APPENDIX 12: COPPER IN MACQUARIE HARBOUR

Refer to section 6.1.3 of the EIS (Appendix 3) for a full overview of copper in Macquarie harbor.

Overview

The EIS summarised the following:

Copper pollution is not a consequence of salmonid farming operations but it is considered in this EIS in relation to any adverse effects that the elevated copper concentrations in the harbour may have on farming operations.

Adequate water quality is a fundamental requirement of salmonid production. As discussed in section 3.2.2 of the EIS, Macquarie Harbour has a history of episodic sediment plumes as a result of acid mine drainage from the King River. Copper is the contaminant of primary concern, due to the high concentrations entering with King River water and its ability to remain in the water column under pH and salinity ranges present in the harbour (Koehnken 2005).

Copper is known to be toxic to finfish in chronic and acute situations especially when the copper is in dissolved form but the understanding of forms of copper in the harbour, the dynamics of copper species balance, and the resultant toxicity to salmonids is poorly understood. The high organic loading in the harbour appears to afford protection to vulnerable species by binding the copper in sediments (Batley 2011, pers. comm.).

This issue was addressed by the Proponent in the EIS because a marine farming zone (Zone 6) previously relinquished as a precautionary move by Petuna is now proposed to be re-established and used by Petuna. The history of farming in adjacent zones without issues and the results of recent modelling suggest that risk is minimal and the Proponent accepts this extremely low risk in farming operations in the future. With the implementation of appropriate mitigation measures, the potential risks are significantly reduced. (Appendix 2, pg 258)

A review was also conducted into the history of copper in Macquarie Harbour, including a review of suspected fish mortalities linked to copper and a subsequent Risk Assessment for fish farms from pollution levels in the harbour conducted by Dr Lois Koehnken (Refer to section 6.1.3, Appendix 2 and Appendix 5).

In addition there was considerable work conducted looking at potential impacts of copper toxicity including heavy metal modelling by DHI (Refer to section 6.1.3. Appendix 2).

Conclusion

The EIS summarised the following:

There are a number of reasons for suggesting that there is a relatively low risk of plumes from the King River significantly impacting on commercial salmonid farming in Macquarie Harbour:

- on the basis of DHI’s modelling and Batley’s review, recent data suggests that existing farms are already subjected to potentially sub-lethal copper concentrations
- existing farms have reported no environmental problems in farming fish in the harbour over the past decade
- in the event of an environmental incident, there are at least three strategies available to the company to mitigate or avoid any potential impacts.

The proposed amendment to the Macquarie Harbour Marine Farming Development Plan October 2005 will provide for the culture of salmonids in the area that was previously Zone 6. Extensive modelling by DHI and more than two decades of successful farming in Zones within 1 km of this region suggest that the risk is not significant. The Proponent considers the risk is minimal and accepts any consequences that may be caused in the future due to plumes from the King River and associated elevations in copper in the water column.
On the information presented however it is not possible to completely exclude risk. Leaseholders choosing to farm salmonids in the harbour note that the Crown does not warrant the waters as suitable for salmonid culture and leaseholders farming salmonids do so at their own risk. (Appendix 2, pg 274)