

# Karelian Diamond Resources (KDR AIM)

Mining –Initiating Coverage

17 January 2019



## Stock Data

Share Price	3.40p
Market Cap (£M)	1.2
EV (£M)	1.3

## Price Chart



## 52 Week Range

3.40p 3.40p  
7.25p

## Company Summary

Karelian is an AIM listed exploration company with a focus on diamonds in Finland. Its aim is the development of the first diamond mine in Western Europe.

MAIN SHAREHOLDERS	HOLDING
Conroy Prof. R	11.91%
Richard Taberner	7.02%
Alan Osborne	4.32%
Conroy Plc	3.57%
Steve Coomber	3.44%

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## Introduction

Karelian Diamond Resources (“Karelian”) is an AIM listed diamond exploration company operating in Finland. It acquired the Lahtojoki diamond mining concession in April 2016 from A & G Mining OY. Since then, Karelian have identified further diamond potential through the discovery of kimberlite boulders in till adjacent to the Lahtojoki diamond deposit. In the Kuhmo area, Karelian have further defined the Seitapera pipe, the largest known kimberlite pipe in Finland which covers an area of 6.9Ha, and discovered a number of other kimberlite dykes in the vicinity.

## Diamonds in Finland

The first kimberlite in Finland was discovered in the 1960’s by Malmikaivos Oy. Despite 50 years of exploration no diamond mine has been developed yet, despite the fact that there are two very significant diamond mines in the Russian controlled part of the craton. Additionally, in the latest Fraser Institute survey for 2017, the top jurisdiction for investment, based on the Investment Attractive Index was Finland. In the Policy Perception Index, which is a “report card” to governments on the attractiveness of their mining policies, Finland rated second.

## Valuation

BHC has modelled the Lahtojoki Diamond Project based on the preliminary economic assessment (“PEA”) and valued it at US\$32.9M, with an IRR of 50.2%. This assumes a discount rate of 10% and an average diamond price of US\$100/ct. This figure is quoted after tax but unfinanced.

## Valuation upside

The Lahtojoki Diamond Project is known to contain “pink diamonds” which have a scarcity factor and with the mine life at the Argyle mine rapidly coming to an end, it being the largest source of pink diamonds, the value of such stones is likely to increase and provide significant upside to the valuation per carat.

## Catalysts for Next 12 Months

Assuming sufficient funding, Karelian would like to process a significant bulk sample from the Lahtojoki pipe to produce a significant parcel of diamonds so that an accurate valuation of the diamonds and hence the pipe could be established. Simultaneously, Karelian intends to continue its exploration thrust, particularly in the boulder area, hopefully making more discoveries.

## Infrastructure

The infrastructure in Finland is excellent, particularly so given that outside the extreme south of the country is sparsely populated. On the BHC site visit in October 2018, we noted that the roads are excellent and on all the sites we visited, Lahtojoki, Anomaly 5, Riihivaara and Seitapera the roads pass very close to the leases. Further, there is a power grid, with distribution and local technical and logistics availability close by.

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## Executive Summary

### Karelian - A Finnish Diamond Explorer

Karelian Diamond Resources (“Karelian”) is an AIM listed diamond exploration company operating in Finland. It acquired the Lahtojoki diamond mining concession in April 2016 from A & G Mining OY. Since then, Karelian have identified further diamond potential through the discovery of kimberlite boulders in till adjacent to the Lahtojoki diamond deposit. The Company has also completed a preliminary economic assessment (‘PEA’) on the Lahtojoki diamond deposit which recommended that Karelian proceed towards a mining operation. In the Kuhmo area, Karelian have further defined the Seitapera pipe, the largest known kimberlite pipe in Finland which covers an area of 6.9Ha, and discovered a number of other kimberlite dykes in the vicinity.

### Valuation

BHC has modelled the Lahtojoki Diamond Project based on the preliminary economic assessment (“PEA”) and valued it at US\$32.9M, with an IRR of 50.2%. This assumes a discount rate of 10% and an average diamond price of US\$100/ct. This valuation is quoted after tax and before funding.

### Short Term Project Upside

BHC believes that the next steps for Karelian are to either buy or hire a state of the art mobile processing plant. This should be used to process the remaining bulk samples taken by European Diamonds at the Lahtojoki pipe and then move it on to bulk sample the other kimberlites that are known to be diamondiferous. Such a programme would yield a larger sample of diamonds enable a better determination of the value of the resources, through a higher confidence in the carats per hundred tonnes and the average value of the stones.

### “Fancies”

Coloured stones are often referred to as “fancies”. It is a well-known fact that pink diamonds only accounted for 5% of the production at the Argyle mine in Australia, yet generated 50% of the revenue. With pink diamonds having been found at Lahtojoki, this suggests that there is significant upside to the US\$100/ct we have used in our modelling. Further, the small diamond found “down ice” from the Kuhmo diamond target, Anomaly 5 kimberlite dyke was green. Green diamonds are also exceptionally rare. Whilst only one small green diamond has been found “down ice”, one would have to assume that the body it originated from would have more green diamonds in it.

### Mining in Finland

In the latest Fraser Institute survey for 2017, which was released in February 2018, the top jurisdiction for investment, based on the Investment Attractive Index was Finland, which moved up from 5<sup>th</sup> place in 2016. In the Policy Perception Index, which is a “report card” to governments on the attractiveness of their mining policies, Finland rated second, behind Ireland.

### Infrastructure

The infrastructure in Finland is excellent, particularly so given that outside the extreme south of the country is sparsely populated. On the BHC site visit in October 2018, we noted that the roads are excellent and on all the sites we visited, Lahtojoki, Anomaly 5, Riihivaara and Seitapera the roads pass very close to the leases. Further, there is a power grid, with distribution and local technical and logistics availability close by.

### Artificial Diamonds

The diamond industry is about to experience its biggest shake-up for years following an announcement by De Beers in June 2018 that they would introduced its own line of synthetic laboratory produced gems. De Beers also said it would offer what it calls ‘fashion jewellery’ for as little as \$800 a carat, substantially undercutting current laboratory producers by at least 75 per cent. The price for a regular diamond of jewellery grade will start at around US\$2,000 a carat, and currently rival producers’ synthetics typically cost anywhere between 10-30 per cent below that. This would appear to put a floor price on the price of diamonds.

## Company History

The Company which was established when it purchased Karelian Diamonds Limited from Conroy Diamonds and Gold P.I.c.and Nordic Diamonds Limited from Conroy P.I.c. in 2005, together with all intellectual property and confidential proprietary data relating to the diamond exploration programmes in Finland of those two companies.

The Company's strategy has been to discover, delineate, acquire and the development of major diamond deposits in the Finnish sector of the Karelian Craton and achieve its objectives by means of an exploration approach based on a highly focused and cost effective methodology. This strategy has resulted in the delineation, at Seitaperä, of the largest diamondiferous pipe (6.9 Ha) so far found in Finland, the discovery, at Riihivaara and Anomaly 5, of new kimberlite bodies and the acquisition of a mining concession over the Lahtojoki diamond deposit.

The Company's shares were admitted to trading on AIM on September 1st, 2005.

## Recent Time Line of Key Company Announcements

Date	Event
19 Apr 2016	Acquisition of Diamond Mining Permit over the Lahojoki Diamond Project in Finland
01 Jun 2016	Diamond Mining Permit Received
10 Aug 2016	Diamond Mine Potential of Lahtojoki Kimberlite Pipe
19 Sep 2016	Diamondiferous Resource Potential around Lahtojoki
09 Nov 2016	New Kimberlite Boulder Discovery 2.5km South West of Lahtojoki Diamond Deposit
12 Jan 2017	Recently Discovered Kimberlite Boulder is Derived from an Undiscovered Kimberlite
31 Jan 2017	Diamond Discovery in Finland
15 Feb 2017	Diamond Discovery: Technical report
16 Mar 2017	Extension of Riihivaara Kimberlite Body
28 Jun 2017	Diamond Exploration Claim Reservation Granted in Area Surrounding Lahojoki Mining Concession
01 Aug 2017	Preliminary Economic Assessment of the Lahtojoki Diamond Project
25 Sep 2017	New Kimberlite Source Indicated in Diamond Discovery Target
18 Oct 2017	Kuhmo Diamond Discovery Update
27 Oct 2017	Diamond Exploration Permit Granted
14 Nov 2017	Promising New Exploration Data
22 Jan 2018	Exploration Claim Granted Over Kimberlite Boulder Area
23 Jan 2018	Diamond Source Proximity Suggested b Sample Results
21 Jun 2018	Update on Finnish Diamond Prospects
13 Aug 2018	New Micro-Diamond Results From Lahtojoki Diamond Deposit
24 Sep 2018	Kuhmo sample material confirmed to be from diamond stability field
18 Oct 2018	Orangeite (Group II Kimberlite) Discovered Up-Ice from Green Diamond
05 Nov 2018	Further Discoveries of Orangeite Up-Ice from Green Diamond Discovery
06 Dec 2018	Positive Drilling Results Finland Riihivaara Kimberlite

Source: Karelian Diamond Resources

## History of Diamonds in Finland

The first kimberlite in Finland was discovered in the 1960's by Malmikaivos Oy, a private prospecting company based in Luikonlahti, eastern Finland. The 1-hectare pipe was discovered during a ground magnetic survey whilst prospecting for base metals in the vicinity of Kaavi. Overburden was only 2m thick and the kimberlite was exposed by trenching and drilling. As Malmikaivos Oy was looking for copper, and this prospect had no potential for copper, the prospect was not considered any further. In the late 1970's, during further base metal prospecting, in the area, glacial boulders of well preserved "almond rocks" were discovered. Samples, sent to several diamond companies, were identified as kimberlite and proven to contain micro diamonds. By tracing boulders in the up-ice direction, Malmikaivos Oy located a second kimberlite in 1984 under a small swamp and a third in 1985 under a small lake only 500m away from the second discovery.

In 1985 Malmikaivos Oy decided to find a partner with diamond exploration expertise and signed an agreement with Ashton Mining Ltd. Malmikaivos exploration teams subsequently managed to find some more kimberlites in the Kaavi-Kuopio area. Till sampling and heavy mineral exploration were also used extensively by Dia Met Minerals during its four years of exploration for diamonds in Finland between 1996 and 1999.

Ashton's exploration in Finland changed when the company was taken over by Rio Tinto Ltd ("RIO"). RIO used a different method of exploration, relying more on geophysical methods such as magnetic, electromagnetic gravimetric and seismic methods which gave inconsistent results and depended upon the composition of the pipes.

Near the end of operations by Dia Met and Malmikaivos, the Geological Society of Finland ("GTK") developed new tools for processing till samples for kimberlite indicator minerals. To test this new capability, GTK processed till samples from several sampling lines in the Kuhmo-Lentiira area of eastern Finland. This gave sufficient positive results that an invitation for tenders was published which was won by American Mineral Fields.

During this period, Conroy Diamonds and Gold PLC (transferred to its subsidiary Karelian Diamonds Ltd) was acquiring ground and conducted a successful exploration programme in Finland, where a number of positive results identified six prospective regions for follow-up exploration, Lapland, Kuusamo, Western, Kuhmo, Kuopio-Kaavi and South Eastern. Kimberlite indicator minerals in these regions indicated the potential to host diamondiferous kimberlites or Orangeite (Group II Kimberlite). Three of these regions were known to host kimberlite bodies and Karelian Diamonds primarily concentrated in the Kuhmo region of Eastern Finland.

North Star Diamonds on the other hand, took up where Ashton and Dia Met had left off in the Kaavi-Kuopio area. After spending considerable time and effort drilling earlier discoveries, they turned their back on Finland in 2006 and their attention moved to the Ekati area of Canada.

## Karelian's Agreement with Rio Tinto

Karelian Diamond Resources plc, announced on the 22 July 2010 that it has concluded a Confidentiality Agreement (with Back in Rights) with Rio Tinto Mining and Exploration Limited. Under the agreement, Rio Tinto will disclose to Karelian confidential information and physical geological samples relating to exploration in Finland for the purpose of Karelian considering that information in relation to Karelian's potential and existing exploration programmes in Finland. In consideration of Rio Tinto disclosing the confidential information to it, Karelian has agreed that Rio Tinto will have the option to earn a 51 per cent interest in any project identified by Karelian in Finland by Rio Tinto paying the direct cash expenditures incurred in developing the project subject to the following conditions:

1. For diamond projects the option will be triggered if Karelian completes 10 tons or more of bulk sampling for diamond exploration; and
2. For all other minerals the option will be triggered if Karelian discovers a resource with an in situ value that is equal to or greater than the in situ value of 3 million ounces of gold in a JORC compliant resource calculation.

On the 26 June 2014 the confidentiality agreement was extended until the 30 June 2020.

## Introduction

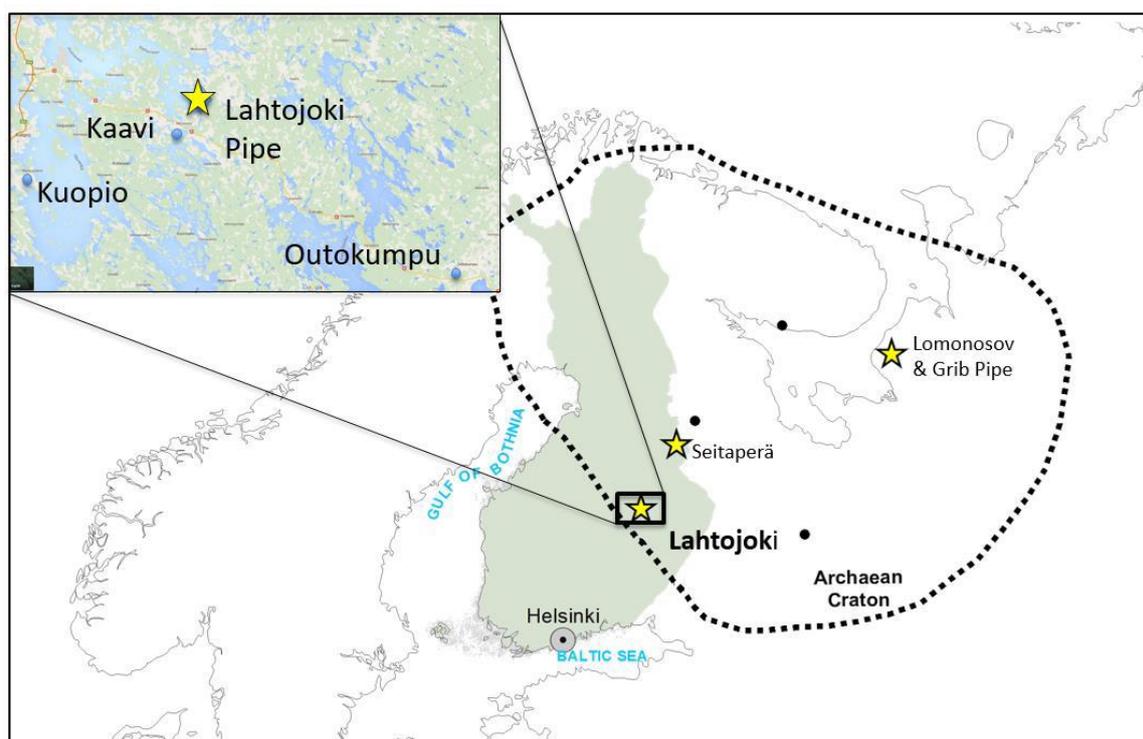
Karelian Diamond Resources plc (“Karelian”) diamond projects in Finland are based on the diamond prospectivity of the Karelian Craton. The Karelian Craton, which is comparable in size to the diamond rich Slave Lake Craton in Canada, stretches across north west Russia and northern Finland.

The world class Lomonosov and Grib Pipe diamond deposits have been discovered in the Russian Sector of the Craton and ALROSA, the Russian company which is the world’s largest diamond miner, has indicated that this diamond region will represent almost all of its future growth. Karelian believes that the Finnish sector of the Craton could be equally prospective.

## Discovery Time Line of the Projects

Date	Project	Prospects/Targets
1989	Lahtojoki	Discovered by Ashton / Malmikaivos through till sampling.
1993	Seitapera	Kimberlite discovered by Ashton / Malmikaivos
November 2007	Seitapera	Karelian projects possible increase on surface area of Seitapera Kimberlite pipe to 6.9Ha (largest diamondiferous body in Finland)
January 2015	Riihivaara	Karelian announces discovery of Riihivaara kimberlite
October 2018	Anomaly 5	Karelian announces discovery of Orangeite (Group II Kimberlite)

Exhibit 1: Map of Fennoscandia, showing locations of Major Kimberlites



Source: Karelian Diamond Resources

## The Karelian Craton

### Overview

The Precambrian rocks of the Fennoscandian (or Baltic) Shield extend for more than a million square kilometres across Norway, Sweden, Finland and Northwest Russia. Approximately one third of the shield lies within Finland. It is broadly divided into two domains; an Archean complex (3.50–2.50 Ga) in the North and East of Finland, and an Early Proterozoic (1.92–1.77 Ga) Svecofennian domain forming central and Southern Finland.

An area of over 300,000km<sup>2</sup> in Finland is highly prospective for diamondiferous kimberlitic rocks based on the presence of the critical conditions necessary for diamond preservation - Archean bedrock of the Karelian Craton, a low geothermal gradient and a thick lithosphere. Seismic studies have indicated that the underlying lithosphere is anomalously thick, extending to depths to at least 240 kilometres (O'Brien et al, 2004.). This coupled with the characteristic low heat flow of the Archean bedrock of typically less than 40 mW/square metre increases the probability that ascended kimberlites will have passed through the diamond stability field where diamondiferous material occurs at depths exceeding 150km.

## The Lahtojoki Development Project

### Introduction

The Lahtojoki diamond project is situated in the Kuopio – Kaavi region of Finland in a highly favourable location with excellent infrastructure including good road access, power distribution and local technical and logistics availability. It is approximately 30km east of Kuopio and 5km northeast of Kaavi, by road.

The pipe, which has a surface area of approximately 1.6 hectares, has intruded into Proterozoic mica schist and granite and is covered by a thin layer (a few meters) of glacial till. The kimberlite pipe is covered by a valid Mining Concession, of some 70 hectares, held by Karelian Diamond Resources. Karelian announced the purchase of the Lahtojoki diamond project in April 2016 when it paid A & G Mining Oy the purchase price is €150,000, comprising an initial purchase price of €50,000 plus a further €100,000 after twenty-four months unless Karelian decides not to develop the project. A royalty to AGM of 1% is payable either in diamonds or cash on diamond production up to 2.5 million carats and 2% payable on diamond production above 2.5 million carats.

The kimberlite is one of 20 kimberlites that were discovered by Ashton Mining (now RIO) through its local subsidiary Malmikaivos Oy (Malmikaivos) in 1989 in the Kaavi-Kuopio area. A substantial amount of exploration work was undertaken which established that the majority of the Kaavi-Kuopio kimberlites are diamondiferous with Lahtojoki ranking amongst the bodies showing the most economic potential.

Exhibit1 shows the outline of the Karelian Archean Craton with the Lahtojoki pipe located close to the south western craton margin. Factors that have a positive influence on the economic potential of kimberlites and may be associated with diamondiferous intrusive bodies close to craton margins include; i) dual diamond paragenesis - eclogitic and peridotitic, and ii) type II diamond association related to deep seated rifting along craton margins.

### Geology

Lahtojoki is a diatreme facies, massive volcanoclastic kimberlite, with minor amounts intrusive coherent (hypabyssal facies), and has been dated at 600Ma. The kimberlite is classified as a typical Group I comprising abundant large, rounded grains (macrocrysts) of olivine, set in a matrix of subhedral to euhedral olivine, monticellite, perovskite, spinel, mica, calcite and serpentine. Kimberlitic indicator minerals, comprising pyrope and eclogitic garnet, magnesium rich ilmenite, chrome-diopside, rare chromite and diamond occur mainly as xenocrysts in the kimberlite matrix but also as rock-forming mineral in mantle derived xenoliths. Eclogite xenoliths are relatively abundant within Lahtojoki and may have provided the majority of diamonds within the kimberlite. These eclogites have exceptional grades of up to 90,00cpt.

Picroilmenite is the most abundant kimberlitic indicator mineral followed by garnet and chrome diopside. The predominant rock type occurring within the Lahtojoki kimberlite is a variably weathered massive volcanoclastic kimberlite (MVK) which is a diatreme facies rock with less than 15% by volume of entrained clastic material. Weathering has resulted in serpentinisation or a more advanced saponitisation of the MVK in zones. In addition to the MVK there are lesser amounts of brecciated massive volcanoclastic kimberlite (BMVK) and rare coherent or hypabyssal kimberlite. The BMVK contains greater than 15% by volume of entrained clastic material, predominantly of crustal origin.

## Exploration History

### Drilling Campaigns

In addition to Ashton Mining two other companies (European Diamonds Plc and Mantle Diamonds Ltd) and the GTK have undertaken exploration work at Lahtojoki during the period 2002 to 2008.

A summary of the drilling is as follows:

- Ashton Mining 1989: 40 diamond holes, 2500m
- Ashton Mining 1990: 8 LDD RC holes (mini-bulk sample), 512m
- European Diamonds 2004/05: 45 diamond holes (incl. micro diamond analysis), 1830m
- Mantle Diamonds 2008: 14 diamond holes (definition drilling), 530m
- GTK 2002: 26 diamond holes (indicator dispersion study), 240m

### Bulk Sampling Campaigns

During 1990 Ashton undertook a large diameter drill (LDD) RC (reverse circulation) programme and recovered a spatially representative mini-bulk sample of 23.3 t from 8 x 200mm diameter holes. An average +0.85mm grade of 28 cpht was returned from processing of the samples in a small DMS (Dense Media Separation) plant constructed by Ashton and located at Luikonlahti (approx. 20km from Lahtojoki). There was no re-crushing of DMS floats which would have liberated additional small diamonds and increased the grade. The tailings were deposited down an old mine shaft and are no longer recoverable.

Percussion drilling is an aggressive sampling technique and crushing of diamonds and associated mass loss can be expected which, again, may have resulted in a reduction in grade. Exhibit 2 below shows the results and grades from the LDD programme.

Exhibit 2: Results from the 1990 Ashton LDD Programme

Hole	Depth m	Dry Tonnes	Largest Stone		+0.8mm		+0.85mm	
			mm	Class	carats	cpht	carats	cpht
LD11	49	1.8	2.40	+7 4 gr		40	0.65	36
LD12	50	1.7	4.30	(1ct)	0.77	45	0.73	43
LD13	50	1.9	2.30	+7	0.72	38	0.67	35
LD36	74	3.6	2.00	+5	0.77	21	0.6	17
LD37	74	3.9	2.40	+7	1.17	30	0.95	24
LD39	72	3.4	3.00	+11	0.73	21	0.74	22
LD40	71	3.5	2.50	+7	0.9	26	0.87	25
LD41	72	3.5	3.60	+11	1.35	39	1.37	39
	512	23.3			7.13	31		28

Source: Karelian Diamond Resources

Ashton was encouraged by the positive large diameter drilling results and during 1993 excavated a 1,500t surface bulk sample from a single location in the western part of the kimberlite. A portion of the sample was treated at the processing facility at Luikonlati and an average +0.85mm grade of 5.7 cpht was returned from 1,000t.

**Exhibit 3: Lahtojoki pink diamonds**



Source: Karelian Diamond Resources

The sample was collected within a highly diluted zone of kimberlitic breccia and un-representative of the Lahtojoki resource. In addition, there was no re-crush circuit installed to process the -10mm DMS floats. Recent advances in process technology now include practical removal of dilution material, in the ore stream.

**Exhibit 4: Samples remaining from the European Diamonds Bulk Sample Programme**



Source: BHC

European Diamonds was granted a claim over the Lahtojoki resource in 2003 and undertook a core drilling programme in 2004/05. During 2005 1.77t of selected core was submitted to Canada for caustic fusion and microdiamond analysis.

A total of 1094 +0.15mm stones were recovered which included 13 +0.85mm stones weighing 0.77ct. The results gave 0.62st/kg, a macro grade of 44cpht and an estimated +1mm in-situ grade of 30 – 35 cpht. Given the positive results European Diamonds continued their exploration and collected a 2,000t sample from two areas close to the Ashton bulk sample within the accessible part of the pit excavation. Approximately 500t of this material was processed at the GTK, Outokumpu, Finland. Exact details of the processing and results are not known, although they are believed to have been sub-optimal for diamond recovery. During 2006 European Diamonds entered into a joint venture agreement with Mantle Diamonds whereby Mantle would earn a majority interest in the project upon completion a definitive feasibility study.

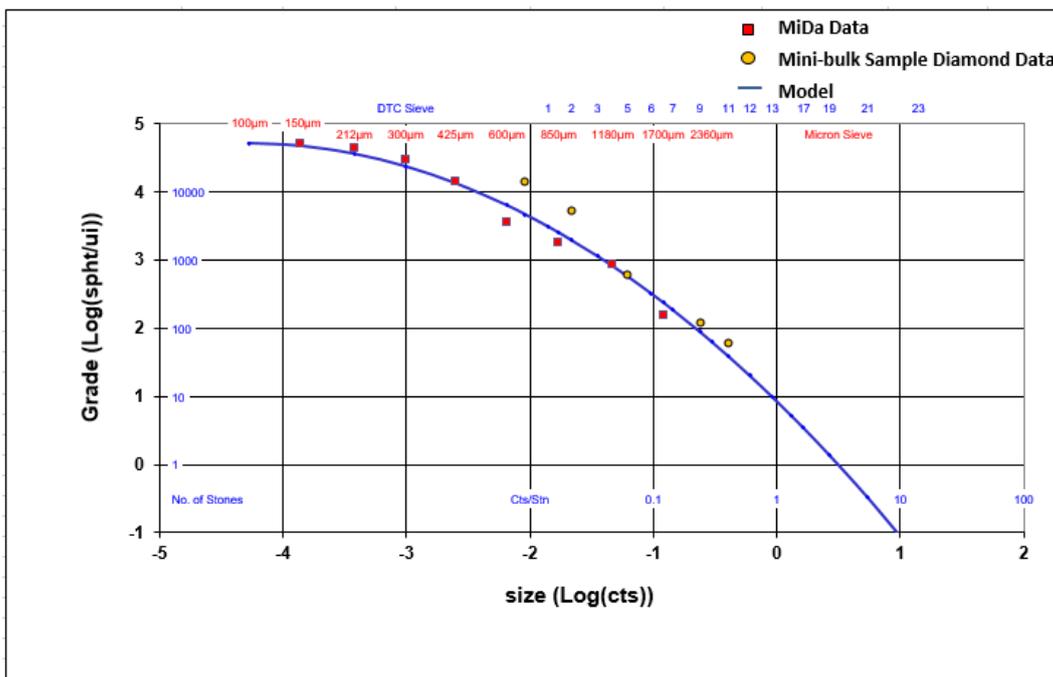
Mantle Diamonds planned to collect a representative bulk sample at Lahtojoki from surface trenching and Bauer large diameter drilling. The programme was initiated but had to be terminated in late September 2008 due to the global financial crisis. Mantle commissioned MSA Geoservices, South Africa to undertake an assessment of the available diamond data from Lahtojoki.

### Grade and Value

The European Diamonds microdiamond data (1094 stones from 1.77 t of drill core) and the Ashton mini-bulk sample data (7.13 carats from 23.3 t of LDD sample) was used to undertake a grade analysis for the Lahtojoki kimberlite. This was achieved by modelling total diamond content curves to estimate size frequency distribution of the data and then estimating the +1mm grades for the modelled data. Recovery factors were then applied to the lower sieve sizes to estimate the +1mm recoverable grades.

Exhibit 5 shows the total diamond content curve for the combined MiDa and Mini-bulk (European Diamonds microdiamond) data. The numbers associated with the data points refer to the number of stones in the sieve class. Typically there should be 20 or more stones/sieve class to provide confidence in the sieve class data point. The MiDa curve is robust in the size ranges up to 600µm. The +600 data, which is less confident, is causing the curve to fall to a fine SFD (Size Frequency Diagram). However, a confident Size Frequency Diagram for the Lahtojoki resource will require the analysis of a larger parcel of diamonds, with minimal diamond breakage, recovered from a representative bulk sample.

Exhibit 5: Total Diamond Content Curve for Lahtojoki Combined MiDa & Mini-Bulk Data



Source: Karelian Diamond Resources

## Lahtojoki: Adjacent diamond potential

Kimberlite boulders have been discovered in an area adjacent to Lahtojoki. The discovery site does not coincide with either of the known ice flow directions in the area connecting to Lahtojoki. Petrographic and mineral chemistry show that the boulders are cohesive (HK) Kimberlite, a kimberlite type that is rare at Lahtojoki. The ilmenite composition resembles that of Lahtojoki but indicates an even better diamond preservation index (redox conditions). A single-Cpx geotherm indicates low heat flow and sizeable mantle diamond window.

It is, therefore, likely that the boulders originated from an, as yet, undiscovered kimberlite body. If a new diamondiferous kimberlite is discovered adjacent to Lahtojoki it could add resources and enhance the technical and financial aspects of the Lahtojoki project.

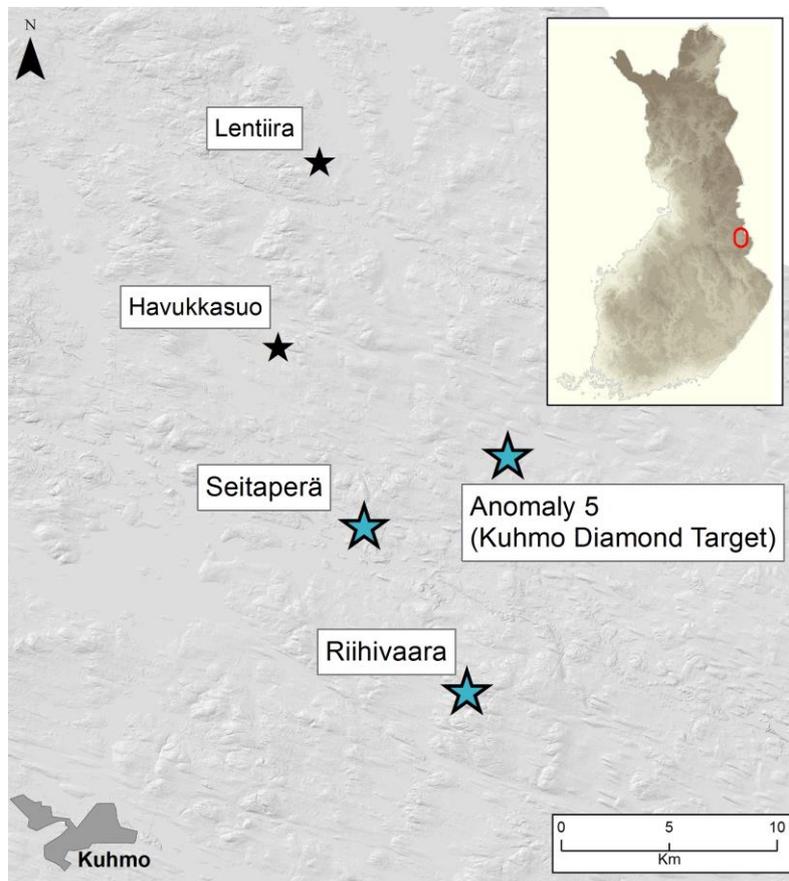
## The Kuhmo Regional Exploration

The Kuhmo region of interest lies within the Kuhmo municipality in Eastern Finland and is located at the south-eastern corner of the Kainuu region, approximately 600km from Helsinki, it is bordered to the East by Russia. The municipality has a population of 8,755 (31 March 2016) and covers an area of 4,806.31 km<sup>2</sup> of which 649.97 km<sup>2</sup> is water.

Historically kimberlite bodies had been identified in Kuhmo at three locations - Seitaperä, Havukkasuo and Lentiira. Drilling had proven one of these kimberlites, Seitaperä, to be diamondiferous and a diamond has been recovered from till at Lentiira.

Karelian Diamonds has identified a new kimberlite body in Riihivaara (Exhibit 6) discovered a kimberlite body in the Anomaly 5 area following up on a diamond that had been discovered in till. The Company has increased the surface extent and diamond content of the Seitaperä kimberlite and has; through till sampling identified sixteen anomalies for further investigation, suggesting that the Kuhmo Region could ultimately host a significant “cluster” of Kimberlite bodies.

Exhibit 6: Kuhmo Kimberlite body location map



## Geology

To date the Kuhmo kimberlites have been shown to be ~1200 Ma emplacement age based on UPb ages from perovskites, ca. 1250 Ma, and Ar-Ar ages from phlogopite microphenocrysts, ca. 1200 Ma, the Kuhmo kimberlites appear to be considerably older than the kimberlites in the Archangelsk area, 365 Ma kimberlites.

In Kuhmo, there is a rock type, which appears to be intermediate between olivine lamproite and Orangeite (Group II kimberlite). The latter, referred as Seitaperä kimberlite, shows many similarities to the diamondiferous rocks of the Lomonosova deposit in the Archangelsk area. It contains most of the typomorphic minerals of lamproite and in major element composition it is equivalent to average olivine lamproite. Serpentinized olivine macrocrysts and phenocrysts along with microphenocrysts of phlogopite, Krichterite, diopside, apatite and perovskite are found in a serpentine and calcite matrix. However, Seitaperä also has certain mineralogical characteristics that are more typical of those seen in Orangeite, such as Ca-Zr-silicates, specific zoning in micas, and more importantly primary carbonate in the matrix.

## Glacial Dispersal Studies

Glacial dispersal studies were conducted by the GTK around the Seitaperä kimberlite pipe. The Kuhmo district is characterised by till formations which date back to the deglaciation at the end of the Weichselian when large glacial lobes developed in the southern and central parts of Finland. The glacial stratigraphy on the area consists of two basal till units covered by ablation till and or a widespread unit of glaciolacustrine sediments. The main ice flow direction in the region was from northwest (300°) to southeast (120°). The till cover is usually more than 3m and in places even considerably more.

Till samples up to 60kg in weight were collected and concentrated using a Knelson Concentrator. Fine fractions (<0.063 mm) of selected samples were analysed by XRF and ICP-MS. The indicator dispersal trail from Seitaperä was ~1km (shorter than other areas of Finland) and was not well defined, mainly due to the lower indicator content in the kimberlite itself and subsequently in till. The indicator maximum is located immediately down-ice from the kimberlite, after which the concentration drops rapidly and the indicators exist mostly in the upper portion of the till bed. The most distal sample containing indicators in significant numbers was taken ca. 800m away from Seitaperä

## Exploration by Karelian

Following up on the results from its primary target exploration programme Karelian initiated a till sampling programme in the Kuhmo region over an area of approximately 1,600km<sup>2</sup>. This programme identified sixteen KIM anomalies for further investigation, suggesting that the Kuhmo Region could ultimately host a significant number “cluster” of Kimberlite bodies.

The company focused its exploration on the known kimberlite body at Seitaperä which it felt was not fully defined and also on the highest priority KIM anomaly identified by the till sampling programme (Riihivaara), before following up additional anomalies (Anomaly 5).

## Seitaperä

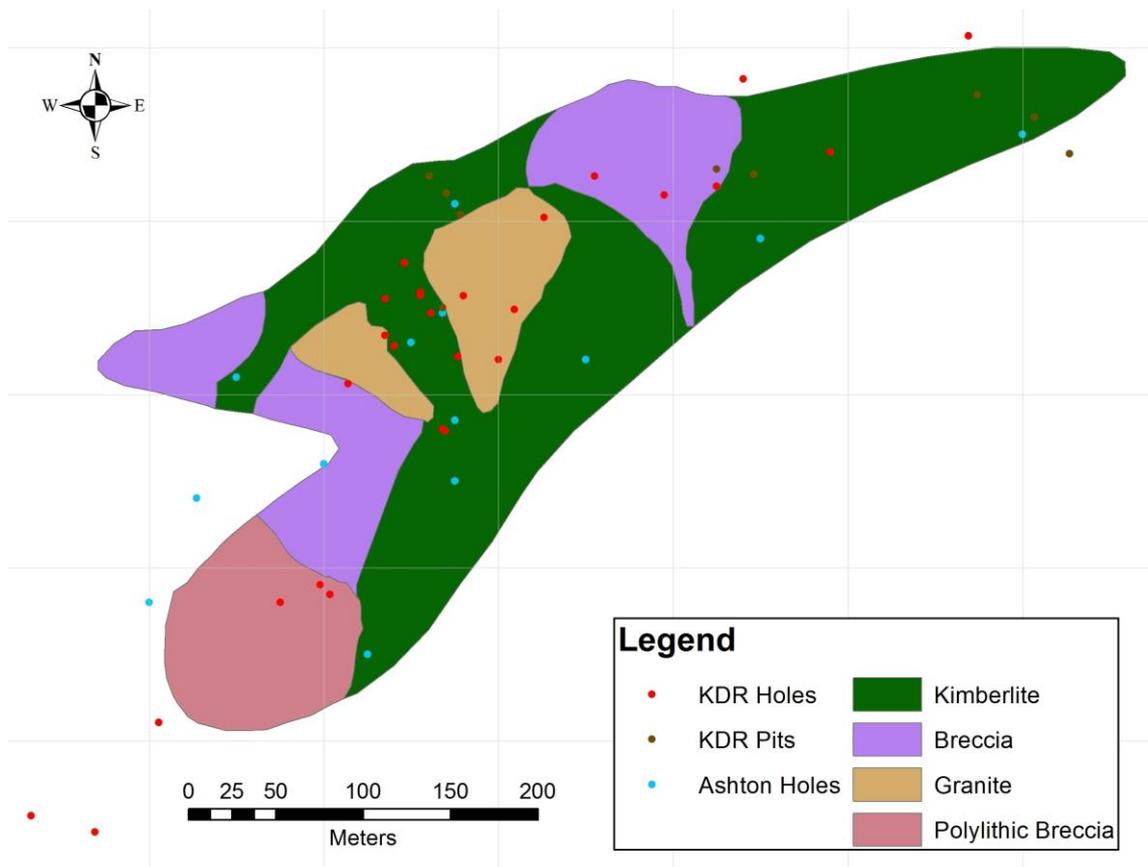
Seitaperä is located approximately 20km to the north of Kuhmo town, it can be accessed by the 912 road. The Seitaperä Kimberlite was discovered in 1993 by Malmikaivos/Ashton through a combination of till sampling and ground geophysics. Twelve holes (251.25m) were drilled in the claim area, of which eight intersected kimberlite. The kimberlite was interpreted to be an irregular dyke with a total surface area of approximately 4ha. Four macrodiamonds with a grade of 1.09ct/100t were reported from a 13.3t percussion drilling sample.

Karelian acquired an exploration permit over the Seitaperä target area in 2005. Exploration by Karelian included pitting/trenching, geological mapping, ground geophysics, core drilling, diamond extraction by caustic dissolution, petrology and geological modelling.

This work by the Company has led to an increase of the previously reported 4 ha dyke to a 6.9 ha pipe, thus becoming the largest diamondiferous kimberlite pipe discovered in Finland to date. Diamond extraction by caustic dissolution of drill core from the Seitaperä kimberlite pipe has recovered 67 diamonds from a 100kg sample including 6 macro diamonds. Remodelling has shown the pipe may contain as much as 8Mt of potential ore down to 140m.

Drilling by Karelian at Seitaperä has been conducted in five phases; see Exhibits 7 and 8. The drilling was conducted by the GTK on behalf of the Company and supervised by Company geologists. During these five phases, a total of 29 holes were drilled for 867.5m. The drilling extended to a depth of 140m and the kimberlite remains open at depth.

Exhibit 7: Location of Diamond Core Drill Holes in the Seitaperä area



Source: Karelian Diamond Resources

The results of the diamond picking are shown in Exhibit 8 below.

Exhibit 8: Details of Seitaperä drill core diamond counts

Drill Phase	Batch	Hole ID	Date of Analysis	Sample Weight (kg)	Diamonds Recovered
1	1	SP02	14 <sup>th</sup> June 2006	9.94	0
3	2	SP10 & SP10a	23 <sup>rd</sup> June 2008	100.20	67
2	3	SP05	04 <sup>th</sup> November 2008	48.53	1
2	3	SP06	04 <sup>th</sup> November 2008	47.96	0
2	4	SP04	16 <sup>th</sup> December 2008	48.28	0
2	4	SP04	16 <sup>th</sup> December 2008	47.80	0
2 & 3	4	SP04 & SP11	16 <sup>th</sup> December 2008	46.96	3
4	5	SP19	18 <sup>th</sup> December 2008	45.70	0
2-5	6	Combination*	10 <sup>th</sup> February 2012	270.25	3

Source: Karelian Diamond Resources

The second batch returned a total of 67 diamonds from a 100kg sample consisting of black serpentinised kimberlite with mantle xenoliths. The majority of these diamonds appear to be octahedral surface fragments (49%), suggesting that there may be a larger stone size distribution in the kimberlite.

Drill core samples (four drill holes) from the fifth phase of drilling, with some additional material from eight drill holes in the previous phases, were analysed by the Saskatchewan Research Council, Canada, for diamond recovery by caustic fusion. These were smaller samples (<8.5kg) sent to better define the diamond bearing zones within the kimberlite. Forty-three samples were taken from the available core, totalling 270kg of which 153.7kg was sourced from the fifth phase drill core.

The analysis recovered three microdiamonds from the fifth phase drill core (from SP25, SP26 and SP27) with a host lithology of brown mica-rich kimberlite. The microdiamonds observed were white in colour, transparent and octahedral. Two of the microdiamonds, including the largest stone, were greater than 60 per cent broken indicating the possibility of larger stone sizes.

## Riihivaara

Riihivaara is a Karelian discovery, made in 2015 through a combination of till sampling and ground geophysics. It is located approximately 20km to the east of the town of Kuhmo and is easily accessed by road. 5 Pits/trenches have intersected kimberlite. The kimberlite is interpreted to be a dyke, open along strike and at depth. No Microdiamond test work has been undertaken on the kimberlite yet. Its location is shown in Exhibit 6.

### Exhibit 9: Riihivaara Discovery Site



Source: Karelian Diamond Resources

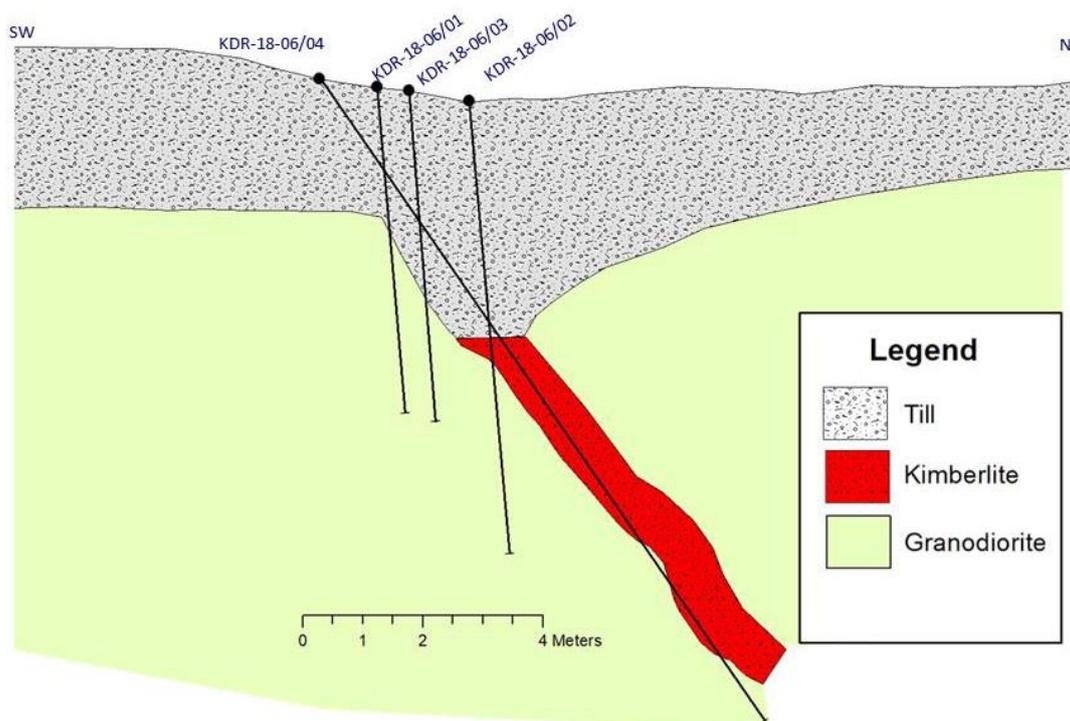
The results returned from the Kuhmo region till sampling programme led to belief that multiple kimberlite indicator mineral trains lie in the region with a multiple of possible source up the glacial ice-flow direction. These till sampling results, including garnets and chromites, were combined with the airborne magnetics data, were used to define a diamond target in the Riihivaara area.

The discovery of the new kimberlite body was made in a pit during follow-up till sampling being conducted in an area where high concentration of kimberlitic indicator minerals had been found by Karelian as part of its ongoing exploration programme in the Kuhmo region of Eastern Finland. Pitting and trenching has identified c.350m length and the kimberlite is still open along strike and at depth. Intersections range from 1 to 2m in width.

13 samples, from Riihivaara, (1 outcrop and 12 till) were provided to Rio Tinto for analysis in Australia. Their results showed that the geotherm is prospective for diamonds and the kimberlite has sampled well into the diamond stability field, and that the kimberlite will almost certainly be diamondiferous due to deep sampling.

Kimberlite was intersected by drilling on its Riihivaara discovery where the previous pitting had discovered a Kimberlite on surface. A total of 56.2 metres were drilled through six short inclined holes, varying in depth from 5.50m to 14.30m, of which three intersected Kimberlite. The Kimberlite consists of a dyke 1-2m wide at surface. The drilling indicates that the dyke dips circa 50° to the NE. Thin sections and SEM studies of the Kimberlite material confirmed it as an Olivine bearing, mica-rich Orangeite (Group II Kimberlite) with mantle-derived xenocrysts.

Exhibit 10: Riihivaara drilling cross section



Source: Karelian Diamond Resources

## Anomaly 5 (Kuhmo Diamond Target)

Anomaly 5 (Kuhmo diamond target) is located approximately 25km to the north east of Kuhmo town; it can be accessed by road. It is marked on the Kuhmo Kimberlite body location map, (Exhibit 6) as Anomaly 5, Kuhmo Diamond Target.

Following the successful exploration at Riihivaara the company focused on the next priority target area, called Anomaly 5. A follow up till sampling programme was undertaken in late 2016 with the results received in 2017. It identified a diamond in till as well as a series of kimberlite indicator minerals.

The diamond discovered in till is a clear, pale green dodecahedron and measures 0.7 x 0.75 x 0.7 mm. To put the rarity of this discovery in context, ODM Laboratory has processed more than 50,000 exploration till samples and has recovered less than 10 naturally occurring diamonds. This is a very rare and significant discovery.

This is significant because the diamond discovery allied with high concentrations of Kimberlitic Indicator Minerals ("KIMs") discovered in the area strongly suggest that a diamondiferous kimberlite is present. The KIMs include 13 purple to red peridotitic garnets (G9/10 Cr-pyrope), 3 orange mantle garnets, 2 Cr-diopside and 178 chromite grains in the 0.25 to 0.5 mm size range, plus 1 purple to red peridotitic garnet (G9/10 Cr-pyrope) and 6 chromite grains in the 0.5 to 1.0 mm size range.

Exhibit 11: Site of Green Diamond Discovery from Anomaly 5



Source: BHC

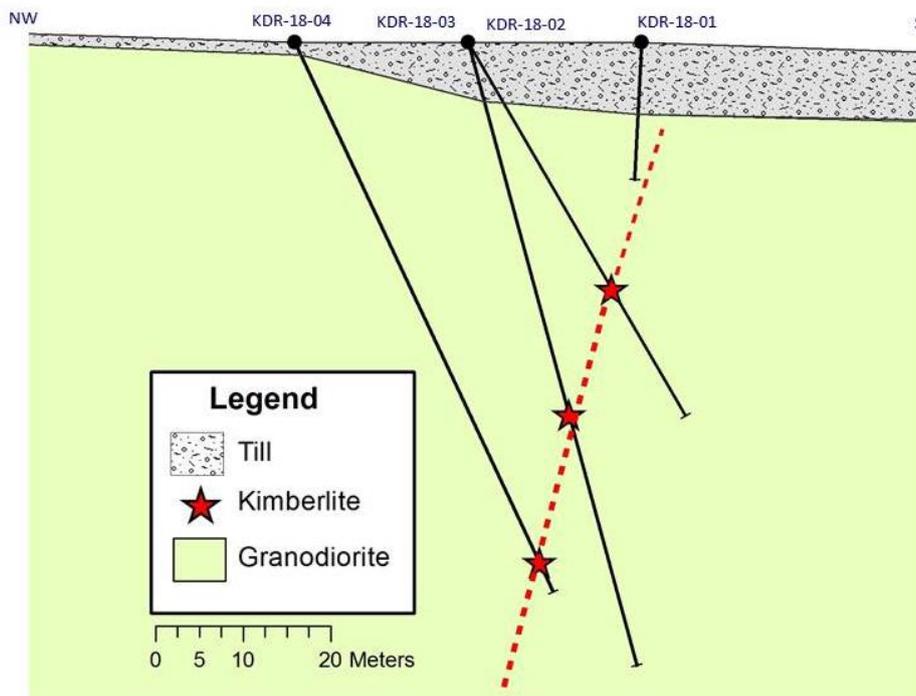
Exhibit 12: The Green Diamond



Source: Karelian Diamond Resources

Kimberlite was discovered by drilling at Anomaly 5 where the company previously identified a high KIM count. A total of 274.9 metres were drilled through five inclined holes, varying in depth from 16.1m to 74.5m, of which three intersected Kimberlite. The Kimberlite consists of a dyke 1-2m wide. Thin sections and SEM studies of the Kimberlite material confirmed it as an Olivine bearing, mica-rich Orangeite (Group II Kimberlite).

Exhibit 13: Anomaly 5 drill cross section



Source: Karelian Diamond Resources

## **Kuhmo Regional Anomalies**

Following up on the results from its primary target exploration programme Karelian initiated a till sampling programme in the Kuhmo region over an area of approximately 1,600km<sup>2</sup>.

This comprehensive sampling programme by the Company included over 200 sites on three North-South traverses. The traverses utilised the road network in the area and were approximately 10km apart and 40km in length. Individual sampling sites along the traverses were spaced approximately 1km apart.

Sixteen sites yielded positive results for kimberlite indicator minerals and were prioritised for follow up by infill sampling in the form of localised traverses. This infill sampling led to discovery of the Riihivaara and anomaly 5 kimberlites.

These results, together with the results reported at Seitaperä, suggest the presence of a kimberlite cluster in Kuhmo.

## Company Valuation

### Background

BHC has reviewed the valuation for both an exploration and development viewpoint.

BHC have picked Botswana Diamonds, Newfield Resources, Artic Star and Lithoquest Diamonds for more detailed comparison. The reasons we have chosen these four companies as comparatives is that they are very similar companies to Karelian. All four are essentially explorers. Botswana Diamonds, Lithoquest and Artic Star all operate in countries with rate highly with the Frazer Institute. (This does not include Botswana Diamonds JV with Vast in Zimbabwe). All three companies have found microdiamonds but are some way off production. However, the countries where Newfield Resources are exploring are not rated in the current Frazer Institute report. In many ways, Newfield Resources is the most comparable company to Karelian, although it does possess an historical Mineral Resource and the alluvial areas has been known to yield large and high value diamonds, both factors that Karelian has yet to emulate.

### Botswana Diamonds Market Cap: £3.06M

Botswana Diamonds has four exploration joint ventures, two of which are in Botswana, one in South Africa and one in Zimbabwe. The Maibwe JV sits on a block of 10 licences in the Kalahari with partners BCL, Future Minerals and Siseko. Significant quantities of diamonds were discovered in drilling in 2015. The major delay with this project has been that BCL, who owns 51% of the JV are in liquidation,

The other JV in Botswana is with Sunland Minerals. It is grassroots exploration on 8 licences in the Orapa and Kalahari regions. It is in advanced discussions with a major producer to step into the shoes of Alrosa who have left the project after an association of 5 years.

In South Africa, Botswana Diamonds is earning in with Vutomi who have 18 high interest kimberlites and 25,000 hectares of highly prospective ground. There are plans for the Thorny River project to be cash flow generative in 2019. It is hoped the project will be self-funding from the bulk sampling programme where modelled grades suggest 46-74c/pct and a carat value of between US\$120-200 per carat.

Finally, Botswana Diamonds have signed a JV with Vast Resources for the development of diamond projects in Zimbabwe. There is a JV signed for the development of the Heritage Concession in the prolific Marange Diamond Fields.

### Newfield Resources Market Cap: A\$104.63

In early 2018, Newfield Resources Limited ("Newfield"), an ASX listed company, merged with Stellar Diamonds plc, a company listed on the London Stock Exchange (AIM). The projects consolidated by the merger are situated in the major diamond producing areas of Sierra Leone and Liberia. The primary asset is the high-grade and high-value Tongo Diamond Project situated in the Eastern Region of Sierra Leone. The Tongo Project comprises two adjacent mining licences that cover over 134 square kilometres and host 11 known kimberlites. It contains a JORC compliant inferred historic resource of 4.5M carats, based on 65,000m of drilling. Drilling has shown that the dykes continue to much greater depths. The licences are subject to a tribute mining and revenue share agreement with Ortea Mining, who will receive a 10% revenue share, net of government royalties and after full project construction costs have been recovered along with a US\$5.5M bullet payment after year 5.

The project combines the kimberlite dyke hosted historical Mineral Resources on adjacent Mining Licences. It is subject to a Tribute Mining Agreement between the two mining licence holders, being Newfield's subsidiary company Sierra Diamonds Limited and Ortea Mining's subsidiary company Tonguma Limited.

Newfield also holds a 100% interest in the Allotropes Alluvial Diamond Project on the Sewa River in the Southern Region of Sierra Leone, and a 90% interest in the Kumbgo kimberlite project, which comprises two exploration licences covering 670km<sup>2</sup> and is located in north-western Liberia, where high value diamonds and kimberlitic indicator mineral anomalies were delineated by previous exploration work. However, the area relatively under explored by modern methods. The attraction is that historically the area has been known to yield large and high value diamonds from artisanal workings. The Allotropes Alluvial Diamond Project covers five active exploration licences covering 1,002 km<sup>2</sup> of tenement holdings within the Bo, Bonthe, Moyamba, Pujehun and Kenema Districts in the Southern Province of Sierra Leone.

### **Lithoquest Market Cap: C\$4.84**

Lithoquest is exploring for diamonds in the extreme north east of Western Australia. Its exploration licences cover an area of 1,500km<sup>2</sup>. We have included it in our list of comparatives as it is a relatively earlier explorer and they have discovered a micro-diamond

It intercepted kimberlite with its first drill hole at target 1804 in September 2018. The company then announced that they would fly an airborne magnetic survey on the North Kimberly Diamond Project. Lithoquest had used detailed magnetic data as an important component in the discovery of the 1804 kimberlite.

During the 2018 field programme twenty-two samples were collected from several areas of interest during the 2018 field program with the goal of identifying targets for follow-up in 2019. The samples were submitted to Diamond Recovery Services, an independent Australian laboratory based in Perth, for the recovery of KIM's. Thirteen of the samples returned KIM's, including one microdiamond.

Abundant chromite grains were recovered from four target areas, including one sample that yielded more than 3,000 grains. The presence of this concentration of indicator minerals suggests that the samples were collected close to a kimberlite source. Picro-ilmenite grains were also observed in several samples and a single microdiamond was recovered from a stream sediment sample. The microdiamond is described as a whole, largely unresorbed, octahedral crystal with a pale brown colour.

### **Artic Star Market Cap: C\$5.33**

Artic Star Exploration is a Canadian listed diamond exploration company. It has two projects, Timantii in Finland which is on the same geological province as the Grib and Lomonosov diamond mines in Russia and it has a 100% interest in 243Ha of exploration permits near the town of Kuusamo. There is also a district scale land package of 93,700 hectares with exploration reservation with exclusive rights for 2 years. Exploration commenced in 2017 and to date 2 new kimberlites have been discovered, Grey Wolf and the Vasa Dyke Swarm. There are also two known diamondiferous kimberlites, the White and the Black Wolf. A drill rig is currently defining the size and shape of the Wolves and obtaining diamond samples. In Canada the company owns the Dia Gras project which is located adjacent to the Ekati and Diavik producing diamond mines. This property consists of 23 contiguous claims encompassing an area of 18,699 hectares and is held in joint-venture with Margret Lake who own 60%. There are a number of known kimberlites on these leases and the exploration paradigm is to explore around the known kimberlites which were primarily discovered by drilling magnetic anomalies for non-magnetic phases using EM and gravity.

## Mining Scenario at Lahtojoki

We have valued the Lahtojoki Diamond Project using Net Present Values with the pit optimised using a Surpac pit shell based on a diamond price of US\$100/ct.

The valuation is based on the June 2017 Preliminary economic assessment of the Lahtojoki Kimberlite project in south eastern Finland by Brennan Mining Services Limited. The nine year mine life proposal was used in the model. We further assumed that pre-stripping would commence in the December quarter of 2022 with first production 12 months later.

We modelled the operation on a quarterly basis until the end of 2025 and then half yearly to the end of the mine life. This plan called for open pitting with the highest rate of stripping in years 2 to 6. The scenario has mining royalties of US\$0.10/t of ore processed. The standard current Finnish company tax rate of 26% was used.

Diamond processing technology and process methodology has improved significantly in recent times and a low cost, highly efficient plant could be built at Lahtojoki. In part the low cost is due to the relatively small plant, only 700,000tpa.

The NPV is quoted in US dollars and is quoted after tax, and unfinanced and as at the start of production.

The assumptions for the open pit start scenario are:

Diamond price	US\$100/ct
Diamond grade	0.40cts/t
Mining Rate	700,000tpa
Strip ratio	2.03:1
Annual diamond production	234kcts
Discount rate	8%
Mining cost	US\$9.37/t
Processing cost	US\$4.74/t
G&A costs	US\$0.78/t
Capex	US\$19.0M
Sustaining capex (LOM)	US\$2.9M
NPV (10%)	US\$32.9M
IRR	50.2%

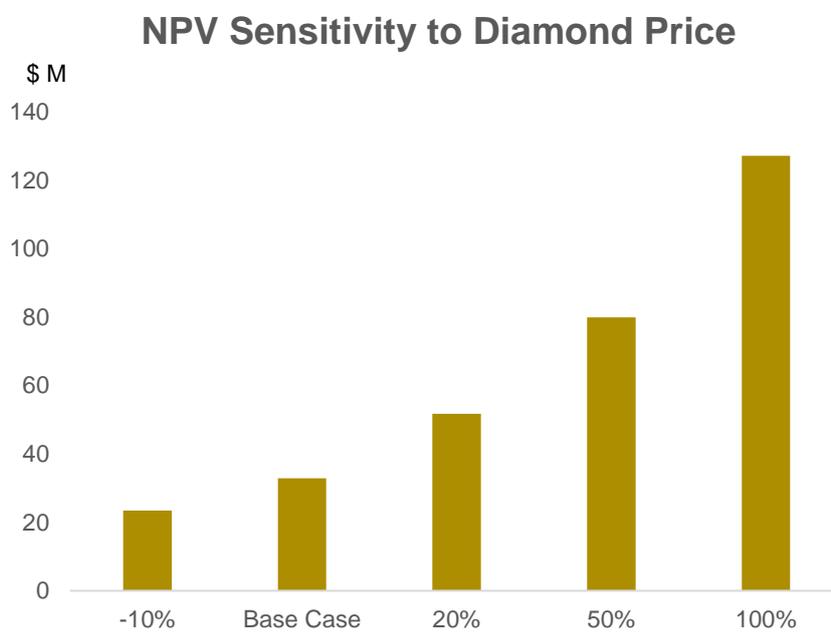
The tax regime in Finland is not particularly onerous. Profits are taxed at a rate of 26% and there is a royalty of US\$0.10/t of ore processed.

## Sensitivity to diamond prices

BHC is acutely aware that diamond prices vary greatly, depending on the sizes and quality of the stones. The size frequency analysis of the data suggests that the grade of the deposit to be sufficient to provide an acceptable revenue when combined with the assumed value of the Lahtojoki diamonds. Although the size frequency data suggests a small stone size deposit there is sufficient information from previous workers to suggest that the Lahtojoki diamonds contain high quality stones and that the value may be high enough to generate economic revenues.

In particular, the Lahtojoki kimberlite is known to contain pink diamonds. At the Argyle mine, "pinks" constituted 5% of the diamond production by weight but 50% by value. Hence, with our sensitivity analysis, we have focused on significant upside to the diamond valuation.

Exhibit 14: NPV Sensitivity to the Diamond Price



Source: BHC

## Investment Risks

### Mining & Metallurgy

The current thinking is that any mining would be open pit since the kimberlites is close to the surface. There is a proposed flowsheet for the Lahtojoki resource, but before this is built Karelian has to conduct bulk sampling to confirm the grade of the resource and establish the value of the diamonds. BHC sees this as an excellent opportunity for Karelian to trial some of the latest processing technologies on a small scale before committing to the final plant design.

### Geology

The grade of the orebody is probably the biggest risks facing Karelian, but a grade of 40cpht is indicated by the microdiamond data. As yet insufficient bulk sampling has been conducted to get sufficient diamonds to provide realistic valuations for the stones. Karelians other kimberlites are less advanced than Lahtojoki, but that said, Karelian are developing their skill sets for finding kimberlites and the area is known to contain a good number of them.

### Country

In the latest Fraser Institute survey for 2017, which was released in February 2018, the top jurisdiction for investment, based on the Investment Attractive Index was Finland, which moved up from 5<sup>th</sup> place in 2016. In the Policy Perception Index, which is a “report card” to governments on the attractiveness of their mining policies, Finland rated second, behind Ireland. Apart from the obtaining of all the necessary permits BHC sees little country risk, especially as diamond processing uses no hazardous reagents.

### Financial

With a market capitalisation of only £1.35M financing is going to be a problem, even getting sufficient money together for the pilot plant. However, once this is achieved, and should the bulk samples processed through it prove economic, and Karelian meets the terms in its agreement with Rio Tinto, then Rio has the option to earn a 51% interest in the project by paying for its development.

### Diamond Pricing

Diamond pricing and the grade of the orebodies are probably the two biggest risks facing Karelian. A sufficiently large sample has yet to be taken to ensure an accurate diamond price scenario.

### Technology

Diamond processing technology has improved significantly since the previous pilot plant work was undertaken by previous owners in Finland. Karelian needs its own pilot plant to vigorously test the kimberlites that it has both procured and discovered, and this would be an ideal scenario to test the process technology for the main plant.

## Appendix A – Directors & Senior Management

Professor Richard Conroy

Chairman

Professor Richard Conroy has been involved in natural resources for many years. He founded Trans-International Oil, which was primarily involved in Irish offshore oil exploration. Trans-International Oil initiated the Deminex Consortium which included Deminex, Mobil, Amoco and DSM. Trans-International Oil merged with Aran Energy plc in 1979, which was later acquired by Statoil.

Professor Conroy also founded Conroy Petroleum and Natural Resources P.l.c. (“Conroy Petroleum”). Conroy Petroleum was involved in both onshore and offshore oil exploration and production and in mineral exploration. In 1986 it discovered the Galmoy zinc deposits in County Kilkenny later developed as a major zinc mine. This discovery by Conroy Petroleum led to the revival of the Irish base metal industry and to Ireland becoming an international zinc province.

Conroy Petroleum was also a founding member of the Stoneboy consortium, which included Sumitomo, which discovered the Pogo gold deposit (4.87M oz) in Alaska, now in production as a world class gold mine.

Conroy Petroleum acquired Atlantic Resources plc in 1992 and subsequently changed its name to ARCON International Resources plc (“ARCON”). ARCONs oil and gas interests were transferred to form Providence Resources plc. ARCON was later acquired by Lundin Mining Corporation.

Professor Conroy founded Conroy Diamonds and Gold p.l.c in 1995. The diamond interests are now held by Karelian Diamond Resources plc, chaired by Professor Conroy and the gold interests by Conroy Gold and Natural Resource plc.

Professor Conroy served in the Irish Parliament as a Member of the Senate. He was at various times front bench spokesman for the Government party in the Upper House on Energy, Industry and Commerce, Foreign Affairs and Northern Ireland. Professor Conroy is Emeritus Professor of Physiology in the Royal College of Surgeons in Ireland.

Maureen T. A. Jones

Managing Director

Maureen Jones has over twenty years’ experience at senior level in the natural resource sector. She has been Managing Director of Conroy Gold since 1998 and was a founding director of the Company. Also a director of Karelian Diamond Resources, she joined Conroy Petroleum and Natural Resources P.l.c. on its foundation in 1980 and was a director and member of the board of Conroy Petroleum / ARCON from 1986 to 1994. Miss Jones has a medical background and specialised in the radiographic aspects of nuclear medicine before becoming a manager of International Medical Corporation in 1977. Miss Jones is also Company secretary.

Seamus P FitzPatrick

Non-Executive Director

Séamus FitzPatrick has worked in both corporate finance and private equity in London and New York with Morgan Stanley, J. P. Morgan and Bankers’ Trust. In 1999 he co-founded CapVest, of which he is Managing Partner (which has raised funds in excess of £2.0B). He is Chairman of the Mater Private Hospital and of Valeo Foods and is a board member of Reno Norden.

Louis J. Maguire

Non-Executive Director

Louis Maguire is an auctioneer by profession and a land valuation expert with particular expertise in the purchase of mineral rights and in land acquisition for mining. He is a founding director of Karelian Diamond Resources plc.

**Dr. Sorča Conroy**

Non-Executive Director

Dr. Sorča Conroy was recruited to ING Bank in 2006 and whilst there was ranked second in the Extel Survey for Biotechnology Specialist Sales. She had previously been specialist sales for life sciences and institutional equities at Canaccord Adams (2005-2006; where she ranked fourth in the 2006 Extel survey) and Hoodless Brennan (2004-2005). A medical graduate of The Royal College of Surgeons in Ireland, she held a number of clinical positions in between her graduation in 1995 and joining Hoodless Brennan.

**Brendan McMorrow**

Non-Executive Director

Brendan McMorrow has over 25 years' experience in a number of public companies in the oil and gas and base metals mining sectors listed in London, Toronto and Dublin where he held senior executive finance roles. He is currently Finance Director of Dunraven Resources P.L.C, an oil and gas exploration and development company. Prior to that he was Chief Financial Officer of Circle oil P.L.C. from 2005 to 2015, an AIM listed oil and gas exploration, development and production company, with operations in North Africa and the Middle East. Brendan is a Fellow of the Chartered Association of Certified Accountants. He is also a Director of Conroy Gold and Natural Resources P.L.C.

## Senior Management

**Kevin McNulty**

Senior Geologist

Kevin McNulty has over 20 years' international exploration experience, primarily in the gold industry. He was involved with Pioneer's (now AngloGold Ashanti's) Teberebie gold mine in Ghana, and with other gold exploration projects in Ghana (including Sefwi and Nangodi). He also worked in Niger and Burkina Faso and South America prior to joining Conroy Gold in 2005. He is a past President of the Irish Association of Economic Geologists, a Fellow of the Society of Economic Geologists, a member of the European Federation of Geologists and a professional geologist of the Institute of Geologists of Ireland.

**Michael Brennan**

Consultant Geologist

Michael has over 25 years of experience in the exploration and mining industry. He started his career as an exploration geologist with De Beers and has worked for a number of junior and mid-tier companies on diamond, gold and base metal projects, predominantly throughout southern and central Africa. In addition to holding various exploration management positions, Michael has focussed on extending his career into project development and operations and had held senior positions in these areas.

**Egbert Gerrys**

Consultant Geologist

Bert is an internationally respected diamond geologist who pioneered the use of indicator minerals and geophysics in diamond exploration and has published extensively on the subject. After undertaking graduate research at McGill University towards his Masters and Doctorate on the Premier kimberlite in South Africa, he was chief geologist for Williamson Diamonds Ltd. of Tanzania, resident geologist for De Beers Consolidated Diamond Mines in Namibia, and managing director of Selection Trust Ltd. of London and South Africa. He specializes in diamond exploration and deposit evaluation for both kimberlite and alluvial deposits, and has previously consulted to numerous public companies active in the sector.

## Appendix B – The Diamond Market

Diamond exploration is extremely difficult. This is because many deposits are covered by sand as in Botswana or till as in Finland. Once a source of kimberlite has been discovered there is approximately a 1 in 7 chance that it will contain diamonds and of the diamondiferous kimberlites there is a 1 in 17 that it will be economic.

The kimberlite bodies are found through a mixture of prospecting, geophysics and till sampling. The second stage is target testing which normally comprises trenching, followed by drilling and detailed analysis of the core.

This stage of the exploration is concerned with testing for a significant micro-diamond content. Where diamond exploration differs from exploration for other commodities is that the next stage is mini-bulk sampling which requires more trenching and very large diameter drilling. Should this stage of exploration prove successful, then the process moves to obtaining a large bulk sample, effectively small-scale mining in order to get sufficient diamonds to provide realistic valuations for the stones. Only after this stage does the feasibility study commence.

This detailed sampling is of particular importance as diamond prices vary of the size of the stone, the clarity and the colour. Therefore, parcels of diamonds, all weighing the same number of carats can vary significantly in valuation

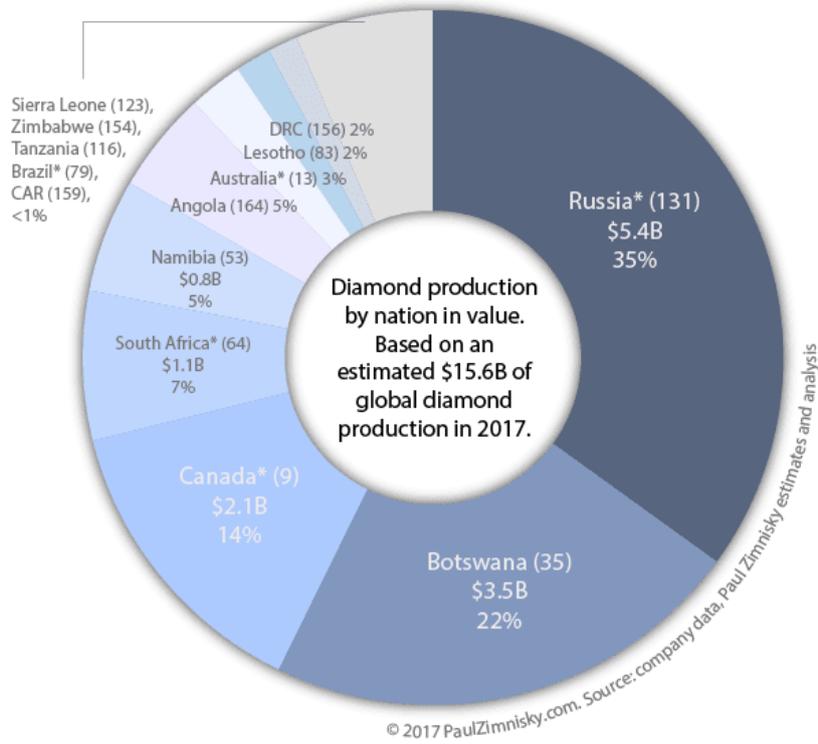
Peak diamond production was 177Mcts in 2005, and although global rough diamond production increased by 19% to 150.9Mcts in 2017, production remains well below its peak. This rise in production was driven by new mines that have recently come into production but there have been no significant new discoveries with the world's largest diamond mines maturing and well past peak production levels. Further, due to modern environmental regulations and the time needed to explore and perform bulk sampling etc. it will probably take 10 years before any significant new mine enters production. The new production that Zimnisky is forecasting to occur around 2022-23 is all in Zimbabwe and Angola. These two countries have not had a good history for miners over the past 20 years, and although the investment climate may be improving in the two countries, they hardly rate as go to mining jurisdictions.

The future outlook for diamond supply is not very positive with many large mines forecast to be closing between now and 2025. To put this in perspective, there are currently only 30 significant diamond mines globally.

Global diamond production is currently highly concentrated with three countries, Russia, Botswana and Canada producing 71% of all diamonds produced annually by value. From the chart below, this concentration is likely to diminish over the next few years due to closures in Canada, Diavik and Victor, South Africa, Koffiefontein, Voorspoed and Russia, Komsomolskaya.

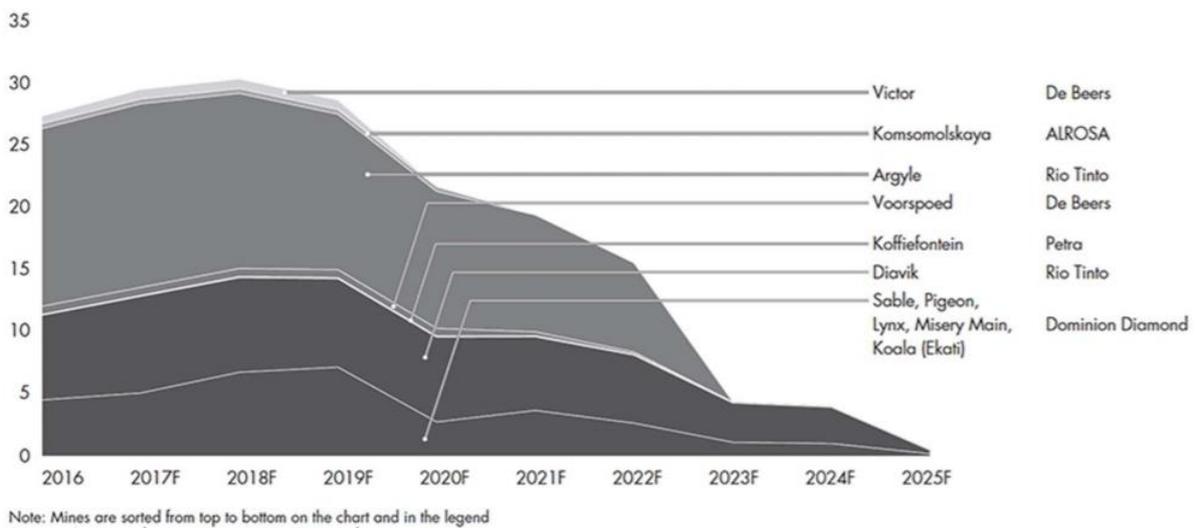
What this does not reveal is the particular types of diamonds each of the mines produces and it is particularly interesting, that the Argyle mine, the largest producer of pink diamonds is due to close in 2023.

Exhibit 15: Diamond Production by Nation by Value



Source: paulzimnisky

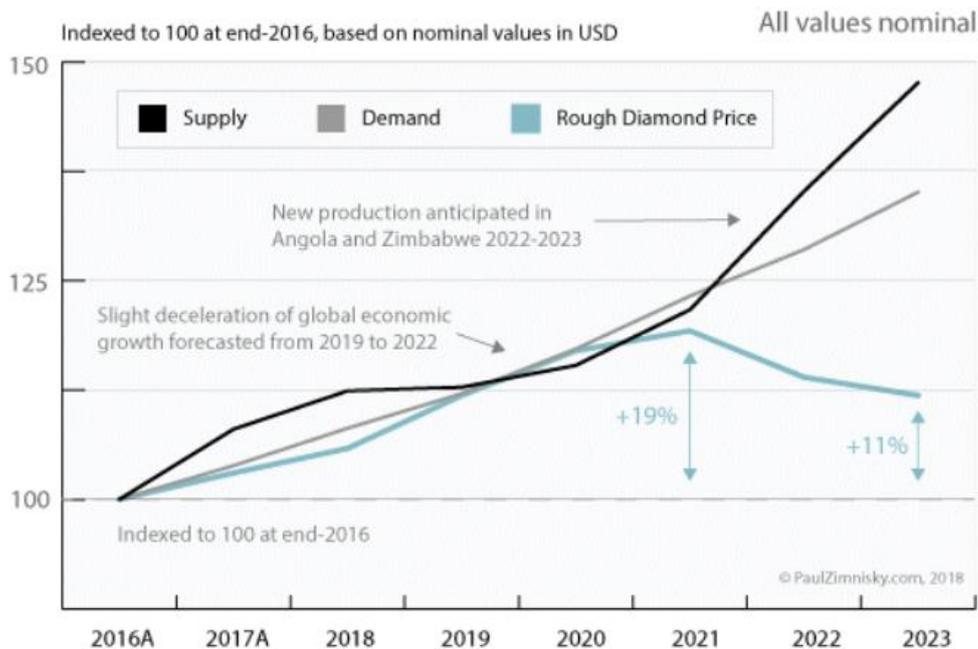
Exhibit 16: Forecast rough-diamond production of depleting mines, millions of carats, optimistic scenario



Source: Lithoquest Diamonds Inc, Bain Analysis, Expert interviews.

As can be seen from Exhibit 16 above, the slope starts to steepen considerably in 2019, and diamond prices have been firming ahead of the anticipated decline in production. This window of opportunity is forecast to last until about the start of 2022, when increasing production is forecast to catch up and overtake demand.

Exhibit 17: Zimnisky Implied Rough Diamond Price Forecast

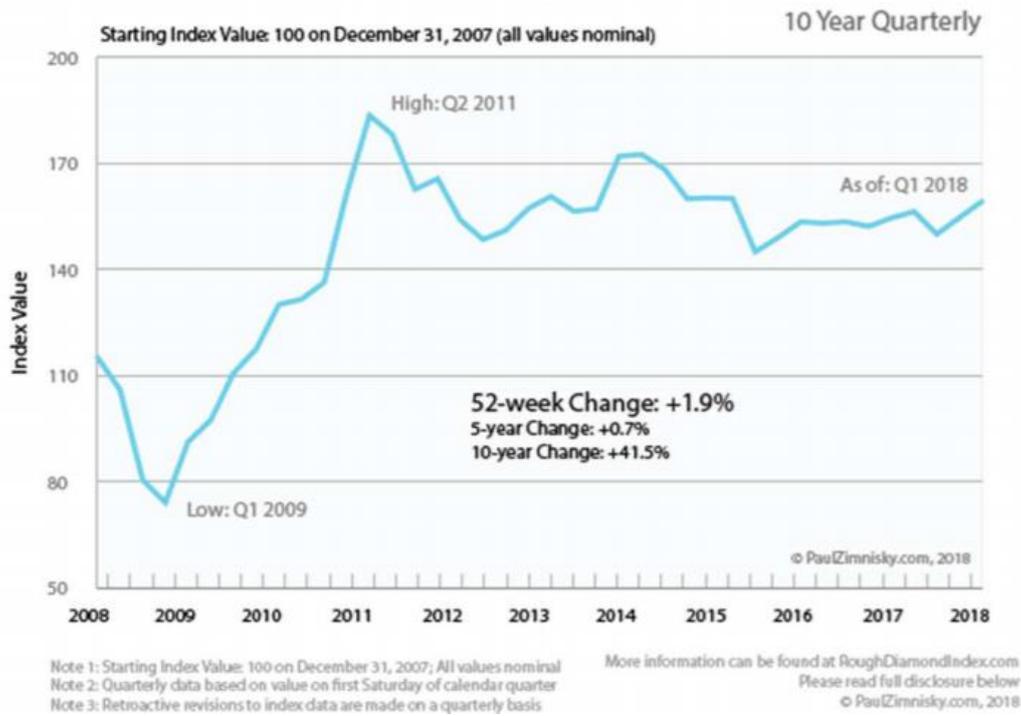


Source: Paul Zimnisky

Demand is being driven by a number of factors, which include:

- The booming US market
- Strong buying from China where consumer confidence has reached a 20 year high
- A globally increasing number of high net wealth individuals
- Female self-purchasing continues to increase
- A rise in generic marketing to consumers
- Rising online retail markets
- Millennials represent over 66% of all diamond demand in the four largest markets and they are forecast to be the highest overall spending generation from 2020 onwards.

Exhibit 18: Zimniskey Global Rough Diamond Price Index



Source: paulzimniskey.com

## Appendix C – Country Overview

<b>Population (2017)</b>	5.55M
<b>Major Language</b>	Finnish
<b>Capital</b>	Helsinki
<b>GDP (as of 2017)</b>	€224B
<b>Major Religion</b>	Christian
<b>Major Exports</b>	Electronical and optical equipment ,machinery, transport equipment, pulp and paper, chemicals, basic metals, timber
<b>Currency</b>	Euro
<b>Unemployment Rate (May 2018)</b>	7.5% 3Q 2017
<b>Major Natural Resources</b>	Iron ore, chromium, vanadium, nickel, cobalt, gold, copper and zinc.

Finland officially called the Republic of Finland is a country in Northern Europe, bordering the Baltic Sea, Gulf of Bothnia, and Gulf of Finland, between Norway to the north, Sweden to the northwest, and Russia to the east. Finland is a Nordic country and is situated in the geographical region of Fennoscandia. The capital and largest city is Helsinki.

Finland's population is 5.55M (2018), and the majority of the population is concentrated in the southern region. 88.7% of the population is Finnish and speak Finnish, a Uralic language unrelated to the Scandinavian languages; next come the Finland-Swedes (5.3%). Finland is the eighth-largest country in Europe and the most sparsely populated country in the European Union. The sovereign state is a parliamentary republic with a central government based in the capital city of Helsinki, local governments in 311 municipalities, and one autonomous region, the Åland Islands. Over 1.4M people live in the Greater Helsinki metropolitan area, which produces one third of the country's GDP.

In 1809, Finland was incorporated into the Russian Empire as the autonomous Grand Duchy of Finland. In 1906, Finland became the first European state to grant all adult citizens the right to vote, and the first in the world to give all adult citizens the right to run for public office.

Following the 1917 Russian Revolution, Finland declared itself independent. In 1918, the fledgling state was divided by civil war, with the Bolshevik-leaning Red Guard supported by the equally new Soviet Russia, fighting the White Guard, supported by the German Empire. After a brief attempt to establish a kingdom, the country became a republic. During World War II, the Soviet Union sought repeatedly to occupy Finland, with Finland losing parts of Karelia, Salla, Kuusamo, Petsamo and some islands, but retaining independence.

Finland joined the United Nations in 1955 and established an official policy of neutrality. The Finno-Soviet Treaty of 1948 gave the Soviet Union some leverage in Finnish domestic politics during the Cold War era. Finland joined the OECD in 1969, the NATO Partnership for Peace in 1994, the European Union in 1995, the Euro-Atlantic Partnership Council in 1997, and finally the Eurozone at its inception, in 1999. It was in the mid 1990's that Finland opened up its economy and started moving away from an economy dominated by Russia.

Finland is highly integrated in the global economy, and international trade is a third of GDP. The European Union makes 60 percent of the total trade. The largest trade flows are with Germany, Russia, Sweden, the United Kingdom, the United States, Netherlands and China. Trade policy is managed by the European Union, where Finland has traditionally been among the free trade supporters, except for agriculture.

Finland has a highly industrialised, mixed economy with a per capita output similar to that of other western European economies such as France, Germany and United Kingdom but slightly lower than Sweden. The largest sector of the economy is services at 72.7 percent, followed by manufacturing and refining at 31.4 percent. Primary production is 2.9 percent.

Recent GDP growth has bounced back from the recessionary years between 2012 and 2015, with growth of 2.1% in 2016 and 2.8% in 2017. The Bank of Finland is forecasting GDP growth between 2018 and 2020 of 2.9%. 2.2% and 1.7% respectively. The declining growth rate in the immediate years ahead reflects the moderate long-term outlook for growth. Inflation will remain close to 1% over the years 2018–2019 before gathering pace and reaching 1.5% in 2020.

## Peter Rose

Peter has 32 years' experience in equities as a resources analyst; he has been at Brandon Hill Capital, formerly Brandon Hill Capital for 11 years. Prior to that he spent 11 years with Deutsche Bank in Australia. Prior to this he spent 2 years with Prudential Bache and 6 years with James Capel. Peter's industry experience includes 16 years as a metallurgist, 3 years with De Beers in South Africa and 9 years in the uranium industry, 7 of which were spent at the Ranger Uranium mine. Peter holds a BSc degree in Applied Mineral Science from Leeds University UK and a Bachelor of Commerce from the University of South Africa. Peter is also a member of the Institute of Materials, Mining & Metallurgy and a chartered engineer.

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<u>Company Name</u>	<u>Disclosure</u>
Karelian Diamond Resources	1, 2, 7

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