

Initial results from bioleaching test work

BBX Minerals Limited (**ASX: BBX**) (“**BBX**” or the “**Company**”) is pleased to provide initial results from bioleaching test work conducted with EcoBiome Metals, LLC (**EcoBiome**). The goal of this investigative test work was to demonstrate how BBX’s complex mineralisation responds to EcoBiome’s patent pending microbial technology.

The test work was conducted at EcoBiome’s facility in the United States, using a surface bulk sample of mafic intrusive from the Ema project (EMB-007) (Figure 1). Samples were then assayed by ICP-MS by an independent analytical test laboratory in Arizona, USA. Samples were assayed for gold, platinum, palladium, iridium and rhodium.

Highlights:

- Initial bioleaching test work completed with EcoBiome.
- Test results show a significant increase in reported precious metals following bioleaching process.
- Follow-up testing for a larger sample size being developed.
- Planning underway for testing of drill core samples using bioleaching.
- EcoBiome operates under a USDA certified testing and development laboratory in The Woodlands, Texas, USA.
- Bioleaching is a simple and effective technology for metal extraction from low-grade ores and mineral concentrates¹.

Bioleaching test work utilising a surface bulk sample of mafic intrusive from the Ema project was completed by EcoBiome at its dedicated testing and development laboratory in The Woodlands, Texas, USA. Samples were then analysed (ICP-MS) for platinum, palladium, iridium, rhodium and gold by an independent analytical test laboratory in Arizona, USA.

A number of experiments were completed on 1 kg samples to determine the appropriate conditions and microbial formulation for the complex mineralisation. These demonstrated an overall increase in 5E² precious metals assayed following the bioleaching process.

Once ideal conditions were established, a new test using fresh mineralised material was carried out. This experiment utilised optimized Cultured Gold[®] microbial formula to demonstrate and prove the ability to extract and recover 5E precious metals from an unprocessed sample. EcoBiome proprietary and patent pending Gold DRIVE™ was utilised to promote the recovery of 5E precious metals. The results are presented in Table 1.

¹ Source: Klaus Bosecker, Bioleaching: metal solubilization by microorganisms, *FEMS Microbiology Reviews*, Volume 20, Issue 3-4, July 1997, Pages 591–604

² 5E precious metals refer to the sum of platinum (Pt), palladium (Pd), iridium (Ir), rhodium (Rh) and gold (Au) expressed in units of g/t.

Table 1: test results

Test using fresh rock	g/t
Au untreated ore grade	1.65
Au EcoBiome treated for 96 hours	14.74
Pd untreated ore grade	15.68
Pd EcoBiome treated for 96 hours	134.99
Pt untreated ore grade	0.06
Pt EcoBiome treated for 96 hours	0.09
Rh untreated ore grade	0.28
Rh EcoBiome treated for 96 hours	0.40
Ir untreated ore grade	-
Ir EcoBiome treated for 96 hours	1.06

These results are intended for test work purposes only and may not be indicative of the overall Ema mineralisation. Additional work is required to optimise the EcoBiome microbial formulation, concentration, metal targeting, and recovery process to achieve superior extraction and bio-recovery.

BBX’s Technical Manager Edmar Medeiros said: *“Initial studies show very promising results. The technique employed proved to be capable of significantly increasing the recovery of metals present in the ore, according to data from the technical report issued by EcoBiome.”*

There is no doubt that this is an initial study only, but it is very promising. The success of the technique will be achieved with the optimisation of operational parameters and process control.

We believe that the continuity of studies at bench scale and pilot plant will be very important in the production of data for the next phases of the project implementation”.

EcoBiome’s CEO Marc Rodriguez said: *“We are excited about the opportunity with BBX. The EcoBiome Metals process is a novel technology which includes our patent pending Cultured Gold microbes and Gold DRIVE. As we have anticipated, the first round of testing has shown highly favourable results using our technology platform. We believe the results using the EcoBiome Metals technology will continue to prove out as we move into the full pilot plant stage and to full commercialisation of the process.”*

Andre J Douchane, CEO commented: *“We are very pleased to see these initial results and while bio leaching of precious metal ores has been used successfully in many applications for many years this is only the first step.*

Additionally, because surface samples from the same location as EMB-007 are known to have very high assays from time to time we don’t consider the grades very important, but what we do consider important is the ability of EcoBiome’s proprietary microbes to consolidate and concentrate the precious metals. There is a lot of work to be done going forward and to that effect we have sent 50 kilograms of material from the Tres Estados project to EcoBiome. The material from a known drill hole will be used to further define and optimise leaching parameters and conditions after which, if successful, laboratory pilot plant testing could begin.”

This announcement has been authorised for release by the Board of Directors.

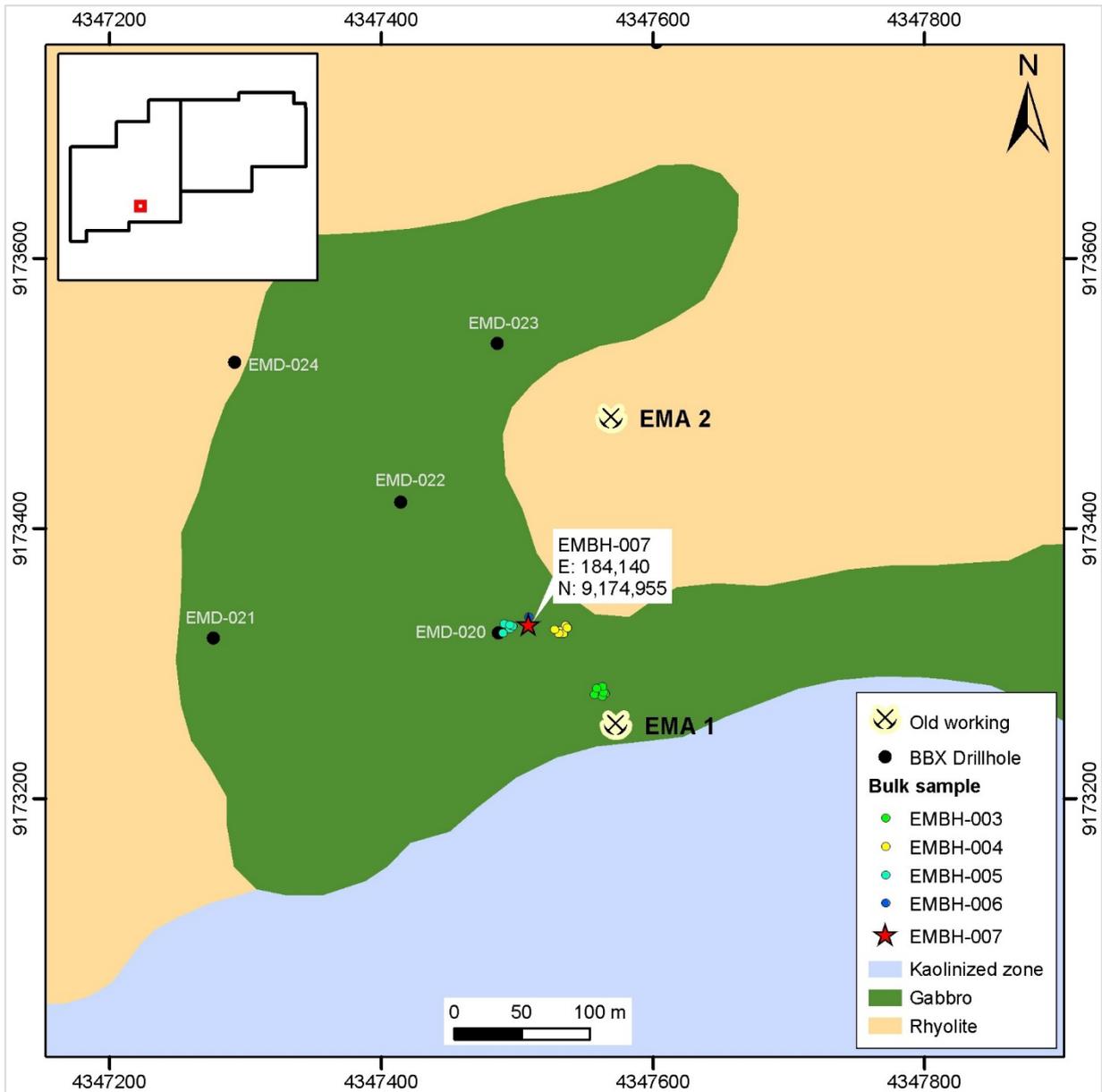


Figure 1: Location of EMB-007 surface sample



For more information:

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About BBX Minerals Ltd

BBX Minerals Limited is a mineral exploration and technology company listed on the Australian Securities Exchange. Its major focus is Brazil, mainly in the southern Amazon, a region BBX believes is vastly underexplored with high potential for the discovery of world class gold and precious metal deposits.

BBX's key assets are the Três Estados and Ema Gold Projects in the Apuí region, Amazonas State. The company has 270.5km² of exploration tenements within the Colider Group, a prospective geological environment for gold, PGM and base metal deposits.

Competent Person Statement

The information in this report that relates to exploration results is based on information compiled by Mr. Antonio de Castro, BSc (Hons), MAusIMM, CREA, who acts as BBX's Senior Consulting Geologist through the consultancy firm, ADC Geologia Ltda. Mr. de Castro has sufficient experience which is relevant to the type of deposit under consideration and to the reporting of exploration results and analytical and metallurgical test work to qualify as a competent person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr. Castro consents to the report being issued in the form and context in which it appears.

CREA/RJ:02526-6D

AusIMM:230624

The following Table and Sections are provided to ensure compliance with JORC Code (2012 Edition).

JORC (2012) Table 1 – Section 1: Sampling Techniques and Data for Metallurgical Test on a Single Bulk Sample

Item	JORC code explanation	Comments
Sampling Techniques	<ul style="list-style-type: none"> Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. Include reference to measures taken to ensure sample representativity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation that are Material to the Public Report. In cases where ‘industry standard’ work has been done this would be relatively simple (e.g. ‘reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay’). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information. 	<ul style="list-style-type: none"> The announcement refers to test results of a bulk surface chip sample from a large rock outcrop The bulk sample was taken from an outcropping dolerite over an area measuring approximately 2m x 2m. Individual sub-samples weighing 0.2 to 0.3kg were broken from the fresh outcrop and aggregated into a single sample. The sub-samples were taken at a roughly even spacing without bias and without regard for the visual appearance of the sub-sample (which in all cases were visually totally homogeneous). Sample representivity was ensured by taking individual sub-samples of an approximate equal size at an approximate equal spacing within the outcropping area, without regard to visual appearance of the rock being sampled. The bulk sample used for the bioleaching test work reported in this announcement was obtained by collecting surface chip samples over an area of approximately 2 by 2 metres at the Ema prospect. The entire 20kg sample was 100% crushed to minus 2mm then homogenised, with 5kg pulverised to 90% minus 150 mesh at BBX’s laboratory in Catalão, Goiás.
Drilling techniques	<ul style="list-style-type: none"> Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc). 	<ul style="list-style-type: none"> Drill results are not included in this announcement
Drill sample recovery	<ul style="list-style-type: none"> Method of recording and assessing core and chip sample recoveries and results assessed. 	<ul style="list-style-type: none"> Drill results are not included in this announcement

Item	JORC code explanation	Comments
	<ul style="list-style-type: none"> Measures taken to maximise sample recovery and ensure representative nature of the samples. Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material. 	
Logging	<ul style="list-style-type: none"> Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. The total length and percentage of the relevant intersections logged. 	<ul style="list-style-type: none"> No geological logging was carried out. N/A N/A
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling. Whether sample sizes are appropriate to the grain size of the material being sampled. 	<ul style="list-style-type: none"> Drill results are not included in this announcement.

Item	JORC code explanation	Comments
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established. 	<ul style="list-style-type: none"> The results presented are for metallurgical tests conducted by EcoBiome Metals, LLC in Texas, USA. Samples were assayed by a third-party laboratory in Arizona, USA, by ICP-MS. No geophysical tools or electronic device was used in the generation of sample results. Quality control procedures such as the use of certified standards and blanks were not used.
Verification of sampling and assaying	<ul style="list-style-type: none"> The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data. 	<ul style="list-style-type: none"> Not applicable as no drill results are included in this announcement Drill results are not included in this announcement Results for this work were reported directly to the CEO and the Technical Manager and entered directly into BBX's data base by the Company's data base manager. No adjustments were made.
Location of data points	<ul style="list-style-type: none"> Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. Specification of the grid system used. Quality and adequacy of topographic control. 	<ul style="list-style-type: none"> Drill results are not included in this announcement.
Data spacing and distribution	<ul style="list-style-type: none"> Data spacing for reporting of Exploration Results. Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied 	<ul style="list-style-type: none"> The sample subject of the test reported in this announcement was collected over a surface area of approximately 4 square metres. No representations of extensions, extrapolations or otherwise continuity of grade are made in this announcement. Drill results are not included in this announcement.

Item	JORC code explanation	Comments
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> • Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material. 	<ul style="list-style-type: none"> • The sample subject of this announcement was collected without bias from a surface outcrop. • The sample was taken in an unbiased manner from the entire outcrop exposure within the sample area. There are no visual structures or other geological features controlling mineralisation as the host rock is a visually homogeneous mafic intrusive.
Sample security	<ul style="list-style-type: none"> • The measures taken to ensure sample security. 	<ul style="list-style-type: none"> • The bulk sample was air freighted in sealed bags directly to BBX's laboratory in Catalão and after crushing and pulverisation, the pulverized 5kg was air freighted to EcoBiome's facility in the United States.
Audits or reviews	<ul style="list-style-type: none"> • The results of any audits or reviews of sampling techniques and data 	<ul style="list-style-type: none"> • No audits or external reviews of techniques have been conducted.

Section 2: Reporting of Exploration Results for Metallurgical Test

Item	JORC code explanation	Comments
Mineral tenement and land tenure status	<ul style="list-style-type: none"> Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area. 	<ul style="list-style-type: none"> The Ema lease is 100% owned by BBX with no issues in respect to native title interests, historical sites, wilderness or national park and environmental settings. The company is not aware of any impediment to obtain a licence to operate in the area
Exploration done by other parties	<ul style="list-style-type: none"> Acknowledgment and appraisal of exploration by other parties. 	<ul style="list-style-type: none"> No exploration by other parties has been conducted in the region.
Geology	<ul style="list-style-type: none"> Deposit type, geological setting and style of mineralisation. 	<ul style="list-style-type: none"> The geological setting of the area reported in this announcement is that of hydrothermally altered mafic intrusives within Proterozoic volcanic and volcanoclastic rocks. The precise nature of this unusual style of igneous rock-hosted precious metal mineralisation is currently unknown.
Drill hole Information	<ul style="list-style-type: none"> A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> easting and northing of the drill hole collar elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole down hole length and interception depth hole length. If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does 	<ul style="list-style-type: none"> Coordinates of the centre point of the 2m x 2m area comprising the bulk sample are included in this announcement (precision of approximately +/- 2m). <p style="margin-left: 40px;">UTM coordinates of the bulk sample centre point (WGS84 zone 21S): 9174960 N 184140 E</p> No exclusion of information has occurred.

Item	JORC code explanation	Comments
	<p>not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</p>	
<p>Data aggregation methods</p>	<ul style="list-style-type: none"> • In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. • Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. • The assumptions used for any reporting of metal equivalent values should be clearly stated. 	<ul style="list-style-type: none"> • The results reported in this announcement refer to a bulk sample collected from a surface outcrop • Not applicable – results reported refer to one bulk sample. • Not applicable – no equivalents were used in this announcement.
<p>Relationship between mineralisation widths and intercept lengths</p>	<ul style="list-style-type: none"> • These relationships are particularly important in the reporting of Exploration Results. • If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. • If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg ‘down hole length, true width not known’). 	<ul style="list-style-type: none"> • Drill results are not included in this announcement.
<p>Diagrams</p>	<ul style="list-style-type: none"> • Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not limited to plan view of drill hole collar locations and appropriate sectional views. 	<ul style="list-style-type: none"> • A map showing the sample location is included in this announcement.
<p>Balanced reporting</p>	<ul style="list-style-type: none"> • Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results. 	<ul style="list-style-type: none"> • The Company believes the ASX announcement provides a balanced report of the results of laboratory tests conducted on the bulk sample.

Item	JORC code explanation	Comments
Other substantive exploration data	<ul style="list-style-type: none"> Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances. 	<ul style="list-style-type: none"> Airborne geophysical results were presented in previous announcements.
Further Work	<ul style="list-style-type: none"> The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. 	<ul style="list-style-type: none"> Comments on the ongoing work programme are presented. A map showing the extent of gold in soil anomalies was included in previous announcements.