

= Dartford Crossing =

The Dartford @-@ Thurrock River Crossing , commonly known as the Dartford Crossing and until 1991 the Dartford Tunnel , is a major road crossing of the River Thames in England , connecting Dartford in Kent to the south to Thurrock in Essex to the north . It consists of two bored tunnels and the Queen Elizabeth II Bridge , a cable stayed bridge . The only fixed road crossing of the Thames east of Greater London , it is the busiest estuarial crossing in the United Kingdom , with an average daily use of over 130 @,@ 000 vehicles . It opened in stages : the west tunnel in 1963 , the east tunnel in 1980 and the bridge in 1991 . The crossing forms part of the M25 motorway 's route , though it is not under motorway restrictions itself . It has been described as one of the most important road crossings in Britain , and suffers from heavy traffic and congestion .

The crossing 's development started in the late 1930s , but was interrupted due to the Second World War and resumed in the 1950s . The original tunnel catered for a single lane of traffic in each direction , but rising traffic levels required the second tunnel to be built . The M25 connected to the tunnels at both ends when completed in 1986 , and this increased traffic put pressure on the tunnels ' capacity . A Private Finance Initiative scheme was started in 1988 to build the bridge . The combined crossing now handles four lanes of traffic in each direction .

The crossing had always been tolled , and from 1 April 2003 this became a charge , though since 2008 it has been free from 10 pm to 6 am . An electronic charging scheme (Dart Charge) began in November 2014 . As a result , the charge can no longer be paid in cash and the old toll booths have been removed . A residents ' scheme is available , offering further discounts for people living near the crossing .

= = Location = =

The crossing spans the River Thames between Dartford , Kent , to the south and Thurrock , Essex , to the north . It is about 20 miles (32 km) east of the centre of London , outside the Greater London boundary . The two tunnels are 1 @,@ 430 metres (4 @,@ 690 ft) long , while the cable @-@ stayed bridge is 137 metres (449 ft) high with a main span of 450 metres (1 @,@ 480 ft) . The high @-@ speed rail line High Speed 1 from St Pancras International Station to Ebbsfleet International Station passes under the crossing approach roads on the north side of the river , at a near right angle .

The design capacity is 135 @,@ 000 vehicles per day , but in practice the crossing can carry as much as 160 @,@ 000 . It has been described by the Highways Agency as " a vital transport link for the national and South East economies " and by the Secretary of State for Transport , Patrick McLoughlin as " a crucial part of the country ' s strategic road network " . It is signed as a major destination on London ' s orbital route , the M25 , though the crossing and its approach road are an all @-@ purpose road (the A282) , allowing traffic prohibited from motorways to use it . Southbound traffic crosses the four lane bridge , while northbound traffic uses both of the two lane road tunnels . However , the bridge is sometimes closed due to bad weather , such as high winds , or for maintenance . On these occasions , traffic uses the tunnels in both directions .

= = = Alternative routes = = =

The crossing is the easternmost road crossing of the River Thames , and the only one that is east of Greater London . The next nearest vehicle crossings to the west are the Woolwich Ferry and the Blackwall Tunnel , both well within East London . There is no official diversion route through London for high vehicles . When the bridge is closed , vehicles over 5 @.@ 03 metres (16 @.@ 5 ft) are diverted around the M25 in the opposite direction .

A number of new crossings have been proposed as relief for the Dartford Crossing . The proposed Thames Gateway Bridge to the west was given planning permission in December 2004 , but was cancelled in November 2008 when Boris Johnson became Mayor of London . Johnson subsequently proposed the Gallions Reach Ferry , a ferry crossing in the same location , as an alternative . The

Lower Thames Crossing is a proposal for an alternative crossing , most likely a tunnel , to the east . Thurrock Council suggest that this crossing will be essential for managing congestion . In July 2014 , the government announced it would develop further plans for an alternative route . Option A is an additional crossing at the current location , while option C is a new crossing east of Gravesend .

= = Charges = =

A free @-@ flow electronic charging system called Dart Charge came into force in November 2014 based on automatic number plate recognition . The charge can be paid online , by text message or by phone in advance or by midnight the day after crossing , but can no longer be paid in cash since the old toll booths have been removed . Charges are payable between 6am and 10pm and this is indicated on overhead @-@ gantry signs . The schedule of charge , however , is not displayed at any location on either of the approaching roads . Reduced charges are available to users with a pre @-@ pay account and holders of DART @-@ Tags , a device held in a vehicle that is detected at the payment booth , automatically deducting the charge from a pre @-@ paid account . The charges for the crossing as of November 2014 are as follows :

The charge payment booths for both directions of travel are located on the south side of the crossing . Various categories of vehicles are exempt from the charge , including emergency services vehicles , military vehicles and those exempt from Vehicle Excise Duty on the grounds of disability . The charge may generally be suspended when it would ease congestion , such as when there is a continuous queue of traffic travelling under 10 mph from either junction 4 (between Sevenoaks and Bromley) or junction 28 (near Brentwood) on the M25 .

The charges vary according to the type of vehicle . Motorcycles are free but there are standard charges for cars , two @-@ axle goods vehicles and larger vehicles with more than two axles . Drivers who fail to pay the charge are issued with a penalty charge notice . There are no signs warning of penalty charges .

Since 2008 , a local residents ' scheme gives 50 free crossings to car drivers resident in the Dartford and Thurrock council areas for an annual registration fee of £ 10 , with additional crossings at 20p each . On 1 March 2014 , this scheme was extended to include privately owned 2 @-@ axle goods vehicles . A further option was introduced giving unlimited free crossings for £ 20 annually .

= = History = =

= = = First tunnel = = =

The idea of a tunnel crossing was first proposed by the Ministry of Transport in 1924 . Initial reports at the start of the year suggested a crossing between Tilbury and Gravesend , replacing a ferry service , but this had been rejected by July in favour of a route further upstream , near Dartford . By 1929 , the total cost of building the tunnel had been estimated at £ 3M . The tunnel was planned to be part of a general orbital route around London and was provisionally known as part of the " South Orbital Road " .

The first engineering work to take place was a compressed air driven pilot tunnel , which was drilled between 1936 and 1938 . Work on the tunnel was delayed due to World War II , and resumed in 1959 , using a Greathead Shield , similar to the work on the Blackwall Tunnel some 60 years earlier . The delay in work due to the war allowed the tunnel 's design to be improved , which included a better ventilation system . After negotiations with the Ministry of Transport , Kent and Essex County Councils successfully levied a toll on the tunnel in 1960 , before opening . The two @-@ lane bore tunnel opened to traffic on 18 November 1963 , costing £ 13M . It initially served approximately 12 @, @ 000 vehicles per day .

The toll was originally two shillings and sixpence , equivalent to 12.5p post @-@ decimalisation , and approximately equivalent in purchasing power to £ 2 @.@ 00 in 2015 . The Dartford Tunnel Act 1967 gave Kent and Essex County Councils authority to change the tolls , and in December 1977 ,

the toll was raised from 25p to 35p for cars , 40p to 55p for 2 axle goods vehicles , and 60p to 85p for HGVs . By 1984 , the toll for cars had risen to 60p .

= = = Second tunnel = = =

The tunnel was expected to carry two million vehicles a year but by 1970 was carrying over eight million . That year , Michael Heseltine , then a transport minister , announced that a second tunnel would be built in conjunction with the North Orbital Road , later to become the M25 .

Construction was approved in April 1971 , with an initial expected opening date in 1976 . Work was delayed due to a lack of funds , which was resolved by EEC funding granted in 1974 . The second tunnel opened in May 1980 , allowing each tunnel to handle one direction of traffic , by which time the joint capacity of the two tunnels had increased to 65 @, @ 000 vehicles per day . Connection of the crossing to the M25 was completed on the northerly Essex side in September 1982 (Junction 31) , and to the southerly Kent side in September 1986 (Junction 1a) . Following the completion of the M25 in 1986 , the daily demand had grown to 79 @, @ 000 vehicles .

= = = Queen Elizabeth II Bridge = = =

During the early 1980s , it was anticipated that traffic through the tunnel would rise on the completion of the M25 in 1986 . At the time , the expectation was that other routes in London would be improved instead , diverting 15 % of traffic away from the tunnel . In 1985 , the Transport Minister , Lynda Chalker , announced that the number of toll booths would be increased to 12 each way , but concern grew that two tunnels would not be able to cope with the full demands of a completed M25 .

Between September 1985 and December 1986 , proposals for improvements to the Dartford Crossing underwent several changes , and in 1986 , a Trafalgar House consortium won a bid to build a new bridge at Dartford crossing , valued at £ 86M . At the time there were several other privately financed projects planned or under construction in the UK , including the Second Severn Crossing . From 1981 until the establishment of the Private Finance Initiatives (PFIs) in the late 1980s , private investment projects were governed by the Ryrie Rules which dictated that " any privately @-@ financed solution must be shown to be more cost @-@ effective than a publicly @-@ financed alternative , and that privately @-@ financed expenditure by nationalised industries could not be additional to public expenditure provision , which would be reduced by the amount of private financed borrowed . "

On 31 July 1988 , a Private Finance Initiative concession was enabled under the Dartford @-@ Thurrock Crossing Act 1988 , which transferred control of the crossing from Kent and Essex county councils to Dartford River Crossing Limited , a private company managed by Rodney Jones . The company would also bear the debt of the bridge , then under construction , " financed 100 % by debt , with no equity contribution " . The private company was at risk of not recuperating their costs , but ultimately the Dartford scheme demonstrated that the Ryrie Rules were no longer a barrier to the private financing of public infrastructure projects . The concession was scheduled for 20 years from the transfer date , with a stipulation that it could end when debts had been paid off , which was agreed to have been achieved on 31 March 2002 . According to the International Handbook on Public @-@ Private Partnership , the chief financing for the project came from a " 20 @-@ year subordinated loan stock , 16 @-@ year loan stock and £ 85 million as a term loan from banks " .

Construction of bridge started immediately after the creation of the PFI in 1988 . It was designed by German engineer Hellmut Homberg , and the two main caissons supporting the bridge piers were constructed in the Netherlands . Each caisson was designed to withstand a bridge strike of a ship weighing up to 65 @, @ 000 tonnes and travelling up to 18 @. @ 5 kilometres per hour (11 @. @ 5 mph) The towers are about 61 metres (200 ft) high , and it took a team of around 56 to assemble the bridge structure . During construction of the approach road , a World War II bomb was found in its path , which required closure of the entire crossing .

The bridge was opened by Queen Elizabeth II on 30 October 1991 . The total cost of construction

was £ 120 million (£ 246 million as of 2015) , including £ 30m for the approach roads . The proposed name had been simply the Dartford Bridge , but Thurrock residents objected and suggested the Tilbury Bridge , leading to a compromise . At the time of opening , it had the longest cable stayed span of any bridge in Europe . It is the only bridge across the Thames downstream of Central London to be opened since Tower Bridge in 1894 .

= = = Charging scheme = = =

In 2000 , the European Union issued a directive that value added tax should be charged on all road tolls , including the Dartford Crossing . The Government opposed the directive and said it would bear the additional cost . It was anticipated that the tolls would be removed on 1 April 2003 under the original PFI scheme contract . However , the Highways Agency decided that the tolls would become a " charge " , under a charging scheme under powers introduced by the Transport Act 2000 to introduce charging schemes on any trunk road bridge or tunnel at least 600 metres (2 @ , @ 000 ft) in length .

Under the 2000 Transport Act , the A282 Trunk Road (Dartford @ - @ Thurrock Crossing charging scheme) Order 2002 allowed the continuation of the crossing fee , which officially became a charge and not a toll on 1 April 2003 . Management of the crossing was contracted to Le Crossing Company Limited on behalf of the Highways Agency . In September 2009 the Highways Agency made a new contract with Connect Plus (M25) Limited . As well as maintaining the crossing , the contract required the company to widen around 40 miles of the M25 and to refurbish a tunnel on the A1 (M) at Hatfield . In October 2009 , the Government announced its intention to sell the crossing as part of a public sector deficit reduction strategy . The announcement was unpopular with local residents , who encouraged drivers to sound their horns in protest when using the crossing . After the change of government following the 2010 Election , the new prime minister David Cameron announced that the crossing might still be sold , despite local opposition , particularly from Gareth Johnson , member of parliament for Dartford . Subsequently , the chancellor George Osborne announced that charges would be increased instead to cover the budget deficit .

Under the 2008 Charging Order introduced on 15 November 2008 , charges between 10pm and 6am were discontinued , but standard daytime rates increased , starting at £ 1 @ . @ 50 for cars . On 7 October 2012 the charges increased to £ 2 for cars , £ 2 @ . @ 50 for 2 axle goods vehicles and £ 5 for multi @ - @ axle goods vehicles . By 2012 , local businesses were complaining that the crossing 's charge booths were impeding local growth . The government announced that a new electronic charging system would be introduced in 2014 . Drivers would be able to pay by phone , text , online or in shops . The charge is proposed to increase to £ 2 @ . @ 50 for cars , £ 3 for 2 @ - @ axle goods vehicles and £ 6 for multi @ - @ axle vehicles . A later report stated that drivers evading the charge could be fined as much as £ 105 .

Preparation work on the free @ - @ flow scheme started in April 2014 . Concerns have been raised about reliability , with a Highways Agency report predicting that it could lose up to £ 6m of unpaid charges per year . In September , the Highways Agency announced that the new scheme would start to operate at the end of November , though related works to remove barriers would continue until April 2015 . Subsequently , the date for removal of the booths was confirmed as 30 November . Drivers can browse to the official charge website and pay for credits to use the crossing at a discount .

= = Traffic = =

A total of 1 @ , @ 486 @ , @ 929 @ , @ 267 vehicles have used the crossing as of 31 March 2014 . The highest recorded daily usage was 181 @ , @ 990 vehicles on 23 July 2004 ; since then traffic levels have decreased . From April 2013 to March 2014 , 49 @ , @ 645 @ , @ 356 vehicles used the crossing : a daily average of 136 @ , @ 015 vehicles . The total income for the financial year ended 31 March 2012 was £ 72 @ , @ 147 @ , @ 091 , while the corresponding figure for the following financial year was £ 80 @ , @ 331 @ , @ 662 .

Bicycles are not permitted on the crossing , but cyclists can be carried across the crossing by the transport authority at no charge . Cyclists report to the crossing control offices on either side , using a free telephone service . The transfer takes around 15 to 30 minutes .

In October 1963 , London Transport ordered five double decker buses based on the Ford Thames Trader chassis for special duties , taking cyclists through the Dartford Tunnel . These had a lower deck purpose @-@ built for carrying bicycles , with upper deck seats for cyclists . Access was via a stairwell to the upper deck starting several feet above the level of the road , accessible from special platforms built at either end of the tunnel ; there was also a ladder built into the side of the bodywork for access elsewhere . The design was criticised for failing to protect any passenger from falling off the vehicle , and running costs were estimated at £ 2 @,@ 550 per month , with only £ 45 revenue . The service was reduced to one bus in April 1964 and then cancelled in 1965 , to be replaced by the current transfer service . One of these buses has been preserved .

The transport of hazardous goods through the crossing is governed by the European ADR Agreement . The Dartford Crossing is class C , which restricts transporting goods such as nitrates and flammable liquids . The introduction of the ADR scheme initially caused confusion , and for a short time , transporting aerosols through the tunnel was banned . Certain hazardous goods vehicles , together with some oversize and abnormal loads (if permitted) may require escorting by Highways Agency Traffic Officers . The crossing authority must hold exercises in conjunction with the emergency services . In 2006 Exercise Orpheus was held , involving the closure of both road tunnels for five hours .

The tunnel is patrolled by Highways Agency Traffic Officers . Officers may stop and direct traffic on the crossing and its approach roads , and must be in uniform to exercise their powers . The crossing is subject to a 50 mph speed limit for all vehicles , which is enforced by safety cameras . Between October 2012 and June 2014 , 24 @,@ 229 drivers were caught speeding , with some travelling as fast as 94 mph . A spokesman from the Highways Agency said the cameras were " helping us improve safety and make journeys more reliable " .

= = = Congestion = = =

The crossing is the busiest in the United Kingdom . Because the design capacity has been exceeded , the crossing is subject to major traffic congestion and disruption , particularly when parts are closed because of accidents or bad weather . Though the Government was adamant that the Queen Elizabeth II Bridge should be designed to avoid closure due to high winds , the bridge has nevertheless had to close on occasions . In February 2014 , during the winter storms , it was closed on the 12th owing to 60 mph winds , and again on the evening of 13th ? 14th .

At busy times there was significant delay at the payment booths when these existed . There are numerous junctions on either side of the crossing , and because it is not under motorway restrictions , a high proportion of local traffic mixes with long distance traffic , for example travelling from the North and Midlands onwards to Continental Europe . In 2004 , a BBC survey reported that the crossing was " the most stressful section of the M25 " while in 2009 , the crossing was listed in a Royal Automobile Club report as the fourth most congested road in Britain . Though Highways England have reported greatly improved journey times since automatic charging was introduced , Gareth Johnson claims otherwise and has insisted that the Lower Thames Crossing , along with improved signing around Dartford , are better options to reduce congestion .