Comments on Productivity Commission Draft Report – Reef Catchments

Comments by G.E. Rayment, Queensland, 13/12/2002

The draft report to which these comments pertain is referenced as: *Productivity Commission (2002). Industries in the Great Barrier Reef catchment and measures to address declining water quality, Draft research report. Productivity Commission, Canberra.*

Overview: Key Points

The second dot point (p. xx) is beyond the Terms of Reference. Conclusions re whether or not there is conclusive evidence of water quality decline within the GBR lagoon are matters for the *Science Panel – Reef Protection,* which is expected to report in detail shortly. Stick to the economics and matters related or the report will be devalued. Indeed, more attention could have been given to the economics of externalities associated with N fertiliser use and in the trading of environmental credits.

Overview: Water quality in the GBR region.

Suggest add "region" after Mackay on P. XXII, as there is significant "pressure" in the Plane Catchment as well.

Overview: Pollutant discharges.

A few points here as follows:

1. Other "authoritative" sources earlier and since Furnas and NLWRA are:
    - Moss, A.J., Rayment, G.E., Rielly, N. and Best, E.K. (1993). A preliminary assessment of sediment and nutrient exports from Queensland coastal catchments. Environment Technical Report No. 5. 27 pp. (Qld Dept. Environment and Heritage Brisbane.) *[This is the seminal contribution for sediments, N and P by land use for GBR and other coastal Qld catchments.]*
    - Neil, D.T. and Yu, B. (1996). Fluvial sediment yield to the Great Barrier Reef lagoon: spatial patterns and the effect of land use. In: *Downstream Effects of Land Use*. Eds. H.M. Hunter, A.G. Eyles and G.E. Rayment. pp. 281-286. (DNR, Brisbane.) *[Sediment yields only.]*
    - Rayment, G.E. (2002b). Water quality in sugar catchments of Queensland. Water Sci. & Tech. J. (Submitted). [Presented 5th Int. River Management Symp., Brisbane, 6 September 2002.] *[This paper has details of modelled estimates of sediments and nutrients (N & P) for Qld sugar catchments as well as for grazing lands. It also covers many other aspects of pollutant discharges from canelands.]. catchments.]*
    - Hunter, H.M. and Walton, R.S. (1997). From land to river to reef lagoon. Land use impacts on water quality in the Johnstone Catchment. 10 pp. (DNR, Indooroopilly.) *[While specific for the Johnstone, the estimates are based on several years of water quality monitoring by NR&M and subsequent modelling. NLWRA estimates are crude in comparison, a point recognised by Ian Prosser. They were based on modelling at continental scale.]*
2. Herbicides are pesticides (final para on p. XXV, this sub-section).

Overview: Impact of water quality decline

Where are the economics? Surely it is possible to put some ecosystem-services values into this segment. Loss of habitat and/or poor water quality can equate to loss of fish catch or a need to increase fishing effort. N leaching also has an externality cost, which nowadays can be predicted in

some cropping situations (eg. Mallawaarachchi *et al.*, 2002a, b)[1]. At this stage, the sub-section is too bio-physical and probably based on an insufficient examination of the science.

Overview Box 1 (p. XXVII) Red herrings on the reef

An interesting heading and worth raising, but conclusions drawn in the final paragraph seem to be at best anecdotal. While for the most part the quantities / amounts of the "materials" mentioned are relatively small, it does not follow that there will be no effects. For example, there is good evidence internationally that chemicals contained in boat antifoulants and similar can result in quite significant residues harmful to aquatic organisms. Some have been withdrawn or are being phased out because of harmful and persistent residues. Moreover, boat antifoulants are already in the water; land based equivalents must first move from land to waterway to river to sea. In addition, fertilisers and pesticides used on golf courses differ little in their mobility when compared to similar use in cropping situations. The main difference is the size of the dose. There are much smaller areas of golfing land than cropping land in the coastal zone, but local effects can be expected.

Overview: Sugarcane

Suggest refer to scientific / technical papers and reviews re water quality, a few of which have already been mentioned. In addition, see Rayment, G.E. (1999, 2002a). Water quality pressures and status in sugar catchments. CRC Sugar, James Cook University, Townsville. [CRC Sugar Web Site, http://www-sugar.jcu.edu.au/ (Exposure draft + Water Quality Pressures and Status in Sugar Catchments)]. Also refer to Bristow, K.L and D.J. Popham, D.J. (eds). (2002). *Water in the Australian Sugar Industry*. CRC Sugar Technical Publication, James Cook University, Townsville.

In addition, it seems likely that the statement attributed to CSIRO (2002b) has been misinterpreted. I would accept the statement if it applied "per unit area". Given the vast areas involved, most nutrients (and sediments) derive from rangelands, although losses per unit area are low.

Overview: Table 2.

It is accepted that this is a summary. While for nutrients, application of fertilisers gets mentioned, there is no mention of nutrients supplied by mill muds, feed lot manure and municipal biosolids. There are around 250, 000 of biosolids produced in coastal Qld and around 2,000,000 tonnes of mill mud / ash. All contain nutrients so need to be factored into the equation.

Water Quality in the GBR Lagoon: Box 2.1

There are significant sins of omission and of accuracy in this "box". It would be fair to open the box with "Much research and monitoring of GBR water quality is undertaken by T'ville-based organisations."

There is no problem with all except CSIRO (Land and Water division) if "GBR water quality" relates to off-shore waters only. If it also covers agricultural systems and coastal rivers and streams, etc, then it is incorrect. It would be essential then to add the following: (Qld) NR&M, (Qld) EPA, Sugar CRC and Coastal Zone CRC. Of these NR&M is of most significance. It has an ambient surface water and

[1] Mallawaarachchi, T., Grundy, M. and Rayment, **G.** (2002). Developing science-based policy options to maximise economic and social benefits from environmental management: insights from the Australian Sugar Industry. In: Graham, M., (ed), Sustainable Environmental Solutions for Industry and Government: Proc. 4th Qld Env. Conf. 27-34. Env. Engineering Soc., Brisbane, 30-31 May.

Mallawaarachchi, T., Monypenny, R. and Rayment, G. (2002). An integrated strategy to enhance profitability and environmental compliance in the Australian sugar industry. Proc. Aust. Soc. Sugar Cane Technol., 24: 99-106.

ground water monitoring network that stretches all along the coast, and also includes stream gauging. NR&M compiles summary details on these and other water resource statistics annually.

Other Comments

I thought the projections for gross value of production in GBR catchments under a range of assumptions was a strength of the report. There are the inevitable typos (eg. phosphorus for phosphorous on P. 131.). Also, my data on fertiliser inputs (N and P) to cane suggest consumption is increasing in all regions, based on 1989, 1994 and 2000 data. There is certainly opportunity to lower application rates, an action likely to attract community support.

Good luck in finalising the report. I am prepared to further clarify comments if requested.

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13 December 2002