out, Tilbury, (42km downriver from Tower Bridge) was being enlarged and modernized to keep pace with the changing shipping industry. However, early mismanagement and labour-disputes led to London losing valuable shipping business to Southampton and, currently the UK's biggest port, Grimsby & Immingham.

For the past 10 years, the total tonnage of cargoes passing through the Port of London has remained quite stable at about 52 million tons. In fact, even at the height its most busiest in the 1960s, the Port of London was only handling an average of 59 million tons a year. These days, the biggest imports are crude oil and oil products along with materials for road building

and the construction industries.

The new deep water London Gateway Port, called DP World (see visualization above), at the former Shell Haven site in Thurrock has recently been given the go-ahead. This new facility is the most significant development in the Port of London in over a century and has the potential to double the tonnage currently handled via the Thames.

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So, who controls the river? Well, nowadays, jurisdiction of the River Thames is split at Teddington between the tidal and non-tidal Thames. The British Waterways Authority takes charge of the river above Teddington Lock while the Port of London Authority (PLA) looks after the tidal Thames.

The PLA, which owns much of the riverbed and foreshore to the high water mark, has three key responsibilities – firstly, to facilitate the safety of all those who use the tidal Thames; secondly, to help conserve the marine environment; and thirdly, to promote the commercial use of the tidal Thames. As far as safety is concerned, the PLA regulates river traffic, maintains shipping channels, provides a pilotage service and supervises sporting and other major activities on the river. The Environment Agency has principal responsibility for protecting the river's natural environment.

# River City Cultural Quarter



The area south of the river between Lambeth Bridge and Blackfriars Bridge is now called South Bank and beyond as far as London Bridge it is called Bankside. Both had a long historical association with the lower end of the cultural spectrum, from Philip Astley's Amphitheatre near Westminster Bridge (where modern circus was invented) to Borough Market on the south side of London Bridge (home to Britain's oldest fruit and vegetable market) to Shakespeare's Globe and all the bear pits and taverns and brothels in between.

The whole area was given a huge boost and a new cultural lease of life by the 1951 Festival of Britain. Eight and a half million people visited the exhibition between May and September in that year and the Royal Festival Hall and a public park called Jubilee Gardens were two significant public amenities that were left as a legacy. Over the years, the Festival Hall was expanded and then, in 1976, just next to it, the National Theatre was built.

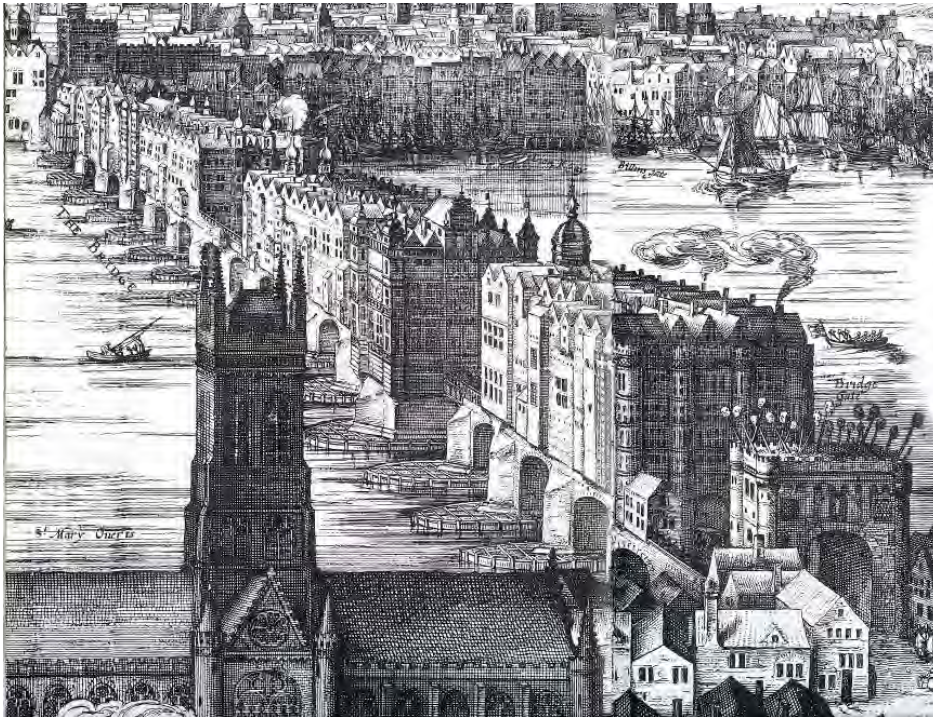
From this strong base, a cultural quarter could have emerged. But in the 1970s, the prevailing mood was set against culture and as south bank land started to become available, property developers devised a grand scheme of high rise, fortress offices and hotels. The few local residents that were left in the area formed a housing action group to campaign against the scheme. This group, called Coin Street Community Builders (CSCB), proposed to build more family housing, more parks and social facilities in the area. CSCB won a remarkable victory and was able to purchase the land from the Greater London Council. One of CSCB's campaigners fought

single-mindedly to preserve the area of foreshore in front of the Oxo Tower from development and the beach that is there to this day (and enjoyed by thousands) is the result of Ernie Hearn's efforts. The CSCB site is pictured 'before & after' above left. The top photograph was taken in 1986; the one below shows the same view in 1997.

In just a dozen years, the changes on the south bank have been incredible. Shakespeare's Globe Theatre opened in 1996, Oxo Tower Wharf in 1997; London Eye and Tate Modern in 2000; Millennium Bridge in 2000; the new Hungerford Bridge walkways in 2002; new facilities for National Film Theatre and a facelift for the Royal Festival Hall in 2007.

Whereas in the 1970's the Thames was undervalued and underused; now it is firmly back in favour. The walk from London Eye along the riverside walkway to Tate Modern is a "must do" not just for tourists but for Londoners too. In 2008, over 20 million people walked along the water's edge between London Eye and Tate Modern not just as a convenient way of getting from one attraction to another but for the pleasure of walking beside the river. It is an oasis of calm in the heart of the busy city.

# River City Old London Bridge



The discovery of remains of a wooden platform on the Thames at Vauxhall dating to about 1550 BC is exciting evidence of the earliest settlement in what was to become the London area. But the city was born when the Romans under the Emperor Claudius began their occupation in 43 AD. More than likely they crossed the Thames from the south bank to the north at present day Westminster to challenge the native Britons.

London Bridge opened in 1199 and survived for over six hundred years. It was a wonder of the medieval world and an icon for the city. Almost 300m long, it had nineteen arches of widths varying from five to ten metres. Its piers sat on boat-shaped platforms (called starlings) that were

exposed at low tide. As such, the whole bridge structure acted as a kind of dam, blocking 85% of the river's width. The rush of water through narrow gaps between the starlings created treacherous eddies and currents. Passing between these by wherry, known as 'shooting the bridge' was extremely dangerous and there was a popular saying: "wise men walk over London Bridge and only fools pass under it."

On the bridge itself, there was a stone gateway and a drawbridge for defense and 129 houses, shops and a chapel. Rent from these, together with tolls from horses and carriages, provided money to maintain the bridge. The shops and houses on the bridge were built either side of a narrow carriageway that became so easily congested that in 1722, two lanes were introduced and 'driving on the left' became London's first traffic regulation.

London Bridge was the only bridge in central London until Westminster Bridge opened in 1750. Between 1757 and 1762, the houses on London Bridge were demolished to try and tackle congestion. Later, the bridge itself was widened and two of its arches were combined to make for better navigation. But it wasn't enough and the old bridge was eventually replaced with a wider, more traffic-friendly bridge designed by John Rennie.



New London Bridge was opened in 1831 with a lavish banquet held on the bridge for King William IV and 1,500 guests. But it didn't last long. It became structurally unsound and had to be dismantled in 1967. A consortium of Americans bought the collapsing bridge for just over a million pounds and used the granite stones to clad a concrete bridge spanning an artificial water course (renamed "Little Thames") that feeds into the Colorado River (see photo left). New London Bridge was replaced by the current bridge which was constructed between 1967 and 1973.

# River City Thames Bridges



In the 18th century, London Bridge was still the only crossing in central London. But as the city's population increased in the Westminster area, there was growing demand for a second bridge over the Thames. But the Company of Watermen, along with the Archbishop of Canterbury (who profited from the horse ferry at Lambeth) and business representatives from the city and Southwark lobbied against it because they thought it would threaten their trade. There was also talk, perhaps promoted by the Watermen, that the new bridge would cause a sewerage build-up, that the Thames would silt up and that consequently it would be impossible to provide London with water, that nearby St Thomas' hospital would be flooded and five thousand people would be drowned. When none of these arguments worked, the

Company of Watermen gave a generous donation to the Crown and the proposal for a bridge was quietly dropped.

But a second scheme soon emerged and this time the Company of Watermen could do nothing to prevent it. Westminster Bridge was built and opened in 1750 and the Watermen were paid £25,000 (the equivalent of about £3.5 million today) in compensation for loss of business.

Blackfriars Bridge opened in 1769. It was originally named William Pitt Bridge, but was always referred to as Blackfriars Bridge and that name stuck. The current structure, with pulpit-like piers in homage to the Dominican monks, opened in 1869. Vauxhall Bridge was next (1816, replaced in 1906) and then a year later, Waterloo Bridge (1817, replaced in 1942). With the men away fighting in the Second World War, Waterloo Bridge was built using mostly a female labour force and so it earned its nickname, the Ladies' Bridge. Then Southwark Bridge (1819, current structure 1921) and Hungerford Rail Bridge (1845, then 1864, new walkways in 2002). Lambeth Bridge (1862, then 1932) was built on the site of London's only horse and carriage ferry. Cannon Street Rail Bridge came next (1866) and then finally Tower Bridge, the most recognizable of all London's bridges, which opened in 1894.



Linking St Paul's to the new Tate Gallery on Bankside, Millennium Bridge (left) immediately earned the nickname 'wobbly' after the huge crowds on its opening day in 2000 caused the bridge to sway. It remained closed for over a year whilst it was modified and is now one of the most popular crossings in the capital.

The opening of Albert Bridge in 1873 was so well attended that it 'wobbled' too and that is why there are signs on both ends of the bridge saying "All troops must break step when marching over this bridge."

# River City East London



Her Majesty's Royal Palace and Fortress, to give the Tower of London its proper name, has been a treasury for the king's jewels, an armoury, a prison, the only mint in the kingdom, a storehouse for the records of justice and a ménage of exotic animals. Rudolph Hess, Hitler's deputy, was one of the Tower's last celebrity prisoners. He was detained here for 4 days in 1941.

Beyond Tower Bridge are located some of London's most historic riverside pubs. They include the Grapes in Limehouse, which features in Dickens'

Our Mutual Friend as The Five Jolly Fellowship Porters. In 1620, from the jetty just outside The Mayflower (above), the Pilgrim Fathers set out to cross the Atlantic.

Just over two hundred years later, JMW Turner painted The Fighting Temeraire after sitting outside the Angel and watching one of Nelson's ships being towed into the breakers yard. Judge Jeffries also sat on the balcony here to watch the hangings across the river at Execution Dock. The Prospect of Whitby dates from 1520. For a time it was known as the Devil's Tavern and was an infamous haunt of smugglers and river pirates. The Trafalgar in Greenwich has been famous since 1837 for its whitebait dinners. At the end of each Parliamentary session, members of the cabinet and sometimes even the Prime Minister himself would assemble here to sample whitebait served within an hour of being caught.



The Queen Elizabeth II Bridge at Dartford is currently the only bridge that crosses the Thames between Tower Bridge and the sea. Tunnels are the preferred method of traversing this stretch of the river with six rail tunnels, three road tunnels, two foot tunnels and soon, a cable car. In addition, there are three public ferry services at Tilbury, Woolwich and Rotherhithe.

The Woolwich Ferry was opened in March 1889. It was an initiative of Sir Joseph Bazalgette (famous for sorting out London's sewage problems) and replaced an existing service with a history stretching back to the 14th century. The ferry connects two of London's most deprived areas. North Greenwich is sandwiched between Royal Albert Docks and London City Airport with the Tate & Lyle sugar refinery and the sewerage treatment plant at Beckton close by. And, just eleven minutes by ferry ride on the south bank of the river is Woolwich where the old arsenal warehouses are now being redeveloped into swish residential properties.

# River Culture Frost Fairs

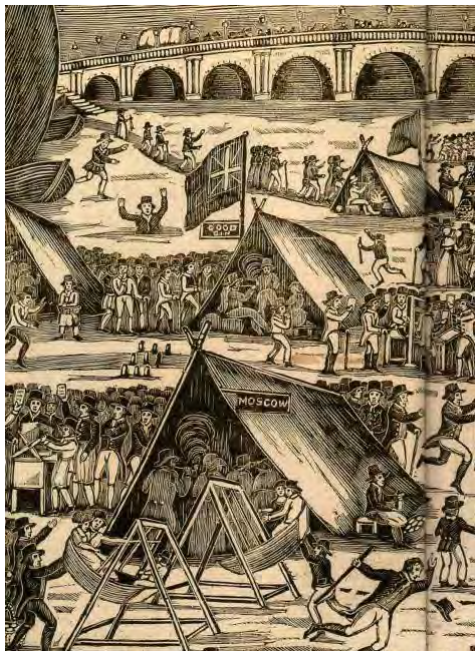


In the days of the original London Bridge, the river banks were unembanked and much wider and as a result, river currents ran at about a quarter of today's speed. The water was slowed still further by the starlings (wood-lined boat-shaped foundations) around the base of the nineteen pillars supporting London Bridge. In harsh winters the slow waters at the river's edge froze and, on occasions, the ice could be up to a metre thick and could often remain for several weeks.

From earliest records we know that the Thames has been freezing over more or less once in a generation. The frozen Thames was a curiosity and thousands came to witness the

extraordinary sight and a number of impromptu 'frost fairs' were established by adventurous tradesmen to take commercial advantage of the crowds.

The most famous of the Frost Fairs took place during the great freeze of 1683-84 (see above), the coldest winter on record. Among the food and drinking booths there were traveling shows, bull-baiting, football games, horse, donkey and coach rides. Printing presses were set up to produce and sell souvenir broadsheets and pictures of the scene marked "printed on the River Thames". King Charles II and his family visited the Frost Fair and the fox hunt that took place on the ice was probably done in his honour. This fair lasted from December to February with a street of stalls, called Freezeland Street, from Temple to Southwark.



There were three frost fairs in the 18th century, in 1715-16, 1739-40 and 1788-89 when the ice stretched all the way from London Bridge to Putney. The winter of 1739-40 was particularly severe and it has been known ever since as The Great Frost.

The last frost fair occurred in 1813-14. The Thames has frozen in part many times since then but the ice has never been secure enough, at least in central London, to host a fair. This is due partly to the fact that after New London Bridge opened in 1831 the river was able to flow more freely. New embankments built between 1864 and 1874 and the greater speed of the river inhibited ice formation. London has also become hotter. The increase in housing and roads (they absorb more daytime heat than trees and fields and they also release heat more slowly at night), together with the introduction of central heating has had the combined effect of raising city centre temperatures. Factories too have played their part in heating the Thames. Until they were closed in the 1960s, the power stations at Lots Road, Battersea and Bankside released warm effluent into the river.

## River Culture Royal River



Since 1422, the new Lord Mayor of London has proceeded from the Guildhall to take his annual oath of office at the Law Courts in the Strand. This major event in London's calendar, called The Lord Mayor's Show, was, since 1453 a grand river spectacle with lavish costumes, elaborately decorated boats, and, during the 17th century there were dramas, or fantastic pageants created by leading playwrights of the day. After 1857, The Lord Mayor's Show transferred to the city streets where it now takes place annually in November. There was an attempt to revive the Lord Mayor's Show as a river spectacle in 1953 to mark the 500th anniversary of the first river Show and also to celebrate the year of Elizabeth II's coronation. Organised by the Port of London Authority, a three mile procession of 150 craft came up river from

Greenwich to Westminster. But it was not a success and since then the Show has remained firmly rooted on dry land.

On 29 May 1533, fifty barges decorated with flags, banners and bunting draped with gold foil, packed with musicians and cannons, and accompanied by many smaller vessels, set out against the tide from Billingsgate for Greenwich to meet Anne Boleyn for her coronation with Henry VIII. Three years later almost to the day, Anne Boleyn took part in a grimmer procession. As the victim of a conspiracy by Thomas Cromwell, she was taken by barge on the same route from Greenwich to be imprisoned within the Tower of London. Later, she was beheaded.

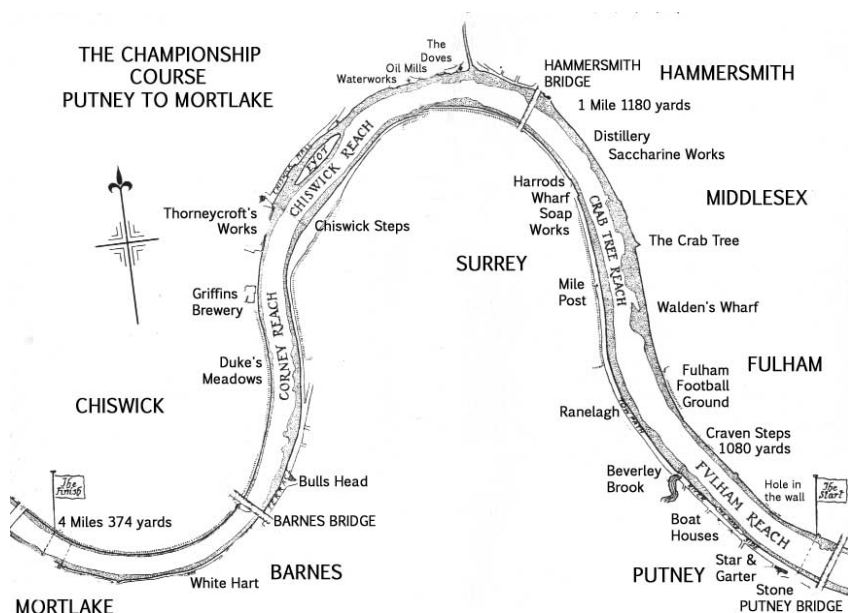
Elizabeth I travelled by water from Greenwich to the Tower to celebrate her own ascension to the throne in 1558. When she died in 1603, her coffin was placed upon a black-draped barge in the dead of night, and transported in a flotilla of other torch-lit barges, downstream from Richmond to Whitehall. When Charles II acceded to the throne in 1660 he also made use of the river. The following year, when he travelled by royal barge down the Thames from Hampton Court to Whitehall with his bride Catherine of Braganza, John Evelyn described the event as "the most magnificent triumph ever floated on the Thames".



The first presentation of Handel's Water Music took place on the night of 17 July 1717, on a barge carrying King George I and a circle of his friends, on the Thames somewhere between Lambeth and Chelsea. Apparently George liked the music so much he had it played three times over en route. Then, after a supper in Chelsea which lasted until 2am, the musicians played again on his return by river to Whitehall. In the (almost) three hundred years that has passed since then until now, Handel's Water Music is still the most significant piece of music to be associated with the Thames.

In 1749, six days prior to its royal premiere, Handel's Music for the Royal Fireworks (pictured left) was rehearsed publicly at Vauxhall Gardens. Over twelve thousand people attended, each paying 2s 6d (about £95 in today's money).

# River Culture River Races



The oldest major rowing race held annually on the river was established in 1715 by the actor Thomas Doggett in gratitude for those who saved his life after he fell overboard. Held each July, the challenge for newly qualified watermen is to row the six and a half kilometres from the Old Swan pub at London Bridge to the White Swan Inn at Chelsea. The prize is a prestigious orange coat with the badge of the House of Hanover on it.

The University Boat Race, a seven kilometre (4 miles 374 yards) race, is rowed by crews of eights from Oxford University (the Dark Blues) and Cambridge University (the Light Blues). It lasts about 18 minutes and has been held in late March or early April almost every year since 1829. In the 1870s

over 12,000 people were recorded on Hammersmith Suspension Bridge alone. These days, over 250,000 people line the river banks to watch the race and there is a carnival atmosphere in the riverside pubs.

The huge popularity of the University Boat Race and the commercial possibilities such an event might offer prompted city officials in Henley to introduce a regatta of summer rowing races in 1839. Intended originally as an event for gentlemen amateurs it became Henley Royal Regatta in 1851 when Prince Albert became its first patron. Over the years, the regatta has become the world's most famous rowing event and is as much a part of the social calendar as the horse racing at Royal Ascot and the tennis at Wimbledon. The regatta takes place over five days at the start of July and the prize over its 1.3 mile course is the highly coveted Henley Trophy. In recent years a successful festival of arts and music has been organized to run alongside the regatta.



The world's oldest rowing club, the Leander, was founded in 1818 in Putney. Other clubs sprang up in Westminster, Wandsworth and Greenwich. Although at this time, the Thames was 'the largest navigable sewer in the world' and rowing was made even more hazardous by the ever-increasing number of steam boats charging up and down river creating huge washes. It is hardly surprising that rowing clubs became concentrated in the quieter waters upstream of Putney.

Today, rowing is far less elitist than it used to be. The largest and most colourful race on the Thames takes place in September. The Great River Race includes boats of all shapes and sizes in a twenty two mile rowing race from the Isle of Dogs to Teddington. Boats have to carry a cox and a passenger and are set off on a handicap system with the slowest starting first. There are usually about three hundred boats (from Viking longboats to Chinese dragon boats), with crews from around the world. As well as being a marvellous spectacle, the race is one of the few times you can see the Thames really busy with boats.

# River Culture Floating Attractions



For those that want to live on the river there are only a limited number of established moorings for houseboats in Central London and these have become more and more highly desirable. In fact, demand massively outstrips supply. Chelsea, Hammersmith and Battersea have fabulously expensive residential moorings and there are many more in the converted docks in the east and in the quieter waters upriver in Brentford, Teddington, Richmond and beyond. But perhaps the most charming community of boats on the river are those just downriver of Tower Bridge. The moorings at Downings Road and Hermitage Quay have recently won their right to stay in this historic neighbourhood.

There are a number of moored boats in central London that have been converted into restaurants and bars. One of these, the HMS President (left), saw action in the First World War before she was moored on Victoria Embankment by Blackfriars Bridge. She is what is known as a 'Q Ship', a warship designed to look like an innocent merchant vessel. In fact, she was loaded with secret guns and escorted convoys to protect conventional merchant vessels. More often than not, her design fooled the prowling German U boats.

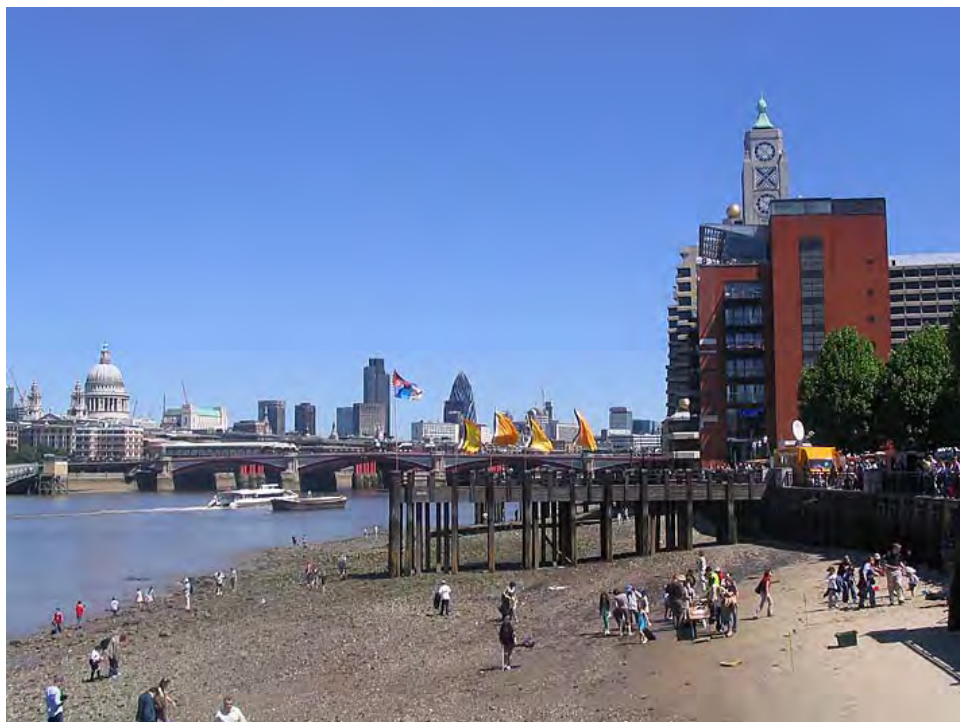
Nestled in a little wet dock by Southwark Cathedral is one of the river's floating treasures. The Golden Hinde is a replica of Sir Francis Drake's 16th century galleon. In 1577, the original Golden Hinde set sail with Elizabeth I's blessing to open up trading routes to the New World. Just off the Brazilian coast, Drake attacked a Spanish galleon and took all the ship's treasure. The Queen herself came down to Deptford on Drake's return and this is where he threw down his cloak to save The Queen's shoes from a muddy puddle. Drake's vast haul was more than enough to pay off Elizabeth's entire foreign debt. The replica Golden Hinde was constructed in 1973 and sailed around the world coming back to her berth at St Mary Overie Dock in Bankside where she is an educational resource. Children can dress up as Tudor sailors and receive living history lessons about Elizabethan naval history.



The river's biggest and most popular floating attraction is permanently moored by Tower Bridge. The frigate HMS Belfast was launched in 1938 and saw action in the Second World War and the Korean War. Now an exciting floating museum, she is the first Royal Navy ship to be preserved for the nation since Nelson's flagship HMS Victory. Surprisingly, in 2007, the Belfast was voted the Independent newspaper's eighth most popular wedding location.

The Cutty Sark (left) was built in 1869. Now in dry dock in Greenwich, she is the world's only surviving extreme tea clipper. The most famous China Tea Race took place in 1866; after ninety nine days at sea the two clippers arrived in London Dock only twenty minutes apart. Cutty Sark never won the Tea Race but a similar dash was established to bring the new season of Australian wool to London and the Cutty Sark broke the wool record every year from 1885 to 1895. Since 1957 she has been open to the public as a visitor attraction but is now closed whilst she undergoes restoration, a process that has been set back considerably by a recent fire. Fortunately, the Cutty Sark Trust has been granted £10 million of lottery funds to help pay for her complete restoration.

# River Culture Thames Beach



At low tide, in several places in central London a foreshore is exposed and it is possible to get down onto this 'beach' and walk for some considerable distance.

In 1934, a pioneering local vicar recognized the potential of the exposed foreshore and created an amazing attraction for local families. The Reverend Tubby Clayton made a beach in front of the Tower of London by laying 1,500 tons of sand over the shingle. King George V opened it promising 'free access for ever' and it proved to be immensely popular, despite the somewhat polluted quality of the water. In fact it was such a success that between 1934 and 1939 over half a million people visited. Children built sandcastles and swam, there

were rowing boats for hire, and there were toffee apple sellers and deckchair men. In depression era London, it was the closest that thousands of poor London families got to a beach holiday.

For years, many boys and young men swam in the river whether to cool off on a hot summer's day or just for the lark of it. Before they got faster vessels, the river police (nicknamed 'beetles on a log') were no real deterrent. The romantic poet and visionary thinker, Lord Byron was one of a select few celebrities to have swum in the Thames. He swam three miles from Lambeth Bridge to Blackfriars Bridge.



However, these days, swimming in the tidal stretch of the Thames is frowned upon by the Port of London Authority and Thames Division can act fast to stop those that try. There are two major problems. Firstly, the force of the tides can be treacherous even for very strong swimmers. Secondly, at some times of the year water quality can be so bad as to pose a risk to health as the comedian David Walliams found on his swim in 2010 from the river's source to its mouth. Despite all this, the nine hundred metre Great River Swim by Chiswick Eyot has now established itself as an annual event.

In 1945, of the 39 miles of riverbank in London, the public only had access by way of public open space, to 3½ miles. However, with the closure of the docks and the redevelopment of old inner city industrial plots, particularly from the 1970s, there has been a concerted effort to make the riverside as publicly accessible as possible. With a few exceptions (the Houses of Parliament for example), it is now possible to enjoy almost uninterrupted walks along both sides of the river from Battersea to Bermondsey. In fact, a public footpath, the Thames Path National Trail, runs from Thames Head (the river's source) for 184 miles to the Thames Barrier and only rarely does it divert away from the riverbanks.

# River Culture River Spectacles



Pre-1960, New Year's Eve was a loud and colourful celebration in the London's docks. People clattered their dustbin lids and ships sounded their whistles and horns. However, since 2004, London's New Years Eve celebrations have been focused on

the Thames by London Eye with a huge fireworks display fired from mid-river.

These days, the annual Mayor's Thames Festival is the river's grandest annual event. It was launched in 1997 with a record-breaking high-wire walk across the Thames. The festival team works throughout the year with hundreds of London schools and community groups to make Thames themed artworks, concerts, carnivals and displays.



The Mayor's Thames Festival takes place annually in mid-September. Activities take place over a weekend on the River Thames, the riverside walkways, roads, bridges, docks and public open spaces from Westminster Bridge to Tower Bridge and beyond.

The festival is a stunning, free celebration of London and its river and it has become a key highlight in the city's cultural life. Its river and water-focused activities aim to inspire and excite and its extensive education programme involving some 300 schools hopes to increase interest in and appreciation of the river and its environment. The festival's flagship arts and education project Rivers of the World links the Thames with river cities around the world.

Many Thames Festival activities are based on public participation. The festival commissions new work, and transforms unusual spaces on and around the River Thames with a mixture of street arts, performance, carnival, pyrotechnics, illuminations, art installations, exhibitions, river events, massed choirs, circus, music and dance, food and feasting. The finale is a magical illuminated Night Procession (left) that winds along the north and south banks of the Thames, followed by a fireworks display fired from the centre of the river itself (above).