21 February 2014 Tony Ferrazza

Hazelwood Mine Fire February 2014
21 February 2014 Site Visit
VWA Review of Site Geotechnical Hazard Management

Purpose:

To gather information from the site on how the fires have impacted the geotechnical mining hazard of slope stability and how this was being managed by GD Suez with the focus on the safety of personnel working in this area.

Tony Ferrazza (Worksafe) and Nikos Likouresis met with Luke Middleton (OH&S Co-ordinator) of Hazelwood Mine (HM) at the site Emergency Response Control Room (ERCR) which was now located near the power station and met with two representatives from the geotechnical consultants GeoHart (Tony Da Silva and Wouter Hartman). Tony D is contracted to GD Suez as the site geotechnical engineer and represents the operator. Tony Da Silva lead the visit and provided the requested information.

Initial observations:

- We (Tony Ferrazza, Nikos Likouresis, Luke Middleton and Tony Da Silva) drove to the south-east crest area and observed across to the northern batters from grass level. We were not allowed to enter the mine. Heavy smoke was evident within the void with limited visibility across the mine to the northern batters;
- We then drove to the mine offices and met with members of the technical services team.

Enquiries Made:

Tony F made the following enquiries of Tony D. Where copies of the provided Information were requested to be sent to Tony F, this is indicated under the term "I _." A list of all the requested information is shown at the end of this report.

Q1: Have you a mine plan which shows the extent of the fire affected areas?

A1; Yes.

I1: Viewed two plans showing the extent of the fire early in the operations (about 12th Feb) and a more recent one. Copy is to be provided.

Q2: How is the stability of the affected area being monitored and assessed?

A2: A checklist has been developed for use by the operations personnel which identifies the hazards. This has been customised to include the fire hazard

and its affects as well as geotechnical, access and other relevant issues. The completed checklist is handed to the geotechnical engineer who enters the information into a customised spreadsheet which risk weighs the findings and calculates a risk value. Where required (eg opening of tension cracks) the geotechnical engineer inspects the area. This information is transposed onto a plan of the mine as red (high risk), orange (medium risk) and green (low risk).

As of this morning, the red areas have been deemed exclusion zones.

I2: Viewed a plan of the mine showing the risk areas. A copy is to be provided.

Q3: Has a Trigger Action Response Plan (TARP) been developed?

A3: We discussed that as the incident was still dynamic the risk assessment process being used was appropriate at this time.

Q4: What precautions does the geotech engineer take when entering these areas?

A4: As with other personnel, he has a CO reading taken before and after entering the area as well as carrying a personal CO monitor.

I4: I observed the CO monitor being carried by Tony D.

Q5: Have the operations personnel been trained in identifying these hazards?

A5: Yes, as part of their normal duties. (Note: Tony D has been on site for only three weeks. James Faithfull is the Technical Services Manager who initially planned to meet with us but was required elsewhere).

Q6: How is this information communicated to the command control?

A6: There is a geotechnical engineer (today it was Wouter Hartman) from Geohart embedded within the command centre and the information is conveyed on a daily basis at the morning briefing meeting. As of today four areas have been identified as no go zones based on geotechnical concerns and have been bunded off with no entry permitted, apart from authorised entry for monitoring purposes.

Q7: How are progressive geotechnical events recorded?

A7: They are recorded on the site geotechnical register as per the site Ground Control Management Plan (GCMP).

I7: I was shown the current register which had entries related to the current incident. A copy is to be provided.

Q8: Has the main drain above the northern batters been damaged?

A8: No. Even though some parts of the drain have fire damage on either side, the fire appears to have jumped the drain.

Q9: What about the horizontal drains?

A9: Most have been unaffected, but some have melted plastic casing; these should be easy to repair as they should be easily removed and replaced. In the main, they are still making water and appear working.

Other instrumentation that has been checked is the piezometers (to measure groundwater pressure). These are of the automatic type and the manual dip type. As far as they know, these instruments are still operating, similarly with the extensometers on the northern batters. Some of the prisms, however, have been damaged. The limited damage is fortunate as the site can still monitor batter movement.

Q10: What about coal cracking?

A10: Cracking has appeared along the western end of the northern batters where the Princes freeway bypass sweeps away from the Hazelwood Mine.

I10: Site to provide a plan mapping the cracks.

Q11: What safety precautions are taken by the surveyors when they are out in the field?

A11: They notify the geotechnical engineer, do a JSA, carry a two way radio and take the same precautions as any other personnel entering these areas.

Q12: How has the additional water load affected the ground water levels?

A12: The groundwater level is still below the critical level.

I12: Site to provide a plan showing sections through the affected batters showing the monitored water level and the critical water level profiles.

Q13: Have the groundwater pumps been affected?

A13: These are still operational.

I13: Site to provide a plan showing the locations of the M1 and M2 pumping bores.

Q14: How is the mine dewatering infrastructure coping with the additional water?

A14: There has been a failure of the groyne (groyne 5) between Nos 5 and 6 dirty water ponds on the floor of the mine. Cracks have appeared along the embankment.

Q15: What action has been taken to make this area safe?

A15: Both ends of the groyne have had earth mounds (bunds) placed to prevent entry and this area has been deemed as one of the four exclusion zones. These cracks are being monitored by the surveyors. Discussions ensued regarding the possible failure cause and the different water levels in the adjoining ponds was thought a possible cause. This was not considered a major safety issue.

Other Issues:

- We discussed the methodology used to determine the batter stability status; Hazelwood are using the Factor of Safety force balance method.
- Discussion ensued regarding the fire service system, dirty water pumping system (this water was used to supply the fire service system) and the clean water (artesian water) pumping systems. Plans of the Hazelwood Mine showing the fire service pipe system layout was provided.
- HM are open to provide any information to VWA as requested.

Summary:

Based on the observations and enquiries made on site, my opinion is that GD Suez at the time of the site visit, is providing an adequate level of safety in relation to the possible adverse effects of the coal fires on the geotechnical hazard of batter slope stability on the personnel working in this area.

This is based on GD Suez providing a safe system of work as demonstrated by the following evidence:

- A system of ongoing monitoring of the geotechnical hazards in the area;
- A system of assessing the risks associated with these by geotechnical experts (Geohart);
- A system of ranking the risk levels;

- A system of communicating the findings to the Incident Controller (evidenced by the geotechnical risk mine plan, the embedding of a geotechnical engineer in the control centre and the inclusion of the geotechnical engineer in the daily briefings);
- A system of implementing controls as required (eg exclusion zones);

Appendix

List of information Requested

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I2: Viewed a plan of the mine showing the risk areas. A copy is to be provided.

I7: I was shown the current geotechnical register which had entries related to the current incident. A copy is to be provided.

I10: Site to provide a plan mapping the cracks.

I12: Site to provide a plan showing sections through the affected batters showing the monitored water level and the critical water level profiles.

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