

GREEN HEROES

# KOALA WATER STATIONS.

GREEN HEROES DESIGN CHALLENGE  
FOR HIGH SCHOOLS, 2020



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VISIT [WWW.GREENHEROES.ORG.AU](http://WWW.GREENHEROES.ORG.AU)



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# THE NEED FOR WATER STATIONS

**The simple difference between life and death.**

In 2020 and always, Green Heroes has pledged to engage young people and the wider community in the conservation of Australian native wildlife. Access to food, water and shelter are the most basic needs of all creatures; our precious wild animals are deserving of these fundamental requirements for survival.

Australia is home to so many unique and incredible native animals and has some of the most diverse habitats found anywhere on the planet. It is recognised by Conservation International as one of only seventeen 'megadiversity countries' worldwide. This group of countries covers less than 10% of Earth's surface but supports over 70% of its biological diversity.

Sadly, there has been dramatic environmental change and loss of biodiversity in Australia over the last 200 years, as the delicate ecological balance continues to be disrupted by human actions.

The main factors that threaten native wildlife in Australia are habitat loss, introduction of exotic plant and animal species, climate change and pollution of the soil, water and atmosphere.

According to official records, almost 60 animal species have already become extinct and more are threatened with extinction. Populations of many native species have declined by over 95% and even some of our most iconic animals, such as the koala, are now considered to be vulnerable.

As drought and other extreme events such as bushfire and flood cause loss of natural food source, however, it is widely accepted that native animals need human support in areas of extreme habitat loss.

The Green Heroes Design Challenge 2020 invites students to collaborate in creating a prototype water station for wildlife.



# THE DESIGN CHALLENGE

"The greatest threat to our planet is the belief that someone else will save it"

Just beyond the remote town of Goondiwindi, in Qld a state reserve is home to a colony of Koalas. Approximately ?? koalas live in amongst the eucalyptus tree here.

Overall the koalas in this colony are healthy and free of disease, however, in recent times the koalas in this colony have begun to climb down from the trees and travel along the ground risking highway crossings, and exposure to predation and other dangers (such as grass and paralysis ticks).

Most often, the koalas here are searching for water, as prolonged drought has left their primary food source dry. The leaves of the eucalyptus trees no longer contain the moisture content required to keep this koala colony hydrated.

**IN A COLLABORATIVE EFFORT BETWEEN GREEN HEROES, THE WILDLIFE EMPIRE AND SCHOOLS, WATER STATIONS THAT ARE WELL DESIGNED AND FUNCTIONAL WILL BE IMPLEMENTED AS A TRIAL FOR KOALAS LIVING WITHIN THIS COLONY.**



# THE DESIGN CHALLENGE

(continued)

## TASK

Participants are asked to answer the following question:

How could the 'redesign' of a water station support distressed Australian wildlife and wildlife support agencies in areas affected by drought, bushfires or extreme habitat loss (such as over development).

You are required to Identify key stakeholders including the specific target animal species

Develop an innovative design solution

Consider and write about the economic, social or ecological sustainability of your design concept



# THE DESIGN CHALLENGE

(continued)

## TIPS

Participants are asked to consider the following:

A design that would allow easy access to water by koalas, ideally raised above the ground to prevent koalas from having to leave the tree.

The design should also take into account the collection and storage of rain water

The design should consider easy access for refilling the water station when needed

The creation of a water station that prevents small animals, such as sugar gliders, possums and lizards from becoming trapped or drowning should they come to the station for water.



# THE DESIGN CHALLENGE

Rules - coming soon

## SUBMISSION

Participants are required to develop a design proposal. This should be in the format of an A3 landscape visually documenting the design process.

To complete this task, you must research and analyse existing design solutions and sustainability information regarding native wildlife watering stations.

Represent your ideas, a sustainable concept and sustainability information using schematic sketching and ideation sketching and/or low-fidelity prototyping. (This can include sketching, CAD models, scale models and/or photographs of any constructed prototypes.)

Evaluate the strengths, limitations and implications of your ideas and how the concept satisfies the needs of stakeholders

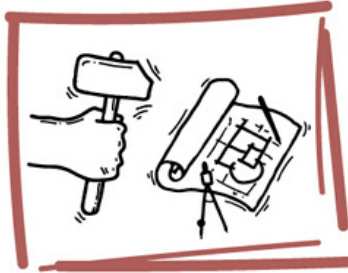


# DESIGN CHALLENGE TIMELINE



*Enter!*

BY MAY  
31ST, 2020

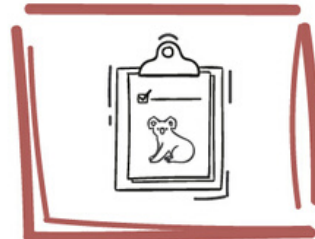


*Design + Build*

BY JUNE 30TH, 2020

*Submit*

BY JULY 15TH, 2020



*Showcase + Awards*

SEPTEMBER 6TH, 2020



# THE DESIGN AND AWARD CATERGORIES

This design challenge is open to Year 7-12 students .

There are two age groups in each category:

Junior Secondary (Yr 7-9) and

Senior Secondary (Yr 10-12)

## AWARD AND PRIZES

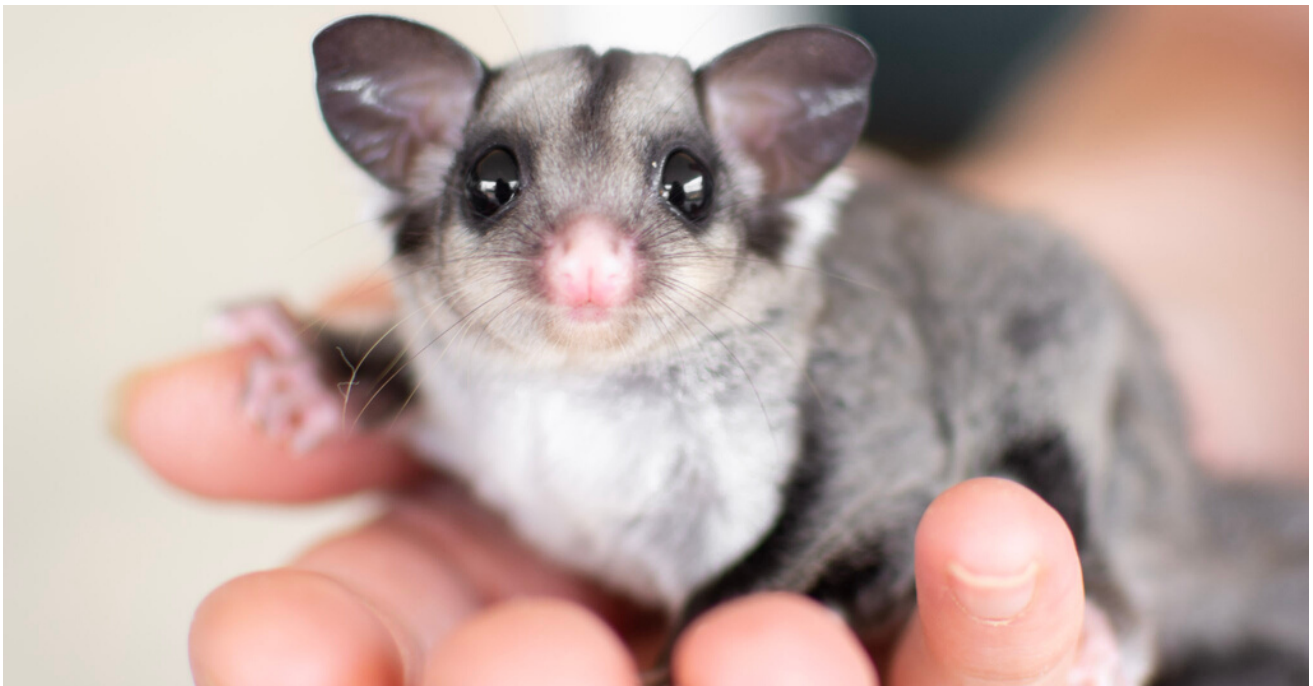
All participants will receive a participation certificate.

Winners in each category will receive, A winners certificate and trophy; up to \$1000 will be donated to enable the construction of the winning water station design for koalas in the story on page 4.

For further information, please contact:

Sarah Jantos [hello@greenheroes.org.au](mailto:hello@greenheroes.org.au) or

Tennile Banks [wildlifeempire4390@yahoo.com](mailto:wildlifeempire4390@yahoo.com)



# DESIGN & AWARD CATEGORIES

## Junior Secondary - Grades 7-9

Urban schools



Goondiwindi and Surrounds



## Senior Secondary - Grades 10-12

Urban schools



Goondiwindi and Surrounds

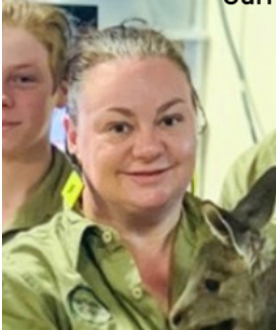


Students selected for an award or commendation will be notified via  
the class teacher by July 31st, 2020



# JUDGING PANEL

Tennille Banks  
The Wildlife Empire



Geoff?



??Jordyn DeBoer  
Environmental scientist

??Dr Michael Pyne  
Senior veterinarian,  
Currumbin Wildlife Hospital

Students selected for an award or commendation will be notified via  
the class teacher by July 31st, 2020



# HOW TO ENTER

Submission should be by PDF. Maximum 10 pages, including cover page, table of contents and reference list.

Email Sarah Jantos [hello@greenheroes.org.au](mailto:hello@greenheroes.org.au) - include your name and DESIGN CHALLENGE in the subject line.

Please also include your age, grade and school in the email along with the best contact details of your class teacher.

Entries must be received no later than the end of term 2, 2020



For any further information or support, please contact:  
Sarah Jantos - [hello@greenheroes.org.au](mailto:hello@greenheroes.org.au)



# **SUPPLEMENTARY INFORMATION**



# Helping wildlife in emergencies

The Department of Planning, Industry and Environment works with the community and wildlife rehabilitation groups to rescue and care for injured and distressed native wildlife in an emergency, such as prolonged drought, or after fire or flood.

## How you can help

Only licensed wildlife rescue and rehabilitation providers or qualified vets may take injured or orphaned native animals into care. You can use the IFAW Wildlife Rescue App to quickly find the closest carer to contact. If you find an injured animal, and it is safe to do so, contain it in a covered box in a dark, quiet place while waiting for a rescuer or when taking an animal to a wildlife carer or vet.

During an emergency some native animals may need short term help. Although not injured they may need access to water, food or shelter until their natural environment recovers. Only provide water or food for native wildlife if you have the permission of the land owner or manager.

## Providing water

Many animals can only survive a matter of days without water. You can help a range of native animals by giving them a safe supply of clean water changed daily to prevent the spread of disease. Never add sugar or electrolytes to the water as it can be harmful. Use:

- Containers or water dispensers put in the shade at a range of heights, including in trees.
- Strong containers to avoid collapse with stable rocks or sticks poking out to give safe access out of the water for birds and reptiles. Modify watering troughs by adding a stick or mesh.
- Firm surfaces to put the containers on, so they don't tip if a heavy animal tries to use it.
- A cleared area with shade to allow nervous wildlife to watch out for predators and keep cool.

Swimming pools can present a danger to thirsty wildlife if no other water source is available. Keep your pool covered or secure a flotation device to the side of the pool, such as a rope threaded through a pool noodle, to allow wildlife to escape if they fall in while drinking. Check it daily.

## Providing food

Feeding native animals is generally not recommended because they have very special and diverse dietary needs. Although it's always best for the health of wildlife to forage for food and water naturally, in times of natural disaster when natural food resources are scarce, you may want to help by providing food. Only supplementary feed until nature begins to recover. If there is still vegetation, providing water only is the best way you can help. Remember:

- What can be offered to one animal may be harmful to another and could result in debilitating disease or even death. Over feeding can be fatal. Always offer fresh water.
- Remove uneaten food. Wash your hands before and after cleaning and drying food and water containers. Change containers daily to prevent the spread of disease. Disinfect containers in a dishwasher or by soaking in a solution of one cup of bleach added to four litres of water.
- Secure food containers in trees. Never throw bird seed directly onto the ground.
- Never feed wildlife bread, honey, sugar, avocado, chocolate or dairy products as they are very harmful. Mixtures of peanut butter, honey and rolled oats, also known as bait or wildlife balls, are also harmful to some animals.

## Suitable food for wildlife

ANIMALS	USE IN SMALL AMOUNTS	DON'T USE - HARMFUL	TIPS
Kangaroos, wallabies, pademelons and wombats	<ul style="list-style-type: none"> <li>Macropod pellets (rural supply stores) if not available use high fibre horse pellets (not high performance), or macropod muesli</li> <li>Leafy green vegetables</li> </ul>	<ul style="list-style-type: none"> <li>Pony, high performance or stud mixes with rice, seeds, sugar or pollard</li> <li>Lucerne</li> <li>Grass or oaten hay (weed risk)</li> <li>Brassicas like cabbage, broccoli, kale, cauliflower</li> </ul>	<ul style="list-style-type: none"> <li>Do not hand feed</li> <li>Scatter food early morning and evening in small amounts – replace as needed</li> <li>Provide fresh water</li> <li>Carrot and sweet potato may be harmful for some macropods</li> </ul>
Eastern pygmy possums	<ul style="list-style-type: none"> <li>Native plants and flowers</li> <li>Small amounts of sweet potato, pumpkin</li> </ul>	<ul style="list-style-type: none"> <li>Sugary foods</li> <li>Rolled oats, peanut butter or honey</li> </ul>	<ul style="list-style-type: none"> <li>Omnivores, so need a varied diet.</li> <li>Place in fork of tree after sunset</li> <li>Do not encourage them to the ground to feed as they are vulnerable to predation</li> </ul>
Sugar, squirrel, feathertail and yellow-bellied gliders	<ul style="list-style-type: none"> <li>Some pear, red apples or melons (seeds removed)</li> <li>Insect meal (pet food store)</li> </ul>		
Brush-tail and ringtail possums	<ul style="list-style-type: none"> <li>Native plants and flowers</li> <li>Small amounts of sweet potato, pumpkin</li> </ul>	<ul style="list-style-type: none"> <li>Fruit or too much starchy vegetable</li> <li>Rolled oats, peanut butter or honey</li> </ul>	<ul style="list-style-type: none"> <li>Place in fork of tree after sunset</li> <li>Mainly folivores (leaf eating)</li> </ul>
Greater gliders	<ul style="list-style-type: none"> <li>Rabbit pellets</li> <li>Eucalyptus foliage</li> </ul>	<ul style="list-style-type: none"> <li>Rolled oats, peanut butter or honey</li> </ul>	<ul style="list-style-type: none"> <li>Place food in a fork of tree after sunset</li> </ul>
Carnivorous and insectivorous marsupials: antechinus, bandicoots, native rats and other rodents	<ul style="list-style-type: none"> <li>Insect meal (pet food store)</li> <li>Finely chopped starchy vegetables</li> <li>Mealworms (small amount)</li> </ul>	<ul style="list-style-type: none"> <li>Meat</li> <li>Rolled oats, peanut butter and honey</li> </ul>	<ul style="list-style-type: none"> <li>Scatter beneath the leaf litter or place under logs where nothing larger than a bandicoot can reach</li> <li>Provide water</li> </ul>
Seed and grain eating birds: parrots, cockatoos, galahs, finches	<ul style="list-style-type: none"> <li>Good quality wild bird blocks with large and small seeds hung in trees</li> <li>Fruit with seeds removed, including apples, pears, melons hung in trees</li> </ul>	<ul style="list-style-type: none"> <li>Black or grey sunflower seeds can make birds sick</li> <li>Seed mixes other than wild bird mix or blocks</li> </ul>	<ul style="list-style-type: none"> <li>Do not scatter seed on the ground. It attracts predators and can result in disease</li> <li>Dispose of rotting and soiled food</li> </ul>
Honeyeaters	<ul style="list-style-type: none"> <li>Insect meal or nectar mix placed in fork of tree</li> </ul>	<ul style="list-style-type: none"> <li>Do not offer water and sugar or honey mixes</li> </ul>	<ul style="list-style-type: none"> <li>Do not put food on the ground as the birds may be attacked by predators</li> </ul>
Reptiles: lizards	<ul style="list-style-type: none"> <li>Insect meal or finely chopped vegetables placed in a tree fork</li> </ul>	<ul style="list-style-type: none"> <li>Meat</li> </ul>	<ul style="list-style-type: none"> <li>Create habitat using logs, rocks and leaves</li> </ul>
Flying foxes*	<ul style="list-style-type: none"> <li>Chopped apples, pears, melon, grapes (seeds removed) hung in trees</li> </ul>	<ul style="list-style-type: none"> <li>Meat, vegetables or sugary foods</li> </ul>	<ul style="list-style-type: none"> <li>Use a wire garland</li> <li>Dispose of rotting food</li> </ul>

\* Do not approach flying foxes without vaccination for Australian bat lyssavirus and rabies and protective gear.

Table developed in consultation with ecologists, wildlife veterinarians, wildlife nutritionists and licensed rehabilitators based on the current knowledge for emergency situations.

Environment, Energy and Science, Department of Planning, Industry and Environment 4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150. Phone: 1300 361 967 (Environment, Energy and Science enquiries); email: info@environment.nsw.gov.au; Website: www.environment.nsw.gov.au. EES 2020/0030; January 2020

# Wildlife drinking stations

During an emergency, such as during prolonged drought or after fire, some native animals may need short term help. Although not injured, they may be distressed and in need of water until their natural environment recovers.

## Considerations for watering devices

You can help native animals by giving them a supply of fresh, clean water. Never add electrolytes or sugar as they can be harmful and exacerbate dehydration. Choose a device that best suits your location, the local wildlife species you are targeting and how regularly you can check on it to maintain the device and add clean water.

A device providing water for wildlife should be:

- Safe and fit-for purpose water dispenser
- Easy to access, clean and refill with fresh water
- Safely mounted and easily relocated
- Cost effective and simple to make with no sharp edges or entanglement points
- Able to have the water changed daily to prevent the spread of disease, or have a secure gravity fed reservoir that is not able to be contaminated or fouled with debris or faeces
- Constructed with either a small watering access point or, for those with a larger surface area of accessible water, have a ramp or other device provided for an animal to scramble out if they fall in
- Mapped, regularly inspected and removed when natural water sources become available.

Consider using a remote motion activated wildlife camera to monitor who is attracted. The position of the station may need to be reassessed if creating a convenient congregation point for feral animals.

For large properties it is recommended to put multiple small stations up to 500 metres apart so small animals do not need to travel as far. This also allows more animals to benefit, reduces the risk of disease and reduces the likelihood of predators being able to monitor all water sources at the same time. Ideally, dispensers would be placed in proximity to where natural sources of water would normally occur.





Once a clean, reliable natural water supply returns the water dispensers should be removed, thoroughly cleaned and stored for future use or deployment to other areas as needed,

The following table shows four examples of easy to construct and relatively cost effective wildlife water dispensers. For instructions on how to make the wildlife watering pod see the link on 'Helping wildlife in emergencies' page at [environment.nsw.gov.au](http://environment.nsw.gov.au).



Example of a specialist design for a koala drinking station Photo: G James/ NPWS

## Examples of simple wildlife watering devices

Device	Materials	Application	Detail
<b>1 Arboreal water dispenser</b> <ul style="list-style-type: none"> <li>Holds 6.5 litres</li> <li>Frequently cleaned and refilled</li> <li>Less than \$30</li> </ul>	<ul style="list-style-type: none"> <li>6.5L Poultry drinker.</li> <li>A rope attached to the water dispenser at one end and a sandbag the other.</li> <li>A suitable fork in a tree. Throw the sandbag over a high branch directly above the fork, to act as a pulley. Manoeuvre the dispenser in place and secure the rope.</li> </ul>	<p>Important for arboreal wildlife which may not come to ground (glider species and some possum species).</p>	
<b>2 Wildlife watering pod</b> <ul style="list-style-type: none"> <li>Holds 14 litres</li> <li>Will last up to two weeks</li> <li>Less than \$30</li> </ul>	<ul style="list-style-type: none"> <li>1 x PVC pipe 100mm x 1500mm with push-on cap, coupling access, access cap and 40mm elbow.</li> <li>PVC primer and cement for non-pressurised pipes.</li> <li>54mm hole saw attachment on a power drill.</li> <li>Star picket and cable ties.</li> </ul>	<p>Ground dwelling animals such as small mammals, reptiles and birds.</p> <p>Can be mounted off the ground and in forks of trees with adequate strapping.</p>	
<b>3 Open reservoir with ramp in and out</b> <ul style="list-style-type: none"> <li>Holds up to 50 litres</li> <li>Must be cleaned out every two days</li> <li>Less than \$30</li> </ul>	<ul style="list-style-type: none"> <li>50L storage tub.</li> <li>25x25mm mesh cut with 7 x 36 squares and bent over the edge of the tub, so half is in the water touching the tub bottom as an escape ramp and half is outside touching the ground and secured.</li> <li>Cable ties to secure mesh to tub and a tent peg to secure mesh to ground.</li> </ul>	<p>Birds, ground dwellers including kangaroos, wallabies.</p> <p>Push a stick for birds to perch on through the mesh, and into the ground.</p>	
<b>4 Closed reservoir with self-filling trough</b> <ul style="list-style-type: none"> <li>Holds up to 25 litres</li> <li>Open trough may need regular cleaning</li> <li>More than \$60</li> </ul>	<ul style="list-style-type: none"> <li>25L container with a tap or bung.</li> <li>Add a hose connector and tube for gravity feed</li> <li>Autofill trough with a float system (may be plastic or metal).</li> </ul>	<p>Ground dwellers.</p> <p>Can be arboreal if set up off the ground on a stable supporting structure and secured.</p>	

Photographs reproduced with permission: 1 P Ridgeway/LLS, 2 Aridrecovery.org.au, 3 G James/ NPWS, 4 P Ridgeway/LLS.



## SIMPLY WANT TO SUPPORT?

- \$30 can buy a box of specialised milk formula for an orphaned marsupial.
- \$50 can provide ...
- \$80 can sponsor an orphaned koala from Goondiwindi through the Green Heroes Wildlife Adoption Program:  
<https://www.greenheroes.org.au/adopt-a-joeey>
- \$150 can .....
- \$250 can provide ....

To discuss hosting a fundraiser for The Wildlife Empire, Goondiwindi or any other wildlife rescue efforts in response to prolonged drought in Australia please contact us.



**IN A WORLD WHERE YOU  
CAN BE ANYTHING...  
BE KIND**

