

Worksheet answers

- Who won your game of Waterworks? What made that person’s water supply the most successful in the group?

Answers will vary. Note: generally owning a variety of water supply facilities is a good idea.

- How much water do you think you need to collect each time you go around the board, to maintain a safe water supply? Explain.

A bit more than the 10 GL needs to be supplied when passing the yellow square. Extra is needed in case of emergencies, like droughts or faults.

- Some water supply options have ‘hidden’ costs. Initial outlay isn’t always expensive but these options require a lot of infrastructure and energy to operate. Some supply options also provide a larger volume of water than others. Use the following table to calculate capital cost per GL, for each supply option. Groundwater has been completed for you.

SUPPLY OPTION	TOTAL COST (initial outlay + energy + infrastructure costs)	CAPITAL COST PER GL (total cost ÷ volume it provides)
groundwater	$\$8M + \$1M + \$1M = \$10M$	$\$10M \div 3 \text{ GL} = \$2.7M / \text{GL}$
dam	$\$15M + \$2M = \$17M$	$\$17M \div 5 \text{ GL} = \$3.4M / \text{GL}$
desalination	$\$10M + \$4M + \$2M = \$16M$	$\$16M \div 1 \text{ GL} = \$16M / \text{GL}$
sewer mining	$\$15M + \$6M + \$3M = \$24M$	$\$24M \div 2 \text{ GL} = \$12M / \text{GL}$
wastewater recycling	$\$12M + \$2M + \$2M = \$16M$	$\$16M \div 2 \text{ GL} = \$8M / \text{GL}$
rainwater tanks	$\$40M$	$\$40M \div 1 \text{ GL} = \$40M / \text{GL}$
water saving measures	$\$2M$	$\$2M \div 1 \text{ GL} = \$2M / \text{GL}$
public awareness water saving	$\$2M$	$\$2M \div 1 \text{ GL} = \$2M / \text{GL}$
grey water systems	$\$60M$	$\$60M \div 1 \text{ GL} = \$60M / \text{GL}$

- Do any of the results in Question 3 surprise you? Explain.

Answers will vary.

- Which supply facilities in Question 3 are the most expensive? Why is this?

Rainwater tanks and grey water systems are the most expensive. This is because they must be supplied to individual households and neither provides large volumes of water.

6. Dams are a relatively cheap source of water, yet the Water Corporation has stopped building them in Western Australia. Why is this?

Dams are rainwater dependent. As the climate gets hotter and drier there's not enough rain to fill dams.

7. Desalination is an expensive way to supply water, so why is it being used in Perth?

It is not rainwater dependent. Perth is next to the ocean, which can provide an almost endless supply of water.

8. The Water Corporation considers the 'triple bottom line' (economic, environmental and social factors) when providing water. Give examples of factors, in each category, that must be considered when supplying water:

economic:

budget, capital costs, maintenance costs, energy costs, economic change as a result of politics

environmental:

maintaining natural ecosystems and wildlife, climate change, unusual weather events such as flooding, droughts and cyclones

social:

public opinion about water quality, health and safety, population changes, recreational use of water and areas from which water is supplied

9. If you played the game again, what decisions would you change and why?

Answers will vary.