TETRA TECH EBA

OQM | Organizational Quality Management Program

UPDATED PRE-FEASIBILITY STUDY ON THE AAPPALUTTOQ RUBY PROJECT, GREENLAND

NATIONAL INSTRUMENT 43-101 TECHNICAL REPORT

PRESENTED TO

True North Gems Inc.

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1.0 EXECUTIVE SUMMARY

Tetra Tech EBA (Tetra Tech) was commissioned by True North Gems Inc. (TNG) to prepare an update to the 2011 Preliminary Feasibility Study (PFS) for their Aappaluttoq Ruby Project, located in southwestern Greenland. This report incorporates updated information on gem valuations and detailed engineering design work completed by TNG and their joint venture partner LNS A/S of Greenland and Norway. No additional geological data has been collected, and the mineral resources used as the basis for the current economic analysis have not changed since 2011. The effective date of this report is January 31, 2015.

1.1 Property description, location and access

The Aappaluttoq Ruby Project is located in southwest Greenland, approximately 150 km south of the capital Nuuk and 20 km southeast of the town of Qeqertarsuatsiaat in the Fiskenæsset mining district. The town of Qeqertarsuatsiaat is home to approximately 240 people and has an all-weather commercial harbour. The property is located near the intersection of 63° 00’ North latitude and 50° 19' West longitude.

Access to the project area is from the sea is through the fjords Tasiussassuaq and Tasiussaa. There are two possible entrances to Tasiussassuaq from the open sea and both are through narrow "gates" with limited depth. The tidal current is strong and passage has to be adjusted to the tide. The tidal range is about 3 m.

The project area is located in a maritime influenced polar tundra region. This is characterized by low daily temperatures, with average lows ranging from -10°C in the winter to +10°C in the summer. The amount of sunlight per day varies greatly throughout the year, with long nights in the winter, and long days during the summer. Precipitation remains constant throughout the year, with about 12 precipitation days per month.

1.2 Ownership

TNG has a 93% interest in the Aappaluttoq property and LNS Group have a 7% interest in the project. The site is located on Exploitation License No. 2014/21, which is registered with the Government of Greenland to True North Gems Greenland A/S, a subsidiary of True North Gems Inc. This licence is a 30-year exclusive mining licence covering an area of 20 km^2 granted on the March 10, 2014 and expiring on March 7, 2044. Two exploration licences remain adjacent to the mining area, both are registered under True North Gems Greenland A/S. Currently, TNG has met and maintained all environmental and social requirements for its exploration and exploitation licenses.

1.3 Geology and mineralization

The Aappaluttoq area lies within the Fiskenæsset Igneous Complex and is dominated by an intrusive gabbro to leucogabbro sequence of rocks with significant volumes of ultramafic rock. This ultramafic sequence is intruded into and is structurally juxtaposed against the felsic gneiss basement suite. The Aappaluttoq ultramafic body is internally zoned with a barren ultramafic core (olivine and lesser pyroxene). It is lensoidal in shape and has a minimum strike length of 170 m and is up to 70 m thick. Gradational alteration is prevalent and evident where ultramafic rocks have been altered to phlogopite. It is in these metasomatic/metamorphic reaction zones between the leucogabbro and ultramafic stratigraphy where the ruby mineralization is mostly concentrated. The Aappaluttoq deposit represents one of the few potentially economic examples of metasomatic ruby formation in a mafic or ultramafic host.

The Fiskenæsset Complex was intruded by several generations of quartzo-feldspathic material. These intrusions are widespread in areas of low deformation and are observed as veins and plugs of granitoid composition crosscutting the main mafic and ultramafic layers.

The main ore zone is currently comprised of three main rock-types: sapphirine-gedrite; leucocratic gabbro and a phlogopitite; with the phlogopitite the host for the majority of the ruby held within Aappaluttoq, and the leucogabbro hosting the pink sapphires.

Exploration has been ongoing at Aappaluttoq since its discovery in 2005. Work has consisted of diamond drilling, mapping, and bulk sample collection. In 2007, 46 drill holes were completed at Aappaluttoq totalling 4,622.1 meters. In 2008, 19 drill holes were drilled totalling 1,834.7 meters. Three bulk samples were collected, increasing from 30 tonnes in 2006 to 54 tonnes (28 tonnes rock, plus 26 tonnes of regolith) in 2007, and 160 tonnes (125 tonnes of rock, ~35 tonnes of regolith) in 2008. In 2010, a detailed ground magnetic survey was completed to trace the extent of the UM unit in the subsurface. 2011 to 2013 focussed on permitting, environmental baseline and the social inclusion study. In 2014, the final permits and IBA was completed. Fieldwork focussed on new ARD-ML testing, locating ideal borrow-pit and construction gravels and surveying the infrastructure for the Aappaluttoq Mine area.

1.4 Mineral resource estimates

The Aappaluttoq open pit mineral resource was estimated in March 2011 by EBA (now Tetra Tech). The initial resource estimate was prepared by Tetra Tech from 6,457 m of drilling data and approximately 90 tonnes of bulk samples. No further in-ground geological development work has occurred since then, thus the resource is still current and actively utilized within the updated PFS.

Search ellipses for the interpolation profiles were based on geology and observed continuity of the phlogopitite host zone. A lower cut-off grade of 1 gram per tonne was selected from evaluation of grade tonnage relationship at several cut off grades. The grade data was interpolated into block models using an inverse distance interpolator with a power of 2 (ID2). The resource is presented in Table 1.

Table 1: Current Indicated and Inferred Resources

Category	Volume	Tonnage(1)	Average Grade(2,3)	Average Grade(2,3,4)	Contained Corundum (2,3)	Contained Corundum(2,3,4)
	m^3	*Tonnes*	*Grams/Tonne*	*Carats/Tonne*	*Grams million*	*Carats million*
Indicated	59,110	189,150	313.33	1,566.65	59.27	296.33
Inferred	24,110	77,160	283.46	1,417.28	21.87	109.35

Notes:
(1) Densities are derived from specific gravity measurements of host lithologies and estimated for host zone based on specific gravity of corundum and average grade
(2) Based on a Total Clean Corundum grades greater than 1.7 mm size fraction from mineralogical lab analysis
(3) Top cut grade of 7,325 grams per tonne (97.5 percentile), and a lower cut-off grade of 1 gram per tonne
(4) One gram equals five carats

1.5 Mineral reserve estimates

The updated open pit mineral reserves are shown in Table 2. Tetra Tech has revised the mine plan and schedule, to include push backs, with lower stripping ratios during the first 2 years.

Tetra Tech considers the spatial distribution of the corundum would make in-pit grade control difficult prior to mining. Additional indicated material below cut-off grade will be processed, this material will dilute the reserves prior to processing.

Table 2: Aappaluttoq Probable Open Pit Mineral Reserves

Category	Tonnage	Average Grade	Contained corundum above 1.7 mm
	Tonnes	Grams/tonne	Grams Million
Total probable mineral reserves for mining(1)	166,983	339	57
Mill feed after dilution and mining losses(2)	189,768	292	55

Notes:
(1) All corundum containing indicated resources within the open pit as designed, intended for mill feed
(2) Resulting mill feed including waste dilution due to mining method of an estimated 19 % and mining loss of 4.5 %

1.6 Mining methods

This PFS is based on open pit mining and considers the agreements between TNG and LNSG, whereby LNSG will provide contract mining services to TNG. Mining is planned to be undertaken between the beginning of March and the end of October each production year (except year 1 (2015), which has a reduced season only commencing after completion of site construction).

The mining method considered is an articulated dump truck, tracked excavator or loader operation. All mining equipment will be provided by LNSG, including 3 haul trucks, 3 loaders and 3 excavators as well as a fleet of support equipment.

Mining includes drill and blast of both waste rock and ore, with ore split into blocks using smaller drilling equipment.

The updated pit design is based on maintaining pit slopes below 56 degrees to ensure that pit the pit design conforms to Danish and Greenlandic regulations. Permitting conditions currently limit the pit bottom to 154 m elevation.

The mine plan produced by Tetra Tech includes 6 m benches with triple benching, allowing for 8 m catch berms. Haul roads are planned to be 9 m wide allowing for single lane traffic only. Ore will be mined in 3 m benches through blasting of blocks of roughly 3 by 2 by 1 m, which are planned to be further fragmented using an excavator mounted impact hammer.

Tetra Tech has included 19.1% waste dilution in ore and mining loss of 4.5%.

Tetra Tech has scheduled a 9 year mine life, with a three year ramp up period from 2,800 tonnes per year of process feed up to 20,000 tonnes per year in year 4.

In order to maintain access to the open pit, the lakes level will be lowered by 10 m. 1.4 Mm^3 of waste rock and 77 thousand m^3 of tailings will be deposited into the lake over life of mine and as such no surface waste rock dumps or tailings facilities are contemplated.

The mining schedule showing tonnes delivered for processing and the associated grade is shown in Table 3.

Table 3: Open pit mining schedule

Open pit mining schedule										
Year	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Total**
Ore tonnes	2,849	12,745	16,560	22,792	22,820	23,564	26,142	31,118	31,178	189,768
Waste tonnes	17,485	167,729	485,012	449,311	571,179	484,642	407,319	249,920	136,266	2,968,862
Corundum Head grade	1,396	438	274	310	196	186	244	226	386	292

1.7 Recovery methods

Information provided on processing has been provided to Tetra Tech by Novus Engineering, who are currently conducting engineering, procurement and construction management for Aappaluttoq processing plant and Nuuk HF facilities. The True North Gems Aappaluttoq Ruby Project's Process Plant consists of the following primary sub-processes:

- Crushing (Primary & Secondary)
- Scrubbing
- Dense Media Separation (DMS)
- Drying, Magnetic Separation and Optical Sorting
- Services

The process is designed to produce a secured rough corundum concentrate that is predominantly corundum particles with minor host rock attachments. The concentrate will be exported from site to Nuuk for further processing.

All sub-processes described will be housed in a single "Process Building" which is a purpose built steel structure housing not only the sub-process facilities but also the Office / Security structure and all required electrical and control facilities. The Process Building will be located adjacent to the project maintenance facility and in close proximity to the open pit. The Process Building will be heated and ventilated as required to allow for personnel comfort and process operations.

Crushing will be undertaken using a primary crusher, which is planned as a diesel powered mobile unit. Secondary crushing will be done by cone crusher. After scrubbing and screening the material into appropriate size fractions, dense media separation using Ferro-Silicon (FESI) powder will be done using cyclone separation. The FESI will be recovered using a magnetic separator and the sinks (containing corundum) will be dried in preparation for optical sorting. Optical sorting will produce primary and secondary dirty concentrate.

Power for processing will be provided by diesel powered generator, with water pumped from the lake.

The optical sorter product will be then packaged for transportation to Nuuk, where hydrofluoric acid digestion in a purpose built facility (temporary for first three years and permanent thereafter) is planned to be undertaken to clean any remaining matrix off the corundum.

After the completion of the corundum cleaning through hydrofluoric acid, sorting of gemstones will be undertaken at TNG facilities in Nuuk.

1.8 Project infrastructure

Tetra Tech has reviewed TNG's plans for construction of the mine site, these were developed by TNG, Novus Engineering and LNSG. Currently TNG and LNSG have planned the following facilities for construction:

1. Mine camp including gym, catering and recreation facilities
2. Mine offices
3. Process facility
4. Mine workshop
5. Outer port facilities
6. Explosive storage and magazines
7. Fuel storage at outer port and at camp
8. Process power generation
9. Camp power generation
10. Site roads including culverts and bridges
11. Helipad

Detailed engineering drawings of site works and infrastructure required for the mining operation have been undertaken by Inuplan, a Greenlandic engineering company as well as by Novus Engineering.

All power for the site is planned to be generated using diesel generators.

Tetra Tech have reviewed the construction layout for permafrost considerations and have noted that permafrost is unlikely to cause construction problems.

TNG are currently planning to construct a permanent cleaning facility and office complex in Nuuk which will replace the temporary rented facility used for corundum cleaning in first three years.

1.9 Market studies, valuations and contracts

Current market conditions support strong growth for both ruby and pink and result from increasing demand among manufacturers and reduced production from classic sources. Prices are trending up in response. There is currently no indication that demand will decline. Worldwide, the population of consumers is growing. This growth compared to the limited production of natural ruby and sapphire supports a positive long-term outlook.

Rough prices used averaged $53 per gram for Ruby and $32 per gram for sapphires. Independent valuations ranged from $5 to $300 per gram for rough gem and near gem material. Individual prices used in the model can be seen in Table 62. The economic evaluation of Aappaluttoq considers 75% rough sales and 25% polished over the life of mine.

Polished prices provided by GemWorld varied from US$65 to US$700 per ct. for Rubies and from US$50 to $700 per ct. for Sapphires.

1.10 Environmental studies, permitting and social or community impact

Under Section 16 of the Mineral Resources Act (Greenland) a full Environmental Impact Assessment (EIA) was required as part of exploitation licence application. This was completed and filed by True North Gems (TNG) in June 2011 and approved with amendments by the Government of Greenland upon signing of the Exploitation Licence in March of 2014.

The Company's interest in the Property is governed by "Exclusive Licence No. 2014/21 for Exploitation of Certain Minerals in Areas at Aappaluttoq in West Greenland" from the Government of Greenland – Ministry of Industry and Mineral Resources (the "Exploitation License"), which Exploitation License became effective on March 10, 2014. A full copy of the Exploitation License is available under the Company's SEDAR filings at www.sedar.com.

1.11 Capital and operating costs

Tetra Tech has reviewed costs provided by LNSG, TNG and Novus Engineering for the construction of the infrastructure required for the Aappaluttoq project. These costs are summarised in Table 4.

Table 4: Summary of Aappaluttoq capital cost estimates for the PFS

Aappaluttoq Capital cost Estimate				
Item	**Life of Mine**	**2015**	**2016**	**2017**
Mine site construction	$21,118,948	$21,118,948		
Process equipment	$3,327,618	$3,327,618		
Temp Nuuk HF facility	$252,720	$252,720		
Permanent Nuuk	$5,732,865	$0	$1,719,860	$4,013,006
Total direct costs in CAD$	**$30,432,150**	**$24,699,285**	**$1,719,860**	**$4,013,006**
Indirect	$340,213	$340,213		
Owners costs	$575,047	$516,168	$29,439	$29,439
Total Indirect in CAD$	**$915,259**	**$856,381**	**$29,439**	**$29,439**
Total Capital in CAD$	**$31,347,410**	**$25,555,666**	**$1,749,299**	**$4,042,445**
Total Capital in US$	**$25,077,928**	**$20,444,533**	**$1,399,439**	**$3,233,956**

Additionally, Tetra Tech assisted TNG, Novus and LNSG with an operating cost estimate as shown in Table 5.

Table 5: Life of mine estimated average cost per tonne for Aappaluttoq in CAD$

Summary	Cost per tonne mill feed
Mining	$201
Processing	$46
G and A	$67
Mine site Power	$57
Transport	$10
Nuuk Office	$146
HF processing	$29
Marketing	$40

Table 5: Life of mine estimated average cost per tonne for Aappaluttoq in CAD$

Summary	Cost per tonne mill feed
Corporate	$18
Capital leasing[1]	$96
Total cost per tonne CAD$	**$711**
Total cost per tonne US$	**$573**

1 Not included in project economics, but included in evaluation of resulting TNG economics.

1.12 Economic analysis

For the purpose of the PFS Tetra Tech and TNG have considered two scenarios for evaluation. The first assumes that the project is 100% owned by TNG the company is required to expense all project costs at 100%. For this scenario upfront capital costs provided by LNSG are considered cash costs to TNG and no leasing or shareholder agreements are included as shown in Table 6 and Table 7. The second scenario evaluates the project as if it is being advanced as a joint venture (JV) agreement with LNSG, this results in reduction upfront cash requirements. This scenario will be referred to as the LNSG JV for the purpose of the PFS as shown in Table 6.

Table 6: Key financial and project highlights of the Aappaluttoq PFS:

Aappaluttoq Ruby Project	Production results	Units
Tonne processed	190	Tonnes (Thousands)
Waste rock mined	2,969	Tonnes (Thousands)
Stripping ratio	16	N/A
Mine operational years (starting 2015)	9	Years
Total corundum recovered from mine site	52.7	Grams Millions
Rough gemstones recovered from operations	17.5	Grams Millions
Average Ruby and Pink Sapphire Price: US$ pct.[1]	$7	US$ per ct.
Estimated revenue	$573	US$ Million
Economic scenario results	**Project Economics[5]**	
All in cash cost per equivalent rough ct. recovered[2]	$3	US$ per ct.
Total Operating costs	$94	US$ Million
Total Project Capital cost (Initial and sustaining)[3,4]	$25	US$ Million
Total Sustaining Capital cost	$5	US$ Million
Total Pre-tax cash flow from operations	$452	US$ Million
Total Post tax cash flow	$282	US$ Million
Pre-tax NPV at 8% real discount rate	**$275**	**US$ Million**
Post-tax NPV at 8% real discount rate	**$171**	**US$ Million**
Post-tax IRR %	**122%**	
Post tax payback period	**1.8**	**Years**

Notes:
1. The average price utilizes gem and near-gem material only; sale of commercial grade corundum has not been included in this PFS. Price forecasts are inclusive of 2.5% annual escalation from the average 2015 price over the life of the mine, this escalation is based on a conservative estimate of the long term supply-demand balance in the coloured gemstone market. The average is based on a 75% of gems sold as rough and 25% sold as polished.
2. All- in-cash costs include the capital, operating, taxes and royalties projected on a per rough carat produced basis. The calculation is performed by dividing life of mine total cash costs of $291 million by life of 88 million rough carats produced over life of mine.

3. This figure includes the investment that LNSG have made of US$14 million in True North Gems Greenland (TNGG) through an agreement whereby LNSG earns 27% shareholding of TNGG through investment and construction of project infrastructure at Aappaluttoq. Tetra Tech has estimated that the contribution by LNSG reduces upfront capital by an equivalent of US$ 17 million, with the remaining US$8 million covered by TNG.
4. Estimated capital cost includes 4% contingency, varying between 0% for quoted items currently in construction and 30% for equipment for which bids have not yet been received.
5. US$ to CAD$ used through the PFS is US$ 1 to CAD$ 1.24.

Table 7 shows the economic results which result from the joint venture with the LNS group. The high IRR of 485% relates to a leasing arrangement for capital costs, reducing upfront cash capital costs to US$8 million from US$25 million.

Table 7: Key financial and project highlights of the Aappaluttoq PFS for True North Gems.

Economic scenario results	TNG	Units
All in cash cost per equivalent rough ct. recovered[1]	$3	US$ per ct.
Total Operating costs[2]	$109	US$ Million
Total Capital cost	$8	US$ Million
Total Sustaining Capital cost	$5	US$ Million
Total Pre-tax cash flow from operations	$454	US$ Million
Post tax cash flow	$287	US$ Million
Pre-tax NPV at 8% real discount rate	**$281**	**US$ Million**
Post-tax NPV at 8% real discount rate	**$179**	**US$ Million**
TNG Post-tax NPV at 8% real discount rate[3]	**$125**	**US$ Million**
Post-tax TNG IRR %	**485%**	
Post tax payback period	**1.1**	**Years**

Notes:
1. All- in-cash costs include the capital, operating, taxes and royalties projected on a per rough carat produced basis. The calculation is performed by dividing life of mine total cash costs of $291 million by life of 88 million rough carats produced over life of mine
2. Inclusive of lease payments.
3. NPV solely for TNG interest in the project

The economics presented above are based on the mine plan, schedule and resulting discounted cash flow analysis, which is summarised in Table 8.

Table 8: Summary of project schedule and cash flows over life of mine

Base case economic summary	Units	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Total
Mining											
Diluted ore mined	Tonnes	2,849	12,745	16,560	22,792	22,820	23,564	26,142	31,118	31,178	189,768
Waste rock mined	Tonnes	17,485	167,729	485,012	449,311	571,179	484,642	407,319	249,920	136,266	2,968,862
Strip ratio		6	13	29	20	25	21	16	8	4	16
Grade of ore mined (head grade)	g/tonne	1,396	438	274	310	196	186	244	226	386	292
Processing											
Total corundum recovered	grams	3,776,870	5,301,717	4,308,416	6,720,272	4,249,618	4,164,969	6,057,930	6,672,251	11,444,662	52,696,705
Revenue											
Rubies sold as rough	grams	26,710	78,792	78,014	197,434	125,157	102,918	129,354	142,472	244,377	1,125,229
Sapphires sold as rough	grams	285,327	841,677	833,361	2,109,041	1,336,954	1,099,393	1,381,796	1,521,921	2,610,494	12,019,964
Rubies sold as polished	ct.	4,140	12,213	12,092	30,602	19,399	15,952	20,050	22,083	37,878	174,410
Sapphires sold as polished	ct.	44,226	130,460	129,171	326,901	207,228	170,406	214,178	235,898	404,627	1,863,094
Net sales revenue	$000	$12,012	$36,323	$36,867	$95,643	$62,151	$52,390	$67,500	$76,210	$134,000	$573,095
Operating costs											
Total operating costs in US$	$000	$5,007	$10,853	$13,770	$13,070	$13,520	$13,170	$13,215	$13,082	$13,072	$108,759
Capital costs											
Mine site construction	$000	$17,031	$	$	$	$	$	$	$	$	$17,031
Process equipment	$000	$2,684	$	$	$	$	$	$	$	$	$2,684
Temp Nuuk HF facility	$000	$204	$	$	$	$	$	$	$	$	$204
Permanent Nuuk	$000	$	$1,387	$3,236	$	$	$	$	$	$	$4,623
Indirect capital costs	$000	$691	$24	$24	$	$	$	$	$	$	$738
Total capital costs in US$	$000	$20,609	$1,411	$3,260	$	$	$	$	$	$	$25,280
Financial											
Cash flow from operations pre-tax	$000	-$20,726	$31,159	$21,519	$81,379	$50,352	$41,089	$56,117	$65,040	$122,831	$448,761
Estimated taxes	$000	$783	$4,662	$8,253	$31,570	$18,360	$14,757	$20,670	$24,162	$46,740	$169,957
After tax cash flow	$000	-$21,508	$26,497	$13,267	$49,808	$31,992	$26,332	$35,447	$40,878	$76,091	$278,805

1.13 Project Sensitivities

To evaluate the economic analysis, Tetra Tech has conducted sensitivity analysis on the economic inputs of the project. This included changing costs and revenue inputs from -40% to +40%, however some sensitivities have been done to a greater extent to test the projects robustness.

The findings show that the project is most sensitive to the percentage of gemstones of the total corundum mined and processed. This shows the project is only feasible as currently assessed if gemstones (gem and near-gem quality material) exceeds 7.5% of corundum content of mined and processed ore over the life of mine. The relationship between project NPV 8% and the percentage of produced corundum as gem quality is shown in Figure 1.

The project has low sensitivity to changes in capital and operating cost and is moderately sensitive to changes in rough and polished gemstone prices.

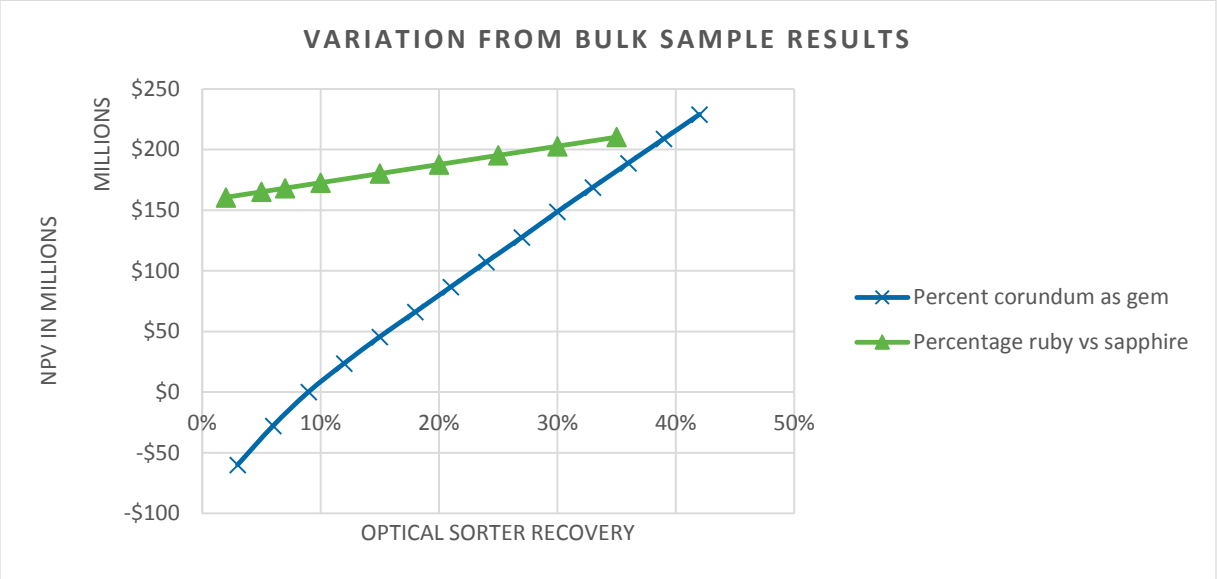

Figure 1: Sensitivity to deviation from bulk sample results, showing percentage of ruby vs sapphire of corundum recovered and percentage of total corundum as gem or near gem quality

1.14 Conclusions

Tetra Tech finds that the Aappaluttoq project has robust economic potential, which is not sensitive to operating or capital costs.

1.15 Recommendations

Tetra Tech recommends that as this project moves forward, the block model is updated to include colour, quality and size distribution of corundum materials.

Once mining commences and a better understanding of operational parameters and constraints are available, it is advised that mining plans are reproduced.

Tetra Tech recommends that TNG and LNSG consider the use of a small bull dozer (equivalent of CAT D6/7) for handling of waste rock, especially when dumping into water.

It is also recommended that a geotechnical study is performed on the rock mass to be mined for the project and that the results are used for revising the mine plan.

It is recommended that True North Gems Inc. conduct site investigations followed by a hydrogeology study to better the understanding of the potential ground water in the open pit.