

Bluejay Mining plc / EPIC: JAY / Market: AIM / Sector: Mining
27 June 2019

**Bluejay Mining plc ('Bluejay' or the 'Company')
Summary of Pre-Feasibility Study for the Dundas Ilmenite
Project**

Bluejay Mining Plc, the AIM and FSE listed company with projects in Greenland and Finland, is delighted to announce an update and summary of the Pre-Feasibility Study ('PFS') for the Dundas Ilmenite Project ('Dundas' or the 'Project') in Greenland, the world's highest-grade mineral sands ilmenite project. The PFS, which is based only on a JORC compliant mineral reserve of 67.1Mt defined at the Project and not the current Mineral Resource of 117Mt (see below), was compiled to deliver two outcomes, firstly as a high-level assessment of Dundas and secondly to accelerate the exploitation permitting process in Greenland. To view the press release with the illustrative maps and diagrams please use the following link:
http://www.rns-pdf.londonstockexchange.com/rns/5724D_1-2019-6-26.pdf

Pre-Feasibility Study Executive Summary

Key Financial Numbers:

- 32.8% IRR on base case post tax and post finance NPV₅ of US\$83.1MM
- US\$153.1MM undiscounted net profit over initial 9-year LOM
- 34% IRR on upside case, post tax, post finance NPV₅ of US\$130.7MM
- US\$247.2MM undiscounted net profit if LOM extended by further two years to include additional indicated resources identified after 2017

Resources:

- The PFS is based only on an initial JORC Compliant Ore Reserve of 67.1Mt with a mean grade of 3.45% TiO₂ (equal to 7.3% ilmenite in situ) and taken from within the Moriusaq

Project area only (see figure 1). This figure was produced by SRK Consulting and delivers an initial 9-year life of mine ('LOM')

- The current Dundas Mineral Resource estimate is 117Mt with a mean grade of 2.91% TiO₂, following the addition of the Iterlak East and West Mineral Resources announced during May 2019
- The Shallow Marine JORC Exploration Target stands at between 300Mt and 530Mt with a mean grade of 0.4-4.8% ilmenite, providing additional resource potential to extend the LOM
- The Ore Reserve is presented at a 1.6% TiO₂ cut-off grade within an engineered pit design and includes loss and dilution of 4.1% and 4.3% respectively
- The cut-off grade used to report the Ore Reserve, assumes a selling price of US\$232/t, all in sustaining C3 cost of US\$113/t, Greenland royalty of 2.5% and total TiO₂ recovery of 79.7%
- Sensitivity Analysis indicates positive financial impact of adding extra mine life through resources to reserve work

Mining and Production:

- Submission highlights a simple and proven development scenario including dry mining, a wet concentrator and dry magnetic separation of mineral assemblage.
- US\$245M estimated capital expenditure ('CapEx') inclusive of mining, processing, storage of dried finished product and a near shore direct ship loading facility due to increase from 300,000tpa to 440,000tpa ilmenite production as well as balance sheet management to account for shipping windows.
- Project finance discussions have commenced with European funding agencies which have stated that the Project's European jurisdiction will allow for a competitive cost of capital and is eligible for access to significant export credit grant benefits.
- CapEx inflated by c.20% to account for additional Greenland costs necessary to ensure viable and safe operation. Given this will be the first conventional mineral sand mining operation in such conditions, the Company has elected to take a highly conservative approach and is confident in achieving further reductions via consultation with end users and Greenlandic logistic specialists as well as assessing and implementing alternative power and mining methods.
- The Company is confident that further design optimisations will generate significant cost savings and further value can be

achieved by increasing the yearly output as already identified resources are added to the study mine plan.

- CapEx includes contingencies commensurate with the current study stage (see below) as well as sufficient reserves for balance sheet and cash flow management between shipping windows.
- Similarly, a conservative approach has been taken in assessing the Operating Costs ('OpEx') outcomes given operating conditions in Greenland. This has been assessed to account for at least an additional 20% of the current total operating cost. The Company and its consultants see significant scope for cost optimisations, particularly with a larger scale project.
- Revenue to Cost Ratio ('R:C') on base case scenario for Dundas is 2.01, using industry accepted ilmenite pricing forecasts and OpEx (mining, processing, infrastructure and G&A) for an operation based entirely in Greenland. This is significantly above an R:C of 1.7 which is considered a minimum metric by leading industry consultants TZMI for new projects to be brought online.
- Current study assumes year-round mining and processing and a spring/summer shipping window.

Upside Potential:

- The PFS and Ore Reserve will be updated as the mine plan is expanded
- Bluejay has commenced a value engineering process with IHC Robbins and Inuiplan A/S to identify further operational improvements in parallel with adding additional resources to the mine plan
- Geological Survey of Denmark and Greenland study (announced to market 22 May 2017) indicates potential for up to 700Mt of ilmenite may be contained within the Company's licence holding

The PFS was submitted in its entirety to the Mineral Licence and Safety Authority, Government of Greenland on 5 June 2019 and includes a maiden JORC compliant Ore Reserve.

Bluejay CEO Roderick McIlree said: "The Pre-Feasibility Study demonstrates Dundas' commerciality and all stakeholders, shareholders and the Government and people of Greenland will benefit from this development.

"The base case positive 32.8% IRR and US\$83.1MM NPV are just a starting point being based only on the current 67.1Mt resource and does not include the May 2019 resource increase to 117MT nor any future resources defined within the broader JORC compliant exploration target of between 300Mt and 530Mt. With demonstrable potential for additional resources both on and offshore along the entire >30km of licence holdings the opportunity to significantly increase the initial 9-year mine life and/or rate of production is clear.

"We are confident that the conservative CapEx figure can be materially improved upon. Recent cost items that were received were not able to be included in the study and will further reduce some of the higher cost and capital items used. The Company will also now initiate a detailed costings assessment for capital items used in the study. It is clear to the Company there are many ways to further enhance project economics, which we will continue to evaluate.

"The PFS has been lodged with the Government of Greenland as part of an exploitation application. The current study stands as the platform from which we continue to improve both OpEx and CapEx through inclusion of more detailed equipment sourcing, labour management and review of alternative sources of power, all of which will be undertaken in parallel to the permitting process. In addition, we will investigate expanding initial production in light of increased resource figures.

"Dundas has now been proven as a viable and economically mineable deposit, and we continue to explore project financing packages with European funding agencies who recognise the secure nature of the jurisdiction, which has positive implications for the cost of capital. However, to truly understand Dundas' worth, one must also look at the value it could add to higher grade finished products because of the potential for blending with lower quality feedstocks."

Figure 1 Location of existing JORC Reserves, Resources Exploration Targets as well as areas of future work.

Additional information

Dundas Titanium A/S ("Dundas" or the "Company") is a Greenland based mineral exploration and mining company. Dundas is 100% owned by Bluejay Mining Plc ("Bluejay") which is listed on the London Stock Exchange AIM market. Dundas is focused on developing its 100% owned Dundas Ilmenite Project (the "Project") which is situated on the

northwest coast of Greenland in the Municipality of Avannaata.

Dundas has undertaken studies and prepared a PFS as part of an application for an exploitation license to develop the Project. The mineral of interest is ilmenite, which is found in the so-called black sands. Ilmenite has a high content of titanium oxide (TiO_2), an important commodity used for making pigments and other products containing titanium.

The Project will produce a premium ilmenite product, which will be sold mainly to customers in the chloride slag industry. Chloride slag produced from this route would then be sold to chloride TiO_2 pigment producers. Also, some of the ilmenite could be sold as a direct feed into the sulphate TiO_2 pigment production segment of the market.

Background

Black (ilmenite-rich) sands were first described in the Thule area in 1916. However, it was not until the 1970s that systematic exploration was conducted by geoscientists from the Greenland Geological Survey.

The black sands on the south coast of the Steensby Land peninsula (Figure 1 -1) are contained in three types of deposits:

- Raised beaches - Inland from the frontal dunes, up to a kilometre in width, along more than 30 km of coastline;
- Active beaches - The area seaward of the frontal dunes which includes the beach, the tidal zones and the surf zone. Historically samples from this area have contained up to 70% ilmenite by weight; and
- Drowned beaches - The areas seaward of active beaches, where raised beaches were previously formed during periods of lower sea level.

Initially, the Project will focus on the raised and active beaches at Moriusaq (Moriusaq Bay) where the ilmenite will be separated from black sands for further processing. The key Project components include:

- Excavation of the beach sands using continuous surface miners (CSM);
- A modular and relocatable wet concentrator plant (WCP),
- A fixed ilmenite dry plant (IDP);
- Product storage and ship-loading facilities; and
- Associated infrastructure and services.

Dundas commenced exploration at the Project in 2015, and has carried

out additional field programmes in 2016, 2017 and 2018. The work programmes included auger, vibracore and sonic core drilling, geochemical sampling, marine geophysical and aerial photogrammetric surveys, trenching and general prospecting.

Geochemical sampling was conducted on raised, active and drowned beaches. Samples have been used, both qualitatively and quantitatively, for grade determination, metallurgical test work and the development of sample product concentrates.

Dundas has developed this PFS in a collaborative fashion, utilising its own internal technical, marketing and local Greenlandic based resources and outsourcing key engineering and mining related studies to recognised industry specialists.

The major contributors to the PFS, and their specific contributions are set out below:

- Dundas Titanium A/S: Provision of information related to Project background, history and location, environmental and social studies, marketing strategy and financial modelling;
- SRK: Regional geology and exploration, hydrogeology and hydrology, geotechnical, mine design and ore schedule, mining costs, resource estimation and ore reserves, and the design for residue management facilities;
- IHC Robbins: Metallurgical test work, design and engineering of the wet and dry processing plants, and processing plant capital and operating costs;
- Wood (formerly AMEC Foster Wheeler): Design and engineering of site infrastructure, logistics and shipping, project infrastructure capital and operating costs, development of the Project execution plan and the EPCM costs.

Resources

Table-1: JORC Mineral Resource Statement for the Dundas Ilmenite Project, December 2018, reported at a 0.0% in-situ TiO₂ cut-off grade

Classification	Location	Tonnes (kt)	Density (t/m ³)	>5mm (%)	>2mm (%)	THM (%)	In-Situ TiO ₂ (%)
Indicated	Moriusaq	88,000	2.24	27.5	36.1	4.2	27.0
	Moriusaq	5,000	2.30	15.7	23.0	5.7	34.2
Inferred	Ilerlak West	1,000	2.12	23.8	30.5	6.0	25.2
	Ilerlak East	7,000	2.12	14.6	23.1	5.6	39.4
	<i>Total Inferred</i>	<i>13,000</i>	<i>2.19</i>	<i>15.7</i>	<i>23.6</i>	<i>5.7</i>	<i>36.3</i>
TOTAL MINERAL RESOURCE		101,000	2.23	26.0	34.5	4.4	28.2

1. The effective date of the Mineral Resource is 11 December 2018;
2. The numbers are presented at a 0.0% in-situ TiO₂ cut-off grade;

3. "THM" and "HM" mean Total Heavy Minerals and Heavy Minerals respectively;
4. HM have been separated from a -2 mm +63 µm size fraction using heavy liquid separation at a density of 2.95 g/cm³;
5. Mineralogical assessments indicate that ilmenite is the only mineral of value in the assemblage. The remainder of the heavy minerals is dominated by pyroxene and amphibole.
6. % TiO₂ in-situ assumes that all recoverable TiO₂ is in the HM component of the -2 mm +63 µm size fraction;
7. % Ilmenite In-situ assumes that all TiO₂ is within ilmenite and that the ilmenite contains 47.65% TiO₂, based on historical exploration data.

Project Description

Dundas is applying for an exploitation license to develop the Project. The PFS is the culmination of the initial step in the document preparation phase in the process towards the grant of an exploitation license. Dundas will be working to improve the accuracy of the data in the PFS to bring it up to the quality required for a bankable feasibility study ("BFS").

The raised and active beach deposits extend some 30 km along the coast within the Dundas exploration license area. Initially, the Project will focus on the raised beaches within the Moriusaq Bay area which is the basis for the current mineral resource. Another potential target area is near Ilerlak delta, 13 km southeast of Moriusaq, where significant upside grade potential is found within the raised beaches. There are also further significant resources offshore ("drowned beaches") which are currently under evaluation.

The Project area is comprised of beaches, separated by rocky headlands, behind which are numerous low-lying terraces or raised beaches gradually rising to a coastal scarp approximately 2 km from the sea. The terraces are dissected by drainage patterns at regular intervals. These drainage channels carry summer melt water to the sea. Small coastal lagoons have developed behind the dune systems. The vegetation is generally sparse and limited to the lowlands where it consists mostly of dwarf shrub heaths with numerous lichens.

Dundas is focused on increasing the total mineral inventory at the Project to demonstrate the global significance of the Project in terms of tonnage. There is considerable upside potential within the Ilerlak delta itself, the offshore ("drowned") beaches, and additional raised beach areas which have not yet been included in the mineral resource calculation.

It is currently expected that the mining will occur all year round. Shipping of ilmenite product will occur over the summer months (mid-July to mid-October). Navigation by boat is generally for three to four

months, utilising an ice class vessel. However, years where the sea ice breaks up earlier are becoming more frequent, allowing the future possibility of longer periods of access.

The PFS considers two business cases, which were run through the Financial Model, being the Base Case and an Upside Case. The key assumptions used, and the main inputs and the outputs for each case are presented below:

The Base Case

The Base Case represents the Project economics based on exploiting the current Indicated Mineral Resources as defined by SRK in their Mineral Resource Estimate (dated 11th December 2018).

The Base Case is defined geologically by active and raised beaches along the Moriusaq bay area which host the mineral sand occurrences. The ilmenite-enriched heavy mineral sand tends to occur in the raised and active beach sediments.

The heavy mineral sands are expected to be extracted using surface mining techniques due to the shallow nature of the orebody. The material will be transported to a wet plant for initial processing to produce a heavy mineral concentrate (HMC). The HMC will be transported to a dry plant to produce two ilmenite concentrates, premium and standard, which will be loaded onto ships for transport to customers.

Oversize material and tailings reject will be transported to the mined-out areas for disposal, allowing for continuous rehabilitation of the raised beaches.

The Project site is currently accessible by boat during the summer months and, depending on weather conditions, by helicopter all year round. There are no roads or serviceable trails in the immediate Project area.

The Project will require the following:

- An airstrip to facilitate the year-round movement of personnel and consumables;
- A jetty from which bulk carriers will be loaded with ilmenite product for export;
- Site roads for general construction and operations traffic;
- A barge ramp for unloading construction and mining equipment and modules of plant and equipment constructed

- offshore; and
- Mine haul roads for access to mining areas and for transport of ore to processing facilities.

Site construction works is expected to commence in June 2020. Mining and processing of the ore is expected to commence in September 2021. First product shipment will occur in late October 2021.

Upside Case

The Upside Case represents the Project economics based on exploiting the current Indicated and Inferred Mineral Resources as defined by SRK in its Mineral Resource Estimate (dated 11th December 2018).

As per the Base Case, the Upside Case is defined geologically by active and raised beaches along the Moriusaq bay area. In this case, the mine life has been extended by the addition of Inferred Resources to the mine schedule. The majority of these are located south of the Iterlak delta and are consequently not mined until the latter years of mine life.

As per the Base Case, for the Upside Case the heavy mineral sands are expected to be extracted using surface mining techniques due to the shallow nature of the orebody. The material will be transported to a wet plant for initial processing to produce a heavy mineral concentrate ('HMC'). The HMC will be transported to a dry plant to produce two ilmenite concentrates, premium and standard, which will be loaded onto ships for transport to customers.

Oversize material and tailings reject will again be transported to the mined-out areas for disposal, allowing for continuous rehabilitation of the raised beaches.

In addition to the infrastructure and sustaining capital requirements for the Base Case, the Upside Case Project will require the following:

- A causeway across the Iterlak delta and access around the steep headland north of the delta, and;
- Mining fleet rebuilds in Year 8, to allow for the extension on mine life.

To account for these expenses, an additional \$13.2M was provided in Year 8 under Sustaining Capital.

Figure 2 Process flow sheet at Dundas Ilmenite Project

Breakdown of capital items

Total direct costs for the project are \$143,030,426. This is made up of \$24,360,000 for mining direct costs, \$57,695,044 for processing direct costs and \$60,975,382 for infrastructure direct costs. The breakdown of direct costs into categories is provided below:

Cost Category	Mining (US\$M)	Processing (US\$M)	Infrastructure (US\$M)
Earthworks & General Services	0.360	6.217	2.449
Civils & Buildings		15.067	15.258
Structural		8.465	3.776
Platework		1.743	2.302
Mechanical	24.000	13.884	22.102
Electrical & Instrumentation		3.951	7.587
Piping & Valves		2.807	2.809
First Fills & Spares			0.121
Vendor Representatives		0.180	0.084
Contingency	1.1	1.2	2.18
Total	24.360	57.695	60.975

Total indirect costs for the project are \$87,333,001. The breakdown of indirect costs into categories is provided below:

Cost Category	Indirect Cost (US\$M)	(% of Total Direct Cost)
Owner's Costs	3.712	2.6
Engineering & Procurement	9.717	6.8
Construction Management Costs	5.503	3.8
Vendor Reps, Spares & First Fills	5.240	3.7
Indirect Construction Costs	18.156	12.7
Indirect Contractors Costs	3.475	2.4
Freight, Duty & Taxes	19.463	13.6
Insurances	1.360	1.0
Contingency & Escalation	20.705	14.5
Total	87.333	61.1

Cost per Tonne Operating Costs

Discipline	Cost (US\$) per tonne of ROM	Cost (US\$) per tonne of Ilmenite
Mining	2.63	44.45
Processing	1.82	30.80
Infrastructure, Services and G&A	2.23	37.56
Total	6.68	112.81

The information in this press release that relates specifically to onshore Mineral Resources and Ore Reserves is based on information compiled under the direction of Dr Mike Armitage C Geol., C Eng., who is a Member of the Institute of Materials,

Minerals and Mining which is a Recognised Overseas Professional Organisation ('ROPO') included in a list promulgated by JORC from time to time. Dr Armitage is a full-time employee of SRK Consulting (UK) Ltd and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code) and for the purposes of the AIM Rules. Dr Armitage has reviewed this press release and consents to the inclusion in the press release of the matters based on his information in the form and context in which this appears.

Market Abuse Regulation (MAR) Disclosure

Certain information contained in this announcement would have been deemed inside information for the purposes of Article 7 of Regulation (EU) No 596/2014 until the release of this announcement.

****ENDS****

For further information please visit <http://www.titanium.gl> or contact:

Roderick McIlree	Bluejay Mining plc	+44 (0) 20 7907 9326
Ewan Leggat	SP Angel Corporate Finance LLP	+44 (0) 20 3470 0470
Soltan Tagiev	SP Angel Corporate Finance LLP	+44 (0) 20 3470 0470
Ingo Hofmaier	Hannam & Partners (Advisory) LLP	+44 (0) 20 7907 8500
Andrew Chubb	Hannam & Partners (Advisory) LLP	+44 (0) 20 7907 8500
Hugo de Salis	St Brides Partners Ltd	+44 (0) 20 7236 1177
Cosima Akerman	St Brides Partners Ltd	+44 (0) 20 7236 1177

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Anonymous (not verified)

Summary of the Pre-Feasibility Study for Dundas

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Thu, 06/27/2019 - 07:00

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Company Announcement - General

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