

# Lower Thames Crossing Tunnel Digging Game

The proposed Lower Thames Crossing would be the longest road tunnel in the UK, stretching 2.6 miles. In this game, players will learn about tunnelling and have the chance to dig and build a portion of the LTC tunnel using a Minecraft model.

- [Getting started guide](#)
- [KS2 Lesson Plan](#)
- [KS3 Lesson Plan](#)

# Getting started guide

## Checklist before you begin

You have installed the latest Education Edition version on your computer or tablet. If you need to install [click here](#)

You have either a trial license or a full license for Education Edition. If you need to purchase a license [click here](#)

### “ How to install the game

1. Download the game files by [clicking here](#)
2. Open Education Edition on your computer and sign in
3. Click PLAY on the main screen
4. Then click IMPORT on the bottom right of the screen
5. Navigate to your download folder and import the .mcworld file
6. Click VIEW MY WORLDS
7. Then click the game and click PLAY

This will need to be done for each computer you wish to use. Please contact your IT department for the most efficient way to do this

# KS2 Lesson Plan

## Introduction

This game was developed with engineers from the LTC to showcase how a tunnel is designed and built. Players will get to dig a section of the tunnel and learn about all the different roles involved with an engineering project of this size.

## Learning Objectives

- “ 1. Learn about tunnel digging and understand what goes in to doing this in real life.
- 2. Gain an understanding of the variety of jobs involved when building a new tunnel.

## Guiding Ideas and Questions

- “ 1. Why do you think tunnels are important for connecting different places?
- 2. Out of the job roles involved, which one would you most like to do in real life?

## Performance expectations

In the game, players will be expected to manually dig a section of the tunnel. They will also be learning about the variety of job roles involved, along with facts about other tunnels and road schemes.

## Lesson Structure

To help you plan your lesson structure, watch this video and be taken step by step through the game. The below notes provide additional guidance.

### **Part 1 -**

Before they start please explain what Highways England does -

*'Highways England manage and improve England's motorways and major A roads, helping our customers have safe, smoother and more reliable journeys. We're the government company which plans, designs, build, operates and maintains England's motorways and major A roads, known as*

*the strategic road network (SRN). Make up of 4,300 miles of motorways and major A roads which are at the core of our national transport system.'*

Students will start in the Highways England offices. Here they can interact with the NPCs (non-player characters) who will either give them bits of information or say generic greetings.

Allow them to explore for 5 minutes and ask them to finish by speaking with Drew located near the blue doorway.

Next, they will make their way through the doorway. They are not to click on anything, or teleport to the scheme, until the next part.

## **Part 2 -**

Get the students to click on the NPC stood in the hallway which says 'LTC Tunnel Digging Game'. They will be given two options for the next part. They must click the button that says Key Stage 2.

They will then be teleported to the virtual road scheme. Here they should interact with the first NPC 'Nadia' who will give them more instructions.

Starting in the portacabin next to NPC Nardia, allow the students 10 minutes to explore the scheme talking to each of the NPCs who will provide facts and job information.

At the end of the 10 minutes, get them to head to the entrance of the tunnel and wait there.

## **Part 3 -**

There are instruction NPCs leading up to the tunnel entrance that the students should interact with. One of the NPCs will automatically put them in creative mode, allowing them to build.

The students will need to follow the instruction boards dotted around the tunnel face, including digging (destroying the blocks) and building the concrete to create a tunnel. They will need to be quick and careful not to let too much ground water leak whilst digging. If too much water leaks through, then the tunnel will flood, and they will need to start again. There is a special NPC in the corner that will reset the tunnel if they need it.

Allow them 25/30 minutes to complete the task. They may not all finish in the allocated time, but the aim is to clear all the blocks and create a concrete tunnel.

# KS3 Lesson Plan

## Introduction

This game was developed with engineers from the LTC to showcase how a tunnel is designed and built. Players will use MakeCode to excavate the tunnel and learn about all the different roles involved with an engineering project of this size.

## Learning Outcomes

- “ 1. Use MakeCode to excavate a section of the tunnel.
- 2. Gain an understanding of the variety of jobs involved when building a new tunnel.
- 3. Gain an understanding of the engineering techniques for building a new tunnel.

## Guiding Ideas and Questions

- “ 1. Why do you think tunnels are important for connecting different places?
- 2. What kind of machine would you design to excavate tunnels?
- 3. Out of the job roles involved, which one would you most like to do in real life?

## Performance expectations

In the game, the players will be expected to use MakeCode to program the excavation of the tunnel. They will also be learning about the variety of job roles involved, along with facts about other tunnels and road schemes.

## Lesson Structure

To help you plan your lesson structure, watch this video and be taken step by step through the game. The below notes provide additional guidance.

## **Part 1 -**

Before they start please explain what Highways England does -

*'Highways England manage and improve England's motorways and major A roads, helping our customers have safe, smoother and more reliable journeys. We're the government company which plans, designs, build, operates and maintains England's motorways and major A roads, known as the strategic road network (SRN). Make up of 4,300 miles of motorways and major A roads which are at the core of our national transport system.'*

Students will start in the Highways England offices. Here they can interact with the NPCs (non-player characters) who will either give them bits of information or say generic greetings.

Allow them to explore for 5 minutes and ask them to finish by speaking with Drew located near the blue doorway.

Next, they will make their way through the doorway. They are not to click on anything, or teleport to the scheme, until the next part.

## **Part 2 -**

Get the students to click on the NPC stood in the hallway which says 'LTC Tunnel Digging Game' They will be given two options for the next part. They must click the button that says Key Stage 3.

They will then be teleported to the virtual road scheme. Here they should interact with the first NPC 'Nadia' who will give them more instructions.

Starting in the portacabin next to NPC Nardia, allow the students 10 minutes to explore the scheme talking to each of the NPCs who will provide facts and job information.

At the end of the 10 minutes, get them to head to the entrance of the tunnel and wait there.

## **Part 3 -**

There are NPCs leading up to the tunnel entrance that the students should interact with to receive their next instructions. They will next start the coding part of the lesson which will be via following step by step instruction provided within the above video - see from 7 minutes and 20 seconds.

The result should be that they use MakeCode to programme the excavation of the material and create a concrete tunnel. To open MakeCode they can either press the C key, or type /code into the chat [Click here to see what the finished code should look like](#). Allow 25 to 30 minutes to complete the task. If students complete this faster get them to start the coding part again.