



# Kai's Clan Lesson Plan - Operation Bushfire Rescue

Suitable Years 5 to 6. This lesson has been adapted from Kai's Clan Projects.

## **Background to mission:**

Across the Australian landscape, bushfires\* have become a common experience. As a result, many animals such as kangaroos, koalas, and goannas have to flee their environment for safety and many lose their lives as they get caught up in a fire storm. Injuries such as burnt feet and skin are common. Rescue groups find it difficult to reach injured animals and others are hard to get to with high temperatures and inaccessible environments that also put human lives at risk. Using autonomous vehicles for rescue could be the answer. Using Kais Clan your mission is to rescue animals at risk of danger amongst the bushfires.

\*A note of caution, some students may find this topic distressing and/or may have had direct experience with bushfires so we encourage you to approach this topic with care.

#### SDG 15: Life on Land

Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.



#### Australian curriculum

Digital Technologies (in this lesson plan)

- (AC9TDI4P02) follow and describe algorithms involving sequencing, comparison operators (branching) and iteration
- (AC9TDI6P02) design algorithms involving multiple alternatives (branching) and iteration
- (AC9TDI4P02) follow and describe algorithms involving sequencing, comparison operators (branching) and iteration
- (AC9TDI6P05) implement algorithms as visual programs involving control structures, variables and input

#### Science (extension of concept)

- (AC9S5U01) examine how particular structural features and behaviours of living things enable their survival in specific habitats
- (AC9S6U01) investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions

#### HASS (extension of concept)

• (AC9HS5K05) the management of Australian environments, including managing severe weather events such as bushfires, floods, droughts or cyclones, and their consequences.





## **Sustainability - Futures**

Sustainable futures require individuals to seek information, identify solutions, reflect on and evaluate past actions, and collaborate with and influence others as they work towards a desired change.

#### **Learning Intentions:**

- Identify how wildlife can be affected by natural disasters such as bushfires.
- · Explore ways of helping injured wildlife
- Explain design criteria to prepare areas to protect wildlife.
- Investigate ways of rescuing animals with an autonomous vehicle.

### Introduction:

Students begin to research information on Australian bushfires over the last 20 years from reliable and valid sources.

Articles to read that back up the scenario.

- South Coast fire hits kangaroo sanctuary, leaving few survivors and medicine shortages ABC News
- NSW fires: As Mogo Zoo was surrounded by blazes, 'not a single fire truck' came (smh.com.au)

Sites with response information

- Emergency Response | WWF Australia
- How to help animals during the bushfire crisis | RSPCA Australia
- Rescuing animals during bushfires Australia | IFAW

## Challenge

How to save native animals from bushfires without human lives being put at risk?

## Requirements

Robot ID /Name/coordinates

- Robot 1 / Fire Truck X:5 y:12
- Robot 2 (5) / Kangaroo/Koala/Goanna X:44 y:42
- Robot 3 (8) / Ambulance X:77 Y:20
- QR Code 101 Bush fire X:47 Y:54
- No robot computer / Bush Fire Service NA





#### **Sensors Bits**

Each robot will require different sensor bits to be added.

- Robot 1 Fire truck add-on the 4 x LED Strip (green)
- Robot 3 Ambulance add LED Matrix (yellow)

## **Objective**

Use the Rescue Run map with roads, water ways and forest areas for native animals to inhabit. Designate the fire zone and pathways for rescue vehicles to access fire hazard areas. Program Kai's Clan to rescue animals in danger of the fire zone and bring them out to safety.

## Set Up

Follow the "Quick Start Guide" instructions to set up Kai's Eye for robot pairing and tracking. On a separate device login to <a href="https://app.kaisclan.ai">https://app.kaisclan.ai</a> and robots will appear in map view.

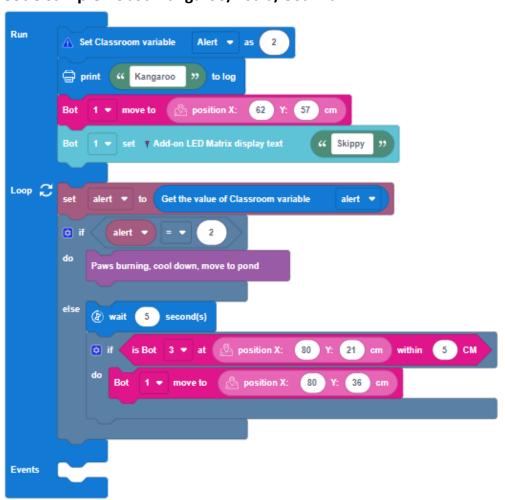






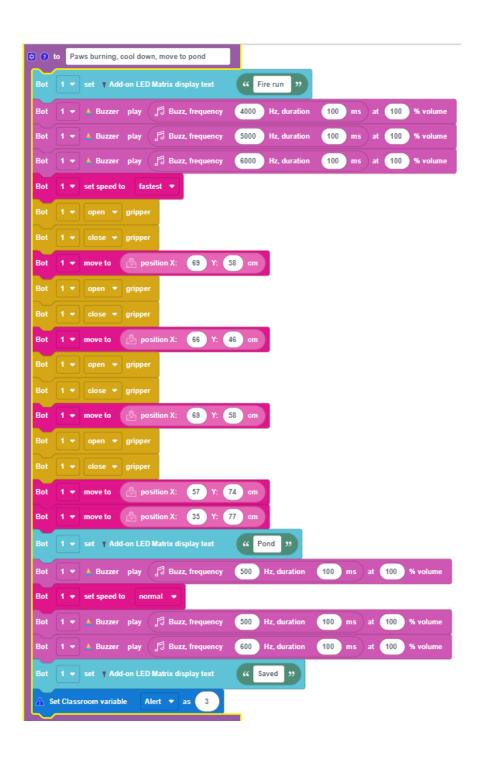
# **Program Tasks**

Code sample Robot: Kangaroo/Koala/Goanna





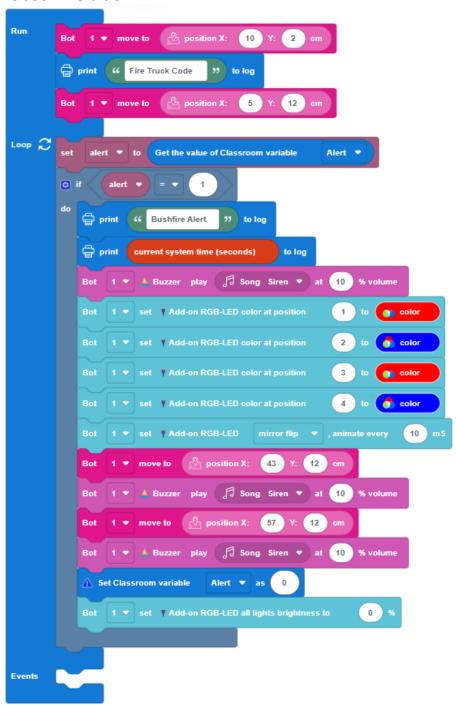








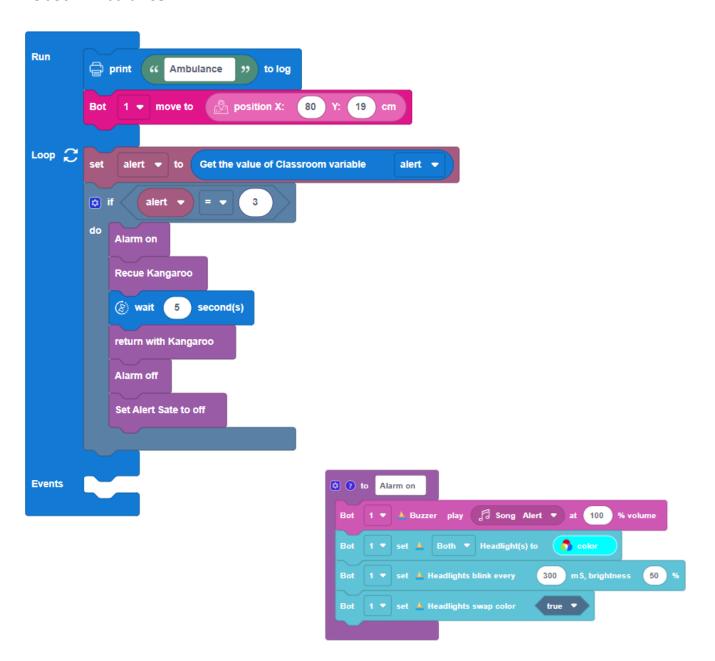
## **Robot: Fire truck**





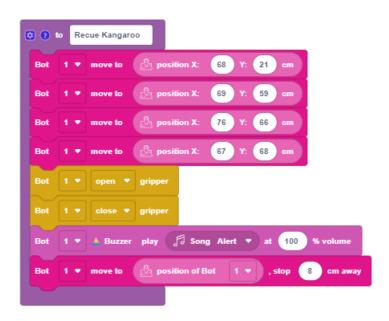


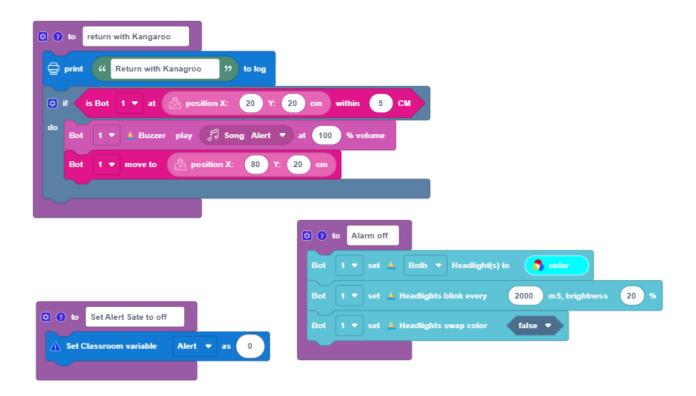
## **Robot: Ambulance**







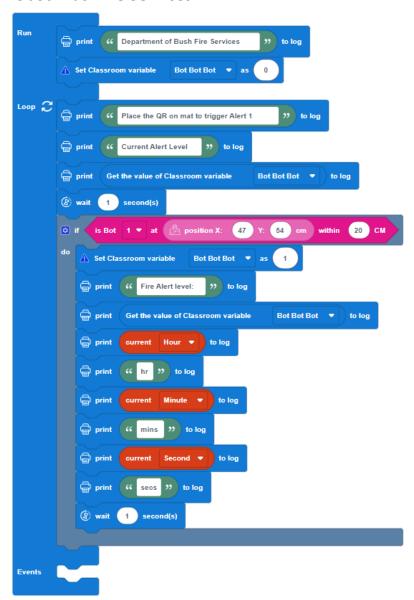








## **Robot: Bushfire Services**







#### **Assessment**

Assessment will depend on your classroom needs and goals. We have some tips and resources to support assessment below.

Observation can be used to check students' ability to carry out tasks aligned to the Australian Curriculum.

Allow students time to practice with the robot so that they feel comfortable using the functionality and in navigating around a mat. A checklist can help support observations.

Teachers observe students using the Kai's Clan robots, creating their algorithms and debugging.

Use questioning to elicit student understanding of the functions of the robot and their algorithmic thinking.

For more assessment resources we recommend the Digital Technologies Hub: https://www.digitaltechnologieshub.edu.au/teach-and-assess/

#### For more information

Please visit our webpage <a href="https://csermoocs.adelaide.edu.au/lending-library">https://csermoocs.adelaide.edu.au/lending-library</a> Email cser@adelaide.edu.au

We would like to thank the Australian Government Department of Education for funding our Lending Library and associated resource development.