

## 2021 Mineral Resources and Ore Reserves Statement

### Key Points

- Kwale South Dune Ore Reserves estimate updated to incorporate existing estimated Mineral Resources located within the proposed expanded Kwale Special Mining Lease 23, increasing ore by 19Mt and contained heavy mineral by 0.6Mt and taking Kwale mine life to December 2023 following such expansion.
- Kwale South Dune Mineral Resources and Ore Reserves estimates reduced by mining depletion during the year to 30 June 2021.
- The combined effect is that:
  - estimated South Dune Mineral Resources have reduced by 22Mt containing 0.7Mt of in situ heavy mineral; and
  - estimated South Dune Ore Reserves remain the same at 40Mt of ore but contained heavy mineral has reduced by 0.1Mt.
- Kwale North Dune Mineral Resources estimate update announced on 19 February 2021 increased the estimate to 194Mt at an average heavy mineral grade of 1.5%, containing 2.9Mt of heavy mineral.
- Maiden Kwale Bumamani Mineral Resources estimate also announced on 19 February 2021 of 5.9Mt at an average heavy mineral grade of 1.9%, containing 0.115Mt of heavy mineral.

The 2021 Mineral Resources and Ore Reserves estimates for **Base Resources Limited** (ASX & AIM: BSE) are summarised in the table below, together with the 2020 Mineral Resources and Ore Reserves estimates for comparison.

	2021 as at 30 June 2021									2020 as at 30 June 2020								
	Tonnes	HM	HM	SL	OS	HM Assemblage				Tonnes	HM	HM	SL	OS	HM Assemblage			
	(Mt)	(Mt)	(%)	(%)	(%)	ILM	RUT	LEUC	ZIR	(Mt)	(Mt)	(%)	(%)	(%)	ILM	RUT	LEUC	ZIR
<b>Mineral Resources</b> (Measured + Indicated + Inferred, inclusive of Ore Reserves)																		
Kwale#	254	4.7	1.9	34	1.9	50	13	-	5.7	246	4.9	2.0	34	2	51	13	-	5
Ranobe	1,293	66	5.1	6	0	72	2*	-	6	1,293	66	5.1	6	0	72	2*	-	6
<b>Ore Reserves</b> (Proved + Probable)																		
Kwale South	40	1.3	3.3	24	2.1	58	14	-	5.7	40	1.4	3.4	26	1.7	57	13	-	6
Ranobe	586	38	6.5	3.9	0.1	74	1.1	0.9^	5.9	586	38	6.5	3.9	0.1	74	1.1	0.9^	5.9

Table subject to rounding differences.

\* Rutile reported is rutile + leucoxene mineral species.

^ Recovered leucoxene will be split between rutile and chloride ilmenite products depending on product specification requirements.

# Kwale incorporates the Kwale South Dune, Kwale North Dune and Bumamani deposits.

Mineral Resources and Ore Reserves estimates in this statement are reported in accordance with the JORC Code. A glossary of key terms used in this statement is contained on pages 8 and 9.

For further information about the estimates in this statement, including information that is material to understanding the estimates in relation to the applicable criteria in Table 1 of the JORC Code, refer to the following announcements<sup>1</sup>:

Deposit(s)		Announcement Title	Estimate Date	Release Date
Kwale South Dune	Mineral Resources & Ore Reserves	Updated Kwale South Dune Mineral Resources and Ore Reserves estimates	30 June 2021	20 August 2021
Kwale North Dune and Bumamani (Kwale)	Mineral Resources	Updated Kwale North Dune and maiden Bumamani Mineral Resources estimates	19 February 2021	19 February 2021
Ranobe (Toliara)	Ore Reserves	Maiden Ranobe Ore Reserves Estimate	27 November 2019	6 December 2019
Ranobe (Toliara)	Mineral Resources	Updated Ranobe Deposit Mineral Resources (corrected)	23 January 2019	23 January 2019
2020 Comparatives	Mineral Resources & Ore Reserves	2020 Mineral Resources and Ore Reserves Statement	30 June 2020	13 August 2020

## Kwale Deposits

The Company's 100% owned Kwale Mineral Sands Operations in Kenya is located approximately 50 kilometres south of Mombasa and 10 kilometres inland from the Kenyan coast. The Company's wholly owned subsidiary, Base Titanium, holds Prospecting Licence 2018/0119 (**PL119**) which contains the Kwale South Dune, and the Kwale North Dune and Bumamani deposits. A portion of the Kwale South Dune deposit resides within Base Titanium's Special Mining Lease 23 (**SML 23**) with the remainder sitting within PL119 but outside SML 23. The Company is in the process of completing the necessary steps to effect the expansion of SML 23 to cover the estimated Kwale South Dune Mineral Resources that are presently outside that mining tenure, but within PL119.

A pre-feasibility study is also currently underway to assess the potential to mine higher grade sub-sets of the North Dune deposit and the Bumamani deposit.

<sup>1</sup> ASX announcements are available at <https://baseresources.com.au/investors/announcements/>.

## Mineral Resources

The 2021 Kwale Mineral Resources, as at 30 June 2021, are estimated to be 254 million tonnes (Mt) at an average heavy mineral (HM) grade of 1.9% for 4.7Mt of contained HM, at a 1% HM cut-off grade.

**Table 2:** 2021 Kwale Mineral Resources estimate compared with the 2020 estimate at a 1% HM cut-off grade.

	2021 as at 30 June 2021								2020 as at 30 June 2020							
Category	Tonnes	HM	HM	SL	OS	HM Assemblage			Tonnes	HM	HM	SL	OS	HM Assemblage		
						ILM	RUT	ZIR						ILM	RUT	ZIR
	(Mt)	(Mt)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(Mt)	(Mt)	(%)	(%)	(%)	(%)	(%)
Kwale South Dune Mineral Resources (Inclusive of Ore Reserves)																
Measured	38	1.2	3.3	24	1.0	59	14	5.6	55	1.8	3.2	24	1	58	14	6
Indicated	16	0.5	3.0	25	5.9	54	13	5.7	20	0.6	2.9	26	7	52	12	6
Total	54	1.7	3.2	24	2.4	57	14	5.6	76	2.3	3.1	25	3	57	13	6
Kwale North Dune Mineral Resources																
Measured	119	1.8	1.5	37	1	42	13	6	-	-	-	-	-	-	-	-
Indicated	73	1.0	1.4	37	2	50	14	6	136	2.1	1.5	38	2	45	12	5
Inferred	2	0.0	1.2	37	3	50	15	7	34	0.5	1.4	36	3	46	13	6
Total	194	2.9	1.5	37	2	45	13	6	171	2.6	1.5	38	2	45	12	5
Bumamani Mineral Resources																
Measured	3.0	0.066	2.2	19	2.2	48	15	7.5	N/A							
Indicated	2.6	0.045	1.7	23	5.2	47	16	7.7								
Inferred	0.3	0.004	1.4	27	6.1	41	14	7.8								
Total	5.9	0.115	1.9	21	3.8	47	15	7.6								
Total Kwale Mineral Resources (Inclusive of Ore Reserves)																
Measured	160	3.1	2.0	33	1.3	49	13	5.6	55	1.8	3.2	24	1	58	14	6
Indicated	91	1.6	1.7	34	2.8	51	13	6.0	157	2.7	1.7	37	2	47	12	5
Inferred	3	0.0	1.2	36	3.3	48	15	6.7	34	0.5	1.4	36	3	46	13	6
Total	254	4.7	1.9	34	1.9	50	13	5.7	246	4.9	2.0	34	2	51	13	5

Table subject to rounding differences.

The 2021 Kwale Mineral Resources estimate represents an increase of approximately 3% in material tonnes but a decrease of 4% in contained HM tonnes when compared with the 2020 Kwale Mineral Resources estimate. This is due to an increase in the Kwale North Dune Mineral Resources estimate and the addition of the maiden Bumamani Mineral Resources estimate, offset by Kwale South Dune mining depletion.

The Kwale South Dune Mineral Resources are estimated to be 54Mt at an average HM grade of 3.2% for 1.7Mt of contained HM as at 30 June 2021, a decrease of 22Mt containing 0.7Mt of HM due to mining depletion, inclusive of sterilisation of sub-economic low-grade material, when compared with the 2020 Kwale South Dune Mineral Resources estimate.

The 2021 Kwale North Dune Mineral Resources estimate was updated on 19 February 2021 and are estimated to be 194Mt at an average HM grade of 1.5% for 2.9Mt of contained HM, at a 1% HM cut-off grade, an increase in material tonnage of 13% and contained HM of 12%, when compared to the 2020 Kwale North Dune Mineral Resources estimate.

The maiden 2021 Bumamani Mineral Resources estimate was released on 19 February 2021 and is estimated to be 5.9Mt at an average HM grade of 1.9% for 0.115Mt of contained HM, at a 1% HM cut-off grade.

## Ore Reserves

Contained within the Kwale South Dune Mineral Resources are the Kwale South Dune Ore Reserves, estimated as at 30 June 2021 to be 40Mt at an average HM grade of 3.3% for 1.3Mt of contained HM.

**Table 3:** The 2021 Kwale South Dune Ore Reserves estimate compared with the 2020 estimate.

	2021 as at 30 June 2021								2020 as at 30 June 2020							
Category	Tonnes  (Mt)	HM  (Mt)	HM  (%)	SL  (%)	OS  (%)	HM Assemblage			Tonnes  (Mt)	HM  (Mt)	HM  (%)	SL  (%)	OS  (%)	HM Assemblage		
						ILM  (%)	RUT  (%)	ZIR  (%)						ILM  (%)	RUT  (%)	ZIR  (%)
Kwale South Dune Ore Reserves																
Proved	30	1.0	3.4	24	0.9	59	14	5.6	35	1.2	3.5	26	0.8	58	14	6
Probable	11	0.4	3.3	24	5.5	56	13	5.7	5	0.2	2.9	27	7	51	12	5
<b>Total</b>	<b>40</b>	<b>1.3</b>	<b>3.3</b>	<b>24</b>	<b>2.1</b>	<b>58</b>	<b>14</b>	<b>5.7</b>	<b>40</b>	<b>1.4</b>	<b>3.4</b>	<b>26</b>	<b>1.7</b>	<b>57</b>	<b>13</b>	<b>6</b>

Table subject to rounding differences.

While ore tonnage did not change, the 2021 Kwale South Dune Ore Reserves estimate represents an overall decrease of 2% in contained HM tonnes from the previously reported 2020 Kwale South Dune Ore Reserves estimate due to:

- depletion due to mining of 19Mt of ore and 0.7Mt of contained HM, inclusive of unmined material caused by an elevated basement floor in some areas compared to that predicted in the underlying model; and
- an additional 19Mt of ore and 0.6Mt of contained HM being included as a result of incorporation of additional Kwale South Dune Mineral Resources located within the proposed expanded SML 23.

The additional Kwale South Mineral Resources were incorporated given the Company's greater certainty that, in the near term, mining tenure arrangements with the Kenyan Ministry of Petroleum and Mining for the proposed extended SML23 will be finalised, and the necessary environmental licencing (an EIA Licence) will be issued.

No Ore Reserves estimate has been completed for the Kwale North Dune and Bumamani deposits.

## Ranobe Deposit

The Company's 100% owned Toliara Project is based on the Ranobe deposit, located approximately 45 kilometres north of the town of Toliara and 15km inland from the coast in south west Madagascar. The Ranobe deposit sits within *Permis d'Exploitation* 37242, which is a mining lease under Malagasy law. The Company is currently progressing the project towards development.

### Mineral Resources

The 2021 Ranobe Mineral Resources are estimated to be 1,293Mt at an average HM grade of 5.1% for 66Mt of contained HM, based on a 1.5% HM cut-off grade. The Ranobe Mineral Resources at 30 June 2021 are unchanged from the 2020 estimate.

**Table 4:** The 2021 Ranobe Mineral Resources estimate, compared with the 2020 estimate, at a 1.5% HM cut-off grade.

	2021 as at 30 June 2021								2020 as at 30 June 2020							
Category	Material	In Situ HM	HM	SL	OS	HM Assemblage			Material	In Situ HM	HM	SL	OS	HM Assemblage		
						ILM	RUT*	ZIR						ILM	RUT*	ZIR
	(Mt)	(Mt)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(Mt)	(Mt)	(%)	(%)		(%)	(%)
Ranobe Mineral Resources (Inclusive of Ore Reserves)																
Measured	419	28	6.6	4	0	75	2	6	419	28	6.6	4	0	75	2	6
Indicated	375	18	4.9	8	1	72	2	6	375	18	4.9	8	1	72	2	6
Inferred	499	20	3.9	7	1	70	2	5	499	20	3.9	7	1	70	2	5
Total	1,293	66	5.1	6	0	72	2	6	1,293	66	5.1	6	0	72	2	6

Table subject to rounding differences.

\*Rutile reported in the table is rutile + leucoxene mineral species.

### Ore Reserves

Contained within the Ranobe Mineral Resources are the Ranobe Ore Reserves, estimated as at 30 June 2021 to be 586Mt at an average HM grade of 6.5% for 38Mt of contained HM. The Ranobe Ore Reserves estimate as at 30 June 2021 are unchanged from the 2020 estimate.

**Table 5:** The 2021 Ranobe Ore Reserves estimate.

	2021 as at 30 June 2021									2020 as at 30 June 2020												
Category	Tonnes	HM	HM	SL	OS	HM Assemblage				Tonnes	HM	HM	SL	OS	HM Assemblage							
	(Mt)	(Mt)	(%)	(%)	(%)	ILM	RUT	LEUC	ZIR						(Mt)	(Mt)	(%)	(%)	(%)	(%)	(%)	(%)
						(%)	(%)	(%)	(%)													
Ranobe Ore Reserves																						
Proved	347	24	7.0	3.8	0.1	75	1.0	1.0	5.9	347	24	7.0	3.8	0.1	75	1.0	1.0	5.9				
Probable	239	14	5.8	4.2	0.2	73	1.3	0.8	5.7	239	14	5.8	4.2	0.2	73	1.3	0.8	5.7				
Total	586	38	6.5	3.9	0.1	74	1.1	0.9^	5.9	586	38	6.5	3.9	0.1	74	1.1	0.9^	5.9				

Table subject to rounding differences.

^Recovered Leucoxene will be split between Rutile and Chloride Ilmenite products depending on product specification requirements.

## Mineral Resources and Ore Reserves Governance

A summary of the governance, internal controls and estimation process applicable to Base Resources' Mineral Resources and Ore Reserves estimates is as follows:

### Mineral Resources

- Review and validation of drilling and sampling methodology and data spacing, geological logging, data collection and storage, sampling and analytical quality control.
- Geological interpretation – review of known and interpreted structure, lithology and weathering controls.
- Estimation methodology – relevant to mineralisation style and proposed mining methodology.
- Comparison of estimation results with previous mineral resources models, and with results using alternate modelling methodologies.
- Visual validation of block model against raw composite data.
- Use of external competent persons to assist in preparation of Mineral Resources estimate updates.

### Ore Reserves

- Review of potential mining methodology to suit deposit and mineralisation characteristics.
- Review of potential Modifying Factors, including cost assumptions and commodity prices to be utilised in mining evaluation.
- Ore Reserves estimate updates initiated with material changes in the above assumptions.
- Optimisation using appropriate software packages for open pit evaluation.
- Design based on optimisation results.
- Use of external competent persons to assist in preparation of Ore Reserves estimates.

## Competent Persons' Statements

The information in the 2021 Mineral Resources and Ore Reserves Statement that relates to Mineral Resources and Ore Reserves is based on, and fairly represents, information and supporting documentation prepared by the Competent Persons named in the table below. Each Competent Person:

- is a Member or Fellow of The Australasian Institute of Mining and Metallurgy;
- has sufficient experience that is relevant to the style of mineralisation and type of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code and as a qualified person for the purposes of the AIM Rules for Companies; and
- consents to the inclusion in this statement of matter based on their information in the form and context in which the relevant information appears.

Mr. Scott Carruthers is employed by Base Resources, holds equity securities in Base Resources, and is entitled to participate in Base Resources' long-term incentive plan and receive equity securities under that plan. Details about that plan are included in Base Resources' 2020 Annual Report.

Name	Estimate(s)	Employer
Scott Carruthers	Kwale Mineral Resources (overall), Kwale South Dune Mineral Resources, Bumamani Mineral Resources, Kwale South Dune Ore Reserves and Ranobe Ore Reserves	Base Resources, full-time employee
Greg Jones	Kwale North Dune Mineral Resources, Ranobe Mineral Resources	IHC Robbins, consultant geologist to Base Resources

Per Scrimshaw	Kwale South Dune Ore Reserves	Entech, a mining consultancy engaged by Base Resources
Chris Sykes	Ranobe Ore Reserves	IHC Robbins, consultant mining engineer to Base Resources

## Forward looking statements

Certain statements in or in connection with this statement contain or comprise forward looking statements. Such statements may include, but are not limited to, statements with regard to future production and grades, capital cost, capacity, sales projections and financial performance and may be (but are not necessarily) identified by the use of phrases such as “will”, “expect”, “anticipate”, “believe” and “envisage”. By their nature, forward looking statements involve risk and uncertainty because they relate to events and depend on circumstances that will occur in the future and may be outside Base Resources’ control. Accordingly, results could differ materially from those set out in the forward-looking statements as a result of, among other factors, changes in economic and market conditions, success of business and operating initiatives, changes in the regulatory environment and other government actions, fluctuations in product prices and exchange rates and business and operational risk management. Subject to any continuing obligations under applicable law or relevant stock exchange listing rules, Base Resources undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events.



## Glossary

Assemblage	The relative proportion of valuable heavy mineral components of ilmenite, rutile, zircon and, where applicable, leucoxene.
Base Resources or Company	Base Resources Limited.
Base Titanium	Base Titanium Limited.
Competent Person	The JORC Code requires that a Competent Person be a Member or Fellow of The Australasian Institute of Mining and Metallurgy, of the Australian Institute of Geoscientists, or of a 'Recognised Professional Organisation'. A Competent Person must have a minimum of five years' experience working with the style of mineralisation or type of deposit under consideration and relevant to the activity which that person is undertaking.
Cut-off grade	The lowest grade of mineralised material that is thought to be economically mineable and available. Typically used by Base Resources to define which material is reported in a Mineral Resource estimate.
Grade	A physical or chemical measurement of the characteristics of the material of interest. In this context, the grade is always a percentage and the characteristics are heavy mineral, oversize, slime and the various product minerals (ilmenite, rutile etc).
Heavy mineral	In mineral sands, minerals with a specific gravity greater than 2.85 t/m <sup>3</sup> .
ILM	Ilmenite, a valuable heavy mineral.
Indicated	An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.
Inferred	An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.
JORC Code	The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 Edition, as published by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia.
LEUC	Leucoxene, a valuable heavy mineral.
Measured	A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.
Modifying Factors	Modifying Factors are considerations used to convert Mineral Resources to Ore Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.
Mineral Resources	Mineral Resources are a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.
Ore Reserves	Ore Reserves are those portions of Mineral Resources that, after the application of all Modifying Factors, result in an estimated tonnage and grade which, in the opinion of the Competent Person making the estimates, are economically mineable.
OS	Oversize material.



Probable	A Probable Ore Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Ore Reserve is lower than that applying to a Proved Ore Reserve.
Proved	A Proved Ore Reserve is the economically mineable part of a Measured Mineral Resource. A Proved Ore Reserve implies a high degree of confidence in the Modifying Factors.
RUT	Rutile, a valuable heavy mineral.
SL	Slimes, being a waste product from the processing of mineral sands.
Sterilisation	Material or Ore that is depleted from Mineral Resources or Ore Reserves, but which was not mined. This material still remains in ground but mining has passed by and, in the competent person's opinion, it has no reasonable prospects for eventual economic extraction.
ZIR	Zircon, a valuable heavy mineral.

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### For further information contact:

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This release has been authorised by Base Resources' Disclosure Committee.

#### About Base Resources

Base Resources is an Australian based, African focused, mineral sands producer and developer with a track record of project delivery and operational performance. The Company operates the established Kwale Operations in Kenya and is developing the Toliara Project in Madagascar. Base Resources is an ASX and AIM listed company. Further details about Base Resources are available at [www.baseresources.com.au](http://www.baseresources.com.au).