

# MORE THAN MINING

## **RBPlat Ore Processing Strategy**

**Analyst Presentation**

12 November 2013



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## Our strategy

Current PGM market macro-economic conditions emphasise

- > Importance of cash preservation
- > Investment focus is on high margin assets rather than volume driven assets
- > UG2 operations under pressure in industry

RBPlat strategy continues to focus on

- > Achieving operational excellence at BRPM (optimising volumes and reducing costs)
- > Flexibility in the business with co-extraction, whilst maintaining Merensky bias
- > Growing organically through Styldrift I and II
- > Pursuing value-enhancing opportunities

## Our strategy (continued)

Building flexibility in the business with co-extraction, whilst maintaining Merensky bias

- > In a safe manner
- > To move down the cost curve
- > Generate cash to fund growth

Pursuing value-enhancing opportunities

- > Co-operation and sharing of infrastructure with adjacent mines
- > Will not pursue acquisitions/synergies at all costs

RBPlat concentrator plant options

- > Styldrift standalone concentrator
- > Upgrade the BRPM concentrator

Possible solutions to treat Styldrift ore at neighbouring operations:

- > RBPlat/Anglo American Platinum ore processing synergy
- > RBPlat/Wesizwe joint concentrator
- > RBPlat/Impala ore processing synergy

# Styldrift concentrator (230 ktpm)



## Key design parameters:

### Two stage crushing circuit:

- > Primary and secondary crushing in close circuit

### Milling and classification:

- > 2 x 8 MW mills (MF2 configuration)
- > 150g/t concentrate grade

### Flotation:

- > Primary rougher, cleaner and re-cleaner circuits
- > Secondary rougher, cleaner and re-cleaner circuits

### Concentrate handling:

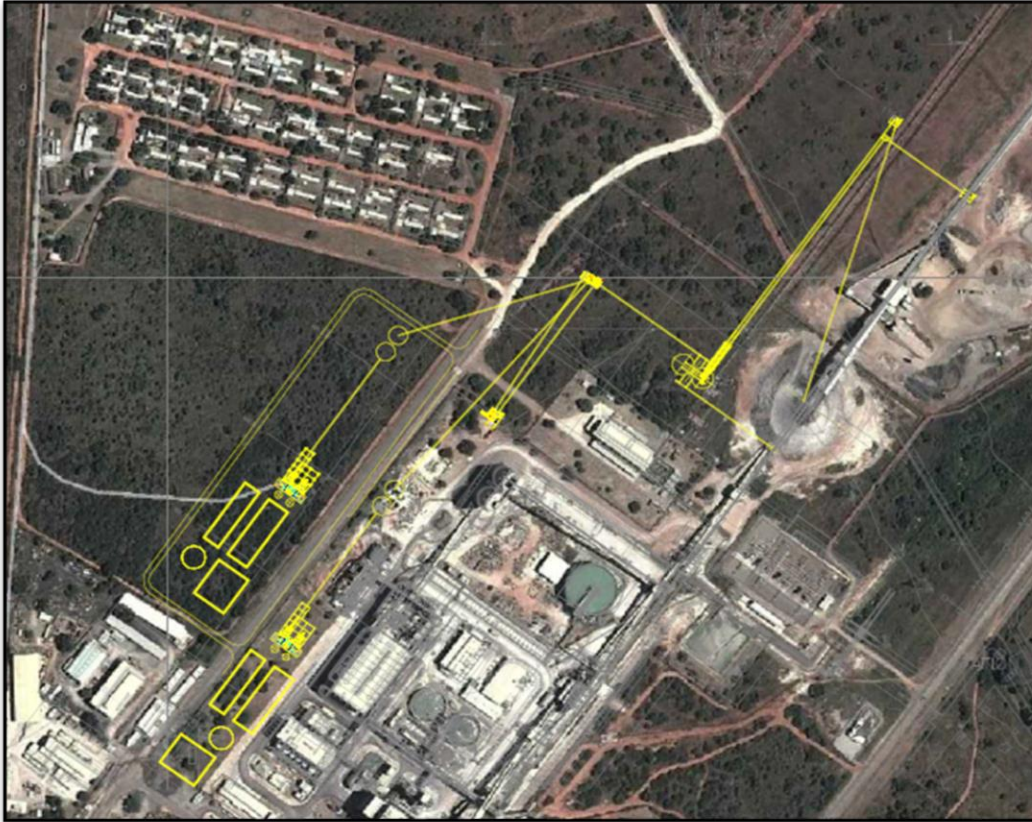
- > Thickening and filtration

### Tailings slurry handling:

- > Tailings pumping to new tailings storage facility

Description	Nominal capex (R'm)	Opex (R/t)	Timing
Ore transport	2 400	118	Q3 2016

# Upgrade BRPM concentrator (350 ktpm)



## Overland conveyor Styldrift to BRPM

- > 6 km of overland conveyor
- > Primary crushing at Styldrift

## 200 ktpm to 250 ktpm upgrade

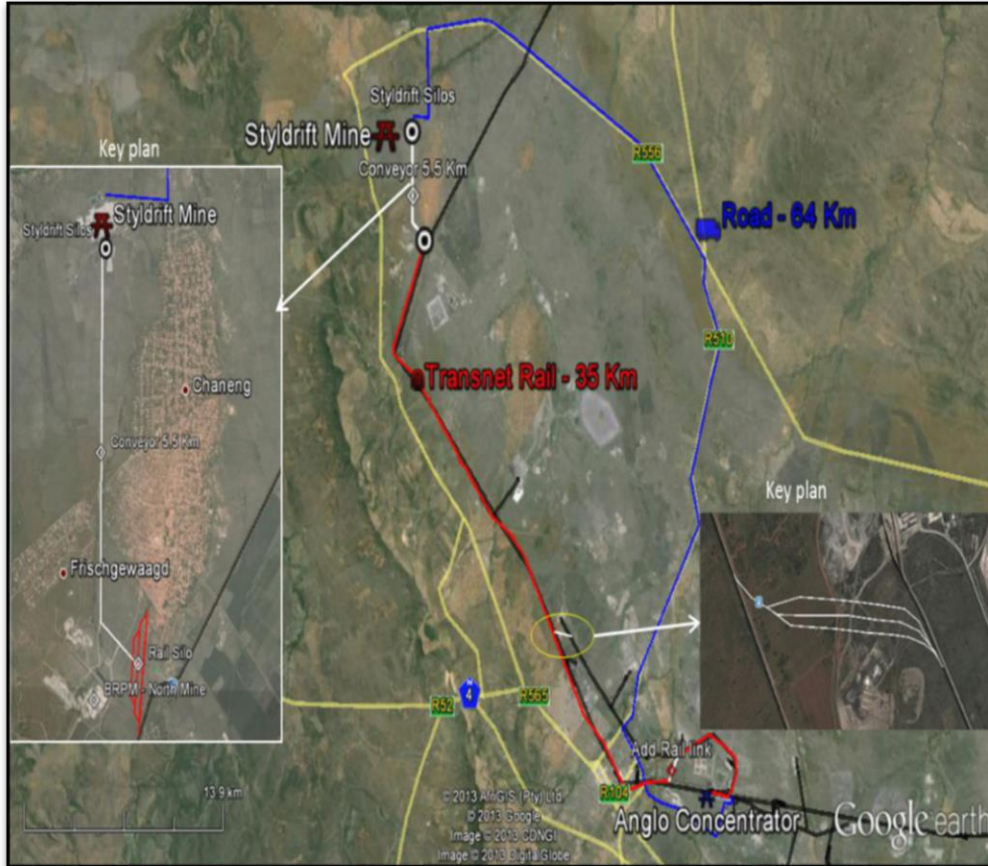
- > 10 kt silo (storage of ROM Merensky)
- > Primary mill conversion (to grate discharge)
- > Upgrade of the existing LAROX filter building
- > Primary and secondary grinding classification upgrade
- > Cleaner flotation circuit re-configuration
- > Guard cyclone installation at existing tails thickeners
- > Tailings disposal to existing tailings storage facility

## 100 ktpm Merensky module

- > Secondary crushing & screening
- > 2 x 5 kt mill feed silos
- > Primary and secondary ball mill (20 x 16, 3.2 MW each)
- > Primary and secondary rougher float (7 x 30 m<sup>3</sup>)
- > Integrated cleaner float (10 m<sup>3</sup> & 3 m<sup>3</sup> flotation cells)
- > Tailings disposal to new tailings storage facility
- > Concentrate handling through BRPM facilities

Description	Nominal capex (R <sup>m</sup> )	Opex (R/t)	Timing
Ore transport	332	6.4	Q3 2015
250 ktpm upgrade	370	121.7	Q3 2015
100 ktpm module	1 298	122.8	Q1 2017
<b>Total</b>	<b>2 000</b>		

# Anglo Platinum ore transport options



## Transnet rail

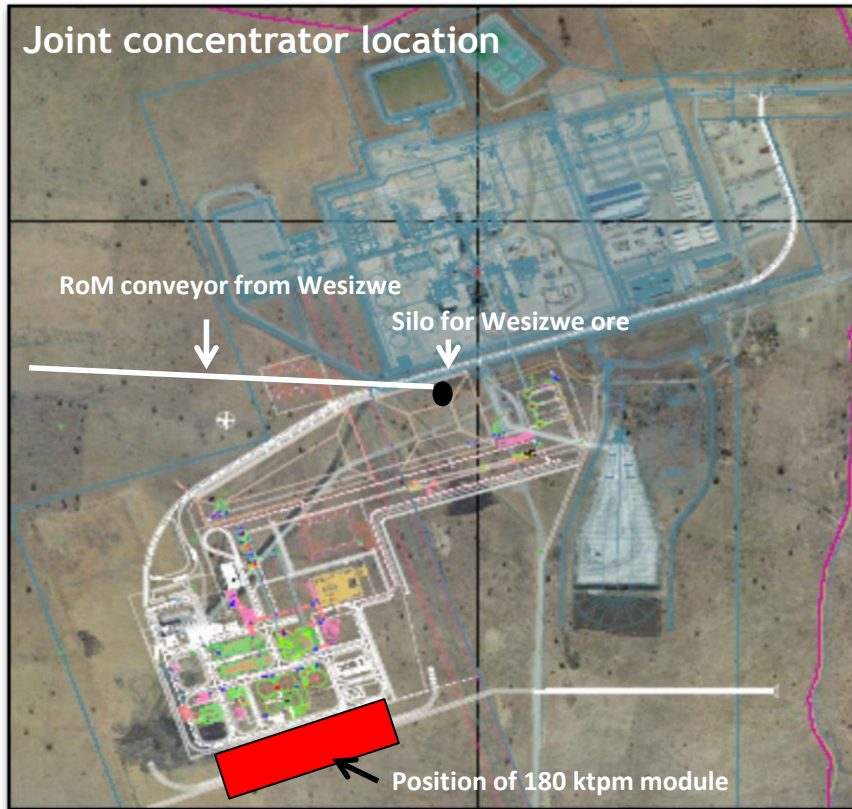
- > Conveyor linking Styldrift with Transnet line
- > New rail siding south of Styldrift
- > 4 x 50 hopper train on Transnet network daily
- > Maintenance workshop for rolling stock
- > Rail link and rail siding between Transnet and Anglo rail network
- > Shunting locomotives for hopper loading at Styldrift and off loading at Waterval concentrator

## Road transport on public roads

- > Distance from Styldrift to Waterval > 65 km
- > Operating on day shift only at 225 trips p/d (45 trucks required)

Description	Nominal capex (R'm)	Opex (R/t)	System ready
Rail	1 032	55	Q1 2017
Road	152	91	Q4 2015

# Styldrift/Wesizwe joint concentrator



## Two stage crushing circuit:

- > Primary and secondary crushing in closed circuit
- > Milling and classification (MF2 configuration)

## 280 ktpm and 180 ktpm modules:

Description	Units	Module 1	Module 2
Treatment capacity	Ktpm	280	180
Installed power	MW	2 x 8.5	2 x 5.5
Mass pull	%	3%	3%
Concentrate grade	g/t	150	120

## Flotation (both modules):

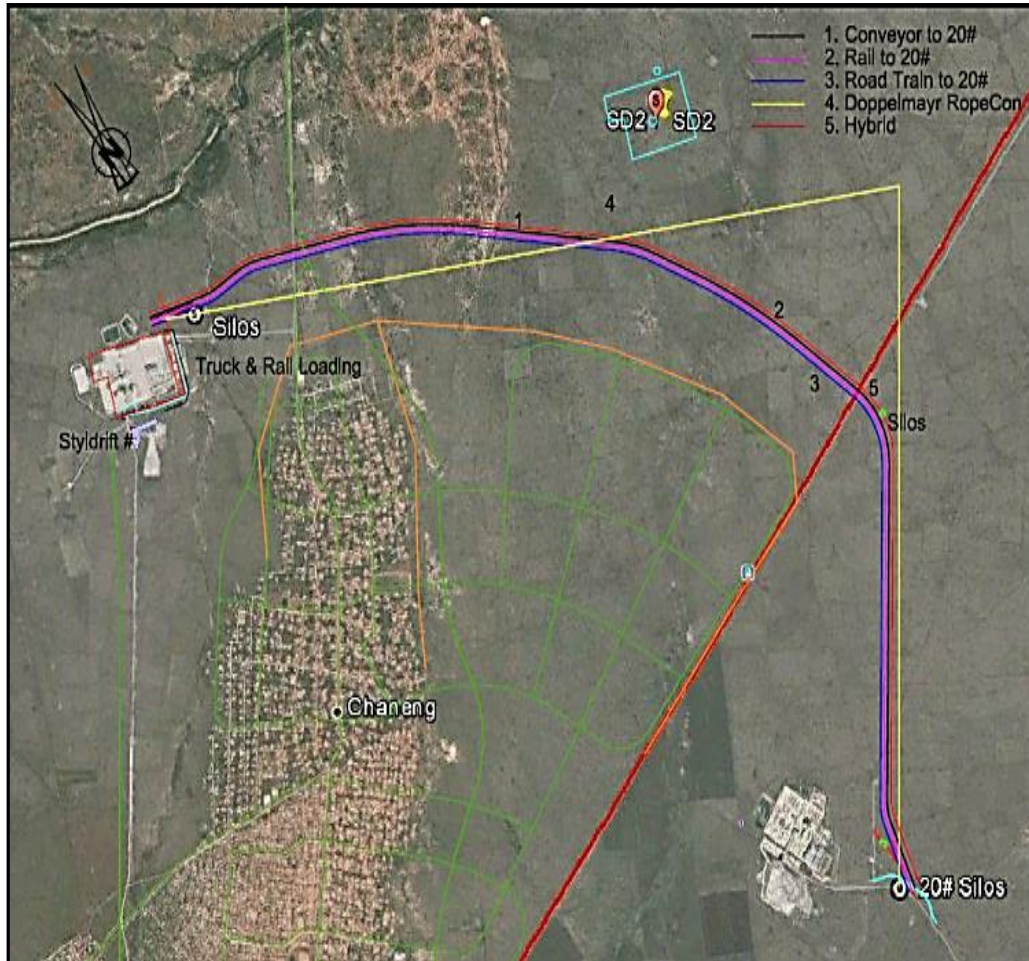
- > Primary rougher, cleaner and re-cleaner circuits
- > Secondary rougher, cleaner and re-cleaner circuits

Tailings pumping to Mimosa tailings storage facility

Description	Nominal capex (R'm)	Opex (R/t)	System ready
Joint concentrator (100%)	4 756	103	Q3 2016









# Impala ore transport options



## Ore transport options:

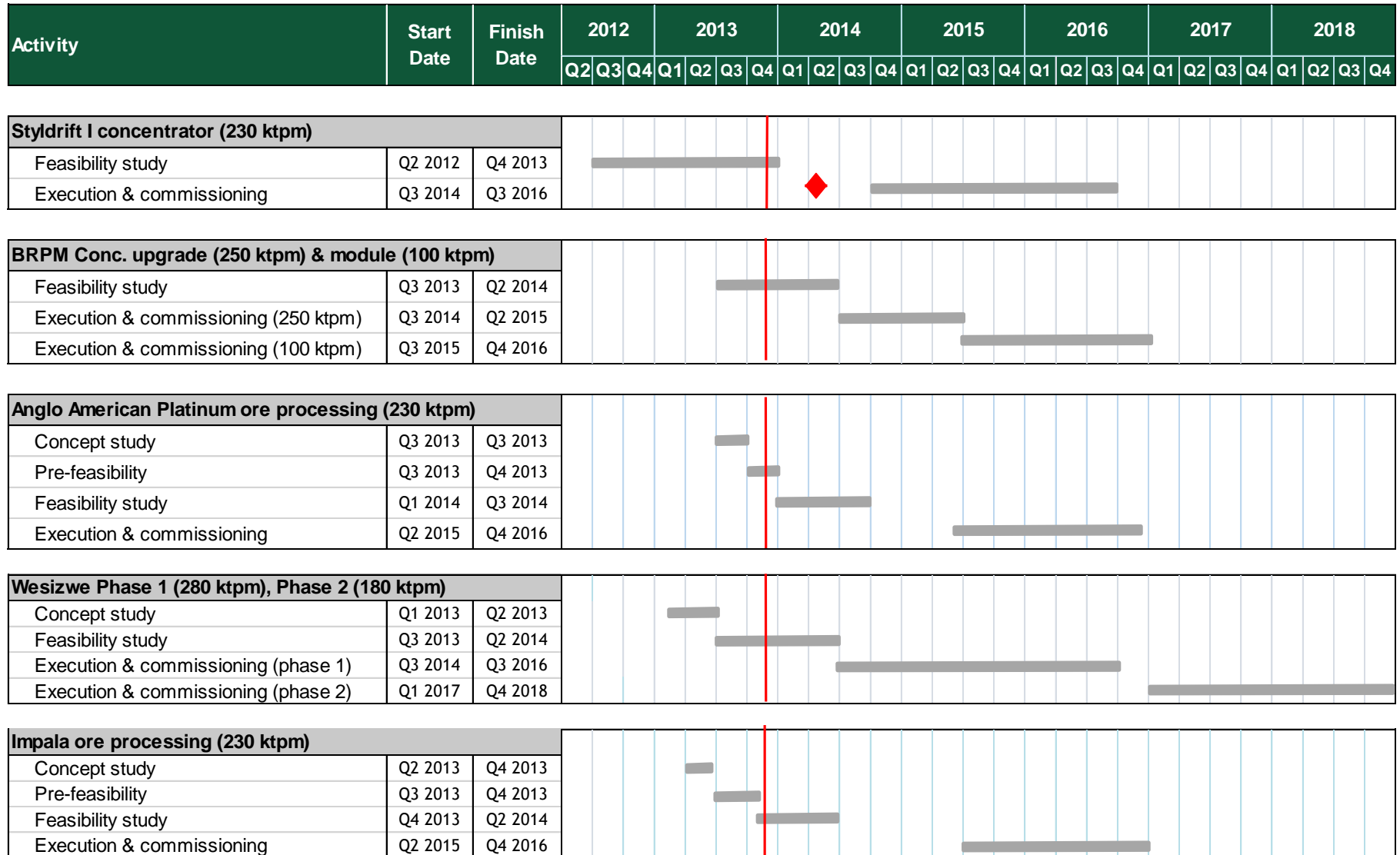
1. Conveyor: Styldrift to Impala 20 shaft
2. Rail: Impala rail extension to Styldrift
3. Road: Road train from Styldrift to Impala 20 shaft
4. Doppelmayr: Two flight from Styldrift to Impala 20 shaft
5. Hybrid: Combination of conveyors and rail to Impala 20 shaft

## Impala ore transport options (continued)

Option	Description		Capital (R'm) Nominal	Opex (R/t)	System ready
1. Conveyor	Conveyor with new rail siding and silo position east of Impala 20 shaft		846	40	Q4 2016
2. Rail	New rail system linking into the existing Impala rail system east of Impala 20 shaft		958	35	Q1 2017
3. Road train	Road trucking with new rail siding and silo position east of Impala 20 shaft		759	41	Q4 2016
4. Rope conveyor	Doppelmayr RopeCon conveyor with new rail siding and silo position east of Impala 20 shaft		1 398	36	Q1 2017
5. Hybrid	Conveyor from SD1 to Transnet rail, discharge into silos. Rail to Mineral Processes	 	814	38	Q1 2017

- Additional R800 million required to upgrade Impala concentrator to be suitable for Styldrift ore

# Concentrator project schedules



## Key outcomes of treatment of ore at neighbouring mines

Capital requirements to deliver Styldrift ore to neighbouring mines is significant

- > R750 million to R1.4 billion (excluding Impala concentrator plant upgrade)
- > Increases treatment cost per tonne by between R35/t to R55/t
- > No added value as a result

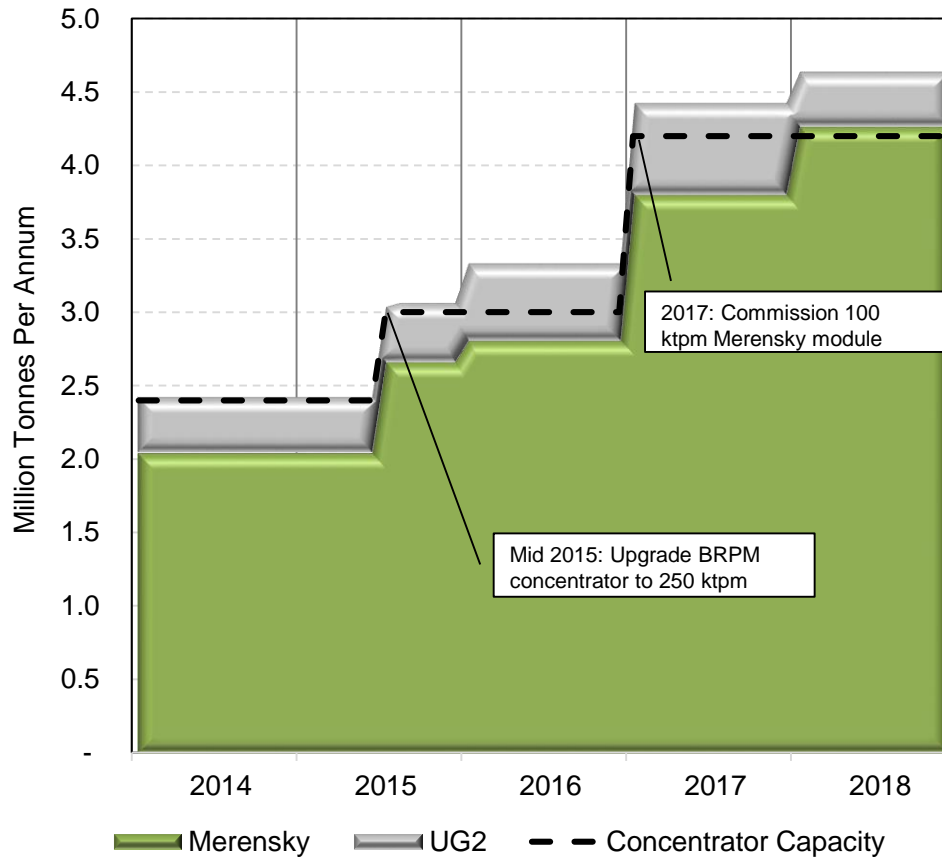
No significant timing advantages are achieved

The risk profile of RBPlat is increased

- > Environmental
- > Community
- > Commercial risk

# Tonnage and treatment profile of upgraded BRPM concentrator

Tonnage Profile (2014-2018)



Concentrator capacity appropriate for Merensky production

UG2 production provides flexibility

- > Deliver UG2 to fill shaft capacity
- > Toll treat excess UG2

Long term UG2 options

- > Construct a 100 ktpm UG2 module under appropriate business case

## Capital reduction

Item	Unit	Standalone Styldrift concentrator	Upgrade BRPM concentrator
BRPM concentrator upgrade to co-process UG2	R'm	300	-
Blending facility for UG2 at BRPM	R'm	50	-
Styldrift I concentrator	R'm	2400	-
Conveyor from Styldrift to BRPM	R'm	-	332
Upgrade BRPM concentrator to 250 ktpm	R'm	-	370
Upgrade BRPM concentrator to 350 ktpm	R'm	-	1 298
<b>Total capital estimate</b>	<b>R'm</b>	<b>2 750</b>	<b>2 000</b>
<b>Capital reduction</b>	<b>R'm</b>		<b>750</b>

## Key outcomes

Construction of a Styldrift concentrator commits RBPlat to mining UG2 at BRPM

- > Requires a significant stockpile (+- 900 kt) of high grade Merensky ore
- > Provides less flexibility to the business
- > Potential to destroy value mining UG2 in adverse conditions

Upgrading the BRPM concentrator results in the following benefits

- > Capital reduction of R750 million
- > Requires a significantly smaller stockpile (+- 300 kt) of high grade Merensky ore
- > Flexible with respect to exploiting UG2 under favourable conditions