Section A: The historical context

Development of naval warfare in the early modern period

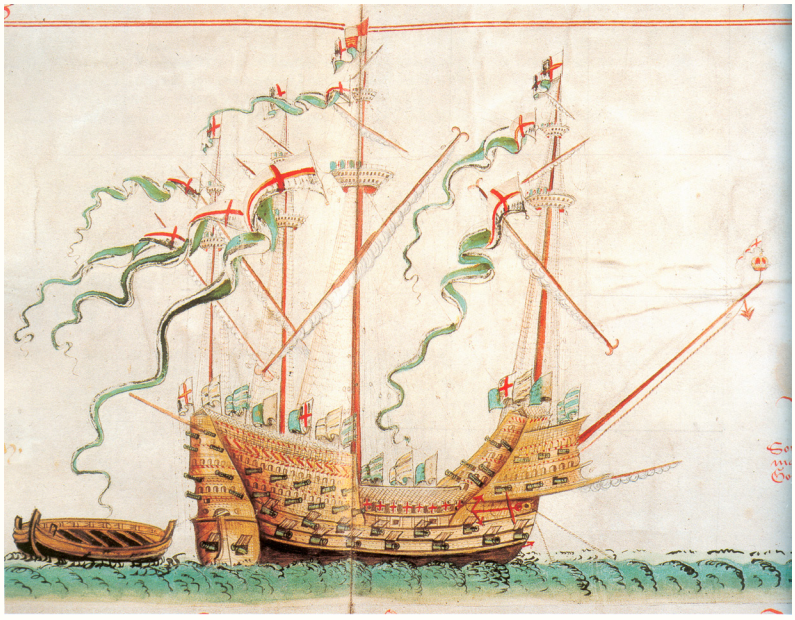
During the Hundred Years War, the medieval English navy had fallen into disrepair. Henry V had started to rebuild the navy in the early 15th century. This enabled him to invade France in 1415 and to destroy the French fleet in 1417. Following another campaign against the French in 1419, it was considered that Henry no longer needed a navy and it began to be wound down. Henry V's contribution to the future English navy was to reorganise it and then create a single Admiralty in 1414 to oversee the navy, which continues to operate to the present day.

After 1485, Henry VII started to build a standing navy. Developments among other European powers meant that Henry began to build bigger ships. These new ships, such as *The Regent* built in 1487, were armed with guns like the 225 serpentines. Henry VII's other contribution was to spend money on facilities to build and maintain ships, including the establishing of a dry dock at Portsmouth in 1495.

Henry VIII and the establishment of the Royal Navy

Building on his father's work, Henry VIII built on the modest fleet of five ships he had inherited, increasing it to 30 by 1514. This was considered to be enough to enable England to protect its continental possessions in north-eastern France.

However, the situation began to change in the 1530s, when Henry's break with the Church in Rome threatened to bring England into conflict with powerful Catholic countries in Europe. This led to the building of more warships, along with coastal fortifications to protect them while they were at anchor. By 1540, Henry VIII had 50 ships, including the huge carracks *Mary Rose* and *Henri Grâce à Dieu (Great Harry)*. This new force helped Henry to capture Boulogne in 1544, to add to his control of Calais, as well as helping defeat a French naval attack on the Isle of Wight in 1545.



Henri Grâce à Dieu

Realising the importance of the navy, Henry VIII ordered the creation of the Navy Royal – a permanent naval force that the state, paid for by the crown, could use to defend England. This involved building a bigger fleet of warships and the founding of dockyards, such as those at Deptford and Woolwich, to build and maintain them. This would eventually become the Royal Navy that still exists today.

Threats of invasion during the reign of Elizabeth I

Henry VIII's children, Edward and Mary, had little interest in the navy. For Elizabeth I, however, it was a vital part of her defences against her foreign enemies. Elizabeth had become a target for Catholic assassins and plots to replace her with her Catholic cousin and heir Mary, Queen of Scots. For these plots to succeed, they needed Spanish military support, which would have had to come to England by sea.

To make matters worse, Elizabeth had supported a number of ventures which could have provoked a Spanish invasion. From the 1570s, she encouraged privateers like Sir John Hawkins and Sir Francis Drake to attack Spanish treasure ships filled with gold and silver that were coming back from the Americas. Then, in the 1580s, she sent troops and ships to help the Dutch in their revolt against Spanish control and provoked the Spanish further by executing Mary, Queen of Scots.

To improve the effectiveness of the navy, Elizabeth's shipwrights had designed new ships that would be faster and able to carry heavier guns. The first one of these, built in 1573 at Deptford, was *Dreadnought*. These ships behaved very differently from the Spanish in battle; the Spanish aimed to grapple and board English ships, while the English used their manoeuvrability to come alongside enemy vessels and sink them with a massive broadside from their cannons.

The real test of this was to come in 1588, when the long-awaited Spanish invasion campaign began. It had been delayed from the previous year after a daring English raid on the Spanish fleet at anchor in Cadiz by Sir Francis Drake, and by the death of its original commander, the Marqués de Santa Cruz.

English ships versus the Spanish Armada 1588

The Spanish Armada, made up of 130 ships, finally sailed in May of 1588 with its new commander, the Duke of Medina Sidonia. The Armada's mission was to secure control of the English Channel and escort an army under the Duke of Parma from the Spanish Netherlands. However, due to delays caused by storms, it took them until July to enter the Channel, heading to Flanders to meet with the troops of the invading force. As a result of three clashes with English ships at Portland Bill, the Isle of Wight and Gravelines, the Spanish had failed to destroy the English navy and were running low on ammunition. Unable to make contact with the Duke of Parma, the Spanish fleet decided to sail home around England and Scotland, down past Ireland. The Armada was scattered and mostly wrecked by storms.

The threat of invasion remained and an attack in 1597 found the English unprepared, but the Spanish were once again battered by storms. The English navy was much smaller than that of its main rivals, France and Spain, but it had shown that it could usually defend England from invasion, especially against enemy ships that were slow and difficult to manoeuvre.

From humble beginnings, the Royal Dockyard at Chatham would play an increasingly important part in the story of the Royal Navy over the next few hundred years.

Section B: Features

The Medway

The River Medway, which runs parallel to the River Thames, had been considered to be a safe anchorage for ships since at least the reign of Henry VIII. By 1550, the Lord High Admiral was ordering that, *"all the Kinges shippes should be harborowed in Jillyngham Water – saving only those that be at Portsmouth"*.

A storehouse at Chatham, serving ships anchoring on the Medway, might have existed since as early as 1509; it first appears in official records in 1547. The Chatham storehouse would have been supplying ships with timber, ropes and cloth for making sails. Food for the crews came from a nearby store in Rochester.

At this point, ship repairs were carried out at the royal dockyards on the Thames, at Woolwich and Deptford. As merchant traffic on the Thames increased, the Admiralty looked for a safer and quieter location for a royal dockyard.

Portsmouth was the location for the main naval base during Henry VIII's reign, largely as the waters were warmer and the weather was better. However, it was more difficult to defend Portsmouth from attack because of its exposed position on the coast. The Admiralty also thought that Portsmouth was too far from London for them to effectively keep an eye on what was going on, so they wanted somewhere that was nearer to the capital.

The Medway was originally used to keep the fleet safe during the winter. The Chatham Dockyard was originally located where the town centre is today, on rented land and using rented storage facilities. One of Medway's significant advantages over Portsmouth was environmental; the Medway was mostly fresh water in the winter and brackish or salt water in the summer. This seasonal variation deterred shipworm, known as *teredo navalis*, a mollusc that was very common in Portsmouth harbour that used to eat into the hull of ships.

For all of these reasons, Chatham rose in importance and became the main royal dockyard over the next few centuries.

Royal Navy ships in the Medway 1675

Tudor dockyard

"...stored for the finest fleet the sun ever beheld, and ready at a minute's warning, built lately by our most gracious sovereign Elizabeth at great expense for the security of her subjects and the terror of her enemies, with a fort on the shore for its defence."

William Camden, a historian, describing Chatham dockyard in his book, *Britannia*, in 1606

During the Tudor period, England's naval power expanded dramatically. Henry VIII laid the foundations for a permanent navy by founding new dockyards to build and maintain ships. He established a navigation school and planted forests to be used in future for shipbuilding. He also had forges set up to cast iron for cannons. Changes also included the building of gunports into ships' hulls so that they were not unbalanced by having guns on the wooden castles at the front and back of the ships. It was during this period that the storehouse at Chatham, on the River Medway, came to be used. The navy anchored each winter and, over time, the site became a more permanent base.

Elizabeth I continued to build up the navy, almost doubling it in size in 20 years. To support this expansion, new facilities were needed to build and maintain this fleet, which was why a new dry dock was built at Deptford on the Thames in 1578. These preparations enabled England's privateers to attack Spanish treasure ships coming from the Americas and to contribute to the defeat of the Spanish Armada in 1588.

Elizabeth's naval yards began to introduce new ideas that would turn the English navy from a defensive force to a power that could be used in an offensive way. Building on Henry VIII's use of gunports that allowed English ships to deliver broadsides that other ships could not defend against, English ships in the 1570s, such as the *Dreadnought*, were designed to be faster and easier to manoeuvre than those used by other countries.

It was at this point that Chatham became more than just a ship's store for the wintering navy, formally becoming a royal dockyard in 1567. The site was drained and a mast pond was built in 1570, in which the water was used to store the wood for masts so that they did not dry out and crack before use. A forge to make anchors was soon established. In 1572, master shipwright Matthew Baker arrived from Deptford to take charge of the operations and Queen Elizabeth herself visited the yard to see his progress the following year.

Other facilities were soon added, including sawpits for turning trees into timber planks, workshops and warehouses. A slipway was built to help get ships onto land for repairs and back into the river afterwards. A wharf was built for ships to anchor against and a crane powered by a treadmill was added in 1580. A dry dock opened in 1581 to help repair ships and enhance the capabilities of Chatham.

While the yard at this time was still mostly used for repairing and cleaning ships, Chatham launched the *Merlin* – a ten-gun pinnace – which was the first ship to be built there in 1579. *Merlin* and *Sunne*, another ship built at Chatham, would both fight in the Armada campaign of 1588. Apart from Drake's squadron, all of the ships involved in the Armada campaign waited in the Medway to be sent out to attack the Spanish, led by Lord Howard of Effingham. It was to Chatham and the Medway that most of the fleet returned once the Armada campaign was over.

To protect the fleet at anchor on the Medway, Upnor Castle was built opposite the Chatham dockyard site in 1567. In 1585, privateer John Hawkins reinforced the defences by stretching a large iron chain right across the Medway to prevent enemy ships from sailing upriver to attack the English ships while they were at anchor. Over the years, other obstacles were added, including chains, masts and hulls of broken ships, to fortify the river's defences.

Stuart dockyard

"So great is the order and application there, that a first-rate vessel of war of 106 guns, ordered to be commissioned by Sir Cloudesley Shovell, was ready in three days. At the time the order was given the vessel was entirely unrigged; yet the masts were raised, sails bent, anchors and cables on board, in that time."

The author Daniel Defoe describing what he saw when he visited the Chatham dockyard when visiting the yard in 1705

In 1618, the dockyard site was moved north, upriver, to allow for the construction of a larger dockyard. This is the site of the dockyard today. This larger site meant that ships could undergo all of their maintenance in one place, instead of having to be moved between Deptford and Chatham for different procedures. The original dockyard site was repurposed as the Gun Wharf, where cannons, small arms and ammunition were loaded onto ships, although gunpowder continued to be stored across the river at Upnor Castle.

Sheerness Dockyard 1755

As naval operations moved from Deptford, Chatham became the most important naval facility in the country. With more space available, new buildings could now be added to the dockyard, built around a yard enclosed by a brick wall that surrounded a dry dock. A second dry dock was soon added. In the 1620s, two roperies and a sail loft were added to produce some of the important items that ships would need on the Chatham site, along with a new mast pond. A lime kiln was built to help provide the mortar for other buildings.

To further support naval operations, a new facility was developed at Sheerness in the Medway estuary. It was intended to speed up re-arming, re-supplying and repairs for ships that wanted to be able to be back at sea quickly. Although only partly completed when the Dutch attacked the Medway in 1667, this new support facility later became the base for British ships anchored there. Eventually, it became a subsidiary repair facility to the main yard at Chatham.

As the Royal Navy continued to increase in size through the 17th century, Chatham dockyard continued to develop. Two further dry docks were added in 1686, along with the Great Long Storehouse, the Anchor Wharf ropery and two more mast ponds. Although the dockyard was still mostly used for repair and maintenance, a second shipbuilding slip was added at the end of the 17th century.

By the early 18th century, further support facilities were needed. The dockyard wall was extended to include a new mast pond, ropery, sail loft and tar cellar. The royal dockyard at Chatham had become one of the largest employers in the country. It was the scale of this operation that had impressed the writer Daniel Defoe when he visited in 1705.

Workers were attracted to the dockyard because of the job security it offered. As the number of workers continued to increase with the expansion of the yard and its work, housing for workers became an issue. As well as new residences for offices on the dockyard site, the nearby village of Brompton was used to house workers. Having housing nearby meant people were willing to come and live there, rather than work being offered to those who happened to live nearby.

Georgian developments

"This day will be launched his majesties ship the Victory, estimated the largest and finest ship ever built. Several of the Lords of the Admiralty, Commissioners of the Navy, and many persons of quality and distinction, are expected to be present, for whose receptions great preparations are making through the Town"

From an article in the newspaper, *London Public Advertiser*, describing the launch of HMS Victory on 7 May 1765

Chatham Royal Dockyard 1782

The 18th century saw the end of Chatham's dominance as a royal dockyard, as government investment shifted to Portsmouth and Plymouth. This was due to the fact that naval strategy looked more and more to the Atlantic because of British interest in North America and the Caribbean. On top of this, the accumulation of silt in the Medway was making it increasingly difficult to get ships in and out of the dockyard.

In the 1770s, it was decided that Chatham would no longer be the main base for the English fleet. Its operations shifted away from maintenance and re-fitting, towards becoming a ship-building yard. By the end of the 18th century, Chatham had six slips for putting newly built ships into the water, alongside its four dry docks where they were constructed. New storehouses had been built and there had been major refurbishments of the Anchor Wharf and the Double Ropehouse. For the first time, they were spinning hemp to make the rope and turning the hemp threads into the final ropes in the same building.

Anchor Wharf warehouses

One of the famous ships in the British navy, *HMS Victory*, was built at Chatham during this period. Launched in 1765, work on the *Victory* started in 1759. When she was launched in 1765, she was kitted out to be in the reserve fleet and only took on active duty in 1778 where she served as Admiral Keppel's flagship. It was only after the Battle of Cape St. Vincent that the *Victory* became Admiral Nelson's flagship; it was on *Victory* that Nelson won his famous battle against the French at Trafalgar in 1805, though he lost his life in the process.

Iron began to be incorporated into the design of ships built at Chatham from 1804, allowing for bigger and stronger ships to be built. As a result, the Gun Wharf had to be extended to accommodate this. A new smithery had to be built and five larger covered slipways were built between 1836 and 1851 for constructing these new larger vessels.

From 1811, steam-powered sawmills were introduced to speed up the production of timber. Steam power was also used to drain dry docks. A new dock opened for this purpose in 1821 and stone was laid at the other dry docks so they could use steam drainage systems. The grinding of pigment and mixing of paint was also mechanised using a steam engine. From 1837, steam power was used to help in the winding of rope in the ropery and in 1841, steam-powered hammers and forges were introduced into the smithery.

Chatham's defences were also upgraded during this period. The Chatham Lines, a series of walls and redoubts such as Fort Amherst, were opened in 1756 as fortification to protect the dockyard from an assault over land. To accommodate the soldiers required to man these defences, Chatham Infantry Barracks opened in 1757 – one of the first large barracks built in Britain. It could accommodate 1800 men, which meant they did not have to live in tents as their predecessors had done. By the 1770s, the barracks served as a training facility for new recruits, although this eventually moved to the Isle of Wight, which was more difficult for recruits to desert. Royal Marine Barracks opened at Chatham in 1779 to house the soldiers who would become the troops on the ships of the fleet.

Victorian developments

"Twelve hundred men are working at her now; twelve hundred men working on stages over her sides, over her bows, over her sterns, under her keel, between her decks, down in her hold, within her and without, crawling and creeping into the finest curves of her lines wherever it is possible for men to twist. Twelve hundred hammerers, measurers, caulkers, armourers, forgers, smiths, shipwrights; twelve hundred dingers, clashers, dongers, rattlers, clinkers, bangers, bangers, bangers!"

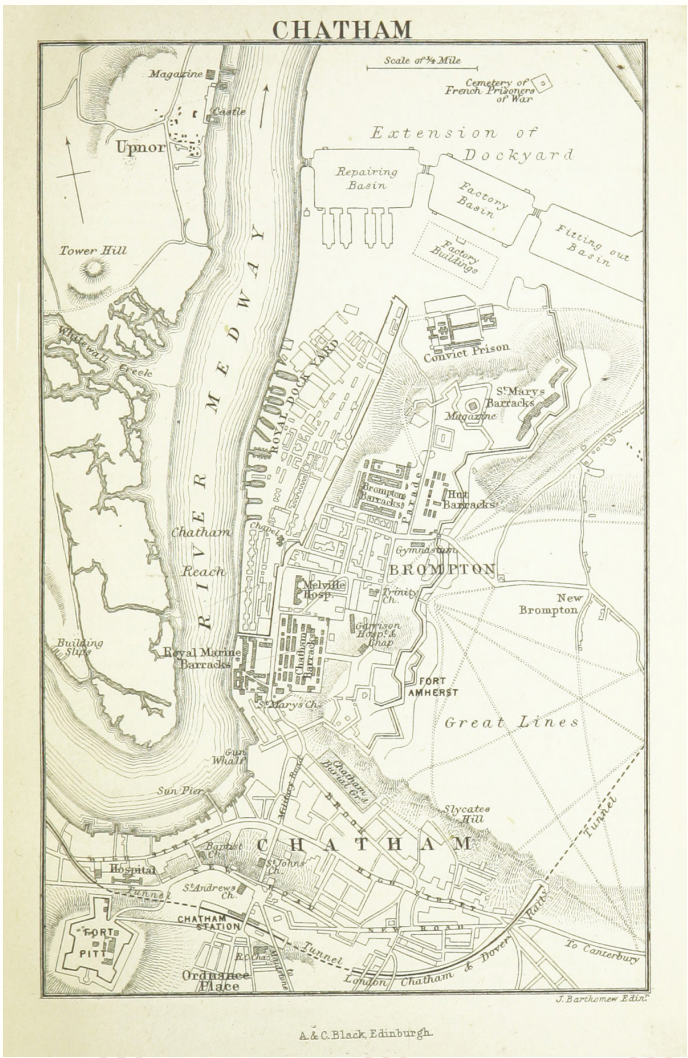
Charles Dickens (1812–1870), a writer who had grown up in Chatham, returning later in life, describing a ship being built in 1861

By the 1830s, steam power was also being applied to the ships themselves. *HMS Phoenix*, a paddle steamer built at Chatham, was one of four experimental steamships run by the Royal Navy. The next stage was the *HMS Bee*, built in 1842, that incorporated both steam paddles and a screw propeller. Older ships were now brought back to Chatham to be refitted with screw propulsion, like *HMS Horatio*. This was followed by experiments with adding armour plating, as was incorporated in the design of *HMS Aetna* in 1856. These developments led to the first fully iron warship, *HMS Achilles*, which was launched from Chatham in 1864.

All of this meant that metal mills had to be added to the site next to the smithery to produce the large quantities of iron needed to shape into the required ship parts. The smithery was enlarged and a new foundry was added in the 1850s to meet this same demand. Number 1 Dock was filled to create space for a workshop built to enable the iron sheets to be bent into the correct shape.

It took years to build a ship. After its frame and outer shell had been built in dry dock, it was then floated out onto the river where everything else was added to it, often taking a year or more. For example, *HMS Achilles* was moored in the River Medway for a year while it was kitted out. To speed this process up, the dock site became four times bigger, incorporating St. Mary's Island and three new basins, each around 20 acres in size, with their own dry dock and specialist facilities for building iron steamships. The first basin opened in 1871 and the final one in 1883.

Much of the labour to enlarge the dockyard was done by the convicts from the prison built north of the site in 1853 for this purpose. In 1897, the prison was knocked



Plan of Royal Dockyard, Chatham, 1884

down and replaced by a new naval barracks for men from the ships stationed in the river. It also served as the headquarters for the naval command of the ships in the area until after the Second World War.

By 1897, new dry docks and slipways for launching ships were needed as the old ones were two small for the most up-to-date ship designs. The new dry dock opened in Number 1 Basin in 1897, which was the biggest in the world when it opened. Number 7 Slip, when it opened in 1900, was the longest in the world. Unfortunately, the launch of *HMS Africa* in 1905, the first British ship to launch an aeroplane, was to be the last battleship built at Chatham as the new *Dreadnought* class of ships were too big to be built at the Chatham site.

20th century developments

"If we are to be able to build new ships in our shipyards and fulfil other priority defence tasks, we simply cannot afford to sustain such a policy of refit and modernisation … As regards support, the change in policy on refits which I have described earlier will mean that we cannot justify keeping a dockyard organisation of its present size. I regret to inform the House that the base and dockyard in Chatham will have to close in 1984…"

John Nott, Minister for Defence, speaking in the House of Commons (25 June 1981)

Photograph of the Royal Dockyard, Chatham, 1910

The 20th century began with the modernisation of the British navy. For Chatham, this meant being upgraded back to being a fleet base, as the navy was divided into three new divisions – one in Chatham, one in Portsmouth and one in Plymouth. New barracks, called *HMS Pembroke*, were built to the east of the Victoria dockyard. New railway lines were opened in 1904, bringing the total amount of track to 17 miles. By 1914, there were over 200 ships in the Royal Navy with crew from the Chatham Division.

HMS Lance, from Chatham, was the first British ship to engage the enemy in the First World War, while *HMS Pathfinder*, also from Chatham, was the first British ship to be sunk. The ships *HMS Hogue*, *HMS Aboukir* and *HMS Cressy*, all from Chatham, were sunk on the same day in September 1914 by a German U-boat. Chatham ships fought as part of the major sea battle at Jutland in 1916 and marines from the Chatham Division were amongst those involved in the Gallipoli invasion in 1915. The dockyards themselves were attacked by German Gotha bombers in September 1917, killing 131 people, which was the largest single loss of civilian lives in the UK during the war.

In the Second World War, *HMS Ajax*, from Chatham, led the British squadron involved in the Battle of the River Plate off the coast of South America at the beginning of the war. *HMS Sheffield* was one of the ships involved in the hunt for the most powerful ship in the German fleet – the Bismark. Ships from Chatham, or manned by men from Chatham Division, were also involved in the dangerous convoys in the Mediterranean, keeping Malta supplied and the Arctic fleets taking supplies to the Soviet Union via its port at Archangel.

Following the war, there were big cuts in defence spending, as it no longer seemed necessary to maintain a large surface fleet. With the gradual independence of countries in the British Empire during the 1950s and 1960s, there was also less of an overseas empire to defend. After 1956, the three divisions were merged back into one. Chatham's role shifted to being the home of the reserve fleet.

Shipbuilding at Chatham became focused entirely on submarines. One of the reasons for this was that submarines were not affected by poor navigation in the Medway. Six coastal submarines were ordered from Chatham. The *C17* was the first of these submarines, launched in 1908. 12 submarines from Chatham saw operations in the First World War, but the 1920s saw a slowing of construction due to international attempts to disarm countries, such as the 1921 Washington naval conference.

Submarine construction increased again in the 1930s in the build up to the Second World War. Surprisingly, Chatham was not a target for the Germans during this war, which has never been explained given its importance to the war effort and how close it was to London. Only one significant raid occurred, in December 1940, causing some damage to the dockyard.

Submarine building would continue at Chatham until the 1960s. By this point, 57 submarines had been built there. In 1960, the support yard at Sheerness was closed. Men were no longer stationed in the barracks and the buildings were used for other purposes. The last submarine built at Chatham was the *Okanagan*, built on behalf of the Canadian navy and launched in 1965. A facility for maintaining and refuelling nuclear submarines was built in 1968 around dry docks 6 and 7. *HMS Valiant* was the first nuclear submarine to come to Chatham for maintenance.

In 1981, Parliament ordered the Chatham Dockyard to be shut down, along with the remaining barracks. Letters had been sent to workers telling them they would be losing their jobs but they were recalled to work to help prepare ships to go to the South Atlantic to liberate the Falklands Islands which were invaded by Argentina in 1982. When the war was over, the yard was kept open for another year to repair the ships damaged in the Falklands campaign. The dockyard finally shut at the end of March 1984.

Section C: Significance

Overtaking Deptford as the premier dockyard

When Henry VIII had started to build his Navy Royal, he had realised that he would need specialist facilities to do this. These royal dockyards would not just be for building ships for the King's navy; they would also be where ships were maintained and repaired. Henry VIII's initial focus was on the dockyards he had built on the Thames, particularly at Deptford and Woolwich as they were nearest to his palaces. Storehouses were also established in other locations like Chatham from 1550 to supply rope, cloth for sails and timber for the hull and masts.

Deptford Dockyard

Chatham had been named as a royal dockyard by Elizabeth I in 1567, although the original site had to be drained before it could be used, and its physical size was quite limited. However, under James I, investment shifted from Deptford to a re-established and expanded dockyard at Chatham.

Deptford had the advantage of being closer to the seat of government, but its location on a busy stretch of the Thames limited opportunities for expansion due to heavy commercial and passenger traffic. As a result, a new dockyard was built near the original Chatham site along the Medway, which was quieter and offered greater potential for expansion. Chatham Royal Dockyard subsequently became the government's principal shipbuilding and repair facility, maintaining that role well into the 20th century.

Development of the nearby dockyard at Sheerness

While the Royal Dockyard had been established at Chatham on the River Medway, docking facilities for the growing Royal Navy fleet were limited. Ships could be brought into Chatham for repairs and could be launched from Chatham to become part of the fleet. However, the rest of the fleet had to anchor in the river at Gillingham Reach or even further out at the sandbank called the Nore. Supplies had to be ferried out to ships which could be very time-consuming, which was not a problem in peacetime but could have serious consequences for the navy during a war.

It was decided that a new dockyard facility was needed where ships could moor and be resupplied quickly from the shore. The government chose the Sheerness peninsula at the mouth of the Medway. Henry VIII had built fortifications there to protect the mouth of the Thames, but by the 1660s, these were no longer in use.

In 1665, after war with the Dutch Republic had been declared, Peter Pett, who was in charge of provisioning at Chatham, set up a small warehouse at Sheerness to facilitate the supply of ships in the Medway. It wasn't long before ships began coming to Sheerness for repairs, prompting the construction of wooden sheds and jetties to make the process easier. Mud banks were even used for careening – putting ships on their side to allow for repairs to the hull. By the end of 1665, a permanent dockyard was established, complete with a storehouse, forge and slips for getting ships out of the water.

Sheerness attacked by the Dutch in 1667

Construction of fortifications to protect the new yard was slow and in the summer of 1667, the Dutch navy captured Sheerness, as its defences were incomplete. The Dutch used the site as a base to attack the fleet anchored in the Medway and subsequently destroyed the facilities at Sheerness. Parliament ordered that the fortifications be completed as quickly as possible to prevent future attacks. By 1672, the rebuilt dockyard was operational, supporting minor repairs and serving as a base for cruisers patrolling the Channel.

The Sheerness dockyard gradually expanded across the marshland surrounding it. New storehouses were added to the central complex, along with several dry docks and a mast pond. Old ships (hulks) that were no longer in use were filled with earth and sunk over time to create additional land for the dockyard, which allowed for the construction of two more dry docks. By 1800, all available land at Sheerness had been used up.

In 1810, a design for a new dockyard by Samuel Bentham and John Rennie was proposed. The original Sheerness facility was closed in 1815 and the new facility opened in 1830. This new yard was twice the size of the old one. Wooden piles were driven into nearby sandbanks and quicksand to turn them into usable land for construction. Special arched foundations were designed to rest on these wooden piles, preventing buildings from sinking. These new facilities remained operational until 1960.

Impact of the silting up of the Medway

An ongoing problem with the Medway River was its tendency to silt up, a process where sand and earth were deposited by the river as water flowed out into the estuary. This made it increasingly difficult for ships to navigate the river up to Chatham, particularly where bends in the river made silt deposition more likely. As navy ships grew larger, this problem became more serious.

By the middle of the 18th century, it could take weeks for ships in need of major repairs to navigate the narrowing channels of the Medway from the Sheerness dockyard to Chatham. This issue had been known when Chatham was selected as the most important royal dockyard in the early 17th century, but it was not until steam-powered dredging was invented in the 19th century that the problem was addressed.

The problem of silting had several effects on Chatham over time. Firstly, it led to the establishment of the companion dockyard at Sheerness, which was located far enough into the estuary to avoid the silting problem. It also contributed to a shift in focus away from Chatham, with greater investment in Portsmouth and Plymouth starting in the early 18th century. Neither of these dockyards was prone to silting and both had reliably deep anchorages, especially for ships preparing for missions in the Atlantic. As a result, Chatham became more of a repair and refitting facility rather than a major shipbuilding centre.

Importance in the Napoleonic Wars

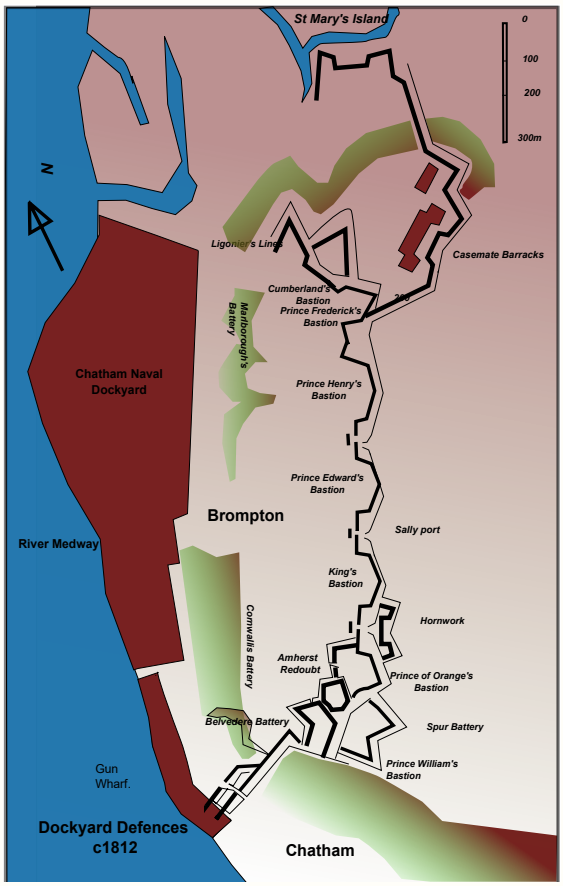
The Revolutionary and Napoleonic Wars (1793–1815) posed a renewed threat to Britain; not just because its ships and colonies might be attacked, but because the British mainland itself might be invaded. Ships from Chatham and its fortifications played an important role in defending Britain against the French threat. At one point, Napoleon controlled all the seaports facing Britain, which not only cut Britain off from continental trade but also provided him with potential launching points for his planned invasion.

The need for defences had been clear from previous wars with France in the 18th century, leading to the construction of the Chatham Lines, a series of fortifications designed to protect the facility from both land and sea attacks. Land was acquired and work began in the 1750s. The first defences were earth banks and wooden fences, but these were later upgraded to stone and brick as the threat from France grew.

French prisoners of war were employed from 1799 to build the redoubts that served as fortresses in the Lines, including Fort Amherst and Fort Pitt. Underground caves were used to store ammunition for the guns in the forts. The barracks within the Chatham Lines were used to station troops tasked with protecting London and the south coast from potential French invasion.

Once the war ended, these residential facilities continued to be used by troops waiting to be deployed overseas, as well as for training purposes, as Charles Dickens commented on in *The Pickwick Papers*. However, by then, guns had become so large and powerful that the defences were no longer considered effective against a concerted enemy attack.

From a ship resupply standpoint, Chatham Dockyard was crucial for supplying ships with equipment and provisions before they returned to action in the war. This led to the construction of a second storehouse in 1812 to store the hemp used for making the navy's ropes. The war also spurred the use of new technology made possible by the Industrial Revolution, as metal began to replace wood in shipbuilding and refitting, while steam power allowed for faster and more efficient work.



Plan of Chatham Dockyard defences in 1812

The most famous contribution of Chatham Royal Dockyard to the Napoleonic Wars was *HMS Victory*, the flagship of Lord Nelson, whose decisive victory over the French at Trafalgar in 1805 is commemorated by his column and statue in Trafalgar Square, London. Work on the ship began in 1759, while Britain was still at war with France during the Seven Years' War and the ship was completed and launched in 1765. After serving in the reserve fleet, *Victory* became Admiral Keppel's flagship in 1778. She finally became Nelson's flagship in 1803, after years of repairs and refitting at Chatham, having previously participated in the Battle of Cape St. Vincent in 1797 – the battle in which Nelson earned fame as one of Britain's most daring military leaders.

HMS Victory can be visited at Portsmouth today. It is a symbol of one of Britian's greatest ever naval victories that was built and repaired at Chatham.

HMS Victory

Mechanisation through 19th century

In the first two centuries of ship maintenance and construction at the Chatham Royal Dockyard, all the processes used were manual, completed by hand by skilled craftsmen. The demands for new ships and faster repairs during the Napoleonic Wars meant that engineers began to look for ways to utilise the engines and machines used in the northern factories of the Industrial Revolution to improve the speed and efficiency of the dockyard's work.

The introduction of iron into ship designs in 1804 marked the beginning of mechanisation in the iron-making process and, by extension, shipbuilding. To produce iron in the quantities required and within the necessary timeframes, a new smithery had to be constructed to meet the increased demand. Work began on this facility in 1808, although the full mechanisation of the iron-making process was not completed until the 1840s, when steam engines were used to blow air into the forge and operate automatic hammers. Metal mills, with rollers and furnaces for reshaping iron, were added in 1845.

Steam power quickly found a wide range of applications in the dockyard, from winding fibres into ropes in the Ropery (from 1811) to cutting timber in the Saw Mill (from 1814), crushing and mixing ingredients in the Lead and Paint Mill (from 1818), and pumping water out of dry docks (from 1820). Work could be done quicker and much more efficiently. All of this enabled Chatham to be able to build the bigger ships that were possible to design once iron could be used as a material in their construction.

Impact of the closure of Woolwich dockyard

The royal dockyard at Woolwich had been in service longer than Chatham, although it was established in the 16th century. By the 1830s, Woolwich specialised in building steam-powered ships for the navy. Even before there was a drop in demand for ships, Woolwich was already nearing the end of its useful life. New ship designs, using iron, were making ships too large for the yard to accommodate. Unlike Chatham, there was no nearby land for Woolwich to expand into.

After the Crimean War in the 1850s, the demand for new naval ships slowed down as warfare between European powers seemed much less likely. This led to the closure of the Woolwich dockyard in 1869. Some workers retired, others were assisted in relocating to Canada and some left to seek other employment. Operations at Chatham were also reduced and some workers were allowed to leave there as well. While the closure of Woolwich, and soon after Deptford, led to the loss of many workers, Chatham quickly began to re-employ them when the unexpected Prussian attack on France in 1870 raised fears of a new European war.

Chatham had already gone through a huge expansion programme in the 1860s, so the extra capacity was already there to take on extra work to cover for the closure of Woolwich. Building materials were brought from buildings no longer needed at Woolwich to make factories at Chatham for making boilers and building engines for the ships.

Struggles with changes in ship design in the 20th century

Changes in ship design began to happen rapidly in the 19th century and for a while, Chatham was at the forefront of these changes. Iron had been added to the structure of ships since the Napoleonic Wars. Steam power was another element incorporated into ships, with the paddle steamer, *Phoenix*, launched from Chatham in 1832. The *Bee* became the first ship launched from Chatham that used a propeller rather than sails. By the end of the 1840s, the Royal Navy shifted from ordering sail ships to those with screw propellers.

From 1863, Chatham began building ships with metal hulls, like *HMS Achilles*. As a result, ships got much bigger as they were not limited by the finite strength of timber. The site at Chatham was greatly increased in size in this period to accommodate these bigger ships but the time was coming when ship design would outgrow these older dockyards. The last warship produced at Chatham was *HMS Africa* in 1905. The new *Dreadnought* class of ships was too big to be constructed at Chatham, so they were built at Portsmouth instead.

However, while Chatham continued to repair and maintain ships, it now switched to building submarines. The *C17* was launched from Chatham in 1908. Submarines would continue to be built at the dockyard until the 1960s, with a total of 57 submarines being built at the dockyard.

Closure in 1984

After the dockyard was closed in 1984, the eastern part of the site became a port for commercial shipping called Medway Ports. Another section was sold off for residential and industrial use, now called Chatham Waters. The 18th century part of the site is now run as a maritime museum by the Chatham Historic Dockyard Trust, which opened in 1985.

The museum includes two warships built at Chatham – *HMS Gannet* (1878) and *HMS Cavalier* (1944) – and a submarine – *HMS Ocelot* (1962) – along with exhibitions explaining the history of the dockyard. Many of these exhibitions contain both large and small artefacts associated with shipbuilding and repair at the dockyard. There are also linked exhibitions from other organisations, including the RNLI, Royal Museums Greenwich and the Imperial War Museum.

Dry dock at Chatham, with *HMS Ocelot* preserved submarine

For more information on the dockyard, follow the link below:
https://thedockyard.co.uk/the-collections/historic-buildings/

Acknowledgements

p.1 Image scan by Gerry Bye. Original by Anthony Anthony. / Wikimedia Commons / Public Domain
p.2 Image by anonymous / Wikimedia Commons / Public Domain
p.4 Image by anonymous / Wikimedia Commons / Public Domain
p.6 Image by Pierre-Charles Canot / Wikimedia Commons / CC0 1.0
p.7 Image by Joseph Farington / Wikimedia Commons / Public Domain
p.8 Image by Clem Rutter, Rochester Kent / Wikimedia Commons / CC BY-SA 3.0
p.9 Image from Mechanical Curator collection / Wikimedia Commons / Public Domain
p.10 Image by Snapshots Of The Past / Wikimedia Commons / CC BY-SA 2.0
p.12 Image by John Cleveley the Elder / Wikimedia Commons / Public Domain
p.13 Image by Rijksmuseum / Wikimedia Commons / CC0 1.0
p.15 Image by Clem Rutter, Rochester, Kent. / Wikimedia Commons / CC BY-SA 3.0
p.15 Image by Ballista / Wikimedia Commons / CC BY-SA 3.0
p.17 Image by Dhowes9 / Wikimedia Commons / CC BY-SA 3.0