

Tunnels

Tunnels are **useful** for moving things like:

- **people**, such as when a train goes through a tunnel;
- **products** that we use and buy;

when the area above ground is

difficult or dangerous to travel on, such as when tunnels are built through a **mountain**.

Animals can also use tunnels as **safe** ways to get around. This [website](#) shows images of animals doing this around the world.



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A tunnel boring machine being used at Hinckley Point C.
Image: Balfour Beatty and Hinkley Point C (used with permission).

Tunnel boring machines

have rotating cutting wheels to break materials away from in front of it. A conveyor belt inside removes the broken material.

Hydraulic arms push the machine forward all the time.

Building a good tunnel

- make sure the rock is not too hard
- make the sides strong
- drill slowly so it doesn't collapse
- use tunnel boring machines



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Building tunnels underwater

The Channel Tunnel between England and France is a well-known underwater tunnel.

Building started from both England and France and met in the middle.



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Global Positioning Systems (GPS) – navigating using satellites – and biostratigraphy – matching up fossils – were used to make sure the two ends lined up and stayed at the right depth.

This was so accurate that they were less than 2 cm off when the two tunnels met. When it was built, the Channel Tunnel was the most expensive construction project in the world. Maintenance is also necessary to keep the tunnel safe.

Try this [video](#) for more information. Please note that the linked video is externally-produced material, for which no responsibility can be taken.

Minecraft challenge

Can you build your own tunnel in Minecraft?

- Learn as you go
- Could you use redstone to make tracks and move things through your tunnel?

If you do not have access to Minecraft you could draw your design, or build your own using simple materials.



Image: Jay Fenney



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