FIRE MANAGEMENT PLAN
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1. COMMITMENT AND POLICY

1.1 Purpose

This document has been developed by ABM Resources NL (ABM) to provide the staff and contractors based at the Twin Bonanza mine site with information and understanding of fire policies and procedures. The objective of this Fire Management Plan (FMP) is to ensure that fire control practices are implemented on site to minimise the risk of fire from site operations and bush fires, and is designed to provide information on how ABM intends to manage fire risks and how all staff on site will be informed about fire safety measures as part of ABM’s overarching environmental management, and health and safety systems.

The six main objectives of the FMP are to:

- ensure a comprehensive fire risk management process is applied across all work areas to ensure a high level of safety for persons, property and environment
- reduce the occurrence, and minimise the impact, of bush fires on the Twin Bonanza area, thereby reducing the threat to life, property and the environment
- document fire prevention requirements of the Twin Bonanza mine site
- ensure that fire safety problems that arise are quickly and effectively contained and resolved
- ensure that ABM complies fully with its legal obligations in relation to fire safety
- ensure that appropriate training and information is provided on fire safety and fire control to all staff on site.

1.2 Scope

This FMP has been prepared to provide additional information to the Environmental Impact Statement (EIS), as requested by the Northern Territory Environment Protection Authority and Commonwealth Government in July 2013, in relation to the Mineral Lease Application (MLA 29822) and Twin Bonanza project development.

The FMP applies existing management commitments, as outlined in Exploration Mining Management Plans for Twin Bonanza, with regards to fire management and safety for exploration purposes and expands to include all fire management prior to, and during, construction, operation and closure of the proposed mine at Twin Bonanza. The FMP will be subject to ongoing review and change to ensure that it remains relevant and effective throughout the life of the operation. The revision of the plan will occur no more than 2 years from the implementation of the FMP.

1.3 Safety
2. LEGAL REQUIREMENTS

2.1 Legislations and codes

The following fire safety legislation is applicable in the Northern Territory (NT) and to ABM:

- *Bushfire Act 2009* (NT)
- *Bushfire Regulations 2005* (NT)
- *Environmental Assessment Act 1982* (NT)
- *Fire and Emergency Act 1996 and relevant amendments* (NT)
- *Fire and Emergency Regulations 2011* (NT)

Bushfires NT, a branch of the Department of Land Resource Management responsible for implementing the Bushfires Act, operates under a series of policy guidelines designed to achieve its fire management objectives and to support landholders with fire mitigation. The NT wide objectives include:

- protection of life, property and the environment from the effects of wildfires
- maintenance of natural resources, including native ecosystems and productive lands, by the use of appropriate fire regimes.

The policy stresses the need for individual landholders, be they public or private, to have fire management plans in place which are, in the main, devoted to the pre-suppression of large and intense fires. Such plans should be set in the context of a broader regional strategy.

In addition, the Bushfires NT policy objective of "maintenance of natural resources" highlights the need to support larger, landscape prescribed, burning efforts. The Twin Bonanza mine needs to ensure that Traditional Owners are confident that the mine site is always well protected from fires that they might light close to the lease block (or even a long way away from the site, but that have the potential to travel to the site even under mild conditions) so that their traditional and landscape-scale burning activity is not hindered by the existence of the mine site and personnel. ABM will adhere to this by keeping vegetation loads below the thresholds, by way of localized prescribed burning efforts and regular maintenance of all firebreaks.

ABM will adhere to all relevant legislation. ABM will specifically undertake seasonal maintenance of firebreaks around accommodation camp buildings and infrastructure in line with legislative requirements, and as part of an integrated fire management approach, to
reduce the risk of fire. Refer to section 6 Fire mitigation strategies / hazard management for further details.

2.2 Standards and guidance material

The following Australian standards and codes of practice apply:

- Fire Engineering Guidelines 2001 (Canberra, ACT: Australian Building Codes Board, 2001)
- ABM Emergency Response Management Plan

2.3 Consultation

ABM has consulted with the Traditional Owners through the Central Land Council (CLC) regarding traditional fire management practices and incorporated their advice into this document.

3. PROJECT DETAILS

The Twin Bonanza project involves the establishment of the Old Pirate open-pit and gold processing operation. The project is located approximately 820km NW of Alice Springs (Figure 1) and approximately 16km east of the Northern Territory and Western Australian border. The site is located approximately 33km south of the Tanami Road, which runs North West from Alice Springs to the Northern Territory and Western Australian border (Figure 1).
ABM plans open pit mining and onsite processing, including associated tails dam, waste dump, power station, accommodation, workshops, offices and transport infrastructure.

4. RESPONSIBILITIES

Responsibility for ensuring the site environmental requirements are met, including the FMP, will lie with the chief operating officer (COO), environmental manager, site general manager and health and safety manager or their delegates.

The responsibilities will include:

1. ensuring company-wide compliance with FMP and policy application throughout the company
2. allocation of appropriate funding for fire safety
3. ensuring the infrastructure design, installation and maintenance of Fire Systems are consistent with the requirements of the FMP.

The COO will be responsible for ensuring employees are appropriately trained, employees will then be responsible for carrying out a range of activities to minimise fire safety risk.

5. MANAGEMENT
The Twin Bonanza project is not in a fire control area; however, seasonal fires are prone to sweep through the region. Vegetation is generally sparse because of the arid climate and predominantly sandy soils. Fire risk in this country will always be higher in years following seasons of good rains, when grasses respond to soil moisture. These are the times to expect large wildfires to threaten the mine and the times when preventative prescribed burning practices are most needed. The majority of fires are thought to be generated from lightning strikes; additional fire sources include Traditional Owner practices and accidental fires through human activities. Fire scar history suggests that roadside ignitions will also be a source of fires to the north and east. The site will operate under the general principal of fire avoidance. The main sources of fire are outlined below:

1. lighting generated natural wildfire
2. uncontrolled burns - not ABM
3. Traditional Owner controlled burns
4. accidental fires - community activities
5. accidental fires – ABM activities

There will be no central reticulated fire system or fire hoses at Twin Bonanza. Fire protection occurs through use of hand held fire extinguishers within buildings and close to equipment. Around the site fire breaks will be used to prevent naturally occurring fires from damaging buildings and infrastructure.

All mining equipment and gensets will be equipped with appropriate fire extinguishers.

Housekeeping will play a major part in ABM’s FMP, including reducing waste and dry vegetation, not only in fire breaks but also around infrastructure on site.

ABM personnel are strictly banned from lighting fires except under controlled conditions. Fires are banned during the course of normal field work activities but camp fires and barbecues are permitted in designated areas under controlled conditions.

The following guidelines are to be followed by all field personnel:

1. All staff will comply with fire ban days declared by BushFires NT, a delegated staff member will monitor the Bureau of Metrology website (BOM).
2. Open fires must be dug into the ground and/or surrounded by a low earthen or rock wall to prevent spreading of hot embers and burning wood.
3. Open fires must be sited on cleared ground which is barren of vegetation over a radius of at least five metres from the fireplace.
4. Fires are not to be lit under windy conditions, greater than 25 knots (46.3 km/hr).
5. A shovel and/or ready supply of water must be close at hand.
6. Only dead wood should be collected for fuel, and fire wood should be checked for inhabitants prior to use, e.g. lizards within hollow logs.
In compliance with ABM's mine management plan (MMP) for the Old Pirate bulk sample within the Twin Bonanza project; no employee of, or contractor to, the company is permitted to light fires for the purpose of clearing vegetation. Back burning is only permitted in the case of a direct emergency, where evacuation and/or infrastructure are compromised and no other form of fire protection is available, or for reducing fuel loads in consultation with Traditional Owners.

Prescribed burning has been recommended by the CLC to maintain a reduced-fuel buffer for standard fire protection. This will be adopted for future MMP’s and will be utilised where practicable, especially in between fire breaks and infrastructure. Refer to section 6.3 for more information.

Other existing systems and practices in use at Twin Bonanza for fire management are outlined below

5.1 Bushfire / wildfire threat

Vegetation consists mainly of spinifex with scattered low trees (mostly species of eucalyptus and acacia), shrubs and herbaceous plants. The growing period is generally directly after the wet season, which occurs from December through to March, with the amount of dry vegetation available as a fuel source depending on the amount of rain and the growth of vegetation for the season. In addition, the dominant wind direction is from the east during the dry season and northeast during the wet season, therefore bush fires from the east and northeast (respective of seasonal variations) will be of potential danger for ABM's staff and operations.

One access road to and from the site exists, and will be sufficient for current operations. Monitoring of local bushfires/wildfires will focus on those fires to the north and northeast.

The risk of wildfire is predominantly from August through to November, where the frequency of storms and lighting strikes increases and a surplus of dry vegetation is available.

If a wildfire is encountered, personnel should avoid the area and evacuate any downwind positions. For safety reasons, ABM personnel are not permitted to fight such fires as they can be highly unpredictable.

Should a fire threaten an exploration or camp site and evacuation is not an option, and it appears probable/highly likely that the fire will approach the site; back-burning to reduce the amount of vegetation (fuel) in the immediate vicinity of the site is permitted if the following actions are taken:

1. Move portable plant and equipment to a safe location.
2. Preferably select small patches of vegetation to burn individually, one at a time. After each patch is burnt, extinguish remaining embers to avoid ember attack on nearby surrounds should the
wind pick-up unexpectedly.

3. Fires are not to be lit under windy conditions. Back-burning is best done early in the morning or in the evening when the wind dies down.

4. Always burn up-wind, i.e. alight vegetation only where a fire break exists in the down-wind direction. The intention is to burn the vegetation (and thereby eliminate the fuel) in the zone between the site and the wild fire.

5. A shovel and/or ready supply of water must be close at hand for extinguishing embers.

6. Ensure a line of retreat away from the fire to safe ground (i.e. where no fuel exists).

7. Never attempt to back-burn alone- only do so with another team member present.

8. If in any doubt, do not attempt back-burning- EVACUATE THE AREA

Personnel may undertake Basic Wildfire Awareness training with Bushfires NT (or equivalent).

6. FIRE MITIGATION STRATEGIES / HAZARD MANAGEMENT

6.1 Environmental induction

The site induction, which covers environmental and safety aspects, will inform all personnel about fire awareness, the requirement to obtain a Hot Work Permit before undertaking welding, cutting or grinding activities, emergency contact numbers, and procedures in case of a fire.

All employees and contractors will be required to attend a site induction, with attendance documented on the Induction/Training Record Form and Induction/Training Register.

6.2 Monitoring wildfires

The site general manager will nominate an onsite person to closely monitor weather conditions, including dominant wind direction, seasonal vegetation growth (fire fuel stores), seasonal rainfall and regional bushfires. Daily monitoring will be necessary from August through to November and observations of fuel loads and rainfall will be required regularly (monthly) throughout the year, fire risk will be higher in years following seasons of good rains. These are the times to expect large wildfires to threaten the mine. Training for the wildfire monitoring will incorporate the knowledge of such fire regimes and techniques for preventative practices, such as prescribed controlled burning.

Monitoring of the BOM website will be undertaken in the evenings, by an appointed staff member, for bushfires warnings and fire bans for the following day. Appropriate management will be implemented the next day.

If a bushfire is approaching the project, this information will be reported to senior management, who has the responsibility to preserve site infrastructure and ensure safety of all personnel in such an event.

The nominated person will have access to the following resources to make informed decisions.
about wildfire and the risk posed to the operations, staff and environment:


Bushfire current fire locations available from: [http://www.bushfirecrc.com/fire-locations](http://www.bushfirecrc.com/fire-locations)


Monitoring of local bushfires/wildfires will focus on those to the north and northeast, particularly those that will restrict access to and from the site of operations.

### 6.3 Fire breaks

In the Northern Territory, the *Bushfires Act* 2009 establishes the legal framework and responsibilities for bushfire management. The fundamental principle established by the Act is that the responsibility for bushfire management rests with the landholder (CLC on behalf of the Traditional Owners) and fire breaks must be established around all assets. Fire breaks should be:

1. a minimum of 4m wide
2. graded, or slashed to a maximum height of 50mm with all slashed material removed
3. lawn or cultivated garden.

Note: this is best practice, however outside of fire protection zones it is not a legal requirement. Strategic fire breaks will be constructed around all buildings and operating plant. Firebreaks will aim to enable vehicle access to fight fires (approximately 6m wide), will stop a fire under mild conditions, and are essential as control lines from which back burning may be undertaken to stop wildfires in extreme conditions. Back burning and/or controlled burning will only be undertaken with a permit under the Bushfire Act that is currently administered by Bushfires NT (where applicable) and in consultation with the Traditional Owners.

ABM will conduct prescribed reduced-fuel burning along fire breaks as a standard feature of fire prevention and to create a reduced fuel buffer of 50m around the facilities. This will aid in the control of fires approaching the mine site. The location and timing of prescribed burning will be negotiated with traditional owners in order to minimise risks to any assets in the surrounding area, such as sacred sites.

All operational areas, including accommodation and power generators will be placed in cleared areas and surrounded by a 6m fire break cleared completely of vegetation and debris. Hydrocarbons and hazardous materials are to be stored in accordance with AS1940-2004 - The storage and handling of flammable and combustible liquids; appropriate hazard separation
zones of fire risk areas from fuel storage and hazardous chemical storage facilities will be enforced.

In the event of a fire, firefighting equipment will include a mobile water tank with associated pump that will be used to extinguish the fire.

6.4 Hot Work Permit- NT Worksafe

All welding, cutting and grinding activities that are undertaken on site require the issue of a hot work permit. The permit will specify fire control practices to ensure no fires are started from conducting these activities. The hot works permit is legislated by the Workplace Health and Safety Act and administered under NT Worksafe; the application for hot works permits is part of ABM’s Safety Management System (Refer to Appendix 2).

Hot work refers to any processes including welding, soldering, grinding, cutting and brazing that can be a source of ignition. Heat generating processes are a fire hazard both during the process and for some time after, particularly where flammable materials are in close proximity. In Australia, a hot work permit is required for hot work that is not part of the day to day production processes.

ABM will align itself with the control measures (outlined in Safe Work Australia's Welding Processes Code of Practice) specifically for welding and other hot works activities including:

1. Isolate fuel sources from ignition sources.
2. Purge all traces of flammable or combustible materials from drums, vessels and tanks which are to be welded prior to welding, and preferably filled with an inert substance such as nitrogen gas or water.
3. Use fire resistant barriers to prevent welding sparks accidently reaching flammable and combustible materials.
4. Check work areas are well ventilated to prevent accumulation of flammable vapours in the work area.
5. Check work area is free from rubbish, paper or dust that could be a potential fuel source or produce dust explosions.
6. Use flash back arrestors on gas hoses to prevent the flames travelling back and igniting the gas in cylinder.
7. Drain and purge equipment, such as gas hoses, and lock the gas off at the valve immediately after use.
8. Do not store flammable and combustible materials near welding area.
9. Keep and maintain fire fighting equipment near welding area.

6.5 Incineration of wastes

ABM will incinerate solid wastes, i.e. cardboard and food scraps, to reduce the solid and putrescible wastes around camp. ABM will incinerate material in a bunded pit, or a turbo
burner, only on days where wind is low and the fire risk is low to moderate. Fires must be supervised at all times and can only be lit by authorisation from the site general manager or their delegate. A fire break must be constructed around the perimeter of the bunded fire pit for at least 6m to prevent unintentional fire spread.

6.6 Communications

All vehicles are fitted with a two-way radio that can also be used in an emergency situation. All vehicles will contain satellite phones when conducting regional exploration activities.

In the event of a fire endangering the camp or operations, staff and/or environment; the site general manager or their delegate will issue a warning and instructions for staff over the two-way radio system and if necessary satellite phones for remote vehicles.

6.7 Firefighting equipment

6.7.1 Fire extinguishers
Portable fire extinguishers are located in easily identifiable locations throughout the buildings. Their locations and suitability for use on various types of fires (e.g. electrical, flammable liquids, ordinary combustibles) will be instructed through the site induction. The operating instructions and designated use criteria are displayed on each extinguisher in word and pictogram format.

Extinguishers are only suitable to use on fires in their incipient stages (small or beginning).

6.7.2 Mobile water tanks
Mobile water tanks that will be routinely used for dust suppression will be available to distribute water in the event of an uncontrollable or large fire. These should only be used by suitably trained staff.

6.8 Firefighting training

The nominated person to monitor bushfires as detailed in Section 6.2 will be given site specific training to carry out the monitoring role.

In addition the mine site is likely to appoint an emergency service officer (ESO) who will assist the paramedic and have specific training in firefighting and emergency response.

Bushfires NT conduct nationally accredited courses including a Basic Wildfire Awareness Course, and a Fire Fighter NT Course. The Basic Wildfire Awareness Course will be considered a minimum for site staff.

6.9 Vehicle inspections

To minimise risk of vehicle fire, drill rigs and light vehicles must carry fire extinguishers and/or 'on-board' fire suppressant systems.
All vehicles on site and arriving on site will be checked daily as part of the daily vehicle prestart check to ensure that they are fitted with appropriate safety and fire control equipment that includes a fire extinguisher and two-way radio. In addition, engine bays and exhaust systems will be checked for vegetation to prevent ignition of vegetation by hot engines.

6.10 Emergency response

Fire wardens will be nominated by the site general manager or delegate and will be trained to respond to serious incidents and fires. Emergency response will be undertaken in accordance with ABM’s Emergency Response Management Plan (ERMP).

An ESO is likely to be appointed, who will assist the paramedic and have specific training in firefighting and emergency response. Refer to ABM’s ERMP and Appendix 1: Fire emergency procedures.
7. REFERENCES

7.1 Legislation

- *Bushfire Act 2009* (NT)
- *Bushfire Regulations 2005* (NT)
- *Environmental Assessment Act 1982* (NT)
- *Fire and Emergency Act 1996 and relevant amendments* (NT)
- *Fire and Emergency Regulations 2011* (NT)

7.2 ABM Resources NL

Refer to ABM’s EIS chapter 5: Risk assessment

7.3 Contractor safe work procedures, codes and guidelines

Twin Bonanza Operations Risk Management Plan (refer to EIS chapter 5 - Risk assessment)

7.4 Other resources


8. DOCUMENT CONTROL AND REVISION HISTORY

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APPENDIX 1 – FIRE EMERGENCY PROCEDURES
BUILDING EMERGENCY RESPONSE PROCEDURES

In order to effect an orderly and safe evacuation, the building is required to have a "Building Emergency Response Procedure". This procedure should be written in conjunction with the Emergency Response Management Plan and emergency response team members and shall consider the following (refer to Australian Standard 3745 - Emergency Control Organization for Buildings, Structures & Workplaces).

1. Action/s to be taken for different events.
   - first aid
   - fire
   - blackout
   - earthquake
   - hazardous materials
   - violent/armed persons

2. Evacuation routes and assembly areas illustrated on floor plans or maps.

3. Consideration of persons with disabilities.

4. Emergency resources and equipment available.

5. Plant requirements.

7. Reporting and communication procedures.

8. Other workplace specific consideration, e.g. securing gold room prior to evacuation, hazardous goods storage etc.

IF YOU DISCOVER A SMALL FIRE

The site is equipped with hand-held fire extinguishers for first-response use on small fires. The initial response should be as follows:

1. Raise the alarm and direct personnel to muster point.

2. Notify emergency response officer, if appointed, and appropriate manager for the site (i.e. processing manager if fire is located in processing plant).

3. If fire becomes uncontrollable (including wildfires) account for all personnel and evacuate ASAP.

4. Clearly state the site location and nature of the emergency (fire, chemical spill, etc).

5. Potentially dangerous processes or machinery should be closed down, if possible to do so safely and with no delay.

6. Attempt to extinguish fire if safe to do so. Fire fighting should only be attempted if safe to do so and if trained in fire fighting or appropriate emergency procedures.

7. Leave immediately by the nearest safe exit route. Move quickly but DO NOT RUN.

8. Report to the senior personnel or emergency service officer on their arrival.
9. Stay outside the building until the "all-clear" is given.

**IF YOU DISCOVER A WILD FIRE / BUSH FIRE**

1. If you see smoke, contact the site general manager or delegate immediately and warn of fire.

2. The direction to evacuate the camp or other areas will be given when management assess the danger.

3. If practicable and required, personnel should move to the Muster Point (Operations area - if not compromised or Centre of Camp; to be advised by Site General Manager or delegate) to be accounted for.

4. **Do not** attempt to extinguish a wild fire.

**IF YOU HEAR THE FIRE ALARM OR ARE WARNED OF A FIRE (OR OTHER TYPE OF EMERGENCY)**

1. Follow the instructions of your supervisor.

2. Potentially dangerous processes or machinery should be closed down, if possible to do so safely and with no delay.

3. Leave by the nearest safe exit route, move quickly but DO NOT RUN.

4. Assist others if required.

5. Report to the emergency muster point (pointed out in general induction).

6. Stay outside the building until the "all-clear" is given.
HOT WORK PROCEDURE & PERMIT

Procedure for hot work permits

Hot work refers to any processes including welding, soldering, grinding, cutting and brazing that can be a source of ignition. Heat generating processes are a fire hazard both during the process and for some time after, particularly where flammable materials are in close proximity. In Australia, a hot work permit is required for hot work that is not part of the day to day production processes. The hot work permit ensures that:

- the work is authorised by a responsible officer
- hazards are identified, isolated, removed, protected or disconnected as appropriate
- the operator is trained to perform the work safely
- appropriate protective clothing and equipment is used
- appropriate warning and fire fighting equipment is on hand.

The person appointed by the site general manager to authorise hot work must be aware of the problems associated with hot work and have the authority to ensure compliance with the procedures. Prior to the commencement of work, a hot work permit should be obtained from the authorised person. This should be done on every occasion that hot work of any type is undertaken anywhere on the site.

A hot work permit should also be issued for a specific task that is undertaken in a clearly identified area. Hot work permits should not be issued for protracted periods. Separate hot work permits should be issued for work which extends from morning to afternoon periods. Before completing the first part of the hot work permit, the person responsible for carrying out the work should complete the check-list shown below to indicate that fire protection measures are adequate, suitable precautions have been taken and the equipment to be used is safe.

If the person authorised to issue the hot work permit is not satisfied with the arrangements, further measures may be requested, and any additional conditions should be entered in the space provided. The earliest time at which a final fire-check should be made will also be specified. This will normally be at least one hour after the time of expiry of the hot work permit, when work must be complete. If trained personnel will not be available to make this check, work must not be commenced. The completed form should be returned to the appointed person and retained for future reference.
Hot work permit check list

**Fire protection (The person carrying out this check should tick the appropriate boxes.):**

- [ ] Where sprinklers are installed they are operative.
- [ ] A trained person not directly involved with the work will provide a regular fire watch during the period of hot work and for at least one hour after it ceases if appropriate.
- [ ] Suitable extinguishers or a hose reel are immediately available.
- [ ] Personnel involved with the work and providing the fire watch are familiar with the means of escape and method of raising the alarm and notifying the Site General Manager or delegate.

**Precautions within 10 metres (minimum) of the work:**

- [ ] Combustible materials have been cleared from the area. Where materials cannot be removed, protection has been provided by non-combustible or purpose made blankets, drapes or screens.
- [ ] Flammable liquids have been removed from the area.
- [ ] Floors have been swept clean.
- [ ] Combustible floors have been covered with overlapping sheets of non-combustible material or wetted and liberally covered with sand. All openings and gaps are adequately covered.
- [ ] Protection has been provided for:
  - Walls, partitions and ceilings of combustible construction or surface finish
  - All holes and other openings in walls, partitions and ceilings through which sparks could pass
- [ ] Combustible materials have been moved away from the far side of walls or partitions where heat could be conducted, especially where these incorporate metal.

**Equipment:**

- [ ] Equipment for hot work has been checked and found to be in good repair.
- [ ] Any gas cylinders have been properly secured and any other fuel within 6m of the work site has been properly secured or moved.
Issuing Company

Permit Number

A. Proposal To be completed by the person responsible for carrying out the work.

Exact location of proposed work

Nature of the work being undertaken

The above location has been examined and the precautions listed below have been complied with as indicated.

Signed

Name (Print)

Date

Position and Company

B. Agreement To be completed by the site supervisor responsible for overseeing the work.

This Hot Work Permit is issued subject to the following conditions

Time of issue of permit

Time of expiry of permit

A final fire check of the work area shall be made, not before

Additional conditions required
C. Agreement  To be completed by the worker or contractor responsible for the work before returning to the permit issuer.

The work area and all adjacent areas to which sparks and heat might have spread have been inspected and found to be free of fire following completion of work.

Time inspection completed (at least 1 hour after work was completed).