

SCARCITY UNDER THE SUN

One idea must land: scarcity isn't "no water" — it's not enough for everyone who needs it. Somebody gives something up.

WE ARE LEARNING

What causes water scarcity, why it is a genuine problem, and the real toolkit for overcoming it — negotiated first-hand at a Pilbara summit.

CURRICULUM · VERBATIM

"Water scarcity and what causes it; why it is a problem; and ways of overcoming water scarcity" — Revised WA Curriculum, Y7 Geography, Water in Australia (SCSA, implementation 2026).

SPARK THE MEMORY FLASH + THE SCALE CHECK

- Harvest Lesson 3's exit prediction first: "you told me where a Pilbara mine finds its water — answers on the table." (Groundwater was the seed.)
- Show the Water Use Data table (lesson image on screen) for FIVE seconds. Hide it. Students rank the five uses from memory, then check. The gap between memory and data is the hook.
- Scale it: an Olympic pool ≈ 2.5 ML, so $19,500 \text{ ML} \approx 7,800$ pools. Ore processing = $12,500/19,500 \approx 64\%$. Let them do the arithmetic before you confirm.

CORE CAUSES · PROBLEM · TOOLKIT

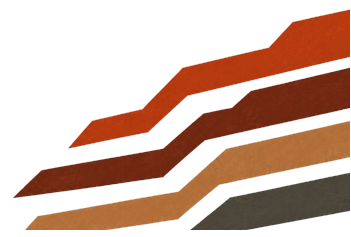
- **Causes** — two kinds, name them plainly: nature's (variability; the dry years Lesson 3 promised) and ours (growing demand: more ore, more people). Scarcity = the gap between them.
- **Why a problem** — the table is five competing claims on one shrinking pool. Ask it early: "who speaks for the river?"
- **The toolkit** — recycle and reuse; substitute fit-for-purpose water (dust doesn't need drinking water); efficiency; restrictions; new sources (their Lesson 3 files: pipelines, desal). Real operations use most of this toolkit routinely — today they'll discover why.

WORKSHOP THE DRY YEAR SUMMIT

- Teams of four; deal the role cards: **Community · Mine Operations · Environment & River · Water Management (chair)**. Chairs run the meeting, police the maths, and sign last.
- Read the announcement card: allocation cut 20% → find **3,900 ML** from the levers menu. Every non-negotiable survives; total $\geq 3,900$; consequences written and owned; all four signatures.
- Deals differ — that's the point. Close with two teams presenting: same numbers, different pain. Ask the room which deal they'd sign.

LAND IT EXIT TICKET

- Causes (one natural, one human), the problem proven with a person from their summit, the smartest fix defended, and the line they'd defend to the Premier. The curriculum descriptor, answered four ways in their own voice.



THE MATHS KEY — DEALS THAT WORK

WORKED COMBINATION	TOTAL ML	THE PAIN IT CARRIES
Fit-for-purpose dust switch (3,000) + mine efficiency (600) + township program (350)	3,950 ✓	Capital cost and new pipework — but river and jobs untouched. The “clean” solve; ask what it costs.
Recycling upgrade (1,800) + production cut (1,250) + township (350) + mine efficiency (600)	4,000 ✓	Shifts reduced — Community and Mine Ops both hurt. Watch this one get argued.
Recycling upgrade (1,800) + dust switch (3,000)	4,800 ✓	Over-solves — the chair should ask: do we need both, and who pays?
Any deal leaning on the river release cut (400)	—	Legal only if Environment consents — their non-negotiable is minimum river health. Expect a fight; that fight IS the lesson.

Checks: $12,500 \div 19,500 \approx 64\%$ · $19,500 \div 2.5 = 7,800$ pools · cut = 20% of 19,500 = 3,900. Scenario data is fictional-but-consistent classroom data matching the lesson image; the toolkit itself (recycling, fit-for-purpose substitution, efficiency) reflects genuine industry practice.

PROBING QUESTIONS

- “Who speaks for the river — and what happens downstream if nobody does?”
- “Which line in the table is really *safety* in disguise?” (Dust suppression.)
- “Is cutting production a water solution or a jobs problem — can it be both?”
- “What would you check before trusting the recycling plant's number?”

DIFFERENTIATION

Support: levers menu shows a worked example deal; the chair role goes to a confident reader. **Extend:** the drought hits year three — another 1,950 ML with the easy levers spent. What breaks first: budget, river, or the deal itself?

RUNNING SHORT — THE CUT LINE

Skip the formal signing and presentations; chairs report deals verbally. Protect the memory flash, one completed deal per team, and the exit ticket.

MISCONCEPTIONS TO WATCH

“Scarcity = no rain” (demand is half the story) · “just use seawater” (energy, cost, distance — their Lesson 3 desal thread) · “the environment line is optional” (river health underpins everything, including the licence to operate).

