



Teacher Resource

## Focus Questions

As a class, discuss the stories featured in the episode of BTN Classroom and record the main points of the discussion. Students will then respond to the following focus questions.

### International Aid

1. What essential supplies are running out in Gaza?
2. How is the war and lack of essential supplies affecting children like Haya, Rama and Remas?
3. What are the three steps that have to be followed when providing humanitarian assistance?
4. What help is the Australian Government providing?
5. People have been calling for a \_\_\_\_\_ to let aid into Gaza.

### Bushfire Science

1. What are the three ingredients of a bushfire?
2. How do bushfires start? Give one example.
3. How does the slope of the land affect bushfires?
4. Strong winds increase the intensity of a bushfire. True or false?
5. What questions do you have about the story?

Check out the [teacher](#) resource on the Archives page.

### Solar Car Challenge

1. Where does the World Solar Challenge start and finish? Find on a map.
2. What is the distance of the race?
3. What is used to power the cars?
4. How did the World Solar Challenge begin?
5. What do solar cars look like? Describe their features.

Check out the [teacher](#) resource on the Archives page.

### Halloween Boom

1. Do you celebrate Halloween in your family or community? Why or why not?

#### EPISODE 30

31<sup>st</sup> October 2023

#### KEY LEARNING

Students will view a range of BTN stories and use comprehension skills to respond to a series of focus questions.

#### CURRICULUM

##### English – Year 4

Use comprehension strategies to build literal and inferred meaning to expand content knowledge, integrating and linking ideas and analysing and evaluating texts.

##### English – Year 5

Use comprehension strategies to analyse information, integrating and linking ideas from a variety of print and digital sources.

##### English – Year 6

Use comprehension strategies to interpret and analyse information and ideas, comparing content from a variety of textual sources including media and digital texts.

##### English – Year 7

Use comprehension strategies to interpret, analyse and synthesise ideas and information, critiquing ideas and issues from a variety of textual sources.

2. Which two festivals are thought to have come together to form Halloween?
3. How did Halloween spread to the United States?
4. What are some criticisms of Halloween?
5. Name three things you learnt watching the BTN story.

## Country Cricket - Heywire

1. How long has Abby been playing cricket?
2. What does Abby like most about the game?
3. Why was it challenging for Abby to initially play cricket with the boys?
4. What role has Abby's mum played in her cricket career?
5. What did you like about the BTN story?



Teacher Resource

# Bushfire Science

## Focus Questions

Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

1. What are the three ingredients of a bushfire?
2. How do bushfires start? Give one example.
3. How does the slope of the land affect bushfires?
4. Strong winds increase the intensity of a bushfire. True or false?
5. What questions do you have about the story?

## Activity: Note taking

Students will practise their note-taking skills while watching the BTN Bushfire Science story. After watching the story, ask students to reflect on and organise the information into three categories. What information in the story was...?

- Positive
- Negative or
- Interesting



## Activity: Class Discussion

Discuss the BTN story as a class. Ask students what they know about bushfires. Use the following questions as a guide:

- Fire relies on which three elements?
- How do bushfires start? (human and natural causes)
- What factors affect the spread of bushfires? (fuel load, weather conditions, terrain, wind)
- What questions do you have about the story?



### EPISODE 30

31<sup>st</sup> October 2023

#### KEY LEARNING

Students will learn about the science of bushfires and Indigenous fire management.

#### CURRICULUM

##### HASS – Year 5

The impact of bushfires or floods on environments and communities, and how people can respond.

##### HASS – Years 5 and 6

Work in groups to generate responses to issues and challenges.

##### Science – Year 5 & 6

Scientific knowledge is used to solve problems and inform personal and community decisions.

##### Science – Year 6

Scientific knowledge is used to solve problems and inform personal and community decisions.

## Activity: Glossary

Students will brainstorm a list of key words that relate to the BTN Bushfire Science story. Here are some words to get them started.

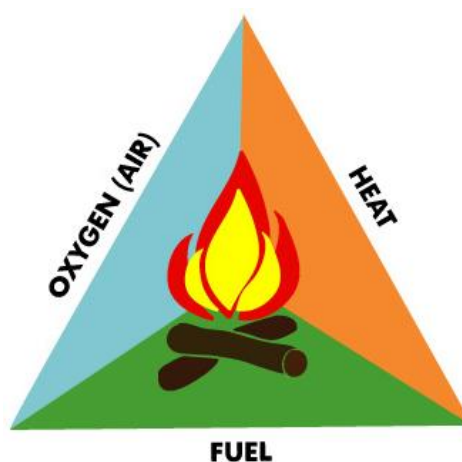
FUEL	TERRAIN	IGNITION
COOL BURN	OXYGEN	FIRE TRIANGLE

## Activity: The Fire Triangle

Students will investigate the three things a fire needs to burn:

- Fuel
- Air
- Heat

Ask students to predict what these three elements might be. Watch this short [CFA Fire Triangle](#) video then ask students to draw and label the fire triangle and explain how fuel, oxygen and heat might affect a fire. Explain to students that if you removed any side of the fire triangle, the fire would go out.



Working in pairs, ask student to discuss:

- Explain the role of fuel in the fire triangle. What are some examples of fuels that can be involved in fires? What would happen if fuel was removed?
- How does heat contribute to the fire triangle? Why is it crucial to ignition? What would happen if heat was removed?
- Why is oxygen necessary for fires to burn? How does it interact with the other elements of the fire triangle? What would happen if oxygen was removed?

## Activity: Research

Discuss the information raised in the BTN Bushfire Science story. What questions were raised in the discussion and what are the gaps in students' knowledge? The following KWLH organiser provides students with a framework to explore their knowledge on this topic.

What do I <u>know</u> ?	What do I <u>want</u> to know?	What have I <u>learnt</u> ?	<u>How</u> will I find out?

Students will develop their own question/s to research or choose one or more of the questions below.

- Investigate the factors that create bushfire risk.
- How can people prepare for the bushfire season?
- How does terrain (topography) affect the way a fire behaves? Fill in the missing word: For every 10° slope, the fire will \_\_\_\_\_ its speed.
- What is radiant heat and how is it dangerous in a bushfire? What steps can be taken to reduce the risks of radiant heat?
- What is the fire danger rating system? How is the fire danger rating determined? Why is it important to have a fire danger rating?
- What is a bushfire survival plan?

## Activity: Cultural Burning

Students will learn more about First Nations fire practices. As a class, watch the [Big Weather: Benefits of Indigenous fire practices video](#). Students can then respond to the following questions:

- What is a controlled burn?
- How are they used to reduce the risk of bushfire?
- What is cultural burning? Where in Australia are cultural burning practices common?
- What are the three main parts of Aboriginal burning?
- Fire management is part of how Aboriginal people look after country. What does this mean?
- How does cultural burning differ from modern firefighting techniques?
- How can we learn from First Nations Peoples about looking after Country?



To learn more about cultural burning, go to the [Firesticks website](#). This [Traditional burning video](#) explores bushfire management practices in more detail.

### Further investigation

Invite a First Nations speaker or expert on cultural burning to share their experiences and knowledge with students.

## Useful Websites

- [Curious Kids: how do bushfires start?](#) – The Conversation
- [Bushfire Survival Plan](#) - BTN
- [Fire Season Warning](#) – BTN
- [Burn off Season](#) - BTN
- [Big Weather: Benefits of Indigenous fire practices](#) – ABC Education
- [How Fire Behaves](#) - CFA



Teacher Resource

# Solar Car Challenge

## Focus Questions

Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

1. Where does the World Solar Challenge start and finish? Find on a map.
2. What is the distance of the race?
3. What is used to power the cars?
4. How did the World Solar Challenge begin?
5. What do solar cars look like? Describe their features.

## Activity: Class Discussion

Discuss the BTN Solar Car Challenge story as a class and record the main points on a mind map with SOLAR CARS in the centre.

Students will respond to the following:

- What do you know about solar energy?
- What did you learn from this story?
- What does this story make you wonder?
- Think of three questions you would like to ask about the story.
- Make a list of words related to this story. Use this list of words to help form a class glossary.



What questions do you have?

What surprised you about this story?

### EPISODE 30

31st October 2023

#### KEY LEARNING

Students will learn more about solar powered cars. Students will guide their own scientific investigation to learn more about solar energy.

#### CURRICULUM

##### Science – Years 5 & 6

Scientific knowledge is used to solve problems and inform personal and community decisions.

Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions.

##### Science – Year 7

Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations.

##### Design and Technologies – Years 3 & 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.

##### Design and Technologies – Years 5 & 6

Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use.

## Activity: Glossary

Students will brainstorm a list of key words that relate to the BTN Solar Car Challenge story. Here are some words to get them started.

SOLAR POWERED CAR	CARBON EMISSIONS	SUSTAINABLE
INNOVATION	SOLAR ENERGY	RENEWABLE

Ask students to write what they think is the meaning of each word (including unfamiliar words). They will swap definitions with a partner and ask them to add to or change the definition. Check these against the dictionary definition.

Further activities for students:

- Students will add to their glossary by downloading the transcript for the BTN Solar Car Challenge story and highlight all the words that relate to the topic.
- What is the difference between renewable and non-renewable energy? Give examples and write a short explanation for each type. Make comparisons.

## Activity: Solar Car Research

Discuss the information raised in the BTN Solar Car Challenge story. What questions were raised in the discussion and what are the gaps in students' knowledge? The following KWLH organiser provides students with a framework to explore their knowledge on this topic.

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?

Students will develop their own question/s to research or choose one or more of the questions below. Encourage students to collect and record information from a wide variety of sources and present the information they find in an interesting way.

- What are the pros and cons of solar powered cars? Create a T-chart to record your findings.
- How are solar powered cars different to petrol fuelled cars?
- How have cars changed since their invention? Explore the history of cars in more detail and create a timeline of significant events.
- What is solar energy? List the different ways we use solar energy.
- Make a prediction about how transport will change in the future. Illustrate your predictions.
- How much energy (in kilowatts) does the sun output each day? Watch this [video](#) on ABC Education to learn more about the sun's power.

## Activity: Science Experiment

Provide students with the opportunity to think like scientists. In pairs or small groups, students will guide their own scientific investigation to learn more about solar energy. Students will design and produce a solar car, solar oven, or mini greenhouse to explore how the effects of light and heat energy can be used to perform a function.

### Class Discussion

Before students begin their investigation, facilitate a class discussion to find out what your students already know about solar energy, where it comes from and how it is used to generate power. Use one or more of these questions to get the discussion started:

- Where does solar energy come from?
- Is solar energy renewable or non-renewable?
- How do we use solar energy? Give examples.
- What else do you know about solar energy? Share your ideas as a class and record ideas on a whiteboard.
- What keywords relate to solar energy? Make a list as a class and create a kid-friendly glossary.
- Have you used or seen solar panels or solar powered devices? Describe.
- What do you think are the benefits of using solar energy?

### Investigation

Working individually or in small groups, students can choose to design and make a solar oven or plant greenhouse to learn more about solar energy. Students will use the investigation framework to guide them during their investigation.

#### Investigation Framework

Below is an investigation framework to guide students when planning and conducting their experiments.

- What am I going to investigate?
- What do I think will happen (prediction)?
- Why do I think this will happen?
- What steps do I need to follow to investigate my prediction?
- What materials and equipment will I need? Make list or draw and label each item.
- How will I make it a fair test? What variables am I going to keep the same?
- Write down as much information as you can about what happened during your investigation.
- Write a report which summarises the discoveries you made during the investigation. Include the following in your report: photos, a labelled diagram, a table of your results and observations to demonstrate what happened.
- Was this what I expected? Explain in more detail.



Students will choose one of the following for their scientific investigation.

### Solar-powered oven

Students will experiment with a solar powered oven to explore the mathematical and scientific relationship among reflection, transmission, and absorption. Students will build and test a solar oven of their own invention.

Students will respond to the following questions:

- What shape will your oven be? What shape best captures the sun's energy.
- Will your oven have insulation? How does insulation increase the temperature?
- What direction will it face?
- What colour will the surface of the oven be (white, black or reflective)? Consider that some colours reflect heat while others absorb it.

Questacon instructional video – [Solar-powered oven](#)

### Mini greenhouse

Students will experiment with a mini greenhouse to explore how solar energy is absorbed and retained. Students will build and test a mini greenhouse of their own invention.

Students will respond to the following questions:

- What shape will your greenhouse be?
- Where will you position your greenhouse to capture the sun's energy?
- What direction will it face?
- What type of material will you use to cover your greenhouse? Compare the effect of different materials.
- Will you use insulation? What will it be made from?

Questacon instructional video – [Mini greenhouse](#)

### Solar-powered rover

Students will build and test their own solar powered car to explore the power of the sun. Students will learn the physics of how a solar panel converts sunlight into electrical energy.

Students will respond to the following questions:

- Did the angle of the solar panel affect the performance of your rover? Why?
- How does the weather affect the performance of the rover?
- How could you improve your rover's performance? Think about your rover's shape, size and other features.

Questacon kit – [Solar-powered rover](#)

## Useful Websites

- [Solar Car Challenge 2019](#) – BTN
- [World Solar Challenge 2023](#)
- [Exploring the Sun](#) – BTN
- [How Do Solar Panels Work?](#) – TEDEd



Teacher Resource

# BTN Transcript: Episode 30 – 31/10/2023

Hey. How's it going? I'm Amelia Moseley and you're watching BTN. Thanks for hanging out with us again. Let's see what's coming up on today's show. The science of bushfires, a 3,000-kay trip powered only by the sun and Thomas gives trick or treating a go.

## International Aid

Reporter: Joe Baronio

*INTRO: All that soon, but first, trucks bringing aid have finally been allowed into Gaza as the war with Israel continues on. They're carrying really important supplies that people there are relying on. Joe took a closer look at humanitarian aid and how it works.*

JOE BARONIO, REPORTER: Here in Gaza, supplies of everyday essentials like food, water, medicine, and fuel have been rapidly running out. People are sheltering from daily airstrikes in schools, hospitals, and emergency shelters.

HAYA: The war broke out, our house was destroyed, and we fled to the UNRWA school. There is no clean drinking water, no sufficient food, and no bathrooms.

RAMA: We are terrified. We didn't know what to do.

See, since 2007 most of Gaza's essential supplies have come through this border, which Israel controls. But after the recent terrorist attack on Israel, the Israeli government shut the border completely and has been launching rockets into Gaza in response. Weeks on, aid groups say many of the 2 million people who live in Gaza desperately need humanitarian assistance, and lots of countries around the world have pledged to help out. But, actually making that happen isn't easy, and there are some important steps that have to be followed.

The first step in any crisis is assessment, where government bodies, like the Department of Foreign Affairs and Trade in Australia, figure out what areas have been impacted and who needs help the quickest. Then it's time for planning. This step is figuring out exactly what affected communities need and how to actually get there. For events like wars, when it's really dangerous and tricky to get in, Governments will work with organisations like the United Nations Relief and Works Agency, or UNRWA, and the International Red Cross Red Crescent Movement.

BETH DELANEY, HUMANITARIAN COORDINATOR AT THE DEPARTMENT OF FOREIGN AFFAIRS AND TRADE: And they're often the ones that are on the ground with the ability to provide the kind of support that's needed in response to a crises, whether it's, whether it's supplies or, or expertise, medical teams, those sorts of things.

And they all team up for step 3, Response, which is guided by three principles: save lives, alleviate, or reduce suffering, and protect human dignity. The response is when we see the hard work on the ground like rescuers digging through rubble, and essential supplies like food, water, and medicine delivered to civilians, funded mostly by donations from governments and private businesses around the world. The Australian Government has provided twenty-five million dollars to help the humanitarian effort in Gaza.

RICHARD MARLES, DEPUTY PRIME MINISTER: We are particularly concerned for those who are suffering in Gaza and so we are committed to providing assistance to them through international agencies such as the UN and the Red Cross.

After lots of international pressure Israel recently allowed some supplies to enter Gaza through its border with Egypt, but many say it's nowhere near enough to help everyone.

THOMAS WHITE, DIRECTOR OF UNRWA AFFAIRS GAZA: The aid that's coming in right now is not of the scale that we need to serve the population.

ALI ZAKI, WORLD FOOD PROGRAMME SPOKESPERSON: We had to reduce the ration of food that we were providing per person to make sure that it's stretching out to as many people.

UN agencies have been calling for a ceasefire, but while the fighting continues world leaders say the most important thing is to keep civilians as safe as possible.

TED CHAIBAN, UNICEF: Humanitarian supplies for children and their families need to be available on a sustained basis for the population.

ANTONIO GUTERRES, UN SECRETARY-GENERAL: To ease epic suffering, make the delivery of aid easier and safer, I reiterate my appeal for an immediate humanitarian ceasefire.

## News Quiz

Tech giant Microsoft is investing five billion dollars to help Australia build something. Is it an Operating System, a cyber shield or an Australian slang word processor? It's a cyber shield to help stop things like theft and spying from other countries. Microsoft will work with Australia's online security agency on the project.

ANTHONY ALBANESE: We know because we've seen through the examples in Australia the impact that a cyber-attack can have. This will strengthen Australia's capacity to resist such attacks.

A rare kind of white Australian animal was found in Tassie this week. What is it? An echidna, a kangaroo or a wombat? It's an echidna. The marsupial with all white fur and spines was spotted near Cradle Mountain.

This iconic dark brown Aussie yeast spread is celebrating a milestone anniversary. What is it? 75 years, 80 years or 100 years? It's 100 years old. Vegemite was inspired by Britain's Marmite which was hard to get here after the First World War, so food businessperson Fred Walker decided that Australians needed their own version of the spread. He asked Dr CP Callister, a chemist, to invent an Aussie version and he came up with what we now know as Vegemite.

## Bushfire Science

Reporter: Justina Ward

*INTRO: For a lot of the country, it's the most dangerous time of year for bushfires. But how do they start in the first place? And what can we do to protect ourselves and our homes? Here's Justina to tell us more about the science of bushfires.*

In Australia we tend to see a lot of these.

JUSTINA WARD, REPORTER: Bushfires. We see around 45,000 to 60,000 bushfires every year.

But have you ever wondered how or why bushfires start in the first place? Let's find out.

Perhaps a good place to start is to understand what fire is. To exist this wavy, hot, thing actually relies on three ingredients: heat, oxygen and fuel. And when these three things combine, it causes a special chemical reaction called combustion.

But how does that happen somewhere like here?

SANDY WHIGHT, DIRECTOR OF NATIONAL PROJECTS AND INNOVATION, AFAC: There's many factors for how bushfires start it can be deliberate arson a lot of its carelessness. The other big cause of bushfires in Australia is dry lightning strikes.

And because our continent is so hot and dry and prone to drought, it makes it a lot easier for fuel to ignite and burn.

So, how does a fire spread? Well, it's got a lot to do with the vegetation, the weather and the shape of the land.

Hey Robbie, how are you going?

But to understand this better I caught up with Robbie, who's a rural firefighting training officer.

JUSTINA: So, what do we have here?

ROBBIE: OK, Justina, this is a burn table. We use it to teach our students a bit about fire behaviour.

ROBBIE: So, say a lightning strike, there's no wind here in this situation, so it's just going to burn in a circular pattern.

ROBBIE: Now the other thing that can affect fire, the two main things, is the wind or slope.

ROBBIE: So, what I can do here is light another fire on a 20 degree slope.

ROBBIE: And we see, this is where we lit the fire, and we see how we've actually got about 3 or 4 times more distance on this side than the backing or the flank fires.

JUSTINA: So, can you explain why fire travels faster up a slope?

ROBBIE: Yeah, certainly that's a good question. When you have a fire being up slope, the heat coming off the fire actually pushes through the fuel in front of the fire and therefore that accelerates the fire of that direction.

The shape of a fire, and how many there are can also influence how a fire might behave.

JUSTINA: The flames are pretty high.

ROBBIE: Absolutely, so that's where we're seeing, because it's a line of fire for one thing, and the slope, means that the fire behaviour, the intensity is going to be quite large.

JUSTINA: Why do the flames react that way in leaning in to each other.

ROBBIE: It's called junction zoning, basically what happens is that the convection pulls together, so instead

of two separate convection columns, we have them both join together so that doubles what's going on, and there goes our fire.

JUSTINA: I'm glad it's only that size.

Yeah, luckily this fire was in a controlled environment. But if a fire was somewhere like here, and we added a bit of wind, well, it would be a different story. You see, strong winds are another big reason to how bushfires spread because by providing more oxygen, it increases the intensity. And a change of wind direction can make the fire a lot bigger really quickly.

MAN OVER RADIO: Yeah, spot fires galore down here, We're talking about 60, 70m flame height. 60, 70m flame height.

JUSTINA: In some cases, bushfires can get so big and generate so much power, that they can even create their own weather.

MIKA PEACE, SENIOR FIRE WEATHER RESEARCHER, BOM: What the fire is doing is it's producing enough energy in an unstable atmosphere that the fires convection column or the smoke plume grows vertically. And then the fire, it can actually generate a fire thunderstorm cloud over the top of it. And in the extreme events, of course, we can see these fire generated thunderstorms or Pyro cumulonimbus clouds can actually ignite new fires downwind.

Another fire spreader are embers, which are burning materials like leaves, twigs and bark and can start spot fires kilometres away. Not to mention the radiant heat that comes from a bushfire.

SANDY WHIGHT, DIRECTOR OF NATIONAL PROJECTS AND INNOVATION, AFAC: If they're particularly dry and fine fuels, they will start to burn themselves. So, that is one of the ways the fire accelerates, is also what makes it so dangerous for us and for animals.

JUSTINA: So, with all this in mind, how do we manage or prevent bushfires?

Well, one way is to quite literally fight fire with fire. We see this with prescribed burns, which involves strategically setting planned fires to reduce the amount of fuel in the landscape. Something that's been practiced in Australia for tens of thousands of years.

OLIVER COSTELLO, CULTURAL FIRE PRACTITIONER: Cultural burning, it's the First Nations Aboriginal people, Indigenous people's way of burning the country. Culturally we try and keep the fire intensity quite low, because we want to protect the canopy. If we do our burning early in the cooler times the fire won't be so bad because we've done all that good fire, or that cultural fire around the landscape.

There are a lot of things that we can do too: like keeping fuel loads low around the house; avoid doing activities that could cause an unwanted fire; paying attention to weather conditions; and if you're in a bushfire prone area, having a bushfire survival plan so you know exactly what to do if you need to get to a safe place.

SANDY WHIGHT, DIRECTOR OF NATIONAL PROJECTS AND INNOVATION, AFAC: This is a this is part of how we live in where we live. We learn about the science so that we can look after things properly, so that we can make good decisions. So that we can provide appropriate warnings and advice to communities for how to keep themselves safe. To make predictions, and that's why it's important we understand the science of bushfires.

# Solar Car Challenge

Reporter: Joe Baronio

*INTRO: Every year teams from across the globe come down under to show off their new solar tech and how it can be used in cars. It's called the World Solar Challenge and Joe took a look at all the action.*

JOE BARONIO, REPORTER: These cars aren't your ordinary rides, obviously. Instead, these are the creations from teams of super-smart students and engineers from around the world competing in the part science show, part race called the World Solar Challenge. Each team has to design and build a solar car completely from scratch, and then race it 3000 kays from Darwin all the way to Adelaide, battling wind, fire, and mind-melting heat along the way.

CEDRIC VERLINDEN, INNOPTUS TEAM: But we especially train our pilots on that within a sauna up to 55 degrees and now they're actually performing really good.

There's three different categories: The Challenger, Cruiser, and Adventure, which all have different rules and regulations but share one thing in common: lots of panels on the top side of the car absorbing energy from the sun and converting it into electric power to drive the wheels.

The idea for this futuristic event is actually from a long time ago. It came from these two: Hans Tholstrup and Larry Perkins in 1982. Tholstrup was an adventurer, keen to find different ways to power cars because he was worried that fuel would eventually run out. So, he teamed up with racing driver Perkins and built this, the Quiet Achiever. The following year they became the first people to drive from Perth to Sydney in a solar car, and a few years later in 1987 invited the rest of the world to join in.

JONATHAN TENNYSON, SOLAR CAR DESIGNER: Such an incredible opportunity to expose the whole world to the possibility that everybody can drive down the road on sunshine.

Back then solar power was pretty unusual, so the teams were doing groundbreaking work. 36 years later, the cars are still pushing boundaries.

CEDRIC VERLINDEN: We developed for example our own motor which is even more efficient than a motor of Tesla so we as a group of twenty engineering students succeeded in beating Elon Musk and we are actually very proud of that.

Cars in the Cruiser class were also part of CSIRO experiments along the way, and then judged on how they stack up as normal, everyday cars at the finish line. Speaking of which.

JOE: I'm here at the finish line in Victoria Square in Adelaide, where many people have turned out to watch some of this year's 31 teams wrap up their journeys. First car across the line was Infinite from Belgian team Innoptus, who also won the last World Solar Challenge in 2019.

JEFF SUY, INNOPTUS DRIVER: We had a very good battery, a very good solar panel, and every team member gave itself more than 100 percent.

Things didn't go to plan for everybody though, with strong outback winds halting many racers near Coober Pedy. But for the ones that made it here in one piece, it's a massive achievement.

VOXIE: I think the coolest thing about them is that they will never run out of fuel.

VOXIE: The design of it's kind of cool, like, how like it's not like other cars it's like unique.

CHRISTIAN SANDERSON, ADELAIDE UNIVERSITY TEAM: It's an awesome field to get into, especially in Australia now. The challenge will help improve and put solar cars on the road in the future.

## Halloween Boom

Reporter: Thomas Miden

*INTRO: Yes, it's that creepy time of year again, Halloween. It's something millions of people around the world celebrate, including right here in Australia. Thomas finds out all about October 31st and why more Aussies are embracing the spooky season.*

THOMAS MIDENA, REPORTER: Hi. I'm a vampire. From Transylvania. Gaggh. I've got a basket, a lantern, and I'm prowling the streets in search of treats. It must be Halloween. Yeah, yeah it is.

Historically, Halloween hasn't been celebrated much in Australia. To explain why that is, and why it's been growing in popularity recently, let's go back to the beginning. Thousands of years ago in Ireland, there was a Celtic festival called Samhain.

Yes, it's pronounced "Sow-win". Don't, don't worry that there's no W. It was believed that on the night of October 31st, the gates between the living and the dead would open, allowing spirits from the otherworld to crossover.

So, to ward off spooky spirits people would light bonfires, leave out food.

I hope fairies like cheese.

And disguise themselves as ghosts to blend in.

I'm a ghost just like you.

GHOST: Cooool.

Later, Christianity came to Europe, bringing a new holiday called All Hallows Eve, which was also on October 31st.

Oh no, that's the night I'm going to Samhain. I can't go to both on the same night. Or can I?

So, it's thought that traditions from the two festivals may have come together which leaves us with Halloween. And then, when Irish immigrants brought the spooky tradition to the US, it really took off.

Around the 1930s, in America, dressing up and roaming the neighbourhood became really popular. Argh. No, you were supposed to dress up as something scary.

People actually used to go up to houses and perform something, or sing a song, hoping for money or food in return. This was called guising. I'm a vampire from Transylvania, and I hate to ask it, have you something for my basket? Oh. Over the years, this has become what we call Trick or treat. Which basically means, please give me something nice like a lolly, or otherwise, I'll do something mischievous.

OLD WOMAN: Aren't you a little too old for trick or treating?

THOMAS: Oh.



It took a while to catch on in Australia, but thanks to pop culture, that's changing.

Halloween's a magical holiday, all about family, friends, and the thrill of getting to be someone else for a day.

It certainly looks different here in the southern hemisphere though. Whereas Halloween was initially inspired by the darker, colder nights of Autumn, here in Australia, this time of year means Spring, and flowers, and long sunny days.

Argh. Sunlight, it burns.

Not everyone is a fan of Halloween. Some think it's just encouraging us to buy things we don't need and eat sugary foods that aren't good for us.

Hmm, I don't think these teeth would be good for my lovely vampire teeth.

It's estimated that almost half a billion dollars could be spent on lollies, costumes and decorations this year. That puts Halloween just ahead of Valentine's Day, in monetary terms.

Either way, with more than 5.3 million Australians expected to join in the festivities this year, getting creative with fancy outfits and creepy decorations has never been more popular.

But for this vampire, here we go again, it's proving to be hard work.

I'm a vampire from Transylvania ...

## Sport

Yeah, the Tillies can't stop winning, can they? In front of 59,000 fans in Perth they've demolished the Philippines 8 0 in their second Olympic qualifier. And there was some true magic on display with Sam Kerr snagging a hat-trick just 24 seconds into the second half.

COMMENTATOR: The perfect start to the second half.

Then not long after, Caitlin Foord got her third goal, too.

COMMENTATOR: Still going, what a run.

CAITLIN FOORD: Yeah, I guess for us we just want to do the best we can whenever we step out there.

Now to France where fans poured in for the Rugby World Cup Grand Final. And with both the All Blacks and the Springboks each having won three previous cups. It was a true nail biter, but in the end ...

COMMENTATOR: South Africa fulfil their destiny as history makers!

The Springboks secured the W by just a single point.

TREVOR NYAKANE: All I can do is my expression and by that it's me dancing. I'm going to be dancing all night.

And finally to Dunedin in New Zealand where the Wallaroos have done something pretty stunning.

COMMENTATOR: 29 points to 20, Australia over France.

That's right, against all expectations, they've defeated France for the first time since 2010 and thanks to some hat-trick goodness from star prop Eva Karpani, the win's been named one of their best ever.

## Country Cricket - Heywire

Rookie Reporter: Abby

*INTRO: Finally, today. We're going to hear from Abby, one of this year's Heywire winners. She loves cricket but since she didn't have a girls' team in her hometown, Abby and her mum decided to start their own league. Check it out.*

Cricket's a big deal in my family. Everyone gets involved. Our backyard cricket games are legendary. I'm the best. No competition.

Oi! I don't think so.

When I first played cricket in primary school, I instantly connected to it. Eight years on, and now I'm playing for Golgol Cricket Club. Today is our final game of the year and we're aiming for a win.

I love batting and hitting the ball in the gaps in the field and, obviously, making runs. I worked hard, played multiple grades and now I'm being noticed by selectors. But it wasn't easy getting here.

When I started competing, there was no team for girls. So, I had to play with the boys. It was hard. I felt excluded and I wasn't getting the same opportunities. They didn't think I was good enough, but I am. Mum wasn't happy about it, so she decided to create a social comp to bring young girls into cricket. It started with a few girls, then grew big enough to play in leagues. That's when we finally started getting noticed by state selectors.

Mum drives me thousands of kilometres and does so much to get me to competitions. We're heading back from Melbourne, where I just trained with the Victorian countryside team. I'm so proud, but I also know there's more work to do to help girls like me who live in the country. I'm going to go as far as I can, but most of all, I want to help other girls get here too.

## Closer

Amazing work, Abby. Thanks for sharing. Now that's all we've got for you today, but if you need a little more BTN in your life, you can check out Newsbreak every weeknight right here in the studio for the latest news. Have the best week and I'll see you soon, bye!