

Alexandra Canal – Self-guided excursion

Changes over time delivery notes.

Slide 1

This PowerPoint presentation provides the supporting secondary research for the Alexandra Canal self-guide fieldwork lesson plans for Stage 4 Geography Water in the World.

The student worksheet can be used with this presentation for students to create a timeline of changing structure and values for this waterway over time.

Each slide comes with notes providing questions (and answers) to get students thinking and there's also some additional information about the site, other responsibilities of Sydney Water and definitions of water related terms.

Slide 2

Questions to get students thinking

Q. Why does our value for a waterway change over time?

A. Over time, our knowledge improves, technology advances and attitudes change. These changes mean that we place different values on our surrounding environment:

- need – source of water for sustaining life
- function – use of water for industry processes and transport
- liveability – aesthetic value, recreation and wellbeing

Additional information

Image source – Sydney Water

The Alexandra Canal is of State Heritage Significance and is included on the State Heritage Register. It is owned by the Sydney Water Corporation.

Slide 3

Questions to get students thinking

Q. What is this map showing?

A. It is an overlay map of the Cooks River and Sheas Creek. It shows both the original path of Sheas Creek (in this version this layer is coloured) and it shows the start of the straightening of the creek. It also highlights intertidal wetlands and tributary waterways surrounding Sheas Creek before it was changed.

Additional Information

Image source – Sydney Water and Water NSW Historical Archives

A facine dyke is a stabilising bank made from bundles of sticks and branches. It was commonly used in the UK to collect sediments and stabilise the edges of waterways. In this case, it was used to stabilise the dredged channel made to redirect the natural flow of water in Sheas Creek.

Slide 4

Questions to get students thinking

Q. How could a few bones with cut marks tell us so much about what Sheas Creek used to be like?

A. There is a lot of evidence that can be gathered from a few bones. What we know is:

- The bones are from a dugong, a sea mammal that is only found in tropical waters today. This tells us that the climate must have been different in the Sydney area thousands of years ago.
- We also know that dugongs eat sea grass. So we can assume that Botany Bay and the Cooks River along with Sheas Creek must have had sea grasses growing.
- The cut marks are made with stone tools that are consistent with evidence seen of stone tool use at other archaeological sites. This tells us that Aboriginal people in the area must have eaten dugongs as part of their diet and made and used stone tools to cut up their food.

Q. What is an intertidal wetland?

A. This is a swampy area where certain plant and animal species grow that are used to the flow of salty water covering them for part of each day. In the past, a swamp was not a valuable landscape feature, so many of these areas were filled in and destroyed. Today, we protect intertidal wetlands as the plants and animals that grow in them are an important ecological community.

Q What is the value of this natural creek?

A. Food chain function and source of resources for indigenous population.

Additional Information

Image sources – 1. a dugong and 2. sea grass - iStock, 3. mangrove habitat - Sydney Water

The local people in this area were the Kameygal (pronounced kam-may-gal) of the coastal Dharug (pronounced dah-rook)

Slide 5

Questions to get students thinking

Q. When did the First Fleet arrive?

A. 26 January 1788. the First Fleet, with convicts and soldiers on board 11 ships, was sent to Australia to lay claim to the land as part of the British Empire. At the time Indigenous people already living here were not recognised as owners. Today, the date is known as Australia Day but discussions on a date change are currently being debated.

Q. Why was it called Sheas Creek?

A. The waterway was named after Captain John Shea. He arrived with the First Fleet to Australia as Captain of the ship the “Scarborough” (image source pending: firstfleetfellowship.org.au). He was the first to explore the Alexandria area and mapped the creek in 1788. He was the first person in the new settlement to shoot a kangaroo. He was also the first officer to die in the colony. He died of tuberculosis on 2 February 1789.

Q. What is a market garden?

A. A market garden is one that grows fruit and vegetables for food consumption in a local area. Sheas Creek was a good source of water to keep small food crops growing well.

Q. What industries would a new colony need and why did they cause so much pollution?

A. Tanneries – making leather, brickworks – to make the bricks for homes and other buildings, wool wash – cleaning wool to send to England, slaughterhouse – abattoirs to supply meat for food consumption

All of these industries used water in part of their processes. These processes added chemicals, blood and silt to the water polluting the creek.

Q. What is the value of Sheas Creek?

A. It is providing a water source for early farming and industry. This provides important food and resources for the new colony.

Additional Information

Image sources – 1. Marine Artist Frank Allen and the First Fleet Fellowship Victoria Inc, 2. iStock, 3. State Library NSW (110323720)

The "SCARBOROUGH" was one of the convict transports of the First Fleet arriving in Sydney on 26 January 1788. It carried 210 male convicts and three military officers - Captain Shea, Lieut. Kellow and Lieut. Morrison. To learn more about the First Fleet visit the National Maritime Museum.

Originally, the polluting industries were all built in Sydney Cove, the site of the City CBD today, along the banks of the Tank Stream. They polluted the water and it made people sick. These industries were forced out of the city under the *Slaughter House Act* of 1849. It required all noxious trades to be operated more than one mile (1.6 km) from the city area.

You can find lots more at https://dictionaryofsydney.org/entry/from_sheas_creek_to_alexandra_canal

For information on changing values of water over time see our [Liveable cities](#) page.

Slide 6

Questions to get students thinking

Q. What is this map showing?

A. It is an overlay map of the Cooks River and Sheas Creek. It shows both the original path of Sheas Creek and its shows the start of the straightening of the creek (in this version this layer is coloured).

Q. Identify the major changes you can see from the first overlay map.

A. Widened river and straight edges

Q. Why would a waterway's name change from a creek to a canal?

A. Because the value and/or use for the waterway has changed. The difference between a canal and a creek is that a creek is a natural flow of water while a canal is man-made. In this case, a natural

creek became an important part of an industrial development. It went from a source of water to a means of transport for products.

Additional Information

Image source – Sydney Water and Water NSW Historical Archives

Sheas Creek had been totally reconstructed. The Department of Public Works planned to create an area for major industry with a waterway transport system. It was originally planned to go all the way through to the Eveleigh rail yards and even through to Sydney Harbour.

The change in name was in honour of Princess Alexandra, wife to Edward, Prince of Wales (later King Edward VII) in 1863.

The Sydney Morning Herald (NSW : 1842 – 1954) noted - The Minister for Works (Mr. O'Sullivan) has not been impressed with the time-honoured name given to "Shea's Creek," and has therefore determined that it shall, now that it is likely to become a credit instead of a disgrace to the capital of the mother State of Australia, receive a new name. He has therefore ordered that it be called in future "the Alexandra Canal."

Teacher note – literacy activity. The way people wrote in the past is far different to today. Read the quote from the SMH and ask the students to simplify the story. Perhaps even turn it into a tweet with a photo.

Slide 7

Questions to get students thinking

Q. What impact did industrial pollution have on the water?

A. blood, toxic chemicals, silt and general rubbish would have ended up in the water, killing flora and fauna and making the water smell and look dirty.

Q. What do you think this area would have sounded like, smelt like and generally felt like?

A. Industry generates heat, odour and lots of noise. It would have smelt of chemicals and smoke, been smoggy, dirty and very noisy.

Q. What is the value of Alexandra Canal during this period?

A. The canal is an important transport route for goods being manufactured in the area. It also had an aspirational value – see next slide for more discussion about this.

Additional Information

Image sources – 1. industry under the flight path - State Library NSW (Home and Away – 20944), 2. wool sheds - State Library NSW (Government Printing Office 2 – 09404), 3. oblique image facing north from today's Tempe reserve - State Library NSW (Home and Away - 20943)

Work started in 1887 where Sheas Creek and Cooks River meet. The work was done by unemployed workers during the 1890s depression and by 1905 the first section of the canal was completed.

Slide 8

Questions to get students thinking

Q. Why did Australia want to build a canal like they use in England?

A. Even though we had been discussing and reached Federation we still had very strong ties with England and wanted to become a wealthy manufacturing country.

Additional information

Image source – www.BBC.co.uk the TV show Peaky Blinders is set in post World War 1 Birmingham. The manufacturing and canal use was established by then. However, the images recreated for the TV show do give an insight to the industry that Alexandra Canal aspired to be like.

There was an ambition build an industrial area similar to Birmingham in the UK. It was a wealthy manufacturing centre for England and the canals were the main transport route for the manufactured goods and for the resources needed to make the good.

Unfortunately, the canal started to silt up and needed continuous dredging. Newspaper reports at time mention that the public were outraged at the amount of money being spent on constant repairs.

Slide 9

Questions to get students thinking

Q. What is this map showing?

A. It is a page from a street directory. A map that was commonly used before google and in car navigation systems. This map is showing the flow of Alexandra Canal meeting the Cooks River.

Q. What is the major difference between the shape of Alexandra Canal on this map compared to the last one?

A. The airport expansion completely changed the path of the Cooks River and has made Alexandra Canal longer

Additional information

Image source – Sydney Water and Water NSW Historical Archives

Slide 10

Questions to get students thinking

Q. What is Stormwater?

A. In the water cycle, the water that flows across the land is called 'run off'. The run off in an urban environment is called stormwater. All the water that falls on paths, roads and other hard surfaces runs into drains and out into waterways like Alexandra Canal.

Q. What's with all the litter?

A. Stormwater collects the litter and rubbish that gets left on city streets as it flows into the drains and waterways. This litter collects in waterways.

Q. What is urban decay?

A. It's when a previously useful part of the city declines and leaves behind derelict buildings and infrastructure and vacant sites.

Q. What is the value of Alexandra Canal during this time?

A. Stormwater drains are designed to remove water quickly from the surface. Alexandra Canal plays a role in helping to reduce flooding. However, the disrepair and litter shows that this functional value was taken for granted.

Additional information

Image source – 1. stormwater entry point into canal, 2. stormwater litter, 3. damaged canal bank near Tempe Reserve - Sydney Water

Find out more about our [Stormwater](#) system and management.

Slide 11

Questions to get students thinking

Q. What is a catchment area?

A. A catchment is an area of land, usually surrounded by mountains or hills (in this case, buildings and roads), where all rainfall that runs off the land, flows to a common point.

Q. Can you find out about the boundaries of this area - are they roads, a hill, a building, a river bank? (Use google maps to zoom in on the most northern, eastern, southern and western points of this catchment area and see if the boundary is along a road, at the top of a slope or the edge of a waterway.)

A. North - Sydney Park Rd, East – Bourke RD, South – Sydney Airport, west – Princess Highway

Additional information

Image source – Sydney Water

Slide 12

Questions to get students thinking

Q. What is a Conservation Management Plan?

A. A Conservation Management Plan (CMP) is a plan to look after an important historical site for the future. It starts with a detailed investigation of a site from its earliest recorded history until present day. This information will lead to a description of the value of a place. This means it represents a part of our history that is unique and important to preserve. Sydney Water has a CMP for over 220 heritage sites.

Q. What is happening to the side of the canal in the picture? What might happen to the tree if this keeps happening?

A. This is called erosion. The tide in Alexandra Canal comes up and is washing away the soft sand behind the old sandstone brick wall. The tree roots are exposed. If the erosion continues the tree may fall into the waterway.

Q. Why would we use a drone to take pictures of a waterway instead of sending a person?

A. Using drones can be safer and sometimes faster than using a person. A drone can access areas that may be unsafe or too small for people. We use flying, aquatic and vehicle drones inside to help us investigate drains, pipes, reservoirs and waterways.

Additional information

Image source – Sydney Water

Slide 13

Questions to get students thinking

Q. How would you describe the changes from the first map on slide 3 to this satellite image?

A. Suggested prompts – shape, size, land use, natural vs human construction

Q. Do the activity on the front page of the field worksheet.

A. This image and the one on the front of the field worksheet are the same

Additional information

Image source – nearmaps.com

Slide 14

Questions to get students thinking

Q. Why did we fix the canal?

A. For the benefit of the public and to improve perception of value of this waterway

Functional – fix damaged wall for safety and to stop erosion

Naturalisation - as part of Water Sensitive Urban Design strategy

Public interest - increased housing in area means more people visiting

Q. What is the value of Alexandra Canal today?

A. This is for your students to investigate. They can evaluate the site using the field workbook to record their investigations. They should recognise an aesthetic value, an economic value and a functional value for the waterway. Once you return from the excursion you may be able to discuss the value we may place on this waterway in the future.

Additional information

Image source – Sydney Water

Naturalisation is the process on turning a constructed space into a more functionally natural environment. It does not aim to return the site to its original state but does aim to use natural building materials or designed material that replicates natural processes.

Slide 15

Questions to get students thinking

Q. Who do you think benefits from this project?

A. The community, Sydney Water... many others

Additional information

Image source – Sydney Water

Slide 16

Questions to get students thinking

Q. What are the sources of pollution in stormwater?

A. Anything that ends up on any hard surface in an urban environment can be picked up by water running off the surface after rain and end up in stormwater drains. For example:

Roads - rubber, petrol, oil, grease and dirt

Footpaths - litter, dog droppings, spit and chewing gum, leaves and sticks, cigarette butts

Industrial areas - broken glass, chemicals, metal, concrete and foam

Additional information

Image source – Sydney Water

In Sydney, all stormwater drains are separate to the wastewater (sewerage) system. All wastewater from our homes and schools is sent to a water treatment or water recycling plant to be cleaned. It may be used again as recycled water for industry and gardens or discharged into the environment.