

## Questions for discussion

Episode 3  
23<sup>rd</sup> February 2016

### Nuclear Dump

1. Before you watch the *Nuclear Dump* story, predict what you think the story is about.
2. What is uranium?
3. Finish the following sentence: Nuclear waste is...
4. What type of energy does nuclear waste release?
5. Why is it dangerous?
6. How does nuclear waste need to be stored?
7. In which state are they proposing that nuclear waste be stored?
8. What are the benefits of a nuclear waste dump?
9. Why are some people worried about the idea?
10. What do you think? Should Australia have a nuclear waste dump? Explain your answer.

Check out the [Nuclear Dump resource](#) on the Teachers page

Vote in the Behind the News [online poll](#)

### Gravitational Waves

1. What was the main point of the *Gravitational Waves* story?
2. Who predicted the existence of gravitational waves 100 years ago?
3. Finish the following sentence: If something big happened in space, like a star exploded then...
4. Gravitational waves can be felt and seen. True or false?
5. What did scientists around the world build to look for gravitational waves?
6. Describe the recent gravitational waves discovery.
7. How will gravitational waves help scientists understand the universe?
8. What do scientists believe the discovery of gravitational waves could lead to?
9. What did you learn watching the *Gravitational Waves* story?
10. What questions do you have about gravitational waves? Working in pairs, research a question and share the information with the class.

Write a message about the story and post it in the comments section on the story page.

### Earthquake Anniversary

1. Where in New Zealand was the earthquake in 2011?
2. What magnitude was the earthquake?
3. Describe the damage the earthquake caused.
4. There are still whole suburbs in Christchurch known as red zones. What does that mean?

5. Why did the kids in the BtN story need to leave their school?
6. What might happen to their old school? Why?
7. Why are parents and students unhappy about what might happen?
8. Describe the earthquake that happened in Christchurch recently.
9. How do the students prepare for earthquakes at their school?
10. What do you understand more clearly since watching the BtN story?

Check out the [Earthquake Anniversary resource](#) on the Teachers page.

### Leap Year

1. In your own words, explain what a leap year is.
2. What is special about the 29<sup>th</sup> February?
3. What is a leapling?
4. How often do leap years happen?
5. When was Evette born?
6. When does she celebrate her birthday?
7. Finish the following sentence: About one in every \_\_\_\_\_ people in the world have a leap day birthday.
8. Why do we have leap years?
9. Who introduced the idea of a leap year?
  - a. Winston Churchill
  - b. Julius Caesar
  - c. The Easter Bunny
10. What was surprising about this story?

Write a message about the story and post it in the comments section on the story page

### The Wombat Carer

1. Explain the BtN story to another student.
2. What type of animal is a wombat?
  - a. Reptile
  - b. Marsupial
  - c. Monotreme
3. Why are Emily and her mum looking after wombats?
4. Describe what they do to look after them.
5. Why do they raise the wombats together?
6. Wombats can be kept as pets. True or false?
7. Think of three words that describes a wombat's behaviour.
8. When does Emily release the wombats into the wild?
9. Illustrate an aspect of the *Wombat Carer* story.
10. What did you like about this story?

Do the [quiz](#) on the BtN website

## Teacher Resource

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# Nuclear Dump

## FOCUS QUESTIONS

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2. What is uranium?
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4. What type of energy does nuclear waste release?
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7. In which state are they proposing that nuclear waste be stored?
8. What are the benefits of a nuclear waste dump?
9. Why are some people worried about the idea?
10. What do you think? Should Australia have a nuclear waste dump? Explain your answer.

## ACTIVITY

**Before watching** the BtN *Nuclear Waste* story, ask students to make some predictions about what the story might be about. Students will compare and contrast their predictions with other classmates after viewing the story.

**Class vote!** Ask students if they are for or against nuclear waste being stored in South Australia. Ask for a show of hands and record the results. Take another vote after watching the BtN *Nuclear Waste* story and once your class has completed in depth research into storing nuclear waste. Is there a change in opinion? Why or why not?

## ACTIVITY

**After watching** the BtN *Nuclear Waste* story, discuss as a class. What questions were raised in the discussion (what are the gaps in their knowledge)? The following KWLH organiser provides students with a framework to explore their knowledge on this topic and consider what they would like to know and learn.

## KEY LEARNING

Students will investigate the advantages and disadvantages of nuclear power, from environmental, economic and social perspectives. Students will also present a debate about the storage of nuclear waste in South Australia.

## AUSTRALIAN CURRICULUM

### Science – Year 7

Some of Earth's resources are renewable, but others are non-renewable ([ACSSU116](#))

Science and [technology](#) contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations ([ACSHE120](#))

Summarise [data](#), from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions ([AC SIS130](#))

### Geography – Year 4

The natural resources provided by the [environment](#), and different views on how they could be used sustainably ([ACHGK024](#))



## KWLH organiser

What do I <u>k</u> now?	What do I <u>w</u> ant to know?	What have I <u>l</u> earnt?	<u>H</u> ow will I find out?

## ACTIVITY

### Class glossary

Create your own classroom glossary about nuclear energy. Use the BtN *Nuclear Waste* story transcript to get you started. Start by brainstorming words as a class using a mind map to record your responses and then find definitions for each word. Consider using pictures and diagrams to illustrate meanings.

- atom
- fission
- radiation
- uranium
- non-renewable energy
- carbon dioxide
- nuclear waste

Challenge students by asking them to use words from their class glossary to write their own sentences. Alternatively, students can make their own crossword puzzle or word find.

## ACTIVITY

Make a list of 3 questions you have about nuclear energy or the storage of nuclear waste that you would like to ask a scientist or engineer. Use the internet to find answers to your questions. Visit the ABC's [Ask an Expert](#) website, to see if any of your questions are answered. Compare your questions and answers with your classmates.

- How is nuclear energy made?
- How much of the world's energy is produced by nuclear power?
- Is it economical to make nuclear energy?
- Why is nuclear energy controversial?
- How is nuclear waste stored?



## ACTIVITY

### Pros and Cons

Investigate and list the pros and cons of nuclear energy. Describe the social, economic, geographic and environmental effects of nuclear energy. Explain reasons for or against nuclear energy. Investigate efficiency, cost, space, sustainability, reliability, impact on the environment and people, noise, emissions, storage of waste, technology and suitability.



### Geographical

- Where is uranium found and mined? Is it a common metal found around the world?
- How much space do nuclear power plants require?
- Where are nuclear power plants built?



### Environmental/Social

- Is the material used to make nuclear energy renewable or non-renewable? Can it be replenished?
- Do nuclear power plants pollute the air or emit greenhouse gases?
- What waste do nuclear power plants produce and is it harmful to people and the environment?
- Where is the waste from nuclear power plants stored? How does it impact on the people that live in these areas?
- Are nuclear power plants safe for the people that work and live nearby?
- Is nuclear power a reliable source of energy?
- How much energy do nuclear power plants produce?



### Economic

- Is the material used to make nuclear power expensive to extract and process?
- Does it cost a lot to build and run nuclear power plants?



Use your research findings, to write a magazine article, news report or information report about nuclear power. Share your research and opinions about nuclear power on a class blog or wiki.

## ACTIVITY

### Classroom debate

Prepare for your class debate using the following statement (or make up one of your own).

*Nuclear waste should be stored in Australia*

Students will work in small groups to brainstorm ideas for both the affirmative and negative and record their ideas on a piece of A3 paper. Watch the BtN story again to listen to the pros and cons of storing nuclear waste in South Australia.

- Choose the strongest points from your list of ideas to share with the class.
- Provide facts and evidence to support your argument.
- Be creative with your word choice to enhance your argument.
- Convey emotion using thinking and feeling words.

Debate the issue, make your speeches and vote on the issue. Refer to [Debating SA's resources](#) for worksheets, checklists and fact sheets on writing speeches and running class debates.

### Guide for giving feedback

- Was the information clear and accurate?
- Were the arguments logical?
- Were the counter arguments accurate and relevant?
- Comments about the presentation style (tone of voice, body language, enthusiastic, convincing).

### Debrief and reflection

- How difficult was it to think of points to support one side of the argument?
- Do you think you would have done a better job supporting the other side of the argument?
- Was I able to convince others of my opinion?
- Did my opinion change?
- What did you learn from this activity?



## USEFUL WEBSITES

Behind the News – Nuclear Industry

<http://www.abc.net.au/btn/story/s4178056.htm>

Behind the News – Uranium Sale

<http://www.abc.net.au/btn/story/s3370382.htm>

Behind the News – Uranium U-Turn

<http://www.abc.net.au/btn/story/s3619577.htm>

ABC News – Nuclear waste dump to meet 'global need' recommended for SA by Royal Commission

<http://www.abc.net.au/news/2016-02-15/sa-nuclear-waste-dump-to-meet-'global-need'-recommended/7167412>

ABC News – A timeline of South Australia's nuclear dump debate

<http://www.abc.net.au/news/2015-09-22/a-timeline-of-south-australia's-nuclear-dump-debate/6794606>

## Teacher Resource

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# Earthquake Anniversary



## FOCUS QUESTIONS

1. Where in New Zealand was the earthquake in 2011?
2. What magnitude was the earthquake?
3. Describe the damage the earthquake caused.
4. There are still whole suburbs in Christchurch known as red zones. What does that mean?
5. Why did the kids in the BtN story need to leave their school?
6. What might happen to their old school? Why?
7. Why are parents and students unhappy about what might happen?
8. Describe the earthquake that happened in Christchurch recently.
9. How do the students prepare for earthquakes at their school?
10. What do you understand more clearly since watching the BtN story?



## ACTIVITY

Negotiate with students how many activities they complete from each section.



## REMEMBER / UNDERSTAND

After watching the BtN *Earthquake Anniversary* story, respond to the following questions:

- What did you SEE in this video?
- What do you THINK about what you saw in this video?
- What did you LEARN from this story?
- How did this story make you FEEL?
- What was SURPRISING about this story?



## KEY LEARNING

Students will develop a deeper understanding of how earthquakes impact on people and places. They will also investigate what tectonic plates are and how they work.



## AUSTRALIAN CURRICULUM

### Design and Technologies – Years 3 and 4

Recognise the role of people in design and technologies occupations and explore factors, including sustainability that impact on the design of products, services and environments to meet community needs

### Science – Year 6

Sudden geological changes and extreme weather conditions can affect Earth's surface ([ACSSU096](#))

Scientific knowledge is used to solve problems and inform personal and community decisions ([ACSHE100](#))

### Science – Year 9

The theory of plate tectonics explains global patterns of geological activity and continental movement ([ACSSU180](#))

### Geography – Year 8

Causes, impacts and responses to a geomorphological hazard

## Glossary

Create a glossary of word associated with earthquakes. Ask students to write what they think each word means then swap definitions with a partner and ask them to add to or change the definition. Check them using a dictionary or other source.

Keywords	My definition	Dictionary definition
earthquake		
epicentre		
Magnitude		
Richter scale		
Plate tectonics		

## Christchurch earthquake, 2011

Watch the BtN [NZ Earthquake story](#) to get a better understanding of what happen in Christchurch on February 2011 then answer the following questions:

- Describe the devastation the earthquake caused.
- What magnitude was the earthquake in 2011?
- Why do a large number of earthquakes happen on the 'Ring of Fire'?



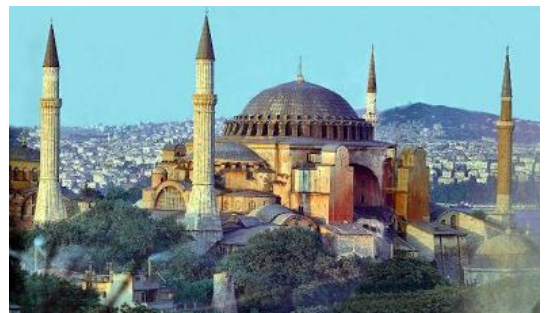
## APPLY / ANALYSE

### Earthquake-proof buildings

Students will investigate what makes a building earthquake-proof.

Some questions to consider include:

- Which buildings around the world have survived earthquakes? For example, the Hagia Sophia in Istanbul, Turkey. What are the features of the structure that make it able to withstand earthquakes?
- What are the design features of an earthquake-proof building?





- Does Australia have a building code about earthquake-proof buildings?
- What is being done in Christchurch to make buildings earthquake-proof? Find out more about the 'Cardboard Cathedral' built in Christchurch when the original cathedral was badly damaged in the earthquake.



Cardboard Cathedral

Students can present their research findings as an interactive poster, illustration or oral presentation.

## Tectonic Plates

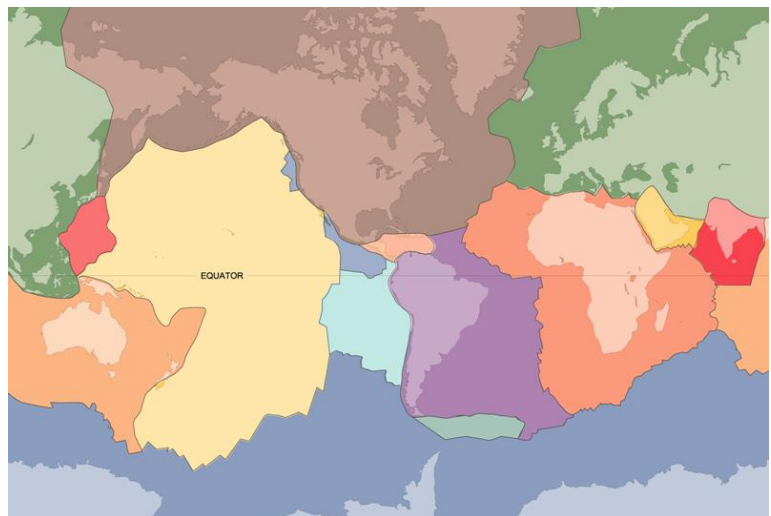
Investigate what tectonic plates are and how they work. Some questions to investigate include:

- What is the top layer of the earth called?
- What are tectonic plates?
- Where do most earthquakes occur?
- What are the edges of tectonic plates called?
- What are the types of tectonic plate movement?
- What does the 'Ring of Fire' have to do with plate tectonics?

Using this map of tectonic plates template locate and label the 15 major tectonic plates.

Locate NZ on the map. What do you notice about the location of Christchurch?

1. Eurasian plate
2. Australian plate
3. Filipino plate
4. North American plate
5. Juan De Fuca plate
6. Pacific plate
7. Cocos plate
8. Nazca plate
9. Caribbean plate
10. South American plate
11. Scotia plate
12. African plate
13. Arabian plate
14. Indian plate
15. Antarctic plate



Map: [http://en.wikipedia.org/wiki/List\\_of\\_tectonic\\_plates#/media/File:Plates\\_tect2\\_en.svg](http://en.wikipedia.org/wiki/List_of_tectonic_plates#/media/File:Plates_tect2_en.svg)

## EVALUATE / CREATE

### Earthquakes Q & A

Make a list of questions you have about earthquakes that you would like to ask a seismologist or geologist. Use the internet to find answers to your questions. Visit the following websites and see which questions are answered.

ABC Science – Ask an Expert!

<http://www.abc.net.au/science/expert/realexpert/earthquakes/>

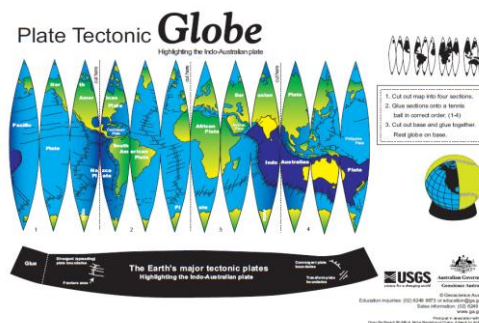


Geoscience Australia – Earthquake Basics

<http://www.ga.gov.au/scientific-topics/hazards/earthquake/basics>

### Make a model

Students create a model using the [map template](#) and a tennis ball to help them visualise the Earth's major tectonic plates. The model shows major plate boundaries, boundary types and highlights the Indo-Australian tectonic plate.



Source: Geoscience Australia

## USEFUL WEBSITES

Behind the News – NZ Earthquake

<http://www.abc.net.au/btn/story/s3148193.htm>

Behind the News – Ring of Fire

<http://www.abc.net.au/btn/story/s2709798.htm>

BBC – How Earthquakes happen

[http://news.bbc.co.uk/2/hi/in\\_depth/4126809.stm](http://news.bbc.co.uk/2/hi/in_depth/4126809.stm)

Scholastic - Earthquake Rocks New Zealand

<http://www.scholastic.com/browse/article.jsp?id=3755744&grade=78>

ABC Science – Ask an Expert!

<http://www.abc.net.au/science/expert/realexpert/earthquakes/>

Geoscience Australia – Earthquake Basics

<http://www.ga.gov.au/scientific-topics/hazards/earthquake/basics>



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Encourage your students to be active and informed citizens by watching our 10 minute news program each day. Go to the BtN homepage and click on the 3News link.



# BtN: Episode 03 Transcript 23/02/16

Coming up on Behind the News:

The scientific world celebrates the discovery of gravitational waves. But what are they?

We meet the school kids still recovering from an earthquake five years later.

And that girl that has wombats as housemates.

Hello I'm Nathan and this is BtN. Stay with us for all that and more.

## The Wire

*INTRO: But first let's take a quick look at some of the big stories that got people talking this week.*

More than ten people have died after a big cyclone hit Fiji on Saturday. Cyclone Winston hit with winds of up to three hundred and twenty five kays an hour. Hundreds of homes have been destroyed and the Australian government has announced it's sending five million dollars in aid to help.

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Public support for the government has dropped. The latest Newpoll's found the choice between Labor and the Coalition is split at 50-50.

But it's also found our P.M. Malcolm Turnbull is comfortably ahead of Bill Shorten as preferred Prime Minister.

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The Air Force is trying out flights to Antarctica which could make scientific missions a lot quicker! Usually the Antarctic Division relies on ships to take equipment to and from the icy continent. But it's hoping to use these C-17A Globemasters for some of the heavy lifting.

MATT FILIPOWSKI, AUSTRALIAN ANTARCTIC DIVISION: We'll always rely on ship for the big bulk heavy lift, but the ability to move things in and out quickly out-sized type cargo would certainly revolutionise our program.

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And tumbleweeds have invaded the tiny town of Wangaratta! The two-metre high plumes of 'hairy panic grass' engulfed homes and left many residents a bit confused.

WOMEN: We've been likened to a wild west movie with the tumbleweeds, well it is like a wild west movie, but instead of the heroes riding in on a horse, they've come in with their blowers on their back. It's been wonderful.

The town's now been cleaned up but who knows when the hairy panic will strike again.

## Nuclear Dump

Reporter: Matt Holbrook

*INTRO: Now to a big issue out of South Australia. A Royal Commission there has recommended that the state become the first in Australia to house a nuclear waste dump. The report found that the dump would make SA a lot of money but some people are really concerned about it. Here's both sides of the debate.*

This is where household waste goes. This is where organic waste goes. And this is where human waste goes. But where does nuclear waste go? OK, that's probably not a question you've ever actually asked before, but it's something a lot of people are talking about at the moment.

MARK PARNELL, GREENS: Is the best we can do for ourselves and next generations to become the world's nuclear waste dump?

TOM KENYON, LABOR: I think we should do it, and if we don't, we've got no one to blame for ourselves for our future.

Nuclear waste is the stuff left over from power plants like this, which turn nuclear fuels, like uranium, into heat and electricity! While we don't have any nuclear power plants here in Australia, there are hundreds around the world.

And the waste they create needs to be put somewhere, really, really safe. See, long after it's been used for fuel, nuclear waste releases a type of energy called radiation. That radiation can harm or even kill, and can last for many thousands of years. That's why nuclear waste needs to be stored in very safe places, away from people, and often far underground. But where?

Well a new report's found that 'where' could be in South Australia. It's considered a good spot because it's

dry, fairly empty in some areas, politically stable and earthquakes aren't really a risk.

The report also says that if we did build a specially designed dump, it could hold 13% of the world's radioactive waste. And doing so could earn South Australia some serious cash, more than \$5 billion dollars a year once it's set up.

But some are really worried about the idea. Even though the dump would have to be built and run safely, they don't like the idea of one being anywhere near them. Others worry about the danger involved in transporting the waste to the dump. And some just don't think it would be as profitable as expected. At the moment, Australia doesn't accept nuclear waste from other countries. And while we do actually store some of our own already, used in things like medicine and research, in the grand scheme of things, it's nothing like what's being talked about here.

The South Australian government hasn't made a decision about building the dump yet. And the report suggests getting support from the community is really important if it's to go ahead.

So what do you think about the idea?

BOY: I think it's good because we can get quite a bit of money from it and the tax could possibly go down since all the money.

GIRL: I think it's a bad idea because people living in South Australia won't want it because it's radioactive and if the storage unit breaks the whole of South Australia's goings to be affected.

BOY: I think it's good because we're getting a lot of money for it and that could be really helpful for our community.

GIRL: I think it would be bad, because it would give South Australia a bad name for being the place that keeps nuclear waste, and I also think it would be bad because of the risk of a leakage, which would be terrible if it got into a water source or a food source.

## Poll

And that will make the perfect topic for our poll this week.

The question - Should Australia have a nuclear waste dump?

Let us know what you think on our website.

Now last week we asked you if we should be ditching the 5c coin.

More than 4000 of you took the time to vote and most said that the 5c coin should stay.

Thanks for voting.

## Gravitational Waves

Reporter: Carl Smith

*INTRO: Okay next up it's been billed as the discovery of the century. Gravitational waves were seen for the first time recently. But to most of us that doesn't mean a lot. So what are gravitational waves and why is finding them such a big deal?*

For generations we've peered into space to try to discover what's really out there.

And now we've found something many people thought we never would.

DAVID REITZE, EXECUTIVE DIRECTOR, LIGO (Laser Interferometer Gravitational-Wave Observatory): Ladies and gentlemen, we have detected gravitational waves. We did it!

But hang on a second, what is a gravitational wave? Well they're actually something this guy, Albert Einstein, predicted the existence of 100 years ago. He guessed that if something big happened in space, like a star exploding, then that would send a ripple of gravity out through space itself.

REPORTER: You can think of it this way. Imagine this big block of jelly is kind of like a chunk of space, and me dropping this marble could represent a massive event like a giant star exploding. When that happens, it's going to send a ripple of gravity through space itself! Those waves that you can see there are gravity slightly disturbing space jelly.

But gravitational waves aren't quite that obvious. They're way too weak for us to ever feel or see. In fact many people thought we'd never actually be able to prove they exist! But these guys came up with a tricky way to look for some of the biggest ones!

1000 scientists around the world, and hundreds of millions of dollars, helped build these two giant detectors in the US. This guy, Rainer Weiss, first suggested building them back in 1972, and it's taken since then to get them up and running!

RAINER, MIT CO-FOUNDER LIGO: I mean that is a human endeavour that I think everyone should be proud of.

And all that hard work went into finding this tiny little blip. That spike is the first gravitational wave humans

have ever been able to detect. It was caused by two giant black holes colliding more than a billion light years away! The researchers say this is a massive discovery.

Up until now we've used things like light, radio waves, microwaves, x-rays and gamma rays to figure out what's happening out there in space. But gravitational waves give us a brand new way to see things that we haven't been able to see before, like the inside of a black hole!

And that'll help scientists unlock more of the secrets of our universe.

DAVID REITZE, EXECUTIVE DIRECTOR, LIGO: As we open a new window in astronomy we may see things that we never saw before.

On top of that, they reckon better understanding gravitational waves could lead to new technology too.

Just like better understanding radio waves, microwaves and x-rays lead to all of these inventions!

Scientists say they've still got plenty of work to do to figure out how these waves work and what they could be used for.

But it's a big step forward in understanding our universe.

## Earthquake Anniversary

Reporter: Amelia Moseley

*INTRO: Recently a 5.7 magnitude earthquake hit the city of Christchurch in New Zealand. Luckily no one was injured. But it did come five years after a much bigger quake hit the city. We asked some school kids there to let us know what happened back then and how they've recovered in the years since.*

These Kiwi kids call Christchurch home, and they reckon it's a pretty awesome place to live.

SCHOOLKID 1: The best thing about Christchurch that I like is we're so close to the mountains and ocean so we can go for a swim whenever we want.

It's the largest city here on the South Island of New Zealand, but all around the streets of Christchurch are reminders of a day back in 2011 when a powerful 6.3 magnitude earthquake hit the city. Many buildings were destroyed or damaged and a lot of people died. It was a really scary time.

SAM: I don't remember the earthquake very well, but I do remember everything going in a blur: People crying and trying to get in contact with friends and family and mainly the giant dust-cloud engulfing us.

Five years on, the city's still being repaired and rebuilt. There are still whole suburbs known as Red Zones where nearly every house has had to be torn down because they're too damaged to fix.

Luckily for these guys, their school wasn't touched in the quake, but it was near a cliff where some rocks had fallen. Everyone was forced to leave in case it wasn't safe and they've had to go to a different school ever since.

Now the government's thinking about closing their old school for good in case there are any more quakes, but many staff, parents and students aren't happy about that. They say the school has been proven to be safe and they really want to move back in.

SCHOOLKID 2: I really want to go back to our old school, seeing it every day, sitting there perfectly fine is torture.

Earthquakes are pretty common in Christchurch, although they're usually very small. Just over a week ago, a 5.7 magnitude quake hit; the biggest here since 2011. It didn't cause too much damage and no one was hurt, but some kids had a close call on the roads.

LOCAL GIRL: And all of a sudden the earthquake started happening and the car just went out of control. And a bus nearly crashed into us.

And down by the cliffs, in a cave.

LOCAL BOY: And then there was two of us sort of climbing up and he just went "get the hell off the rocks!" and then we hear dad going "get off the rocks!" so I just run into the water, dive under and thought "that was a stupid idea."

These guys felt it too.

SCHOOLKID 3: The latest earthquake was a reminder that we're still not safe and it was pretty scary.

But at school, they have regular earthquake drills so they know what to do.

SCHOOLKID 4: In earthquakes we drop, cover, hold and away from glass.

SCHOOLKID 5: It's important to do this because we always have earthquakes.

Like everyone in Christchurch, they've learned to live with that and they're looking forward to seeing their city get back on its feet.

OLIVIA: Since the earthquake, there's been heaps of big machines and roadworks helping with the rebuild.



But after all, we will get a brand new city.

## Quiz

Okay let's test you on your earthquake knowledge now.

What are the large bits of earth that run into each other during an earthquake called?

Terra Crust

Tectonic Plates

Islands

The answer is Tectonic Plates

## Did You Know?

Just seven tectonic plates make up 94% of the earth's surface.

The largest of them is the Pacific Plate, which is 103,300,000 km<sup>2</sup>.

## Leap Year

Reporter: Amelia Moseley

*INTRO: This year is a leap year which means we all get to enjoy an extra day at the end of this month. But why do we actually have leap years? Take a look.*

We all love it when our birthday comes around each year. But some kids don't get the chance to celebrate them as much as others.

Hello my name's Evette and I'm turning 3 this year! Yay!

No, Evette isn't just a little umm, tall for her age. She's actually a very special kind of human known as a leaping! No, you don't have to be particularly good at leaping, but you do have to have a disappearing birth date - the 29th of February.

EVETTE: I was born on the 29th of February 2004, on a leap year, and it makes me special and unique.

A leap year happens about every four years and this year is one of them. It means an extra day is added here to the shortest month of the year, February. Outside of leap years, the 29th of Feb isn't on the calendar which is why Evette has only ever celebrated two real birthdays! For the rest of the time she's had to pick a date!

EVETTE: Some people celebrate on 1st of March. I celebrate it on the 28th because it's easier and I don't have to wait so long for the 1st of March!

Only about one in every 1500 people in the world have a leap day birthday! But other than making those people kind of special, why on earth do we have leap years? Well, it all has to do with just that - the earth. You probably know one year is 365 days, right? That's meant to be how long it takes for the earth to revolve all the way around the sun. But it actually takes our planet 365 days and nearly six hours to do this. So after a few years an extra 24 extra hours, or one day, has added up and needs to be added to the calendar. That's when a leap year comes in to save the day!

REPORTER: Well, sort of, it's actually a bit more complicated than that! Most adults don't even know that it's not actually six extra hours for the earth to go all the way around the sun. To be exact it's an extra 5 hours, 48 minutes, and 45 seconds.

So if we have a leap year every four years, our calendar would get too far ahead! That means a few years that should be leap years aren't! Confusing, hey! But don't worry, the next weird year like that isn't until 2100. Phew! So kids like Evette can celebrate their real birthday this year and look forward to many more too! And for us non-leaplings? Well we can all enjoy an extra day in our year and maybe even a nice slice of leaping cake.

## Quiz 2

Okay now for another question. Good luck!

Who introduced the idea of a leap year? Was it:

Winston Churchill

Julius Caesar

Or the Easter Bunny

The answer is Julius Caesar.

## The Score

*INTRO: Right, it's sport time now. Here's some of the biggest moments from this week.*

The AFL has announced that it's launching an official women's league this year. Female AFL players now make up one fifth of all people involved in the code. So the AFL says it's time for a professional league.

10 matches will be played across Australia starting in March. So scouts have been on the look-out for the next superstars of the game. Some top athletes are even looking at making a switch to the code.

HANNAH WEST, TRACK AND FIELD ATHLETE: I've never ever, ever played a game of football, that's really the first handball and kicking drills I've done.

MICHAEL SOLOMON - AFL NT CHIEF EXECUTIVE: Whether that be netballers, cricketers, rugby players, teaching them the skills of how to kick a ball or handball a ball is absolutely something we can assist female athletes with.

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Nick Kyrgios has won his first ATP title in an upset win at the Marseille Open in France.

The 20-year old beat fourth seed Marin Cilic 6-2, 7-6. to win the final.

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There have been some impressive performances from Australia's young guns at the Youth Winter Olympics in Lillehammer.

15 year old Madison Poole just missed out on a medal in the Ice Hockey Skills challenge finishing up in 5th place.

MADISON POOLE: I have no words, it's crazy. My family have never come over for an international competition ever. So for them to be here is actually unbelievable.

Meanwhile Julia Moore smashed some of her own records in the speed skating. She says the experience has helped her to improve a lot.

JULIA MOORE: Skated through that, got a personal best and then I had my semi and came third in that, beat my personal best from the heat and I was really happy about that.

But it's not all serious competition at the Youth Olympics. The Aussie team took some time out to have a bit of fun on the ice rinks too.

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MADISON POOLE: It's pretty fun and funny, a lot of them are really good actually. I feel like I should take it up.

EMILY ARTHUR: I'm thinking about changing sports to be honest. The boots feel great on your feet, don't hurt at all.

“You got it alright Mahalah, ohh hahaha”

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And the National Penny Farthing Championships have taken place in Northern Tasmania. More than 70 riders dashed through the streets of Evandale on the old-fashioned bikes. Which is pretty brave, considering they're really high and don't have any brakes!

Evandale's hosted the race for decades and lots of locals like to get in the spirit.

GIRL: I love riding them, they're just fun.

MAN: It's not an unfamiliar sight to see someone riding a penny farthing down the main street of Evandale on any day.

## Wombat Carer

Reporter: Carl Smith

*INTRO: OK finally today many of us live with dogs or cats. But how would you feel sharing your house with 20 wombats? Well that's what the girl in this next story does. But it's all for a very important reason.*

They're furry, cuddly and super cute. But these orphan baby wombats need of a bit of help. Luckily, that's exactly what they're getting here.

EMILY: My name is Emily Small, and I live in Goongerah, and my mum and I run the Goongerah wombat orphanage. People know us as the crazy wombat ladies - not our actual names. We raise orphan wombats, or injured wombats that need rehabilitation.

Wombats often run into trouble, especially around roads.

And Emily's orphanage is a little sanctuary for the ones that need some time to recover.

EMILY: So at the moment we have these two in - this is Hamlet and Lola. I've had them for about 2 months.

We raise them together cos it's easier for them. Like they get to cuddle each other, they hear another heartbeat which they're used to from being with their mum. They keep the right temperature.

Although they're adorable, they can also be a bit of a handful!

EMILY: I wake up and immediately check on them, they'll be in their little bed. And they've always weed or worse and made a mess so I pick them up, put them in a fresh pouch, put them in the bed to warm up or just to get comfortable in their new pouch. Make their milk, get their bottles ready, feed them. They're getting fed four times a day, there's heaps of cleaning to go with that. You can't have them as pets, you do need a licence and they take an exceptional amount of care and devotion and they're really hard to look after really, and they're very destructive - they can't be living in a suburban household at all.

Things can get a little crowded around the orphanage but Emily says they all get along pretty well!

Well, most of the time anyway.

EMILY: They make a little noise they hiss, they're like HISS HISS HISS, or they'll do one like a little high pitched scream like 'help me mum'. Wombats are the most intelligent marsupial; they have a really amazing memory. They seem really dumb because they can only see about a metre, they have really poor eyesight because they don't need it - they come out in the dark and they just dig holes and eat grass

It can be a lot of hard work, but Emily loves her job.

EMILY: They have a three year bond with their mum in the wild, so they're that affectionate and all consuming of their mother, so I take on that role if I'm caring for them, and it's really special. They're cuddly, they're playful, they're emotional and sensitive, they're just beautiful, it is their character that we fall in love with.

And the wombats seem to fall in love with Emily too.

EMILY: When they're ready and old enough and we think it's time, we'll open the gate and they are released like out right here. And every single one will come back home, onto the veranda and they're like 'yay I'm back home, can I please have some sort of delicious treat?' And then they'll go off and be big wombats at night. The next night they'll come back all the time, all the time. There's just an influx of wombats in and out! They bring so much reward and they give so much love. They're absolutely beautiful creatures.

Closer

Right that's it from us!

See you next week!