Storm season 2017

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Outlook

The Bureau of Meteorology has forecast 4 tropical cyclones for Queensland this storm season, with a 54% chance of more cyclones occurring.

Recent severe weather events worldwide e.g. hurricane Harvey, Irma and Maria, have again highlighted the destructive potential and call for a high level of preparedness.

How can you prepare?

Emergency management plan

The SSE must ensure adequate resources, facilities and procedures are available before, during and after a storm.

- The site's emergency management plan covering these arrangements must be included in the Safety Health Management System (SHMS).
- The emergency management plan must be based on a risk assessment.
- The checklists at the end of this bulletin includes some items that could be considered in relation to preparation and recovery from storms.

Seasonal risk assessment

Before each storm season commences, develop a seasonal risk assessment by:

- inspecting the mine, including drainage structures
- using survey pick-ups to ascertain where drainage issues may exist
- using weather modelling and information from the Australian Bureau of meteorology.
- reviewing water management strategy with consideration of current levels and possible rain
- inspecting buildings including sea containers
- using appropriate reports (e.g. water level reports, structural integrity, geotechnical hazards)
- using appropriate technical input
- using checklists at the end of this bulletin or a site specific checklist.

Develop a seasonal action plan, based on the specific

hazards that might be present on site

Utilise the emergency management plan, the emergency management plan risk assessment and seasonal risk assessment to develop the seasonal action plan. Using a team approach, assign responsibility for actions and ensure that completed actions are tracked. The SSE may consider assigning single point accountability for this action plan completion.

Ensure warning and evacuation systems work

A mine's SHMS should have:

- a process for identifying and warning anyone who could be affected by severe weather events.
- a system for moving people to a place of safety including considerations for evacuation of people off site.
- timely actions to bring risk into acceptable limits.

As an aid in this, mines, quarries and exploration projects should consider developing a trigger action response plan (TARP) based on warnings and observations. TARPs should also consider explosives-charging operations and the risks created by an approaching storm.

Ensure your structures are sound

Storm events have shown that some mine buildings, if not secured properly, can be turned over by strong winds, causing severe injuries to anyone inside.

For this reason, there must be a system to ensure that temporary and semi-permanent relocatable structures on a mine are adequately designed, sited, constructed and anchored.

For instance, to prevent movement during a storm, single or multi-modular semi-permanent (or permanent) units (mobile dongas, offices, crib rooms or ablution blocks) must be mounted and anchored to pre-established concrete and steel pedestals and/or other specifically designed anchoring points, in accordance with building standards. Consideration should be given for standalone rather than attached awnings for mobile crib huts. Precautions should also be considered for other structures that are vulnerable to the effects of strong wind-tanks, conveyor belts or mobile equipment such as cranes.

Have an emergency response and rescue system ready and effective

An adequate emergency response and rescue system must be in place in case a severe weather event causes injury, entrapment or damage to buildings or infrastructure.

Communicate, communicate, communicate

Although severe weather is often localised and infrequent, this does not provide a real margin of safety. As part of the overall preparation process, everyone on site, including contractors, must be made aware of the site's emergency response plan (including location of safe places) and what is expected of them.

In particular, all mine employees must be made aware of procedures covering lightning strike to rubber-tyred vehicles.

Sites should also check their communication and mutual assistance protocols with adjacent mines or other offsite

resources.

How can you recover?

The storm may have passed, but hazards may yet remain.

Use the checklist at the end of this document before resuming normal operations. Note that the list does not cover your site-specific severe weather hazards.

References

Additional information to assist in the management of severe weather, and recovery, can be obtained from:

- Weather forecasting - Bureau of Meteorology at http://www.bom.gov.au/qld
- Cyclone outlook - http://www.bom.gov.au/climate/cyclones/australia/
- Mines Inspectorate, Safety Bulletin 78 Flood recovery in mines, 12 February 2008 https://www.dnrm.qld.gov.au/business/mining/safety-and-health/alerts-and-bulletins/mines-safety/flood-recovery-mines
- Mines Inspectorate, Safety Alert 177 Mobile crib hut blown over during storm, 7 November 2007 https://www.dnrm.qld.gov.au/business/mining/safety-and-health/alerts-and-bulletins/mines-safety/hut-blown-over-storm
- Mines Inspectorate, Safety Bulletin 102 Severe weather preparedness, 30 November 2010 https://www.dnrm.qld.gov.au/business/mining/safety-and-health/alerts-and-bulletins/mines-safety/severe-weather-preparedness

Checklist

Preparing for a storm - checklist

At your mine site: Site status

1. Have all potential severe weather emergencies been identified?
2. Are adequate resources, facilities and procedures in place to implement and maintain an effective management program before, during and after a storm?
3. Has the site checked its communication and mutual assistance protocols with adjacent mines or other offsite resources?
4. Has a clean-up been conducted to remove loose 'flying object' debris?
5. Are there park-up areas for mining equipment above the high-water mark? Have they been 'made ready' and communicated?
6. Has the site prepared shutdown and tie-down procedures for conveyor belts, crib huts, temporary structures and other plant and equipment exposed to the elements? Is all necessary hardware available such as tie-downs and ropes?
7. Have all nominated storm shelters been inspected and cleaned?
8. Have shelters been replenished with basic supplies: first aid supplies, drinking water and communication equipment?

9. Do all mine personnel know where the nominated shelters are?

10. Have sumps and environmental traps (oil, grease, fuel) been cleaned out to eliminate or minimise ground contamination should the trap or sump overflow?

11. Has the integrity of mine communication and power systems been checked?

12. Has the site's power back-up system been checked for ready operation in case of mains blackout?

13. Is there a list of post-storm clean-up equipment, e.g. front-end loaders, bobcats, lighting plants, pumps and hoses, fuel tanks?

14. Has the on-site emergency response equipment, including medical facilities and vehicles, been checked for readiness?

15. Have containment dams, levies and weirs been checked to avoid accidental breaches?

16. Have areas of potential ponding, e.g. on top of waste dumps, been identified and made to drain freely to avoid subsequent slope instability?

17. Are effective systems, including TARPs, in place to identify and warn potentially affected people of the onset of severe weather?

18. Is there an effective system for evacuating people to a designated place of safety?

19. Is there an efficient system for monitoring, analysing and evaluating the onset of any severe weather and identifying the actions required?

20. Is there an effective system for ensuring that temporary and semi-permanent relocatable structures on a mine site are adequately designed, sited, constructed and anchored?

21. Is there an effective system for ensuring tanks, conveyor belts or mobile equipment (such as cranes) that are vulnerable to the effects of strong wind are safe during severe weather?

22. Is there an effective, adequate emergency response and rescue system in case severe weather causes injury, entrapment or damage to infrastructure?

23. Have the procedures covering lightning strike to rubber-tyred vehicles been reiterated to all mine employees?

24. Does the mine communicate predicted storm events at the start of shift and have means of communicating further updates as prediction of a storm is confirmed, (This may included in a TARP)

25. Has the mine planning/scheduling processes including a consideration of storm/wet weather events e.g. loading and firing shots

26. Has everyone on site, including contractors, been made aware of the site's emergency response plan, and their individual responsibilities and expected actions?

Recovering from a storm - checklist

At your mine site: Site status

1. Has pit wall instability and slope undercutting been assessed and considered? After a storm, there is increased likelihood of some form of pit wall instability (due to ingress of water and lubrication of joint/fault planes) and undercutting as surrounding areas are soaked and groundwater tables are recharged, possibly at some distance from the operation.

2. Have ramps, roads and safety bunds been checked for damage, undercutting, wash-outs, soft edges or loss of traction? Have they been reinstated to a safe standard?In rebuilding mine roads and other infrastructure, mobile equipment hazards, unprotected road edges from eroded safety banks, undercutting, wash-outs, loss of traction and soft edges, must be taken into account.

3. Have pedestrian traffic areas been checked and reinstated to a safe standard?

4. Has the stability of waste dumps, stockpiling areas, sedimentation ponds and dams been checked for their integrity and safety?

5. Have all personnel and equipment hazards from working in and around water with mobile equipment been identified and dealt with before work re-starts; in particular, water management infrastructure, pumping and working near the water's edge?

6. Are drowning hazards effectively controlled? Wearing suitable, approved life jackets will help with managing potential drowning hazards.

7. Are hazards in handling mud effectively controlled?

8. Have equipment recovery and equipment towing hazards been effectively addressed?

9. Are hazards from water ingress into machinery effectively controlled?

10. Are people aware of wildlife hazards such as insects and snakes inside cabinets and other enclosures?

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