



# Tower Bridge Learning

## Self-guided visit resources – Key Stage 1

Thank you for booking a visit to Tower Bridge Exhibition, we hope you enjoy your visit.

This pack contains information and activity ideas for you to do with your class during your visit. We also recommend that group leaders visit Tower Bridge in advance of bringing their school group so they can familiarise them self with the exhibition content and layout. We can provide a complimentary ticket to facilitate this.

### Background information

Tower Bridge first opened in 1894 and is an unusual bridge because it allows people to cross the River Thames but also opens to let tall ships travel up and down the river.

This unusual design came about because of 2 issues. In the 1880s, London was the largest city in the world and was extremely congested, so a new bridge was needed to help ease the road traffic. At the same time the Pool of London (the area around Tower Bridge) was a busy port, receiving goods from all over the world. A normal, low level bridge would have meant that the ships bringing in goods would not have been able to reach the warehouses and a different type of bridge was needed.

Tower Bridge is a bascule bridge, which means the road opens to let tall ships pass. The word bascule comes from the French word for balance or seesaw, as the 2 sides of the bridge move like a seesaw.

Tower Bridge was designed by the architect Sir Horace Jones and then his design was improved by the engineer Sir John Wolfe Barry. Tower Bridge gets its name from its location next to the Tower of London, rather than from the towers on the bridge itself. The Tower of London also influenced the design of Tower Bridge, as there was some concern that a modern Victorian bridge would look out of place next to the castle next door. To solve this, it was decided that the bridge should be faced in stone to match the Tower of London – it's not until you're inside Tower Bridge that you see the brick and metal which makes up the structural skeleton.

The bridge took 8 years to build and, in total, c.800 people were involved in its construction.

The high level walkways were originally opened to the public so that pedestrians could cross the river even when the bridge was open for a passing boat. They found, however, that the bridge opened and closed so quickly that pedestrians tended to wait on the road with the rest of the traffic. This lack of use meant that the high level walkways were closed to the public in 1910 and then were inaccessible until 1982 when the exhibition opened. The glass floor was installed in 2014.

Tower Bridge still opens for boats today, on average 3 times a day, and 40,000 people cross using the road each day. There is no charge to open Tower Bridge for a boat, you just need to be tall enough to require it. All bridge lift dates and times are published on our [website](#) and so it's worth having a look to see if there is a bridge lift happening on the day of your visit.



# Exhibition Guide

## North Tower

The North Tower is at the top of the lift or stairs and is the first part of your visit.



### Key features

- The film shows life in Victorian London at the time when Tower Bridge was being built.
- The goods around the film screen show some of the types of cargo which were coming into the Pool of London on ships and through Tower Bridge.
- The blinds covering the windows show some of the construction workers building Tower Bridge.
- Above the film are portraits of the 4 principle men involved in Tower Bridge's design and construction. Sir Horace Jones (Tower Bridge's architect), Sir William Arrol (structural steel manufacturer), Lord William Armstrong (engineer and inventor) and Sir John Wolfe Barry, (principle engineer who oversaw the building of Tower Bridge).
- The brick walls and metal frames you can see form the main structure of Tower Bridge.
- The brown colour of the metal is the original colour of all the metalwork on Tower Bridge. Tower Bridge was repainted red, white and blue in 1977 to mark the Queen's Jubilee.

### Discussion ideas

- What can you see?
- [Looking at the video] Can you see anything you would see around London today? What wouldn't you find in London today?



## East Walkway

This walkway gives you a great view over the east of London but the west walkway has more recognisable buildings so you may want to spend more time there! The west walkway also has another glass floor which tends to be quieter.

### Key features

- A great view over the east of London towards Canary Wharf and the O2 arena
- Views of tall sailing ships (usually moored up) which would need Tower Bridge to open in order to pass underneath
- Victorian warehouses which would have stored goods like the ones in the North Tower

### Discussion ideas

- What famous buildings can you see?
- Can you see any other bridges out of this window? (No! Tower Bridge is most easterly bridge in central London)
- Can you see any boats? Which ones would we need to open Tower Bridge for?

## South Tower

You can either spend time in the South Tower between visiting the walkways or at the end before going to the Engine Rooms.

### Key features

- A film showing the different people who worked at Tower Bridge.
- Access to the Engine Rooms and toilets (larger toilets available in the Engine Rooms)

### Discussion ideas

- Look up! How many workmen can you see? (7)
- Are they safe up there? How could we make them safer?



## West Walkway

This walkway gives great views over West London

### Key features

- Views of many famous buildings including the Shard, City Hall, BT Tower, St Paul's Cathedral, The Monument, the Walkie Talkie, the Gherkin, Tower of London, HMS Belfast.
- Views of London Bridge (the next bridge along from Tower Bridge)
- A good place to discuss the changing London skyline (see activity sheet)
- A second glass floor

## West Walkway (continued)

### Discussion ideas

- What famous buildings can you see?
- What are the buildings made from?
- Do you think they are old or new?
- Can you see many buildings made from wood? Why do you think that is? (*destroyed in the Great Fire of London*)
- How many bridges can you see? (4. London, Southwark, Millennium (tricky to spot) and Blackfriars bridges.)

## Glass floor

### Key features

- The glass floor is directly over the part of the bridge which opens (the bascules) and you can see the gap between the 2 bascules cutting across the road at the centre of the bridge.
- The glass floor is very strong and can take the combined weight of 2 taxis and an elephant
- If you time it right you can watch the bridge opening from the glass floor, it can get busy though!

### Worksheet notes

Pupils can do a tally of the different bridge users they see. We suggest spending 5 minutes (you could set a timer on your phone) but you can spend as long or as little as you want. If you haven't covered tallies yet in school then the pupils can just tick to show what they have seen.

Please try to keep your group to one side, so other visitors can still walk across the floor.

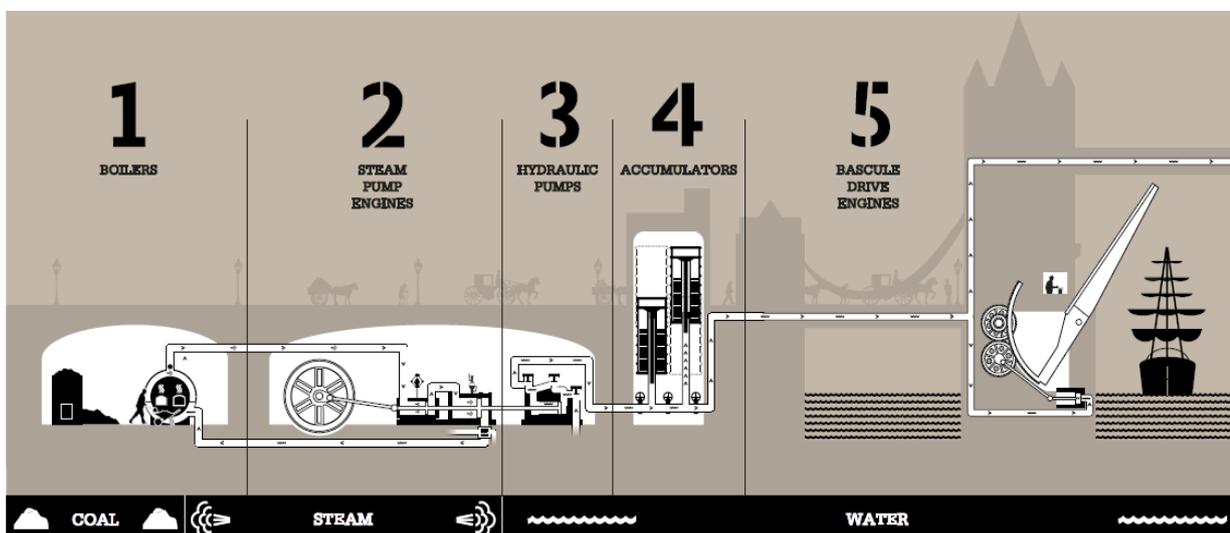


## The Engine Rooms



### Key features

- These are the original Victorian Engines of Tower Bridge and were used to power the Bridge until 1976 (we now use electricity and oil hydraulics). Inside you will see how they worked.
- Generating the power needed to open Tower Bridge can be broken down into 5 stages. Each stage is numbered as you walk through the Engine Rooms.
  - Stage 1 – Boilers
  - Stage 2 – Steam pumping engines
  - Stage 3 – Hydraulic pumps
  - Stage 4 – Accumulators
  - Stage 5 – Drive engine and cog





## Boilers



These created steam by burning coal and boiling the water. Each boiler has 2 fires and these fires were burning 24 hours a day.

### Key features

- The 2 glass tubes on the front would show the stokers how much water was in the boilers, so they could make sure it didn't run dry
- The gauge at the top measures the pressure inside the boilers.

### Discussion ideas

- What can you see?
- What do you think this room would be like when the all the fires were burning?
- What adjectives could you use to describe this machine?

## Steam pumping engines



These machines used the steam from the boilers to power a water pump which you can see when you reach the other end of the engine.

### Key features

- When the big wheel turns, it makes 2 smaller wheels turn which then power a set of pistons. If your pupils play Minecraft, they may already know what a piston is.
- The oil jars on the engine are filled with oil to stop friction being generated by the moving parts.
- The green, red, white and black colours of the machine were chosen by the designer, Lord William Armstrong, as these were the colours on his family crest.



## Steam pumping engines (continued)

### Discussion ideas

- What can you see?
- Do you think the machines have always been this colour? What colours are engines normally?
- What material is this machine made from? Why is this better than another material such as stone?
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## Accumulators



These accumulators stored pressurised water and were filled with water by the water pump on the steam pumping engine.

### Key features

- The accumulators rise and fall depending on the amount of water inside them, when they're up high they are filled with water, down low they are empty
- To open the bridge, the accumulators would be released, letting out the pressurised water, which then powered the drive engine.

### Discussion ideas

- What can you see?
- How do you think these might move?
- What adjectives can you use to describe this machine?



### Drive engine

The water would be forced down the pipes of the drive engine by the weight of the accumulator dropping which would turn the cog at the end.



### Key features

- The cog which, when it turned, would make the Bridge open
- This drive engine is in the wrong place, it needs to be inside the Bridge, connected to the bascule to be able to open it.
- We still use a cog to open Tower Bridge today.

### Discussion ideas

- [Looking at the cog] Do you know what this is? (students may call it a gear – they are the same thing!)
- Where else do you find these?

**The worksheet begins on the next page.**



Name \_\_\_\_\_

## From the walkways I can see...

**TALL** skyscrapers! Can you draw your favourite building?

**What is it made of?** Circle the materials you think the building is made from...

Stone

Glass

Metal

Brick

Wood

**What shapes can you see in the building?**

Triangles

Rectangles

Circles

Squares

Something else



## From the Walkways, I can see...

How many of these can you see through the glass floor?

