

Year 6

Lesson 1

Where water comes from

www.logan.qld.gov.au

Learning objectives

Students will be able to determine:

- The definition of a catchment.
- Basic principles of catchment management.
- Issues associated with balancing the needs of various catchment users.

Learning outcomes

Subject	Strand & Content Descriptors
Science	<p>Science Understanding</p> <ul style="list-style-type: none">• Sudden geological changes or extreme weather conditions can affect Earth's surface (ACSSU095) <p>Science as a Human Endeavour</p> <ul style="list-style-type: none">• Scientific knowledge is used to inform personal and community decisions (ACSHE220)
Geography	<p>Geographical Knowledge & Understanding</p> <ul style="list-style-type: none">• Places are connected to each other locally, regionally and globally, through the movement of goods, people and ideas as well as human or environmental events. <p>Geographical Skills & Understanding</p> <ul style="list-style-type: none">• Pose geographical questions that range in complexity and guide deep inquiry then speculate on their answers• Identify a variety of information sources that will be used for inquiry, considering their validity• Identify and create appropriate materials, geographical tools or equipment to collect data or observations, using formal measurements and digital and spatial technologies as appropriate

Important questions

- What is a **catchment**?
- How do well-managed catchments contribute to clean water supplies?
- What impacts can industrial, agricultural or other users have on the dam catchment?
- What mechanisms are used to manage competing demands on catchments?



Background information – the dam and its catchment

A catchment is an area of land, bordered by hills or mountains, from which runoff flows to a low point – either a dam or the mouth of the river. Water running from a bath down the plughole is a simple representation of a catchment.

On its journey to the dam, rainwater collects atmospheric pollutants; bacteria, animal droppings, twigs and soil as it runs off the land, which is why the water must be treated before drinking.

Some developments can increase organic materials – farming, urban development or mining may all contribute to increased soil erosion. Agriculture and industry may also add chemicals such as herbicides and pesticides.

Catchment management includes strategies implemented to ensure high water quality for consumption – maintaining vegetation to reduce erosion, regulating land use and keeping stock away from waterways. Catchment management attempts to balance the need for water with maintaining habitat and stream flow.

Note: We all live in a catchment, whether we are in the school grounds or the garden at home. The water we use flows along natural and man-made channels to a low point. We contribute to the quality of our catchments with our water use, waste disposal and other actions. However, for the purpose of this activity, the catchment we are concerned with is the area surrounding a dam, or the ‘dam catchment.’

Linking locally – Logan

The Logan district is unique in that water is supplied to the area from several different sources; Hinze Dam on the Gold Coast, Wivenhoe Dam, and Most of the water used by Logan residents comes from various source points. These include:

- Wivenhoe Dam treated at Mt Crosby water treatment plant,
- Hinze Dam treated at Mudgeeraba and Molendina water treatment plants,
- Leslie Harrison Dam treated at the Capalaba water treatment plant,
- Stradbroke Aquifer (not treated), and
- Seawater treated at the Gold Coast Desalination Plant at Tugun.

Water from these source points are supplied to the city through 6 water supply zones. These zones supply different suburbs in Logan. Logan City uses approximately 55 mega litres per day. This will change as seasons change.

The daily water demand for the city can be met in a number of alternative ways. This water is supplied to 270,000 residents of Logan City. Treated water is stored in 28 reservoirs and delivered to households through a 2,060 kilometre network of pipes.

The ability to obtain water from any or all of these locations is at the direction of the Water Grid Manager and will be adjusted due to demand conditions.



Lesson plan – the dam and its catchment

Use **Activity sheet 7 ‘What is a catchment?’** to introduce the concept of a catchment and discuss relevant processes and definitions.

In small groups, students use maps or suitable websites, software to identify and plot local or familiar catchments. The catchment area should be complete, encompassing all land from the highest to the lowest point. (Information and maps from local government, catchment groups or agencies such as Healthy Waterways will be useful in this process).

International Catchments: selecting catchments or activities associated with catchments in other countries can provide a useful global perspective on catchment management. Suitable catchments could include: the Mekong delta (Vietnam); the Danube delta (Europe) or catchments of the Colorado River (Texas USA).

Sites associated with key land use or other practices in the catchment are identified and plotted, these could include: tourism, fishing, recreation, urban development, agriculture/horticulture and industry.

Students briefly discuss the potential impacts these and other activities on the dam catchment and associated connected environments such as waterways, estuaries and oceans.

Students in each group select or are allotted the position of a key catchment user (for example: commercial fishermen; park ranger; housing developer; tourism operator). Students research the use of the catchment by each stakeholder and develop a presentation that supports their continued use of the catchment.

This perspective argument is then delivered by each student to the whole group.

As a group the students, discuss any conflicts that arise and develop solutions or opportunities to retain or improve the balance between environmental protection and economic development.

These outcomes are then integrated with the plotted map to produce a report that recommends mechanisms to retain or improve catchment health.

Resource requirements

- Activity sheet 7 ‘What is a catchment?’

Additional activities

Make a model of a catchment. See **Activity sheet 12 ‘Making a model catchment’**