

Summary of evidence provided by Jane Bowen

The Titiroa stream is home to a number of at risk and threatened native migratory freshwater species that need to move between both freshwater and marine environments to complete their lifecycle. The tide gates, dam and diversion channel impact significantly on freshwater fish values and passage within this catchment. This includes preventing the passage of fish when they are closed, which occurs for approximately half of every tide cycle, and there is also likely adverse impacts on passage of some species and life stages even when they are open due to the velocity found within the diversion channel. In my opinion the Titiroa tide gates also likely impact detrimentally on inanga spawning at this location.

All tide gates are considered barriers to fish passage, however, the Titiroa tide gates are an outdated passive tide gate design, that open and close passively dependent on the tide. The New Zealand Fish Passage Guidelines state that best practice, where tide gates are required, is the installation of active tide gates, which only close once water levels reach a critical level. Self-regulating (sometimes known as fish friendly) tide gates are considered minimum standard, and rely on a stiffener or counterweight, holding the gate open for a longer period of time, which allows for greater fish passage. Insufficient information, consideration or feasibility has been given to assessing these, or other alternative options, to improve fish passage in the Titiroa.

To mitigate against the impact of inanga spawning various mitigation/off setting has been proposed by way of potential habitat restoration, however, I consider this proposed mitigation/offsetting to be insufficient. There is limited information provided on the location, methods or feasibility of these restorations, and there is potential underestimation of the area needed to be restored. No mitigation was proposed for the adverse effects of the structure on fish passage in the original application.

I provide recommendations to address the adverse effects relating to the Titiroa tide gates including:

a. In an ecological sense, removing the structures would resolve the adverse impacts on fish passage and inanga spawning

b. However, if the gates are required in the present location, then I recommend:

- Full feasibility, design and implementation of a fish passage design that is consistent with the New Zealand Fish Passage Guidelines, taking into account the hierarchy of fish passage solutions for tide gates listed in the guidelines, should a tide gate structure be conclusively shown to be required at this site and:
- Reconsideration of the area needed to be off set or mitigated against, identification of these sites, and feasibility of inanga spawning restoration given issues identified with proposed sites
- Further investigations in regards to inanga spawning, given current inconsistencies and uncertainties, to inform mitigation/offsetting and future management
- Monitoring and reporting to further understand the impacts of the structure, ensure maintenance long term, and to inform any subsequent improvements once a fish passage solution is implemented