



Supplementary submission No. 098  
25 February 2014  
11.1.14

**Supplementary Submission to the  
Queensland Government on the  
Public Hearing – Inquiry into  
the Regional Planning  
Interests Bill 2013 held on  
12<sup>th</sup> February 2014**

**25 February 2014**

## Background

It is on record that the viability of Cape Alumina has been severely impacted by the Government's decision to ban mining in the Steve Irwin Wildlife Reserve (SIWR). We believe this decision was made based on misinformation provided to the Government regarding the environmental values of the SIWR and the potential impacts of mining on the proposed 1.5% of the SIWR.

Due to this, Cape Alumina is seeking to make sure the real science around this location and the potential impacts of bauxite mining in that area are understood. Even if the decision stands, let it at least be clear what has actually been achieved by this, both from an environmental conservation position, and from the position of lost jobs and economic and social development opportunities for the Cape York region, particularly the Traditional Owners of the land.

Cape Alumina respects the memory of Steve Irwin and the purpose of the SIWR to maintain Steve's ideals. We also honestly believe the Pisolite Hills bauxite project could be undertaken to provide a win-win for everybody involved, including the Irwin family and Steve's memory.

With this aim foremost in mind, we provide some clarifying comments on the information given at the Public Hearing on 12<sup>th</sup> February 2014 by Mr Barry Lyon, Senior Conservation Ranger at the SIWR.

## Comment by Mr Lyon on p9

*"The outstanding perennial river along the southern boundary, four clusters of nationally recognised relic rainforest and the Walter savannah woodland and wetland types easily met the first criteria."*

## Clarifying comment

It should be made very clear, that **the Steve Irwin Wildlife Reserve does not include any part of the Wenlock River**. As noted by Mr Lyon above, the Wenlock River lies along a southern portion of the SIWR boundary, and we understand the boundary ends at the banks of the Wenlock River. Any reference to the values of the Wenlock River in relation to the SIWR is incorrect. There is a lot of inference that protecting the SIWR is protecting the Wenlock River – this is false and misleading.

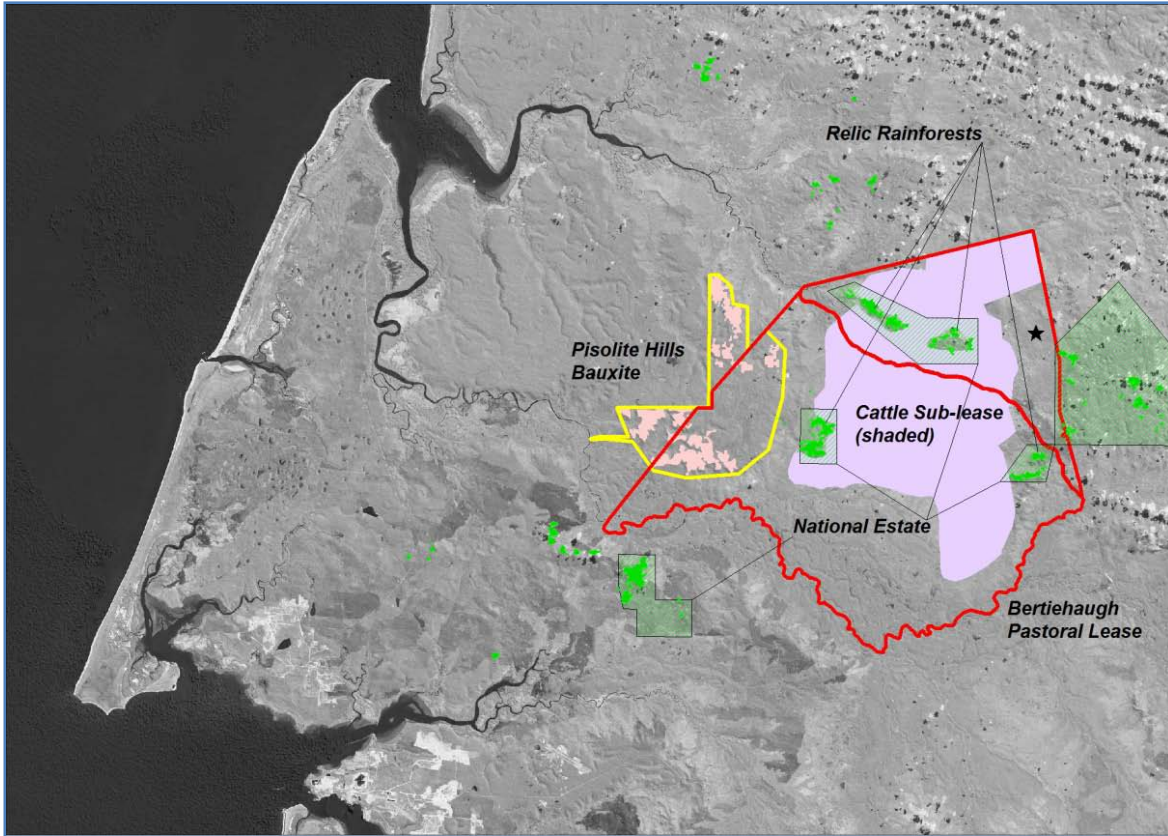
Once that point is clarified, what are the actual environmental values of the SIWR, as referenced above by Mr Lyon? The map overpage shows the four clusters of relic rainforest listed on the National Estate. These make up approximately 10% of the SIWR. They do have environmental value but they are a small portion of the SIWR, and for reference, well outside any identified bauxite resource areas.

In relation to Walter savannah woodland – there is no recognised habitat under Queensland regional ecosystem mapping that matches this description. While Walter (1973) did define savannah's as "homogenous grasslands upon which woody plants are more or less evenly distributed", and did go on to provide a range of classifications for savannahs based on varying factors, simply classifying the majority of the SIWR as an undefined 'Walter savannah woodland' is extremely high level, and does not make clear that the 'Walter savannah woodland' is actually Darwin Stringybark (*Eucalyptus tetradonta*) open forests that covers approximately 70% of the SIWR, covers over 2,000,000 ha of the western Cape York and that are classed "Not of Concern" under State legislation and "Least Concern" under Commonwealth legislation.





The 'wetland types' we can only assume refers to the small perennial springs that occur throughout the region. There are 8 springs that Cape Alumina is aware of on the SIWR. They are small springs with some surrounding vine forests, generally of less than 5ha each in size. This means they make up less than 1% of the SIWR.

Therefore, the SIWR is 135,840 ha, of which approximately 10% is National Estate dry vine forest, <1% is springs and 70% is Darwin Stringybark open forest. The remaining approximate 19% are various other vegetation types that are not listed at State or Commonwealth level.





An aerial photo of Darwin Stringybark open forest on the SIWR, showing the very small fringing riparian vegetation along the Wenlock River, is shown below:

Helicopter  
Photos con't  
Cape Alumina

Left (5874): Close up of a creek that flows through the proposed mining lease and the flank of the creek, which is usually a riparian area where grasses are replaced by waterlogging tolerant herbs and sedges.

Right (5875): View proposed mining lease in areas not proposed for mining.

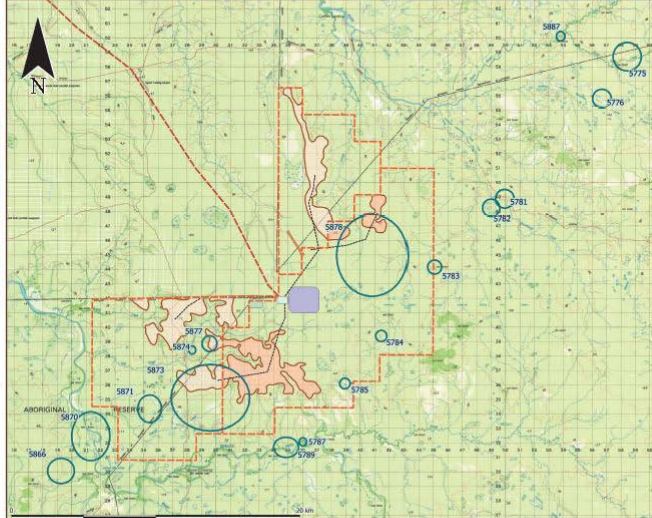
Far Right (5887): One of largest tributaries to the Ducie River. The Ducie forms when few similar tributaries merge a few kilometres downstream from this image.

Above Left (5871): View of topography, with part of area proposed for mining in the foreground.


Left (5874): Located in the centre and top-left of the image are small areas of melaleuca woodland. These communities are not listed as wetlands, however they are likely to have water table at surface level for part of the year. These areas have higher habitat value than the surrounding forests. The depressions are mapped as RE 3.3.50a or Broad Vegetation Group 18.

Left (5873): Lower (tidal freshwater?) reaches of the Wenlock River. This area features a narrow but well developed riparian forest including many species that normally only grow in rainforests of the higher rainfall east coast.

Below (5886): Close-up of typical Darwin Stringybark forest vegetation.



Forest & Sea Consulting  
Plan C158-CP11  
1 May 2007  
Scale 1:200 000 @ A3





## Comment by Mr Lyon on p9

*"...should the property ever be sold in the future, which is extremely unlikely, the funds from the sale return to the Australian government."*

### Clarifying comment

The idea of the Irwin family selling the SIWR has never been raised before, but was specifically raised by Mr Lyon at this public hearing. Cape Alumina cannot provide any clarifying information on this comment and was shocked it was made, but it does highlight the Irwin family have considered the implications of selling the SIWR. This should be taken into account when making any decisions about the SIWR.

## Comment by Mr Lyon on p9

*".... this country survives in healthy pristine condition"*

### Clarifying comment

The SIWR has been (and continues to be) a cattle grazing property for over 100 years. While a portion of the SIWR has been fenced off from cattle in the last few years, wild cattle still occur outside the fenced area, and commercial cattle grazing continues on the rest of the SIWR. To be accurate, it should be called the Steve Irwin Wildlife Reserve and Cattle Station.

In addition to the ongoing cattle grazing, feral animal and weed impacts are well known through the region, including the SIWR.

While impacts are relatively low compared to some areas of Queensland, they are hardly 'pristine'. The photograph below shows one of the springs on the SIWR that has been damaged by feral pigs.



## Comment by Mr Lyon on p10

*"I would just like to point out here that the Weipa bauxite land province—they are the largest bauxite reserves in the world"*

### Clarifying comment

The comment above is incorrect. The largest bauxite reserves in the world are in Guinea, as shown in the Table below.

Source: US Geological Survey	Mine Production		Reserves	Reserve Base
	2006	2007		
Australia	62,300	64,000	5,800,000	7,900,000
Brazil	21,000	24,000	1,900,000	2,500,000
China	21,000	32,000	700,000	2,300,000
Greece	2,450	2,400	600,000	650,000
Guinea	14,500	14,000	7,400,000	8,600,000
Guyana	1,400	2,000	700,000	900,000
India	12,700	13,000	770,000	1,400,000
Jamaica	14,900	14,000	2,000,000	2,500,000
Kazakhstan	4,800	4,900	360,000	450,000
Russia	6,600	6,000	200,000	250,000
Suriname	4,920	5,000	580,000	600,000
Venezuela	5,500	5,500	320,000	350,000
Other Countries	5,460	6,800	3,400,000	4,000,000
<b>World Total (rounded)</b>	<b>178,000</b>	<b>190,000</b>	<b>25,000,000</b>	<b>32,000,000</b>

## Comment by Mr Lyon on p10

*"the bauxite plateau on the reserve that may have been mined represents only 1.6 per cent of that approximately."*

### Clarifying comment

It might only represent a small proportion of the overall bauxite plateau, but it represented over 50% of the Cape Alumina Pisolite Hills project. Cape Alumina is a small ASX listed company with over 2000 shareholders, many of whom are 'mum and dad' investors from the Cape York area. Apart from a smaller project, the Bauxite Hills Project, we do not have any other tenements that are currently economically viable. This means that not being able to mine on the 1.5% of the SIWR has put an Australian company on the edge of closure, with jobs being immediately lost, and all the potential jobs and economic benefit of the Pisolite Hills project also being lost. All for 1.5% of the SIWR that is predominantly Darwin Stringyback open forest and that is kilometres away from the Wenlock River.



## Comment by Mr Lyon on p10

*"It is arguably the case that the entire bauxite plateau around Weipa will eventually be mined. "*

### Clarifying Comment

This comment shows a complete lack of understanding of the bauxite mining process and what it takes to get an economically viable project into production. From Mr Lyon's perspective, we can only assume he sees bauxite plateau on a map and believes it is all the same quality bauxite and can all be mined. In reality, the bauxite quality varies significantly throughout the plateau. Economic viability of the bauxite as a mineable resource can vary depending on quality of the bauxite (% of alumina, % of silica) and the cost to mine which is dictated by the size of the resource, thickness and depth of the bauxite seam, and location to available export markets. Finding an economically viable bauxite resource in the plateau is akin to winning the lottery – numerous factors have to line up. Cape Alumina has a number of tenements, but only a proportion of these may ever be economically viable. As exploration work is done, areas of tenements that are proven to be uneconomical are released. There is no chance the entire bauxite plateau will ever be mined, but it is exactly this type of emotive and misleading comment that has been used to get a decision against mining in one of the few actually viable areas.

## Comment by Mr Lyon on p10

*"We consider that retaining some of this special country from which some perennial springs run and feed the Wenlock—protection of that—is essential."*

### Clarifying comment

This statement implies that mining would not protect the springs. Apart from the numerous studies and reports that Cape Alumina has undertaken that refute Mr Lyon's statement, we will instead reference a completely independent, State Government commissioned report by RPS, *Review of submissions relating to the hydrology and ecosystem functions of 'Bauxite Springs' on and in the vicinity of Bertihough Station, Cape York Peninsula. Final Report. 30 March 2010* that specifically states:

*The springs are supplied from a sandy alluvial aquifer of the Bulimba Formation which underlies the bauxite at depth and receives recharge from both sinkhole areas away from the proposed bauxite mining and via more diffuse surface recharge across the plateau. If bauxite alone is to be mined and there is suitable attention to mining operation, mine water management and mine rehabilitation it appears to be unlikely that there would be a diminution of spring discharge.*

The Government report states this and Australia Zoo has a copy of this report. The fact that they ignore the Government report possibly relates to the fact the same State Government commissioned report highlighted that the boreholes the SIWR had installed for assessing the hydrogeology of the area were not installed to appropriate standards and their accuracy could not be confirmed:

*In the meeting held on 5 February 2010 the following was ascertained from the Australia Zoo / MWA representatives:*

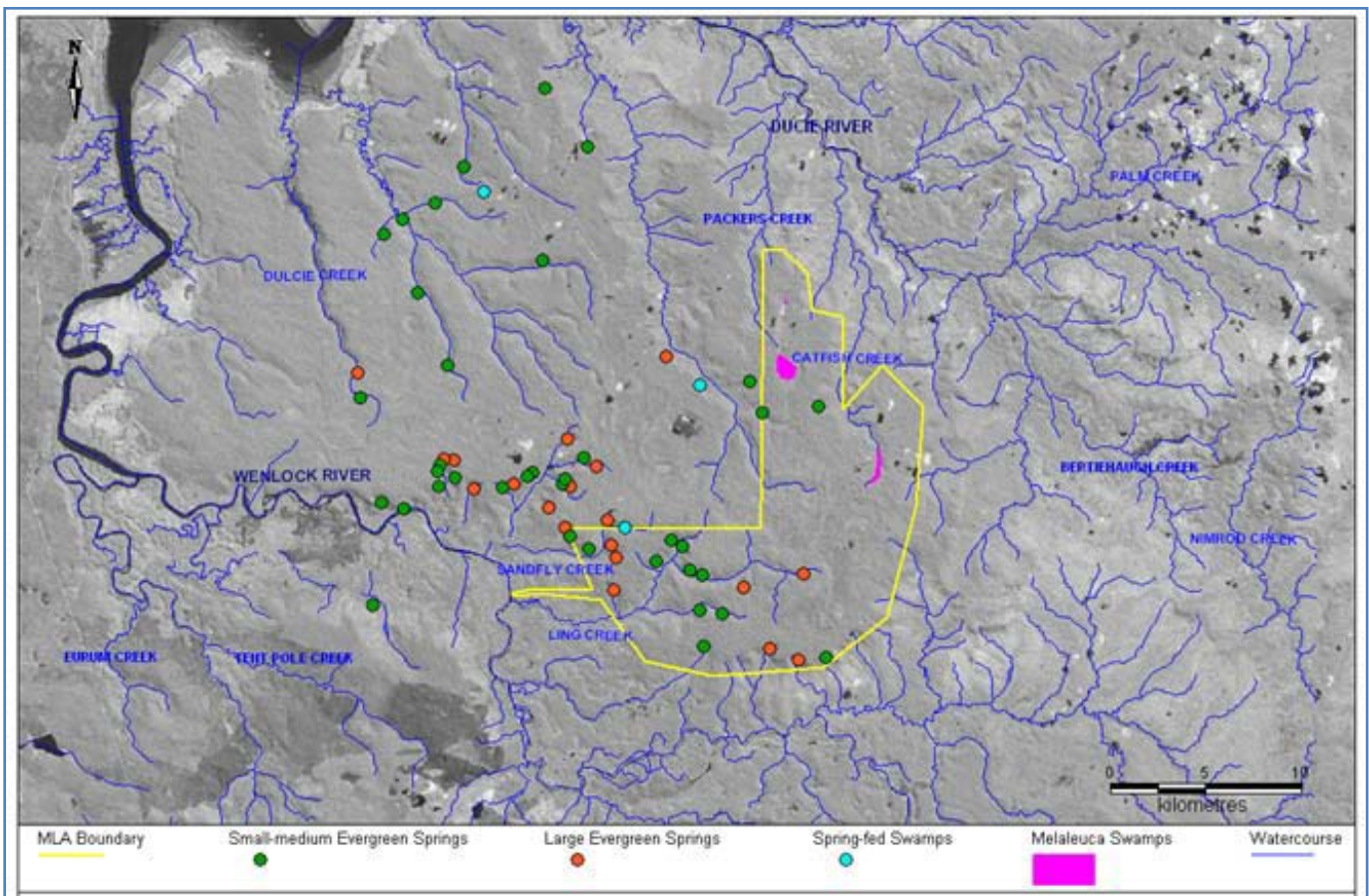
- There was no on-site geological supervision, rather Barry Lyon collected 1 m strata samples which were then freighted off sight for subsequent examination;*
- All of the bores were constructed using similar bore construction methods;*
- All of the bores had fully slotted final casing; and*
- All of the bores had the annulus between the borehole wall and the casing filled with porous materials back to within 0.5 m of the ground surface.*



The bore construction as described by the Australia Zoo representatives at the meeting of 5 February 2010 would not be in accordance with the document: Land and Water Biodiversity Committee, 2003 Minimum Construction Requirements for Water Bores in Australia Edition 2, Revised September, 2003.

Specifically, the guidance contained in the aforementioned document requires a minimum depth of annular seal of 5 m from the surface. This has not apparently been provided and could potentially impact on the reliability of groundwater level observations, particularly for the wet season.

In addition, the statement seems to imply that the springs are somehow special or unique to this particular area and therefore this area needs to be protected. In reality, there are well over 100 of these small perennial springs in the region. The map below shows the springs in the immediate vicinity of the Pisolite Hills project, highlighting that only 13 springs actually occurred within the proposed Mining Lease area. Of these springs, Cape Alumina had committed to maintaining at least a 200m buffer from the outer extent of the springs – based on their wet season extents, so that was 200m from the widest known area of the springs and their associated vegetation. As noted in the quotes taken from the Queensland Government report (RPS, 2010), **“If bauxite alone is to be mined and there is suitable attention to mining operation, mine water management and mine rehabilitation it appears to be unlikely that there would be a diminution of spring discharge.”**



AARC 2010. Aquatics flora and fauna – springs in immediate vicinity of Pisolite Hills.

## Comment by Mr Lyon on p10

"If the bauxite, which is the supporting substrate for the ecosystem, is taken out and the landscape is lowered, you cannot rehabilitate that, because that substrate that supported the original ecosystem is gone."

### Clarifying comment

While we concede that Mr Lyons, Australia Zoo and the SIWR are not mining experts and should not be expected to know full details of the mining rehabilitation process, we would expect as one of the leading research facilities in the world, that if they do not know something then they would not try to imply otherwise.

The statement Mr Lyons makes above is demonstrably incorrect. There is a significant body of research and scientific study that clearly disproves Mr Lyon's claims regarding rehabilitation of bauxite mines, a very small selection of which is presented below:

#### Reference 1

Nichols, O.G. and Watkins, D. 1984. *Bird utilisation of rehabilitated bauxite minesites in Western Australia*. *Biological Conservation* **30**, 109-131.

#### Quote 1-0

*Abstract*

*Alcoa of Australia Limited rehabilitate bauxite mined areas in the southwest of Western Australia. One of the aims of the revegetation programme is to promote the return of fauna species which inhabited areas prior to mining. This paper discusses the extent to which bird species utilise revegetated bauxite minesites. **It was shown that revegetated areas as young as 4–5 years can support similar bird species numbers, densities and diversities as unmined forest.***

*(emphasis added)*

#### Reference 2

Schwenke, G.D, Mulligan, D.R. and Bell, L.C. 2000. *Soil stripping and replacement for the rehabilitation of bauxite-mined land at Weipa. III. Simulated long-term soil organic matter development*. *Australian Journal of Soil Research*.

#### Quote 2-0

For rehabilitated areas at Weipa, the CENTURY model produced an encouraging set of long-term soil organic matter outcomes using simulated 'average', 'worst-case', and 'best-case' results of soil stripping and replacement operations, based on the 4 stripping-method treatments of the soil replacement trial (Schwenke et al. 2000a). **Regardless of soil stripping-method, all soils showed a tendency for soil organic matter storage to increase to a new equilibrium which, in terms of the non-recalcitrant fractions, was essentially the same as that of the undisturbed forest.**

*(emphasis added)*

#### Reference 3

Ward, S.C. 2000. *Soil development on rehabilitated bauxite mines in south-west Australia*. *Australian Journal of Soil Research*.

#### Quote 3-0

**The results from rehabilitated areas and the unmined forest presented here indicate that there is no obvious soil chemical impediment to the establishment of a self-sustaining forest ecosystem on rehabilitated bauxite mines.** The restoration of the vertical gradients in soil properties indicates that some of the ecosystem processes have been re-established. Current soil research on rehabilitated bauxite mines is concentrating on the physical properties of the soil profile in relation to the development of plant roots.

*(emphasis added)*



**Reference 4**

Corbett, M.H. 1999. *Revegetation of mined land in the wet-dry tropics of Northern Australia: A Review*. Supervising Scientist Report 150, Supervising Scientist, Canberra.

**Quote 4-0**

**5.5 Other indicators of ecosystem recovery**

In an attempt to define indicators of ecosystem recovery at Gove mine, Reddell et al (1993) examined a wide range of ecosystem attributes encompassing: floristic and vegetation attributes, and soil biological, chemical, physical, hydrological and structural characteristics.

They examined a wide range of rehabilitation age classes (1 to 16 years since rehabilitation), as well as native undisturbed areas, and drew the following conclusions with respect to useful indicators of ecosystem recovery:

- **Soil microbial activity increased with age of rehabilitation. Older (>10 years) rehabilitated sites displayed similar rates to those that occur in native sites.**
- Fruiting bodies of macrofungi reflect changes in substrate and development of nutrient cycling processes and was strongly indicative of the stage of development of the plant communities and their disturbance history.
- **Colonisation of roots by mycorrhizal fungi increased with age of rehabilitation and progressed toward the patterns found in native sites.** This trend was most apparent with ectomycorrhizae which reflect the increasing dominance of woody species.
- **Concentration of total carbon (representing organic matter) increased systematically with age and approached values reflecting those of native forest soil.**
- The production of seed by species in rehabilitated areas, 10 years and older, **is an important indicator that these communities can be self-sustaining.**
- Substantial litter accumulation occurred between 5 and 10 years after rehabilitation.

These conclusions indicate that nutrient cycling processes may provide a useful indication of ecosystem recovery. **This is supported by studies of post mining organic matter dynamics such as those at Weipa by Schwenke (1999) and Grigg et al (1999).**

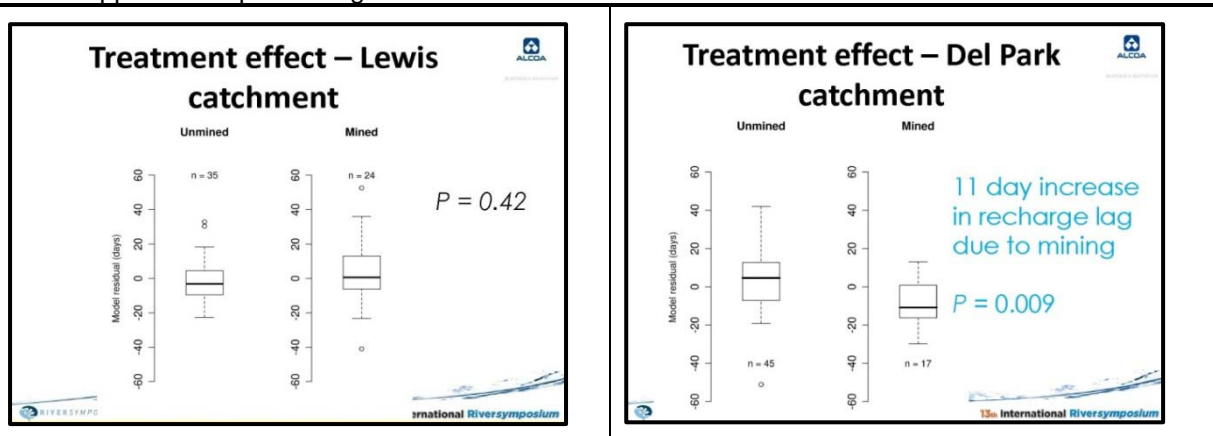
*(emphasis added)*

**Reference 5**

Hughes, J. 2010. *Effects of bauxite mining on groundwater recharge lag*. Presentation at 13th International RiverSymposium, Perth.

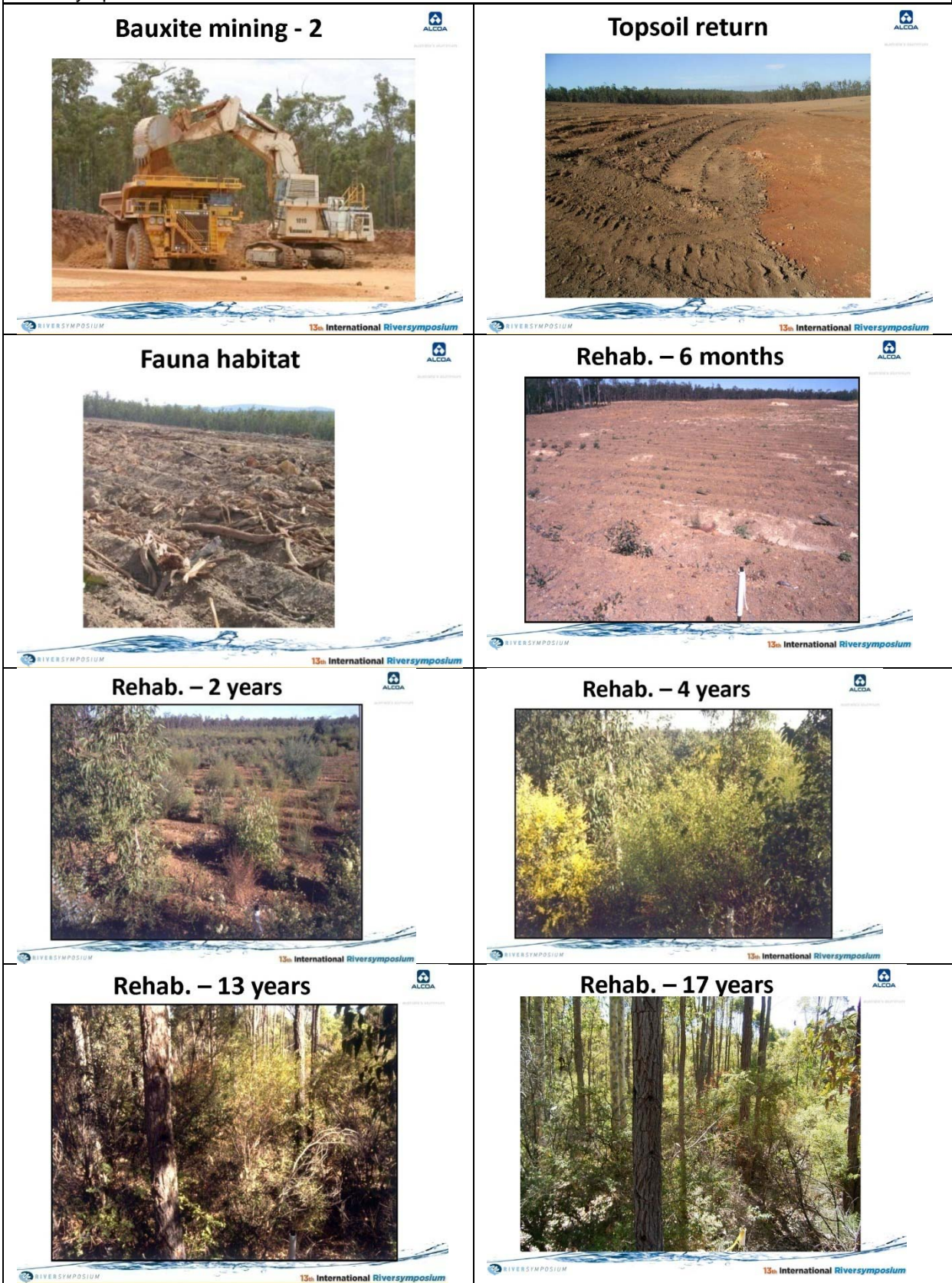
**Quote 5-0**

Field results taken on two catchments – Lewis and Del Park, as shown in Table 1 below. Lewis catchment showed almost no discernible difference in lag times of rainfall to groundwater, Del Park showed an approximate 11 day delay in rainfall infiltration to groundwater. Modelling from field data indicated that, in the longer term, once rehabilitation had stabilised, rainfall infiltration to groundwater would approximate pre-mining levels.



**Quote 5-1**

Photos of mining process and rehabilitation success over time from presentation by Alcoa at RiverSymposium in Perth in 2010.



## Comment by Mr Lyon on p11

"We have been working with hydrologists. So to take that bauxite away you are losing that big geological sponge that initially absorbs all of that water and then feeds the springs, which then feed the river."

## Clarifying comments

The Queensland State Government report previously referenced (RPS, 2010) clearly identifies two major concerns with information provided by Australia Zoo, these being:

- the Australia Zoo bores were not installed correctly and cannot be considered accurate
- And, as a direct quote from the report:

*During the meeting held on 5 February 2010, when queried regarding access to this reference the Australia Zoo representatives declined to provide access to this report. Although it must be conceded that both Cape Alumina and Australia Zoo have managed the release of information relative to both of their effective cases in this matter, **the refusal to make available a full copy of this report despite selectively quoting from it raises questions regarding what overall conclusions Peter Jolly may have drawn regarding the site.***

(emphasis added)

Given these findings from the Government itself, any comments that Australia Zoo makes in relation to the groundwater in that region cannot be considered correct.

Add to this the detailed reports, ongoing monitoring of properly install monitoring bores and water flumes from the springs, and the findings of independent third parties that all confirm mining of the bauxite would have little or no impact on the springs, the comments made by Mr Lyon on behalf of the SIWR must be taken to be incorrect.

## Conclusion

As initially stated, Cape Alumina is not seeking to discredit Australia Zoo or the valuable research works that are undertaken on the SIWR. We respect the memory of Steve Irwin and his conservation ideals. We simply want to make sure that statements made about the Cape Alumina Pisolite Hills project and the potential impacts on the SIWR are corrected on the public record. Mining companies are held to an extremely high standard of scientific accuracy when providing information for the Government to assess potential environmental impacts from a project. We believe opponents to the project should be held to a similar standard.

From the information presented above, which is only a small sub-set of the scientific studies that have been undertaken for the Pisolite Hills project that would have been presented in the EIS that was over 80% completed, we believe that mining on 1.5% of the SIWR could be undertaken in a manner to maintain all of the identified regional values and provide win win outcomes for all relevant stakeholders, including the Traditional Owners, the Cape York region, the State Government, Cape Alumina shareholders and the SIWR.