

# The success of Premier Coal's aquaculture project may just unlock the perfect solution to this longstanding mining challenge.

## CASE STUDY

### Unlocking the missing link to sustainable mine void water use

Water in voids left by old open cut coal mines is a potentially valuable resource — in the Collie region alone there are 13 pit lakes dating back to the 1960s.

The problem is most mine pit lakes are too acidic to support the growth of algae — the building block of food chains in all lakes ecologies.

The main limitation to algae is usually the extremely low nutrient concentrations in the water.

The potential solution is obvious then: if nutrients like carbon and phosphorus are added to water in mine pits, algal growth may be stimulated — creating the environment necessary to support a food chain right up to fish and waterfowl, and improving water quality at the same time. But where can these nutrients be sourced?

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The award-winning aquaculture project has been guided by extensive research and is now growing marron with water from a disused mine void. The waste produced by these marron needs to be discharged from the water they are growing in; discharges that just happen to be high in organic matter and nutrients.

It may just be that marron sewage from an aquaculture venture in one lake can be discharged into another pit lake. This will not only avoid potential contamination of the broader environment, it may improve water quality of the recipient lake to the point where it can supply high quality water back to the aquaculture project.



Premier Coal has invested \$30,000, together with \$157,000 from an Australian Coal Industry Research Program grant, in an 18-month Edith Cowan University research project to determine the capacity of acidic pit lakes to accept aquaculture discharges, and how aquaculture discharges assist in remediating pit lake water quality.

Establishment of new aquaculture ventures across Australia are becoming increasingly limited with water shortages and the environmental risks associated with waste discharge. A successful research project could give the aquaculture industry a boost in regional Australia, and improve environmental outcomes at the same time.