

QUESTIONS ON NOTICE

REPORT ON PROCEEDINGS BEFORE STANDING COMMITTEE ON STATE DEVELOPMENT BENEFICIAL AND PRODUCTIVE POST-MINING LAND USE At Lake Macquarie City Council Chambers, Speers Point, on Wednesday 21 August 2024

Q1 Ms SUE HIGGINSON: I've got two quick follow-up questions on that. Professor, is there written material about the Borneo project that you could provide to the Committee if we requested that?

TIM ROBERTS: Sure. There are some published papers that have come out of that company. The company is PT Adaro. It's regulated by the Central Government of Indonesia. The regulation criteria for end-of-mine are as strong or stronger than regulations in New South Wales and Queensland. In terms of the quality of water, any water released from the site has to be above pH 6.5 and a certain minimum sedimentation standard.

There are some publications that I could certainly send in.

1. ANSWER: **Strategies of Water Flow Treatment of Paringin Pit Lake to Meet Wastewater Discharge Compliance:** [This study, published in the *Journal of Degraded and Mining Lands Management*, focuses on the treatment strategies for water flow in Paringin Pit Lake to ensure compliance with wastewater discharge standards¹.](#)
2. **Research Interests and Publications on Academia.edu:** [Didik Triwibowo has shared various documents and research interests on Academia.edu, including topics like coalbed methane, economic development, mining sustainability, and tailing geochemistry².](#)
3. **Paringin Pit Lake: Key Success Factors of Creating a Pit Lake:** [This paper discusses the hydrologic processes and water quality management necessary for creating a healthy pit lake, suitable for aquaculture³.](#)

Q2 Ms SUE HIGGINSON: That would be very helpful. With the software and the programs that are available in terms of final landforms, are any of those fit or currently run using climate models and scenarios for the type of precipitation that we are heading into and what we've already started to experience across New South Wales, and Australia more broadly? I'm curious about where the marriage is happening in that field.

ALEC ROBERTS: The landform evolution models definitely do that. You can actually put a rainfall profile up off into a thousand years into the future and then simulate what will happen to the landform based on that model of rainfall changes. It's very important. The good thing is you can apply this to existing landforms. It can be conventional landforms or it could be landforms that we're suggesting here. The landform evolution models can be run against any of these landforms

ANSWER:

SIBERIA is a landform evolution model originally developed by the late Prof Garry Willgoose from University of Newcastle. This was updated to include climate data in Mid 2006.

SIBERIA can be found here: SIBERIA homepage <https://www.telluricresearch.com/siberia-homepage.html>

Academic Publications on SIBERIA can be found here:
<https://csdms.colorado.edu/wiki/SIBERIA-Publications>

A Q&A about Landform Evolution Modelling (including SIBERIA) by NSW Resources Regulator can be found here: NSW Resources Regulator - Landform Evolution Modelling and Geomorphic Design Principles for Mine Rehabilitation Landforms: Questions and answers
https://www.resourcesregulator.nsw.gov.au/sites/default/files/documents/q-and-a-landform-evolution-modelling-and-geomorphic-design-principles-for-mine-rehabilitation-landforms_f_9feb2021.pdf

More detail can be found in: Willgoose, G. 2018. *Principles of Soilscape and Landscape Evolution*, Cambridge University Press, Cambridge, UK, 356pp.
<https://doi.org/10.1017/9781139029339>