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Letter of Endorsement from Dr Alan Tingay

In June 2006 I was asked to be the Independent Scientist for the Ok Tedi Mine Continuation Agreement Working Group. My role in particular was to provide advice to community leaders on the environmental and health impacts of the Ok Tedi mine based on a review of scientific research by Ok Tedi Mining Limited (OTML), its predecessor BHP, and independent researchers.

In order to do these tasks in the short time available, I spent August and September 2006 in Papua New Guinea based at Tabubil. During that time I reviewed a large number of research and technical reports that were provided by OTML at my request, held discussions with OTML staff, made a 3 week trip downriver from Kiunga to Parama Island, and met with representatives of 30 villages to identify and discuss issues of concern to them.

The environmental research carried out by OTML and BHP is generally of a very high quality and provides considerable information about the impacts of the mine especially in the area from the mine down to Everill Junction (the southern limit of the Middle Fly region). I commend OTML for this research program but note that there has not been an equivalent research effort on the potential future impacts in the South Fly regions. This means that there is uncertainty regarding the extent and intensity of future effects in these regions.

I presented the conclusions of my review at the Working Group 3 meeting at the end of September 2006. The presentation was in the form of a series of slides which summarized the environmental research findings and issues. These slides were subsequently published on the internet by OTML so that they are widely available.

My view of the environmental impacts of the Ok Tedi mine are summarized in Attachment 1 to this letter. These impacts are extensive and severe and are progressively affecting areas and communities further downstream from the mine. It is clear also from the scientific research that some major impacts of the mine such as increased flooding of the Fly River will continue for many years after mine closure.

Very little, if anything, can be done to mitigate the existing environmental impacts. This is because these impacts are fundamentally caused by the very large quantity of wastes that have been discharged into the Fly River system since the beginning of mine operations. These wastes cannot be removed. A large volume of this waste has been transported downstream and some has been deposited in the main river channels and the off-river water bodies. Waste is also moving downstream on the bed of the main river channels.

These wastes have increased sediment levels, flooding, bio-available copper levels and are generating acid and metalliferous drainage effects. Other impacts include destruction of fish habitats, severe impacts on aquatic food webs, extensive dieback of lowland rainforest, and loss of sago swamps and gardens.

A very large quantity of wastes also remains in the upper tributaries of the Ok Tedi River. This will erode and be washed downstream over the long term.

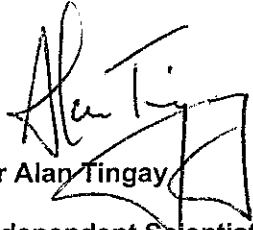
Given this situation, my main professional and personal concerns relate to the **social implications of the existing and unavoidable future environmental impacts. In my opinion, the most serious of these implications include potentially severe impacts on food availability and therefore on nutrition in many villages due to impacts on key food items such as sago and fish, increased potential for biological contamination of water supplies due to increased flooding, and a potential increase in mosquito populations**

and therefore mosquito-borne diseases. A summary of the health implications is provided in Attachment 2. An effective response to these present and future health issues is fundamental to the success of all other development programs.

In my opinion, those involved in the Working Group through considerable hard work have achieved a basis for managing the social impacts of the Ok Tedi mine into the future. **However, continuing commitment, cooperation and goodwill by all involved will be required for a very long time for a comprehensive and successful program to be achieved.**

The CMCA New Entity also will be responsible for managing a large financial compensation package as a result of the efforts of the Working Group. I urge them to play a leading role in a health initiative and to give the funding of nutrition and health improvement programs the highest priority in their community assistance strategies.

In conclusion, I would like to thank all of the people who have helped and encouraged me in my work. These include all of the people that I have had the opportunity to meet in the mine-affected areas, the delegates to the Working Group, the staff of OTML, the independent facilitators and observers, NGOs, staff of the PNG Sustainable Development Program Company, officers of Government agencies and many others. It has been a privilege to work with people committed to providing a better future for the mine-affected villages of the Western Province.


Dr Alan Tingay
Independent Scientist

Attachment 1 - A Summary of the Environmental Impacts of the Ok Tedi Mine

Over 1 billion tonnes of tailings and waste rock have been discharged from the Ok Tedi mine into the Fly River and its tributaries over the past 20 years. At present, approximately 2 million tonnes of wastes are discharged into the river system each week or about 100 million tonnes every year.

These wastes have caused profound changes to the river system. These changes will continue to get worse for a very long time into the future and are likely to affect the entire river from the mine to the coast near Daru. The latest modeling by scientists from Ok Tedi Mining Limited suggests that the impacts in the lower Middle Fly will last for at least several hundred years, this means many human generations.

The impacts on the river system include:

- **Deposition of sediments from the mine over much of the river system** with deep deposits (in excess of 3 metres) in the Ok Tedi and adjacent floodplains and in the upper Middle Fly. These deposits have raised the level of the river bed and have significantly contaminated associated lagoons, lakes and tributaries. The deposits on the river bed are increasing and are moving downstream at a rate of about 8km each year. Much of the upper Middle Fly is now affected and the impact will travel progressively downstream to near Everill Junction over the next 40 years.
- **A significant increase in the frequency, height and extent of flooding** in the Middle Fly caused by the deposits of wastes and consequent raising of the level of the river bed. These impacts are illustrated in maps prepared by scientists for OTML. Increased flooding in the South Fly is also likely but the impacts in this area and the Fly River Estuary have not been assessed in detail.
- **A significant increase in copper levels throughout the river system** down to the estuary. Copper is toxic at relatively low levels to many aquatic plants and animals and this pollution has caused the destruction of much of the phytoplankton in parts of the upper Middle Fly.
- **Evidence of acid mine drainage** on the levees that flank the river channel in the Middle Fly and on islands from the Ok Tedi down to Suki Creek in the South Fly. The formation of acid in the mine wastes causes more copper to flow into the river.
- **Destruction of large areas of lowland rainforest** in the lower Ok Tedi and Middle Fly floodplains. This dieback is expected to eventually destroy most of the rainforest in the Middle Fly.
- **Very large decreases in the quantity and variety of fish** and other aquatic animals in the river caused by continuous and very high levels of turbidity, the destruction of habitat by sediment deposits and the impact of copper on phytoplankton that supports the food web that the fish depend on.
- **The destruction of large areas of sago** especially in areas close to villages along the river and tributaries due to flooding.

Attachment 2 – A Summary of Social Impacts of the Ok Tedi Mine

Major impacts on villages throughout the Fly River system have been caused by the environmental impacts of the Ok Tedi mine. These social impacts will increase significantly over future decades as the environmental impacts increase unless major aid and assistance programs are put in place.

The social impacts include:

- **The destruction and difficulties caused by increased flooding.**
- **Widespread reduction in the availability of sago** the staple food of most communities. People now have to travel long distances from many villages and use much more labour to obtain smaller quantities of sago than before the mine impacts.
- **Major loss of food protein** as a result of the reduction in fish stocks.
- **Loss of food items and other products that were traditionally obtained from forest areas** due to the extensive dieback impacts.
- **Forced relocation of gardens and reduction in garden produce** due to flooding of traditional garden areas.
- **Loss of traditional water supplies** and dependence on erratic and inadequate supplies during the dry season.
- **Probable increases in mosquito populations** and malaria and other diseases due to increased flooding.
- **Difficulties in establishing adequate and hygienic sanitation facilities** due to frequent and prolonged flooding.

In addition, **health facilities and services** are generally poor or almost non-existent throughout much of the river system. There are few aid posts and medical personnel and very large distances from many villages to medical help. This situation exists despite the fact that the Ok Tedi mine has existed in the region for more than 20 years and even though OTML, together with Government and other agencies, has implemented assistance programs. Medical records which are necessary for planning health improvement and disease prevention strategies also are poor.

The difficulties facing **women** in particular in the affected area will increase significantly as a result of the social impacts and the lack of health facilities and services. Women have the major responsibility for growing crops and for sago production and the work required for both activities has already increased and is likely to become unsustainable for some families and communities. Women also have particular medical needs including pre-natal, birth and post-natal care. These services do not exist in many of the affected areas.

Potentially large numbers of **children** also will be subject to poor nutrition levels as the impacts from the mine increase over time and will be more vulnerable to disease and long-term health issues.

Major improvements in food security, of the existing health infrastructure and health services, and other assistance will be needed to limit these impacts effectively given the large number of communities involved and the very large area affected by mine impacts.