

True North Gems

Greenland's ruby and pink sapphire mine

Initiation of coverage

Metals & mining

16 April 2015

Price **C\$0.17**

Market cap **C\$51m**

C\$1.13/US\$

Net cash (C\$m) at 30 September 2014 0.5

Shares in issue 297.2m

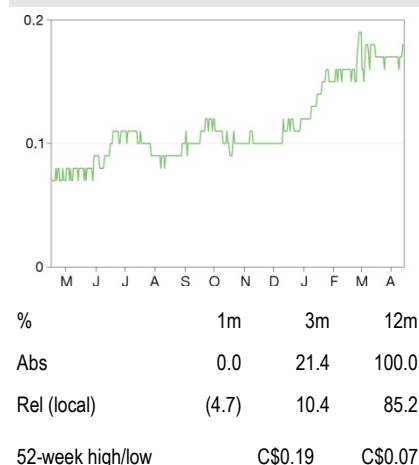
Free float 88%

Code TGX

Primary exchange TSX-V

Secondary exchange N/A

Share price performance



Business description

True North Gems is developing its 93% owned (73% upon completion of the mine by its JV partner LNSG) and exploitation (mining) permitted Aappaluttoq ruby and pink sapphire mine in Greenland.

Next events

Mine start-up Q315
First sale data H215

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True North Gems' Aappaluttoq ruby and pink sapphire mine in Greenland will start up in Q315. This follows a turnaround year of permit approvals and project financing. Two key risks remain: project execution as planned and management's ability to market its gemstones. Concerning the latter, we await the first sale of Aappaluttoq stones in H215 to provide the first indication of value for its rubies and pink sapphires. Our DDF C\$0.41/share valuation (using a 10% discount rate) currently uses prices as contained within True North's revised pre-feasibility study (PFS), which we also use to value the company's shares.

Year end	Revenue (C\$m)	PBT* (C\$m)	EPS* (c)	DPS (c)	P/E (x)	Yield (%)
12/13	0.0	(1.7)	(0.7)	0.0	N/A	N/A
12/14e	0.0	(3.2)	(1.1)	0.0	N/A	N/A
12/15e	10.9	7.7	2.6	0.0	6.5	N/A
12/16e	32.2	21.6	7.0	0.0	2.4	N/A

Note: *PBT and EPS are normalised, excluding intangible amortisation, exceptional items and share-based payments.

Ruby prices key to Aappaluttoq's value

Rubies come in a wide range of sizes, quality and, consequently, value. Prices achieved at Gemfields' inaugural sale of its Montepuez rubies and corundum in June 2014 averaged US\$18.43/ct, whereas its December 2014 higher-quality rubies yielded an average price of US\$688.64/ct. True North has taken account of specific Gemfields' auction data, third-party valuations and market research pricing data to underpin a new, revised PFS, which uses an average price of US\$7/ct.

Socially acceptable, natural Burmese-quality rubies

Producing rubies and pink sapphires from Greenland provides the gemstone market with a source of socially acceptable gemstones separate from the still negative sentiment surrounding Burma (source of the world's premier stones), its old military junta and human rights issues. All this should play well to True North's case for marketing its rubies and pink sapphires, which will carry a certificate of provenance via its proprietary gemstone tracking system, Ruby Track.

Valuation: Sale data key to unlocking value

Our base case valuation uses True North's 2015 PFS on the Aappaluttoq deposit announced on 18 March. The PFS details a currently defined nine-year mine life (although deposits 2 and 3 have already been identified as extending this), extracting variably sized and distributed quantities of rubies and pink sapphires. Sale agreements are being finalised with offtake partners for specific parcels of stones. This 'sight-holder' approach is favoured over auctions (eg Gemfields' approach) as Aappaluttoq's hard rock deposit style (cf alluvial deposits such as Gemfields') allows for far greater prediction of mine output. On this basis, we value True North's 73% share of Aappaluttoq at C\$0.41 (using a 10% discount rate). A near-term risk associated with achieving the sale of Aappaluttoq's stones during FY15 exists, but adjusting FY15 revenue by increments of C\$5m only alters our valuation by 3% (see pages 8-12).

True North Gems is a research client of Edison Investment Research Limited

Investment summary

Company description: Rubies from Greenland

True North Gems' core asset is its 93%-owned (reducing to 73% as the mine enters production in Q315) ruby and pink sapphire deposit in Greenland, located on exploitation (mining) licence 2014/21, over 20km². The licence provides exclusive rights to pursue mining activities in these areas. An exclusive exploration licence (2008/46) is also allocated to the True North; this extends around the mine licence and hosts the second and third targets for future exploration.

Valuation: Highly contingent on sale data

Our valuation of True North Gems relies heavily on third-party pricing data for its rubies and pink sapphire, as detailed in the revised 2015 PFS. The average of all the rough and polished ruby and pink sapphire prices used is US\$7/Ct. Further detail on the prices used, as well as the proportions of each type of stone due to be sold, are given in Exhibit 5. All other operating and cost data are taken from the 2015 PFS. On this basis, and until such time as we can amend our forecasts to reflect True North's own price data, we value the company's 73% share in Aappaluttoq at C\$0.41 per share (using a 10% discount rate to reflect general equity risk). An alternative inference of Aappaluttoq's value is that LNS Greenland's purchase of 27% of the project for C\$26m implies a value for 100% of the project at C\$96m, or C\$0.21 per share for True North's eventual 73% interest.

Financials: Mine financed largely via JV partner buy-in

True North Gems has sold a total of 27% of its operating subsidiary (Aappaluttoq is owned by True North Gems Greenland – TNGG) to its JV partner LNS for C\$26m. LNS will realise its 27% interest when it completes mine construction during Q315. Of the C\$26m invested by LNS, C\$18m is subject to a capital lease agreement with True North. We have followed the same method used in the 2015 PFS by including this as an operating cost item (amounting to C\$96/tonne of mill feed over LOM) in our financial model. A further C\$5m capital loan was provided to TNGG and used for capital and construction costs. The equity portion of Aappaluttoq's mine financing was only C\$3m via the issue of 28.6m True North shares (also to LNS). The C\$4m balance of the C\$38m capex estimate to build Aappaluttoq is to be satisfied through an additional loan and by vendor finance arrangements for certain pieces of long-lead time processing equipment. There remains uncertainty surrounding the FY15 revenue figure due to a lack of concrete sale agreements for Aappaluttoq stones. We have confidence in the abilities of both True North's CEO and newly appointed head of marketing (Hayley Henning) to secure such agreements (a number of buyers are lined up and terms are being finalised) and note that adjusting our FY15 revenue figure by increments of C\$5m changes our base case valuation by only C\$0.01 or 3%. We have also had a conversation with management where they highlighted that discussions are taking place over additional funding to assist with working capital and to ensure sufficient capital reserves are in place to support working capital requirements through the first year of Aappaluttoq's operation. To reflect this in our model we have included a notional C\$10m loan repaid over five years (from 2017) using an assumed 9% interest rate. We will refine our valuation as True North announces the finalised terms of this financing.

Sensitivities: Mine under construction, marketing now key

True North, in conjunction with LNS Greenland, is now constructing the Aappaluttoq mine and has navigated all pre-development obstacles (eg reserve calculation, permitting, environmental studies and, in large part, financing). The most significant risks to our valuation are ruby and pink sapphire prices and security of offtake. The ruby and pink sapphire prices used to underpin the PFS are based on third-party valuations, as well as available public price data (ie Gemfields' auction data)

and market research by GemWorld. A standard approach among precious stone companies is to base cash flow forecasts by applying gemstone prices to the most abundant stone present in the ore reserve, in part and to mitigate variability in revenue generation and pricing risk associated with the highly variable nature of gemstone quality as much as possible. True North has approached its financial modelling and cash flow forecasts based on this method.

Company description: Greenland's rubies and sapphires

True North Gems is developing its core asset, the 100%-owned (73% on completion of the mine by its JV partner LNS) and exploitation (mining) permitted Aappaluttoq ruby and pink sapphire mine in Greenland.

LNS joint venture agreement and corporate structure

True North's JV partner Leonhard Nilsen & Sonner A/S (LNS) and its Greenland subsidiary invested US\$23m in August 2013 and a further US\$11m in September 2014 for a 27% stake in True North Gems' Greenland operating subsidiary. LNS has started construction of the Aappaluttoq mine and expects to continue unhindered over the winter period with the aim of a Q315 mine start-up. LNS will also operate the mine and is experienced in operating in arctic conditions. The Aappaluttoq mine is located in Greenland 150km south of the capital Nuuk, 20km south-east of the community of Qeqertarsuaat. The government of Greenland approved True North's mine plan and impact benefit agreement in Q114 and subsequently provided True North with its exploitation licence. This licence has a term of 30 years, ending in 2044.

Exhibit 1: Aappaluttoq rubies/pink sapphires in situ (left) and cut and polished (right)



Source: True North Gems October 2014 corporate presentation

An introduction to the ruby market

The mining, production and sale of diamonds is much better understood than rubies and pink sapphires, due in part to diamonds being much more common. Many more diamond mines exist than for coloured gemstones and this is one reason for a dearth of knowledge about this sector. The desirability of diamonds marketed over the years by De Beers has kept coloured gemstones, relatively speaking, out of the limelight. With the growth of the Asian luxury goods market (ie largely Japan and China) coupled with that in the west, and fashions helping to strengthen demand for

coloured gemstones, there is a need to understand what could become a much larger and dominant segment of the gemstone space. Gemfields is the only other established coloured gemstone mining company and has made significant progress in marketing its emeralds, rubies, sapphires and amethysts. Its inaugural ruby auction of June 2014 provided the first public price data for rubies and forms an integral part of our valuation assumptions. Its subsequent high-value auction in December 2014 demonstrates the premium that special and high-quality stones can attract. The value of rubies is determined by the four Cs: colour, clarity, carat and cut. The main sources of rubies globally are Myanmar (Burma), Thailand, Sri Lanka and Madagascar and also Mozambique.

The following excerpt from Walter Schumann's 1999 book *Gemstones of the World* is a succinct overview of rubies, their occurrence, production and history. Pink sapphires occur alongside rubies in nature; both are forms of corundum.

"Two colour varieties of Corundum are used for making jewellery, the red ruby and the sapphire which comprises all other colours. Common corundums, that is, those not of gemstone quality, serve as cutting and polishing material. The well-known polishing material emery is mainly fine-grain corundum, to which magnetite, hematite, and quartz are added. The name corundum has its origin in India and probably referred to ruby. Ruby is thus named because of its red colour (Latin-ruber). It was not until about 1800 that ruby, as well as sapphire, was recognised as belonging to the corundum species. Before this, red spinel and the red garnet were also designated as ruby.

The red colour varies in each individual deposit, so it is not possible to determine the source area from the colour. The designations 'Burma Ruby' and 'Siam Ruby' are therefore strictly erroneous, and refer more to quality than origin. The most desirable colour is the so-called 'pigeons blood', pure red with a hint of blue. The distribution of colour is often uneven, in stripes or spots. The substance that provides the colour is chromium, and in the case of brownish tones, iron is present as well. As a rough stone, ruby appears dull and greasy, but, when cut, the luster can approach that of diamond; but the hardness varies in different directions. Ruby has no cleavage, but has certain preferred directions of parting. Because of brittleness, care must be taken when cutting and setting.

Inclusions are common. They are not always indicative of lower quality, but show the difference between a natural and a synthetic stone. The type of inclusion (minerals, growth structures, canals, or other cavities) often indicates the source area. Included rutile needles bring about either soft sheen (called silk) or when cut en cabochon, the rare cat's eye effect, or more often the very desirable asterism – a six-rayed star, which shimmers over the stone when it is moved. Nowadays there are also Trapiche Rubies on the market. The appearance is equal to the Trapiche Emeralds."¹

Third-party assessments of Aappaluttoq gems

True North commissioned GemWorld to compile a report detailing the current supply and demand characteristics of both the ruby and pink sapphire gem markets. Concerning rubies, GemWorld's report highlighted traditional sources of supply from Burma and Thailand as having become sporadic in recent years, with newer sources of supply (ie Mozambique, Malawi and Greenland) becoming important. This situation continues to drive ruby prices up as demand in the major markets of China, the US and India grows. With respect to pink sapphires, the current market is said to be roughly in balance, but with diminishing supply from traditional sources in Madagascar and Sri Lanka expected to provide supply-side constraints and therefore price support. Both these reasons are expected to support True North's objective of becoming an established source of gem-grade responsibly sourced rubies and pink sapphires. Further points taken from the GemWorld report are provided below.

- Greenland ruby and pink sapphire material has been underappreciated for two reasons. Firstly, the industry's introduction to Greenland material focused too heavily on showcasing the larger

¹ Gemstones of the World, Walter Schumann, pages 82-84. N.A.G Press, 1999.

red but opaque bead material (ie lower value) at the expense of small but transparent gem-quality ruby and pink sapphires (higher value). Secondly, only exploration has occurred and so very little material has been supplied to establish Greenland as a producing source. This will of course change as True North's mine enters production.

- Aappaluttoq material will be promoted as a natural (non-treated) and responsibly sourced product, which is expected to enhance marketability and value.
- Further, a small number of Aappaluttoq stones were submitted to GemWorld for assessment, resulting in the following observations:

The colour distribution of one lot of 13 polished gems submitted for gemological examination found approximately one-third sufficiently saturated to be classified as ruby and two-thirds classified as pink sapphire. The stones were gem industry quality and in that regard the production is viable as a gem product.

Before commissioning GemWorld, True North also supplied three parcels of varying Aappaluttoq material to another independent expert, Donna Hawrelko, president of the Accredited Gemologists Association in Canada. Ms Hawrelko commented that the pink (Aappaluttoq) sapphires examined are unique to the market "in that they display a beautiful warm pink colour without any of the beryllium treatment so commonly found in the pink stones on the market today". It was also stated that Madagascar pink sapphires are likely to be the most comparable to Aappaluttoq stones. However, Madagascar pink sapphires do not display the soft velvety look that True North's material often displays.

Marketing: TNG outlines a three-pronged strategy

True North intends to approach the marketing and sale of Aappaluttoq stones using three sale platforms. Its strategy is to maintain regular cash flow generation through the sale of its smallest and most abundant 'melee' stones. Larger and more valuable stones and stones sold polished may be sold via separate auctions as an awareness and introduction exercise. The current marketing strategy is therefore:

- a consistent supply of small stones will be extracted from the mine. All rough melee (small unbroken faceted stones under 2.8mm) will be sold at regular intervals, possibly on a quarterly basis. Coupled with an adequate grading system to provide consistent size and colour, the regularity of these sales should allow buyers to pre-sell, and jewellers to arrange mounts before receiving the melee stones;
- auctions (similar to Gemfields) could be held to sell the larger, higher-value material in its rough form. The auctions are likely to be open to all potential buyers, including those buying melee goods; and
- some polished material will be sold, planned to be 25% of production (depending on mine output). This will take place at five vetted (by true North) polishing houses. These houses have been chosen in terms of their ability to maintain an audit trail of each stone to the Aappaluttoq mine and the quality of polishing.

True North will provide a certificate of provenance and use a proprietary system called Ruby Track to record each stone parcel sold to the market. This will ensure a transparent extraction record, that the source is clearly labelled as Greenland and confirm if the stone parcels are in their raw form or have been heat-treated (note, currently heat-treatment is not anticipated to form part of the marketed goods). The importance of these systems and the security they provide to the buyer in terms of provenance and whether the stone has been heat-treated or not, is paramount to True North achieving the best value possible for Aappaluttoq material. The sale of unheated, untreated ruby and pink sapphire will form the backbone of the company's marketing and sales campaign.

Gemfields' auction reflects strength in the ruby market

Gemfields' second ruby auction, designated as high quality, took place on 8 December 2014 in Singapore. This auction sold 62,936 carats of higher-quality untreated rubies from its Montepuez concession in Mozambique. For comparison, the first auction sold a mixture of treated and untreated lower-quality rough rubies and corundum (ie non-gem quality ruby) totalling 1.82m carats. By contrast, True North expects all its rough rubies and pink sapphires to be sold untreated based on its previous third-party assessments.

This second (higher-quality) ruby auction achieved a record-breaking US\$688.64/ct, with 97% of lots sold by market value and total sales at auction of US\$43.3m. All gemstone and diamond auctions are based on highly specific assessments of the stones on offer and require a significant amount of speculation concerning the value of rough stones.

Therefore, applying per carat valuations across different deposits and different companies should be treated with caution and we point the reader to this fact when viewing our valuation of True North's Aappaluttoq deposit, at least until the company starts releasing sales data for its own stones. We note that Gemfields has built up its marketing strategy over a number of years and its auction values will be in part based on the success of its marketing approach. Notwithstanding these differences, the value of the higher-quality Montepuez stones proves two points: that the mixture of treated and untreated higher-quality Montepuez rubies are highly desirable and by extension valuable; and that Gemfields secured a higher average carat valuation at its second auction. It is now True North's turn to enter the ruby market and apply its approach to selling its stones (with True North's aspirations comparable to Gemfields in the early years), which is ultimately based on De Beers' model for selling diamonds on a preferred customer basis.

Geology and resources

Geological overview of Aappaluttoq

The corundum showings at Aappaluttoq typically include occurrences of co-existing red ruby and pink sapphire. The geology of the Aappaluttoq area 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 (a rock type containing a very high proportion of ferromagnesian minerals) core. Gradational alteration is prevalent and evident where ultramafic and gabbroic rocks have been altered to phlogopite (a form of metamorphic mica). It is in these metasomatic/metamorphic reaction zones between the leucogabbro and ultramafic stratigraphy where the ruby mineralisation is mostly concentrated.

Resources and reserves

Aappaluttoq is a primary ruby and pink sapphire deposit. This is positive in that it has allowed for an NI 43-101 compliant resource estimate to be completed, the only one currently in existence for a ruby/pink sapphire deposit. It also de-risks planned production as the resource model has been converted to reserves and used to underpin the Aappaluttoq mine plan. Further, rubies and sapphires are held in solid rock, which provides some security from the theft of stones during the mining process (see following section). However, it is also a negative in that alluvial deposits, which are commonly the source of gemstone production, provide a degree of size-sorting and concentration of the gemstones, thereby enhancing the deposit's grade in certain alluvial areas.

Exhibit 2: Aappaluttoq NI 43-101 compliant resource estimate

Resource category	Tonnes	Corundum (ct/t)	Contained carats
Indicated	189,150	1,567	296,398,050
Inferred	77,160	1,417	109,335,720

Source: True North Gems

The Aappaluttoq deposit is currently approximately 350m along strike; however, there are several other potential expansion sites along the 8.5km geological trend. The current mine plan concentrates on only a small portion of this strike and has a planned initial nine-year mine life. Deposits number two and three have already been identified and are noted to have high-grade corundum cropping out at surface. Pending requisite mine planning and technical assessment of these deposits, each will be brought into production, extending the operational mine life for True North in Greenland. The current operation has a 30-year mine licence, which we consider could be amended to allow for mining additional deposits that currently lie on the adjacent exploration licences.

Exhibit 3: Aappaluttoq NI 43-101 compliant reserve estimate

	Reserve (t)	Corundum grade (g/t)	Contained corundum, total grams (m)	Contained carats (m)
Proven and probable	161,700	350	56.6	283

Source: True North Gems

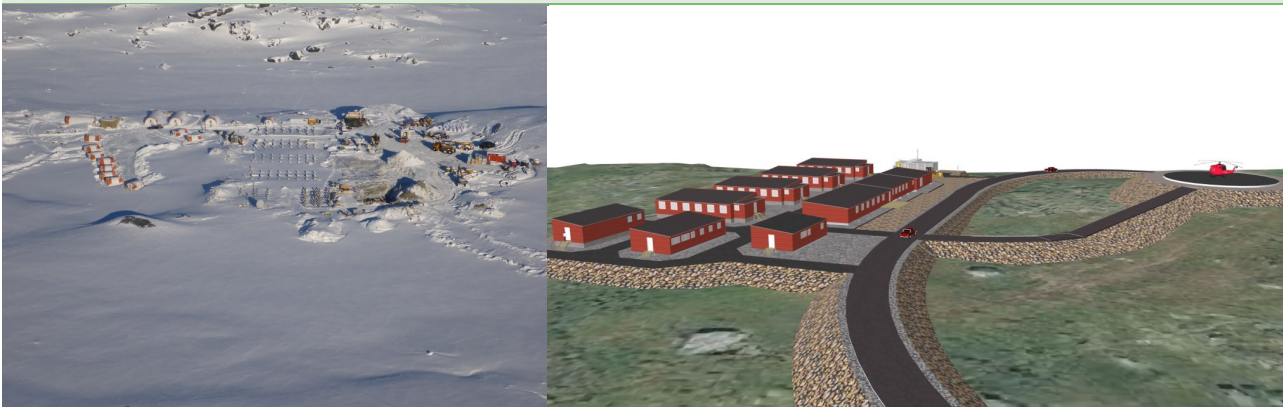
Mining: Deposit type provides inherent security

True North's JV partner LNS will mine Aappaluttoq via an open-pit operation. The deposit is partially underwater (albeit shallow) and requires lowering of the lake's water level by 10m during the mine's life with additional safety rock-bunds around the pits-edge to prevent larger waves lapping into the pit. Mining will take 18 tonne blocks of gemstone-bearing rock from an open-pit mine. These will be extracted using either wire saws or low-impact explosives to reduce fragmentation and damage to the contained gemstones. The mining of eighteen-tonne blocks allows easy transport and reduces theft of stones by keeping them in their host rock until the first stage of processing occurs.

The project will involve the development of a mine and process facility at Aappaluttoq, along with associated infrastructure and the construction of a corporate office and ruby sort house in the Greenland capital of Nuuk. Pit optimisation, design and production scheduling indicates a high stripping ratio operation, which benefits from low mining costs, short ore and waste haul distances, a low precipitation environment, competent ground conditions and available local workforce which, combined, give favourable economics over the expected nine-year mine life. The mining operation will be a typical open-pit operation. Mining will use conventional blast, load and haul equipment mining up to 450,000 tonnes of total material over an eight-month operating season from the beginning of April to the end of November each year. Ore production will increase gradually from approximately c 2,000 tonnes in the first year (to satisfy plant commissioning and initial operation) to nearly 25,000 tonnes from year three. Increased production will be achieved by extending the work season from four months in the early years to eight months in later years.

The major items of rock-moving equipment in the mine are several excavators and two main 35-tonne articulated dump trucks. The main access to the site during construction and operations for goods and personnel will be by a four-hour boat ride from Nuuk, with calls as necessary at nearby villages. Helicopter support will be available; it is roughly a one-hour flight. The dirty rough concentrate will be transported in secure containers by helicopter and boat on an irregular schedule.

Exhibit 4: View of Aappaluttoq mine construction site rendering of site accommodation (as of March 2015)



Source: True North Gems website

Processing and security

Process facilities will include a crushing, screening and dense media separation (DMS) circuit to separate and extract the corundum from the host rock. One handpicking station will enable operators to extract larger gems to prevent them being crushed and use optical sorting to process all other material. Surveillance and security systems will be put in place to protect against theft. The concentrate produced (dirty rough concentrate) will contain gem, near-gem and non-gem corundum.

Mine construction underway – first production Q315

True North's JV partner LNS Greenland is a Norwegian construction firm specialising in construction and mine operation in the arctic environment. The company announced on 13 November that construction was underway, comprising:

- upgrading and winterisation of the current exploration camp;
- installation of a small construction camp at the outer port;
- construction of a temporary safety-compliant explosives depot;
- the fabrication of the landing dock;
- development of a 1.5km construction route from the outer port towards the main camp site;
- heavy equipment including haul trucks, a blasting drill rig, front-end loaders and excavators on site and active; and
- blasting to prepare the permanent camp site, helipad area and the future road network.

The construction crews are entirely comprised of Greenlandic workers as required under the Impact Benefit Agreement (IBA) with the municipality and local communities. TNGG has also recently retained the services of a highly experienced Greenlandic civil engineer to oversee the construction management of the project.

Assumptions and valuation

True North Gems is a pre-cash flow company and its Aappaluttoq mine will only become operational in Q315. Furthermore, there is a lack of verifiable detailed data in the marketplace concerning the sale of rubies and there are no comparable (to Aappaluttoq) pink sapphires on the market according to True North's consultants. Gemfields is one of the only other public company mining coloured gemstones (Richland Resources is also quoted on the AIM market), and the prices fetched for its Montepuez rubies forms a component of the 2015 PFS pricing assumptions (Exhibit 5). There is also no current understanding in the ruby/sapphire market of Aappaluttoq material. All these factors place

a certain degree of risk on our valuation, which we will refine as the company releases sales data, expected through 2015. We use True North's 2015 PFS on Aappaluttoq for its mine schedule, capital and operating cost base. We have reviewed these operating costs and consider them to be in line with other hard rock, open-pit operations. The capital cost base of US\$25m reflects the low capital intensity of coloured gemstone operations and the fact that there is no need for costly processing plants required for other metalliferous ore bodies.

As already stated, there is no operation comparable to Aappaluttoq, especially in terms of the quality of its pink sapphires, which will be unique to the market. While only time will tell whether Aappaluttoq material will require heat treatment/glass-filling, the stones assessed so far by third-party gemologists suggest they would not. This could have a material impact on our financial forecasts, as untreated raw pink sapphires and rubies exhibiting Burmese qualities (demonstrated in a proportion of Aappaluttoq's rubies) will likely command a premium price to that of heat-treated/glass-filled stones. For reference only, the US\$18.43/ct average rough ruby price achieved by Gemfields in its inaugural ruby auction in June 2014 was from the sale of a mixture of untreated and treated rubies and corundum.

The 2015 PFS is a revision of the previous PFS on Aappaluttoq published in 2011. While initial capex remains at US\$38m, a notable and important refinement of the 2015 PFS has been further assessment and recognition of grade distribution. A review of geological data has provided greater definition in the distribution of ruby and pink sapphire quantities throughout the Aappaluttoq orebody. This work has also allowed for a refinement of the life-of-mine plan. Mining will first focus on the extraction of a high-grade parcel of ore in year one grade 1,396g/t of corundum. As mining progresses, the grade decreases to 438g/t, 274g/t and 310g/t through years two to four. A low-grade period is shown to occur in years five to eight (grading 196g/t, 186g/t, 244g/t and 226g/t), reflecting the natural variation in grade throughout the deposit, the lack of adequate geological information provided by existing drill data to provide for higher confidence resource categories and also potentially higher-grade material. True North anticipates material mined in these years to be upgraded in terms of resource category and grade as mining and further drilling to provide new geological data.

Our valuation of True North Gems uses price assumptions taken from the 2015 PFS and shown in Exhibit 5 below.

Exhibit 5: Ruby and pink sapphire prices and percentages per type sold

	Proportion of production	Prices used	Weighted average of prices used	GEMWorld Report January 2015 0.10 Ct.	GEMWorld Report January 2015 0.25 Ct.	GEMWorld Report January 2015 0.50 Ct.	Valuations 2007 to 2015	Units
Rough Ruby Prices								
Top Ruby Rough Price	1%	\$211.95	\$53	N/A	N/A	N/A	US\$15 to US\$300	US\$/g
Good Ruby Rough Price	10%	\$92.15						
Moderate Ruby Rough Price	22%	\$27.65						
Commercial Ruby Rough Price - not considered for PFS	67%	\$0.00						
Rough Sapphire Prices								
Top Sapphire Rough Price	1%	\$127.17	\$32	N/A	N/A	N/A	US\$5 to US\$100	US\$/g
Good Sapphire Rough Price	10%	\$55.29						
Moderate Sapphire Rough Price	22%	\$16.59						
Commercial Sapphire Rough Price - not considered for PFS	67%	\$0.00						
Polished Ruby Prices								
Top Ruby Polished Price	1%	\$250.00	\$64	US\$300	US\$450	US\$1350	US\$73 to US\$120	US\$/Ct
Good Ruby Polished Price	10%	\$100.00		US\$100	US\$200	US\$515		
Moderate Ruby Polished Price	22%	\$40.00		US\$65	US\$100	US\$175		
Commercial Ruby Polished Price	67%	\$0.00						
Polished Sapphires								
Top Sapphire Polished Price	1%	\$100.00	\$31	US\$200	US\$300	US\$700	N/A	US\$/Ct
Good Sapphire Polished Price	10%	\$50.00		US\$80	US\$100	US\$325		
Moderate Sapphire Polished Price	22%	\$20.00		US\$50	US\$65	US\$125		
Commercial Sapphire Polished Price	67%	\$0.00						

Source: True North Gems 2015 PFS

Other operating and valuation assumptions taken from the 2015 PFS are shown in Exhibit 6.

Exhibit 6: Valuation assumptions

Aappaluttoq ruby project	Production results	Units
Tonne processed	190	Tonnes (000s)
Waste rock mined	2969	Tonnes (000s)
Stripping ratio	16	ratio (waste:ore)
Mine life	9	Years
Total corundum recovered from mine	52.7	Grams (m)
Rough gemstones recovered from operations	17.5	Grams (m)
Average ruby and pink sapphire price: US\$ pct.	7	US\$ per ct.
Estimated LOM mine revenue	573	US\$m
Economic scenario results		
All-in cash cost per equivalent rough ct. recovered	3	US\$ per ct.
Total operating costs	109	US\$m
Total project capital cost (initial and sustaining)	25	US\$m
Total sustaining capital costs	5	US\$m
Total pre-tax cash flow from operations	454	US\$m
Total post tax cash flow	287	US\$m

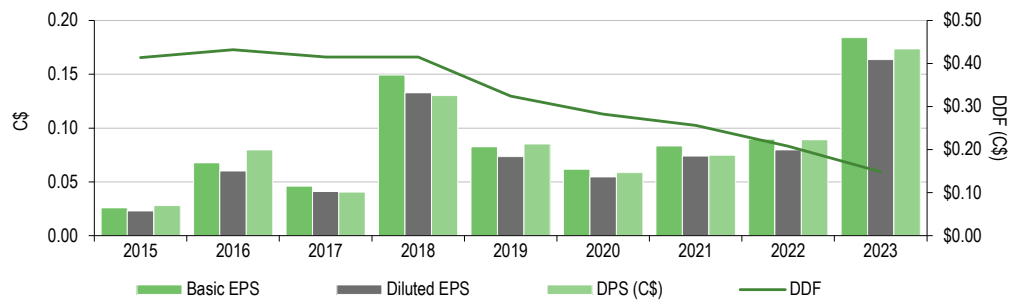
Source: True North Gems 2015 PFS

Our financial model also includes an adjustment for True North's capital lease agreement with its partner LNSG. This capital leasing agreement, a part of True North JV agreement, amortises C\$18m in development capital over the life of mine. As per the 2015 PFS, we have accounted for this agreement as a separate cost line item amounting to C\$96 per tonne milled over life of mine.

Valuation: 123% upside using conservative pricing and new PFS

If True North Gems executes the Aappaluttoq mine as planned and pays out all its free cash in the form of theoretical dividends, we estimate that the dividend stream to investors in 2015-21 could be worth C\$0.41 in current money terms (using a discount rate of 10% to reflect general equity risk). This increases to C\$0.41 in FY16, as shown in Exhibit 7. The variability in earnings is due to the variability in deposit grade throughout the mine life. The high discount currently applied to True North Gems reflects, in our view, a lack of consensus estimates of the company's value, a lack of industry peers and, importantly, a lack of binding sale agreements to underpin revenue forecasts.

Exhibit 7: Edison's estimate of EPS, diluted EPS, DPS and dividend discount flow (DDF)



Source: Edison Investment Research

An alternative perspective on Aappaluttoq's value is that LNS Greenland's purchase of 27% of the project for C\$26m implies a value for 100% of the project of C\$96m, or C\$0.21 per share for True North's eventual 73% interest.

Sensitivities

True North, in conjunction with LNS Greenland, is now constructing the Aappaluttoq mine and has navigated all pre-development obstacles (eg reserve calculation, permitting, environmental studies, financing etc). As stated, the main risks associated with True North Gems relate to its ability to finalise agreements for the sale of its rubies and pink sapphires, as well as increasing market awareness of Aappaluttoq stones. Our discussions with management indicate that sale agreements on selling Aappaluttoq's stones with third parties are well advanced. As well as the discussions being with parties close to the CEO, which should provide some support to the claims, the appointment of Hayley Henning as VP of marketing also brings an already established network of industry jewellery manufacturers (albeit geared towards tanzanite). We await True North's announcement of these agreements to de-risk our valuation and provide support to the ruby and pink sapphire prices used in the 2015 PFS. A summary of these recent management and board appointments is provided below.

Key management and board appointments

New appointments of established gemstone industry executives support True North's ambition to become a leading ethical supplier of rubies and pink sapphires to the gemstone and jewellery manufacturing industry. The task of securing offtake partners for its stones lies predominantly with the ability of the following individuals:

Nick Houghton, CEO and president: True North's CEO and president has worked in the jewellery manufacturing and gemstone exploration industry for over 30 years. During his career Mr Houghton held senior management positions at both retail and wholesale gemstone companies, before establishing his own operation, Elan Diamonds, in 1994. In 2000, he directed the merger of Elan Diamonds and Canadian Diamond Cutters to form Cadium Investments, becoming president and director of the Vancouver-based polished gemstone marketing company.

Hayley Henning, VP marketing: Hayley Henning was executive director of the Tanzanite Foundation, headquartered in New York. During her tenure she was responsible for linking jewellery manufacturers and designers with suppliers of tanzanite, to promote the ethical image of tanzanite and grow the tanzanite market. Her role at Tanzanite, and importantly the network she has built up over her career, should bolster True North's ability to secure offtake partners for Aappaluttoq material and raise market awareness of the company's Arctic-sourced rubies and pink sapphires.

Ray Simpson, Director: appointed to True North's board of directors, Mr Simpson has 20 years' experience in the diamond industry. He currently works for a Switzerland-based alternative investment advisor specialising in diamond-related investment and financial products. His previous positions include roles at Dominion Diamond Corp (formerly Aber Resources, subsequently Harry Winston Diamond Corporation). He started his career at De Beers, with responsibilities including mine resource evaluation, supply and demand forecasting and consumer marketing.

Following discussions with management, we have included a C\$12m loan repayable over nine years (the current mine life at Aappaluttoq) bearing an interest rate of 8%. The following exhibit provides an indication of EPS and year-end cash at varying levels of revenue.

Exhibit 8: Indication of FY15 EPS and year-end cash at varying revenue levels						
FY15 (C\$m) revenue	0.0	5.0	10.9	15.0	20.0	25.0
NPV (C\$)	0.39	0.40	0.41	0.42	0.44	0.45
EPS (basic & diluted) (C\$)	(0.01)	0.01	0.03	0.04	0.05	0.07
End FY15e cash 9C\$m)	3.6	5.7	8.3	10.1	12.3	14.5

Source: Edison Investment Research. Note: C\$10.9m revenue case equates to our base case FY15 forecast.

Other quantitative and qualitative risks specific to True North and the Aappaluttoq mine are shown below.

Exhibit 9: Sensitivity to percentage changes in net revenue						
% change in annual net revenue over LOM	-20	-10	0	10	20	30
DDF	0.30	0.36	0.41	0.47	0.53	0.58

Source: Edison Investment Research

Exhibit 10: Sensitivity to discount rate (30% discount rate = TGX share price on 8 April 2015)						
Sensitivity to discount rate	0	5	10	15	20	30
DDF	0.70	0.53	0.41	0.33	0.27	0.19

Source: Edison Investment Research

Financials

Capex met via JV funding and project cash flows

True North Gems has sold a total of 27% of its operating subsidiary (Aappaluttoq is owned by True North Gems Greenland – TNGG) to its JV partner LNS for C\$26m. LNS will realise its 27% interest when it completes mine construction during Q315. Of the C\$26m invested by LNS, C\$18m is subject to a capital lease agreement with True North. We have followed the same method used in the 2015 PFS by including this as an operating cost item (amounting to C\$96/tonne of mill feed over LOM) in our financial model. A further C\$5m capital loan was provided to TNGG and used for capital and construction costs. The equity portion of Aappaluttoq's mine financing was only C\$3m via the issue of 28.6m True North shares (also to LNS). The C\$4m balance of the C\$38m capex estimate to build Aappaluttoq is to be satisfied through an additional loan and by vendor finance arrangements for certain pieces of long-lead time processing equipment. There remains uncertainty surrounding the FY15 revenue figure due to a lack of concrete sale agreements for Aappaluttoq stones. We have confidence in the abilities of both True North's CEO and newly-appointed head of marketing (Hayley Henning) to secure such agreements (a number of buyers are lined up and terms are being finalised), and note that adjusting our FY15 revenue figure by increments of C\$5m changes our base case valuation by only C\$0.01 or 3%. We have also had a conversation with management where they highlighted that discussions are taking place over additional funding to assist with working capital and to ensure sufficient capital reserves are in place to support working capital requirements through the first year of Aappaluttoq's operation. To reflect this in our model we have included a notional C\$10m loan repaid over five years (from 2017) using an assumed 9% interest rate. We will refine our valuation as True North announces the finalised terms of this financing.

Dividends: Timing and yield dependent on sale data

We note management's intention to pay a dividend in the future. However, a formal dividend policy has yet to be announced. We expect True North to declare its dividend policy once the Aappaluttoq mine has bedded in and cash flows from marketing its gemstones stabilise. On the basis of our forecast assumptions, the decision to pay dividends could occur during 2016.

Exhibit 11: Financial summary

	C\$'000s	2012	2013	2014e	2015e	2016e	2017e
December		IFRS	IFRS	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS							
Revenue		0	0	0	10,931	32,246	31,928
Cost of Sales		0	0	0	(1,550)	(6,936)	(9,012)
Gross Profit		0	0	0	9,381	25,310	22,916
EBITDA		(1,144)	(1,593)	(3,113)	8,631	23,097	20,725
Operating Profit (before amort. and except.)		(1,144)	(1,593)	(3,118)	7,737	22,203	19,831
Intangible Amortisation		0	0	0	0	0	0
Exceptionals		19	0	0	0	0	0
Other		(20)	0	0	0	0	0
Operating Profit		(1,146)	(1,593)	(3,118)	7,737	22,203	19,831
Net Interest		8	(57)	(50)	(14)	(560)	358
Profit Before Tax (norm)		(1,136)	(1,650)	(3,168)	7,723	21,644	20,189
Profit Before Tax (FRS 3)		(1,138)	(1,650)	(3,168)	7,723	21,644	20,189
Tax		(1)	22	0	0	(841)	(5,399)
Profit After Tax (norm)		(1,138)	(1,628)	(3,168)	7,723	20,803	14,789
Profit After Tax (FRS 3)		(1,139)	(1,628)	(3,168)	7,723	20,803	14,789
Average Number of Shares Outstanding (m)		198.9	233.7	295.8	297.2	297.2	297.2
EPS - normalised (c)		(0.6)	(0.7)	(1.1)	2.6	7.0	5.0
EPS - normalised and fully diluted (c)		(0.0)	(0.0)	(0.0)	2.6	7.0	5.0
EPS - (IFRS) (c)		(0.6)	(0.7)	(1.1)	2.6	7.0	5.0
Dividend per share (c)		0.0	0.0	0.0	0.0	0.0	0.0
Gross Margin (%)		N/A	N/A	N/A	85.8	78.5	71.8
EBITDA Margin (%)		N/A	N/A	N/A	79.0	71.6	64.9
Operating Margin (before GW and except.) (%)		N/A	N/A	N/A	70.8	68.9	62.1
BALANCE SHEET							
Fixed Assets		22,474	24,467	26,047	34,738	33,844	32,950
Intangible Assets		0	0	0	0	0	0
Tangible Assets		22,474	24,467	26,047	34,738	33,844	32,950
Investments		0	0	0	0	0	0
Current Assets		137	788	6,223	14,827	36,411	3,864
Stocks		0	0	0	595	570	741
Debtors		29	18	0	5,391	2,650	2,624
Cash		4	271	5,724	8,343	32,692	0
Other		104	499	499	499	499	499
Current Liabilities		(1,105)	(1,390)	(2,084)	(2,212)	(2,655)	(2,825)
Creditors		(1,092)	(1,390)	(2,084)	(2,212)	(2,655)	(2,825)
Short term borrowings		(13)	0	0	0	0	0
Long Term Liabilities		(573)	(1,113)	(6,113)	(15,557)	(15,001)	(12,446)
Long term borrowings		0	(894)	(5,894)	(15,339)	(14,783)	(12,227)
Other long term liabilities		(573)	(219)	(219)	(219)	(219)	(219)
Net Assets		20,933	22,753	24,073	31,796	52,599	21,542
CASH FLOW							
Operating Cash Flow		(662)	(1,423)	(2,400)	2,773	26,305	20,751
Net Interest		8	(57)	(50)	(14)	(560)	358
Tax		0	0	0	0	(841)	(5,399)
Capex		(1,096)	(2,091)	(1,585)	(9,585)	0	0
Acquisitions/disposals		29	50	0	0	0	0
Financing		1,047	3,786	4,488	0	0	0
Dividends		0	0	0	0	0	0
Net Cash Flow		(674)	265	453	(6,826)	24,905	15,710
Opening net debt/(cash)		(678)	9	623	170	6,996	(17,909)
HP finance leases initiated		0	0	0	0	0	0
Other		(13)	(879)	0	0	0	(0)
Closing net debt/(cash)		9	623	170	6,996	(17,909)	(33,618)

Source: True North Gems accounts, Edison Investment Research

Contact details	Revenue by geography
Suite 700 1055 W. Georgia St. PO Box 1108, Vancouver B.C. Canada +1 604 687 8055 www.truenorthgems.com	N/A

CAGR metrics	Profitability metrics	Balance sheet metrics	Sensitivities evaluation
EPS 2012-16e	N/A ROCE 15e	N/A Gearing 15e	22.0% Litigation/regulatory ○
EPS 2014-16e	N/A Avg ROCE 2012-16e	N/A Interest cover 15e	570x Pensions ○
EBITDA 2012-16e	N/A ROE 15e	24.3% CA/CL 15e	6.7x Currency ◐
EBITDA 2014-15e	N/A Gross margin 15e	85.8% Stock days 15e	20 Stock overhang ●
Sales 2014-16e	N/A Operating margin 15e	70.8% Debtor days 15e	180 Interest rates ◐
Sales 2012-16e	N/A Gr mgn / Op mgn 15e	1.2x Creditor days 15e	4.3 Oil/commodity prices ●

Management team	
President & CEO: Nicholas Houghton Mr Houghton is an accredited gemologist and is president and director at True North Gems, with more than 30 years' international experience in the jewellery manufacturing and gemstone exploration industry.	Chairman: Robert Boyd Mr Boyd is a mining executive with more than 35 years' experience in exploration, executive-level management, corporate finance and corporate governance.
Director: Ray Simpson Mr Simpson is currently an executive VP of Dominion Diamond Corp, formerly known as Aber Resources and subsequently Harry Winston Diamond Corporation. He has over 20 years' experience in the diamond industry.	VP of marketing & development: Hayley Henning Ms Henning has 20 years' marketing and corporate social responsibility experience in the gemstone and jewellery industry. She has been executive director of the Tanzanite Foundation, the marketing division of TanzaniteOne Mining, for several years.

Principal shareholders	(%)
Halman-Aldubi Provident and Pension Funds	13.75
LNS-Group	9.60
Board of Directors holdings	2.52

Companies named in this report
Gemfields, De Beers, Richland Resources, Dominion Diamond Corp.

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