ADDENDUM

TO THE

ENVIRONMENTAL IMPACT STATEMENT

TO ACCOMPANY THE

DRAFT AMENDMENT NO. 1

TO THE

MACQUARIE HARBOUR MARINE FARMING DEVELOPMENT PLAN OCTOBER 2005

Maugean skate (*Zearaja maugean*)

Macquarie Harbour is one of two small estuarine systems in Tasmania (the other being Bathurst Harbour) that the Maugean Skate (skate) is known to inhabit. The total range of the species is thought to be no more than 100 km^2 and the population was estimated at 1,000 individuals (TSSC 2004). The species inhabits low-nutrient brackish water, 5-7 m deep (TSSC 2004) and appears to mostly inhabit the shallower upper regions of the estuaries (IUCN 2007). The species is listed as endangered under the EPBCA and the TSPA. Macquarie Harbour therefore represents a critical habitat for this poorly understood species. Given the small population size and the limited distribution, any action that may result in the death of skates may be considered significant.

Actions associated with the proposal that could potentially impact on the skate include:

- physical disturbance of habitat
- changes in water quality – either through inputs (food, waste), incidental additions (oil and diesel) or the re-suspension of contaminated sediments – resulting in adverse health impacts and/or loss of suitable food species
- incidental entanglement/capture in netting used in fishing activities
- the introduction of non-indigenous marine species

Habitat Disturbance

Given that the skate has been recorded in 5-7 m water depth it is unlikely that the proposal would directly impact upon the skate. Mooring blocks utilised in the mooring systems for sea cages would cause localised disturbance to the seabed, however it is unlikely that their deployment would directly impact upon the skate or its habitat given that the proposed zones are all located in water that is greater than 20 m in depth. Similarly, it is unlikely that solid wastes from the stocked fish and waste feed would have any impact on skate habitat given the relatively restricted dispersal of solid wastes from cages.

There is some potential for dredging and other actions related to shore-based activities to result in very small areas being subject to sedimentation. However, it is considered that these activities would have minimal impact on skate or its habitat.

Water Quality

The range of dispersal of soluble waste from stocked fish is likely to be greater than that of solid wastes. Modelling undertaken for DO and nutrients predicts that the proposal would result in no significant effect in areas inhabited by the species, i.e. shallows less than 10 m.

Gill Netting Entanglement

The most significant risk that the proposal poses to the skate would be through entanglement in gill netting associated with escaped salmonid capture activities conducted by the Proponent and/or recreational fishers following a mass escape event

of stocked fish. Recreational and commercial gill netting is currently permitted in Macquarie Harbour and any consideration of the relative increase in the level of impact on the skate from proponent/recreational netting (for escaped salmonids) needs to take into account the background level of recreational and commercial netting that currently occurs for species targeted in the harbour. It is highly likely that any netting efforts targeting escaped salmonids following mass escape events associated with the proposed zones would be minimal compared to the total recreational/commercial netting effort conducted annually in the harbour.

Introduced Species

It is unlikely that the proposal would result in the introduction and establishment of non-indigenous marine species in Macquarie Harbour.

Australian Grayling (*Prototroctes maaena*)

The Australian Grayling (grayling) is a small to medium-sized, slender, silvery fish with soft-rayed fins lacking any spines. It is endemic to south eastern Australia, including Victoria, Tasmania and New South Wales, and is a migratory species that inhabits estuarine waters and coastal seas as larvae/juveniles, and freshwater rivers and streams as adults. The grayling is considered threatened due to declines in abundance throughout most of its range, and has been listed as Vulnerable under the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (Backhouse 2008).

The grayling is a diadromous species, migrating between rivers, their estuaries and coastal seas, so relies on free access to a range of freshwater, estuarine and marine habitats for its survival. The grayling spend most of their lives in freshwater, inhabiting rivers and streams, usually in cool, clear waters with a gravel substrate and alternating pool and riffle zones (Bishop & Bell 1978b; Berra 1982) but can also occur in turbid water (Jackson & Koehn 1988). Larvae and juveniles inhabit estuaries and coastal seas, and there appears to be an obligatory marine stage (Crook et al. in prep.), although their precise habitat requirements are not known. With its relatively short life span, most individuals spawn only once before they die, so populations are especially vulnerable to any disruption of spawning or recruitment.

The grayling was once abundant throughout its range, but it has declined in many areas since European settlement of Australia, and is now generally patchily distributed, although it can still be locally common in some rivers (Bell et al. 1980; Berra 1982; Jackson and Koehn 1988; McDowall 1996a). It is uncertain if the extent of occurrence has declined.

The nearest known records for this species date from 1975 and are from approximately 31 km up the Gordon River (and near the confluence of the Gordon and Franklin Rivers). These records represent the south western edge of the known range for this species, and come from the zone of furthest saltwater intrusion into the system (between Butler Island and the Franklin confluence). Given that the species appears to have an obligatory marine phase in its life cycle, it is possible that juveniles migrate through the waters of Macquarie Harbour.