

= Bristol Harbour =

Bristol Harbour is the harbour in the city of Bristol , England . The harbour covers an area of 70 acres (28 @. @ 3 ha) . It has existed since the 13th century but was developed into its current form in the early 19th century by installing lock gates on a tidal stretch of the River Avon in the centre of the city and providing a tidal by @-@ pass for the river . It is often called the Floating Harbour as the water level remains constant and it is not affected by the state of the tide on the river .

Netham Lock in east Bristol is the upstream limit of the harbour . Beyond the lock is a junction : on one arm the navigable River Avon continues upstream to Bath , and on the other arm is the tidal River Avon . The first 1 mile (1 @. @ 6 km) of the floating harbour , downstream from Netham Lock to Totterdown Basin , is an artificial canal known as the Feeder Canal , while the tidal River Avon follows its original route . Downstream of Totterdown Basin , the floating harbour occupies the former natural course of the River Avon , whilst the tidal River Avon flows through an artificial channel known as the New Cut . This separation of the floating harbour and the tidal River Avon allows boats in the harbour to remain floating at low tide , reduces currents and silting and prevents flooding .

Between Bristol Temple Meads railway station and Hotwells , the harbour and the River Avon run parallel at a distance of no more than 0 @. @ 65 miles (1 @. @ 0 km) apart . Downstream of Bristol Temple Meads railway station , the floating harbour meanders through Bristol city centre , Canon 's Marsh and Hotwells . At Hotwells , the floating harbour rejoins the tidal River Avon , via a series of locks , and flows into the Avon Gorge .

= = The harbour today = =

Bristol Harbour was the original Port of Bristol , but as ships and their cargo have increased in size , it has now largely been replaced by docks at Avonmouth and Portbury . These are located 7 miles (11 @. @ 3 km) downstream at the mouth of the River Avon .

The harbour is now a tourist attraction with museums , galleries , exhibitions , bars and nightclubs . Former workshops and warehouses have now largely been converted or replaced by cultural venues , such as the Arnolfini art gallery , Watershed media and arts centre , M Shed museum , Antlers Gallery and the At @-@ Bristol science exhibition centre , as well as a number of fashionable apartment buildings . The Bristol Harbour Railway , operated by M Shed , runs between the museum and the Create Centre on some weekends and bank holidays . Historic boats are permanently berthed in the harbour . These include Isambard Kingdom Brunel 's SS Great Britain , which was the first iron @-@ hulled and propeller @-@ driven ocean liner. and a replica of the Matthew in which John Cabot sailed to North America in 1497 . The historic vessels of M Shed museum , which include the steam tug Mayflower , firefloat Pyronaut and motor tug John King , are periodically operated .

Bristol Ferry Boats and Number Seven Boat Trips operate ferry services in the harbour , serving landing stages close to most of the harbour @-@ side attractions . The Bristol Packet boats offer regular harbour tours with commentaries and river cruises on the Tower Belle up the River Avon to Conham , Hanham and Bath and downstream to Avonmouth . In late July each year , the Bristol Harbour Festival is held , resulting in an influx of boats , including tall ships , Royal Navy vessels and lifeboats .

= = Sections , quays & harbourside features = =

= = History of Bristol docks = =

Bristol grew up on the banks of the Rivers Avon and Frome . Since the 13th century , the rivers have been modified for use as docks including the diversion of the River Frome in the 1240s into an artificial deep channel known as " Saint Augustine 's Reach " , which flowed into the River Avon .

Saint Augustine 's Reach became the heart of Bristol 's docks with its quays and wharfs . The River Avon within the gorge , and the River Severn into which it flows , has tides which fluctuate about 30 feet (9 m) between high and low water . This means that the river is easily navigable at high @-@ tide but reduced to a muddy channel at low tide in which ships would often run aground . Ships had no option but to be stranded in the harbour for unloading , giving rise to the phrase " shipshape and Bristol fashion " to describe how ships and their secured cargo were capable of taking the strain of repeated strandings on the mud .

As early as 1420 , vessels from Bristol were regularly travelling to Iceland and it is speculated that sailors from Bristol had made landfall in the Americas before Christopher Columbus or John Cabot . After Cabot arrived in Bristol , he proposed a scheme to the king , Henry VII , in which he proposed to reach Asia by sailing west across the north Atlantic . He estimated that this would be shorter and quicker than Columbus ' southerly route . The merchants of Bristol , operating under the name of the Society of Merchant Venturers , agreed to support his scheme . They had sponsored probes into the north Atlantic from the early 1480s , looking for possible trading opportunities . In 1552 Edward VI granted a Royal Charter to the Merchant Venturers to manage the port .

By 1670 , the city had 6 @, @ 000 tons of shipping , of which half was used for importing tobacco . By the late 17th century and early 18th century , this shipping was also playing a significant role in the slave trade .

= = = Construction of the floating harbour = = =

In the 18th century , the docks in Liverpool grew larger and so increased competition with Bristol for the tobacco trade . Coastal trade was also important , with the area called " Welsh Back " concentrating on trows with cargoes from the Slate industry in Wales , stone , timber and coal . The limitations of Bristol 's docks were causing problems to business , so in 1802 William Jessop proposed installing a dam and lock at Hotwells to create the harbour . The £ 530 @, @ 000 scheme was approved by Parliament , and construction began in May 1804 . The scheme included the construction of the Cumberland Basin , a large wide stretch of the harbour in Hotwells where the Quay walls and bollards have listed building status .

The tidal new cut was constructed from Netham to Hotwells , with another dam installed at this end of the harbour . The Feeder Canal between Temple Meads and Netham provided a link to the tidal river so that boats could continue upstream to Bath . However , the new scheme required a way to equalise the levels inside and outside the Dock for the passage of vessels to and from the Avon , and bridges to cross the water . Jessop built Cumberland Basin with two entrance locks from the tidal Avon , of width 45 ft (13 @. @ 7 m) and 35 ft (10 @. @ 7 m) , and a 45 feet (13 @. @ 7 m) wide junction lock between the Basin and what became known as the Floating Harbour . This arrangement provided flexibility of operation with the Basin being used as a lock when there were large numbers of arrivals and sailings . The harbour was officially opened on 1 May 1809 .

Patterson 's yard within the harbour was used for the construction of many ships notably Brunel 's SS Great Western in 1838 and the SS Great Britain in 1843 . They were some of the largest ships to have been built at the time , and ironically hastened the decline of the city docks by proving the feasibility of large ships . The SS Great Britain was to be towed away from her builders , to have her 1 @, @ 000 hp engines and interior fitted out on the River Thames , but her 48 ft (14 @. @ 6 m) beam was too big to pass through the lock . Thus the SS Great Britain was moored in the Floating Harbour until December 1844 , before proceeding into Cumberland Basin after coping stones and lock gate platforms were removed from the Junction Lock . At one time there were dozens of Bristol shipyards , the largest in the harbour being Hilhouse , who became Charles Hill & Sons in 1845 .

= = = 19th century improvements = = =

The harbour cost more than anticipated and high rates were levied to repay loans , reducing any benefit the new harbour had at drawing companies back from Liverpool . In 1848 the city council bought the docks company to force down the rates . They employed Isambard Kingdom Brunel to

make improvements , including new lock gates , a dredger and sluice gates designed to reduce siltation .

By 1867 , ships were getting larger and the meanders in the river Avon prevented boats over 300 ft (91 m) from reaching the harbour . A scheme to install a much larger lock at Avonmouth to make the entire river a floating harbour , and to straighten the sharper bends , was dropped after work began on the much cheaper docks at Avonmouth and Portishead . The present entrance lock was designed by Thomas Howard and opened in July 1873 . This has a width of 62 ft (18 @. @ 9 m) and is the only entrance lock now in use at the City Docks .

From 1893 until 1934 the Clifton Rocks Railway provided an underground funicular railway link from the western end of the harbour , which is close to the locks , into Clifton .

== == Railways == ==

The original Bristol Harbour Railway was a joint venture by the GWR and the Bristol and Exeter Railway , opened in 1872 between Temple Meads and the Floating Harbour . Its route included a tunnel under St Mary Redcliffe church and a steam @-@ powered bascule bridge over the entrance locks at Bathurst Basin . In 1876 the railway was extended by half a mile to Wapping Wharf . In 1906 , new branches from the south via the Ashton Avenue swing bridge were built to Canons Marsh on the north side of the Floating Harbour and to Wapping via a line alongside the New Cut . A Coal Concentration Depot owned by Western Fuels was established at Wapping Wharf just behind the Industrial Museum but this closed in 1987 .

== == Underfall Yard == ==

The docks maintenance facility was established on the land exposed by the damming of the river to construct the harbour and remains sited at this location to the present day . William Jessop had created a weir in the dam at Underfall to allow surplus water to flow back into the New Cut , this was known as the ' Overfall ' . By the 1830s , the Floating Harbour was suffering from severe silting . Isambard Kingdom Brunel was , however , able to devise a solution to this problem . In place of the Overfall he advised better use of three shallow sluices and one deep scouring sluice between the harbour and the New Cut , together with a dredging vessel . This drag boat would scrape the silt away from the quay walls . When the deep sluice opened at low tide , a powerful undertow sucked the silt into the river to be carried away on the next tide . The shallow sluices enabled adjustment of the dock water level according to weather conditions .

Several old buildings , which date from the 1880s , remain at Underfall Yard and have listed building status . The octagonal brick and terracotta chimney of the hydraulic engine house dates from 1888 , and is grade II * listed , as is the hydraulic engine house itself . It is built of red brick with a slate roof and contains pumping machinery , installed in 1907 by Fullerton , Hodgart and Barclay of Paisley , which powers the dock 's hydraulic system of cranes , bridges and locks . The former pattern @-@ maker 's shop and stores date from the same period and are grade II listed , as are the Patent slip and quay walls .

== == Warehouses == ==

A large number of warehouses were built around the harbour for storage and trade . Many survive today and some are being converted into apartment blocks but many have been demolished as part of the regeneration of the area .

One which has survived is the A Bond Tobacco Warehouse , which was built in 1905 and was the first of the three brick built bonded warehouses in the Cumberland Basin , and is a grade II listed building .

B Bond Warehouse dates from 1908 and was the first in Britain to use Edmond Coignet 's reinforced concrete system . It is now used by Bristol City Council and houses Bristol Record Office , the Create centre and council offices .

Robinson 's Warehouse built in 1874 by William Bruce Gingell , and the Granary on Welsh Back are examples of the Bristol Byzantine style with coloured brick and Moorish arches .

The Arnolfini art gallery occupies Bush House , a 19th @-@ century Grade II * listed tea warehouse. and the Watershed Media Centre occupies another disused warehouse .

= = = 20th century improvements = = =

In 1908 , the Royal Edward Dock was built in Avonmouth and in 1972 the large deep water Royal Portbury Dock was constructed on the opposite side of the mouth of the Avon , making the Bristol City Docks in the floating harbour redundant as a freight dock . In 1977 Charles Hill & Sons , the last shipbuilder at the Albion Yard , closed after delivering the 1541 tonne beer tanker Miranda Guinness . Part of the yard reopened in 1980 when Abels Shipbuilders began operating , who still produce a steady stream of small ferries , survey vessels , tugs and other craft .

Amey Roadstone (formerly T R Brown and Holms Sand & Gravel) sand dredgers worked from Poole 's Wharf in Hotwells until 1991 . Occasionally coastal trading vessels enter the Cumberland Basin to be loaded with large steel silos manufactured by Braby Ltd at their nearby Ashton Gate works .

The old Junction Lock swing bridge is powered by water pressure from the Underfall Yard hydraulic engine house at 750 psi (52 bar) . The new Plimsoll Bridge , completed in 1965 , has a more modern electro @-@ hydraulic system using oil at a pressure of 4 @, @ 480 psi (309 bar) .

= = Regeneration of the harbourside = =

Since the 1980s , millions of pounds have been spent regenerating the harbourside . In 1999 , Pero 's footbridge was constructed , linking the At @-@ Bristol exhibition with Bristol tourist attractions . In 2000 , the At @-@ Bristol centre opened on semi @-@ derelict land at Canon 's Marsh and some of the existing Grade II listed buildings were refurbished and reused . It was funded with £ 44 @. @ 3 million from the National Lottery , the Millennium Commission , South West of England Regional Development Agency , and a further £ 43 @. @ 4 million from Bristol City Council and commercial partners , including Nestlé . Private investors are also constructing studio apartment buildings .

The regeneration of the Canon 's Marsh area is expected to cost £ 240 million . Crest Nicholson were the lead developers , constructing 450 new flats , homes and waterside offices . It is being carried out under the guidance of The Harbourside Sponsors ? Group , which is a partnership between the City Council , key stakeholders , developers , businesses , operators and funders .

The Cumberland Basin & Baltic Wharf are used by a variety of small boats by Baltic Wharf Sailing Club and is surrounded by tourist attractions . The old hydraulic pumping station has been converted into a public house and is a Grade II listed building .

There are three active boat building companies in the harbour : Abels Shipbuilders , Bristol Classic Boat Company and the Slipway Co @-@ operative at the Underfall Yard .

= = Events = =

Bristol Harbour hosts the Bristol Harbour Festival in July of each year , attended by tall ships and hundreds of ships and boats of all kinds . About 200 @, @ 000 visitors view the boats , and watch live music , street performances and other entertainments .

In 1996 , the harbour was the setting for the first International Festival of the Sea . A larger version of the annual harbour festivals , this was attended by many tall ships , including the Eye of the Wind , Pride of Baltimore , Rose , Kaskelot and Earl of Pembroke . The key theme was John Cabot 's pioneering voyage of discovery to the Americas and a replica of Cabot 's ship , the Matthew , was dedicated prior to its reenactment of Cabot 's voyage the following year . In 2009 , the 200th anniversary of the Floating Harbour was commemorated with a series of celebratory events .