

# The Next Gem of the Kalahari Botswana Next Diamond Mine (BK16)



December 2020



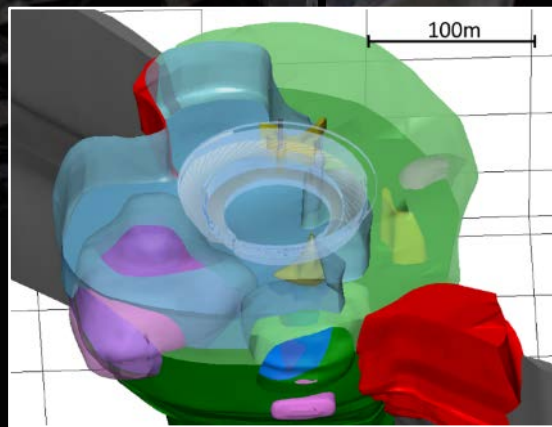
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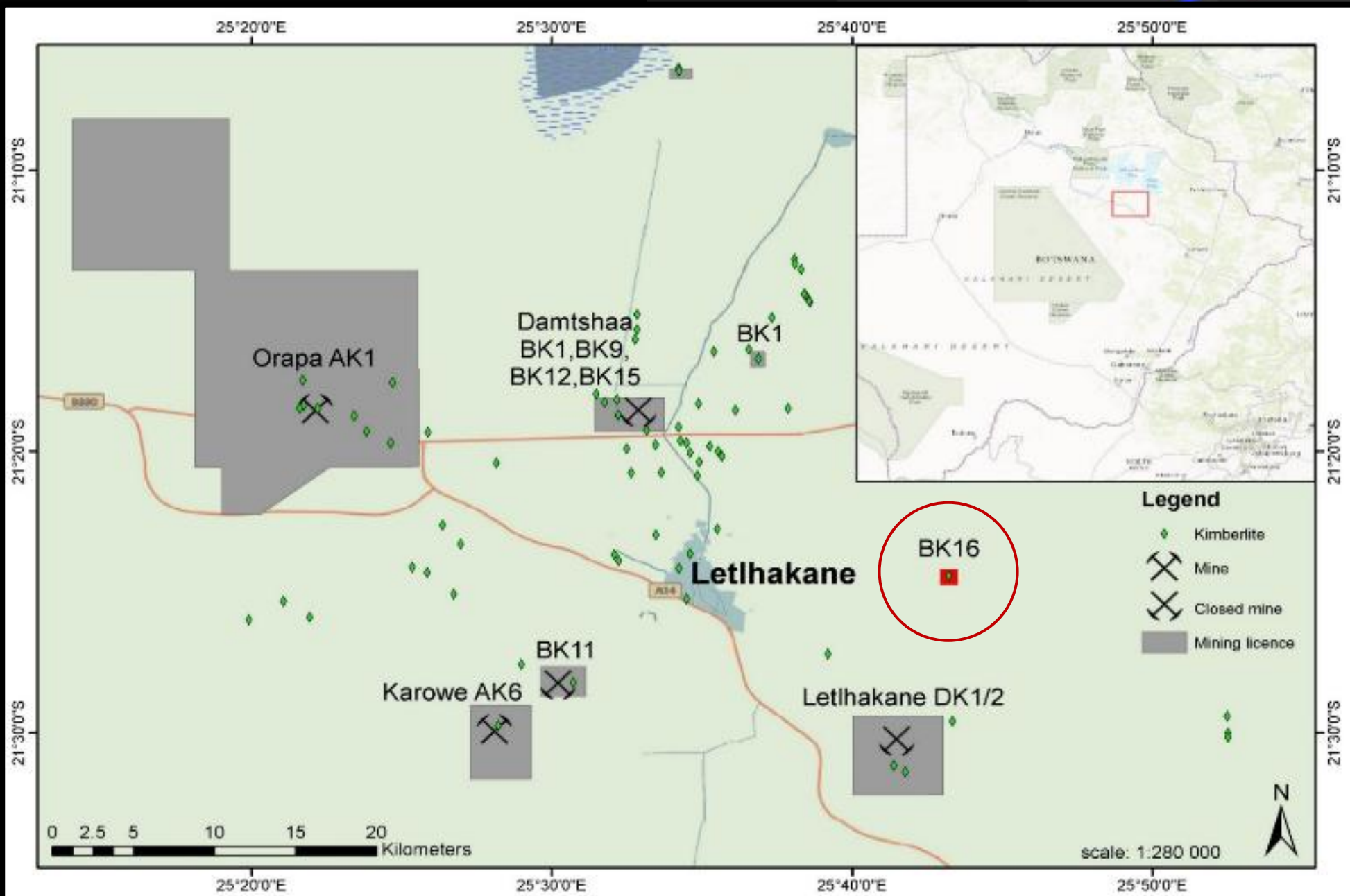
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# BK16

- The Next Mine in Botswana - the Next AK6
- Very High Value Diamonds
- Excellent Chance of Being Economic
- Need to Take a Bigger Sample to Confirm Grades
- Next Stage is a Surface Bulk Sample
- Prove High Diamond Value



# The Next Gem of the Kalahari



# Company Profile



**Newdico (Pty) Ltd**  
Exploration services  
100% owned

**Gcwihaba Resources (Pty) Ltd**  
PLs – Metals  
100% owned

**Bosoto (Pty) Ltd**  
PL – Precious Stones  
(BK16)  
100% owned

- Canadian Registered: TSX listed 1995: TSX.V listed 2001
- 45,347,310 shares issued and outstanding (December 1, 2020)
- 47,800,310 fully diluted common shares

# BK16 Kimberlite Discovery and Historical Work



## Snapshot:

- BK16 was discovered by De Beers

BK16  
Discovery and  
Historic Work

Revisited by  
Tsodilo  
Resources

Phase 1:  
LDD  
Sampling

Phase 1:  
Diamond Value

Phase 1: Size  
Frequency  
Distribution  
Modeling

Conclusions

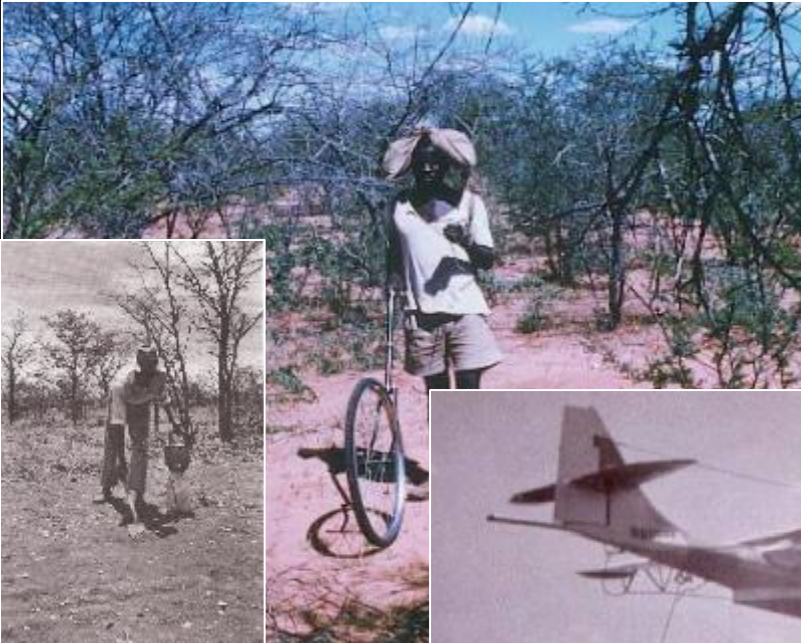
# BK16 Discovery (De Beers)

De Beers Early 1960's  
Cyclometer and soil sampling lines  
Identified mineral anomaly locations

## ➤ De Beers (State Grant 14/72 and 1/76)

- 1960's
  - General soil sampling
  - Geophysics for kimberlite anomalies including BK16
- 1970 to 1972
  - BK16 drilling
  - Geophysics defined size as 3.5 ha
- 1976 to 1984 – Pit sunk to 36 meters within highly diluted kimberlite
- Defined a grade of 1.4 cpht

1976 to 1986 De Beers drilled holes and dug shaft pit with limited tunnels at BK16



De Beers Airborne  
Geophysics 1968 to  
locate kimberlite bodies

Photos M. Marx 1966

# Tsodilo Resources Ltd. Revisits BK16



## Snapshot:

### ➤ Fresh Perspective

- New modern sampling technologies
- New modern processing technologies
- Deliver step wise evaluation program
  - ✓ Phase 1: Moderate LDD Sampling Program to Update Diamond Valuation
  - ✗ Phase 2: Larger Sample: reduce uncertainty + improve grade constraints
  - ✗ Phase 3: Feasibility Study

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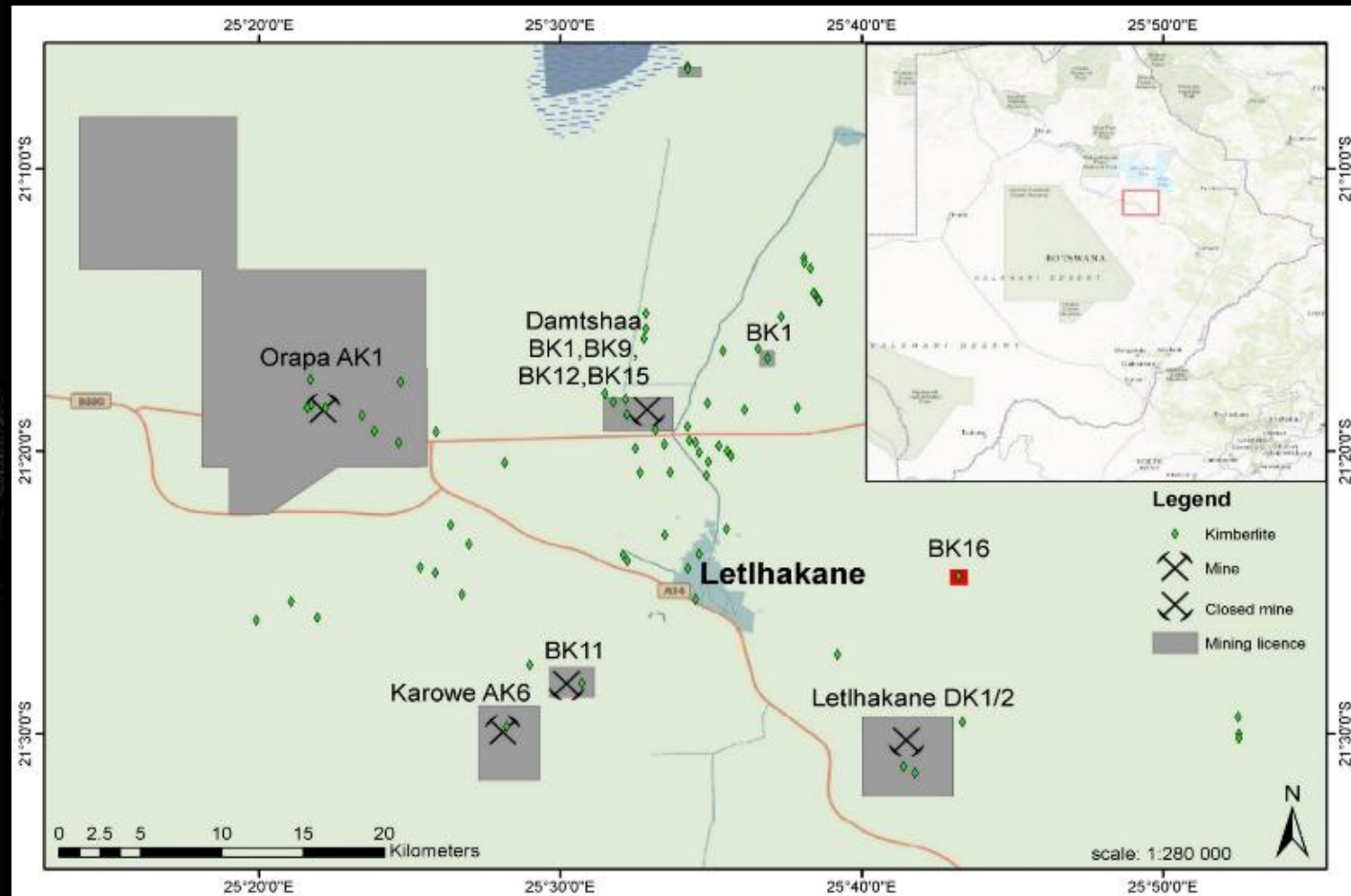
# BK16 Revisited: Diamond Country

## ➤ 1km square license over the BK16

- Initial grant October 2014 to end September 2017
- 1<sup>st</sup> renewal: Oct 2017 to Sep 2019
- 2<sup>nd</sup> renewal: Oct 2019 to Sep 2021
- Located in Orapa Kimberlite Field (OKF)
- BK16 is one of ~85 known kimberlites

## ➤ OKF Mines include

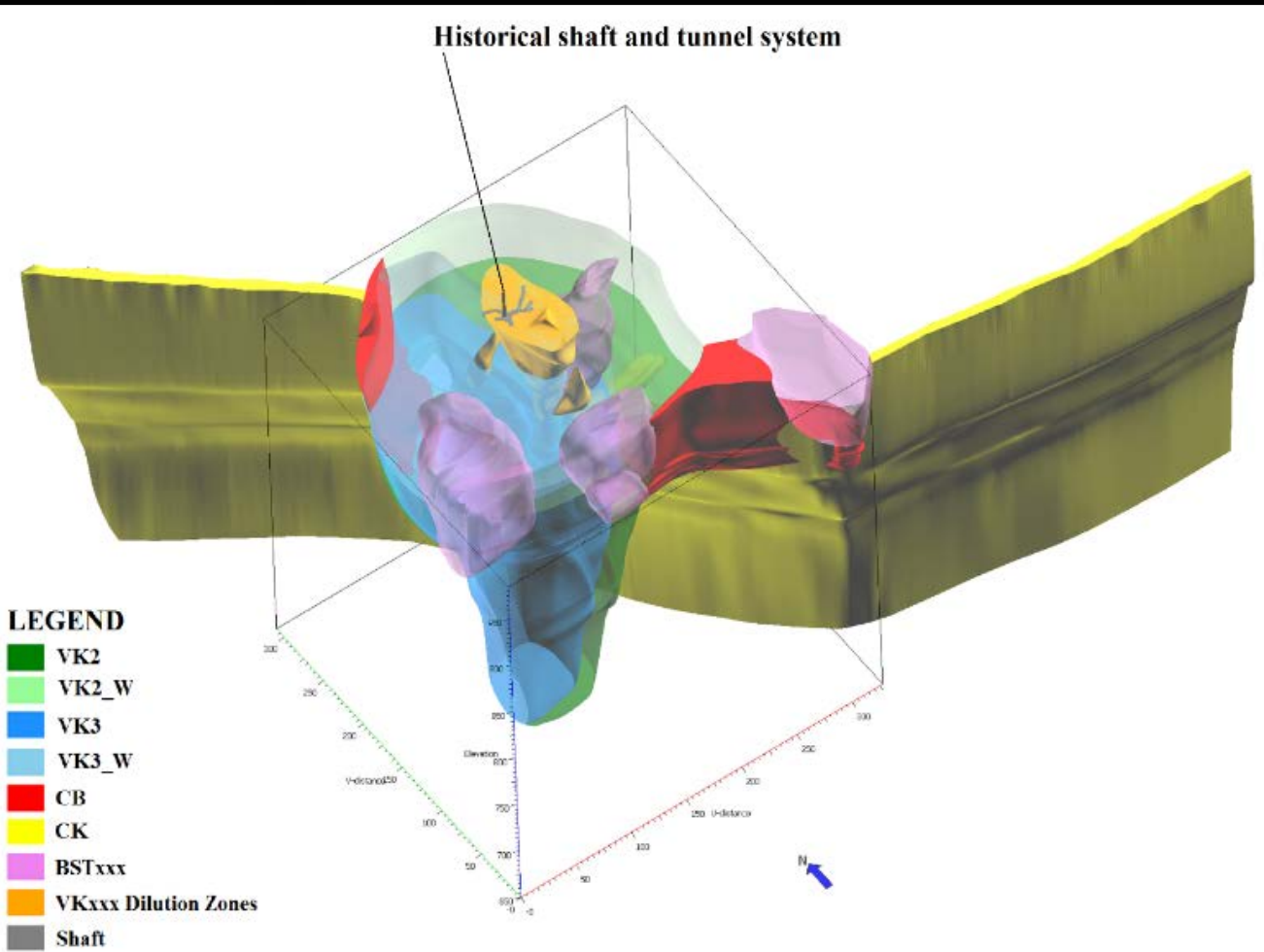
- Orapa Debswana
  - AK01, AK02, and AK07
  - ~12,000,000 carats annually
  - Tier 1 diamond mine
- Karowe Mine, Lucara Diamonds Corp.
  - AK06
  - ~250,000 carat annually



# BK16 Revisited: Drilling and Geological Model Update

- GoCad 3D Geological Model
- Modelling Incorporates
  - Tsodilo drill holes
    - 3,665m 2015 ore body delineation drilling
    - 3,668.75m 2017 pilot hole core drilling
    - 3,120m large diameter drilling (LLD)

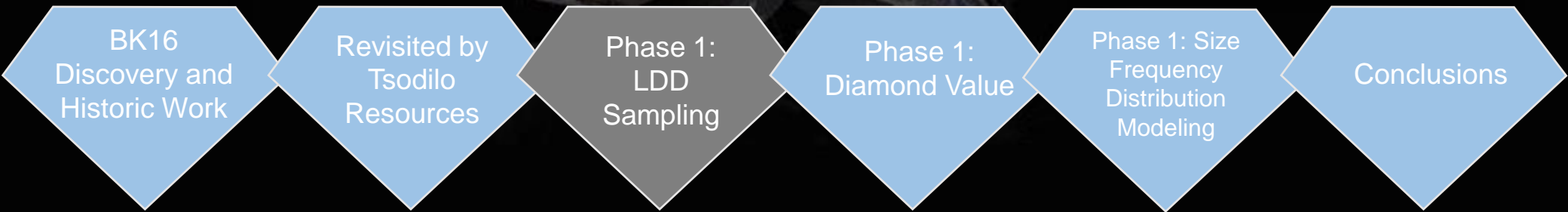
- Historical holes (3,695.25m)
  - 622.25m core drilling
  - 815m 12.25 inch RC drilling
  - 2,258m 6.5 inch RAB drilling
- Magnetic and Gravity data
- Historical Shaft and tunnel location
- Includes:
  - All Kimberlite Phases
  - All internal Dilutions
  - Large mega xenoliths
- Exploration Target Tonnages
  - 18.2 to 20.1 Million Tonnes
  - To a depth of 450m



# Phase 1: LDD Bulk Sampling and Processing



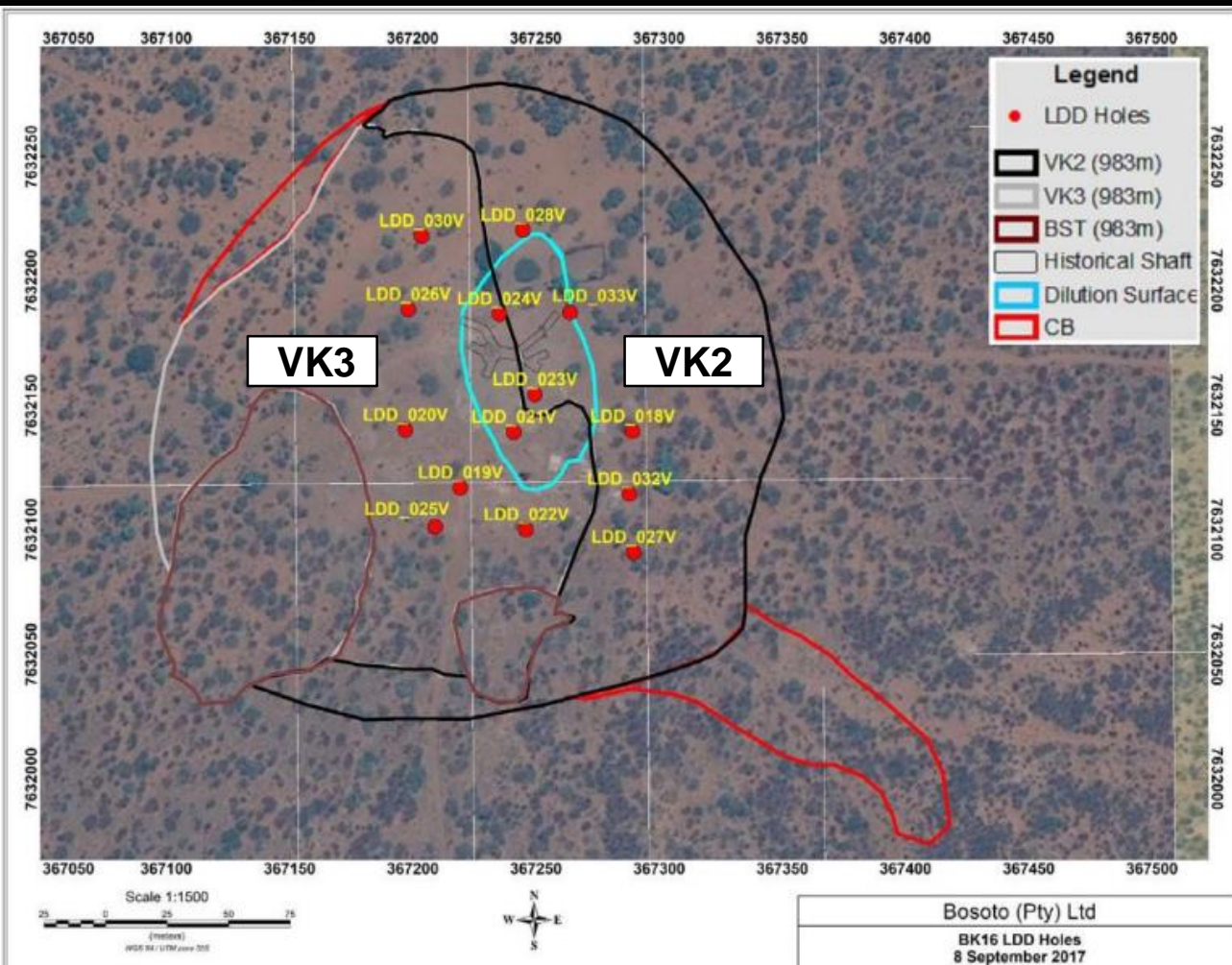
- **Phase 1 LDD sampling Purpose:**
  - ✓ 2,000 tonnes of kimberlite
  - ✓ Recover for diamond valuation purposes only (\$/carat)
  - ✗ Sample too small for direct measure of grade (cpht)



# Phase 1: LDD Bulk Sampling Program

- 14 holes drilled
- 24" large-diameter drill holes (LDD)

- 2,077 (calipered) tonnes of kimberlite
- Mainly VK2 and VK3
- Minor CB and VKxxx



- Samples every 12m
  - ~5 tonnes of washed chips
- Bagged in 2 tonne bulk bags
- Sealed + transferred to DMS Plant
  - Dense Media Separation
  - Produces concentrate
  - Transferred in Barrels
- Concentrated X-Ray Sorted
  - Bourestnik (BV) Polus-M



# Phase 1: LDD Bulk Sampling Program



24 inch bit

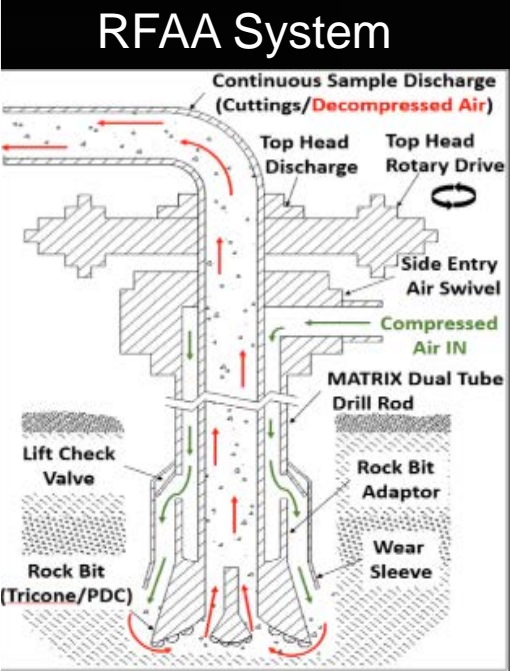
- Gave large chips
- Worked closely with drillers

## ➤ Elephant LDD Rig

- 150 tonnes of pull back
- Reverse flood air assist (RFAA)
- 24 inch bits
- tungsten carbide inserts
- Correct penetration rates
- Drill bit wear not excessive
- Low grinding
- Low diamond breakage



“Elephant” LDD rig



# 10 tph Dense Media Separation (DMS) Plant



- **Located in Letlhakane**
  - Crushing
  - Screening
  - Concentration by DMS
- **Sample storage laydown area**
- **10 tph capacity**
  - Water recycling dam
  - Scrubber
  - Primary (Jaw) and Secondary (Cone) Crushing
  - Dense Media Separation (DMS) FeSi cyclone
- **Concentrate Sample Produced**



Water Recycling Dam



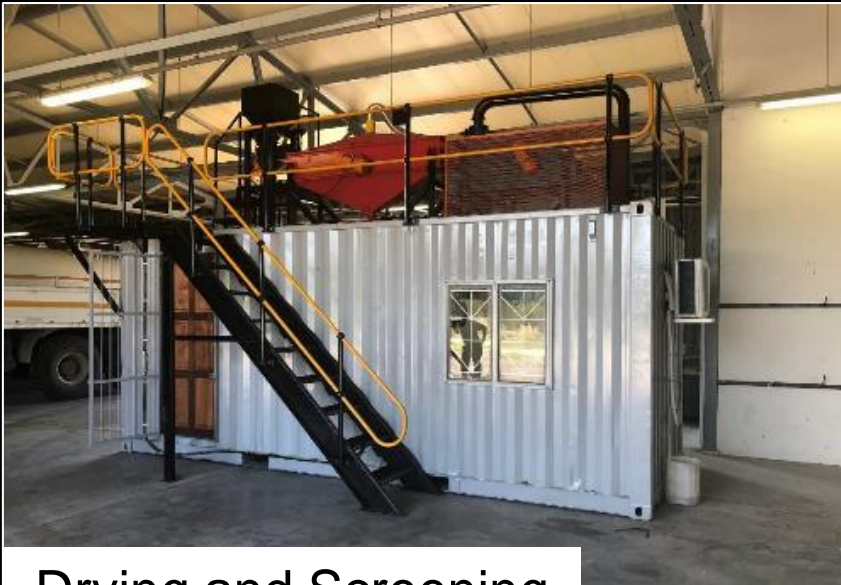
Sample Laydown



DMS Cyclone

# X-Ray Recovery Unit

Sample	Carats	Number of Stones	%
Main LDD samples	76.955	491	98.15
Tailings Retreatment Audit	1.280	14	1.63
Re-Crushing Audit	0.028	1	0.04
Grease Bucket Audit	0.140	3	0.18
Total Audit	1.448	18	1.85
Total Diamonds From LDD	78.403	509	100



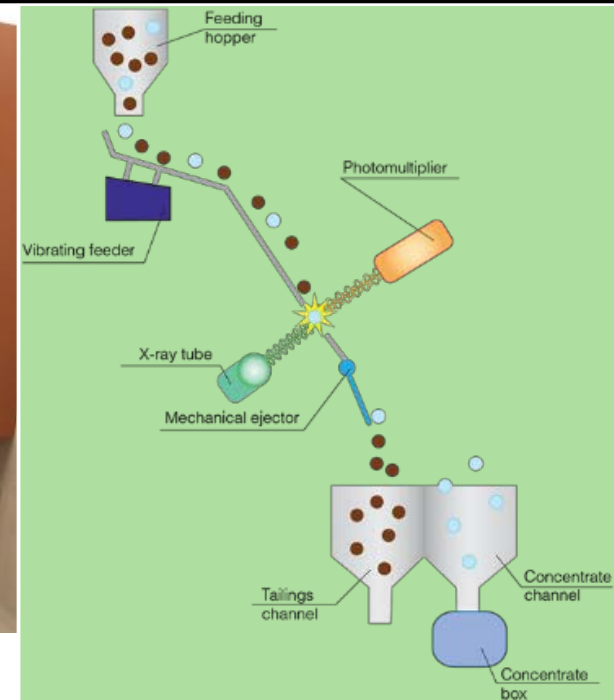
Drying and Screening

- Concentrate taken to Maun X-Ray Sorter under high security
- Bourevestnik (BV) Polus-M - X-Ray Sorter
  - Passed through drier to create dry feed
  - Screen sorted to 1-3mm and 3-8mm
  - +8mm fraction straight to hand sorting

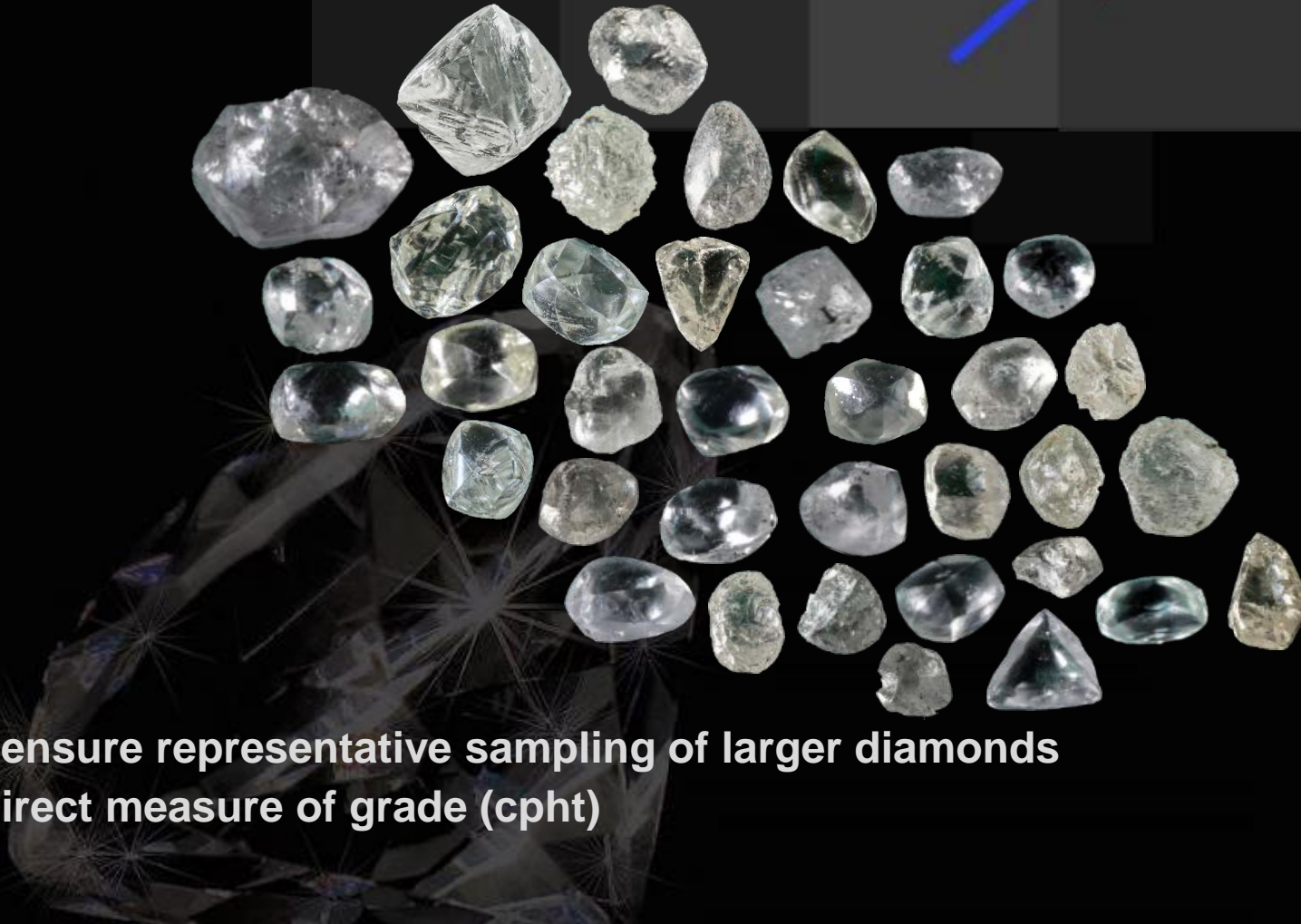
- Audit:
- DMS plant highly efficient
- >98% recovered on first pass
- X-ray BV machine very efficient
- 99.8% effective
- No Type II diamond recovery issues at all



Bourevestnik Polus-M X-Ray sorter



# Phase 1: Diamond Valuation



- ✓ **Concept Proven**
- ✓ **High Value Diamonds**
- ✗ **Need larger sample to ensure representative sampling of larger diamonds**
- ✗ **Sample too small for direct measure of grade (cpht)**

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Phase 1: Size  
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# Phase 1: Diamond Valuation

- **Diamonds sorted in Maun shipped to Gaborone**
  - Brinks Security Services
  - I Hennig
    - Diamond Technology Park (DTP)
    - Verified by Department of Mines rep
    - Acid Cleaned “boiled” at Lucara facilities
- **Independent Valuation and Breakage Studies**
  - Mr. Ray Ferraris of QTS Kristal Dinamika
  - Weight of each stone confirmed
  - Sieved Diamond Trading Company (“DTC”) mass carater/grainer system for +1 DTC sieve class (~>1mm)
  - Each stone valued separately
    - Price point, \$ per carat, and total \$ value for each stone
  - Assessed for breakage and Impact damage
    - Classified by Mr. Ferraris and Dr. Paddy Lawless



*“While this is statistically a very small sample; the presence of such high color clean high-yielding shapes bodes well for the future” Ray Ferraris*



**S021: 1.535 carat; \$755 per carat; J color; Octahedron**



**S101: 1.410 carat; \$748 per carat; J color; rounded Dodecahedron**

***“This production is very similar to the Karreevlei Mine diamond production in South Africa in that it is dominated by white high quality dodecahedron diamonds” Ray Ferraris***

**S024: 1.38 carat; \$705 per carat;  
F color; Dodecahedron**



**S066: 0.965 carat; \$565 per carat;  
J color; Dodecahedron**



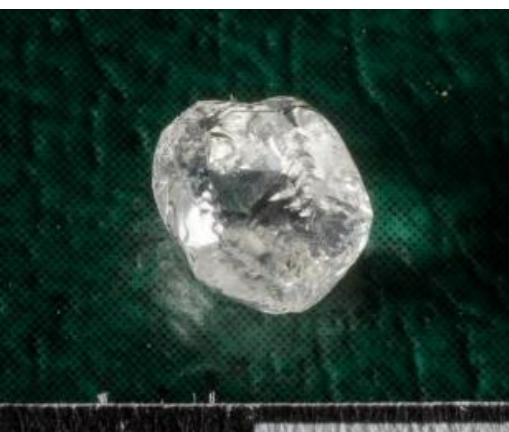
**S021: 0.705 carat; \$465 per carat;  
F+ color; Dodecahedron**



**S164: 0.745 carat; \$405 per carat;  
J color; Dodecahedron**



**S008: 0.815 carat; \$375 per carat;  
G+ color; Irregular Dodec**



**S229: 0.730 carat; \$350 per carat;  
F+ color; Irregular Dodec**



**S229: 1.935 carat; \$350 per carat;  
DE color; Irregular Dodec**



**S142+S143: 0.920 carat; \$245 per  
carat; yellow color; Dodecahedron**



# Phase 1: Size Frequency Distribution Modeling



- ✓ Very High Value Diamonds Possible
- ✓ Higher Grade Possible
- ✗ Need larger sample to decrease uncertainty in diamond value and realize some larger stone
- ✗ Need larger sample to decrease uncertainty in grade

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# Phase 1: Size Frequency Distribution Modeling

- Independent Study by Mr. Stephen Coward (Interlaced): Industry leading specialist
- Size frequency gives indications of a coarse diamond distribution
- Due to small size of samples, and coarse SFD, coarse stones are not recovered yet (but modeled as present)
- Potential Size frequency and \$/ct has been modelled:
  - Using a combination of simulation and extrapolation
  - Comparison to similar deposits- Karowe's AK6 deposit
- Models of potential grade, size and value suggests:
  - This deposit has potential to host a coarse size distribution
  - This deposit has potential to have high value stones
  - If both can be demonstrated through next phase of sampling BK16 could become a valuable asset
- Additional work is ongoing to define the parameters of the sampling required to demonstrate economic viability.

Variable	Unit of Measure	BK16 Sample	Current BK16 SFD Study			
			Min	P20	P80	Max
Preliminary Grade	Cpht	3.8	4	5	7	8
Diamond Value	US\$/carat	177	281	290	600	792
Kimberlite Value	US\$/tonne	6.6	11	15	38	67



# Comparison to AK6 (Karowe)

## ➤ BK16 Value Modelling vs AK6 Value (production)

### ➤ BK16 range is similar to AK6

➤ Generally similar in values

➤ BK16 shows a courser spread than AK below 2 carats

➤ Above 2 carat the AK6 slope increases

➤ AK6 has a massive jump in the value of stones above 10 carats

➤ However no exceptionally large stones of this type recovered at BK16

➤ However BK16 is clearly under sampled

It is not possible to predict the curve beyond the current extrapolations

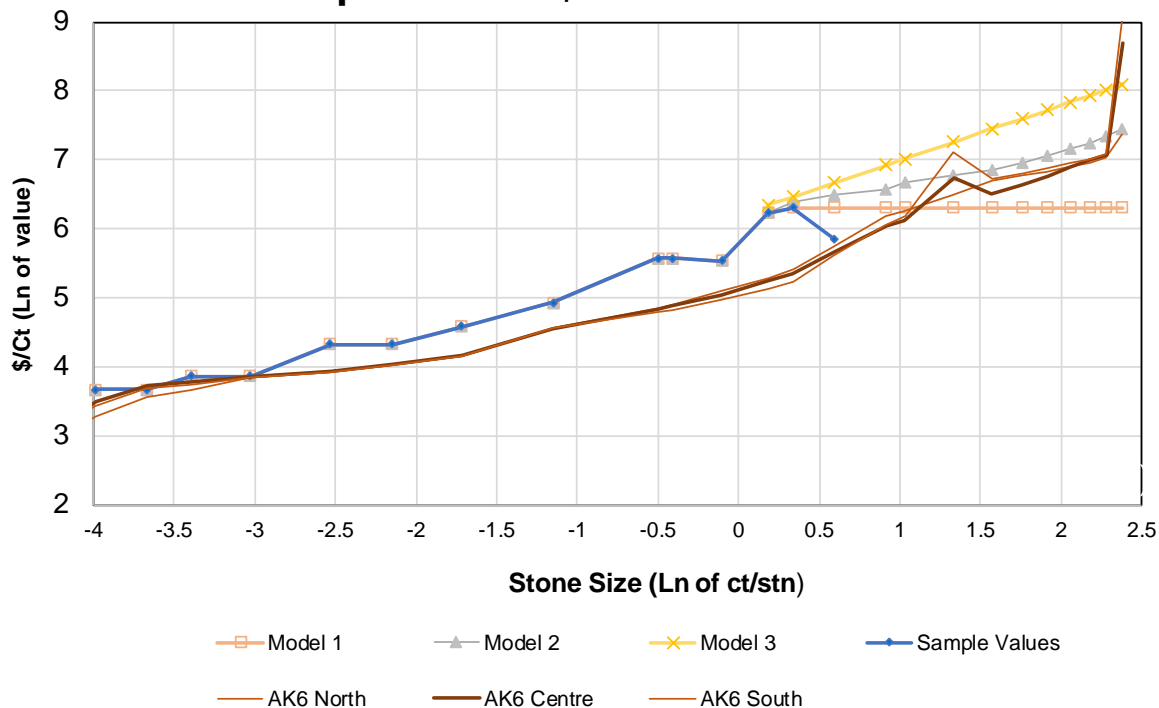
➤ However, current extrapolations are based on a clear under-sampling from BK16

## Type Ila diamonds seen at BK16

➤ Potential for significant upside trend when a larger sample is taken

*\*The values for Karowe (AK6) are based on the Open pit Mineral Reserve Estimate as at May 2018, Nowicki, 2018. Note - the grade of AK6 has gone down over time, but the \$/ct and \$/tonne have steadily increased over time as evidence and thus confidence has increased in the large high quality component of their diamond population.*

### Comparison of \$/ct - BK16 to AK6

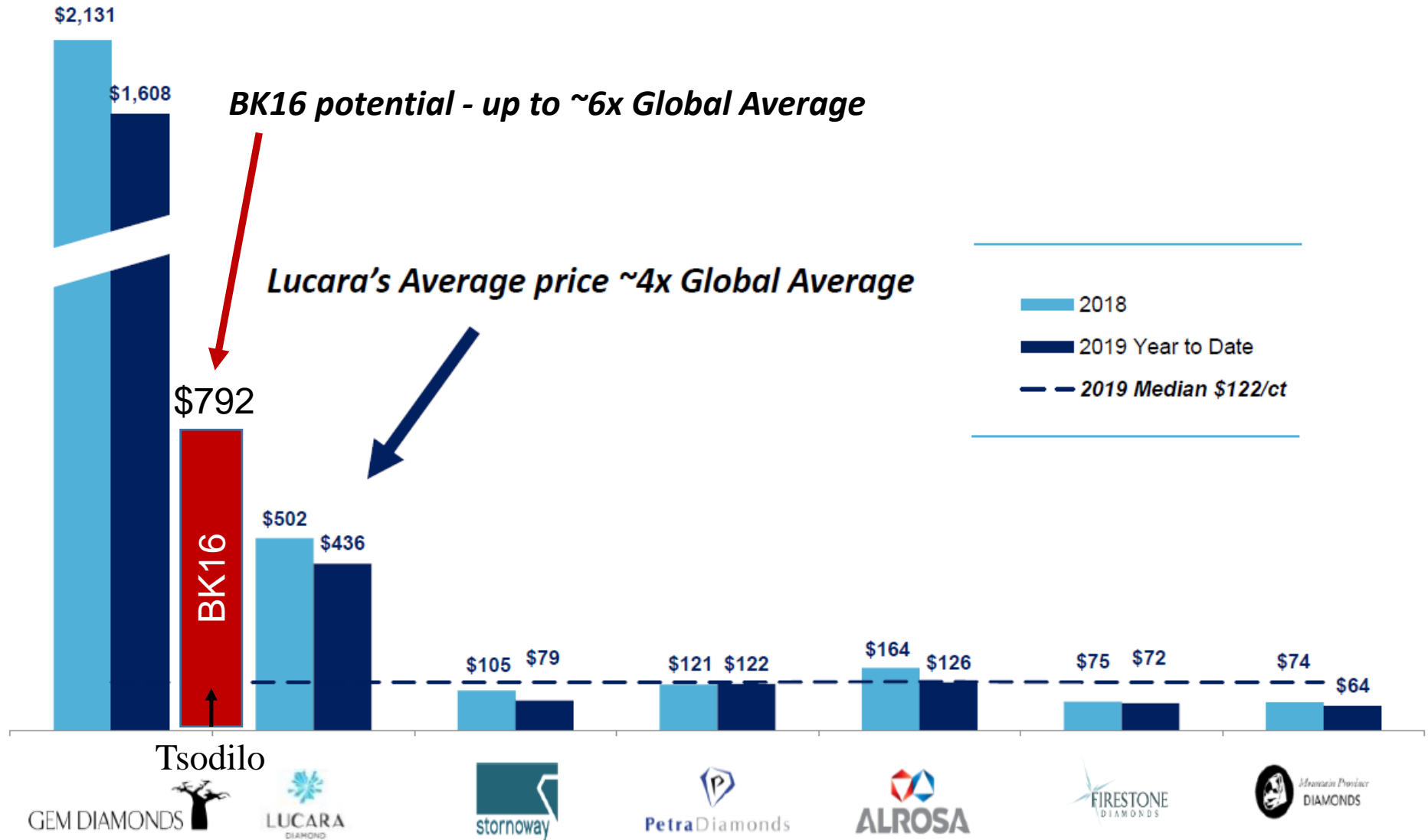


Variable	Unit of Measure	Current BK16 SFD Study				*Karowe (AK6)		
		Min	P20	P80	Max	North	Centre	South
Grade	Cpht	4	5	7	8	13	14	12
Diamond Value	US\$/carat	281	290	600	792	222	367	716
Kimberlite Value	US\$/tonne	11	15	38	67	29.68	53.46	91.22

# BK16 is Future Proof due to its High Valued Diamonds Bucking Global Trends

## GLOBAL ACHIEVED AVERAGE DIAMOND PRICES 2018/2019

(All amounts in U.S. Dollars per carat unless otherwise indicated)



# Conclusions



## ➤ Deliver step wise Evaluation Program

- ✓Phase 1: Diamond Value Concept Proven
- ✓Higher Value Diamonds Modeled
- ✓Higher Grade Possible

✗Phase 2: Larger Sample: reduce uncertainty and improve grade constraints

✗Phase 3: Feasibility Study

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# BK16 next phase: **What's Next?**

➤ BK16 is the most prospective of the kimberlites currently being evaluated in the Orapa Kimberlite Field

➤ Next stage of Evaluation:

➤ **Phase 2: Larger Sample:**

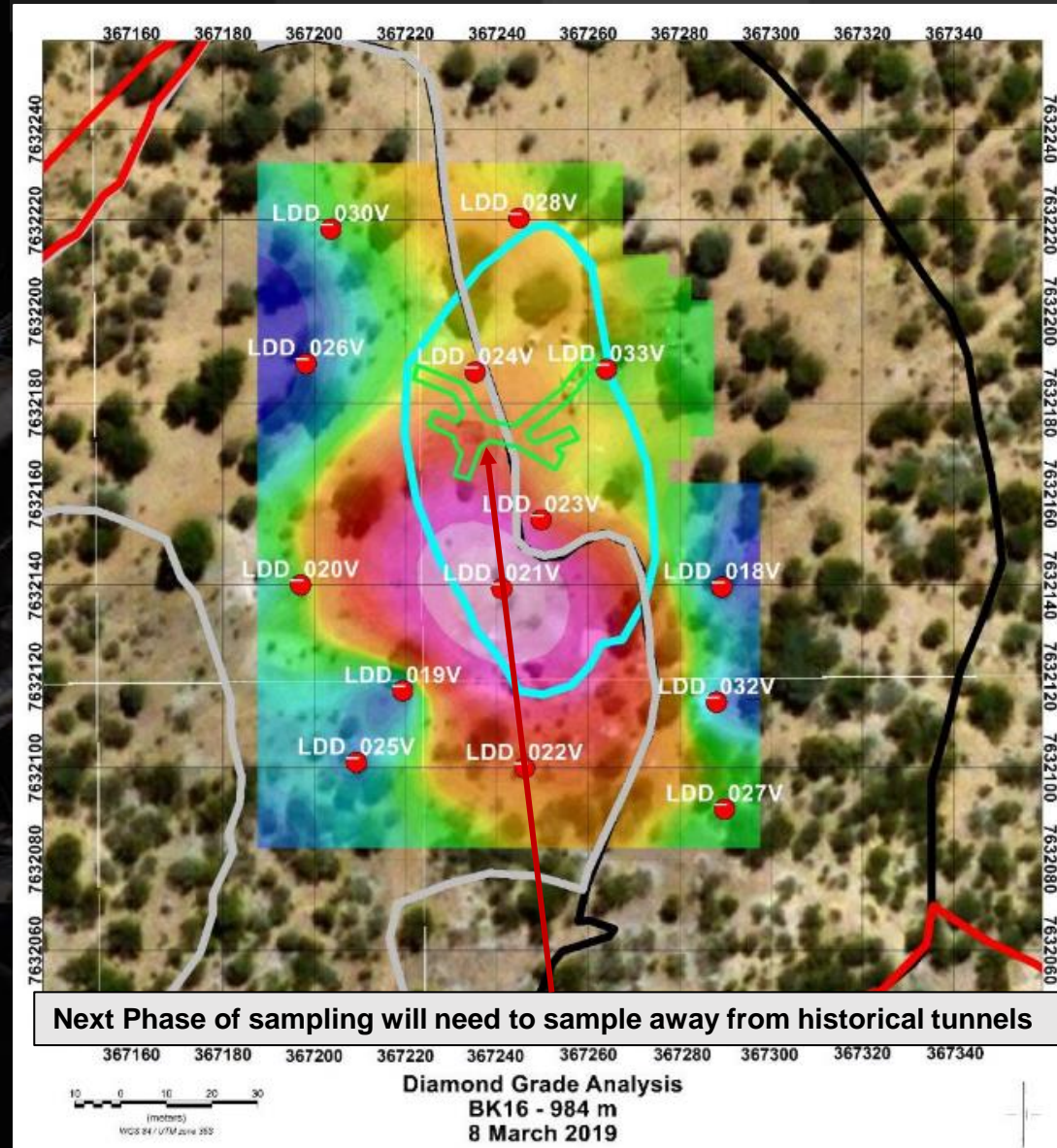
- Need to take a larger sample
- **~20,000 tonne bulk sample**
- Probably as a new Surface dug sample (Box Cut)

➤ Will Give:

- Better indication of real grade
- Confirm presence of large diamonds
- Increase certainty in Value of diamonds
- Better constrain economic model

➤ **Phase 3: Feasibility Study**

- Full engineering studies
- To define all mining parameters





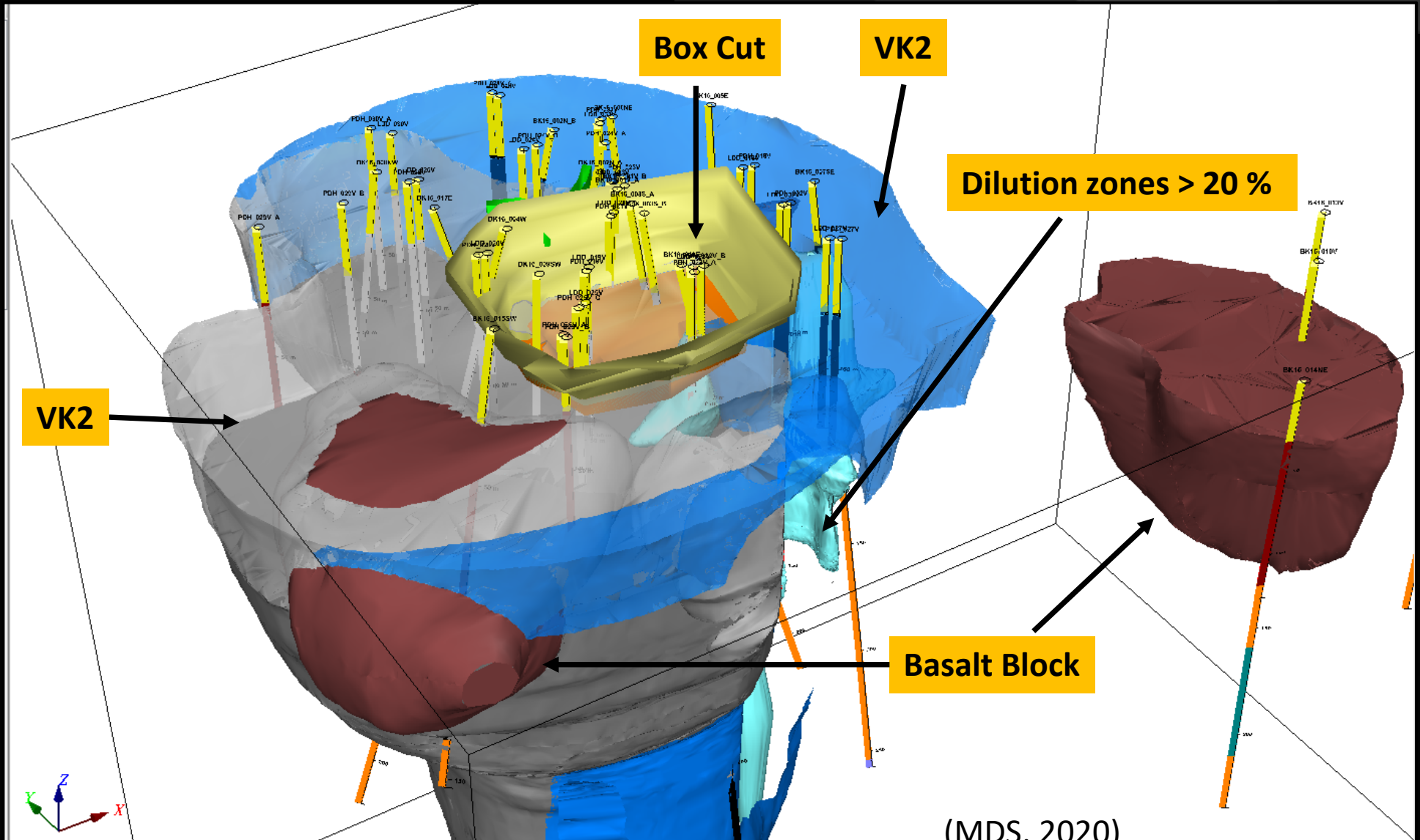
# Surface Bulk Sample

- Simple trench style box cut is envisaged to collect 10,000m<sup>3</sup> of kimberlite **~20,000 tonnes**
- Will give ~800 to 1,600 carats for a more in-depth and reliable economic valuation of the BK16 kimberlite
- LDD would be too expensive for this volume of material
  - Hence why a surface sample such as a “box cut” design
- 6 companies engaged to quote on this program:
- Trollope currently considered “most likely” contractor for the works
- However decision not final

**TROLLOPE**  
MINING SERVICES

- Trollope Mining Services Botswana - currently the contact mining company for the Lucara Karowe (AK6)
- Trollope have highly competitive costs and have local infrastructure and links to Lucara already set up.
- These obvious advantages are alongside a highly skilled local work force and an excellent safety track record.

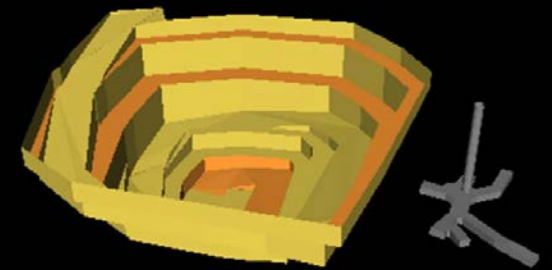
# BK16 Optimized Surface Sampling Design



(MDS, 2020)

# Design and Pit Shell Parameters

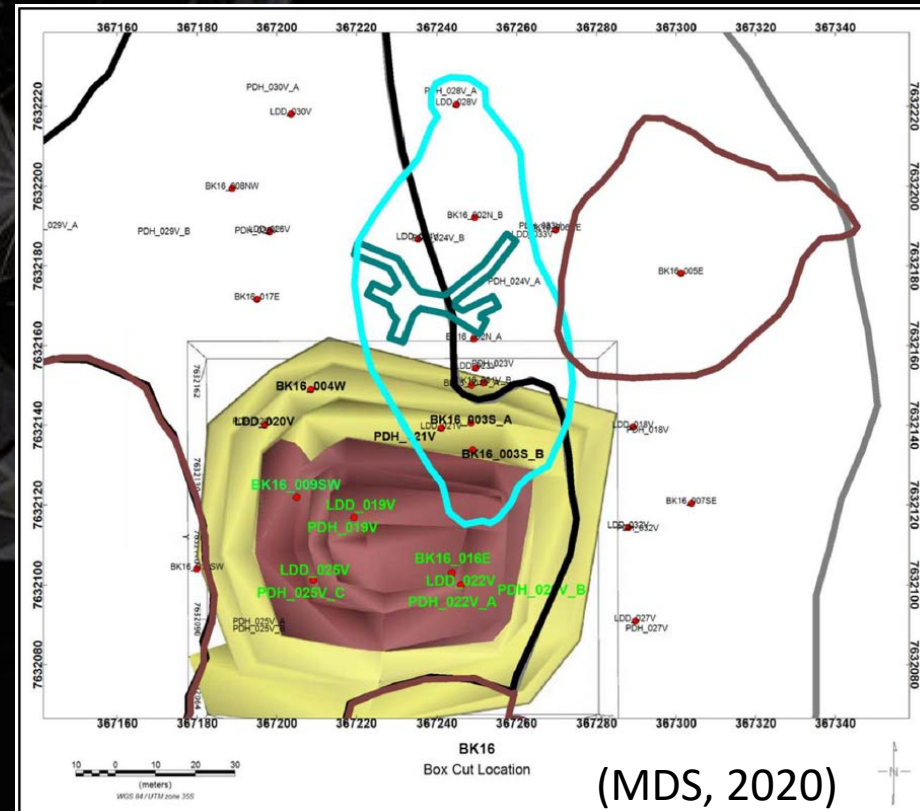
- A 10m wide road at a gradient of 12% is sufficient to allow for smooth and safe passing of the selected earthmoving machinery on the ramp.
- The selected ramp incline allows for the optimum productivity of the hauling equipment.
- A 5m high Bench 1 with a 5m wide berm on the weak zone of the soft sands.
- 10m high Benches 2 and 3 with 7m wide berms for the moderate strength KAS rock type.
- 5m high Benches 4 and 5 with 5m berms for the relatively weak kimberlite VK2 and VK3.
- The combination of 10m and 5m high benches is matched with the envisaged loading tools as well to minimize horizontal contact dilution.
- For slope stability consideration, trim / smooth wall blasting techniques will be applied to discourage back break in order to protect the integrity of the high walls.



(MDS, 2020)

# Main Geotechnical Properties Aiding Key Design Parameters

- The Intact rock strength (UCS) plays a major role in the determination of Slope Angles
- Shallow excavation maximum depth of only 35m
  - Main rock type which is encountered by the majority of the cut = KAS Kalahari Sandstone (Silcrete) >80%
  - Considered a 'competent' rock analyzing the UCS data
  - Hence an inter-ramp Slope Angle of between 45% and 50% are to be applied for a safe and practical pit
  - This includes a significant safety factors
- The final depth of the excavation was determined by taking into consideration the required quantities for sampling together with the modelled base of the KAS surface



# Vital Statistics

➤ Table: Mineable Material showing the mid-bench volumes.

Zone	Classification	Box Cut Lithotype	Density	Volume (m3)	Tons	Cpht	Carats
12	Kimberlite	VK2	2,06	237	488	6	29
13	Kimberlite	VK3	2,06	13 596	28 008	6	1 680
21	Waste	KASFINAL	2,41	130 402	314 269	0	-
25	Waste	SOFTS	2,00	10 242	20 484	0	-
			<b>2,35</b>	<b>154 477</b>	<b>363 249</b>		<b>1 710</b>

**Centre of Gravity:** 367185.72, 7632146.30, 1000.83

**Total Surface Area:** 16928.77

**Minimum Elevation:** 978.00

**Maximum Elevation:** 1013.00

**Minimum X co-ord:** 367122.58

**Maximum X co-ord:** 367240.37

**Minimum Y co-ord:** 7632092.82

**Maximum Y co-ord:** 7632200.90

**Minimum surface dip:** 0.00

**Maximum surface dip:** 89.98

- 10m Road Width @ 12% gradient

- 5m high, 5m berm Bench 1 (weak zone)

- 10m high, 7m berm Benches 2 & 3 (moderate strength)

- 5m high, 5m berm Benches 4 & 5 (weak zone VK2 / VK3)

# Surface Sample Rehabilitation Plan

- **Separate and comprehensive Rehabilitation Plan to meet statutory requirements**
- **Aim of this surface bulk sampling pit rehabilitation is to make the workings and facilities safe and restore the environment to as close as possible to its natural state**
- **The site is to be left in a safe and environmentally acceptable manner and that the community can make use of it for other economically viable activities**
  - **Initially the open ground site will be back filled with the material from the hard waste stockpiles (KAS).**
  - **This ground will be levelled and compacted**
  - **The softer sands (KAL) will then be placed over this levelled ground and compacted as far as possible so that it is safe for both humans and animals**
  - **The top soil that has been stockpiled separately will be spread over the area again on top of the loose sand as a last stage so that the seeds and bio-material can take hold again in a natural manner**
  - **The Rehabilitation process will make use of species indigenous to the area. Seeds from surrounding seed areas will be used for re-seeding**
  - **Rehabilitation will be executed in such a manner that surface runoff will not cause erosion of disturbed areas**
  - **The site will be rendered physically stable due to the compaction and levelling, as well as being chemically and biologically stable**
  - **All equipment and infrastructure will be removed from the site. Removal of the perimeter fencing will be undertaken once the site is safe and rehabilitated. In essence, every effort will be made to make sure there are no remaining impacts (residual impacts)**

# Risk Assessment and Mitigation

## ➤ Statutory Requirements

- The company and its contractors will comply with all statutory requirements with respect to the upcoming activities including appointment of a the “Competent Person” in terms of the Mines, Works, Quarries, and Machinery Act.

## ➤ Safety, Health and Environment Policy

- The company has well-documented SHE Policy. The company will ensure all contractors are in compliance with this policy and have HSE procedures adequate to undertake this task.

## ➤ Community and Labor Considerations

- The company and its contractors have been operating in and around Boteti district for some time and have a keen knowledge of the social and community requirements in Letlhakane itself and within the outreach areas
- The company and its contractors will endeavor to undertake extensive liaisons and engagements with community leadership and village development structures
- The policy is to recruit and hire within the Boteti region to the fullest extent possible given the current youth unemployment and skills development challenges in the region

# Other Diamond Project

**Opportunity:**

**Kimberlite and Alluvial Targets**

**PL217/2016**

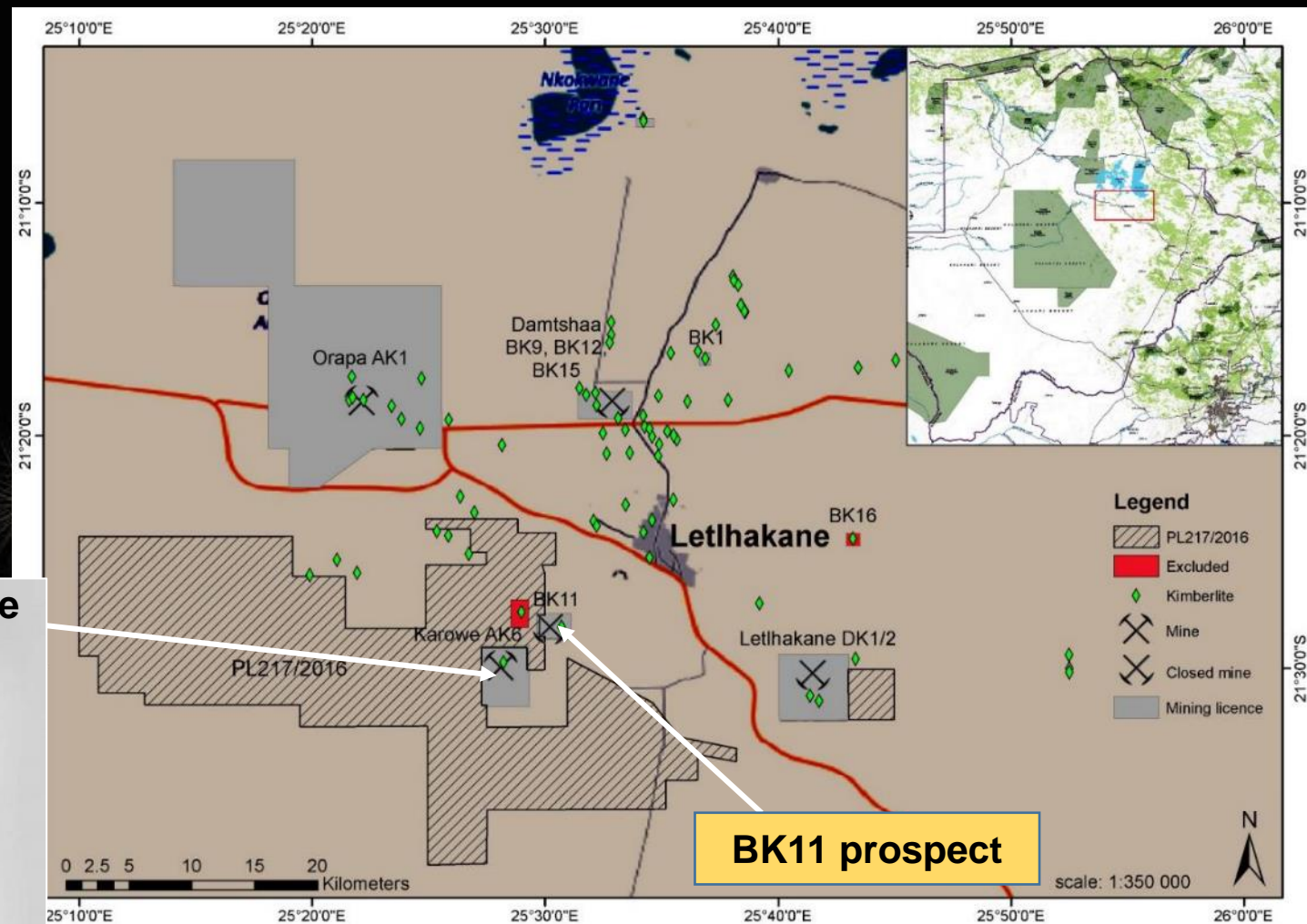




# PL 217/2016 – OKF Alluvial and Kimberlite Diamond Prospect

- 1. Diamond licence
- 2. Kimberlite looking targets based on geophysics

3. **Exciting Alluvial potential:** downstream from diamondiferous kimberlites and a large diamond producer



Karowe Mine

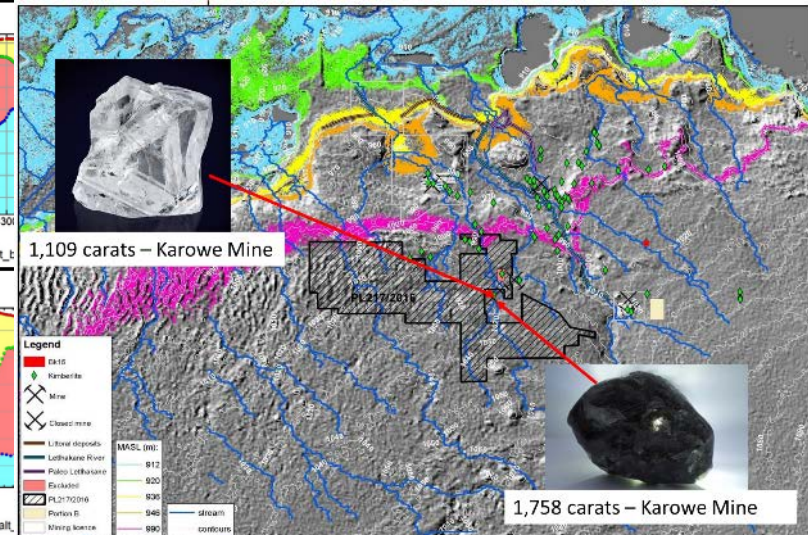
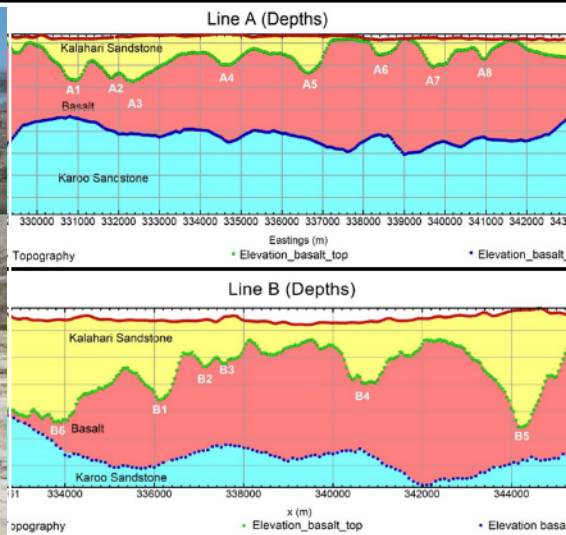
# PL217/2016

## Alluvial Diamonds and Kimberlite Targets

- Similar to the Orapa Airport Pan Gravels which are ~4 million carats
- AK6 and BK11 are Eroded Northward Flowing Paleo-Channels
  - Fossil Outwash Channels from the **AK6 Kimberlite**
  - Very Large High Quality High Valued Diamonds (Blue Diamonds)
  - Sewelo (1,758 cts) / Lesedi La Rona (1,109 cts) / Constellation (813 cts)

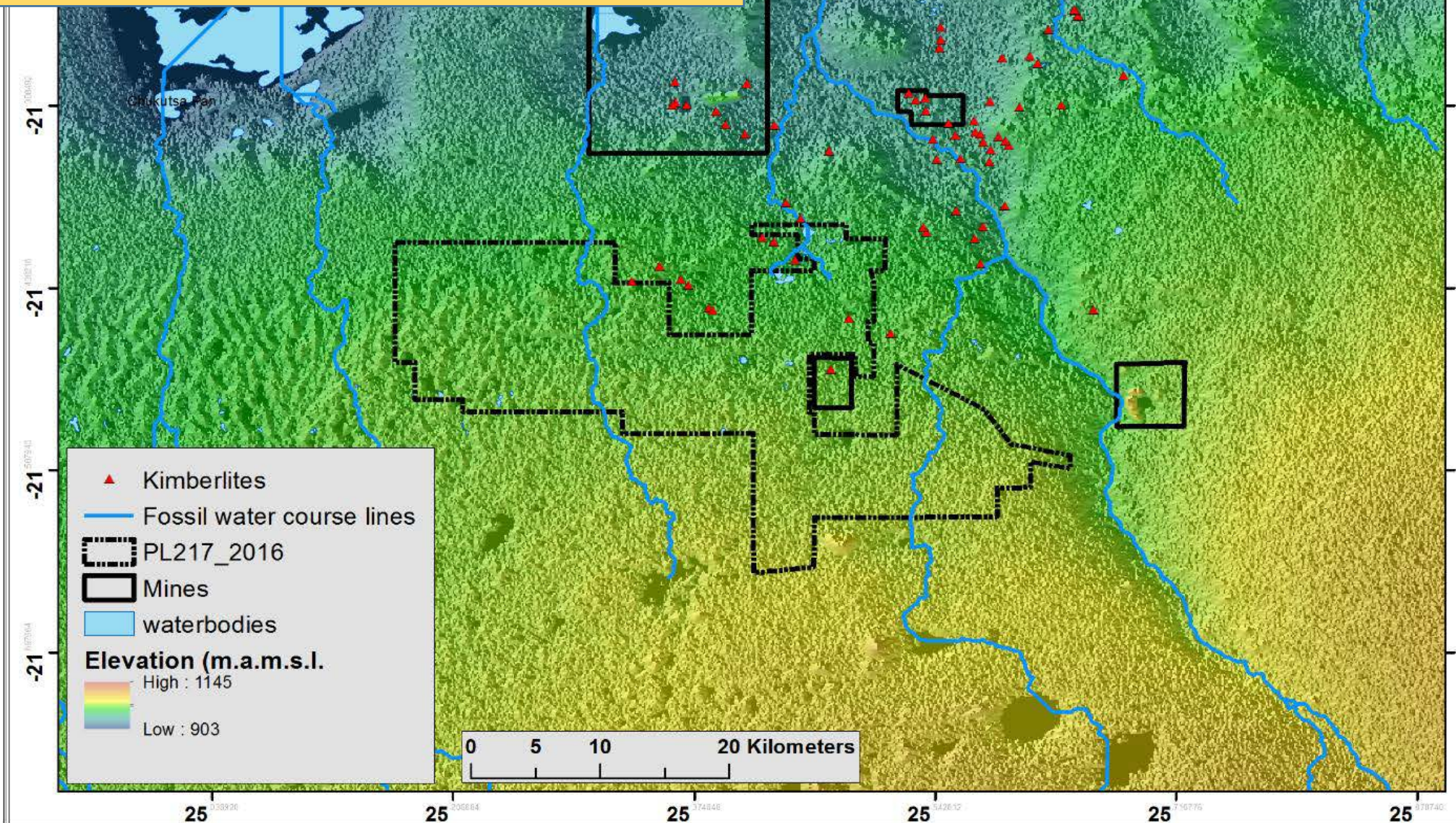


9.74 CT BLUE (AK6)

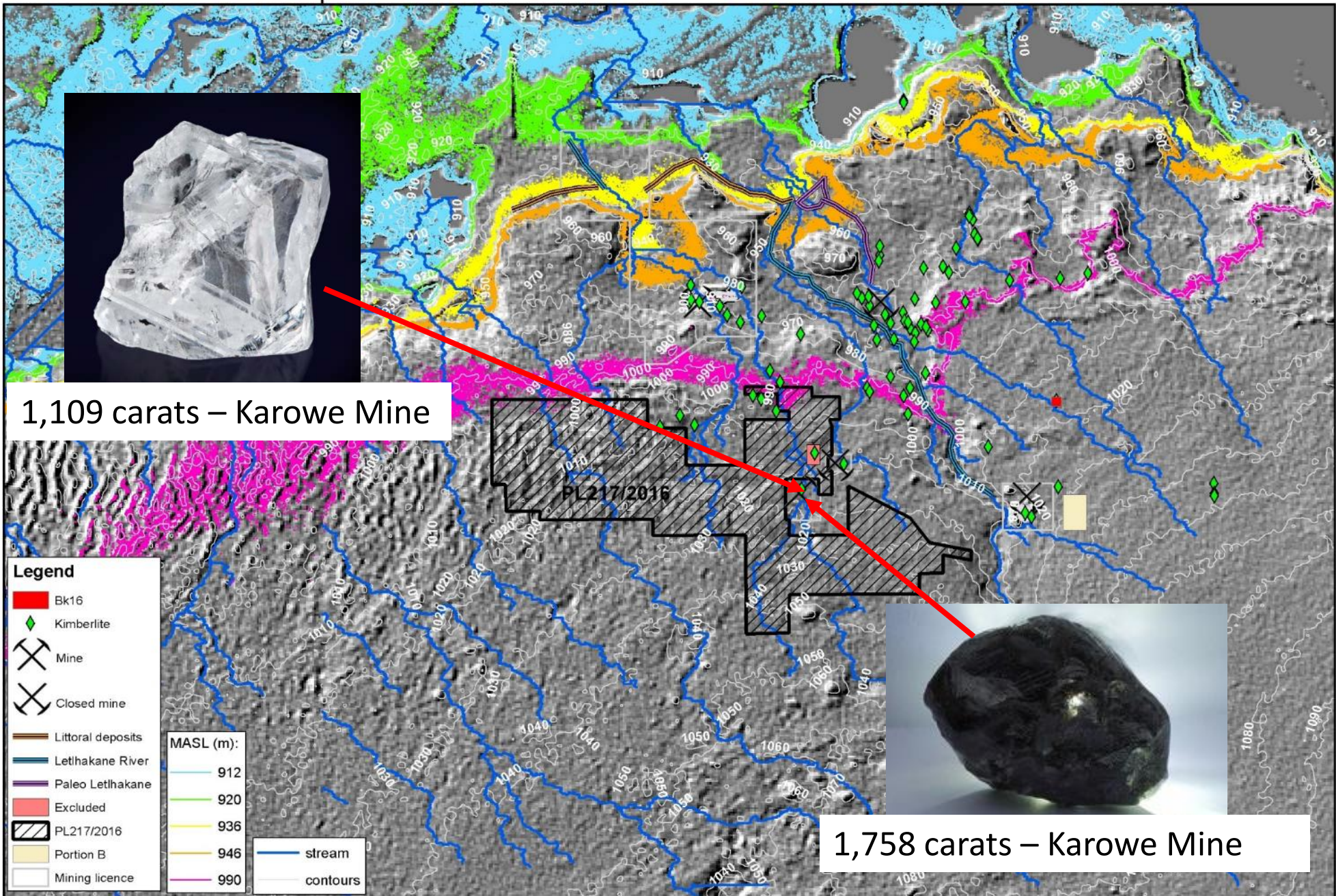


## Geomorphology

- Rivers
- Surrounded by diamond bearing kimberlites
- Differential erosion



25°0'0"E



1,109 carats – Karowe Mine

1,758 carats – Karowe Mine

- Legend**
- Bk16
  - ◆ Kimberlite
  - ✕ Mine
  - ✕ Closed mine
  - Littoral deposits
  - Lethakane River
  - Paleo Lethakane
  - Excluded
  - PL217/2016
  - Portion B
  - Mining licence

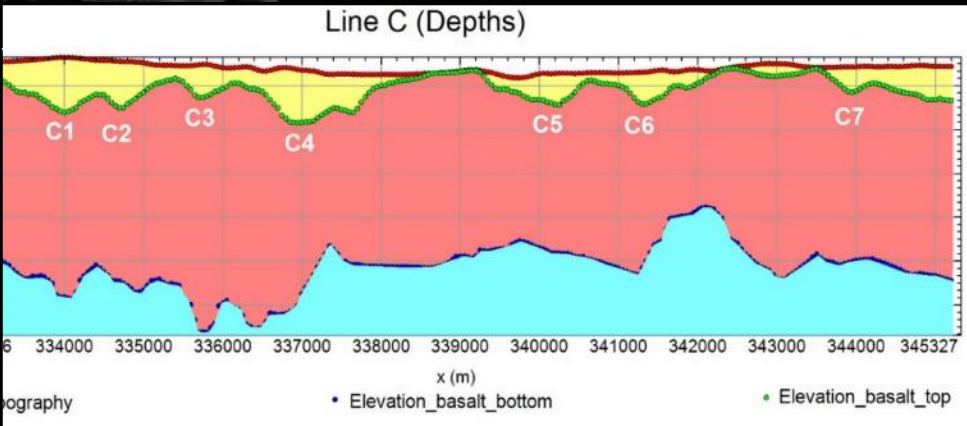
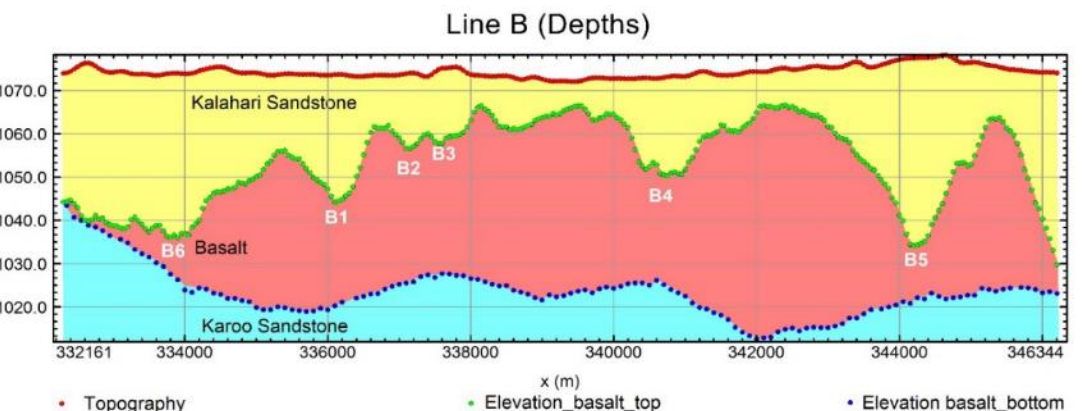
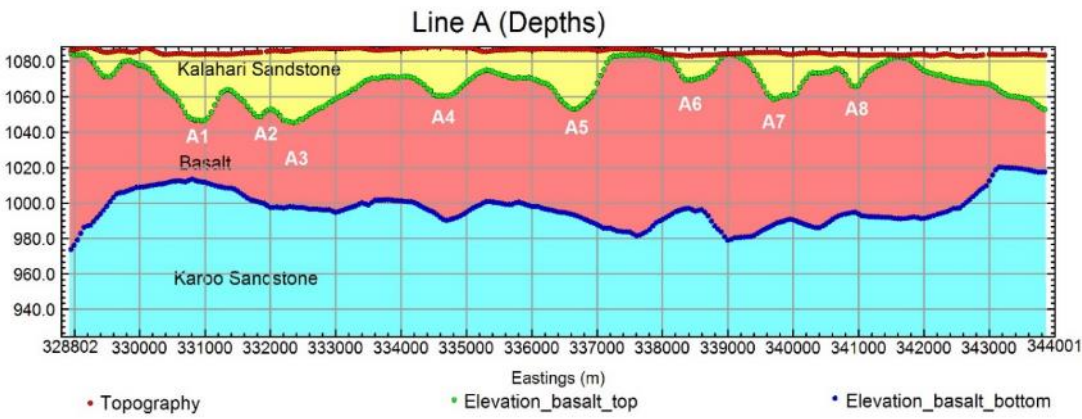
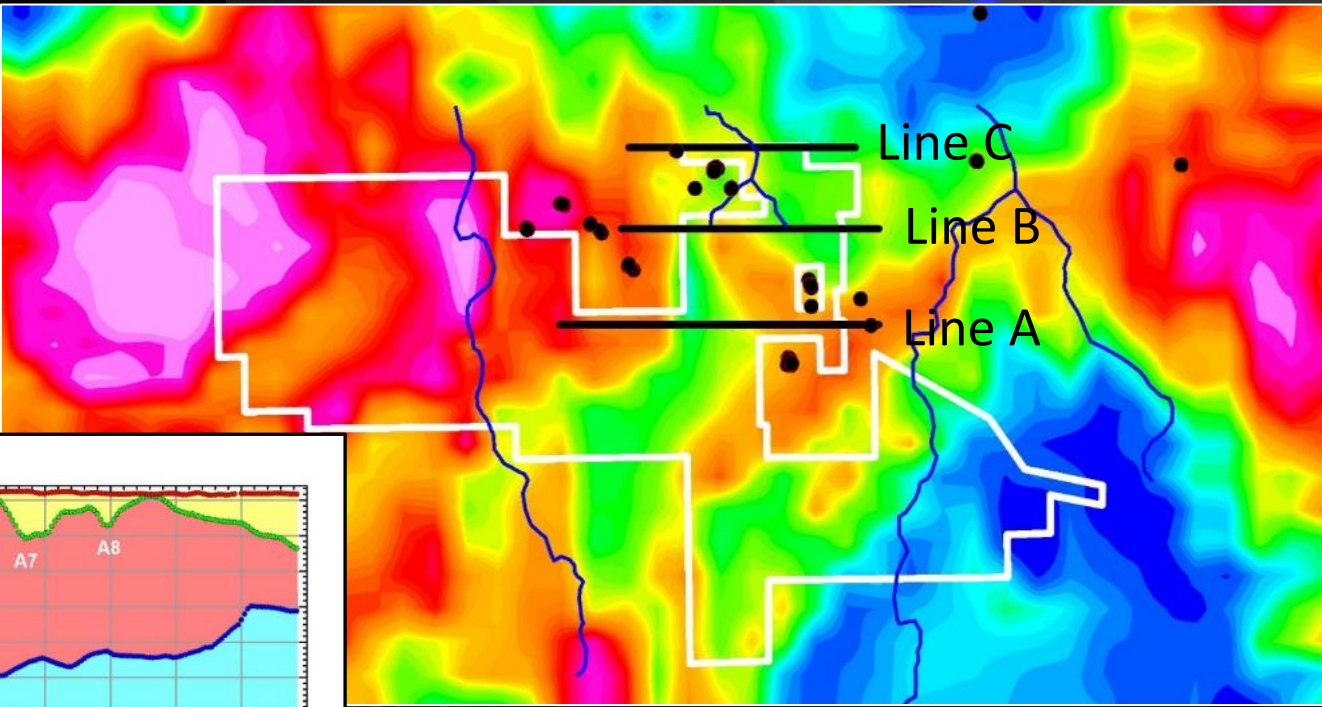
**MASL (m):**

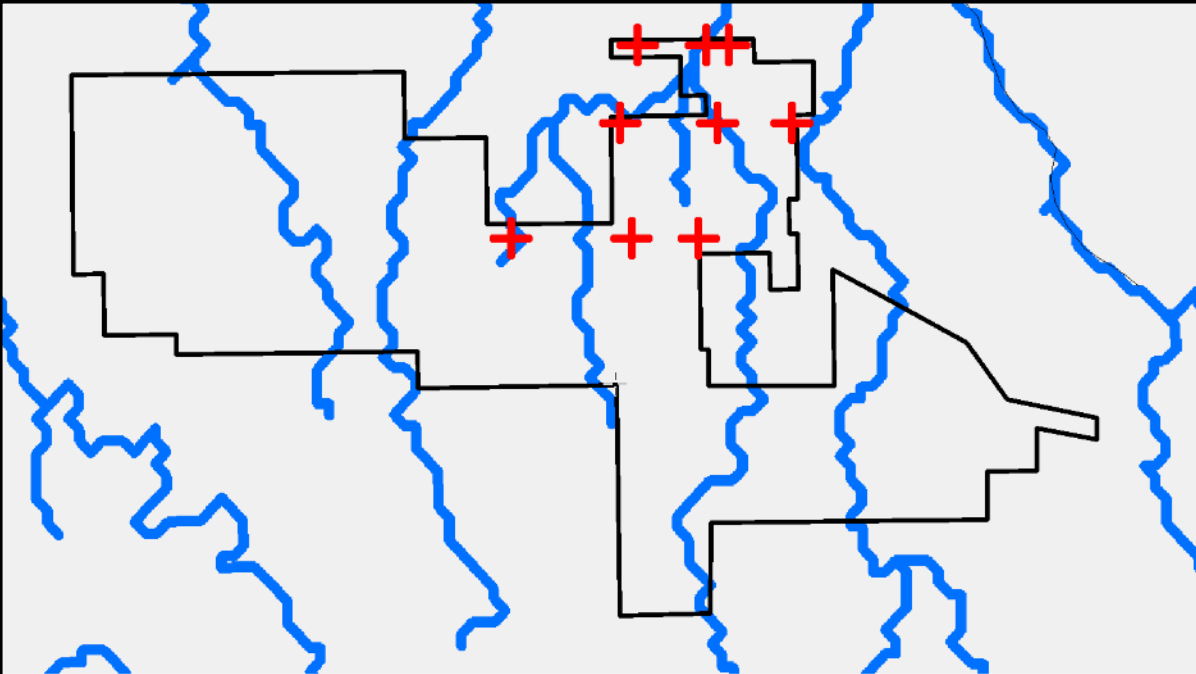
912	stream
920	contours
936	
946	
990	

02.55 10 15 20 25°0'0"E

Kilometers

- 3 gravity lines surveyed to identify subsurface channels
- Gravity lows are associated with less dense material
- Several potential paleo-channels identified close to present-day drainages (~15-40m)





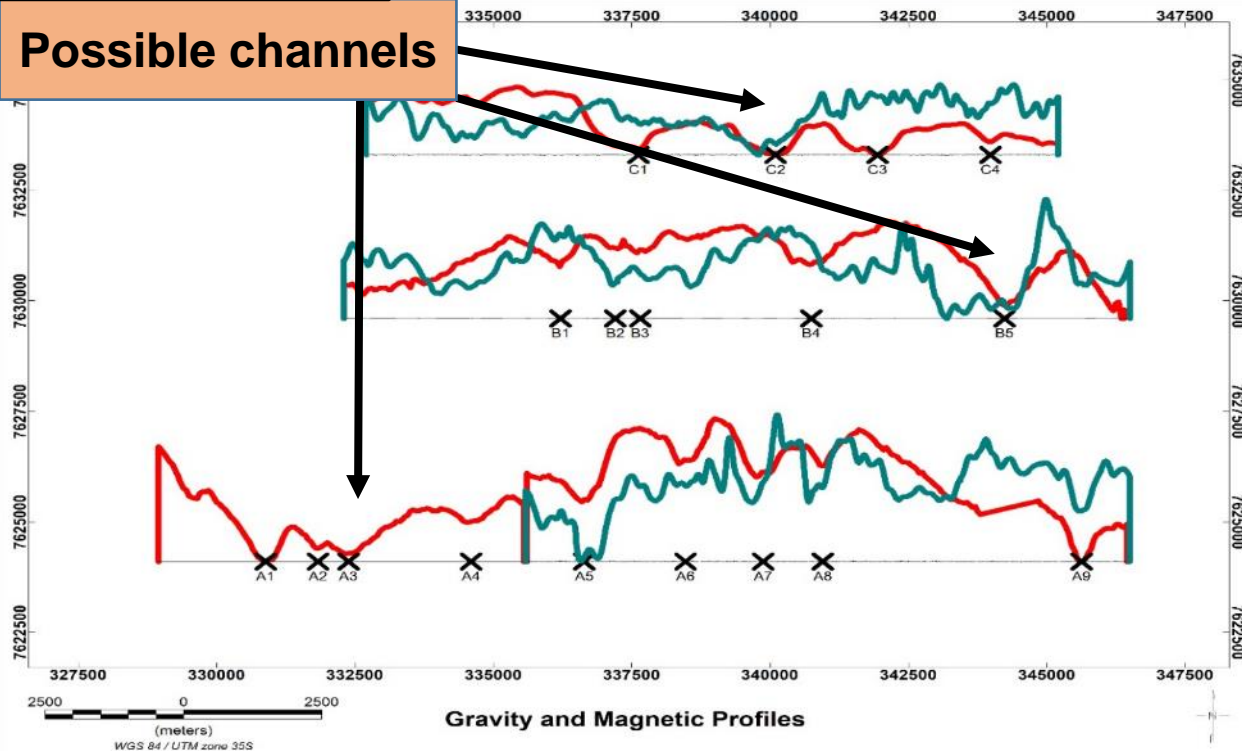
## Next Stage Short Term

- Soil Sampling to focus targets
- High definition geophysical surveys to further delineate targets

## Next Stage Sampling

- Drill several holes along the gravity lows using Company drills
- If gravel intersected select sites for excavation
- Extract several tons for treatment through Company DMS plant

## Possible channels



# Contacts

**James M. Bruchs**

*Chairman and CEO*

Tel: +1 416 572-2033

Email: [jbruchs@tsodiloresources.com](mailto:jbruchs@tsodiloresources.com)

**Dr. Alistair Jeffcoate**

*Manager*

Tel: +267 74333081

Email: [alistair.Jeffcoate@tsodiloresources.com](mailto:alistair.Jeffcoate@tsodiloresources.com)



**Tsodilo Resources Limited (TSD:TSX-V)**

Canada Trust Tower, 27<sup>th</sup> Floor - Box 508

Toronto, Canada M5J 2S1

Website: <http://www.TsodiloResources.com>

Email: [info@TsodiloResources.com](mailto:info@TsodiloResources.com)