



# EAST WAIKIKI PRIMARY SCHOOL

CIRCUIT BREAKERS 2020

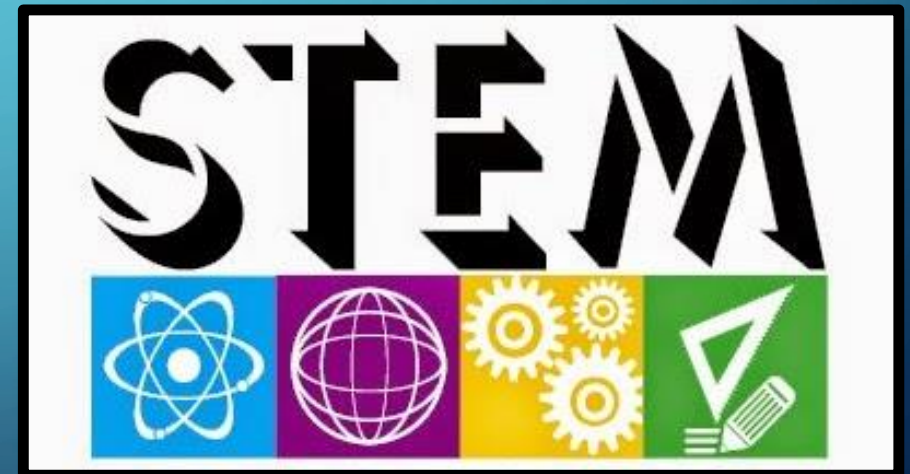
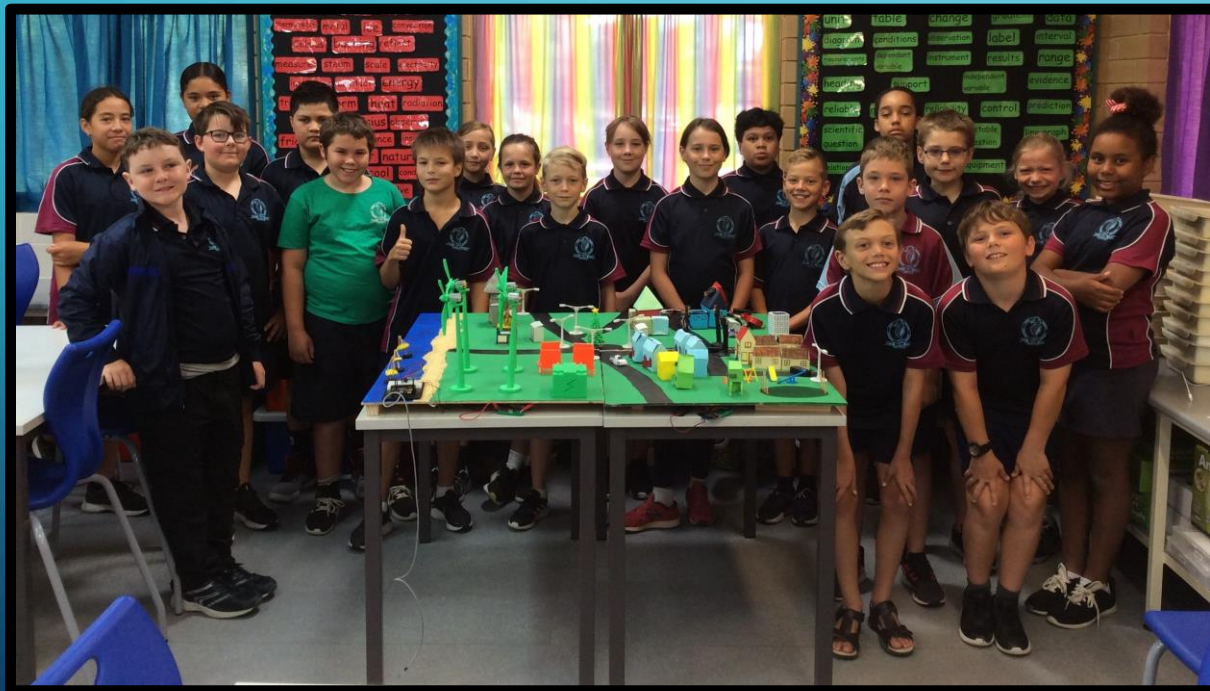
# OUR SCHOOL

Our school, East Waikiki Primary School, is in Rockingham. It has approximately 450 students from Kindergarten to Year 6. This year 24 students from Year 4 and 5 participated in Circuit Breakers.



# AFTER SCHOOL CIRCUIT BREAKERS GROUP

Our after school STEM Circuit Breakers group was led by Mrs Kay and Ms Peters with approximately 24 students taking part. We stayed after school every Monday for an hour and a half to learn about Western Power, sustainable energy sources, micro:bits and coding. We designed and built our ideal town powered by renewable energy, using a combination of micro:bits and batteries to run the different parts of the town.



# WHAT WE LEARNT ABOUT WESTERN POWER

Western power does many jobs around our cities and country

- Western Power delivers power safely and efficiently to all our homes.
- Western Power supplies cities with solar power, wind power and hydro power.
- It teaches children and adults about power and engineering.
- Western Power responds to accidents and emergencies including or involving power.
- Western Power constantly think about the future and better ways to provide electricity to everyone.



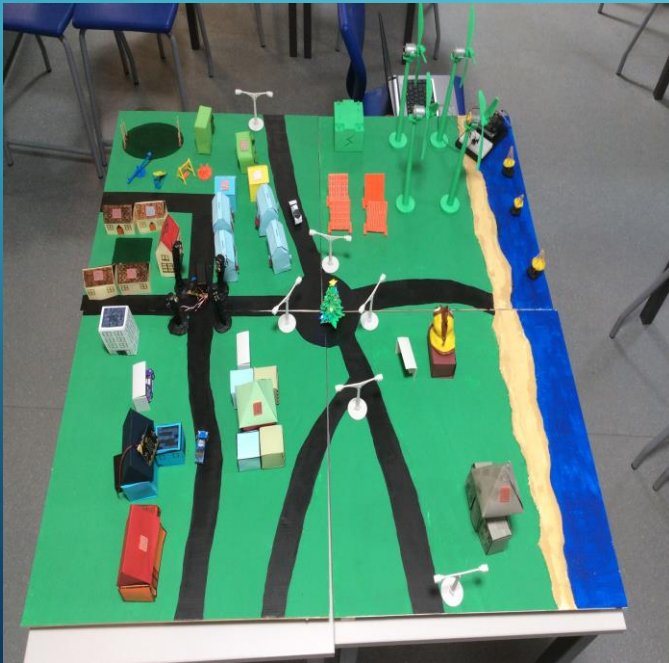
# WHAT WE LEARNT ABOUT ENGINEERING

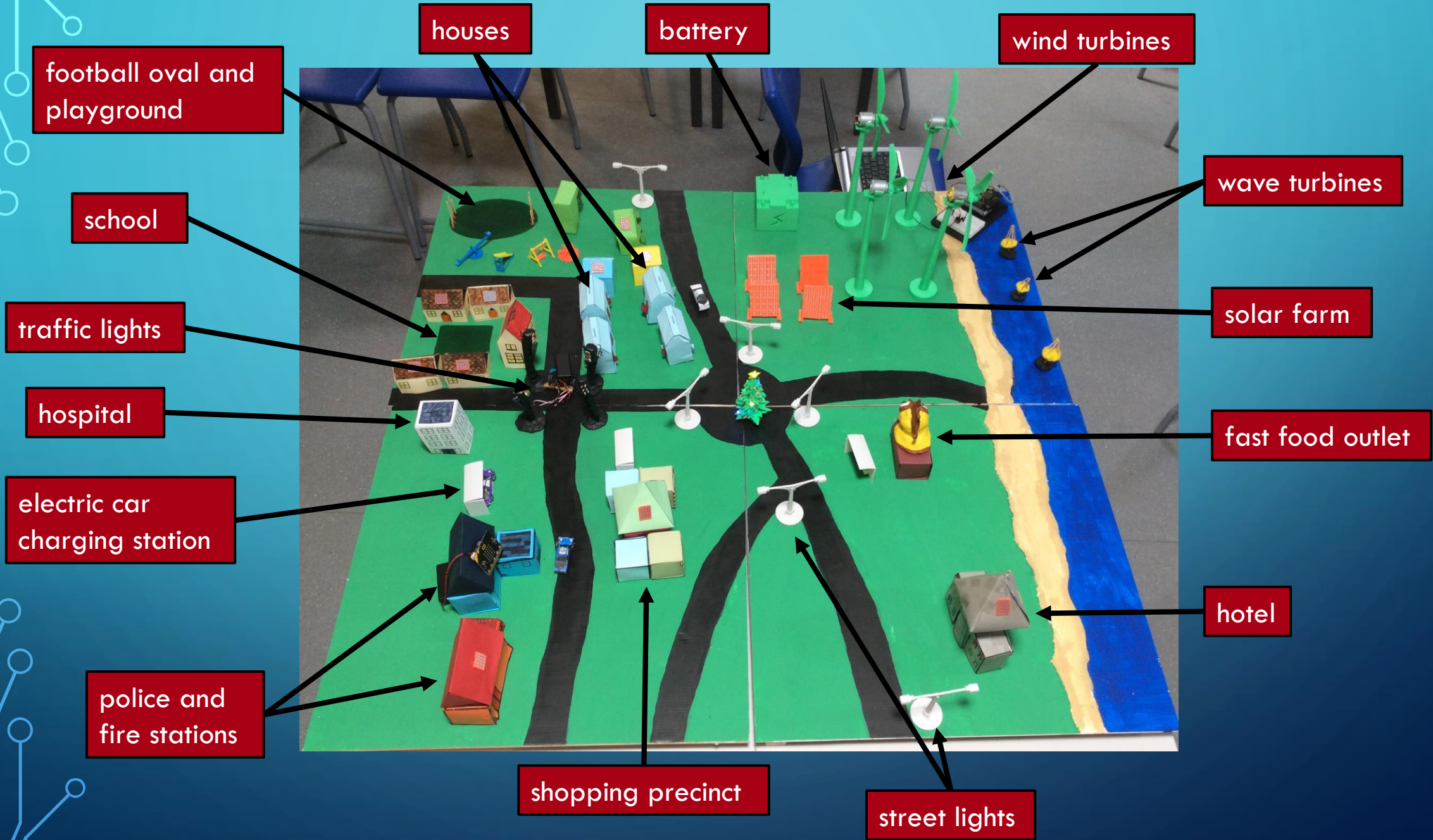
- Being an engineer you have to problem solve and think outside the box.
- Engineering isn't just one job. There are many types of engineers, such as mechanical, electrical, chemical and medical, hydraulic and civil (transport) engineers.
- Engineers are STEM professionals. They imagine, discuss, prototype, reflect, innovate and collaborate.
- Engineers help design and make what we use in our everyday lives. They make buildings, bridges, detergents, roads etc.



# OUR TOWN: STEMVILLE

- Our town of the future was made as part of the circuit breakers program.
- Our town is called Stemville.
- We have: 7 houses, 1 hotel., 3 electric car stations, 1 school, 1 police station, 1 fire station, 1 shopping centre, 1 football field, 1 playground, 1 beach, fast food places, 4 large solar panels, 1 bank, 3 wave turbines, 4 wind turbines , 1 big battery and 1 Christmas Tree.
- The lights for the houses, the traffic lights, the wind turbines, and the police lights, sign and siren are all operated using the micro:bits.
- We used some paper nets, plasticine and 3D printing to make the different parts of our town.



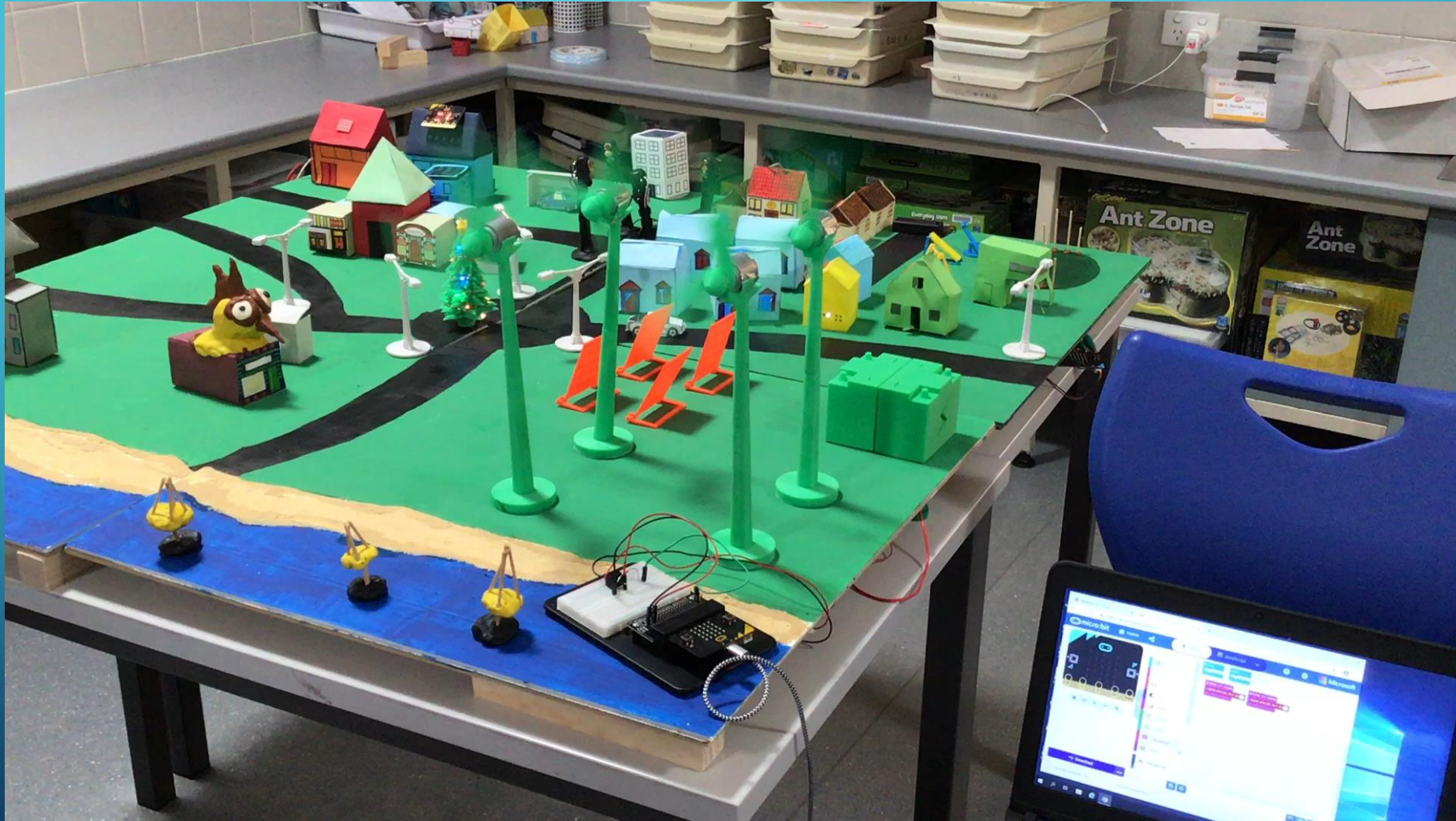


# OUR WORKING BOARD PART 1 (PLAY VIDEO)



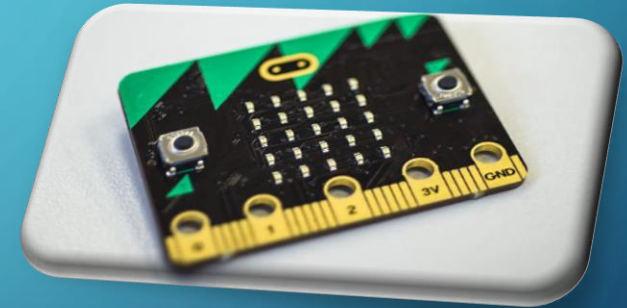


# OUR WORKING BOARD PART 2 (PLAY VIDEO)



# USING THE MICRO:BITS

- We used micro bits for our town to power many parts.
- We used simple push A for on and B for off coding to turn the lights on and off.
- The traffic lights are wired and coded in series so that they work like real traffic lights and even have a sign (on the micro:bit) that tells the school children when to walk across the road and when not to.
- The micro:bit did not have enough power to run the motor in the windmill so we used a breadboard to boost the power and run the motor.
- We attached a micro:bit to a speaker from our click connex kit to make a siren for the police car which also has a flashing light on its roof. The police station has a sign on it made with a micro:bit.



  
micro:bit

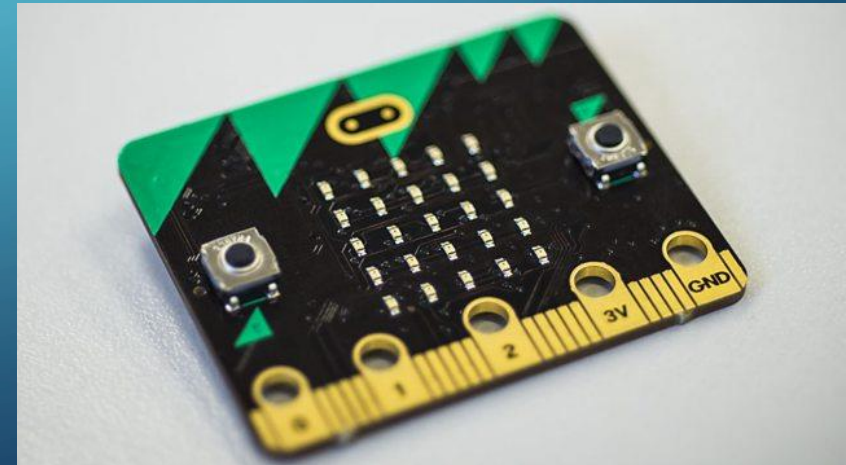
# OUR LIGHTS FOR STEMVILLE



We coded our Lights to turn on when we press A on the Micro: Bit and when we press B the light turns off.

We use alligator clips to connect the micro: bit to the LED light bulb inside the house. There are 2 micro: bits used to control the lights in the 7 houses

The micro: bit is connected to a battery pack with two AAA batteries which give the micro: bit the power to operate it.



# THE EMERGENCY SERVICE CORNER

In this corner the coding was used for:

1. The blue police car light flashing.
2. The POLICE sign on police HQ.
3. The police car siren

The other buildings in the area are the hospital and the electric station for recharging electric cars.



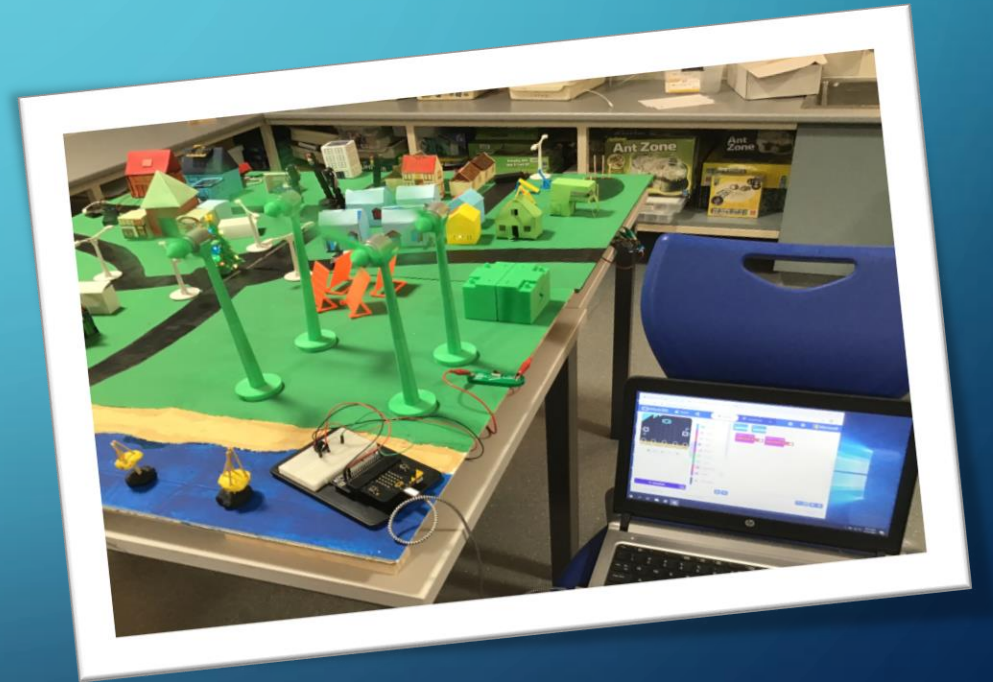
# RENEWABLE POWER

Wind power is a useful way to make electricity without using harmful fossil fuels. As you see on our board, there are four windmill that spin in the wind and collect energy and store it in the battery.

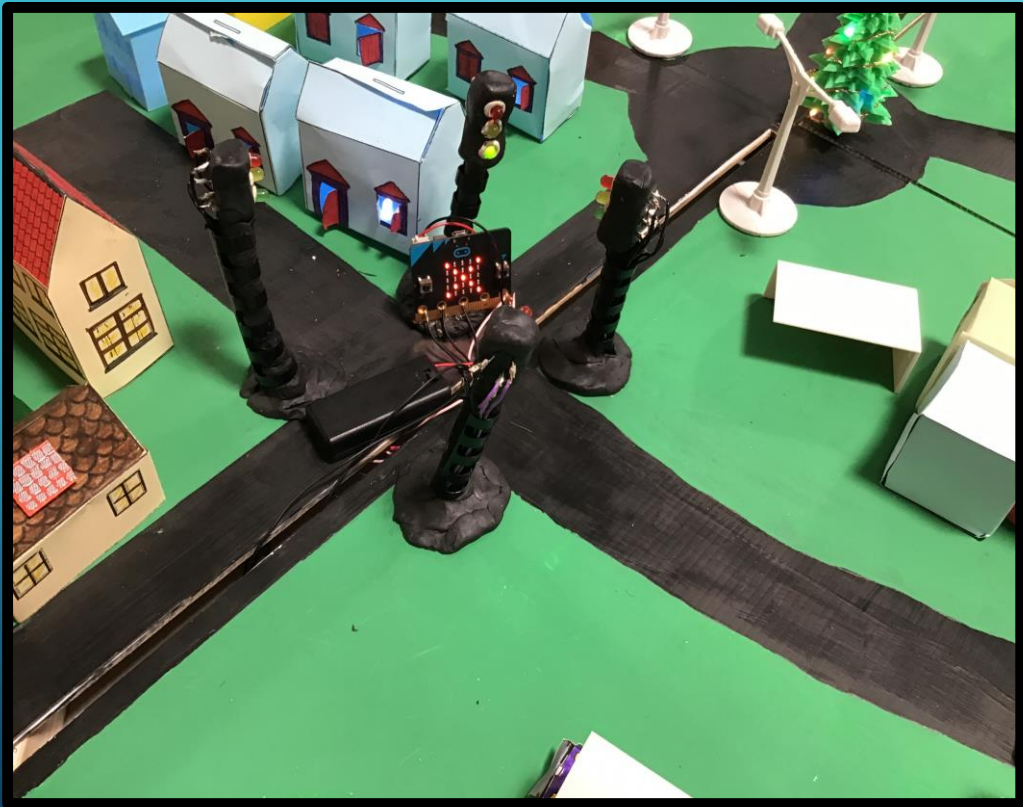
Solar power is also a renewable power source that collects sun beams, turning them into electricity.

Hydro is also a sustainable way to make power. The waves or the current turn a turbine and create power.

All this power is fed into a battery which is used to power the community and in power cuts.



# TRAFFIC LIGHTS



Our traffic lights are coded so that they follow a sequence. When they are red the micro: bit reads walk to indicate to the people to cross the road and when they are green the micro: bit shows a big X to indicate to the people to stop or you will get run over.

# WHAT WE LEARNT AND ENJOYED THE MOST

- This activity helped us learn about how towns could improve their power supply,
- We learnt how to co-operate with each other.
- We learnt how to create and build new things using different materials.
- This program taught us how to overcome obstacles and challenges and to solve real life problems
- We learnt about the different types of energy sources and the role of Western Power in our community.
- Our favourite things about the program were:
  - coding the micro:bits.
  - building things with plasticine.
  - making circuits with the copper tape, LED lights and micro:bits.



# Thank you

Thankyou Western power and Simon our STEM Professional for sponsoring and assisting us with this extra curricula activity. We really enjoyed it and it was fun.

We learned:

- how to code with micro: bits
- how to be safe around power
- how to make models with plasticine, paper and 3D printers.

Also we would like to thank Mrs Kay and Ms Peters because they made this possible for us.

Hopefully we can do this next year. Every one enjoyed this program very much.

# THANK YOU!