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SPECIAL FEATURES
CONCRETE

Miner launches community help scheme in Sulawesi

By Dave Lennon

PT Newmont Minahasa Raya (PTNMR), a gold mine situated on the Indonesian island of Sulawesi, recently launched a community benefit program to help improve local fisheries and train local fishermen in the production of concrete fish habitats. PTNMR contracted Sinclair Knight Merz to get the program up and running.

The mine is located three hours drive from Manado in an area called Mesa, and has been in operation for just over three years. The mine is operated by the US parent company Newmont, and has a policy of investing in, and assisting the local community.

In recent times the local fishermen have complained of reduced catches. This has been brought about by overfishing and other unsustainable practices such as "bombing" and cyaniding. Within minutes such practices destroy coral structures and ecosystems that have taken hundreds of years to develop. It is an "eat for today" only policy and is a problem in many poor countries.

In many cases, coastal development adds to the fishery problem by destroying productive coastal habitats and reducing water quality.



A fibreglass mould is prepared for one of the concrete reef balls.

PTNMR has a marine monitoring program in place, and data collected to date have not identified significant changes to water quality that could account for reduced catches. However, the data show reduced fish numbers as well as the occurrence of coral bleaching. Last year has seen global seawater temperatures rise to unprecedented levels which stresses the corals sufficiently to cause them to turn bright white. Some do survive, but the majority fail to regain their colour and die. This bleaching has happened worldwide and the consensus is that this will have an effect on fisheries. However, no-one can predict to exactly what scale.

PTNMR investigated the possibility of constructing artificial reefs to help enhance areas and also replace lost substrate due to bombing, cyaniding or coral bleaching. The challenge was, what would be the best material to use to construct the reefs, and where to construct them?



Sinclair Knight Merz's Dave Lennon indicates an identifying mark on one of the finished reef balls. The identifying marks are used for ongoing monitoring of the fish habitats.

A quick surf of the internet revealed the home page of the Reef Ball Development Group (<http://www.reefball.com/>), a nonprofit organisation that has developed a leading mould system for producing effective concrete reef modules. These modules are called reef balls, but the name is misleading as they are not balls, but hollow dome structures with "Swiss cheese" walls.

Over 40,000 of these modules have now been deployed around the world and studies show they mimic natural reefs in form and function. They also provide an ideal surface for hard corals to develop.

***Dave Lennon** is a principal of Sinclair Knight Merz and is based at the Brisbane office.*

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