

Teacher's Notes

Background to the Walka Water Works Ecology Project

The heritage value of the Walka Water Works extends well beyond the bricks and mortar of the pumping station and reservoir. The place has outstanding landscape beauty and has significance as ecology altered by progressive human habitation. This project arises from the place's particular significance as a bird habitat and the initiative of the MCC and the Hunter Bird Observers Group in establishing a viewing platform on the western edge of the reservoir. This project has developed both on site and multimedia online resources available via tis website.

Resources include:

- School Curriculum Resource reference and Blooms Matrix
- Ecology viewing platform';
- Installation of seating near the platform for 20 people to facilitate small group discussion;
- A series of marker posts for wildlife viewing areas;
- A5 downloadable PDF walking guide for students;
- Production of the Walka Bird App, a digital education resource.
- Two onsite signage panels;
- information sheets for students accessible via the website
- Detailed information sheets accessible via the website for teachers;
- Web resources including photography from the Hunter Bird Observer's Club Image Library

The following notes provide detailed background on these resources.

School Curriculum

The initial focus of interpretation has been students at Stage 2 (Years 3-4; Ages 8-9) of NSW curricula. However, the experience is also intended to provide engagement to other Stages and other casual visitors to Walka, including parents and grandparents with children.

A curriculum resource development guide for Walka was prepared by education consultant Helen Doust which recommended that Walka opportunities can support teaching of History, Science and Geography syllabi.

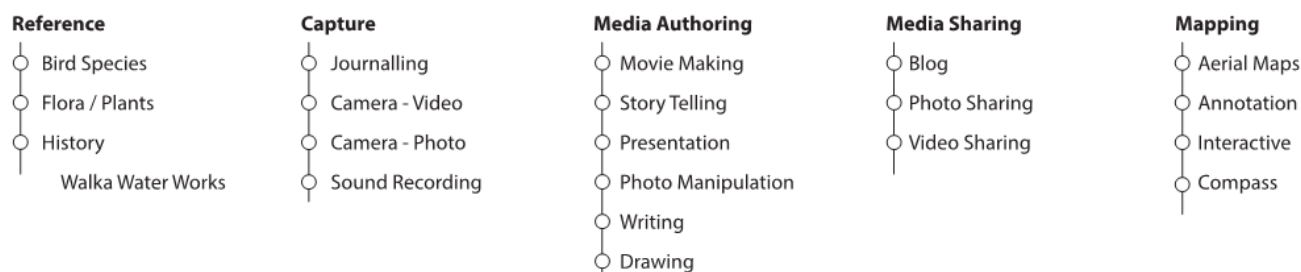
The new Geography syllabus was considered to offer the most opportunities including sections on environment, landscape, flora and fauna.

The new Science syllabus also offered opportunities in the section “ Natural Environment through understanding about the Physical World, Earth and Space, and Living World”.

Through this project's development of onsite and online resources, teachers are provided with opportunities to address a number of the identified curricula streams.

A Blooms grid mapped to curriculum learning outcomes (arranged by six thinking levels and multiple intelligences) has been developed for a range of context areas and is included as part of the Walka web resources. Students are encouraged to be involved in activities, directed as to how to observe, and how to recognise change.

The following diagram maps exercises to skills development.



ECOLOGY TRAIL BLOOMS MATRIX : STAGE 2 (YEARS 3 AND 4) WALKA WATER WORKS

EXCURSION AND IN-CLASS ACTIVITIES TO SUPPORT THE TEACHING OF HISTORY, SCIENCE AND GEOGRAPHY SYLLABUSES

| MULTIPLE INTELLIGENCES | KNOWING | UNDERSTANDING | APPLYING | ANALYSING | CREATING | EVALUATING |
|---|---|--|---|---|---|--|
| VERBAL I enjoy reading, writing and speaking | Make a list of animals and birds that can be found at Walka Water Works. What parts of the environment do they need to survive? | Write about the differences in lives between resident and migratory birds. | Imagine you live in 1888 when the Walka Water Works began. To pump water. Handwrite a letter about how your life changed after water was pumped to your home. | Write about changes that have occurred at Walka Water Works as a result of human activity. | Use word art to describe three different living things at Walka Water Works. Use word art to describe three non living things at Walka Water Works. | Describe the different types of bird habitat at Walka Water Works. |
| LEARNING OUTCOMES | ST1-11LW GE2-1 | ST1-11LW | GE2-2 | ST2-RES GE2-1 | ST2-10LW GE2-1 | ST1-11LW GE2-1 |
| MATHEMATICAL I enjoy working with numbers and science | Do birds congregate in a particular part of the reserve? How would you design an experiment to test whether this hypothesis is true or not? | Describe different parts of a map that would be useful when you are exploring Walka Water Works. | Using the Walka Water Works Map use the scale to measure distances between each view point. | Construct a map with a legend showing birds you might see at viewpoints shown on the Walka Water Works map. Tip: make a symbol for each bird and show these on the map, then in a legend with their name. | Construct a graph using the Walka Bird list showing birds that live at Walka Water works, and where they can be seen. | Estimate the height of different plants and trees you see at Walka Water Works. Write a description of what they look like and draw a diagram to show their different sizes. |
| LEARNING OUTCOMES | ST2-11LW GE2-4 GE2-2 | GE2-4 | GE2-2 | GE2-1 GE2-2 | ST2-10LW GE2-1 | ST2-10LW GE2-4 |
| VISUAL I enjoy painting, drawing and visualising | Choose a bird that lives at Walka Water Works and make a detailed drawing of its life cycle. | Make a list of some of the ways you can recognise different types of birds. | Cut out pictures of birds from the bird list and paste them on drawings of their habitats at Walka Water Works. | Draw features of Walka Water Works that help birds and other animals survive. | Create a poster that promotes the environmental values of Walka Water Works to local residents | Make a pictogram using drawing of birds you saw at Walka Water Works and from what Location View Point. |
| LEARNING OUTCOMES | ST1-10LW GE2-1 | ST1-10LW | ST1-11LW GE2-2 | ST1-11LW GE2-1 GE2-2 | ST1-10LW GE2-3 | GE2-1 |

Bloom Matrix extract

Ecology Viewing Platform

The Ecology Viewing Platform (below) set on the lake's edge represents the centre of the program around the theme of ecology.

Designed and constructed by Council, and centrally located within the network of existing trails across the site, the platform has been developed as a destination as part of the project's Walka Ecology Walk, interpretation signage, and the new seating area for small groups.



Seating at the Ecology Platform

The installation of 'ecopod' seating for small groups (up to 20 people) improves the usability of the Walka Ecology Walk and viewing platform..

The selection of seating incorporates both accessible and smaller seats configured for group discussion. They are sourced from Repeat Plastics, a company who specialise in sustainably produced products. By installing this furniture approximately 157,500 plastic packages have been diverted from landfill.



Viewing Areas

Students are encouraged to complete the Lake Trail circuit where sheltered and expansive viewing areas are marked by a post offering good opportunities for observing wildlife. The route commences from the Pump house car park, progresses to the Ecology Viewing Platform, and continues back to the Pumping Station car park via the reservoir wall.

The way finding posts mark key observation points along the walk and have been developed as a sculptural presence on the site. Their locations were developed in close consultation with the Hunter Bird Observer's Club as excellent vantage points for observing wildlife.

The markers consist of coloured posts topped by bird silhouettes representing a common species often seen from their Viewing Area location.

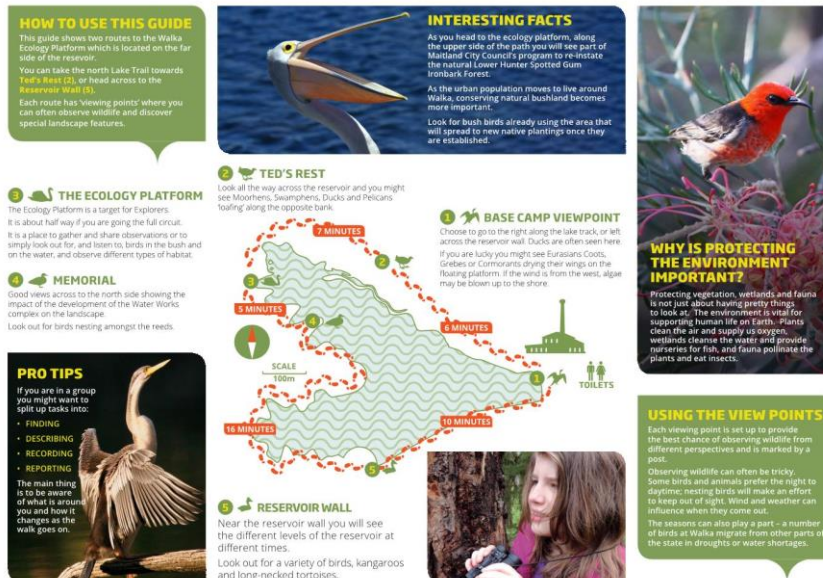


"Look for this species" logos such as those illustrated below are additionally attached to the side of the posts.



Walka Ecology Walk Explorer's Guide

An A5 brochure guide has been developed for students and teachers as an excursion resource. School groups are encouraged to divide into groups. Half walking along the northern Lake Trail, and the other half across the reservoir wall. Groups would meet at the Ecology Platform for reporting, observations and discussion.

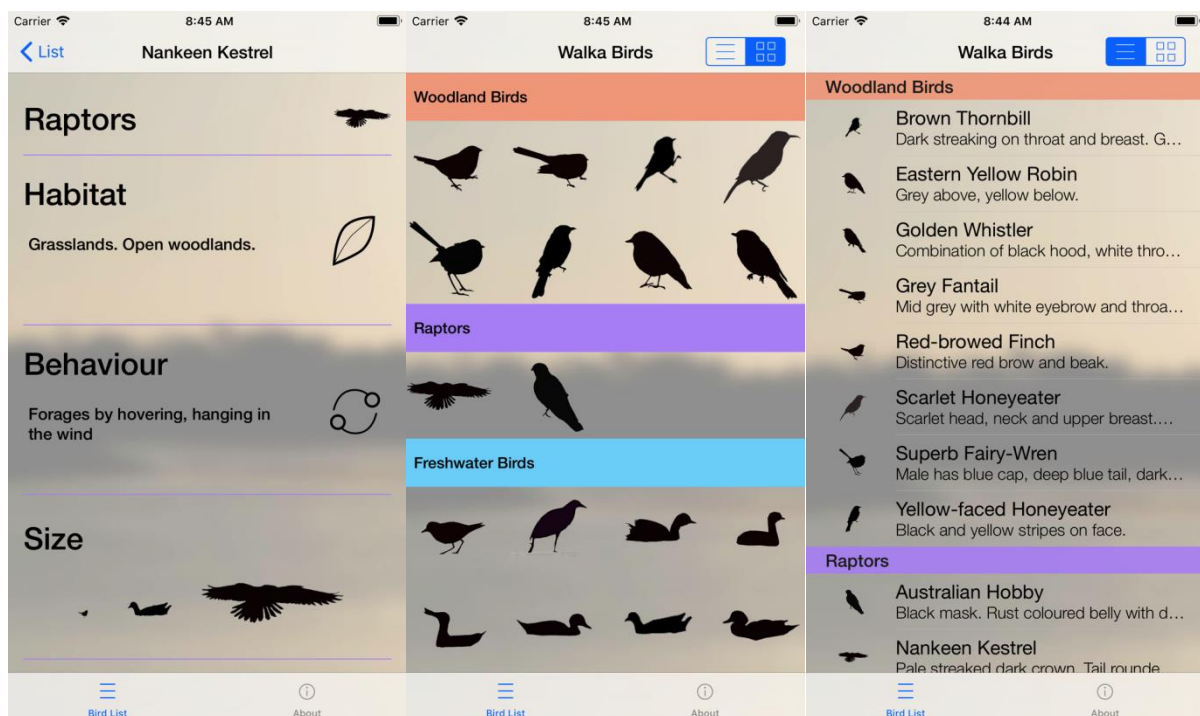


Walka Bird App

The Walka Bird App has been developed as a starter's guide into birdlife at Walka. It was generated from investigations and documentation relating to habitat, bird descriptions, behaviour, food and photography.

Importantly, the ordering of information has been developed according to specialist advice and involvement from the Hunter Bird observers Club and specifically designed to focus on improving observation skills

The app's design strategy aims to compliment and support excursions to the site, with broad educational goals enabling observation, data gathering and collection, and returning to the classroom for more in depth analysis. It is intended as a digital experience which can be pre-loaded in a browser-based desktop / tablet map application.



Walka Bird Slideshow

Superb photographs from the Hunter Bird Observer's Club Image Library have been made available to this program. This has provided exceptional high resolution visual imagery which has been used in all aspects of the program including the Walka Bird App and the Walka Bird Slideshow.

Each of the images is available for download and printing for student exercises.



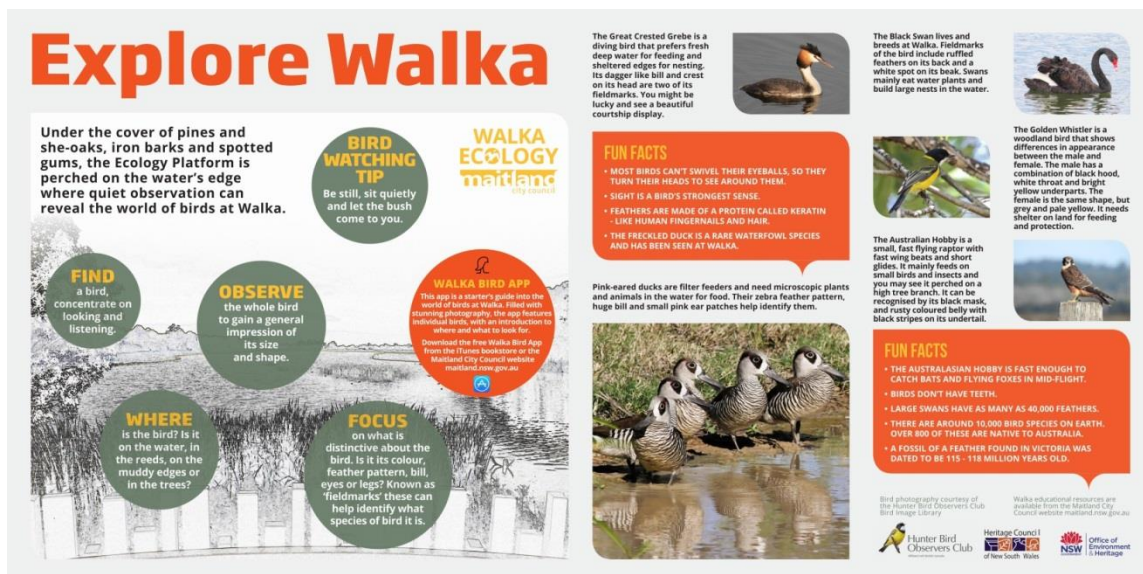
Examples of images from the HBOC Photo Image Library

Information Signs

Two onsite signs have been installed for the Walka Ecology Walk in the Pumphouse picnic area and near the Ecology Viewing Platform.



Sign 1



Sign 2

Web Resources

The Walka website includes a range of visual, written and interactive digital resources developed to support students and teachers in using and enjoying visits to Walka.

The Walka resource is located within the educational resources section of the MCC website.

Specific pages include:

- **Walka for visitors** introduces the site
- **Walka school excursions** provides details for planning an excursion to Walka Water Works and mapping
- **Walka for teachers** has been produced to provide in-class resource support and curriculum guidelines. It includes detailed information sheets, Excursion Risk Assessment, Walka Resource Curriculum Guide and Blooms Matrix.
- **Walka for students** presents activity sheets and fact sheets perfect for preparing to visit Walka and for classroom projects.
- **Walka image gallery** includes a range of Walka images which can be used to explore the place's history from the late 1800's through to today.
- **Walka bird slideshow** has been developed with the assistance of the Hunter Bird Observer's Club presenting a superb photographic showcase of Walka's wildlife.

maitland city council **Discovery Journal Activity Sheet WALKA WATER WORKS**

FEELINGS

You can use this Activity Sheet as part of a Nature Journal. Write in the space provided, or cut and paste the questions into your workbook.

Choose a place outdoors or at Walka Water Works where you can spend some time to write down your observations. This can be done individually or as part of a group.

Date: _____

Time (of day): _____

What season is it? _____

How much time did you spend here doing your journal? _____

Is it sunny or cloudy? _____

Has there been any rain? _____

Is there any wind? _____

What's the temperature? _____

The feelings you get when you first go to your nature journal place... _____

Do you think this place is beautiful or ugly? Why? _____

Why did you choose this place? _____

What sounds can you hear? _____

What does this place smell like? _____

Discovery Journal Activity Sheet 4-1 **m**



THE WALKA WATER WORKS IS THE ONLY WATER WORKS IN THE HUNTER VALLEY AND THE LARGEST REMAINING WATER WORKS IN AUSTRALIA. IT IS A PLACE OF NATIONAL ENGINEERING SIGNIFICANCE WHICH PUTS IT ALONGSIDE ICONS LIKE THE SYDNEY HARBOUR BRIDGE

WHY WALKA WATER WORKS?

The need to build the water works resulted from increases in the population of Newcastle and Maitland during the late 1800s, and concern for the standards of health. At the time, in 1878, Newcastle had a population of 22,000. Its emerging trade was larger than Sydney, but it only had two public water.

This meant that people would not have been able to wash and bath too often. Today, we can easily turn on a tap, but then there were serious health risks, and even death for people with no easy access to water. A supply of clean, water was needed that storing water in tanks, using horses and carrying barrels in casks.

THE VISIONARY DESIGNER

To design and plan for the Water Works, the government brought out to Australia a talented hydraulic Engineer, William Clark. The architect, often the most important assistance in public health in the history of the Hunter Valley, was about to begin.

He made detailed surveys of the Hunter area to choose the ideal location for the Water Works. He also, as he knew it today, was chosen because:

It was located close to the Hunter River.

It was outside the local influence of the Hunter River.

The Water Works, which was located there, formed a good natural storage reservoir.

The Water Works location meant that tanks and filters required as part of a water works would be located above the main flood level of the Hunter River.

Once the design was completed, by Clark, the government allocated funds for its construction.

INSIDE AND UNDER THE GROUND

All the machinery and pipes for the Water Works had to be ordered from England. In 1882, the first contract was put out to build the water works. Between 1882 and 1885 the contracts were given to build and the first pipes were contracted, and by 1885 the pump house with all its machinery was completed.

On 27 January 1887, the pumping engines were tested, and a new water supply reached Newcastle and Maitland for the first time. Both Maitland and Newcastle residents had to wait until 1888 to be connected to the new water supply.

BIGGER AND BIGGER

The population of the region continued to grow. Even though the pumping station had been designed to service a population of 50,000, by 1887 additional supplies were needed by the growing mining settlements, and were needed along with more and machinery in 1887, 1910 and 1915.

However, by this time, the Hunter Water Board was in charge of the Water Works, needed another large water supply was needed. Chisholm Clark was named in 1924, and the new construction was passed down between 1927 and 1945, only to be used in emergency.

Above: Examples of Activity and Fact Sheets available through the website

Revegetation Works

A program of environmental rehabilitation has been underway at Walka. It has resulted in the removal of large areas of weeds around the Ecology Platform, and along the Ecology walk route, in addition to native plant habitat rehabilitation and new plantings.

The revegetation sites are in sight of walking tracks allowing for student appreciation.



Above: New plantings being made on National Tree Planting Day 2017