BMCS-LEG Comments on
Coalpac's Response to PAC Review Submissions [CRPRS]

PART 3

10. Introduction

PART 1 comprised Sections 1 to 6 and mainly responded to Sections 1 to 3 and principally 3.1.1 to 3.1.5 within the 'Coalpac Response to Further Submissions'. The latter is available on the DP&I website [http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4332].

PART 2 preserves continuity of section numbering and footnotes commencing with Section 7. Much of the content of Sections 8 and 9 was provided by and modified by BMCS. It principally deals with Sections 3.1.7 to 3.1.10 within the 'Coalpac Response to Further Submissions'.

PART 3 again preserves continuity of section nomenclature, plate numbers and foot notes. Much of the content of Sections 11.1, 11.2.1, 11.3 and 11.4 was provided by Mr Chris Jonkers of LEG and Mr Yuri Bolotin, and modified by BMCS. It principally deals with CRPRS Section 3.1.11 pp32and briefly examines Sections 3.1.12-3.1.14.

The Joint Groups regret the size of PART 3, but when the matter of the long-recognised Baal Bone damage was taken as 'accepted' in the previous JS (Joint Submission), the CRPRS elected to criticise the lack of evidence (see below).

11. Impacts to threatened flora species

CRPRS Section 3.1.1 p32 notes that*: "Limited evidence is provided to support the claims made by the Joint Submission that substantial or extensive cliff falls have incurred significant ecological impacts or resulted in the desiccation of vegetation."* And on p33: *"…contrary to the discussion in the Joint Submission, relatively little of this area is showing evidence of cracking related to underground longwall mining with no apparent evidence of desiccation."* And on p34: *"There is no evidence that longwall mining has had any detrimental ecological impact in the Baal Bone Colliery site."*

The Joint Groups find these statements totally astounding[7], particularly as such 'independent authorities' as Coalpac's CEO and the Director of Cumberland Ecology (CE) examined representative parts of the Ball Bone Colliery area.

The Joint Groups reject the CRPRS's assessment and make the following comments:

- The joint Groups were given approximately one week to prepare the Joint Submission and Annexure A; it would be interesting to know the time Coalpac and its highly paid consultants spent preparing the response.
- The document was specifically targeted at showing why the landscape and vegetation in the Coalpac-Pine Dale region were worthy of protection – in fact, to provide additional substantiation of statements made about the environmental merits of the region and of conclusions reached in the PAC1 review.
- The comments made about Baal Bone were in the context of damage inflicted on the landscape and vegetation by the previous mining; little support was provided because of prior discussion with DP&I and the focussed nature of the JS's objective.
- The Baal Bone damage is well-documented by Baal Bone Colliery, pertinent government departments responsible for inspecting damage, and by LEG. Additional information will be provided below, but an

[7] It is perhaps less astounding when one realises that CRPRS Plates 8, 11 and 14 seem to be wrongly located on Fig. 6.

excellent source of pertinent information is provided in Sections 2.2-2.4 pp13-21 of a report by Keith Muir[8], as launched on 27/04/2010 by the Hon. Bob Carr.

- The actual reference to Baal Bone was in the context of the BBPLS; the Baal Bone portion of the BBPLS is compromised by mining. The Coalpac-Pine Dale region merits protection and reservation within the parks system as an SCA. It is disappointing that the CRPRS chose to quibble about the lack of information about subsidence damage at Baal Bone when there is an overwhelming body of evidence to the contrary.

The Joint Groups now provide such additional information in the next subsections.

11.1 MAJOR PROJECT ASSESSMENT: Baal Bone Coal Project MP 09_0178

From the Director-General's Environmental Assessment Report, January 2011 page 11:
"…predicted tensile strains are expected to cause 50 - 100 mm wide cracks in rock surfaces at the start of the longwall panels and along permanent goaf edges. Significant subsurface fracturing of the overburden strata above the coal measures would also be expected, with the potential for increased levels of hydraulic connectivity, particularly in strata closer to the seam."

This clearly demonstrates that a level of fracturing and some disturbance to the hydrologic regime was anticipated.

11.2 BAAL BONE COLLIERY LW29-31 SMP Area – official reports

11.2.1 From the End of Panel Report – LONGWALL 30, March 2011

The information is provided as quotations without commentary. Only where the quotation has a contained quotation will inverted commas and italics be used.

In accordance with Condition 18, Incident and Ongoing Management Reporting, of the Baal Bone Colliery Longwalls 29-31 Approval Conditions, notification was provided for the following impacts.
Condition 18(a) requires notification of *"…any significant unpredicted and/or higher-than-predicted subsidence and/or abnormalities in the development of subsidence."*

The first exceedance reported related to the width of a tension crack around the start of Longwall 30 at Baal Bone Colliery. The Trigger Action Response Plan (TARP), contained within Baal Bone's LW29-31 SMP Land Management Plan (Revision 2, June 2009), states that *"…surface cracking > 200mm in width constitutes a major impact and initially requires notification to the Interagency Committee, the PSE and other appropriate parties under SMP Approval Condition 18."*

Condition 18(b) requires notification of *"…any exceedance of predicted impacts on surface and groundwater resources and/or natural environment that may have been caused (whether partly or wholly) by subsidence."*

The second exceedance reported concerned a minor impact on surface watercourses as defined by the TARP contained with Baal Bone's LW29-31 SMP Environmental Monitoring Program (Revision 1, May 2009). This impact relates to potential bed damage in a watercourse where water is seen to disappear and initially requires notification to the appropriate parties under SMP Approval Condition 18.

It should be noted that both of the subsidence impacts as notified above are related to the same set of circumstances at the start of Longwall 30 (LW30).

Routine inspections of the surface above LW30 first identified initial cracking around the start area on the 9 July 2010. At that time the width of the crack was within the predicted range.

Weekly visual monitoring was continued and during the inspection of 23 July 2010 it was confirmed that the width of the crack had developed to a point where it was more than likely going to trigger the TARP. A verbal notification of the situation was subsequently made to the Acting Subsidence Executive Officer (I&I NSW) and a commitment given to lodge a formal written notification in the event that the situation developed further.

[8] 2010 Keith Muir, Colong Foundation for Wilderness – http://www.colongwilderness.org.au/files/pages/impact-of-coal-mining-on-gardens-of-stone.pdf

Concurrent with an inspection on 30 July 2010, Baal Bone erected additional warning signs in the vicinity and barrier tape was placed along several sections of the crack.

Pre-emptive discussions and a site inspection were conducted with the Soil Conservation Service (Lithgow) to evaluate the most suitable remediation procedure and initial contact was made with Forests NSW (Macquarie Region) to confirm specific approval and/or other requirements they may have in regards to the undertaking of site works.

11.2.2 From the Subsidence Management Status Report No.15 – 8th August 2012 to 7th December 2012.

All are direct quotations and are presented without commentary.

The only visible impacts associated with LW 31 observed was some tension cracking, as predicted, parallel to the gate roads and across the centre of the panel. Notification was provided, as required. An Inspection Plan was developed, approved and implemented to identify, confirm and classify all cracking over the LW 29-31 area. Inspections were conducted and all cracking identified. A Risk Assessment was then conducted, including all relevant parties.

Following this, a Review of Environmental Factors (REF) has been prepared, including flora and fauna studies and remediation program. The REF was accepted by DTIRE and Forests NSW on 8 November 2012. Baal Bone Colliery is currently organising the repair of the subsidence cracks.

To date there has been one unpredicted subsidence impact observed **on surface drainage depressions** within the SMP area, in LW 30…

All groundwater levels appear to be approximately at (or above) pre-mining levels, with the only exception being at piezometer BbPB1, where groundwater has re-stabilised at RL956 (**approximately 5 m below pre-mining level**). [BMCS emphasis]

Monitoring of groundwater bores for both levels and quality has continued. During the reporting period zinc and copper levels were elevated above TARP triggers levels.

The zinc exceedance at BBPB3 is classified as a major impact (i.e. Zn > 0.175 mg/L for > 2 consecutive months). BBPB4 has seen an exceedance in copper levels, classified as a major impact (i.e. Cu > 0.043 mg/L for > 2 consecutive months).

Baal Bone Colliery is conducting further studies in the Cox's River swamp area and will follow up with additional information if a definitive source for the elevated levels of zinc and copper is determined.

Gross species diversity records do not necessarily provide a clear indication of an effect of mining...[extremely equivocal - BMCS comment]

11.3 PUBLISHED evidence of the degradation of the Baal Bone region

As well as the Report by Keith Muir referred to in footnote 8, the following references and notations are pertinent to Baal Bone and testify to the degradation of the region by longwall mining – the references are presented as a time sequence:

- **1991** Kay, D., *Effects of Subsidence on Steep Topography and Cliff Lines*, Report No.1446, National Energy Research Development and Demonstration Program, Sydney.
  This report by Mr D Kay, Subsidence Engineer for NSW Department of Mineral Resources, recorded **58 cliff collapses** above Baal Bone Colliery up to 1991. The collapses comprised approximately **16% of the total length of cliff faces** undermined. The average size of cliff falls was 9 m long by 6 m high and 1.4 m deep, and the **average volume of rock was 170 m^3.**
- **2001**, Radloff B.J. and Mills, K.W., Management of Mine Subsidence Impacts on Cliffs at Baal Bone Colliery (Western Coalfields NSW), in *Proceedings of the Coal Mine Subsidence Conference*, Mine Subsidence Technical Society.
  Cliff collapses at Baal Bone clearly recognised as subsidence induced.

- **2004**, Department of Mineral Resources, *New Approval Process for Management of Coal Mining Subsidence*, Department of Mineral Resources, Maitland.
  The Subsidence Management Plan (SMP) process came into effect from 18 March 2004. The then Minister for Mineral Resources, the Hon Kerry Hickey, said:
  "Coal mining…still bears a significant legacy of past mining practices and policies. The community no longer accepts that its environment and amenity will diminish significantly as a result of mining – and nor should it. We must balance present-day needs without compromising the future of our children."
- **2005**, NSW Scientific Committee, Final Determination to list *Alteration of Habitat following Subsidence due to Longwall Mining* as a KEY THREATENING PROCESS in Schedule 3 of the TSC Act. 15 July[9].
  "9. Subsidence due to longwall mining can destabilise cliff-lines and increase the probability of localised rockfalls and cliff collapse (Holla and Barclay 2000, ACARP 2001, 2002). This has occurred in the Western Coalfield…(ACARP 2001)."
- **2007** Mills, K., Baal Bone Colliery Longwalls 29-31 Subsidence Management Plan Application, Appendix 1, Part 2, Review of Subsidence Monitoring and Impacts of Mining on Sandstone Cliff Formations Assessment BBO 3250 – SCT Operations Pty Ltd
  Sixteen years after Mr D. Kay's 1991 report, Mr Ken Mills found that **10–20% of the total length of sandstone cliff formations experienced rock falls when undermined**. Longwall panel 21 caused **25% of the length of the cliff line to fall, with local high fall densities up to 50%.**
- **2010**, Cubby, B, *Cliffs crumbled due to coal mining, says new report*, SMH April 27[10]
  "The report looks at…Baal Bone and Clarence collieries operated by Coalex, and Invincible mine, operated by Coalpac."

11.4 PHOTOGRAPHIC evidence of the degradation of the Baal Bone region

Plate 5 (Appendix A) is a copy of CRPRS Figure 6 p35. It shows the locations of a set of Plates which Coalpac uses to support its claim that the ecological damage is negligible. It is disappointing that CRPRS Plate 14 shows surface water where the main track goes through Long Swamp, seemingly with the implication that there has been no desiccation (otherwise why show it?). It is a track-formed depression which retains water after rain. The desiccation is further along the swamp.

Plate 6 (Appendix A) is of the same region at approximately the same scale. It shows the substantially greater amount of damage identified by Mr Jonkers of the LEG. The numbers on the Plate correspond with those in the Table of GPS coordinates (see next paragraph and footnote 13).

The photographs presented in Plates 7-11 in Appendix A[11] show that substantial amounts of damage exist as a result of the longwall mining at Baal Bone. It could be argued that in precisely the same way the CRPRS Plates 4-18 have been used to substantiate the case for minimal damage, Plates 7-11 are here presented to illustrate maximal damage. Photographs do not directly lie, but neither need they be representative, no matter how many are shown! In consequence, only a few of the many photographs held by the Joint Groups are included[12]. The Joint Groups prefer to emphasise the Table of the GPS coordinates and descriptive details of about 300 cracks and 50 cliff collapses associated with LWs 1-30[13].

11.5 CONCLUSION regarding degradation of the Baal Bone region

The combination of the Director-General's expectations, Baal Bone's own reports, independently published documents, and detailed documentation (including photographs) of cracking and cliff collapses should be sufficient to overcome any doubts introduced by CRPRS Section 3.1.1 pp32-34. Extensive cracks exceeding 200 mm in width and cliff collapses amounting to 10-25%+ of the length of the cliff line is excessively destructive in anyone's language. The question must surely be how two experts (Coalpac's CEO and the Director of Cumberland Ecology) could fail to see this damage?

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[9] http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/threat_profile.aspx?id=20001
[10] http://www.smh.com.au/environment/cliffs-crumbled-due-to-coalmining-says-new-report-20100426-tnbk.html
[11] Full details of the localities are available on request.
[12] There are also practical limitations to using a vast array of photographs in a submission of this type.
[13] This Table is too big to include in the present document but is available on request should it be needed to substantiate the intensity of subsidence-induced damage above the LWs at Baal Bone.

The collapse of hundreds of m^3 of sandstone creating subsidence-induced scree and talus aprons masking the Permian substrate, in turn accompanied by physical destruction of cliff-related habitat and vegetation types developed on the richer Permian-derived soils, is most certainly detrimental to preserving the natural land system which the Joint Groups have called the BBPLS (Ben Bullen Pagoda Land System). In addition, the effects of cracking in the Permian and Triassic 'overburden' on surface drainage, hydraulic connectivity, groundwater levels and water quality (excessive Zn and Cu) must inevitably distort the natural vegetation and reduce the worth of this region as an example of the BBPLS.

The Joint Groups again contend (as also stated in the Joint Submission) that the Baal Bone region is a poorly preserved portion of the BBPLS, and protection of the BBPLS in the Coalpac-Pine Dale region is essential.

Should DP&I and the PAC2 Commissioners have any remaining doubts about the damage inflicted by longwall mining on this region and its implications for this portion of the BBPLS, the Joint Groups would be pleased to take them on a site inspection.

Dr Brian Marshall, ***16 June 2013***

For the Management Committee of BMCS
And on behalf of the Joint Groups

Appendix A pp13-20 is attached below.

APPENDIX 'A'

Plates 5-11 to accompany the submission entitled

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Figure 6. Baal Bone Colliery Photograph Locations

Plate 5: Reproduced from CRPRS p35 – it shows the location of Plates used in the CRPRS to deny the amount of subsidence-induced damage in the Baal Bone area

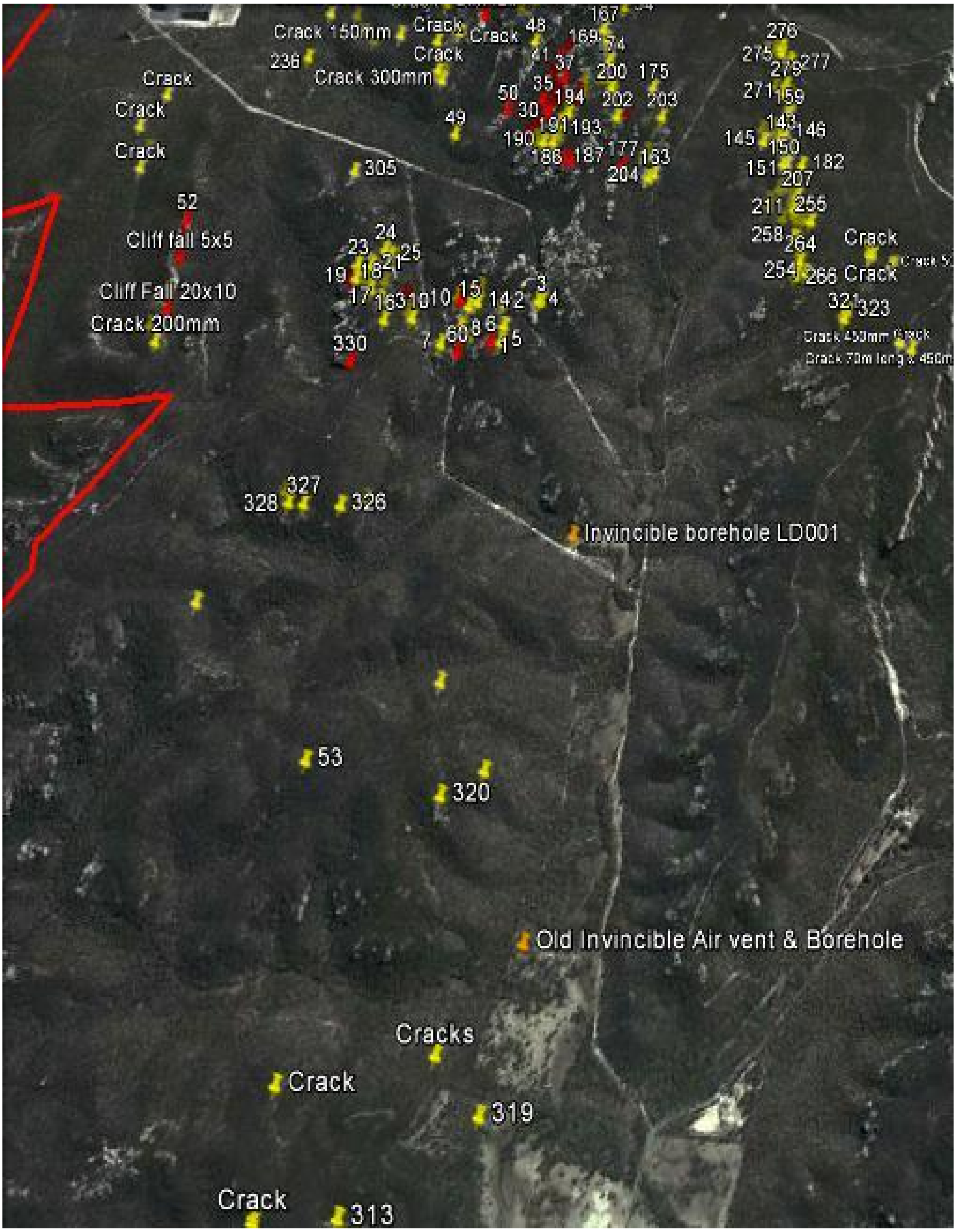

Plate 6: This is approximately the same area as in Plate 5 – it shows a far higher incidence of significant cracks (yellow) and cliff collapses (red) than that observed by Coalpac and its consultant.

Plate 7: ***Two examples of desiccation in Long Swamp – somewhat different from CRPRS Plate 14 (located at point 11 on Plate 5 above) where the swamp is crossed by the track.***

Plate 8: This is a typical example of subsidence-induced cracking – one of many examples which could have been chosen.

Plate 9: ***In this example of subsidence-induced cracking the degree of separation is substantial, but dilations exceeding 200 mm are known.***

Plate 10: ***This cliff collapse is a typical result of cracking and ground movement leading to a rock slide. The slide material 'drowns' and destroys vegetation and habitat in its path, and covers the underlying strata.***

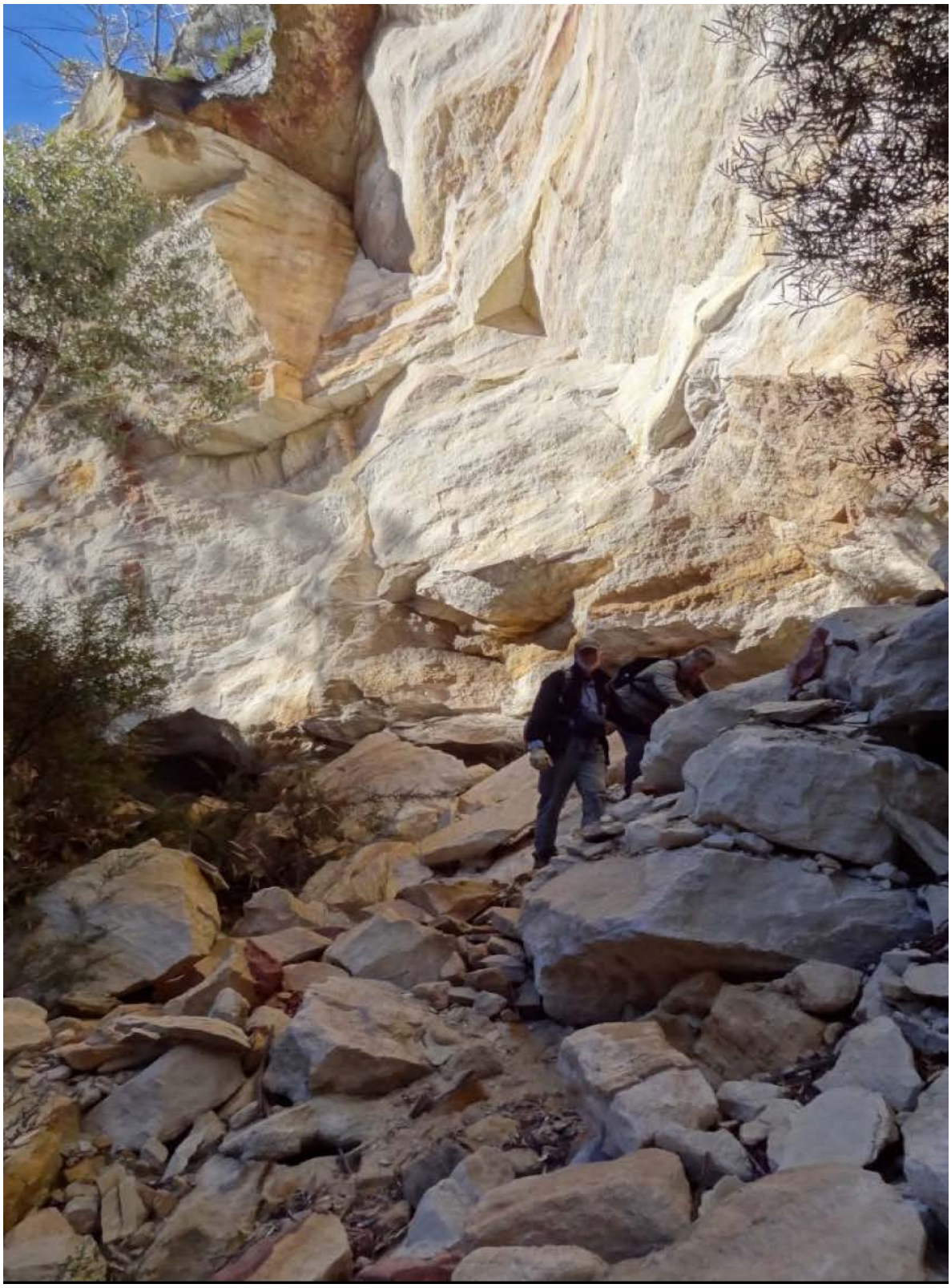

Plate 11: Another small cliff collapse showing the impact (literally) on vegetation and pre-existing habitat.