

## ILUKA RESOURCES KEY PHYSICAL & FINANCIAL PARAMETERS - 2017

30 January 2017

This document provides an indicative guide to key physical and financial parameters expected for the Iluka business in the 2017 financial year. The information is provided to assist sophisticated investors with the modelling of the company, but should not be relied upon as a predictor of future performance.

**This information is based on Iluka forecasts and as such is subject to variation related to, but not restricted to, economic, market demand/supply and competitive factors. It is Iluka's approach to modify its production settings based on market demand, and this can have a significant effect on operational parameters and associated physical and financial characteristics of the company. In the case of part of the guidance, it also relates to the Sierra Rutile operation, for which the company has recently taken control of and where a more extended period of operational involvement will enable more definition of appropriate operational and cost settings. As such, the guidance should be viewed as broad parameters, subject to modification.**

The following excludes the Mining Area C iron ore royalty. In the case of Metalysis Ltd, Iluka equity accounts for this investment. A \$1.4 million loss was recorded as at 30 June 2016. The current guidance parameters supersede all previous key physical and financial parameters.

Supplementary information contained in the appendices to this document includes:

Appendix 1	Cost of Goods Sold and Inventory Methodology
Appendix 2	Production and Cost Trends
Appendix 3	Production Settings
Appendix 4	Historical Production, Sales and Prices
Appendix 5	SRL Physicals and Financials
Appendix 6	Operating Mine – Physical Data

### Disclaimer

#### Forward Looking Statements

This document contains certain statements which constitute "forward-looking statements". These statements include, without limitation, estimates of future production and production potential; estimates of future capital expenditure and cash costs; estimates of future product supply, demand and consumption; statements regarding future product prices; and statements regarding the expectation of future Mineral Resources and Ore Reserves. Where Iluka expresses or implies an expectation or belief as to future events or results, such expectation or belief is expressed in good faith and on a reasonable basis. No representation or warranty, express or implied, is made by Iluka that the matters stated in this presentation will in fact be achieved or prove to be correct. Forward-looking statements are only predictions and are subject to risks, uncertainties and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements. Such risks and factors include, but are not limited to:

- changes in exchange rate assumptions;
- changes in product pricing assumptions;
- major changes in mine plans and/or resources;
- changes in equipment life or capability;
- emergence of previously underestimated technical challenges; and
- environmental or social factors which may affect a licence to operate.

To the extent permitted by law, Iluka, its officers, employees and advisers expressly disclaim any responsibility for the accuracy or completeness of the material contained in this presentation and exclude all liability whatsoever (including in negligence) for any loss or damage which may be suffered by any person as a consequence of any information in this presentation or any error or omission therefrom. Iluka does not undertake any obligation to release publicly any revisions to any forward-looking statement to reflect events or circumstances after the date of this paper, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.

#### Non-IFRS Financial Information

This document uses non-IFRS financial information including mineral sands EBITDA, mineral sands EBIT, Group EBITDA and Group EBIT which are used to measure both group and operational performance. Non-IFRS measures have not been subject to audit or review.

## Physical Parameters

### Production - Iluka Group

2016 figures exclude any contribution from Sierra Rutile. The acquisition of Sierra Rutile was finalised on 7 December 2016.

Production settings are able to be adjusted and are dependent on market demand conditions, cash cost and inventory monetisation considerations.

Production (kt)	2016	2017 Guidance Iluka only	2017 Guidance Sierra Rutile only	2017 Guidance Iluka group	2017 Commentary
Zircon	347	~275	-	~275	Lower production reflects continued processing of heavy mineral concentrate from the Murray Basin and Jacinth-Ambrosia, facilitating inventory draw-down. Sales expected to be higher than production.
Rutile	109	~90	~150	~240	Continued processing of Murray Basin concentrate. Sierra Rutile below 3 year guidance range of ~160-175kt <sup>1</sup> . Lower ore grade due to mine schedule changes prior to change of control; to be addressed through revised mine plan and increased mine rates. 3 year production guidance expected to be retained following completion of this activity. In 2018, rutile production is expected to be lower associated with the cessation of the dredge operation. Associated with the factors above, average 2017-2019 rutile production is expected to be at the lower end of the guided range.
Synthetic rutile (SR)	211	~205	N.A.	~205	Operation of synthetic rutile kiln 2 (SR2).
<b>Total Z/R/SR</b>	<b>667</b>	<b>~570</b>	<b>~150</b>	<b>~720</b>	
<b>Ilmenite</b>	326	Not guided	~40	Not guided	Ilmenite produced can be sold directly or used as a feed for synthetic rutile production. It is expected that the majority of non Sierra Rutile internal ilmenite production will be used for synthetic rutile production in 2017.

1. Three year average annual guidance for 2017-2019, as disclosed on 9 December 2016.

## Sales - Iluka Group

Guidance parameters based on inclusion of Sierra Rutile. 2016 sales exclude Sierra Rutile

<b>Sales Volumes (kt)</b>	<b>2016</b>	<b>2017 Guidance</b>	<b>2017 Commentary</b>
Zircon	339	Not guided	Iluka 2017 combined Z/R/SR sales are expected to exceed Iluka 2016 combined Z/R/SR sales. In addition, Sierra Rutile sales in 2017 are likely to be matched to 2017 guided production levels.
Rutile	154		
Synthetic rutile	187		
<b>Total Z/R/SR</b>	<b>680</b>		

### Explanatory notes:

- In 2016 zircon sales constituted ~47% premium product, ~33% standard product and ~20% zircon in concentrate. In 2017 the structure of zircon sales is expected to be similar. Refer table on page 13 for an indication of 2016 price variations by product grade.
- Rutile sales include some lower titanium dioxide product, referred to as Hyti. HyTi, due to its lower titanium dioxide content (~91% TiO<sub>2</sub>), sells at a lower price than rutile (~95% TiO<sub>2</sub>). In 2016, ~91% of sales volumes classified as rutile was rutile and ~9% was Hyti. These product weightings are expected to be similar in 2017.
- In addition to the main mineral sands products of zircon, rutile and synthetic rutile, Iluka also generates revenue from, and incurs production costs related to, ilmenite and by-product streams, including iron concentrate and activated carbon. In 2016, this ilmenite and other revenue was \$30 million.

## Financial Parameters

### Iluka Group

2016 data excludes Sierra Rutile.

The following guidance is also provided as a worked example of an income statement, refer to *Iluka Simplified Profit and Loss Model 2017* at [Iluka Mineral Sands Briefing Papers](#).

	2016 (excl. SRL)	2017 Guidance Iluka only	2017 Guidance Sierra Rutile only	2017 Guidance Iluka group	2017 Commentary
<b>Cash Costs \$m</b>					
Production cash costs Z/R/SR (excluding ilmenite concentrate and by- products)	243	~215	~115	~330	Iluka only production settings similar to 2016. Production costs lower with Jacinth-Ambrosia idled for whole year (relative to 9 months in 2016) and lower overburden movements at Tutunup South.  Sierra Rutile costs of ~A\$115m (~US\$87m) are above three year average guidance range of US\$75-85m <sup>1</sup> due to mine schedule changes prior to change of control, as referred to previously.  Refer note 1
Ilmenite concentrate and by-product costs	8	~10	-	~10	Higher iron concentrate costs due to additional shipments from the Mid West. Costs also include those associated with activated carbon (a co-product with revenue stream from synthetic rutile production).
<b>Total Cash Costs of Production</b>	<b>251</b>	<b>~225</b>	<b>~115</b>	<b>~340</b>	
Other cash costs <sup>2</sup> Includes: royalties, marketing and selling, exploration, resource development and corporate support	~190	~120	~20	~140	Costs expected to be lower than 2016 levels with reduced expenditure following the sustainable business review in corporate, resource development, exploration, marketing areas.  Balranald project costs to be capitalised in 2017 (expensed in 2016).  Refer note 2
Restructure, idle capacity, rehabilitation & holding costs <sup>3</sup>		~60	-	~60	Refer note 3 and 4
<b>Total Cash Costs</b>		<b>~405</b>	<b>~135</b>	<b>~540</b>	
<b>Unit cash costs per tonne of Z/R/SR produced (excluding by- product costs) (\$/t)</b>	364	~375	~760	~460	Iluka only unit costs at similar level to 2016 reflecting unchanged operational settings.

<sup>1</sup> Three year average annual guidance for 2017 - 2019, as disclosed on 9 December 2016.

<sup>2</sup> 2016 non-production costs of **\$190 million were guided**, (2016 actuals for other cash costs will be released at the time of the full year results) including a guided non-recurring ~\$35 million item for research expenditure on the Balranald unconventional mining method and an actual \$14 million for Sierra Rutile transaction costs (previously \$18 million of which \$2 million re-classified as interest expense in relation to a deal contingent forward, with the balance mainly a SRL management payment made prior to change of control).

<sup>3</sup> 2016 to be released in 2016 Full Year Results

<b>Unit cost of goods sold per tonne of Z/R/SR (\$/t)</b>	691	~730	~975	~775	2017 is indicative only and will be dependent on sales mix and other factors during the year. Refer note 5
<b>Non Cash Costs</b>					
Depreciation & amortisation <sup>3</sup>		~80	~40	~120	Iluka has changed to a straight-line depreciation method. Assets will be depreciated in periods when idled (previously depreciation halted during idling). Refer note 6 re. Sierra Rutile D&A
Other <sup>3</sup>		~20	-	~20	Includes rehabilitation unwind and other finance costs. Refer note 7
Capital Expenditure <sup>3</sup>		~190	~70	~260	The magnitude and timing of capital expenditure in 2017 will depend on a final Board execute decision for the Cataby project. This guidance assumes commitment to Cataby during 2017. As outlined at the time of acquisition, planned capital expenditure at Sierra Rutile includes safety and operational improvements and Lanti and Gangama dry mine expansions. Capital expenditure for 2017 also includes progressing the alternative mining method development approach for the Balranald project and several other projects. Refer note 8

## Notes to Key Physical and Financial Parameters

### Note 1 – Product cash costs of production include the following main components:

- mining and concentrating costs; transport of heavy mineral concentrate; mineral separation; synthetic rutile production and costs for externally purchased ilmenite and production overheads. This category excludes Australian State Government royalties.

### Note 2 - Other cash costs include:

- royalties, marketing and selling costs (including marketing overheads and port costs), exploration expenditure expensed, resource development expenditure and corporation and other support costs.

### Note 3 - Restructure costs/plant idling costs

Refer Note 6 (d) of Notes to Iluka's Financial Statements of the 2015 Annual Report for further description of this item.

### Note 4 - Rehabilitation and holding costs for closed sites

Refer Note 3 (ii) of Notes to Iluka's Financial Statements of the 2015 Annual Report and Note 6 (e) Annual Report for further description of this item.

### Note 5 – Cost of goods sold

COGS comprise the cash costs of production, excluding by-product costs, plus depreciation and amortisation (D&A), plus or minus inventory movement. Refer Appendix 1.

## **Note 6 – Depreciation and Amortisation**

Sierra Rutile includes charges for depreciation of plant and equipment plus amortisation of mine reserves arising from the purchase price of the acquisition. Depreciation of mine plant and equipment reflects the age and wear and tear of the assets however the company expects to review the asset lives in conjunction with plans to extend the life of the mine beyond current deposits in operation. Mine reserves are amortised over the life of mine consistent with Iluka standards.

Depreciation and amortisation of most assets is charged over the life of the relevant mine or asset, whichever is the shorter. Iluka currently adopts a unit of production depreciation policy for all mine specific plant and mine reserves. All other assets are depreciated using the straight-line method. As a result, all mine specific plant, such as mining units, concentrators and mineral separation plants, do not incur any depreciation charges when they are not in use (i.e. when they are idle). Given Iluka's approach to flexing production to meet market demand, sometimes for extended periods, the Board has resolved to change the depreciation method for mine specific plant to straight-line, with effect from 1 January 2017. This will result in additional depreciation charges of ~\$12 million in 2017. Mine reserves will continue to be depreciated using units of production, consistent with common industry practice.

Included in the depreciation and amortisation of the \$120 million is \$20 million of depreciation relating to idle assets. This \$20 million includes the \$12 million mentioned above. This amount does not get charged to inventory; i.e. is reflected directly in the P&L.

## **Note 7 - Other non-cash costs**

Includes the unwind of the discount on rehabilitation provisions which are recognised as a liability at net present value which is reported as a finance cost.

## **Note 8 – Capital Expenditure**

Future capital commitments are dependent on the outcome of feasibility studies, market conditions and in the context of company balance sheet management. The level of capital expenditure in any given year will be determined by the final project scope, approvals and phasing of expenditure.

## **Other items:**

### **Interest and Tax**

Given a higher debt level in 2017 following the acquisition of SRL in December 2016, interest payments are expected to be higher. The average interest rate payable on Iluka's debt will ultimately depend on the relative weighting of debt drawn from Australian dollar and US dollar denominated facilities as well as future interest rates. Based on current US LIBOR and Australian Bank Bill swap rates, Iluka expects the average interest rate for 2017 to be in the range of 2.8 to 3.0 per cent. In addition, the company pays commitment fees for any undrawn facilities.

The majority of Iluka's taxable income is Australian based with a prevailing corporate tax rate of 30 per cent. Average tax rate paid can vary from this due to factors including minimal tax benefits recognised for any US losses incurred and non-deductible expenses, specifically in relation to overseas exploration and transaction costs. As at 30 June 2016, Iluka incurred an income tax expense of \$2.4 million on an operating loss before tax of \$18.5 million which reflected no tax benefit recognised in respect of the US operating loss and international exploration expenditure, partially offset by the benefit of research and development tax offsets.

Iluka is in a tax paying position in Australia and as such generates franking credits from the payment of tax.

The main features of the fiscal regime of Sierra Leone are:

- 4 per cent royalty on export sales;
- corporate income tax payable at the higher of 3.5 per cent of turnover and the prevailing corporate income tax rate on taxable profits post utilisation of tax losses; and
- prevailing corporate income tax rate of 30 per cent but Sierra Rutile Act caps any increase to the corporate income tax rate to 37.5 per cent

As at 31 December 2015, SRL had unused tax losses of \$464.3 million available for offset against future profits, of which \$63.2 million were recognised as a deferred tax asset (source: SRL 2015 Annual Report)

## Mining Area C Iron Ore Royalty

The Key Physical and Financial Parameters information relates to Iluka's mineral sands business. It does not include the royalty from Iluka's ownership of BHP Billiton's Mining Area C iron ore royalty. The royalty is based on 1.232% of Australian dollar revenues from Mining Area C and an A\$1 million one-off capacity payment for each 1 million tonne increase in production.

## Sierra Rutile

Iluka completed the acquisition by statutory merger of Sierra Rutile Limited on 7 December 2016. Appendix 5 provides recent physical and financial information for SRL. The following link provides access to a spreadsheet with historical information on the company, [November 2016 - SRL Historical Physical and Financial Data](#).

### For enquiries, please contact:

Dr Robert Porter, General Manager, Investor Relations  
Phone: +61 3 9225 5008  
Mobile: + 61 (0) 407 391 829  
Email: [robert.porter@iluka.com](mailto:robert.porter@iluka.com)

## APPENDIX 1 – PRODUCTION SETTINGS

The following table sets out Iluka's production settings in 2016, along with expected production settings in 2017. Iluka's approach is to flex production in line with market demand and operational settings are subject to change.

	2016	2017
<b>Jacinth-Ambrosia mining South Australia</b>	Mining and concentrating activities suspended from April for a period of 18 – 24 months; Jacinth-Ambrosia concentrate continued to be processed at Hamilton and Narngulu mineral separation plants. Refer ASX Release 16 February 2016.	Mining and concentrating idle. Concentrate continued to be processed at Hamilton and Narngulu mineral separation plants.
<b>Murray Basin mining Victoria</b>	Mining ceased. Concentrate continued to be processed.	Continue to process existing concentrate.
<b>Tutunup South mining South West, Western Australia</b>	100% utilisation	100% utilisation. Tutunup South is a principal source of ilmenite feed for the SR kiln 2 at Capel.
<b>SR kiln 2</b>	100% utilisation Ilmenite feed source from Tutunup South, Jacinth-Ambrosia, Murray Basin and an external source	100% utilisation
<b>3 other SR kilns</b>	Idle	Idle
<b>US Mining (Virginia)</b>	Idle - Mining and processing operations were idled at the end of 2015 Iluka has evaluated two mineral sands deposits in the US – Hickory and Aurelian Springs.	Closed 31 December 2017
<b>Stony Creek MSP, Virginia</b>	Idle	Closed 31 December 2017

## APPENDIX 2 - COST OF GOODS SOLD AND INVENTORY METHODOLOGY

### Cost of Goods Sold

Mineral sands earnings reflect the difference between revenue and COGS, rather than the cash costs of production and depreciation incurred in a period. COGS is the inventory value of each tonne of finished product sold. All production is added to inventory at cost, which includes direct costs and an appropriate portion of fixed and variable overhead expenditure, including depreciation and amortisation, allocated to each product on the basis of relative sales value.

The inventory value recognised as COGS for each tonne of finished product sold is the weighted average value per tonne for the stockpile from which the product is sold.

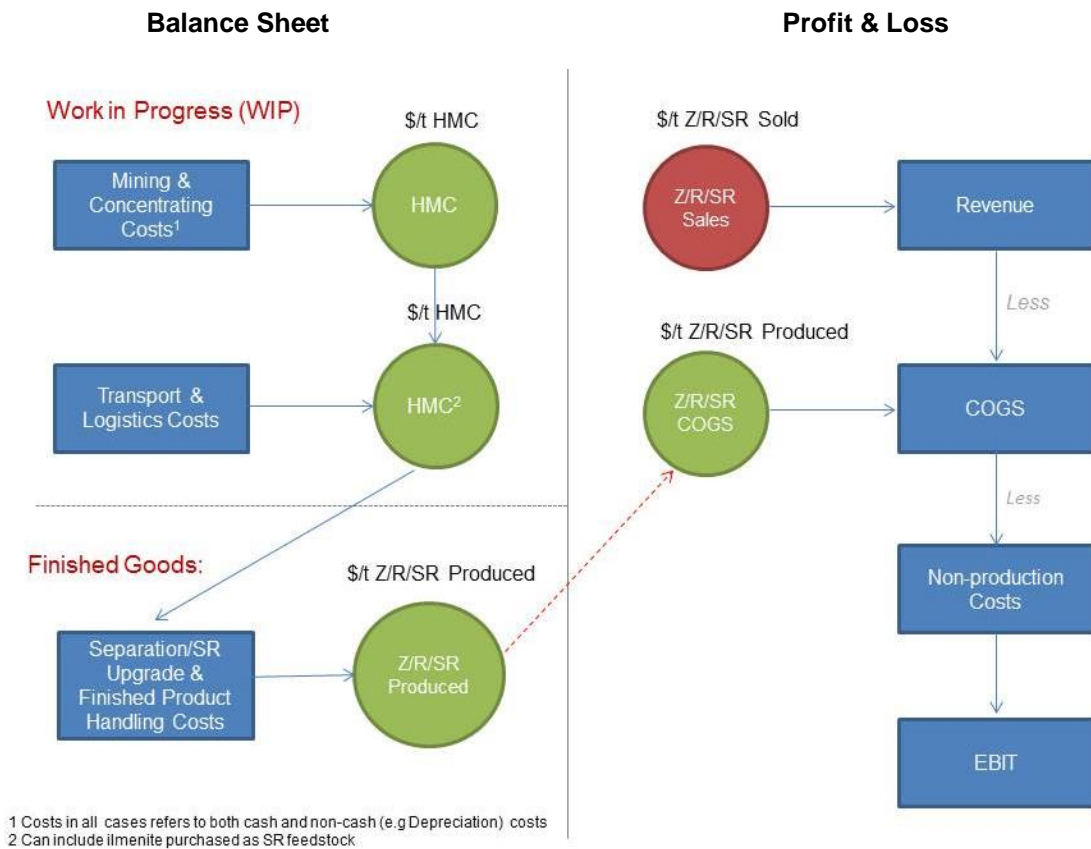
Iluka provides guidance on cash and non-cash costs of production, as well as finished goods production volumes, which in periods of low and stable inventory levels will **be a surrogate for COGS**. However, in periods of draw-down from large inventory balances, the **unit cost of inventory drawn has a more significant influence on COGS**, than current year production costs.

Production settings for 2017 are provided in Appendix 3. There is no planned heavy mineral concentrate (HMC) production from Jacinth-Ambrosia, Murray Basin or the US. As a result, HMC inventory will be drawn down further during 2017 (as with 2016) as it is processed into finished products through the mineral separation plants and not replenished from mining.

Iluka's COGS was \$691 per tonne (cash and non-cash costs) of Z/R/SR in 2016. 2017 COGS is expected to be marginally higher than this, but is dependent on sales mix and can, as such, vary. In periods of large expected movements in inventory, it can be simpler to model COGS on a unit basis, with the unit COGS (\$/t) multiplied by the expected Z/R/SR sales volumes (kt).



The diagram below illustrates how costs of production (both cash and non-cash) are built up on the balance sheet in both work in progress and finished goods inventory and then transferred to the profit or loss (cost of goods sold) as finished product is sold.



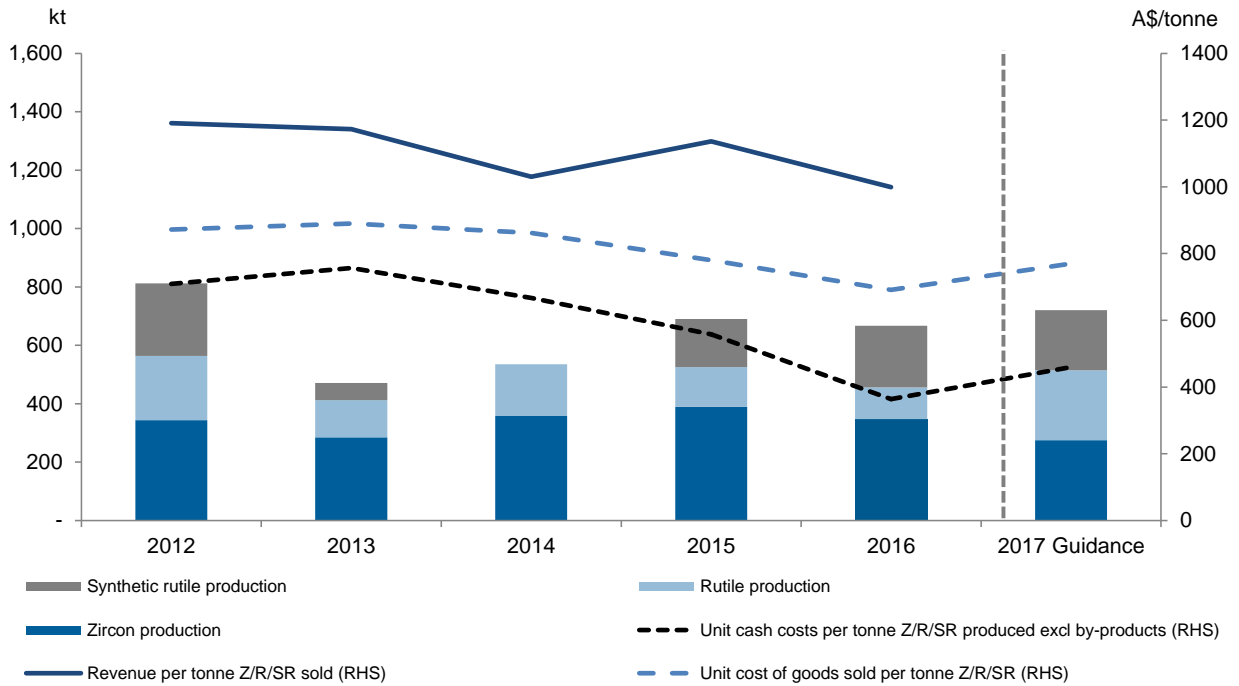
**Notes:**

- Production costs (cash costs and depreciation) are allocated to inventory on the balance sheet as incurred
- Inventory is held at various stages through the production process and accumulates further cost at each stage
- Typical inventory stages (and type of costs accumulated):
  - Work in progress (WIP): ore mined (overburden and ore mining costs)
  - WIP: HMC at mine (ore mined costs plus concentrating costs)
  - WIP: HMC at mineral separation plants (ore and concentrating previously allocated, plus transport costs)
  - Finished products: Z/R/SR/l (all prior HMC, plus separation and finished product handling costs)
- For each tonne of finished product sold, the average cost to produce a tonne (COGS as \$/t) is charged to the P&L
- The annual balance sheet inventory movement is therefore:
  - annual production costs incurred to produce new WIP and finished products; less
  - production costs of finished products sold transferred from inventory to the P&L (COGS)
- The annual cost of goods sold in the P&L represents the unit cost of products sold drawn from inventory, multiplied by the sales volume
- Non-production costs (e.g. corporate, exploration, idle capacity and restructure) are expensed to P&L as incurred

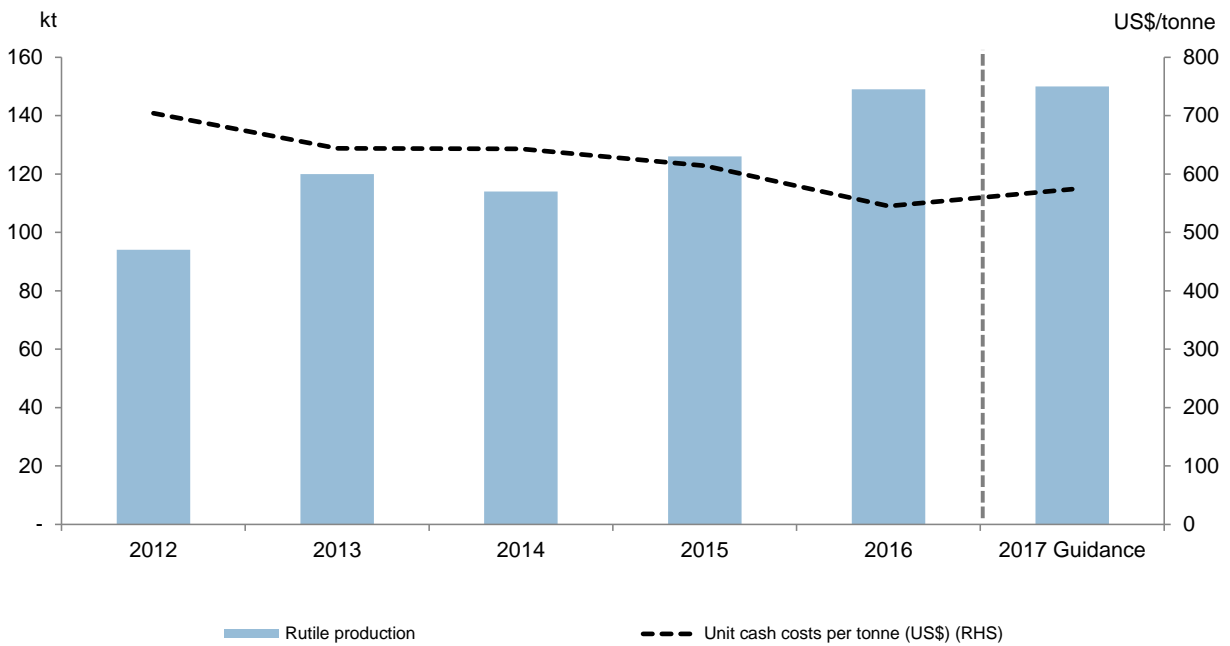
### APPENDIX 3 PRODUCTION AND COST TRENDS

The chart below illustrates historical production, total cash costs of production and unit cash costs, with indicative 2017 trends based on guidance parameters provided above. It should be noted that 2017 guidance parameters include Sierra Rutile. Prior years do not include Sierra Rutile.

**Figure 1. Iluka Group Cash Production Costs, Unit Cash Costs and Unit Cost of Goods Sold**



**Figure 2. Sierra Rutile Cash Production Costs and Unit Cash Costs**



## APPENDIX 4 HISTORICAL PRODUCTION, SALES AND PRICES

### 2012 - 2016 Historical Iluka Production Volumes (2016 excludes SRL)

Annual Volume (kt)	2012	2013	2014	2015	2016
Zircon	343	285	357	389	347
Rutile	220	127	177	136	109
Synthetic rutile	248	59	-	165	211
<b>Total Z/R/SR</b>	<b>811</b>	<b>471</b>	<b>534</b>	<b>690</b>	<b>667</b>
Ilmenite	674	584	365	466	326

### 2012 - 2016 Historical Iluka Sales Volumes (2016 excludes SRL)

Annual Volume (kt)	2012	2013	2014	2015	2016
Zircon	214	370	352	346	339
Rutile	105	168	182	134	154
Synthetic rutile	170	46	82	171	189
<b>Total Z/R/SR</b>	<b>489</b>	<b>584</b>	<b>616</b>	<b>651</b>	<b>680</b>
Ilmenite	443	337	317	300	18

In 2016 zircon sales constituted ~47 per cent premium product, ~33 per cent standard product and ~20 per cent zircon in concentrate.

Rutile sales include some lower titanium dioxide product, referred to as Hyti. In 2016, ~91 per cent of sales volumes was rutile and ~9 per cent Hyti.

### 2012 – 2016 Iluka Weighted Average Prices

The following table provides weighted average received prices for Iluka's main products on an annual basis between 2012 and 2016.

Prices are influenced by product specifications and quality, lot size sold, contractual and customer arrangements. In recent years a higher proportion of sales of lower grade zircon (concentrate and tailings material) and Hyti (~90 per cent TiO<sub>2</sub> product) have impacted average received prices. In some cases, the sale of this product is monetisation of residual material.

In 2016, approximately 80 per cent of zircon sales were premium or standard grade zircon and approximately 9 per cent of rutile sales were Hyti.

Iluka Price US\$/tonne FOB	2012	2013	2014	2015	2016
Zircon – Premium and Standard	2,080	1,150	1,033	986	810
Zircon – (all products including concentrate and tailings material) <sup>1</sup>	na	na	na	961	773
Rutile <sup>2</sup>	2,464	1,069	777	721	716
Synthetic rutile	1,771	1,150	750	Not disclosed	Not disclosed
Average AUD/USD (cents)	103.6	96.8	90.3	75.2	74.4

#### Notes:

1. Zircon prices reflect the weighted average price for zircon premium and zircon standard, also with a weighted average price for all zircon materials, including zircon in concentrate and zircon tailings. The prices for each product vary considerably, as does the mix of such products sold period to period. In 2016 the split of premium, standard and concentrate by zircon sand-equivalent was approximately: 47%;33%;20%.

2. Includes Hyti sales. Hyti is ~90 per cent TiO<sub>2</sub> relative to Rutile of 95 per cent TiO<sub>2</sub>.

Iluka's synthetic rutile sales are, in large part, underpinned by commercial off take arrangements. The terms of these arrangements, including the pricing arrangements are commercial in confidence and as such not disclosed by Iluka. Synthetic rutile, due to its lower titanium dioxide content than rutile, typically is priced lower than natural rutile.

## APPENDIX 5 SRL Physicals and Financials

<b>Physicals kt</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Rutile production	94	120	114	126
Rutile sales volume	81	111	130	118
<b>Financial Performance US\$m</b>				
Total revenue	179	123	118	106
Operating costs	(71)	(88)	(103)	(90)
EBITDA	108	35	15	16
EBIT	92	17	(6)	(5)
NPAT	84	10	(9)	(13)
EBITDA margin	60%	28%	13%	15%
Average rutile price <sup>1</sup>	2,041	1,044	799	775
<b>US\$m</b>				
Cash flow from operations	66	41	9	19
Cash flow from investing activities	(60)	(40)	(20)	(31)
Free cash flow	5	1	(11)	(12)
Production cash cost (US\$/t)	704	644	643	614

## APPENDIX 6 OPERATING MINES – PHYSICAL DATA – 2012 - 2016

The following table provides a summary of Iluka's physical flow – from mining to processing of finished products over the period 2012 to 2016. The data will enable a view of operational settings as Iluka has flexed production over this period of time, including reducing level of synthetic rutile production. 2016 excludes Sierra Rutile

	Group Total 2012	Group Total 2013	Group Total 2014	Group Total 2015	Group Total 2016
<b>Mining</b>					
Overburden Moved kbcm	13,342.8	11,874.3	16,306	3,630	819
Ore Mined kt	29,738.2	19,300.3	14,689	13,815	4,348
Ore Grade HM %	7.2	10.7	13.5	9.1	8.8
VHM Grade %	4.9	9.3	12.1	7.9	7.8
<b>Concentrating</b>					
HMC Produced kt	1,529.7	1,538.3	1,305	1,137	371
VHM Produced kt	1,213.9	1,326.7	1,135	978	325
VHM in HMC Assemblage %	79.4	86.2	87.0	86.0	87.6
Zircon	26.9	34.9	36.7	38.2	31.4
Rutile	13.5	14.2	21.6	9.0	5.7
Ilmenite	36.8	36.1	28.6	38.7	50.5
<b>Processing (HMC to finished product at a mineral separation plant)</b>					
HMC Processed kt	1,468.1	1,044.2	968.0	1,206	942
<b>Finished product kt</b>					
Zircon	343.2	285.1	357.6	388.6	347.0
Rutile	220.3	127.0	177.2	136.5	108.8
Ilmenite (saleable/upgradeable)	674.1	584.5	365.4	466.1	326.2
<b>Synthetic Rutile Produced kt</b>					
	248.3	59.0	-	164.9	210.9

An explanation of the Iluka's physical flow information can be obtained from Iluka's Briefing Paper - Iluka Physical Flow Information on the company's website [www.iluka.com](http://www.iluka.com), under Investor & Media, Briefing Papers & Presentations, 2010. The nature of the Iluka operations base means that HMC from various mining locations can be processed at various mineral separation plants.

### Explanatory Comments on Terminology

**Overburden moved** (bank cubic metres) refers to material moved to enable mining of an ore body.

**Ore mined** (thousands of tonnes) refers to material moved containing heavy mineral ore.

**Ore Grade HM %** refers to percentage of heavy mineral (HM) found in the ore mined.

**VHM Grade %** refers to percentage of valuable heavy mineral (VHM) - titanium dioxide (rutile and ilmenite) and zircon found in a deposit.

**Concentrating** refers to the production of heavy mineral concentrate (HMC) through a concentrating process at the mine site, which is then transported for final processing into finished product at one of the company's two Australian mineral processing plants, or the Virginia mineral processing plant.

**HMC produced** refers to HMC, which includes the valuable heavy mineral concentrate (zircon, rutile, ilmenite) as well as other non-valuable heavy minerals (gangue).

**VHM produced** refers to an estimate of valuable heavy mineral in heavy mineral concentrate produced.

**VHM produced and the VHM assemblage** - provided to enable an indication of the valuable heavy mineral component in HMC.

**HMC processed** provides an indication of material emanating from each mining operation.

**Finished product** provides an indication of the finished production (zircon, rutile, ilmenite) attributable to various mining operations. The difference between the VHM produced and finished product reflects differences in the amount of HMC produced and processed in a given period and finished product recovery losses at the processing stage.

**Ilmenite** is produced for sale or as a feedstock for synthetic rutile production.

Typically, 1 tonne of upgradeable ilmenite will produce between 0.56 to 0.60 tonnes of SR. Iluka also purchases external ilmenite for its synthetic rutile production process.