VICTORIA State Government | Education and Training

METROTUNNEL

MINECRAFT EDUCATION EDITION

STATION IDEAT!ON

A MINECRAFT MISSION

TEACHER GUIDE

YEAR 5 AND 6

QUICK PROGRAM OVERVIEW

Week	Key Student activity	Key Resources
Investigate: Inworld Exploration Pages 2-8	Student teams receive the team design portfolio with a challenge invitation from Freddie (Town Hall Station lead designer). Teams explore the inworld Town Hall Station working in multiplayer mode to understand the design challenge and possible passenger needs, collecting information in their portfolios. Revisit the Design Portfolio to review the Project Rubric and the Design Process ahead.	• Design Portfolio • Minecraft Station Ideation World • Project Rubric
Investigate: Research Page 9	Teams conduct online research, surveys, and interviews to understand the prospective passenger need/s they wish to address. They also research solutions from around the world that address human needs in innovative ways.	• Design Portfolio
Generate: Pages 10-12	Teams generate their first design ideas and sketches, storing these in the design portfolio. They will pitch their best ideas to their teacher and peers then use the project rubric to set goals for their proposed solution.	• Design Portfolio • Project Rubric
Produce: Pages 13-15	Working in multiplayer mode, teams design, build and annotate their design solution inworld.	• Design Portfolio • Minecraft Station Ideation World
Evaluate: Page 16-17	Student teams will present their final design solution and seek feedback from their teacher and peers. The final design will be assessed using the project rubric.	• Design Portfolio • Minecraft Station Ideation World • Project Rubric
Competition 2022:	Student teams will prepare a narrated video recording of their final design for submission	• Design Portfolio • Minecraft Station Ideation World

INTRODUCTION

Station Ideation - A Minecraft Mission is an opportunity to engage year 5 to 6 students in an authentic high-profile project happening in Melbourne.

The Metro Tunnel Project will underpin Melbourne's rail network for decades to come. Young people have a bigger stake than anyone in our city's transport system. This mission will show them what the project means to them as future citizens and workers.

This challenge is primarily built around a progressive approach to the Victorian Curriculum F-10 for Design and Technologies utilising digital design portfolios and Minecraft: Education Edition.

Student teams record their progress as they complete the challenge using a digital **Design Portfolio.** This portfolio is a structured template which scaffolds key stages of the design process.

The design portfolio is available in **Google Slides** and can be downloaded as a **Microsoft PowerPoint** or PDF. This can be shared with your students using Google Classroom, Microsoft Teams or as a printed booklet.

THE MISSION

Teams of students are invited to become station designers and use Minecraft to prototype creative use of public spaces in Melbourne's new Town Hall Station.

Students will begin the challenge by going on a world-first tour of Town Hall Station in Minecraft. As they explore the station, they will encounter members of the Metro Tunnel design team who will share creative ideas that facilitate passenger wellbeing, accessibility, time management, sustainability and showcase Melbourne. Above ground in the streets around the station, design teams will meet prospective passengers to learn more about their needs.

Guided by the design process outlined in their portfolios, student teams will choose a space, and transform it to meet the needs of prospective passengers in 2025 and beyond.

VICTORIAN CURRICULUM F-10

Design and Technologies

Learning Area	Content Description	Code
Technologies and Society	Investigate how people in design and technologies occupations address competing considerations, including sustainability, in the design of solutions for current and future use	VCDSTS033
Materials and technologies specialisations	Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use	VCDSTC037
Creating Designed Solutions: Investigating	Critique needs or opportunities for designing, and investigate materials, components, tools, equipment and processes to achieve intended designed solutions	VCDSCD038
Creating Designed Solutions: Generating	Generate, develop, communicate and document design ideas and processes for audiences using appropriate technical terms and graphical representation techniques	VCDSCD039
Creating Designed Solutions: Producing	Apply safe procedures when using a variety of materials, components, tools, equipment and techniques to produce designed solutions	VCDSCD040
Creating Designed Solutions: Evaluating	Negotiate criteria for success that include consideration of environmental and social sustainability to evaluate design ideas, processes and solutions	VCDSCD041

Critical and Creative Thinking

Learning Area	Content Description	Code
Questions and Possibilities	Experiment with alternative ideas and actions by setting preconceptions to one side	VCCCTQ022
Questions and Possibilities	Identify and form links and patterns from multiple information sources to generate non-routine ideas and possibilities	VCCCTQ023
Meta-Cognition	Investigate how ideas and problems can be disaggregated into smaller elements or ideas, how criteria can be used to identify gaps in existing knowledge and assess and test ideas and proposals	VCCCTM031

OTHER LEARNING AREAS

The five design themes highlighted to students in the challenge relate to learning areas across the curriculum. As part of the investigation stage of the design process, students may touch on aspects of one or more of the following:

Learning more about the importance of sustainable materials

Learning more about the history of Melbourne

Assisting station users to use their time efficiently

Understanding personal, social and community health

Considering how to meet the needs of all station users

CORE LEARNING INTENTIONS AND SUCCESS CRITERIA

Learning Intentions

Students will be able to:

- LI1: work through the design process as members of an effective team
- LI2: undertake relevant research to inspire the development of innovative design solutions
- LI3: understand how environments can be designed to meet various user needs
- LI4: investigate, identify, and imagine prospective passenger needs and requirements for 2025 and beyond
- LI5: generate a broad range of relevant and innovative solutions
- LI6: build the prototype of their chosen installation or service solution in Minecraft
- LI7: seek out and leverage feedback from peers and real-life passengers
- LI8: reflect upon and self-assess their team's efforts and learning against the success criteria described in the rubric.

Success Criteria

Success criteria are described in the assessment rubric and evidenced through work in the Station Ideation Design Portfolio and the Minecraft prototyped solution.

ASSESSMENT

Formative

Students should regularly present their work to the class, another team, or their teacher as they progress through each stage of the design process. Informal presentation and feedback sessions could take place once teams have:

- established their station spaces and prospective passenger issues or themes
- gathered and annotated their research images and/or interviewed members of the local community
- generated a range of possible concepts
- created a final design.

Observe student teams collaborating and working in their design portfolios.

Summative

Assess the team activity
The project rubric may be revisited at several stages of this challenge:

- peer review
- team self-assessment
- final team and/or teacher assessment.

Student teams might self-assess using the rubric and submit the completed project rubric, design portfolio, and Minecraft prototype to their teacher for review.

Assess individual learning
Invite individual students to write a final reflection on their learning. Students should consider their role in the team, how they worked together as a team, what they learned about prospective passenger needs and how built environments can support those needs.

PREPARATION/ REQUIREMENTS

Pre-lesson activities (teacher only)

To facilitate this activity using Minecraft: Education Edition, teachers do not have to be expert Minecraft users. Quick in-game tutorials are available to develop familiarisation with basic Minecraft controls. These can be found by opening and signing into Minecraft: Education Edition, selecting Library and then How to Play. Guidance is available for both keyboard and touch device users.

TEACHER CHECKLIST

- ✓ Check all students have Minecraft: Education Edition downloaded to their device and their EduPass/login details available. Information is available on **Arc.**
- ✓ Download and import the Station Ideation world.
- ✓ Determine the best access for your student design teams. Station Ideation is designed to be completed collaboratively with groups of three to four students. Teams may design in one Minecraft world by using Multiplayer Mode, whether one world is shared by the whole class (hosted by the teacher), or a world is opened for each team (hosted by the team leader). Guidance on how to host Multiplayer worlds can be found here:
  How To Set Up A Multiplayer World

Prior Minecraft knowledge required by students

To play the game, students should already know how to:

- ✓ move forward, back, left, and right within Minecraft
- ✓ place and break blocks
- ✓ interact with non-player characters (NPCs)
- ✓ take photos with the in-game camera.

TIMELINE

Station Ideation: A Minecraft Mission can be completed within Five weeks (approx. Two lessons per week) or through a short intensive period (approx. two full days), for instance, during **Design and Technologies Week.** This teaching resource outlines the focus required for each of the anticipated five weeks.

As with all project based learning, students should be given agency to find their own level and should work at their own pace, managing their own learning with support from the structured resources and class teacher.

Tip!

Minecraft saves locally to the device that the game is hosted on. Students are advised to export their world at the end of each session to not lose access to their world file. World files can be saved locally on a device or using OneDrive or Google Drive. Guidance can be found here:
Importing and Exporting your Worlds

Week 1: Investigate

Students will be able to:

- work through the design process as members of an effective team
- undertake relevant research to inspire the development of innovative design solutions
- understand how environments can be designed to meet various user needs

PROJECT STAGE: INTRODUCTION

- The Design Brief

ACTIVITY:

Create design teams of three to four students and have the team choose a leader.

Distribute the **digital design portfolio** to the team and ask students to read the opening page from Freddie. Then, as a class, discuss what students understand is the mission ahead of them.

Step through the design portfolio with the whole class and discuss the importance of working as a team, taking notes, and showing evidence at each stage of the design process. Draw attention to the Project Rubric and discuss how it can be used by the team to set their team goals.

RESOURCES:

Design Portfolio: Message from Freddie (p.2)
Design Portfolio
Project Rubric

FREDDIE - HEAD STATION DESIGNER

PROJECT STAGE: STATION EXPLORATION

- Meet Metro Tunnel design team members
- Identify design spaces
- Find inspiration

ACTIVITY

Invite student teams to open the Station Ideation Minecraft world. Students will be on their own devices and join in world as a team. The world should be **hosted** by the team leader of each team, and others will use the **join code** to enter. Team members should try to stay together as they move through the Minecraft world. Whether sitting together or using Minecraft chat, they should be encouraged to talk about what they see, read, and hear.

Freddie will meet them and offer instructions for them to follow throughout the world.

As student teams explore Town Hall Station, they will encounter 5 members of the Metro Tunnel design team who will provide information on potential themes and teleport them to inspirationally designed spaces around the world.

JOIN CODE EXAMPLE

IONA WATCH - A MEMBER OF THE STATION DESIGN TEAM

Remind students to take notes and use the in-game camera throughout the activity. These can be employed variously in the Design Portfolio.

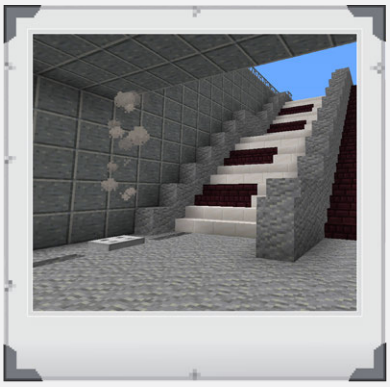
Video and web links are offered in-world for each of these spaces for students to conduct further research.

Video Links:
Wellbeing: **Piano Stairs**
Accessibility: **Schiphol Airport Robot**
Sustainability: **NYC Lowline underground gardens**
(There is no video available for the London Electronic Walkways or Syntagma Station)

Students will collect in-game 'power up' items along the way as a reward for engaging with each Metro Tunnel design team member.

Underground, teams will find the six potential build areas which they can freely revisit before deciding on their final design space.


IN-GAME CAMERA


PIANO STAIRS

RESOURCES:

Design Portfolio: Investigate 1 (p.5)
Station Ideation mcworld

PROJECT STAGE: PROSPECTIVE PASSENGERS

- Identify needs
- Find common themes

ACTIVITY

At the end of the Town Hall Station tour, students will find themselves above ground at Federation Square. Freddie will direct them to meet prospective passengers on Swanston Street.

Tip!

They must interact with all 17 prospective passengers to unlock creative mode in the game (enabling them to build). The in-game compass will lead students to interact with each of these passengers and an onscreen counter will show how many they have checked off.


FREDDIE AT FEDERATION SQUARE


SWANSTON STREET

From each character's dialogue, they should identify at least one need or opportunity. Some of the passengers may have similar needs and students should be encouraged to identify any possible themes.

Teams should record information in the design portfolio for 3 passengers and try to establish the problem to be addressed as the goal/s of their design.

Outside of Minecraft:
Teams are also encouraged to conduct primary research by speaking to members of their local school community to investigate what their needs are when travelling through train stations. You could facilitate a trip to your local train station so that students can interview real life passengers.

RESOURCES:

Design Portfolio: Investigate 2 & 3 (p.6-7)
Station Ideation mcworld

MEET PROSPECTIVE PASSENGERS


MEET PROSPECTIVE PASSENGERS

PROJECT STAGE: BUILD SPACE

- Evaluate potential spaces

ACTIVITY

Having established the problem/s to solve, teams need to consider which spaces might be most suited for their solution.

They should consider several factors for 2 or more separate areas before deciding on the final site for their design.

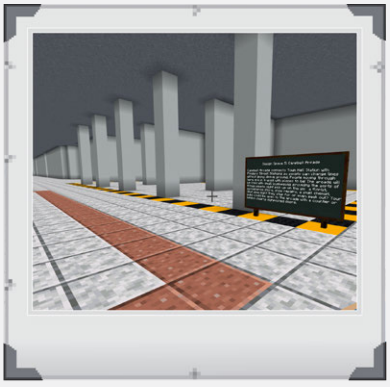
Possible factors could include:

- Position
- Size
- Ceiling height
- Lighting requirements and visibility
- Passenger flow

RESOURCES:

Design Portfolio: Investigate 4 (p.8)
Station Ideation mcworld


DESIGN SPACE 2


DESIGN SPACE 5

Week 2: Investigate

Students will be able to:

- work through the design process as members of an effective team
- understand how environments can be designed to meet various user needs
- investigate, identify, and imagine prospective passenger needs and requirements for 2025 and beyond
- generate a broad range of relevant and innovative solutions

PROJECT STAGE: RESEARCH

- Select need/issue to address

ACTIVITY:

Teams will conduct research into the need/s they wish to address.

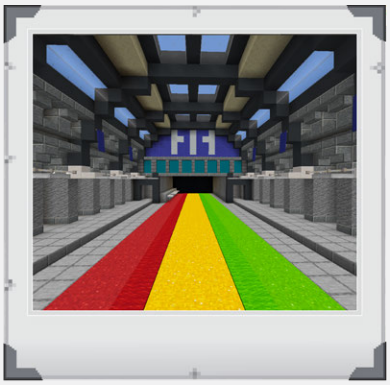
They should identify and collect images of what they consider interesting designs and paste them into the indicated spaces on each design page of their portfolio.

They should also record a short note to suggest why they chose each image.

The more research teams do at this stage, the more likely they will be to generate an innovative design.

Encourage teams to share their research with other design teams in class. They may have discovered interesting design ideas and concepts that will inspire others.

NYC LOWLINE UNDERGROUND GARDENS



LONDON ELECTRONIC WALKWAYS

Tip!

Teams should be encouraged to research innovative solutions that are not directly related to train stations so that they create something unique for their chosen space. For example, they could investigate airports, stadiums, shopping centres, galleries or park designs from around the world.

RESOURCES:

Design Portfolio: Investigate 5 (p.9)
Research Stage Video

Week 3: Generate

Students will be able to:

- work through the design process as members of an effective team
- understand how environments can be designed to meet various user needs
- generate a broad range of relevant and innovative solutions
- seek out and leverage feedback from peers and real-life passengers

PROJECT STAGE: CONCEPT DEVELOPMENT (SKETCHING)

ACTIVITY:

Teams should create a range of simple sketches on the allocated pages in their portfolio (they may add or remove pages as required)

Students can sketch on paper and take pictures of their sketches, or use digital sketch tools like SketchPad and TinkerCad, then upload sketches to the team's design portfolio.

This stage should be fast-paced, and no idea should be discarded. Generating lots of ideas here is important, it's not about feasibility at this stage. The more sketches and ideas the students have at this stage the more innovative their final design is likely to be.

To get ideas for their quick sketches, they should refer to the research images they collected and annotated. Each image should help them to produce at least one sketch. Prompts on the design portfolio should help them to consider a range of elements.

If teams become stuck on one idea, ask them to sketch it several times with slight changes to each iteration.

They could consider some of the following modifications:

- Changing the size
- Changing the style / theme
- Adding more functions / features
- Reducing complexity
- Using a variety of shapes and colours

SKETCH A DESIGN

RESOURCES:

Design Portfolio: Generate 1 (p.10)
Concept Development Stage Video

PROJECT STAGE: TEAM CONSULTATION

ACTIVITY:

Teams pitch their ideas to another design team. This is a good opportunity for teams to revisit the design brief and rubric to ensure their developed concepts still meet the brief.

Students from other teams should ask questions and offer feedback on one thing they thought was well done and one thing that might be improved.

RESOURCES:

Design Portfolio: Generate 2 (p.11)

Week 4: Produce

Students will be able to:

- work through the design process as members of an effective team
- build the prototype of their chosen installation or service solution in Minecraft
- seek out and leverage feedback from peers and real-life passengers
- reflect upon and self-assess their team's efforts and learning against the success criteria described in the assessment rubric.

PROJECT STAGE: FINAL DESIGN:

- Create accurate drawings
- Explain how design meets station users needs
- Identify key features of final design
- Respond to feedback

Teams should now refine and draw their agreed final design.

They can draw it in 2D plan view or 3D perspective. Students can sketch on paper and take pictures of their sketches or use digital sketch tools like SketchPad and TinkerCad then to upload sketches to the design portfolio.

The design should be accurately drawn, detailed, and annotated. The annotations should show the key features and explain how their design meets the needs of their chosen passengers.

Teams could use visual tools like colour to indicate materials where appropriate.

Teams should talk through their final design drawings with their teacher before they progress to building in Minecraft.

RESOURCES:

Design Portfolio: Produce 1 (p.13)

AABIRA - STATION USER

KAREN - STATION USER

PROJECT STAGE: BUILD/DEVELOPMENT

ACTIVITY:

Student teams will collaborate in multiplayer mode in Minecraft to prototype their final design as outlined in their Design Portfolio.

Remind students to export a copy of their world file at the end of each session to ensure they do not lose access to their work. Guidance can be found here: **Importing and Exporting your Worlds**

RESOURCES:

Design Portfolio: Produce 2 (p.14)

Week 5: Evaluate

Students will be able to:

- work through the design process as members of an effective team
- understand how environments can be designed to meet various user needs
- build the prototype of their chosen installation or service solution in Minecraft
- seek out and leverage feedback from peers and real-life passengers
- reflect upon and self-assess their team's efforts and learning against the success criteria described in the assessment rubric.

PROJECT STAGE: PEER REVIEW

Once teams have completed the construction of their prototype in Minecraft, they should present this to their peers for review.

Peer feedback can be provided using the design rubric. Students are encouraged to note peer feedback received.

RESOURCES:

Design Portfolio: Rubric (p.17)
Station Ideation mcworld

FEEDBACK FROM PEERS

PROJECT STAGE: MINECRAFT - REFINE SOLUTION

ACTIVITY:

Students will act upon feedback to make final amendments to their Minecraft design.

RESOURCES:

Station Ideation mcworld

PROJECT STAGE: SELF-EVALUATION

ACTIVITY:

The rubric should be revisited at several stages of this challenge to:

- guide students when giving feedback to each other during peer review
- support team self-assessment of final designs/builds
- scaffold teacher assessment and feedback

RESOURCES:

Design Portfolio: Evaluation 1 (p.16)
Design Portfolio: Rubric (p.17)

Week 6: Competition 2022

Visit the **Station Ideation website** for more information.

PROJECT RUBRIC

CRITERIA	1 POINT	2 POINTS	3 POINTS
Evidence the team identified the needs of prospective passengers	The team engaged with prospective passengers in-game to identify their needs	The team interviewed members of the local community (parents, guardians, teachers) to identify their needs when visiting train stations	The team reached out to prospective passengers in creative ways to identify needs (e.g., create a survey, visit a local train station on a class excursion)
Evidence of relevant research into design themes	The team engaged with all Metro Tunnel design team members in-game	The team engaged with all Metro Tunnel design team members in-game and researched each example provided (evidenced in design portfolio)	The team engaged with all Metro Tunnel design team members in-game and researched other creative spaces and solutions online (evidenced in design portfolio)
Evidence of ideation (lots of possible solutions)	Team members generated at least 4 possible ideas and solutions (evidenced in design portfolio)	Team members generated at least 8 possible ideas and solutions (evidenced in design portfolio)	Team members generated, explored, and sketched more than 8 ideas for spaces and solutions (evidenced in design portfolio)
Evidence of team prototyping of key features in Minecraft	Prototype in Minecraft has innovative features but unclear of purpose (no notes, labels, materials are not identified)	Prototype in Minecraft is annotated to identify innovative features	Prototype in Minecraft is annotated and includes explanation and justification of chosen innovative features
Evidence of testing solution with prospective passengers	Team evaluated final design against their original passenger need/s	Team sought feedback on their prototypes from other student teams and their teacher	Team sought feedback on their prototype from prospective passengers in the local community (parents, guardians, school staff)

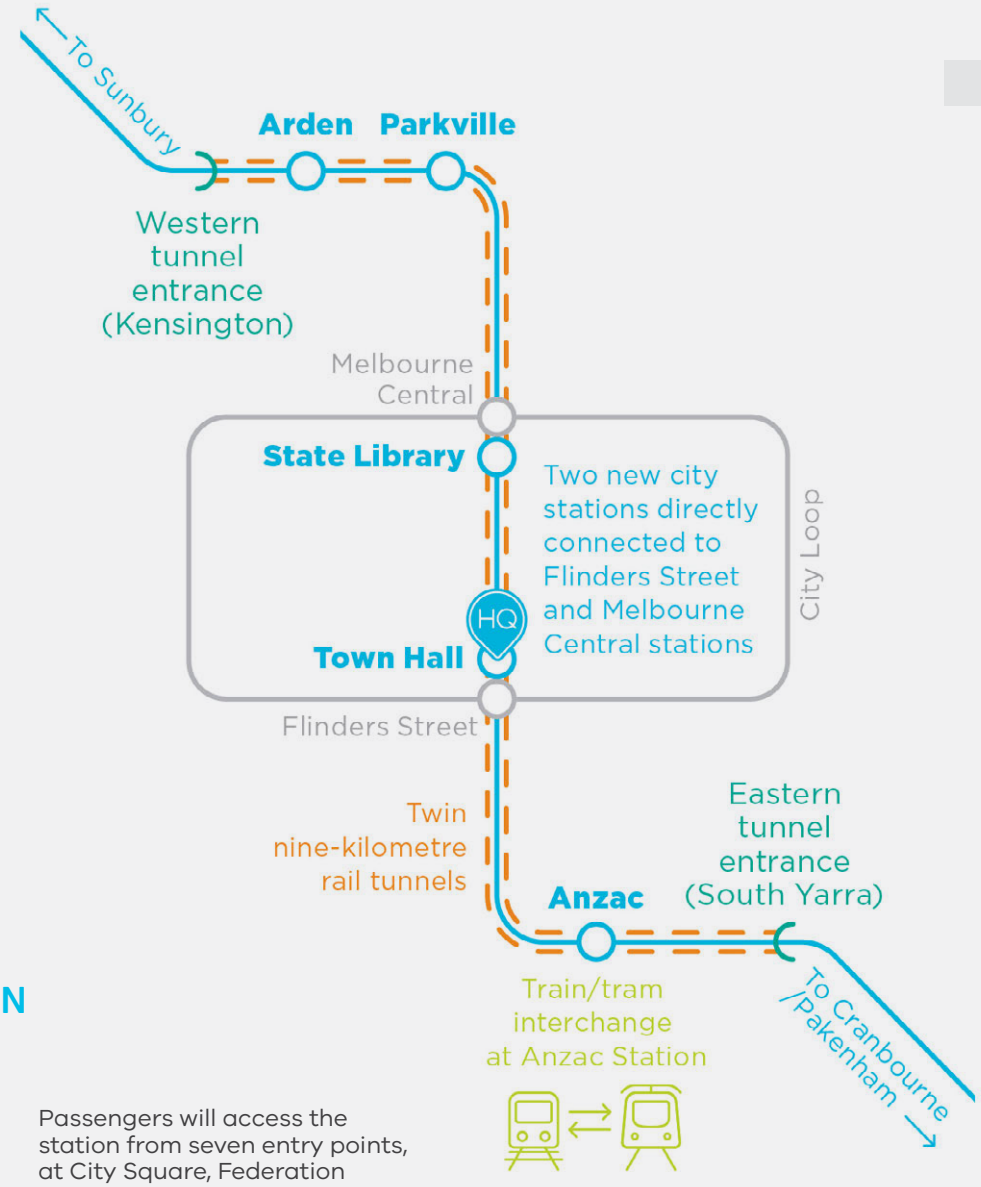
THE METRO TUNNEL

The Metro Tunnel is building twin **9km tunnels** and **five new underground stations** at Arden (near North Melbourne), Parkville, State Library at the northern end of Swanston Street, Town Hall at the southern end of Swanston Street and Anzac at St Kilda Road.

It will transform the way people move around Melbourne and improve access to key landmarks and destinations.

By taking three of the busiest train lines (Cranbourne, Pakenham and Sunbury) through a new tunnel under the city, the Metro Tunnel will untangle the City Loop so more trains can run more often across Melbourne.

As a result, room will be created on the network to enable more than half a million additional passengers per week to travel on the rail network during peak periods.



THE TOWN HALL STATION

The new **Town Hall Station** at the southern end of Swanston Street will improve access to some of Melbourne's most iconic and important tourist destinations including Federation Square, Southbank, Arts Centre Melbourne, St Paul's Cathedral and other culturally significant landmarks.

Town Hall Station will have a direct link to Melbourne Airport in 2029 via Melbourne Airport Rail.

Located more than 40 metres under Swanston Street, between Flinders Street and Collins Street, Town Hall Station's design features 'trinocular caverns' – three overlapping tunnels, dug by road headers, to create an open space for passengers and allowing the concourse and platforms to be integrated on one level.

Passengers will access the station from seven entry points, at City Square, Federation Square, Campbell Arcade, Flinders Street, Swanston Street, Cocker Alley and Scott Alley.

Town Hall Station will also have an underground passenger connection to the platforms at Flinders Street Station, allowing commuters to conveniently interchange between the Metro Tunnel and City Loop train services.

Further information on the Metro Tunnel Project can be found at **metrotunnel.vic.gov.au**.

METROTUNNEL Education

ABOUT THE METRO TUNNEL EDUCATION PROGRAM

The Metro Tunnel Project will underpin Melbourne's rail network growth for decades to come. Young people have a bigger stake than anyone in our city's future transport system. With them in mind, we have created an Education Program to show students what the project means to them as future citizens and workers.

Our Education Program resources and activities are curriculum aligned, targeting careers learning and skills in Science, Technology, Engineering, Arts and Maths.

School Visits to Metro Tunnel HQ

125-133 Swanston St, Melbourne

A free session at our award winning visitor centre, Metro Tunnel HQ, is a great way for your students to learn more about Victoria's biggest ever public transport project.

The Metro Tunnel Project uses world-leading construction technology and much of the activity will be underground. Audio-visual and augmented-reality installations at our visitor centre bring the project to life.

Take a one hour guided tour of the visitor centre including a short walk to view the Town Hall Station construction sites.

Got more time? Add a one hour classroom workshop to your booking:

- **Primary Students (Grade 5-6)**
  - Time Traveller
  - Signalling Secrets
- **Secondary Students (Year 8-10)**
  - Careers Explorer
  - Voluminous Matters

More information

For more details about our school sessions, links to additional learning resources and to make a FREE booking visit:

metrotunnel.vic.gov.au/education

Station Ideation is a collaboration between the Department of Education and Training and the Metro Tunnel Project. For more information please contact:

digital.learning@education.vic.gov.au

metrotunnel.vic.gov.au