OFFICE OF THE PRIME MINISTER'S CHIEF SCIENCE ADVISOR
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Remarks to the Local Government NZ Symposium: Freshwater 2017
Wellington, May 30, 2017

(EXTRACT – read the full speech here: www.bit.ly/WaterSpeech)

Freshwater Management – Challenges for New Zealand, for Local Government and for the Key Sectors

Sir Peter Gluckman, Prime Minister's Chief Science Advisor

… We now understand that the freshwater ecosystem is not just about the water and the plants and animals that live in and around it – we as humans are part of the ecosystem and what we do affects ecosystem function (and the health of our waterways) in both subtle and profound ways. And what we do to modify one ecosystem will have effects on many others.

Now, the need for more holistic and integrated practices of ecosystem management – something long recognised by Maori – is more generally understood. But such management practices do create challenges in dealing with legacy issues: to ensure the quality of our freshwater estate on one hand, while balancing development interests on the other. These scientific and policy challenges are compounded by the inherent complexities of freshwater-associated ecosystem maintenance and enhancement …

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… It has been inevitable since humans and their accompanying animals and plants came to New Zealand and altered land use by deforestation, draining of wetlands, etc., that there would be impacts on the quality of fresh water. This has been particularly so since the arrival of Pakeha, and subsequent urbanisation, industrialisation and the rapid expansion of pastoral farming. The latter, and particularly its very rapid intensification in recent years, creates enormous challenges. On one hand it is at the core of our economy, and on the other it has led to rapid changes in land use, particularly through dairy expansion, with concomitant major and adverse impacts on the quality of our freshwater estate.
Agriculture and horticulture are also creating supply-side issues in some catchments – that is, there are places and times where there simply is not enough water to meet everyone's needs, and these demands are poorly regulated if at all.

The urbanisation of New Zealand is a further factor in reduced water quality. Accompanying issues are created by the impact of hydroelectric and geothermal power, industrialisation and the arrival of exotic invasive species that have all had further impacts on our freshwater and its associated biota. There are many measures of water quality – reflecting its physical, chemical and biological characteristics. However, no single measure is sufficient to understand the state of fresh water, and the analysis is further complicated by gaps and inconsistency in the monitoring regimes. This is reflected in the current confusion over the proposed new water standards. There is an inherent and pragmatic logic in having nuanced definitions that take into account what is an acceptable risk, consideration of the seasonal changes, the relationship to extreme weather events etc., but the impacts of such complexity must be interpreted and communicated clearly …

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… Fresh water contributes greatly to our economy through its role in tourism, in agriculture, and in industry, and is highly valued by New Zealanders for cultural, social and recreational reasons. Indeed, it is an inherent

part of our national identity. The provision and benefits of fresh water to meet economic, social, cultural and environmental needs are referred to as 'ecosystem services', and include water for:

- intrinsic cultural value and a source of mahinga kai;
- potable water supply and household use – and I think councils are now waking up the to the need to be much more aggressive about scientifically directed management;
- economic uses (agricultural irrigation and stock use; industrial use; hydroelectric energy generation; fisheries; tourism);
- recreation and social amenity; and
- sustaining our indigenous biodiversity, which in turn delivers its own set of ecosystem services.

All consumptive uses of water have some impact on the freshwater environment, even where water recycling is involved. Some non-consumptive uses have serious impacts through introduced biota, changing water chemistry or hydrology, and other effects on ecosystem services. With increasing use and demand for fresh water, it becomes harder to reconcile varying interests of households, agriculture and industry, and of communities that require other values be catered for, including those of conservation, recreation, tourism and of iwi …

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