Andrew Dolling
Productivity Commission
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Collins St. East
Melbourne, Victoria 8003

Dear Andrew

I have had the opportunity to read the interim report on "Industries in the Great Barrier Reef Catchment and Measures to Address Declining Water Quality". Given the complexity of the issue and the timing, it is a very complete, informative and useful document. You are to be congratulated on your effort. That being said, there are a few matters which I feel should be considered to clarify aspects of the document. These have been noted on the attached sheet.

I have annotated a copy of the Commission's draft report with regard to smaller, more specfic items and will send that along directly by post.

Thank you very much for the opportunity to assist in this process. If you have any further questions on the attached comments or specific issues where the Institute can be of assistance, please feel free to contact me.

Yours sincerely,

Miles J. Furnas
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Comments on the Productivity Commission Report: "Industries in the Great Barrier Reef Catchment and Measures to Address Declining Water Quality" by Miles Furnas (Australian Institute of Marine Science: 13 December 2002).

1. "Pollutant" – This term is used throughout to identify sediment, nutrients and other materials entering the GBR World Heritage Area (GBRWHA). This term has been used by some (e.g. GBRMPA), but not all parties in the discussion about runoff to the reef. It is an emotive and loaded term, with different connotations to different parties. It should therefore should be explicitly defined very early in the report so that readers do not impart their own meaning to its use or weighting of implications.

   The primary materials which are influencing water quality in watersheds and the GBRWHA (sediment, nutrients) are wholly natural and have been influencing the GBR since the dawn of time. The only really new materials are those produced to support modern industry or agriculture (pesticides, herbicides, hydrocarbons). These compounds could/should be correctly called pollutants. For sediment and nutrents, what we are dealing with is a matter of degree, not kind. The levels of sediment and nutrients usually encountered in the GBR under disturbed conditions are small beer indeed compared to levels in many developed catchments in Europe, Asia or North America and would likely be small compared to pre-human levels in many of those catchments. The highest concentrations of sediment and nutrients occur during flood events when when their concentrations are naturally hight. Modern land use practices likely influence the size of these peak values, but we still cannot say with any certainty how much. The average increase in sediment and nutrient inputs since 1850 falls within the likely range of natural variability in runoff of those materials based on long-term fluctuations in river discharge. Where does natural variability end and "pollution" in the strict sense begin?

   I raise this point because I feel that the term has been used by individuals or organisations in the water quality debate in an undisciplined fashion. In common usage, it has a very clichéd connotation based on examples from other, likely inappropriate situations. The situation in the GBR is a subtle one, and as you have noted in your report, the effects are difficult to see or measure. The sceptical reader might rightly say – "if there are these pollutants going into the reef – where are they?" – which encapsulates a significant part of the current political debate.

   I strongly suggest that you explicitly define "pollutant" and "water quality" in the very early text of the report, along the lines of….

   Pollutant – A material or property introduced to a habitat or ecosystem by human activity which is toxic or harmful to organisms or disruptive to relationships between organisms. Examples include: pesticides, toxic organic compounds, heavy metals (e.g. Hg), excess heat. In some cases, an excess of natural materials (e.g. nutrients, organic matter, sediment) added to a habitat or ecosystem by human activity can lead to harmful, disruptive or undesirable changes and can therefor be regarded as a pollutant in that system.

Water quality – The defined suitability of water and the materials in it for a particular purpose (e.g. drinking, recreation, ecosystem health, irrigation, industrial use).

For the purpose of this report, we will use the term "pollution" to mean above-natural levels of sediment and nutrients in, or export from, catchments adjoining and waters of the GBR World Heritage Area……..

and stick to those usages throughout.

2. There is a confusion between the use of the terms - catchment and drainage basin. Some, but not all of the hydrological and nutrient export statistics used in the water quality debate apply to defined drainage basins (AWRAC, Qld. DNR&M), which include the catchment of the naming river or creek, plus additional areas draining to subsidiary creeks or rivers outside of the main stream. In some cases (e.g. Burdekin, Fitzroy Rivers), the catchments of these rivers encompass virtually all of the drainage basin (99+%), while in others, the catchment of the main stream makes up a smaller percent of the basin (e.g. Normanby River). In some drainage basins, a significant fraction of the agricultural activity (e.g. sugar in the Herbert and Haughton Rivers) now takes place outside of the catchment of the Herbert and Haughton Rivers in the strict hydrological sense. An explicit definition (catchment = drainage basin unless explicitly defined otherwise) might be useful as some readers may consider the statistics on the basis of catchments (sensu strictu) and others on the basis of drainage basins. This sort of nitpicking will be used to undermine the report if it suits particular parties.

3. Of necessity, the Commission's report incorporates information from a considerable variety of sources and contains a diversity of views on particular matters. In some cases, there are differing values provided for basic pieces of information. This is normal. The report, however, does not reconcile the sources and implications of the differences. An important case in point is the differing estimates of annual sediment inputs to the GBR presented on pages xxiii, xxvii, pg 20 and 25. The higher values (e.g. Table 2.3) come from a decade-old desktop modelling study carried out by QDNR and QEPA (Moss et al.), while the lower values are derived from newer empirical measurements (AIMS) and catchment spatial modelling (CSIRO, NLWRA). Which is better? Does it matter? The unexplained difference has a considerable effect on the relative contribution of particular industries (e.g. sugar, grazing, prawn farming) to total sediment runoff. This is at the heart of the report. Similar arguments would apply to nitrogen and phosphorus inputs. The range of modern estimates of sediment and nutrient input should be noted, where appropriate, or a preferred value identified to allow the non-expert reader to interpret the range of values.

4. Tables 1 and 2.3 – "Natural" should more properly be defined as undeveloped and uncleared lands in reserves (e.g. Shoalhaven Military Reserve), national parks and other protected areas (Wet Tropics World Heritage Area). The relative contribution of various types of land use to runoff is now the subject of active research. This might be mentioned.

5. Pg. xxviii – Woodland removal per se may not directly influence erosion and sediment production. The continual and accelerated loss or removal of understory grass cover by grazing which accompanies or follows tree clearing is a more significant cause of accelerated erosion. Grazing can remove grass cover while trees are uncleared. Our ability to measure the spatial variability in and extent of grass cover loss is far poorer. We monitor tree clearing because we can. Woodland clearing is often just a first step in the process of land "development", usually to enhance grass production, more grazing and to facilitate grazing management practices (mustering).

6. In the economics sections, various values of industries are given for 1999-2000, while those for 2001 are estimated. How were these estimates done? How good are they as indicators of the current state of these industries. Given that industry values are changing with time, it's hard to interpret the "accuracy" of the more recent estimates.