

**PASS EMP APPROVED BY EPA**

- The Directors are delighted to report that the Company's Environmental Management Plan (EMP) for the receipt and management of sulphidic excavation material (Potential Acid Sulfate Soils or PASS) at the Nagambie Mine has been approved by the Environment Protection Authority of Victoria (EPA).
- EPA approval of the EMP clears the way forward for full permitting of the PASS Project in coming months. Nagambie Resources is submitting a Work Plan Variation to Earth Resources Regulation (North East Victoria), within the Department of Economic Development, Jobs, Transport and Resources (DEDJTR), to enhance the rehabilitation of the legacy pits from the 1990s gold mining operation. It is proposed that PASS from large excavation sites in Melbourne will be used to backfill the open pits below the water level. Clay from the mine site will then be dozed into the pits and compacted to permanently cap the PASS in an anaerobic state.
- The EMP satisfies all the environmental aspects considered by the EPA, including water, air/dust, land, odour and noise impacts. The Company will be adhering to strict EPA operating, monitoring and reporting requirements for the initial period (refer attachment).
- The potential scale of the Nagambie PASS Project is illustrated below:
  - ❖ Total Capacity to Store PASS Under Water: 6.2 Million Tonnes
  - ❖ Potential Storage per Year: 1.0 Million Tonnes
  - ❖ Comparative Market Storage Charge: Over \$140 per Tonne
  - ❖ Nagambie Resources' Storage Charge: Commercially Less than \$140 per Tonne
- Advantages of the Nagambie PASS Project include:
  - ❖ Rehabilitation of the legacy pits to their original use as farming land;
  - ❖ Generation of significant employment opportunities in the region;
  - ❖ Future funding for proposed gold production, landfill storage and sand & gravel production at the Nagambie Mine – creating further employment opportunities in the region; and
  - ❖ The best environmental outcome and the lowest cost outcome for PASS Management for Melbourne's major development and infrastructure projects.

**COMMENTARY**

Nagambie Resources' Chairman, Mike Trumbull said: *"The EPA approval is a significant milestone for the Company and is breaking new ground in PASS Management in Victoria. Nagambie Resources' EMP, summarised in the five-page attachment, has 'lifted the bar' considerably in terms of receipt and management of PASS.*

*"The Company could start taking PASS from the Melbourne Metro rail tunnels and the Western Distributor road tunnels in around two years' time. Until mid CY 2018, and beyond, the Company is planning to take PASS from large excavations for high-rise buildings in the Melbourne CBD and Fishermans Bend."*

**NAGAMBIE RESOURCES**

*Underwater storage of sulphidic excavation material (PASS) in the two legacy pits at the Nagambie Mine represents an excellent environmental fit with the construction of Fishermans Bend / CBD high-rise buildings, the Melbourne Metro rail tunnels and the Western Distributor road tunnels.*

*The discovery and development of shallow, open-pit and heap-leachable gold deposits is being methodically advanced. The Company has 100% of tenements encompassing historic Victorian goldfields at Nagambie, Clonbinane, Rushworth and Redcastle.*

*Aggregates and gravel are being produced from the old heap leach pad and overburden dumps respectively.*

*The first landfill site is being designed to take advantage of the 20 Ha of black plastic under the old heap leach pad.*

*Leasing and agistment of the freehold land at the Nagambie Mine is being maximised.*

**SHARES ON ISSUE**

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Kevin Perrin (Finance Director)  
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21 June 2016

## **PASS RECEIVAL AND MANAGEMENT AT THE NAGAMBIE MINE: EPA OPERATING, MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS FOR THE FIRST TWO YEARS**

Nagambie Resources' Environmental Management Plan (EMP) for the receipt and management of sulphidic excavation material (Potential Acid Sulfate Soils or PASS) at the Nagambie Mine has been approved by the Environment Protection Authority of Victoria (EPA).

The EMP satisfies all the environmental aspects considered by the EPA, including water, air/dust, land, odour and noise impacts. Nagambie Resources will be adhering to strict conditions set by the EPA covering operating, monitoring, record keeping and reporting requirements for the first two years. Extension of the approval of the EMP beyond two years, and the form that approval could take, will be dependent on the results of the extensive monitoring and reporting work carried out in this initial period.

PASS from excavation sites in Melbourne will be used to backfill both the East and West legacy pits from the 1990s gold mining operation below the water level. Clay from the mine site will then be dozed into the pits and compacted to permanently cap the PASS and return the mined areas to their original use as farming land.

PASS is free of anthropogenic ('human made') contamination and complies with the EPA's standards for clean fill material. Disposal of PASS to anaerobic water-filled pits is a recommended method of managing PASS as defined in EPA publication 655.1 *Acid Sulfate Soil and Rock*.

### **PASS MANAGEMENT OPERATING REQUIREMENTS:**

1. The Nagambie Mine site is not open to the public. Only trucks will be able to enter the mine site and only after:
  - (a) an agreement, including indicated tonnages of PASS material, has been entered into between Nagambie Resources and the source company responsible for the PASS material;
  - (b) the provision of a report by the source company on the PASS at the excavation site that meets the requirements of Australian Standard AS4482.1 and EPA publications 655.1 *Acid Sulfate Soil and Rock* and IWRG 702 *Soil Sampling* (including confirmation that the material is PASS and is not actual acid sulfate soil or AASS); and
  - (c) Nagambie Resources has visited the Melbourne excavation site containing the PASS material;
2. Every truck load of PASS will be identified with a job number and a load number for that job;
3. PASS truck drivers will sign in to a driver-controlled computer station at Nagambie Resources' private weighbridge (to be constructed) and receive a computer-printed entry ticket giving the truck registration number, PASS job number and associated load number. All PASS trucks will then be driven onto the weighbridge and their gross (loaded) weight will be automatically recorded;
4. PASS truck drivers will then follow road signage to the PASS truck tipping area open at the time and will only be allowed to tip at the truck tipping area after handing over their entry ticket;

### Aerial View of the Nagambie Mine Site



Looking north east. Water-filled West Pit in foreground, East Pit in background

5. Every truck load of PASS will be videoed as tipping proceeds using mobile (trailer-mounted), solar-powered CCTV cameras and all video footage will be kept on site for at least 12 months;
6. After tipping out the PASS, truck drivers will then return to and drive onto the weighbridge where they will sign in to the driver-controlled computer station and collect a computer-printed exit docket. The docket will set out the truck registration number, the PASS job number, the associated load number, the tare (empty) weight, the gross (loaded) weight and the net load (tonnes of PASS) for record purposes;
7. Every tipped load of PASS will be assessed (see “Monitoring Requirements” below) before being dozed into the water-filled pits within 48 hours, mostly within 24 hours;
8. A long-armed excavator will routinely ensure that all PASS material is cleaned from the pit walls and pushed at least 5.0 m underwater. The 5.0 m figure is a safety precaution for the first two years while the variation in pit water level is measured and assessed. The water level in the pits is the groundwater level in the Nagambie area. Nagambie Resources expects that annual variations in the groundwater level, both rises and falls, will not be great. As a guide, over the 13-year Millenium Drought (1997 to 2009 inclusive, the lowest rainfall period ever measured at Nagambie, during which the pumping of water from farmers’ bores would have been at record levels), the three key State Observation Bores nearest to Nagambie (58264, 58265 and 58266) all registered a total fall in groundwater level of approximately 2.6 m or 20 cm per year. Also as a guide, the same three bores all registered a total rise in groundwater level over the 10-year period after they were installed (1987 to 1996 inclusive) of approximately 1.1 m or 11 cm per year;
9. Drainage from the truck tipping areas will be directed to the water-filled pits. Both pits have over 8.0 m of airspace above the surface water level and therefore the capacity to contain stormwater from the truck tipping areas. Site engineering will prevent any run off from the truck tipping areas entering waterways discharging from the site;

10. The mine site will be closed to the receipt of PASS materials if all the PASS truck tipping areas are full;
11. To minimise dust created by trucks and mobile equipment in dry weather, the mine site will routinely use water trucks and, if justified, dust suppressants on all gravel roads;
12. To minimise noise impacts for the first two years:
  - (a) the hours of operation for PASS management will be limited to between 7 am and 6 pm;
  - (b) trucks accessing the mine site will be instructed to not use airbrakes when approaching and on the site;
  - (c) PASS trucks accessing the mine site from the Goulburn Valley Highway will be instructed to use only the Locksley-Nagambie Road, McDonalds Road and Zanelli Road; and
  - (d) the noise level of truck and equipment reversing signals on the mine site will be minimised, consistent with safety; and
13. Odour effects are highly unlikely given the nature of the PASS materials, the management protocols to be adhered to and the distance of the truck tipping areas from neighbours.

### **PASS MANAGEMENT MONITORING REQUIREMENTS:**

1. Every tipped load of PASS material will be assessed before it is dozed into the water-filled pits;
2. A visual inspection of all tipped loads of PASS material will ensure only spoil/clean fill material is present and that no demolition or other waste is present. Any load containing such materials will be photographed and moved to one side, and the source company will be required to remove the load and take it to a landfill site before Nagambie Resources will accept any more PASS from that source company. All incidents will be recorded.
3. Every tipped load of PASS will be pH tested in the field with at least three samples taken per load. This testing will be to confirm the PASS material does not have a pH below 5.5, which would indicate acidification has occurred. If a pH of less than 5.5 is detected:
  - (a) the source company will be notified and prevented from delivering any further material without pH testing at their site to determine whether acidification has occurred to other materials held at the excavation site (if it has, then these materials will not be accepted at the Nagambie Resources' site);
  - (b) the acidified tipped load will be moved to a bunded area draining to the water-filled pit and treated with slaked lime CaOH<sub>2</sub> (from a stockpile held for the purpose) to immediately correct the pH prior to the load being dozed into the pit; and
  - (c) the EPA will be notified of the incident and response;
4. Tipped loads will be randomly sampled at a frequency of at least one load in twenty, using composite sampling with at least three sub-samples per load from randomly selected sources. The composite samples will be sent to a NATA-accredited laboratory for testing against the upper thresholds for Arsenic, Cadmium, Chromium (VI), Copper, Lead, Mercury, Molybdenum, Nickel, Tin, Selenium, Silver, Zinc, Cyanide, Fluoride, Phenols (halogenated), Phenols (non-halogenated), MAHs, Benzene, PAHs, Benzo(a)pyrene, C6-C9 petroleum hydrocarbons, C10-C36 petroleum hydrocarbons, Polychlorinated biphenyls, Chlorinated hydrocarbons, and Organochlorine pesticides. Instances of non-compliance with the upper thresholds will be reported back to the source company and no additional materials will be received from the source site until additional testing is undertaken at the source site to isolate the contamination. All instances of materials exceeding the upper thresholds will also be reported to the EPA and water from the receiving pit will be sampled within a week of receiving the laboratory results for the tipped load(s), and tested by a NATA accredited laboratory for any of the contaminants for which exceedances have been detected. The water samples will be

tested according to the Australian and New Zealand guidelines for fresh and marine water quality. If contaminants in the water are detected exceeding trigger levels, a risk assessment and mitigation plan for the management of the contamination will be developed and submitted to the EPA for approval;

5. Every week, pH measurements of the water in both pits will be routinely taken using a site pH meter and the results recorded in both tabular and graphical format. The three-monthly pH results from the laboratory analysis of pit water quality will be added to the tables and graphs. The background level of the water in the 1990s-era open pits is naturally alkaline (a buffer to acidification) with a pH range from 7.4 to 9.2 over the last nine years, with an average of 8.3. In order to be able to record the progress of the acidification of the pit water, should such an occurrence occur, no additional buffering will occur unless the pH of the pit water falls below 6.0. If pH does fall below 6.0, agricultural lime CaCO<sub>3</sub>, from a stockpile held for the purpose, will be added to the water to provide the additional buffering required;
6. Every month, the water levels in both pits will be routinely measured and recorded in tabular and graphical format. Significant rainfall events and significant evaporation events (minimal rainfall and hot weather) will be noted on the graph. Based on the records for the three key State Observation Bores nearest to Nagambie during the 1997 to 2009 Millennium Drought, Nagambie Resources expects the maximum possible yearly fall in water level to be around 20 cm; and
7. Every three months, the water in both pits will be routinely sampled and analysed by a NATA-accredited laboratory for pH, Electrical Conductivity @ 25°C (the water in both pits is strongly saline), Hydroxide Alkalinity as CaCO<sub>3</sub>, Carbonate Alkalinity as CaCO<sub>3</sub>, Bicarbonate Alkalinity as CaCO<sub>3</sub>, Total Alkalinity as CaCO<sub>3</sub>, Sulphate as SO<sub>4</sub><sup>2-</sup>, Chloride, Calcium, Magnesium, Sodium, Potassium, Aluminium, Iron, Arsenic, Cadmium, Copper, Lead, Manganese, Nickel, Zinc, Free Cyanide, Total Cyanide and Weak Acid Dissociable Cyanide. These parameters are based on routine testing of pit water quality since 2007 by Nagambie Resources and ANZECC's *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000*. Water testing will be conducted in accordance with EPA publication IWRG701 *Sampling and analysis of waters, wastewaters, soils and wastes*.

## **PASS MANAGEMENT RECORD KEEPING REQUIREMENTS:**

1. Records will be kept of all applications by source companies to deliver PASS materials to the mine site. These will include:
  - (a) details of the excavation materials including location, site ownership, contamination risk assessment, and details of testing compliant with the EPA requirements;
  - (b) details of materials' classification and testing, including NATA-accredited laboratory testing of EPA parameters for clean fill; and
  - (c) correspondence from source companies, Nagambie Resources and any referral authorities (such as EPA) demonstrating approval for the disposal of materials from the source excavation site at the Nagambie Resources' site;
2. Nagambie Resources will maintain records including:
  - (a) records of all trucks delivering PASS materials to the site including: (1) truck registration number; (2) job number; (3) associated load number; (4) tonnage; and (5) date and time. This will allow reconciliation of PASS materials sent from the source site with loads received on site;
  - (b) records of field testing of the pH of all tipped PASS material loads;
  - (c) records of management of all PASS materials on site, including the date of receipt, the date materials were dozed into the water-filled pits, and the pit into which the material was dozed;

- (d) records of maintenance conducted at the site including: (1) slaked lime CaOH<sub>2</sub> dosing of received materials; and (2) agricultural lime CaCO<sub>3</sub> dosing of the water-filled pits;
- (e) records of all field testing of the pH of the water in the water-filled pits, as well as all NATA-accredited laboratory testing of water quality against the upper thresholds;
- (f) records of monthly water level in the water-filled pits to establish any trends in the groundwater level; and
- (g) records of any exceedances of: (1) water quality testing parameters; (2) pH less than 5.5 for tipped PASS material loads; (3) odour; (4) dust; or (5) stormwater pollution and details of how these were responded to.

### **PASS MANAGEMENT REPORTING REQUIREMENTS:**

1. Every incidence of a tipped load of PASS material having a detected pH of less than 5.5 will be reported to the EPA, together with the responses taken by both Nagambie Resources and the source company;
2. Every three months, Nagambie Resources will email to the EPA:
  - (a) updated graph of weekly pH measurements for each pit, noting any quantities of agricultural lime added to the water in the pits if pH falls below 6.0;
  - (b) updated graph of monthly water levels for each pit, noting any significant movements and commenting on any significant rainfall or evaporation periods;
  - (c) updated table of three-monthly water quality NATA laboratory results, highlighting any exceedances of the upper thresholds, together with the actual quarterly NATA laboratory report;
3. At the end of each year, Nagambie Resources will produce an independent environmental management report. This will involve an independent review of:
  - (a) records, to confirm they have been kept correctly;
  - (b) the details of material types and quantities received on site, with a reconciliation of the quantities produced by approved sources of materials and the quantities of materials received on site, as well as a review of materials testing and approval procedures;
  - (c) water quality testing;
  - (d) pit water level measurement; and
  - (e) incidents and responses;
4. Prior to the end of the initial period, Nagambie Resources must have a suitably qualified person conduct a water balance study and produce a report which considers the suitable head of water to be maintained such that PASS remains in an anaerobic environment. This study should include evaporation rates and decreased precipitation rates which may be encountered due to the effects of climate change. Nagambie Resources considers that the thick, compacted, impermeable clay layer that will be ultimately used to cap the PASS in both pits will additionally ensure that the PASS always remains in an anaerobic environment;
5. Prior to the end of the initial period, Nagambie Resources must conduct a community consultation program and produce a report to the satisfaction of the EPA; and
6. Prior to the end of the initial period, Nagambie Resources must have a suitably qualified person conduct a hydrogeological assessment of groundwater quality and produce a report in accordance with EPA Publication 668.

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## **FORWARD-LOOKING STATEMENTS**

*This report contains “forward-looking statements” within the meaning of securities laws of applicable jurisdictions. Forward-looking statements can generally be identified by the use of forward-looking words such as “may”, “will”, “expect”, “intend”, “plan”, “estimate”, “anticipate”, “believe”, “continue”, “objectives”, “outlook”, “guidance” or other similar words, and include statements regarding certain plans, strategies and objectives of management and expected financial performance. These forward-looking statements involve known and unknown risks, uncertainties and other factors, many of which are outside the control of Nagambie Resources and any of its officers, employees, agents or associates. Actual results, performance or achievements may vary materially from any projections and forward-looking statements and the assumptions on which those statements are based. Readers are cautioned not to place undue reliance on forward-looking statements and Nagambie Resources assumes no obligation to update such information.*