

Digging Deeper

Meet the pioneering Victorian engineer James Greathead and find out about his ground-breaking invention, the 'Greathead' digging machine.

Pupils will learn:

- About the role of tunnels and underground trains in London's public transport system
- How the design and function of London tunnels has evolved.
- About the role of the engineers and construction workers in the development of tunnels.

Explore our [Future Engineering Wonders webpage](#) for more information

Key Stage 2

Before your visit

- **Have a conversation with students on how they travel every day:**
 - Have you ever used the public transport?
 - How was your experience?
 - How is it different travelling on buses or trains?
 - How do you think transport might have changed over time?
- **Create a basic road map using tape on the floor of your classroom, or chalk on an outside space:**

Have the students act as vehicles from the 1850's (horses, carriages, people on foot) on the road trying to get about (it should be congested and difficult to get around)

 1. Make a Mindmap in groups of how to solve the problem of overcrowded roads
 - More roads/ raised roads or flyovers/ tunnels might come up
 2. Discuss in small groups what would need to be considered when building new tunnels
 3. Draw out some tunnels on your map and have the students move about again (it should be less congested and easier to get around).

After your visit

- **Split the class into 2 groups and hold a class debate:**
 - **Group 1:** People who *want* to have new deep level tunnels (e.g. Engineers, construction workers and lobbyists)
 - **Group 2:** People who *don't want* new deep level tunnels (e.g. nervous passengers, people who don't want to finance the project, Londoners who's lives will be disrupted by the construction)
 - The teacher should act as moderator and the class could vote at the end which argument they think won (not just voting for themselves!)
- **Design and create a poster, leaflet or webpage to convince passengers to use the brand new deep level underground networks**
- **Create a comic-strip or advertising campaign combatting possible fears that people would have had from travelling deep underground for the first time.**
- **In groups create a tunnel of the future using junk materials:**
 - What materials might tunnels be made from, what are the properties of those materials?
 - How might tunnels be built? Will we have new technology or machinery?
 - How long will tunnels take to build and who will build them?
 - Where will tunnels of the future be built?
 - What kinds of vehicles will use tunnels in the future?



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