

15 November 2010

Anna Scott
Department of Planning
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**RE: PEER REVIEW OF ECOLOGICAL IMPACTS OF TILLIGRA DAM ON
KOORAGANG WETLANDS - SITE INSPECTION**

Dear Anna

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As you are aware, Cumberland Ecology was commissioned by the Department of Planning (DoP) to conduct an independent review of a report entitled "Hunter Estuary Ramsar Wetland Impact Assessment" prepared by EcoLogical. The report – referred to hereafter as the "Wetland Impact Assessment or WIA Report" - assesses the impacts of the proposed Tillegra Dam upon the Hunter Ramsar wetlands, which are listed as wetlands of international importance and matters of national environmental significance by the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The purpose of this letter is to briefly explain the results of our recent site visit to Kooragang Island on the 10th of November this year and how that influences the findings of our recent peer review of the WIA report.

1. BACKGROUND

The peer review of the WIA report by Cumberland Ecology found that although only small impacts were likely, based upon the modelling of changes in hydrology and salinity, it was appropriate that the proponent, Hunter Water, provide a more detailed assessment or risk assessment to individual species of water birds and to plant communities perceived to be most at risk from the Tillegra Dam. The conclusions to the peer review were:

The Proponent has generally provided a detailed analysis of the major factors that could impact the Hunter Estuary Wetlands as a result of the Tillegra Dam project: hydrological and biochemical (particularly salinity) changes. The modelling results show that under a range of scenarios, the impacts to hydrology and salinity are negligible. Based upon those results and assuming that the

modelling is accurate, the conclusions drawn are generally appropriate.

Some areas of uncertainty remain about the modelling and the ecological implications of such uncertainty are unresolved. The second independent review of hydrology and water quality by Peirson (2010) generally supports the modelling approach used by the proponent. However, Peirson believes that more can be done to quantify hydrological and salinity changes in different areas of the estuary and contends that “possibly the most significantly impacted areas are in the west, near the upstream boundary of the Ramsar area.” He also points out that it appears that no scenarios considering the impacts to salinity on low flows during the filling phase of Tillegra Dam have been presented. Peirson also concludes his report by stating “The total volumes of freshwater flowing into the Williams River and lost by evaporation should be checked carefully to confirm that no gross errors remain in the determined estuary inflows for pre- and post-dam assessment scenarios.”

Under a worst case scenario involving protracted and extreme drought, the Dam may take 20 years or more to fill. This could conceivably have important implications for salinity and hydrology in parts of the wetland and in turn for some wetland birds and wetland plant communities, particularly saltmarsh. This needs to be thoroughly examined. Hypothetically, assuming that the Dam is approved within 12 months and construction commences shortly thereafter, the dam could be constructed and filled between within 15 to 20 odd years. Sea level rise during this period should therefore also be considered when assessing the worst case scenario because rises in sea level are recognised as a greater risk and will become increasingly relevant with time.

Impacts from the Dam are likely to be dwarfed by predicted changes in climate and sea level. The analysis in the WIA Report indicates that climate change (and sea level rise) constitutes an extreme risk to the Ramsar wetlands, which is appropriate. Relatively small changes in sea level would have major impacts across the Ramsar wetlands that are likely to be much greater than potential impacts from the Tillegra Dam project in the medium to long term. Cumberland Ecology has been supplied with modelling approximate inundation extents of mean high water for a 0.4m sea level rise scenario. A copy of this map is appended to this report. The map clearly shows that under a 0.4m sea level rise almost the entire Kooragang Island would be inundated – representing a far bigger threat to the wetlands. The predicted 0.4m rise in sea level is predicted to occur within decades and within the operational phase of the dam.

Water birds and wetlands communities such as salt marsh were principal reasons for the Hunter Wetlands being listed as Ramsar wetlands. They are wetlands of international importance for many bird species and for salt marsh. Moreover, migratory waders and salt marsh communities have declined significantly and beyond LAC levels in the Hunter Estuary Wetlands. The Proponents ecologists need to conduct a detailed analysis of the potential

impacts on all of the various migratory birds and also such significant habitats as salt marsh.

It is conceivable that some species or plant communities are potentially at greater risk than others from the project but there is no analysis within either the WIA Report or the Proponent's response report to examine this. The species at greatest risk should be clearly identified.

Areas on the north western side of the Kooragang Island were identified as being at greatest risk of experiencing changes in water level and/or salinity.

2. IMPLICATIONS OF SITE VISIT

The site visit was very informative as it served to reinforce how much the wetlands of Kooragang Island have changed over the decades from human impacts, and how much they remain under threat.

On the site visit, we were taken around the wetlands and saw all major types of wetland and the major geographic locations in question, including the areas known as the “dykes”, Fullerton Cove, and wetlands on the northern and western sides of Kooragang, where the hydrology peer reviewer predicted the greatest changes were likely. On the visit I observed broad areas of saltmarsh and other related wetlands that form major habitat for a variety of wetland birds.

The low relief of Kooragang Island is such that small changes in water level and topography can result in large differences in flora and fauna. This can mean that small changes in hydrology could conceivably be significant to some species.

Since the preparation of our original peer review, the proponent has commissioned a response that responds to various peer reviewers comments including those of Cumberland Ecology. The response by the proponent is that it stands by the modelling results and the implications of those results: namely that the hydrological and salinity changes are predicted to be negligible, hence there is no need to go into further detail about the likely impacts to individual species.

While I believe that the predicted scale of impacts as a result of changes to hydrology is small, I also remain of the view that there are “loose ends” to the modelling, as suggested in our original peer review. There are also some scenarios for the dam that have not been entirely modelled, such as a protracted filling scenario during extreme drought. Given the importance of the wetland in question – it is of international significance – such matters should be put beyond doubt to ensure that the impact assessment for the wetlands is robust.

Furthermore, the proponent has suggested that it will “monitor” the wetland response to potential changes to salinity and hydrology that could emanate from the construction and operation of Tillegra Dam. I believe that the methodology for monitoring is not clear, nor is the precise subject of the monitoring. Moreover, as the proponent has not endeavoured to conduct a filtering or risk assessment of individual species or plant communities, it is quite unclear what would be monitored and what would trigger a management response. The details of monitoring should be identified now rather than post approval.

Due to the magnitude of the project, the importance of the wetland and the reason why the wetland was listed as being a RAMSAR wetland (due to water birds and wetland communities) the proponent should do a risk assessment of changes to individual species. While this analysis may simply draw the same conclusions as those of the modelling, the analysis is likely to help clarify which species and communities could or should be subject of monitoring.

Should you wish to discuss this with me further, I will be remote-area surveying overseas from 22 November to 9 December 2010. I will be available only sporadically via email due to the terrain and security issues.

Yours sincerely



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Director

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