

16 May 2018

BAOBAB EXPANSION AND UPGRADE PROJECT UPDATE Q1 TO MID-Q2 2018 DEVELOPMENTS

HIGHLIGHTS

- **Wood PLC has been appointed as lead engineering consultants for the Baobab expansion and upgrade project Bankable Feasibility Study (BFS)**
- **The BFS has been structured to include an initial Feasibility Study phase, followed by the final Bankable Feasibility Study**
- **Processing test work continues with positive results**
- **The project's Indicated Mineral Resource is now estimated at 42.0 million tonnes at 19.4% P₂O₅ at a cut-off grade of 10% P₂O₅^[1], with the Inferred Mineral Resource estimated at 320 million tonnes at 16% P₂O₅ at a cut-off grade of 10% P₂O₅^[2], and a Resource Estimation Technical Report has been completed**

Appointment of Wood PLC

Avenira Limited ('Avenira' or the 'Company') (ASX: AEV) has appointed Wood PLC ('Wood') during the March quarter as its Lead Engineering Contractor for the Bankable Feasibility Study ('Study') currently underway at its 80% owned Baobab Phosphate Project in Senegal.

Wood, formerly known as Amec Foster Wheeler, will have a lead role in completing the Study for the targeted 1 Mtpa nameplate capacity expansion and upgrade of the existing beneficiation plant at the Gadde Bissik mine. The Study will build on the conceptual study conducted by Hatch in 2017, and on the experience accumulated during the actual mining activities on site since 2016.

Managing Director and CEO Louis Calvarin, commented "*Wood bring a first-class mining and processing team to the Gadde Bissik Expansion and Upgrade investment project. We are very pleased to be working with them as lead engineers: we have a winning combination in place.*"

The objective of the Study is to provide a definitive design basis for detailed engineering and construction management, for a plant producing high quality phosphate rock concentrate with a nominal capacity of 1 Million tonnes per year of concentrate. The scope of the Study includes mining, processing and a tailings storage. Wood will develop operating and capital cost estimates to approximately ±10% accuracy. This will

^[1] See Company Announcement dated February 5, 2018

^[2] *Ibid.*

avenira.com



also provide for detailed economic modelling to assist in raising funds to advance the project into commercial production.

The Study will follow a two-stage approach. Phase 1 is a Feasibility Study to deliver an AACE Class 4 cost estimate and is projected to be completed by early July 2018. Phase 2 will deliver a Bankable Feasibility Study including an AACE Class 3 cost estimate and is projected to be completed by the end of 2018.

Phosphate Industry Expertise

Glenn Gruber, a phosphate beneficiation specialist with over forty-five years' experience in industrial minerals, including plant engineering, plant operation, plant troubleshooting, plant design, laboratory and pilot plant testing, feasibility studies, and due diligence studies, has joined the Wood team for the Study as process expert. Glenn has led for many years the mining and beneficiation and minerals technology teams at Jacobs Engineering and its predecessor company Zellars-Williams.

Company consultant Henry Lamb, a geologist with forty years' experience in mining, geology and exploration of phosphate deposits, mine/production planning, economic analysis, and operation and maintenance of phosphate mineral projects in the US and internationally is actively supporting the BFS work. A competent person for JORC Code compliance and a qualified person pursuant to NI43-101, Henry has been associated with multiple international projects funded by the World Bank and the US Trade and Development Agency.

Ibrahima Gaye, a phosphate industry professional with over thirty-five years' experience in phosphate mining and beneficiation in Senegal, has joined the Baobab project team. A mining engineer by education, Ibrahima brings to the project his deep knowledge of Senegal phosphate ore mining and processing, having held multiple senior leadership positions at the long-established phosphate fertiliser producer Industries Chimiques du Sénégal (ICS), including several years as the ICS Beneficiation Process Manager and Site Manager.

Processing Test Work

Laboratory scale comminution and magnetic separation tests carried out by processing technology suppliers at their testing facilities since the conceptual study completion support the main processing options selected at the conceptual stage and essentially confirm the results of preliminary testing in 2017. The purpose of the test work is to confirm the feasibility and effectiveness of selected technologies and to provide design bases for the mass-balance projection and equipment sizing, in line with the project objective to deliver a concentrate with > 34% P₂O₅ with Fe₂O₃ and SiO₂ levels meeting market requirements.

Comminution

Comminution test work was performed at FLSmidth's Minerals Testing and Research Center in Salt Lake City, Utah to evaluate the hardness and abrasiveness characteristics of the larger size rocks in Baobab's ore from the Gadde Bissik Mine and provide data for crushing and milling equipment selection and design. Samples of ore were tested to evaluate their respective Bond Low Energy Impact Crusher Work Index (CWi), Bond Abrasion Index (Ai) and Bond Rod Mill Work Index (RWI). Samples selected to represent the hardest types of ore found at the mine were also tested to evaluate their Unconfined Compressive Strength (UCS).



The CWi tests indicated that the material is Soft within the range for resistance to breakage. The Ai test results yielded an average abrasion index indicating that the material is Very Soft or not very abrasive. The RWi test results showed that the material is in the Medium range for resistance to breakage. CWi, Ai and RWi testing results are summarised in Table 1 below (averages).

CWi (kWh/metric t)	Ai (grams)	RWi (kWh/metric t)
8.2 ± 3.8	0.0158	11.8 ± 4.9

Table 1 - Comminution Testing Results Summary

UCS test are illustrated below (before and after pictures: UCS test of Sample H-7).



Cores of H-7 Samples before UCS test



H-7 Sample 3 at UCS test completion

Magnetic Separation

The new process configuration will incorporate Magnetic Separation (MS) to ensure Fe₂O₃ content meets customer requirements. MS test work has been carried out on both Rare Earth Dry Roll and on Wet High-Intensity technologies at Eriez Magnetics Central Test Laboratory in Erie, Pennsylvania, with both types of processes achieving effective separation of ferruginous particles from the rock concentrates at the laboratory scale. Table 2 and the picture below show results achieved during one typical test run.

Field Intensity (T)	Magnetic Fraction Weight (g)	Magnetic Yield (%)	Non-Magnetic Weight (g)	Non-Magnetic Yield (%)
0.5	60	11.6	459	88.4
0.7	90	17.7	418	82.3
0.9	113	22.4	391	77.6
1.1	132	25.6	384	74.4
1.3	123	24.2	385	75.8

Table 2 – Sample 5: < 850 µm M.G.



Sample 5: < 850 μm M.G.

MS test work is continuing to further optimise processing arrangements and maximise phosphate recovery and final concentrate grade.

Flotation

The new process configuration will centre on flotation to reduce SiO_2 levels in concentrate to levels required by customers. Extensive laboratory scale flotation tests have been performed under Henry Lamb's supervision in Florida and have demonstrated at that scale that the target separation performance can be met by reverse flotation of silica (SiO_2) using amine-based formulated reagents. Table 3 below summarizes for illustration the key outcomes of one of the Florida flotation tests.

Stream	P_2O_5	SiO_2
Flotation Feed	17.2%	53.8%
Flotation Concentrate	36.1%	3.6%
Flotation Tailings	4.9%	86.5%

Table 3 – Laboratory Scale Flotation Results (Florida)

Current period test work includes onsite bench scale flotation testing using actual mine water on various samples extracted from the Gadde Bissik open pit, plus settling and dewatering tests of tailings and final concentrate product by process technology suppliers. Large samples of coarse and fine flotation feed material have also been prepared for upcoming pilot scale flotation runs for technology selection.

Mineral Resources Estimates

The Company has completed and published revised Mineral Resource estimates at the Baobab project (see announcement dated February 5, 2018). The project's Indicated Mineral Resource is now estimated at



42.0 million tonnes at 19.4% P₂O₅ at a cut-off grade of 10% P₂O₅ ^[3], with the Inferred Mineral Resource estimated at 320 million tonnes at 16% P₂O₅ at a cut-off grade of 10% P₂O₅ ^[4].

The table below, reproduced from the February announcement, shows the current Mineral Resource estimate, including depletion by mining to date, at a P₂O₅ cut-off grade of 10%.

GADDE BISSIK MINERAL RESOURCE TABLE - EFFECTIVE DATE 31/01/2018									
Cut-off grade 10% P₂O₅									
Area	Resource Category	Mt	P₂O₅ %	CaO %	MgO %	Al₂O₃ %	Fe₂O₃ %	SiO₂ %	
Gadde Bissik East	Within SMP	Indicated	31.5	20	28	0.09	2.19	3.80	42.9
		Inferred	3	18	24	0.15	3.0	2.9	49
	Outside SMP	Indicated	10.5	17.9	24.7	0.08	2.40	4.10	47
		Inferred	142	16	22	0.17	3.4	3.9	51
	Combined	Indicated	42.0	19.4	26.8	0.09	2.24	3.88	44.0
		Inferred	145	16	22	0.17	3.4	3.9	51
Gadde Bissik West	Inferred	26	13	17	0.4	6.7	7.0	48	
Gandal	Inferred	32	15	21	0.1	4.2	7.9	46	
Gadde Escale	Inferred	82	16	23	0.2	2.4	3.0	52	
Dinguiraye	Inferred	35	17	25	0.2	3.4	3.7	46	
Total Resources	Indicated	42.0	19.4	26.8	0.09	2.24	3.88	44	
	Inferred	320	16	22	0.18	3.5	4	50	

Mineral Resource Table - Cut-off grade 10% P₂O₅ ^[5]

Technical Report

During the March quarter the Company has also completed an updated technical report in respect of the Gadde Bissik phosphate deposit in the Republic of Senegal. The technical report was authored by MPR Geological Consultants Pty Ltd, and has an effective date of February 2018. The report includes all information up to the updated Mineral Resource estimate announced on the ASX on 5 February 2018.

The technical report can be viewed on the Company website at avenira.com.

Louis Calvarin
Managing Director

^[3] See Company Announcement dated February 5, 2018

^[4] Ibid.

^[5] Ibid.



About Avenira Limited

Avenira Limited (ASX: AEV) is a phosphate rock mining company with a vision to develop a portfolio of agricultural minerals and production assets that will build long term shareholder value by supplying to the world the agricultural nutrients critical to global food security.

Our flagship asset is the 80% owned Baobab Phosphate Project located in Senegal, West Africa. During the 2017 calendar year, the Company has established its strategic plan for the Baobab Project, focused first on a major expansion and upgrade of the beneficiation plant at Baobab's Gadde Bissik mine to bring it to a profitable operational higher level, and subsequently on implementing next-step investments towards its longer-term objective of downstream integration.



Phosphate Concentrate Production



Gadde Bissik Pit 1

Under the plan to expand and upgrade the existing ore beneficiation unit the Company engaged engineering firm Hatch to conduct a conceptual study which delivered positive results detailed in the Company's announcement of 17 October 2017. Following the positive conceptual study and successful completion of its Entitlement Offer and Placement capital raising, the Company has embarked on the next phases of its strategic plan, to include more detailed engineering work, approvals and financing.

The Company also owns approximately 7% interest in JDCPhosphate Inc., a private company in the USA focused on the development of the Improved Hard Process (IHP), a potentially game-changing proprietary high-grade phosphoric acid production technology. Avenira has exclusive license rights to use the IHP in Australia and Senegal once commercially proven.

The Company's other asset is the 100% owned Wonarah Phosphate Project in the Northern Territory. The project forms part of the Company's long-term strategy and will be enabled by the IHP process. Wonarah is one of the largest known phosphate deposits in Australia.

For further information on the company please refer to the company's website at www.avenira.com.



Compliance Statement

Information in this report relating to Exploration Results or estimates of Mineral Resources or Ore Reserves has been extracted from the reports listed below. The reports are available to be viewed on the company website at: www.avenira.com

Baobab Project:

27 April 2015: Minemakers to acquire a potential near-term production rock phosphate project in the Republic of Senegal
11 May 2015: Minemakers delivers maiden Inferred Resource for Baobab Rock Phosphate Project in Republic of Senegal
22 September 2015: Baobab project update
7 December 2015: Maiden Indicated Mineral Resource at Baobab Phosphate Project
21 January 2016: Technical Report Mineral Resource Estimation for the Gadde Bissik Phosphate Deposit, Republic of Senegal
28 October 2016: September 2016 Quarterly activities report
23 February 2017: Baobab exploration results update
2 March 2017: Significant increase to Indicated Mineral Resource at Baobab Phosphate Project.
9 June 2017: Company Update (Strategic Plan)
31 July 2017: June 2017 Quarterly Activities Report
11 September 2017: Baobab Exploration Results Update
12 October 2017: Mineral Resource increase at Baobab Phosphate Project
5 February 2018: Mineral Resource Increase at Baobab Phosphate Project

Wonarah Project:

15 March 2013: Technical Report Mineral Resource Estimation for the Wonarah Phosphate Project, Northern Territory, Australia
30 April 2014: Quarterly activities report

The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

Cautionary Statement Regarding Forward-Looking Information

All statements, trend analysis and other information contained in this document relative to markets for Avenira trends in resources, recoveries, production and anticipated expense levels, as well as other statements about anticipated future events or results constitute forward-looking statements. Forward-looking statements are often, but not always, identified by the use of words such as "seek", "anticipate", "believe", "plan", "estimate", "expect" and "intend" and statements that an event or result "may", "will", "should", "could" or "might" occur or be achieved and other similar expressions. Forward-looking statements are subject to business and economic risks and uncertainties and other factors that could cause actual results of operations to differ materially from those contained in the forward-looking statements. Forward-looking statements are based on estimates and opinions of management at the date the statements are made. Avenira does not undertake any obligation to update forward-looking statements even if circumstances or management's estimates or opinions should change. Investors should not place undue reliance on forward-looking statements.