



Behind the Pebble Mine: Hunter Dickinson Inc.

The Canadian Mining Company You've Never Heard Of

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Executive Summary

Investors are strongly advised to fact-check the information published by Northern Dynasty Minerals (TSX: NDM; NYSE: NAK) about Hunter Dickinson Incorporated and its affiliated companies. Hunter Dickinson Incorporated (HDI) is the company behind Northern Dynasty and the proposed Pebble Mine in Alaska.

Northern Dynasty represents a level of risky speculative investment unprecedented even amongst other junior mining companies. Investors should take the cautionary statement at the beginning of any and all Northern Dynasty presentations very seriously indeed.¹

Serious discrepancies exist between the information buried in company corporate filings with securities regulators and the information provided by Northern Dynasty and HDI to the public. The costs externalized to lenders, communities and regulators can exceed the economic benefits of the mining project. The long-term outcomes of HDI projects have not, in general, been good news for the companies that came after them.

Given the determined opposition in Alaska to the Pebble Mine over almost two decades, MiningWatch Canada decided to analyze the risks to potential long term investors in Northern Dynasty and the Pebble Mine, based on a review of 19 past and current projects promoted by the Hunter Dickinson Group of companies.

The report examines publicly available information and corporate filings of most HDI-affiliated public companies both historic and current.

The largest junior mining company people have never heard of

Since the mid-1980s, HDI has set up public companies like Northern Dynasty to advance exploration projects, then installed and compensated their own directors and key management in these companies, and entered into contracts with their own companies to supply services to the public companies. HDI companies then report to investors through consolidated financial statements which means that any transfer pricing and other financial strategies (that may or may not exist) among the subsidiaries are not visible to investors. HDI, its directors, subsidiaries and affiliates also make loans to these companies, and purchase shares, options and warrants in each other.

Key management personnel and directors of many HDI companies overlap, and are also employees of HDI or one of its subsidiaries. Robert Dickinson, Ronald Thiessen and Russell Hallbauer, together with their families, own 50% or more of HDI.² HDI directors and managers are well-remunerated for their involvement, even when the company involved is, in fact, producing little for shareholders, no revenues for governments³ and catastrophic challenges for the communities it affects.

Among the findings about other HDI affiliated projects:

- HDI is currently associated with only one operating mine: the Gibraltar Mine near Williams Lake, a marginal porphyry copper-molybdenum mine operated by Taseko Mines Ltd.⁴ It was re-opened in 2004 with substantial government support and continues to operate, although burdened with debt⁵, with an under-funded reclamation bond⁶ and on-going government help.
- Any other mines HDI affiliates have attempted to operate have not succeeded in the long run (Bokoni⁷, Tirisano⁸, Campo Morada⁹, Burnstone¹⁰, Hollister¹¹).
- Of the 19 mine projects we examined for which HDI claims affiliation and success:
 - Four mines went into receivership when commodity prices dropped, leaving creditors holding the bag (Hollister Mine, Burnstone Mine, Bokoni Mine and Rockwell Diamonds' alluvial mines).

- Four current projects are being fought – and will continue to be fought – ferociously by the communities affected (Ike¹², Sisson¹³, Florence Copper¹⁴ and Pebble). If New Prosperity is included, there are five.
- Of current public HDI projects, four appear to be uneconomic at current commodity prices (Sisson¹⁵, Ni-Black¹⁶, Olza¹⁷ and Ike¹⁸).
- Pebble has not yet produced a feasibility study; Anglo-American walked away after spending US\$595 million on the feasibility study. The project was also abandoned by Rio Tinto, and earlier by Mitsubishi. A planned option agreement with First Quantum Minerals (TSX:FM, NYSE:FQVLF) for Pebble, if concluded, will sell 50% of the project to a subsidiary of FM for US\$1.5 billion, considerably less than the project needs for development.¹⁹
- Large under-funded liabilities for potential catastrophic failures of tailings technology exist for investors at Taseko's Gibraltar Mine²⁰ and Florence Copper²¹, as they may at Northcliff's Sisson Mine.
- In four others, the company that bought the HDI project took serious losses on it a few years after its purchase (Golden Bear²², Mt. Milligan²³, Bokoni²⁴, Campo Morado²⁵).
- All HDI projects that reached development appear to have expanded beyond the initial permitted footprint (see following case studies)

The accumulated earnings surplus/deficit of HDI-affiliated companies is concerning. Even for a junior mining company built on negative earnings, HDI-affiliated firms have taken on extraordinary accumulated losses. Most of that loss is attributable to Northern Dynasty (NDM). The NDM deficit at the end of the third quarter of 2017 was CAD \$459 million, leaving total equity at \$144 million with over 304 million shares issued²⁶. An infusion of cash (\$37.5 million US) from First Quantum at the end of December 2017, due to a proposed option agreement, is restricted for use in permitting only.

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Introduction

MiningWatch Canada is a pan-Canadian initiative supported by environmental, social justice, Indigenous and labour organisations from across the country. It addresses the urgent need for a co-ordinated public interest response to the threats to public health, water and air quality, fish and wildlife habitat, and community interests posed by irresponsible mineral policies and practices in Canada and around the world.

Over the past fifteen years, MiningWatch has watched the efforts of Northern Dynasty Minerals, a Canadian company incorporated in BC, to develop the Pebble Mine, a copper-gold mine in Alaska despite the serious opposition of the majority of Alaskans.

We decided to focus on the economic risks for potential investors in Northern Dynasty and the Pebble Mine, based on a review of past and current projects promoted by the Hunter Dickinson Group of companies. Hunter Dickinson Incorporated (HDI) is the company behind Northern Dynasty and the Pebble Mine.

There are compelling reasons the Pebble Mine should never go ahead based on its economic impacts on the salmon fishery, on the environment, on the affected peoples, but that is not the topic of this report. This report examines the companies and projects in which HDI claims success and tells the story that is often left out. What were the externalized costs to lenders? To affected communities? To governments? How has the project turned out so far?

How does what the company claims jibe with the larger story?

This critique does not include all the instances in which HDI companies acquired claims others had prospected, then explored, drilled, raised investments and debt, and found nothing. Nor does it explore in detail the workings of the subsidiaries set up under these companies (in the case of the Great Basin Gold group, 22 such companies). The public companies report to investors using consolidated financial statements, and so the information is not available.

[A note about style: comments in italics are quotations from other sources, and are attributed in the end-notes.]

What HDI – the company behind Northern Dynasty²⁷ – says about itself:

Hunter Dickinson Inc. (HDI) is a diversified, global mining group with more than 25 years of mineral development success. From its head office in Vancouver, Canada, HDI applies its unique strengths and capabilities to acquire, develop, operate and monetize mineral properties that provide consistently superior returns to shareholders.

HDI is structured as a private mining group that provides management and technical services to a diverse portfolio of high-quality and high-growth mineral companies and properties.

HDI sources and acquires mineral assets with significant potential for value growth. It has the technical capabilities and management experience to consistently and rapidly advance those properties through exploration, development, permitting, and construction and into stable and profitable mine operations.

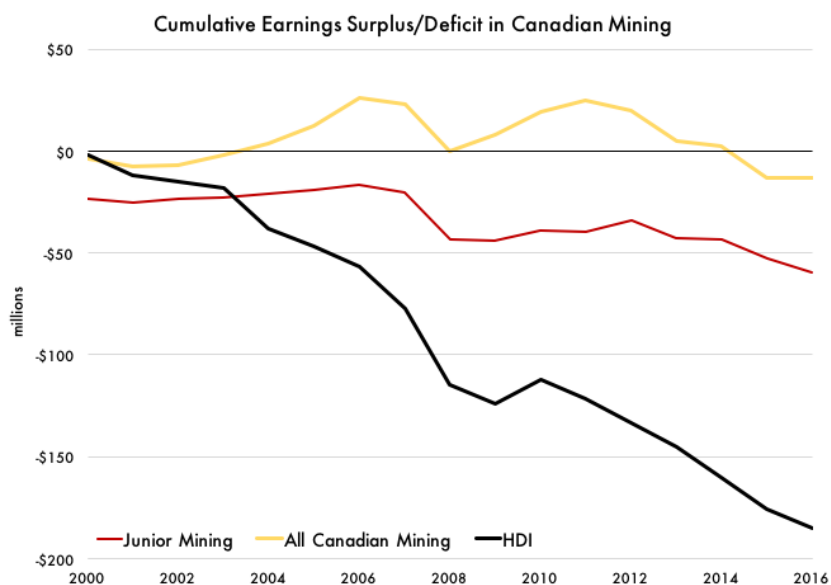
HDI is characterized by the drive and commitment of its founders, senior management and multi-disciplinary team. It is known for its technical excellence, experience and reliability. And it is passionate about bringing Responsible Mineral Development to life in creative ways for the benefit of shareholders, partners and communities.²⁸

Our research tells a different story.

We examined publicly available information and corporate filings of almost all the public companies for which HDI claims success in their corporate presentations and on the Northern Dynasty websites. The information is summarized in this report.

- The public companies that HDI purports to serve are, in fact, companies over which HDI directors and staff exercise considerable control. Each of the companies has a number of subsidiaries which means that any transfer pricing that may exist among company subsidiaries and affiliates is invisible to investors, that could make liability for the damages the mines may cause to the environment and affected communities difficult to attribute, and could make the assessment and collection of taxes - if the mine were to go ahead- very difficult. As an example, Northern Dynasty has 13 different companies 100% owned by Northern Dynasty, including the Pebble Limited Partnership and Pebble Mines Corp. which is incorporated in Delaware (a known tax haven). First Quantum Minerals is currently seeking 50% ownership of these latter two subsidiaries through its Framework Agreement.
- HDI is currently associated with only one operating mine: the Gibraltar Mine near Williams Lake, a marginal copper-molybdenum mine operated by Taseko Mines Ltd.²⁹ After Boliden operated the mine sporadically for a number of years, the mine was closed and sold to Taseko for very little in 1999. It was re-opened in 2004 with substantial government support and continues to operate, although burdened with debt³⁰, with an under-funded reclamation bond³¹ and on-going government help. Any other mines HDI affiliates have attempted to operate have not succeeded in the long run (Bokoni, Tirisano, Campo Morada, Burnstone, Hollister).³²
- Of the mine projects for which HDI claims affiliation and success:
 - Four mines went into receivership when commodity prices dropped, leaving creditors holding the bag (Hollister Mine, Burnstone Mine, Bokoni Mine and Rockwell Diamonds' alluvial mines).
 - One was rejected twice in the final federal environmental assessment process, and would usually have been written off by the company. Instead, Taseko launched three lawsuits against the federal government.³³ The Federal Court of Canada dismissed the Taseko claims with costs on December 5, 2017.³⁴
 - Four current projects are being fought – and will continue to be fought – ferociously by the communities affected (Ike³⁵, Sisson³⁶, Florence Copper³⁷ and Pebble). If New Prosperity were included, there are five.
 - Of current public HDI projects, four appear to be uneconomic at current commodity prices (Sisson³⁸, Ni-Black³⁹, Olza⁴⁰ and Ike⁴¹).
 - Pebble has not yet produced a feasibility study; Anglo-American walked away after spending US\$595million on the technical report just as the study was nearing completion. The project was also abandoned by Rio Tinto, and earlier by Mitsubishi. A planned option agreement with First Quantum Minerals (TSX:FM) for Pebble, if concluded, will sell 50% of the project to a subsidiary of FM for US\$1.5billion, considerably less than the project needs for development.⁴²
 - Large under-funded liabilities for potential catastrophic failures of technology exist for investors at Taseko's Gibraltar Mine⁴³ and Florence Copper⁴⁴, just as they might at Northcliff's Sisson Mine and – likely – at Pebble.
 - In four others, the company that bought the HDI project took serious losses on it a few years after its purchase (Golden Bear⁴⁵, Mt. Milligan⁴⁶, Bokoni⁴⁷, Campo Morado G⁴⁸)

- The accumulated earning surplus/deficit of HDI-affiliated companies is concerning. Even for a junior mining company built on negative earnings, HDI-affiliated firms have taken on extraordinary accumulated losses even within an industry predicated on losing money. Most of that loss is attributable to NDM.



Dr. D.T. Cochrane⁴⁹ writes;

The lines in this figure trace the average cumulative surplus/deficit of all Canadian mining companies, a subset comprised of junior mining companies and the total cumulative deficit of HDI-affiliated companies at the end of 2016.⁵⁰ In years when the group posts positive net earnings, the line moves up. When the group posts losses, the line moves down. The figure shows that cumulative losses for all three groups have piled up over recent years, with Canadian mining as a whole moving from a surplus into a deficit. The average Canadian mining company lost \$19 million from 2011 to 2016. The average junior mining company lost \$38 million and the HDI-affiliated companies lost a combined \$64 million. Companies that were previously affiliated with HDI, but are no longer have not fared any better. Between 2011 and 2016, post-HDI publicly traded companies increased their deficit to \$474 million.⁵¹

HDI and Northern Dynasty

Northern Dynasty Mines is the public company created by HDI that is charged with bringing the Pebble Mine to a stage where a major mining company would either purchase it outright or joint venture with HDI to build it. HDI has held the project since October 2001 and has now attempted every strategy available to them to find a major willing to risk this project. They have not succeeded; Anglo American, Rio Tinto and Mitsubishi have all invested heavy sums and then walked away.

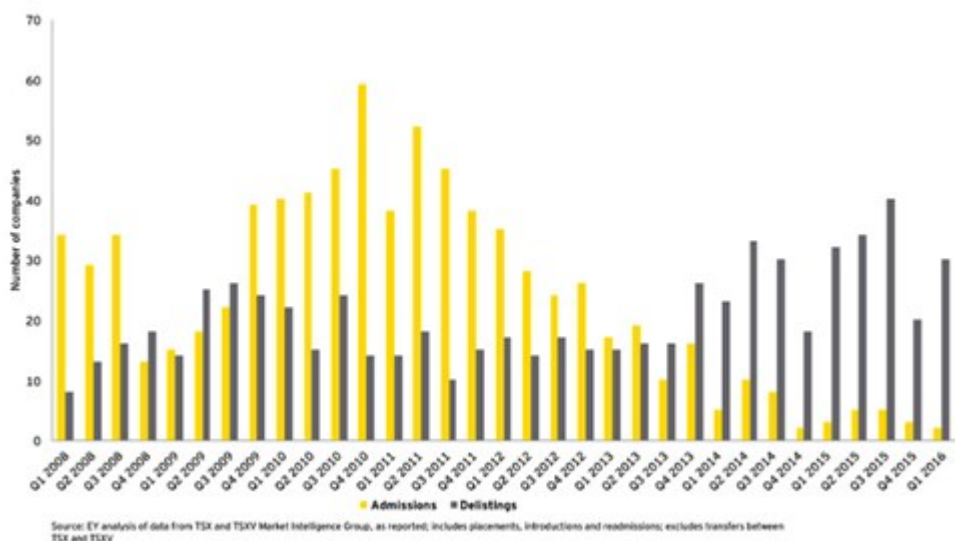
In December 2017, Northern Dynasty and First Quantum Minerals announced a “Framework Agreement” to negotiate an Option Agreement, where by First Quantum would progressively buy-in to 49.5% of the Pebble Limited Partnership and 50% of NDM subsidiary Pebble Mine Corporation, over a four-year period, by providing tranche payments of US \$37.5Million to assist with permitting. The first payment was due five days after the signing of the Framework Agreement, but others are dependent on “progress” in negotiating the Option Agreement and on the permitting process. The total amount FM would pay for effectively one half of the Pebble Partnership and Pebble Mines Limited is US\$1.5billion. This amount is

well under the estimated capital costs required to build the proposed mine. Further, the Agreement appears to restrict NDM from spending the money on matters other than permitting for Pebble, and also to restrict NDM's ability to solicit other partners.⁵²

By the end of September 2017, NDM had a total of 304,018,817 shares issued worth CAD\$509,907,000 but the company had an accumulated deficit of CAD\$459,588,000.⁵³ This meant that the company equity was in fact only CAD\$144,404,000.⁵⁴ There was no debt.

In the last decade, junior miners around the world have faced consistently falling commodity prices and a shortage of capital willing to invest in mining projects. In many jurisdictions, such as South Africa, the regulatory environment has become more complex and difficult. In others, resistance by indigenous and other communities trying to protect salmon, grizzly bears, aquifers, and heritage have made it impossible for new mines to proceed. Droughts and floods related to climate change have had their own impacts.

TSX and TSXV mining admissions and delistings since 2008



Source: Patel, Jay. "Canadian Mining Eye – Q1 2016 – Joiners and Leavers." [Ernst & Young, 18 Aug. 2016.](#)

There is no doubt that HDI directors are admired by their industry peers and that they have received many awards for their work. However, the junior mining industry, of which HDI is a part, is an industry that thrives on hype and groundless optimism. Success is completely dependent on commodity prices, accessible risk capital, supportive regulatory environments, the ability to get a social licence and simple good luck.

Hunter Dickinson's reputation was built in the boom years of the junior mining cycle, and those days are gone. HDI companies were affected by this context as much or more than other juniors.

As noted previously, HDI is currently involved with only one actual operating mine: the Gibraltar Mine near Williams Lake, a marginal copper-molybdenum mine operated by Taseko Mines. Gibraltar was re-opened in 2004 and also initiates a number of risky development projects. Taseko says: *Taseko's strategy has been to grow the Company by utilizing cash flow from the Gibraltar Mine to assemble and develop a pipeline of projects.*⁵⁵

What do we know about the Hunter Dickinson Group of companies?

Although HDI is a private company and therefore not required to provide information for investors on SEDAR.com⁵⁶, we can know the company by its works.

HDI functions by establishing public companies to advance exploration projects, installs their own directors and key management in these companies, and sets up contracts with their own companies to supply services to the public companies. HDI then reports to investors through consolidated financial statements which can render any transfer pricing and other financial strategies (that may or may not exist) among the subsidiaries invisible to investors. HDI, its directors and subsidiaries also make loans to these companies, and purchase shares, options and warrants in each other.

In 2018, the HDI directors are:

- Russell Hallbauer (director)
- Robert Dickinson (chairman)
- Ronald Thiessen (CEO)
- David J. Copeland (director, project development)
- Marchand Snyman (COO)

We know that the key management personnel and directors of many HDI companies overlap, and are also employees of HDI or one of its subsidiaries. Robert Dickinson, Ronald Thiessen and Russell Hallbauer, together with their families, own 50% or more of HDI.⁵⁷ Other previous and current HDI directors: Scott Cousens, David Copeland and Barry Coughlan, have been involved in most of the HDI companies, often in executive positions. Other recurring names include: Rene Carrier, Trevor Thomas, Jeffrey Mason, Gordon Fretwell and Marchand Synman. A list of their HDI-affiliated directorships can be found in Appendix C.

We also know that HDI directors and managers are well-remunerated for their involvement, even when the company involved is, in fact, producing little for shareholders, no revenues for governments and catastrophic challenges for the communities it affects.

We use 2015 as an example:

Payments to HDI Key Management Personnel and Directors 2015

Key management personnel (“KMP”) are those persons that have the authority and responsibility for planning, directing and controlling the activities of the Company, directly and indirectly, and by definition include all directors of the Company. Figures are in Canadian dollars. The year 2015 has been chosen as it marks the shift from a number of HDI historic companies to its current affiliates.

	KMP fees paid directly by the company	KMP Fees paid by HDI/HDSI	HDI Services ⁵⁸
Northern Dynasty ⁵⁹	2,700,000 ⁶⁰	2,800,000 ⁶¹	5,010,000
Amarc ⁶²	57,000	212,000	2,099,000
Northcliff ⁶³	85,000	879,000	2,055,000
Rathdowney ⁶⁴	803,002	785,647	2,388,641
Heatherdale ⁶⁵	75,393 ⁶⁶	301,335	592,000
Taseko ⁶⁷	???	1,063,000 ⁶⁸	2,407,000

We know that HDI directors are generous in their donations to politicians in British Columbia, Arizona and other jurisdictions in which they operate.⁶⁹ They practice philanthropy and get recognition and tax deductions with pet projects such as the Britannia Mining Museum, Mining Education programs, hospitals and Fortius Health. (See Appendix E)

The associations which represent mining interests, such as the Mining Association of British Columbia and the Association of Mineral Exploration of British Columbia, have their support, influence and sometimes cash.⁷⁰ We know that HDI aggressively negotiates with regulators and community leaders and litigates when it is crossed.

Northern Dynasty – Pebble Project, Alaska⁷¹

Northern Dynasty proposes to develop the copper-molybdenum-gold Pebble Mine in southwestern Alaska, within the Bristol Bay watershed.

- The Pebble Mine is fiercely opposed by a majority of Alaskans and still needs to be permitted not only by the federal EPA, but by the State of Alaska.
- Whether the mine is economically feasible has not been determined. In February 2017, Kerrisdale Asset Management claimed that it was “worthless”, as the capital costs of building the mine were prohibitively expensive.⁷² NDM has countered this allegation by attacking the messenger: Kerrisdale is a short seller, and stands to gain from a drop in NDM shares.
- There are as yet no NI 43-101 compliant reserves for Pebble, only “mineral resources” and even they are out-of-date. The last detailed technical report was a pre-feasibility study prepared by Wardrop in 2011. The costs for the estimates were based on information collected in 2008⁷³. An “update” of this study in 2014, led by HDI’s David Gaunt found that “*Of the total resource, the Measured category represents approximately 5%, the indicated category represents 55% and the inferred category represents approximately 40%...Inferred mineral resources are considered to be too speculative to allow the application of technical and economic parameters to support mine planning and evaluation of the project. Under Canadian rules, estimates of Inferred Mineral Resources may not form the basis of feasibility or pre-feasibility studies, or economic studies except for Preliminary Economic Assessments as defined under 43-101. It cannot be assumed that any part of the Inferred Resource will ever be upgraded to a higher category.*”⁷⁴ [emphasis added]

- In the 2011 Technical Report, Wardrop estimated initial capital costs to build the mine, process plant, secondary gold plant, roads, pipelines, power supply, port and other infrastructure at US\$5.76 million.⁷⁵ The report assumed that over \$1.3 million in infrastructure would be paid for by the State of Alaska and reduced the CAPEX to \$4.7 million.
- A smaller mine plan was announced by Pebble Partnership CEO Tom Collier on October 5, 2017, and this plan is now the basis of the permitting application to the Army Corps of Engineers, submitted December 22. It is intended that the plan would mine the mineral resource closest to the surface, would not use cyanide and would limit the environmental damage. However, the company continues to use the larger resource estimates (and which would therefore have a much larger mine footprint) to promote the project to investors.⁷⁶
- There are no publically available revised capital costs for the “smaller” mine plan. The company plans to release a full feasibility study at the same time as permitting is complete.⁷⁷
- The capital cost for the mine is likely to be significantly higher than currently considered. A study by Canada’s Export Development Corporation in 2016⁷⁸ found that “Capital cost over-runs [for mines] were endemic”. The study looked at 78 projects and found that since 2008, the average capital cost over-run [CO] was 40 %.
- Major companies that have been interested in NDM have walked away. Mitsubishi, which entered in February 2007 with approximately 9.1% of the company, sold the entirety of its equity stake in March 2011. Rio Tinto held almost 20% of the stock after June 2006; but in April 2014, donated the entirety of its holdings to various Alaskan charities after a strategic review undertaken earlier in the year. In July 2007, Anglo American and NDM established the Pebble Partnership. To earn a 50% interest, they were required to commit \$1.5 billion to a feasibility study. However, after spending US\$573 million, in December 2013, they withdrew from the project, before the feasibility was completed. The potential Option Agreement with First Quantum is only for a total of US\$1.5 billion, in return for approximately 50% of the project.

What is the role of Hunter Dickinson in Northern Dynasty?

Northern Dynasty (NDM of the Toronto Stock Exchange and NAK on the New York Stock Exchange) is an HDI company.

Northern Dynasty was incorporated in Vancouver in 1985 by Robert Hunter, Robert Dickinson and others and engaged in a number of unsuccessful exploration projects before it bought the deposit known as Pebble in 2001.

By 2005, the company had defined a 4.58 billion ton deposit, known as Pebble West. Subsequent exploration activity between 2004 and 2009 defined the Pebble East zone. The company now claims it has almost 12 billion tons of measured and indicated resources of copper, gold, molybdenum and silver.

Being a Hunter Dickinson company means that the public company (Northern Dynasty) is used to raise money from shareholders to fund the salaries, bonuses, exploration work, administration, and all the other expenses incurred on a mineral exploration project. The shareholders also assume any debts that the company may incur and elect the directors.

Hunter Dickinson Services Inc. (“HDSI”) is a private company that provides geological, engineering, environmental, corporate development, financial, administrative and management services to the Group

*and its subsidiaries at annually set rates pursuant to a management services agreement. The annually set rates also include a component of overhead costs such as office rent, information technology services and general administrative support services. HDSI also incurs third party costs on behalf of the Group which are reimbursed by the Group at cost. Several directors and other key management personnel of HDSI, who are close business associates, are also key management personnel of the Group.*⁷⁹

In the case of Northern Dynasty that means:

- Hunter Dickinson directors and key management run the show and determine how shareholder equity will be spent. For example, when it was determined that a “multi-dimensional strategy” was required to address the EPA’s “preemptive regulatory action under Section 404c of the Clean Water Act,” US \$15.1 million was allocated to the legal team from Steptoe and Johnson (led by Pebble Partnership CEO Tom Collier) if they had a favourable outcome or settlement from the EPA.⁸⁰ When the EPA settled the lawsuits with NDM in May 2017, that amount may have fallen due⁸¹.
- The NDM Chairman (Robert Dickinson), the CEO (Ronald Thiessen), the CFO (Marchand Snyman) and almost all the senior management are actually employed by Hunter Dickinson Service Inc. - a subsidiary of HDI. HDSI invoices NDM for their salaries, bonuses and shares annually. They do other work with HDI affiliates at the same time as they work for NDM.
- As of September 30, 2017, all non-executive officers, the Chair, CEO and Senior VP of the Pebble Limited Partnership are paid directly by Northern Dynasty. Some of the NDM directors (Milau, Pickering, Balakrishnan, Decker and Keep) are also paid directly by NDM.
- The senior management of NDM is entirely made up of HDI employees, who also work for other HDI mining projects such as Northcliff, Amarc and Taseko projects.⁸²
- HDI companies report to investors through consolidated financial statements which mean that any transfer pricing and other financing strategies (that may or may not exist) among the subsidiaries are invisible to investors. HDI, its directors and subsidiaries also make loans to these companies, and purchase shares, options and warrants in each other. Northern Dynasty has twelve subsidiaries. The table below is accurate to September 30, 2017.

Name of Subsidiary ¹	Incorporation	Principal Activity	Ownership
3537137 Canada Inc. ²	Canada	Holding Company.	100%
Pebble Services Inc.	Nevada, USA	Management/services.	100%
Northern Dynasty Partnership	Alaska, USA	99.9% of Pebble Limited Partnership & 100% of Pebble Mines Corp.	
Pebble Limited Partnership	Alaska, USA	Holding Company and Exploration of Pebble.	100%
Pebble Mines Corp.	Delaware,	General Partner.	Holds 0.1% of PLP
Pebble West Claims Corporation ³	Alaska,	USA Holding Company.	Subsidiary of the PLP 100%
Pebble East Claims Corporation ⁴	Alaska,	USA Holding Company.	Subsidiary of the PLP 100%
U5 Resources Inc. ⁵	Nevada,	Holding Company.	Subsidiary of NDM 100%
Cannon Point Resources Ltd.	BC	Not active.	Subsidiary of NDM 100%
MGL Subco Ltd.	BC	Not active.	Subsidiary of NDM 100%
Delta Minerals Inc.	BC	Not active.	Sub of MGL Subco 100%
Imperial Gold Corporation	BC	Not active.	Sub of Delta Minerals 100%
Yuma Gold Inc.	Nevada,	Not active.	Sub of Imperial Gold 100%

Notes:

¹ An inactive wholly-owned subsidiary, 0796412 BC Ltd., was dissolved on February 17, 2016.

² Holds 20% interest in the Northern Dynasty Partnership. The Company holds the remaining 80% interest.

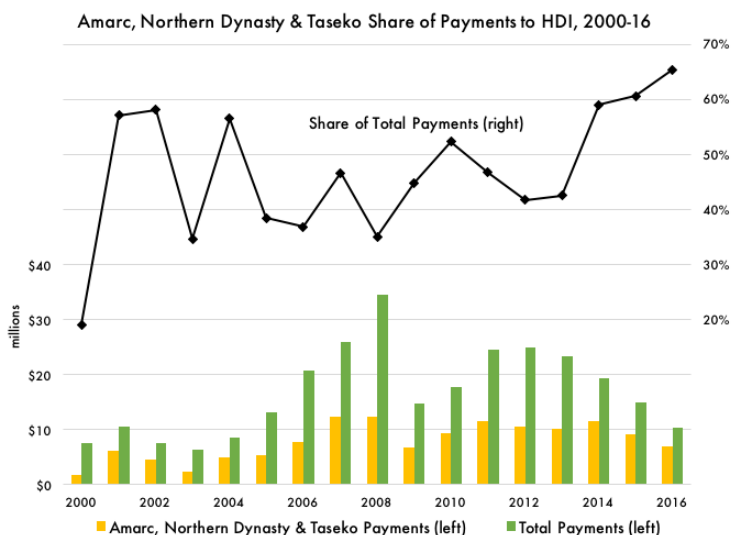
³ Holds the Pebble Project claims.

⁴ Holds certain of the Pebble Project claims and claims located south and west of the Pebble Project claims.

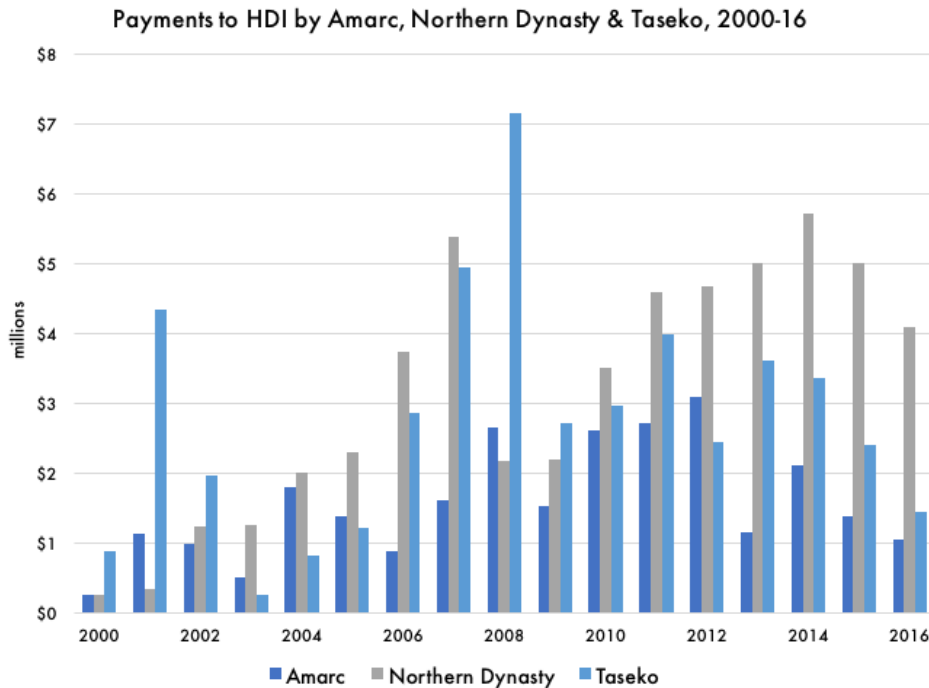
⁵ Holds certain mineral claims located north of the Pebble Project claims.⁸³

Northern Dynasty is an extremely speculative investment, even among junior mining companies.

- The NDM deficit at the end of the third quarter of 2017 was CAD \$459 million, leaving total equity at \$144 million with over 304 million shares issued⁸⁴. An infusion of cash (\$37.5 million US) from First Quantum at the end of December 2017, due to the proposed option agreement, is restricted for use in permitting only. Using more share offerings to fund itself and HDI will likely be seen as unacceptable share dilution.⁸⁵ If signed, the First Quantum Option Agreement will mean that NDM shareholders only own 50% of the Pebble Project, with the value of the other half fixed at US\$1.5 billion.
- According to the report by Dr. D.T. Cochrane (available as Appendix D), although NDM controls only 13% of HDI-affiliated companies' asset value, it accounts for 70 percent of market capitalization⁸⁶ of HDI-affiliated companies. Since 2000, NDM has made up an increasing share of the fees paid to HDI by publicly traded firms. The first figure shows the total payments made to HDI by publicly traded HDI-affiliated firms and the payments that came from the core trio (left axis). It also shows the trio's share (right axis). By 2014, NDM was providing 30.1% of total payments to HDI.



The next figure shows the annual payments of the three members of the core trio from 2000 until 2016.



Cochrane continues: *The ratio of market capitalization to non-current assets (M/N) offers a measure of the pessimism or optimism of investors about a company's future. A ratio below one suggests a pessimistic evaluation of a company's future. The greater the ratio is above one, the more optimistic are investors about the company.*

Two things set NDM apart. First, it is one of just a handful of Canadian junior mining companies to maintain an M/N greater than 5 for more than ten years from 2000 to 2016.⁸⁷ Second, among that handful of companies, NDM has had the highest capitalization. In 2016, NDM's capitalization of \$750 million was greater than the capitalization of the other nine companies combined. From 2009 to 2016, NDM's average capitalization was over \$500 million. The next largest average belonged to Ngex Resources, which averaged just over half that.⁸⁸

Northern Dynasty represents a level of risky speculative investment unprecedented even amongst other junior mining companies. Because of NDM's increasing importance for payments to HDI, it is imperative for HDI to maintain this level of speculation regardless of the actual feasibility of the project.

The Pebble project is at the very heart of this reality. NDM closed 2016 up over 700 percent from its 2015 close. That jump was almost certainly due to developments at the EPA favourable to the future of the project. In January 2018, when the EPA re-thought its determination, NDM stocks dropped 25%, even though the application permit for the mine had just been accepted by the Army Corps of Engineers.⁸⁹

The Case Studies – Historic Mine Projects

North American Metals – Golden Bear Mine, British Columbia

What HDI says about Golden Bear:

*The predecessor to HDI was formed by Robert Hunter and Robert Dickinson in 1985. The two principals founded **North American Metals Ltd.**, which partnered with Chevron Canada in the development of the Golden Bear mine near Dease Lake, British Columbia (BC). Three years after North American Metals was forged (in 1988), the company's shareholders decided to sell to Homestake Canada for \$40 million. The takeover realized a total return on equity capital (\$14 million) of 190% in less than three years.⁹⁰*

Key points for Investors and other stakeholders:

- In 1986, North American Metals ("NAM") bought into a 50% joint venture interest in the mine; they undertook a pre-feasibility study (PEA) that projected a CAPEX of \$36 million. Homestake, in a hostile takeover, then bought 73% of NAM on the strength of the prefeasibility study. Capital costs to build the mine soared to \$80 million as the 153km long road needed to access the site cost twice as much as predicted and other costs had been underestimated.
- A major flood of the mine in 1994 (not predicted in the PEA) forced a shutdown.
- A cooperation agreement with the Tahltan First Nation had to be in place before the mine could proceed as the Tahltan blockaded the road and held the company equipment hostage. The mine was on prime moose habitat.
- In the end, the mine only operated for eight years, and its latest owner, Goldcorp, is still responsible for its care and maintenance.

What is the story of the Golden Bear Mine?

The Golden Bear mine is a closed underground and open pit heap leach gold mine located in the extreme northwest corner of British Columbia, 100 kilometers west of the town of Dease Lake. The mine is accessible by way of a 153 kilometer long access road from the Telegraph Creek road.⁹¹

The Golden Bear mine was originally discovered by Chevron Minerals and was thought to have 10.8 gpt (grams per tonne) of gold with an inventory of 1.6 million tonnes. In 1986, NAM bought into a joint-venture 50% interest in the property. By mid-1987, NAM had released a pre-feasibility study that was projecting the capital cost of a 360-tonne-per day operation at \$36 million. Reserves were now projected at about 2 million tonnes grading gold at 9.25 gpt. Major gold miner Homestake launched a bid for NAM in March 1988 and bought 73% of the company for \$29 million.⁹² At this time, HDI and its key players Robert Hunter, Robert Dickinson, Jeff Franzen and Ronald Thiessen were no longer responsible for NAM.

At that point, fortunes went downhill.

Capital cost estimates ballooned to \$80 million because the 155-km road cost twice as much as anticipated, operating costs were more than double the original estimate and the original feasibility study (undertaken by NAM) had underestimated capital costs.⁹³ In 1991, Homestake closed the underground operations and focused on an open pit mine to save capital costs. As a result, Chevron sold its remaining share in the mine to NAM for \$1 million in late 1991⁹⁴.

Homestake tried underground mining again, but closed the underground workings in 1993. In 1993, a negative feasibility study convinced Homestake to sell the property to Wheaton River Minerals, who kept its now-subsidiary NAM as operator.⁹⁵

A major flood in 1994 forced the shutdown of the planned heap leach operations.⁹⁶ The mine re-opened in 1997 as a seasonal heap leach operation. A combination of open pit and underground ore was used to build two heap leach pads that continued to produce gold until 2001. Mining at the Golden Bear mine was completed in 2000 when the economically viable ore was depleted⁹⁷.

Wheaton became a subsidiary of Goldcorp Inc. following a merger between Wheaton and Goldcorp Inc. on April 15, 2005.⁹⁸ Goldcorp has had the mine on care and maintenance ever since.⁹⁹ At closure, *The Golden Bear site had three small open pits, two underground portals, two heap leach pads, five mine rock storage areas, one tailings impoundment, and a reclaimed camp and mill area.*¹⁰⁰

Golden Bear is also lauded as the first mining Impact Benefit Agreement with a First Nation in Canada, with the Tahltan Nation Development Corporation. The agreement was only achieved after confrontation with the Tahltan. Former Tahltan Chief Jerry Asp shared his story of what happened when North American Metals (still an HDI company at that time) arrived to work on the Golden Bear deposit.¹⁰¹

“The Tahltan Nation Development Corporation ...set its sights on the mining industry. The Tahltan drafted a resource development policy in 1987, calling for jobs, social and economic benefits, contracting opportunities and equity participation in mining projects within the traditional territory.... In 1988, the owners of the Golden Bear mine project were going to mine in our country, put a 100-mile road in there and take a bunch of equipment in. We were down negotiating with the company and they tried to sneak \$1 million worth of construction equipment in through Telegraph Creek.” The road in had never been designated as a highway, and properly belonged to the Tahltan, said Asp. So, his sister and a few others got together and organized a roadblock. “They took \$1 million in equipment, and held it hostage right on the reserve.” They used a high-profile aboriginal rights lawyer to get the RCMP off their back, but negotiations were still going nowhere, said Asp. So, on a Wednesday he called up CHON-FM in Whitehorse and announced that on Saturday morning the equipment would be auctioned off to the Tahltan people. “By Friday afternoon I had a deal with Golden Bear,” said Asp.”¹⁰²

El Condor – Kemess Mine, British Columbia

What HDI says:

*HDI was instrumental in the development of the Kemess gold-copper porphyry deposit located in northern BC. Under the aegis of **El Condor Resources Ltd.**, the Kemess project had reached the permitting stage when Royal Oak purchased the company in 1996. Sold at C\$7 per share (total value of \$103 million), the total realized return on equity capital (\$21 million) was 400%. During its mine life, the Kemess South mine produced nearly 3 million oz gold and 800 million lb copper.*¹⁰³



South Kemess tailings. Photo: <http://wikimapia.org/11202813/Kemess-Mine-Tailings-Dam>

Key points for Investors and other stakeholders

- As a result of the terms of the South Kemess deal, the provincial government paid more of the capital cost than the company did, and more than El Condor received from Royal Oak for the project.
- The mine was built and opened in late 1998. The ore was mined out by 2005 and the mine closed.
- There has been steady expansion of the mine footprint ever since. In 2007, a plan to put tailings from a proposed North Kemess Mine in Amazay Lake – a lake sacred to the Sekani – was rejected after an arduous environmental assessment. In agreement with First Nations, AuRico is now proceeding to build Kemess North as an underground mine, and seeking permission to put its tailings in the mined out South Kemess pit.
- The Sekani are concerned that the dam holding the tailings may not be secure.

What is the Kemess story?

In 1993, El Condor Resources (Hunter, Dickinson et al) held 60% of the Kemess South and 100% of the Kemess North claims on Sekani territory in the interior of BC. They had commissioned a preliminary economic assessment from Kilborn Engineering, which showed mineable reserves (this was pre-NI43-101) at 220 million tonnes at 0.22% copper and 0.018oz/ton of gold. They put the project on the market.

In 1995, Royal Oak Mines bought El Condor for \$4.90/share and 1/3 of a Royal Oak share – a deal worth \$95 million. The deal was conditional on permits for Kemess South being obtainable from the province, and assurances that the province would provide at least \$150 million in funding for the remote development.

In 1995, Geddes Resources (which was 39% owned by Royal Oak) bought the other 40% of the Kemess South claims from St. Phillips Resources, giving Royal Oak a total 80% interest in the Kemess claims.

Geddes Resources held the claims at Windy Craggy, a copper-gold project on the earth-quake prone and wild Tatshensheni River on the BC Alaska border, which had been strongly opposed by environmentalists in both countries. By 1993, the province of British Columbia was ready to turn the site into a provincial park, but Geddes wanted millions in compensation for its mining claims.

Ultimately, a deal was made to give Royal Oak the permits for the Kemess South mine and financial assistance to cover the infrastructure costs of building the mine. This assistance amounted to \$29 million cash compensation to Geddes, \$20 million to an exploration fund, \$50 million for on and off-site infrastructure costs, and \$49 million to cover the cost of a 320 km hydro line.¹⁰⁴ Peggy Witte of Royal Oak got the mine for \$67.9 million; it cost the province \$104 million, and the Sekani got nothing.

Royal Oak went into receivership in 1999, and Kemess was acquired by Northgate Minerals, which also got the company's resource exploration tax pool.

Continental Gold – Mount Milligan Mine, British Columbia

What HDI says:

Continental Gold Corp. found and explored the Mount Milligan gold-copper porphyry deposit near MacKenzie, BC and had advanced the project to the permitting stage when major mining company Placer Dome Inc. made a bid to buy the company. Continental Gold shareholders accepted an offer of C\$20 per share in 1990 (total value of \$177 million), realizing a total return on equity capital (\$29 million) of 550% over two years¹⁰⁵



Mt. Milligan Mine. Photo: National Observer

Key points for Investors and other stakeholders

- Placer Dome (PDI) paid \$258 million for the HDI Mt. Milligan deposit in 1990, and then wrote it off in 1992 when gold prices dropped.¹⁰⁶
- The very marginal copper-gold mine was put finally brought into production in 2014, but was carrying a US\$782 million gold stream agreement with Royal Gold. In 2016, now carrying \$800 million in debt, it was sold again to Centerra, which paid \$175.6 million in cash and assumed the debt. The gold stream agreement was renegotiated to include copper¹⁰⁷.
- The Mine is on the territory of the Nkadz'li First Nation, who have seen the entire Sam family kehoe (trapline) destroyed, and had serious impacts on their village nearby.¹⁰⁸
- Building and operating the proposed Mt. Milligan mine near Prince George meant turning a two-kilometer long, fish bearing creek into a waste dump for potentially acid-leaching rock. The move to use the King Richard Creek Valley for waste disposal would result in almost three hundred million tonnes of waste rock being dumped into the creek, eliminating all fish and marine life.¹⁰⁹

The Mt. Milligan story

Richard Hanslinger discovered the deposit in 1984. In 1986, Lincoln Resources undertook a drilling campaign on the site and discovered significant mineralisation.¹¹⁰ HDI's Continental Gold acquired 64% of United Lincoln in August 1988, and subsequently the two companies amalgamated. In 1990, Continental

Gold was taken over by Placer Dome, which acquired BP Canada's 30% interest for \$78.8 million and the balance from Continental Gold of \$258 million.

At a press conference on February 10, 1992, less than two years after the acquisition, Placer Dome announced that it was writing off its \$266 million investment in Mount Milligan in its 1991 fiscal year. They did not think the project was viable at that time unless the capital cost came down and the price of gold increased considerably.¹¹¹ The estimate of a lower grade was a result of additional drilling, which doubled the data available and led to a different conclusion. Said the Northern Miner: *"Placer Dome's \$266 million write down of its Mount Milligan project in British Columbia was unequivocal acknowledgement that it made a mistake. The company simply paid too much for a project that didn't live up to expectations."*¹¹²

Mount Milligan is one of the lowest grade gold-copper mines in Canada. The mine has since gone through a number of owners: Placer Dome re-evaluated the project a number of times and in 2006, with gold prices high, sold it to Terrane Minerals (owned 58% by Goldcorp).¹¹³ Terrane did most of the planning and permitting for the mine and then in 2010 sold the project to Thompson Creek Metals for \$650 million.

To enable the Terrane purchase, Royal Gold- a streaming company –put \$782 million into Mt. Milligan in return for the right to buy 52% of the gold produced at the mine for the lesser of US\$435 per oz., or the prevailing price of gold.¹¹⁴ Construction on the mine began in 2010. By February 2014, the mine was in full production.

Within a few years, Thompson Creek (a predominately molybdenum producer faced with low prices) was burdened with an \$800 million debt, and could not raise sufficient funds from its shareholders to meet its obligations. In July 2016, Centerra Gold Inc. bought Thompson Creek (including Mt. Milligan) for \$175.6 million and assumed the debt.¹¹⁵ According to a media report, *"As part of the merger, Centerra has cut a deal with Royal Gold Inc. to change the terms of a metal streaming agreement that Royal Gold holds on the Mount Milligan mine. The new stream will deliver less gold to Royal Gold, but will also deliver copper for the first time."*¹¹⁶

Centerra Gold is a very problematic mine operator, which has been reliant on its Kumtor Mine in Kyrgyzstan since 1997. In 1998, there was a serious cyanide spill into Lake Baikal on the road leading to the Kumtor mine. In addition, Kyrgyz authorities launched a criminal case over allegations that certain Centerra managers abused their authority, and banned some Centerra employees from leaving the country¹¹⁷.

Centerra was also fined US\$98.4-million for placing waste rock improperly¹¹⁸ *"On September 11, 2017, the company announced that the Kyrgyz claims had been settled. Under the deal, the Canadian miner will make a one-time payment of \$50 million to a new, government-run nature development, alongside annual payments of \$2.7 million. Centerra will also pay \$7 million to a cancer care support fund and another \$3 million one year after the deal closes."*¹¹⁹

The mine is located on the traditional territory of the Nak'adzli people, who live in a few different communities (bands). The site of the mine was (is) the traditional keyoh (trapline) of the Sam family, and had been for centuries. After four years of mining, the keyoh is now completely destroyed and the First Nations do not use the site. The tailings impoundment was built on the fish-bearing waters of King Richard creek, and has obliterated it.¹²⁰

Continental Minerals – Xietongmen Project, Tibet

<p>What HDI says about Continental Minerals Corporation:</p>

*In April 2011, the Jinchuan Mining Group acquired **Continental Minerals Corporation** in a transaction valued at C\$447 million. Continental acquired the Xietongmen Copper-Gold Project in the Tibet Autonomous Region of China in 2004 and rapidly advanced the project, completing a positive feasibility study in 2007.¹²¹*



Figure 4.1 - Location of Xietongmen Property

Key points for Investors and Other Stakeholders

- The transaction with Jinchuan Mining Group- a Chinese state-owned company- was strongly resisted by local Tibetans who are deeply affected by the open pit mine, tailings and infrastructure. *Most local residents are subsistence farmers who grow minimal quantities of wheat, barley, other cereal grains and potatoes in small cultivated plots; raise chickens and ducks; and graze small numbers of sheep, goats, cattle, yak, horses and donkeys on the lower grassy hillsides. Small, widely-spaced, drought resistant bushes and shrubs are found mostly near valley bottoms or on south-facing slopes. There are no trees on the property. The small village of Shung (Xiongcu), part of Rongma Xiang (similar to a township), is situated approximately 2 km south of the area of drilling in the main Xietongmen deposit¹²².* The opposition resulted in a number of incidents where monks (who say the mountain where the mine is located is sacred) and villagers were brutalized by the company and the Chinese government.¹²³
- The mine was also opposed by Tibetans driven into exile by Chinese repression. *“It’s unconscionable for a Canadian company to be operating inside Tibet when Tibetans are facing a brutal military clampdown and the most repressive conditions in three decades,”* said Kunga Tsering, president of the Canadian-Tibetan Joint Action Committee, in a 2009 statement.¹²⁴
- Protests from local people and from the Free Tibet Movement have confronted Continental from 2005 until the present day. Continental’s response was to try to placate villagers with a promise of jobs and small grants.¹²⁵ Even the name of the mine – Xietongmen – ignores the Tibetan name for the mountain, “Shetongmon”, and the company consistently ignores the Tibetan name of the neighbouring town “Shigatse”.

Farallon Resources – Campo Morado G9 Mine, Mexico

What HDI says

Farallon Mining Ltd. Outlined significant polymetallic mineral resources at its Campo Morado property in Mexico, including the high grade G-9 deposit. Within a short time span of four years, Farallon developed, permitted, built and put into operation the G-9 mine, achieving commercial production in April 2009, prior to being acquired by Nyrstar NV for C\$409 million in an all cash transaction that was completed on January 5, 2011.¹²⁶



Photo: <http://www.miningglobal.com/mining-sites/nyrstar-sells-mothballed-zinc-mine-mexico-20-million>

Key points for investors and other stakeholders

- There was no resource estimate or feasibility study for the Campo Morado G9 Mine before HDI's Farallon rushed it into operation in 2009. Commenting on the project just before the sale, an investment analyst said: *While mine life at G-9 has been a concern mainly due to the Company's decision to forego a feasibility study and formally define significant reserves, we do believe significant exploration upside exists at this volcanogenic massive sulphide system. As such we are confident that as drilling continues, both mine-site and regional exploration, the Company should be able to prove up more tonnage at G-9 and the surrounding deposits, supporting a robust mine life.*¹²⁷
- On January 5, 2011, Nyrstar reported that the deal to purchase Farallon was concluded. However, after Farallon sold the Campo Morado G-9 Mine to Nyrstar for \$409 million¹²⁸, things did not go so well.
- The price of zinc fell precipitously in 2009 and never again reached the peak it had hit previously. Though it recovered somewhat in 2010 and 2011, the price was nevertheless approximately half what it had been in the peak years before 2009 just as the deal with Nyrstar was being negotiated. The fall in price also would affect the size of the mineable resources at the mine.
- Rising violence in Guerrero State where the mine was located, caused by increasing battles between drug cartels, made the area extremely dangerous. In early 2015, 43 students in Guerrero State were disappeared and never found. Subsequently, four employees were kidnapped from Torex Gold Resources. In March that year four other employees were kidnapped while heading home from a Goldcorp mine site; only one survived. In February, 2015, Nyrstar closed the

Campo Morado Mine indefinitely. The marginal economic returns from the mine were not worth the dangers of continuing to operate.¹²⁹

- **On June 14, 2017, Nyrstar sold the Mexican subsidiaries that owned the Campo Morado Mine to Telson Resources for US \$20 million dollars and the right to purchase future zinc production at a premium price.**¹³⁰ Only six years before, they had paid \$409 million for it. Telson says they will put the mine into production at an unspecified point in the future.



Great Basin Gold – Hollister Mine (Nevada), Burnstone Mine (South Africa)

What HDI says:

Great Basin Gold Ltd. was listed on the Toronto and American Stock Exchanges in 2003. While part of the HDI group, the company acquired and advanced mining assets in the Witwatersrand Basin of South Africa and the Carlin Trend of Nevada, USA. HDI first acquired the Hollister project in Nevada in 1997 and by 2001, had made a high grade gold-silver discovery. It acquired the Burnstone gold project in South Africa the following year, and successfully advanced it from exploration through feasibility. The company became independent of HDI in 2007.¹³¹



Great Basin Gold mines. <http://www.gowebcasting.com/events/denver-gold-group/2010/09/20/great-basin-gold-limited/play/stream/1017>

Key Points for Investors and Other Stakeholders:

- Great Basin Gold Ltd. (“GBG”), was a publicly-traded international mining company engaged in the exploration, development and operation of gold properties. It operated through 22 subsidiary companies that reported through consolidated statements. A number of the subsidiaries were incorporated and based in known tax shelters (British Virgin Islands, Cayman Islands, Cyprus).
- The company entered receivership in 2013, while Ronald Thiessen was still Chairman of the Board, and Scott Coughlan was still a Director. From 1996 through 2007, the company was under HDI control, based on a contract dated December 31, 1997. HDI ceased to be a “related party” after 2007.
- Philip Kotze was also a company director from 2011 until 2013, and was the President and CEO of HDI-subsiary Atlatsa from 2008 to 2011. He later bought the HDI Burnstone Mine out of the liquidation proceedings in 2013.
- Subsequently, Thiessen and Coughlan were defendants in civil proceedings filed in British Columbia and Nevada by Credit Suisse AG, GBG’s largest creditor. In February-March 2011, prior to GBG’s bankruptcy, the company borrowed US\$70 million (the “Hollister Facility”) from Credit Suisse to finance mining operations at its Hollister gold mine in Nevada. In 2012, following the bankruptcy filing, Credit Suisse executed a US\$35 million debtor-in-possession financing facility (the “Canadian DIP Facility”) connected to the Canadian bankruptcy filing, which was subsequently increased to US\$51 million in 2013. Credit Suisse filed suit in Nevada alleging that the defendants had provided information, at the time of the Hollister Facility, stating that the life of the Hollister Mine was estimated at over eight years, the proven and probable reserves at the mine were estimated to be 907,000 Au(eqv) oz, and the net present value of the mine was C\$236 million. Following the bankruptcy proceeding, however, the Hollister mine was reported to have “only a three-year life of mine and proven and probable mineral reserves of 187,000 Au(eqv) oz.” When the mine was sold in 2013, it was sold “for only US\$15 million and a small percentage of future profits.” Credit Suisse alleged “negligent misrepresentation, fraud and breach of fiduciary duty” on the part of the defendants. The Nevada proceedings were settled in July, 2017.¹³² Details of the settlement were not disclosed.
- Thiessen and Coughlan were also defendants in a related civil proceeding filed in British Columbia in 2014 by Linden Advisors LP, Crystalline Management Inc. and Wolverine Asset Management, LLC. The plaintiffs were investors in debentures issued by GBG in 2009, who alleged that the defendants made material misrepresentations concerning GBG’s financial and liquidity position in a GBG prospectus related to the debenture issue. After counterclaims and responses filed by both sides, this proceeding was settled and dismissed in December 2016, with neither party taking anything from the other.
- In May 2013, the Hollister Mine was sold at auction for US\$15 million by Waterton Global Resource Management. In Q3, 2016, Waterton shut it down. Hollister was again sold, to Rimrock Gold, which then sold it to Klondex for \$80 million and some shares and warrants in Klondex. Franco-Nevada holds a 3-5% NSR on the property (subject to gold price).
- In 2013 in South Africa, at the Burnstone Mine, GBG subsidiary Southgold filed for bankruptcy protection. The company’s debt exceeded US\$400 million (largely owing to Credit Suisse and Standard Bank). Southgold brought in a private business rescue practitioner- Peter Steen, who

sold the mine to Philip Kotze's Witwatersrand Consolidated Gold Resources ("Wits") for \$7.25 million¹³³; Wits also assumed the company debt. However, the plan cut the debt to \$177.5 million and required Wits to bring the mine back into operation within three years. The rescue plan was announced in July 2013.¹³⁴ Wits could not meet its obligations either, and, by the end of the year, the entire company had been bought by Sibanye for less than \$40 million.¹³⁵

Anooraq/Atlatsa Resources, South Africa

What HDI says:

*Atlatsa Resources Corporation (formerly Anooraq Resources Corporation) was the first Black Economic Empowerment company in South Africa listed on North American stock exchanges. Atlatsa holds a 51% interest in Bokoni Mines (formerly Lebowa Platinum Mines) and several other PGM properties. The company is a significant independent producer, with refined annual production from Bokoni totalling ~115,000 oz of platinum, palladium, rhodium and gold. Production capacity at the long-life mine is being expanded to 250,000 oz per year by 2016. The company became independent of HDI in 2007.*¹³⁶



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Key Points for Investors and Other Stakeholders:

- As of July 2017, the Bokoni Mine in South Africa is closed and on care and maintenance. *"After years of failed efforts to restructure the mine to be sustainably profitable and the financial assistance of Amplats, the Bokoni mine recorded R500m of cash outflow in the first six months of this year. 'In the circumstances, the Bokoni joint venture partners are no longer able to continue funding losses at the mine with no reasonable short to medium term turnaround prospects'."*¹³⁸ On August 28, 2017, Atlatsa informed the TSX that it could not file and requested a cease trade order.
- Hunter Dickinson was considered a "related party" of Atlatsa from 2004 until December 31, 2010.**¹³⁹ Thiessen and Kirk were still Directors in 2010, as was Philip Kotze, who had been appointed President and CEO of Atlatsa in July 2008. In that same year, Kotze was appointed to the board of Great Basin Gold and served until that company's bankruptcy in 2013. The CEO of Witwatersrand Gold Corp in South Africa, in 2013 Kotze was able to buy the South African GBG Burnstone Mine out of Great Basin Gold's receivership for US\$7.25 million and a greatly reduced debt.¹⁴⁰

- Anooraq (later Atlatsa) was needed by Anglo American Platinum (Amplats; Angloplats) in the Rustenburg area of South Africa to allow Amplats to meet Black Economic Empowerment regulations of the South African government.¹⁴¹ The sole market for metals mined by Atlatsa was Amplats.
- Atlatsa was structured with a number of subsidiaries. *[Anooraq Resources] holds 100% of the shares of NIC, which in turn holds 100% of the N2C shares. N2C holds the Registrant's 100% of the shares of Plateau Resources (Pty) Limited (herein "Plateau"), the private South African mining corporation that holds the legal rights to the mineral interests comprising the Platreef Project. This is Anooraq's principal subsidiary, and it was obtained through a deal with Hunter Dickinson.*¹⁴²
- At the time of the Bokoni Transaction (under HDI watch), a 2009 Deloitte Report urged a re-working of the reserves and resources estimate conducted by Angloplats. *"All mineral reserves and resources were calculated by in-house personnel. Deloitte did not recalculate them, and raised questions about how the work was done, as there was no effective mine plan. The estimated the value of the mineral reserves (2008) [was] based on 2008 US dollars.*¹⁴³ Metal prices had been predicted to be \$1300/oz for Platinum, \$270/oz for Palladium, \$3700/oz for Rhodium and Nickel at \$8.00/lb. Not only were the estimates questionable at the time; they were now seriously out of date.
- The 2009 Bokoni transaction increased total HDI affiliated company assets from \$12.9 million to over one billion dollars; Atlatsa's assets comprised 46.7 percent of the total assets of HDI-affiliated companies. The next year, when Atlatsa's assets ceased to be part of the HDI-affiliated group of companies, the loss of those assets was responsible for 104 percent of the decline in HDI-affiliated total assets.¹⁴⁴
- HDI backed out a year after the purchase of the Bokoni Mine; as Anooraq was struggling with the take-over of a producing mine. *"In Fiscal 2011, the Company re-examined the life-of-mine and analyzed the flaws at the operations. The Company undertook a detailed technical review of operations with Anglo Platinum in Fiscal 2011. This resulted in a new strategic plan for the Bokoni Group which is expected to result in the disposal of certain exploration assets to Anglo Platinum, recapitalization and refinancing of Anooraq and the Bokoni Group, together with accelerated production growth at Bokoni Mine."*
- Subsequently, in the summer of 2012, in protest about working conditions and BEE policies at the platinum and gold mines in the Rustenburg area, a massive "Illegal" miners' strike took place. Over 75,000 workers walked out. On August 16, at the Lonmin Mine in Marikana, 34 striking miners are shot.¹⁴⁵ In October, the Amplats workers walked off the job again; 2161 workers are on strike at Bokoni. Amplats fired 12,000 workers and hired replacement workers. Anooraq followed suit and dismissed 2500. Approximately 60% of the operating costs of the Bokoni Mine were for labor; *Bokoni Mine had approximately 5,000 employees (including 1,600 contractors), including approximately 7 of whom may be considered senior management.*¹⁴⁶



Atlatsa/Anooraq stock price chart (stockwatch.com)

Rockwell Diamonds – industrial alluvial diamond mines, South Africa

What HDI says:

Rockwell Diamonds Inc. acquired its South African diamond properties in 2006. Today, the company is an established alluvial diamond producer holding a 74% interest in the Saxendrift operation and the Wouterspan and Nieuwejaarskraal development projects in South Africa. High-value 2+ carat stones comprise a significant proportion of Rockwell's annual production. The company's primary focus is to add value to existing operations, while aggressively seeking to acquire superior, advanced-stage projects. The company became independent of HDI in 2007.¹⁴⁷



Rockwell Diamonds promotion

Key Points for Investors and Other stakeholders:

- In 2017, the South African subsidiaries of Rockwell Diamonds were forced into bankruptcy proceedings by their creditors. Rockwell then delisted from the TSX. Rockwell's subsidiary in South Africa (Rockwell Resources RSA Pty Limited) and two other subsidiaries (HC van Wyk Diamonds Limited and Saxendrift Mine Pty Limited) are being operated under Business Rescue Management as ordered by the Court, following an application by creditors of the three South African subsidiaries on May 18, 2017.¹⁴⁸ The three subsidiaries are currently in provisional liquidation.¹⁴⁹

- HDI and its key players were involved with the company until late February 2013. HDI's David Copeland was chairman until October 2011 and stayed on as a director until August 2012. First Trevor Thomas and then Gordon Fretwell acted as Corporate Secretary until May 2015. HDSI and CEC Engineering¹⁵⁰ were providing services as late as February 2012.
- In 2008 and again in 2009, Rockwell faced take-over bids from Pala Investments of Switzerland. Pala alleged that the company was mismanaged.
- A property in the Democratic Republic of Congo (DRC) that Rockwell acquired as part of its founding deal became mired in a dispute with DRC-based Midamines. Rockwell lost the dispute at arbitration in 2011.
- There were problems dealing with South African government regulation and Black Empowerment requirements.¹⁵¹
- The company became effectively controlled by the controversial Steinmetz Diamond Group¹⁵² through its marketing and beneficiation agreement with Diacore, and its debt arrangements with Daboll Consulting, both of which are subsidiaries of Steinmetz)
- Rockwell's important Tirisano Mine, acquired in 2011 for \$4.6 million, was closed in 2012 following a number of work stoppages, government delays in permitting and problems with Black Economic Empowerment (BEE) support for the mine. Rockwell sold the Tirasano property in 2015 for the same amount they paid for it, losing the investment made to try to ramp up the mine to a full capacity of 90,000 m³ per month.

Detour Gold Corporation, Ontario

What HDI says:

*HDI launched **Detour Gold Corporation** as an initial public offering on the Toronto Stock Exchange in February 2007. The company became independent over the following 18 months, as it focused on advancing the development of its flagship Detour Lake Project. With initial open pit proven and probable reserves of 15.6 million oz of gold (470 million tonnes grading 1.03 g/t at a 0.5 g/t cutoff), the mine, which reached commercial production in 2013, is expected to produce an average of 650,000 oz per year over a mine life of 20+ years.*¹⁵³



Key Points for Investors and Other Stakeholders

- The Detour Mine in Ontario was built on the site of a former mine, which operated from 1983-1999. The area had already been extensively explored by Placer Dome. The project was developed and enlarged by the work of Pelangio Resources Ltd and their geologist Eric Kallio.
- When Pelangio needed a partner in 2006, HDI stepped in, incorporated Detour Gold, set up the initial IPO in 2007 and provided a \$1million start-up loan.
- Geologist Gerald Panneton was the driving force behind establishing the mine. In 2006, when he was approached by Pelangio and got involved in the Detour project, HDI had just made him President and CEO of Continental Minerals as well as Vice-president of Corporate Development. As an HDI employee, he set up the formal arrangement between HDI and Pelangio, and ended the HDI agreement two years later in 2008. In an interview about how the mine started, he does not even mention HDI, but talks as though he did it all. He left Continental Minerals in January 2008.
- There is no mention in SEDAR.com filings of an HDI contract with Detour after 2009. HDI director Ronald Thiessen, however, remained as a director of Detour Gold until 2013.

Current Projects – Case Studies

Taseko Mines Ltd. – Gibraltar Mine, British Columbia

What Taseko says about itself and the mine:¹⁵⁴

Taseko is the owner (75%) and operator of the Gibraltar copper-molybdenum mine, located in south-central British Columbia, the second largest open pit copper mine in Canada and the largest employer in the Cariboo region. Taseko restarted Gibraltar in 2004. From 2006 until 2012, the Company invested ~\$700 million to expand and modernize the operation which was originally scheduled for demolition when the Company acquired it in 1999.

Highlights

- The second largest open pit copper mine in Canada and fourth largest in North America
- Life of Mine average annual production of 140 million lbs of copper and 2.6 million lbs of molybdenum (100% basis)
- Large Reserve of 3.1 billion lbs of recoverable copper and 55 million lbs of molybdenum
- 22 year mine life
- Replacement value in excess of \$1 billion¹⁵⁵

Taseko's strategy has been to grow the Company by utilizing cash flow from the Gibraltar Mine to assemble and develop a pipeline of projects. We continue to believe this will generate the best, long-term returns for shareholders. Total expenditures on projects in 2016 consisted of \$5.0 million at the Florence Copper project, \$1.7 million on New Prosperity, and \$0.8 million on the Aley Project.¹⁵⁶

Following a period of mine expansion and capital expenditure, Gibraltar has now achieved a stable level of operations and the Company's focus is on further improvements to operating practices to reduce unit costs. Improvement of operating costs were due to cost control initiatives which were implemented during 2015, including mine plan modifications, workforce reductions and vendor initiatives. During September 2016, the molybdenum circuit at Gibraltar was successfully restarted, and will continue to contribute by-product credits in future periods.¹⁵⁷

Figure 1. 2: Mine Site Configuration



Key Points for Investors and Other Stakeholders:

- The Katsura Report says that “Taseko (HDI) acquired Gibraltar for the equivalent of \$1 in 1999”¹⁵⁸, when it was on care and maintenance. The company was able to offload much of the requirement for adequate reclamation bonding onto the province¹⁵⁹. There was no initial CAPEX.¹⁶⁰
- An expansion and modernization program costing approximately \$700 million was completed in three phases by selling 25% of Gibraltar Mines Ltd to Cariboo Copper and by the issuance of senior secured notes at high rates of interest with difficult repayment terms. Taseko was forced to use most of its cash on hand and a new senior secured note debt facility to extend the deadline for payment only as far as 2022.¹⁶¹ The holders of the notes are unknown.
- The company reports using consolidated financial statements that mean its relationships to its subsidiaries is not visible to investors. It has been using proceeds from the Gibraltar Mine to fund the exploration, development and litigation for the Florence Copper Project and exploration for Aley Niobium. Taseko has been also using funds from Gibraltar to wage the company’s unsuccessful judicial reviews and civil suit against the Canadian Environmental Assessment Agency for refusing to permit Prosperity/New Prosperity Mine. (These cases were dismissed with costs by the federal court in December 2017). These litigation expenditures have not been balanced by a commensurate increase in resource tax pools and assets.
- The company appears to have consistently used overly optimistic assumptions in its planning, failing to predict the precipitous drops in the price of copper (2012) and molybdenum (2008), underestimating the strength of the Canadian dollar, and reporting its financial situation to investors in terms of EBITDA, when in fact interest expense has been a major consideration for years.¹⁶²
- The company has an enormous underfunded liability for its tailings impoundment. The tailings impoundment at Gibraltar is similar to the Mt. Polley tailings impoundment in structure (toxic saturated tailings held behind earthen dams at a high elevation). Over 85,000 tpd are deposited in the impoundment. The mine is only able to keep the dams from over-topping by discharging directly into the Fraser River¹⁶³. The “provision for environmental rehabilitation” (PER) is a line on the company balance sheet. As of June 2017, Taseko had estimated PER at \$30,535,000 and has cash deposited with the province of \$7,500,000. The amount is set using a 100 year time frame with a 2.3% discount rate.¹⁶⁴ There is no commensurate fund against accidental failure of the tailings impoundment.
- The mine lies on land claimed by both the T̓silhqot’in Nation and the Secwepemc Nation, and has a tense relationship with both. Recently, members of the local committee that provide oversight on water discharge resigned.¹⁶⁵

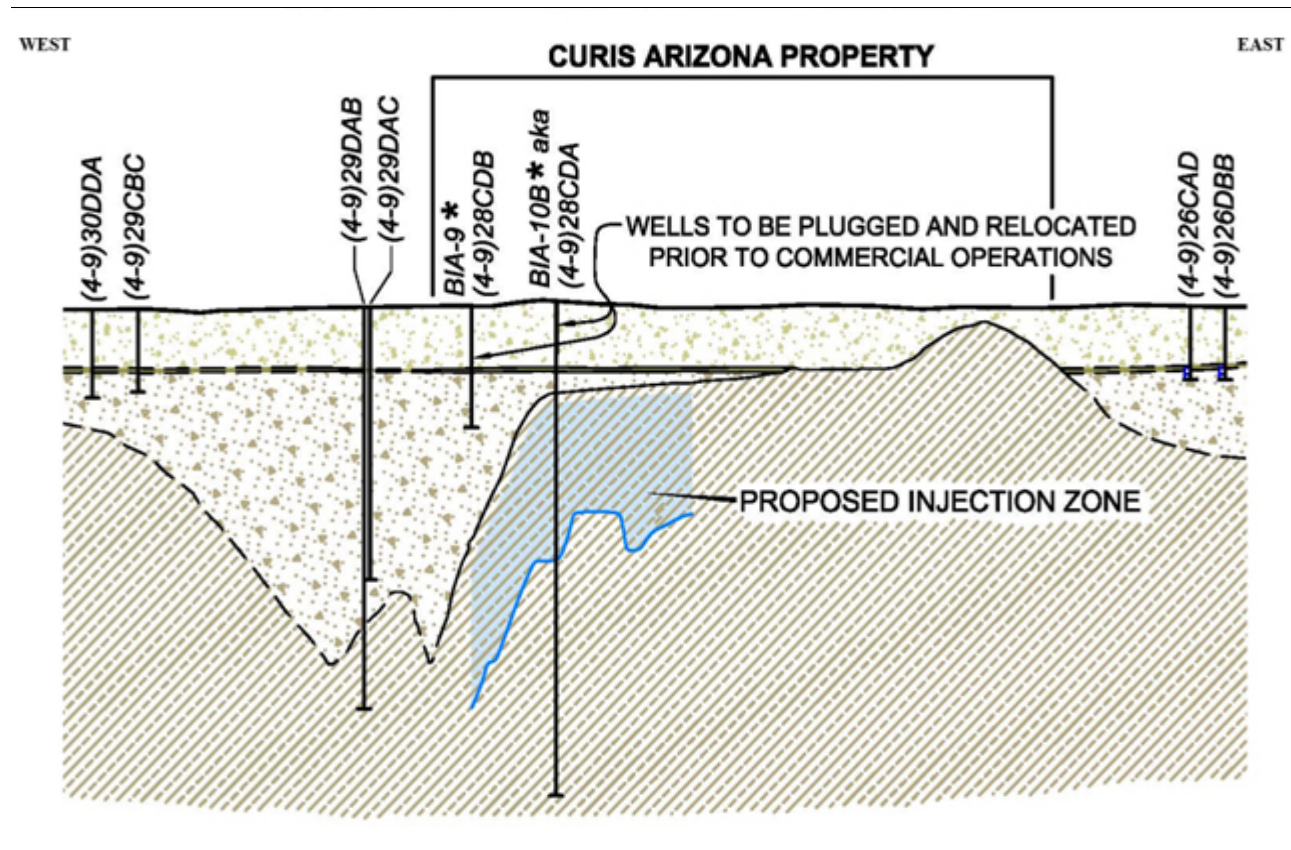


- The relationship between Taseko and HDI, which was the subject of Raging River Capital's investor activism in 2016¹⁶⁷, has not been publicly aired as there was a settlement regarding substantive matters. Changes were made to Taseko's SEDAR filings after the dispute, but the motivation for these changes is difficult to determine.¹⁶⁸
- The friendly relationship with provincial regulators enjoyed by the company may be changing. In May 2017, the BC Liberals, to whom the company, its Chair and CEO have been major donors, lost power and have been replaced with a coalition government of the NDP and the Green Party. Taseko has relied on the province for tax considerations, reduced rates for hydro and other subsidies, lax regulation and enforcement of pollution control measures, and handling of First Nations' concerns. The impact of the new provincial government is still uncertain.

Taseko Mines – Florence Copper, Arizona¹⁶⁹

What Taseko says:

- *The Florence Copper Project is possible because of a rare copper deposit located in the Historic Copper Corridor of Arizona – a region steeped in copper mining history.*
- *The deposit is large, and it lies 400 to 1,200 feet below the surface of private and state-owned land in Florence, Arizona.*
- *The natural features of the deposit allow the copper to be extracted without disturbing the land and with minimal environmental impact. The deposit is porous and naturally shattered – this allows the copper to be recovered using a water-based solution in a process called in-situ copper recovery (ISCR). ISCR requires no open pit, no tunneling, no waste dumps, and none of the large equipment typically associated with traditional mining activity.*
- *The extraction process occurs deep in the bedrock. It involves a simple combination of physics and basic chemistry to dissolve and then pump copper-rich solution to the surface. Once at the surface, the solution is converted into large sheets of up to 99.999% pure copper cathode.*
- *During its lifetime, Florence Copper is estimated to create close to 500 jobs for Pinal County and generate \$3.4 billion in economic activity for the State of Arizona. Currently, the project is in the advanced permitting stages for a Production Test Facility.¹⁷⁰*



<http://swgroundwater.com/index.php/projects>

Key points for Investors and Other Stakeholders

- Florence Copper is currently a private company, a subsidiary of Taseko Mines, and its financial statements and that of its subsidiaries are consolidated with those of Taseko. Florence Copper Inc. (Nevada) is a wholly owned subsidiary of Curis Holdings (Canada) Ltd, which is 100% owned by Curis Resources Ltd (British Columbia), which in turn is 100% owned by Taseko Mine Ltd. None of these companies are registered in Arizona.
- There is a substantial potential unfunded liability for investors from this mine, as the mine is located very close to the drinking water aquifer for Pinal County and the Town of Florence. The consequences of accidents are not covered in the reclamation bond for the mine. Leakage into aquifers from in-situ leach wells – no matter how carefully constructed – is a real concern. Water availability is huge issue in Arizona and there is substantial opposition to the mine from the Town of Florence, from citizens' groups, and from developers South West Value Partners and Pulte Homes, who all believe that the mine endangers the drinking water aquifers. Taseko has used an aggressive public and government relations and litigation strategy to control the discourse and get the permits it needs to go ahead.
- *There are only "probable mineral reserve estimates for the mine, as in-situ operating parameters developed from extensive metallurgical and hydrological testing have not yet been subject to a full scale field test."*¹⁷¹ The estimates are based on a long-term copper prices of US\$3.00/lb. The mine will be most sensitive to copper prices.¹⁷²

- The Curis Technical Report from 2013 noted: *the oxide mineralized body is highly fractured and incompetent, complicating the process of drilling and well installation...Until the proposed drilling and well installation designs and methods are demonstrated in the PTF, there is a risk that the techniques necessary to overcome these obstacles could be more expensive than anticipated...If fouling of inspection wells becomes a problem, costs to rehabilitate or replace wells, which are not included in this study, would add to the cost of production.*¹⁷³
- The Taseko economic analysis assumes no debt financing for the mine (and therefore no interest charges).¹⁷⁴ However, Taseko has already incurred substantial debt financing to support all its projects (including Florence Copper) and the interest on that debt is currently at 8.75%. The debt comes due in 2022. Florence Copper is one of the securities for that debt. Over the life of mine, upfront capital and sustaining capital costs come to almost \$1 billion.¹⁷⁵
- Investors should also be concerned about the role to be played by HDI over the life of the mine. It should be noted that at the time of the takeover, both the Curis Group (Curis Resources and subsidiaries) and Taseko were effectively managed by HDI. By 2014, the Curis Board was still completely dominated by HDI board and senior staff. Curis directors Robert Shafer, Trevor Thomas and Brian Causey were HDSI employees. Rene G. Carrier- while not on the Taseko board – had served on boards of HDI companies Quartz Mountain (president), Rockwell Diamonds (president), Amarc, Rathdowney, Continental Minerals and Heatherdale. Gordon Fretwell is a lawyer who was lead director of HDI's Northern Dynasty Minerals Ltd. from July 2004 to February 24, 2016. He also served as Special Counsel for Misty Mountain during its reorganization into Continental Minerals and as Corporate Secretary for HDI's Quartz Mountain and Rockwell Diamonds.

Taseko Mines – New Prosperity Project, British Columbia



What Taseko says:

One of Canada's largest undeveloped copper-gold projects, New Prosperity has the potential to create significant economic and social value, both in and beyond British Columbia.

- *The Prosperity deposit is a gold-copper porphyry with a one billion tonne measured and indicated resource containing 5.3 billion pounds of copper and 13.3 million ounces of gold. At metal prices of US\$1,000/ounce gold and US\$3.15/pound copper the project has a pre-tax net present value of C\$3 billion and a 40% pre-tax internal rate of return. At long-term gold and copper prices the project has robust economics.*

*New Prosperity is a project that holds the potential to dramatically increase shareholder value and improve the economic well-being of local communities. Development of this large-scale deposit will be a major step towards transforming Taseko into a strongly positioned mid-tier mining*¹⁷⁶

Key Points for Investors and Other Stakeholders

- Prosperity is a wholly-owned project of Taseko Mines Limited, and has been an important project for HDI directors for decades.
- The New Prosperity Mine proposal has been rejected twice by federal review panels under the Canadian Environmental Assessment Act, and their decision has been affirmed in cabinet by the federal Minister of the Environment. These decisions over-ride decisions by the British Columbia government to grant Environmental Assessment Certificates to the mine proposals.
- In February 2016, Taseko launched a civil claim¹⁷⁷ and two federal judicial reviews (November 29, 2013¹⁷⁸ and March 26, 2014¹⁷⁹) against the federal government. The civil suit sought damages claiming that the federal government and “its agents” failed to meet legal duties owed to Taseko. The judicial reviews challenged Panel findings and say that there was “a failure to observe the principles of natural justice and procedural fairness”. The three lawsuits targeted specific public servants by name. On December 5, 2017, the federal court dismissed the applications with costs awarded against Taseko.¹⁸⁰
- The T̓silhqot’in people, who live where the mine is proposed, hold Aboriginal title to the adjacent lands, as well as a legally recognized right to hunt, fish and trap in the mine footprint. They have been adamantly opposed to the mine since they first heard of it. The CEAA Panel recognized the damage such a mine would do to their physical well-being and culture. Taseko has consistently disregarded their concerns and sought to intimidate them, unsuccessfully.
- The regulatory environment for mining in BC has been severely criticized by the province’s Auditor General. In May 2016, A-G Carol Bellringer wrote: *We found almost every one of our expectations for a robust compliance and enforcement program within the MEM and the MoE were not met. We found major gaps in resources, planning and tools. As a result, monitoring and inspections of mines were inadequate to ensure mine operators complied with requirements. The ministries have not publicly disclosed the limitations with their compliance and enforcement programs, increasing environmental risks, and government’s ability to protect the environment...*¹⁸¹
- Hunter Dickinson directors and Taseko have been major donors to the governing BC Liberal party for years. A Vancouver Sun article written in February 2014 reported: *Hallbauer, directly and through his company, is a generous contributor to Premier Christy Clark’s Liberal party. Together both have contributed \$110,000 to support the Liberals since late 2009, according to the Elections B.C. database. Those contributions included Hallbauer’s \$5,000 campaign donation earlier this year to Mines Minister Bill Bennett, who went to Ottawa this month to lobby the federal government to approve the New Prosperity Mine.*¹⁸² They have also been very active in the industry associations that lobby the BC government for law, regulation and policy that favour the industry.

- The lax BC regulatory environment has increasingly worried Alaskans, who are downstream from many BC mines and have evidence that BC has not been regulating and monitoring these mines sufficiently.¹⁸³

Amarc Resources Ltd., British Columbia

What the company says about itself:

Amarc is a British Columbia-based mineral exploration and development company focused on developing the IKE Project, an exciting new porphyry copper deposit discovery in British Columbia ("BC"). Amarc is led by an experienced management team with a demonstrated history of advancing exploration and development projects and delivering outstanding value to shareholders. The company is publicly traded in Canada on the TSX Venture Exchange (AHR) and in the United States on the Over the Counter Bulletin Board (AXREF).

Amarc has made a significant copper-molybdenum-silver discovery at its IKE project located in the heartland of the province's copper mining industry. Assay results received from an initial nine hole (5,400 metre) diamond drill program have confirmed the presence of an important porphyry deposit. The nine discovery drill holes intersected chalcopyrite and molybdenite mineralization from surface and over a broad area, measuring 1,200 metres east-west by 600 metres north-south and to a depth of approximately 500 metres. Mineralization at IKE remains open in all lateral directions and to depth. The nine discovery holes and post-drilling geological, geochemical and geophysical surveys completed outwards from the drilled area indicate that the IKE porphyry system has the potential for important-scale resource volumes.

Amarc has secured additional mineral claims in the IKE area to cover other compelling deposit targets and potential infrastructure sites.¹⁸⁴

Key points for investors and other stakeholders:

- The IKE deposit is in the heart of a tribal park called Dasiqox, proclaimed by the T̓silhqot'ín First Nation in 2014. IKE is "located at the Dasiqox headwaters – at the heart of T̓silhqot'ín 's traditional and ancestral territory. The IKE site's glacial waterways feed into the Dasiqox (Taseko) salmon-bearing river."¹⁸⁵
- The T̓silhqot'ín see the tribal park as an assertion of indigenous governance, a place where a living can still be made from the land in ways that mean it is there for future generations, and a place of cultural revitalization. The T̓silhqot'ín won legal recognition of Aboriginal title to their land from the Supreme Court of Canada. It took a 25-year court battle, before the Supreme Court of Canada ruled on June 26, 2014, that the nation held title to 1,900 square kilometers of land in its traditional territory, and additionally, had hunting, fishing and trapping rights on many more. It is these other lands that Dasiqox seeks to protect.
- The T̓silhqot'ín have successfully stopped HDI and Taseko twice at the New Prosperity Mine. They have issued an eviction order to Amarc, but Amarc is continuing to drill.
- Amarc's Robert Dickinson and Diana Nicholson claim that they have found a "world-class porphyry deposit" of 462 km², but they have drilled fewer than 50 holes. What they have found is

marginal: the highest grade intersections they have disclosed to date are .39% copper, .046% Molybdenum and 3.2 gpt of silver, no gold.¹⁸⁶

- Exploring since 1993, Amarc has yet to identify an economically viable deposit. By June 2017, the company's deficit had risen to \$ 65,709,399. The 2017 current loss was \$1,042,648. In 2014, the current loss had been as high as \$4,884,024. The tax loss carry-forwards are now \$15.3 million and the resource pool for use against future income tax is \$23.8 million¹⁸⁷ (reduced by the use of flow-through shares for financing). There are 145,424,061 common shares issued. The company owes Robert Dickinson, the CEO, two loans amounting to over \$2million.
- The only income in 2015-2017 period, aside from share offerings, was:
 - the IKE option agreement with Thompson Metals brought in \$3 million in 2016 and \$2.9 million in 2017. That agreement is now terminated as Thompson was acquired by Centerra Gold.¹⁸⁸ Since the 2017 financial statement, the company has now entered into the Mineral Property Farm-in Agreement with HudBay described below.
 - the BC Mineral Exploration Tax Credit (METC), which amounted to \$648,512 in 2017.
 - a \$38,000 Sales tax refund was due it in 2017.
- Amarc is now in a joint venture with HudBay, with imposed deadlines to deliver a positive feasibility study on IKE and a successful environmental assessment by the end of 2026. Aside from the farm-in with Hudbay, the company has no other source of cash. HudBay is a mid-tier Canadian mining company. Its flagship mines and smelter complex was in Flin Flon, Manitoba. The smelter was the largest single point source of mercury and lead pollution in North America¹⁸⁹ until it was closed in June 2010. HudBay has since been dealing with substantial community opposition to its mining projects in Guatemala, Peru and Arizona.

HDI Northcliff Resources Ltd., New Brunswick

What HDI says:

Northcliff Resources Ltd. is a mineral development company focused on advancing the Sisson Tungsten-Molybdenum Project located in New Brunswick, Canada. Northcliff is publicly traded on the Toronto Stock Exchange (TSX) under the symbol NCF.

The Sisson property hosts a large near-surface tungsten-molybdenum deposit amenable to open pit mining. Sisson has excellent potential to be a near-term metal producer, with the capability to meet increasing tungsten demand from North American, European and Asian markets.

In January 2013, Northcliff announced positive feasibility results for the Sisson Project based on a 30,000 tonnes per day open pit mining and milling operation and an ammonium paratungstate (APT) plant.

Highlights from the Sisson Project Feasibility Study include¹:

- *334 million tonne proven and probable mineral reserve² containing 22.2 million metric tonne units (mtu) of tungsten trioxide (WO₃) and 154 million pounds of molybdenum (Mo) at an \$8.83/t Net Smelter Return cut-off*
- *Average of 557,000 WO₃ mtu in APT and 4.1 M lb Mo in concentrate produced annually over a 27-year mine life*
- *Pre-tax net present value (NPV) of \$714 million (8% discount rate), a pre-tax internal rate of return (IRR) of 20.4% and a 4.1-year payback on initial capital expenditures of \$579 million*
- *Post-tax NPV of \$418 million, a post-tax IRR of 16.3% and a 4.5-year payback*

The Sisson Project has received both provincial and federal approvals after progressing through a rigorous, four-year environmental assessment process. Current project activities are directed toward

*obtaining construction and operating permits, while the senior management team advances discussions to secure off-take agreements and project financing.*¹⁹⁰

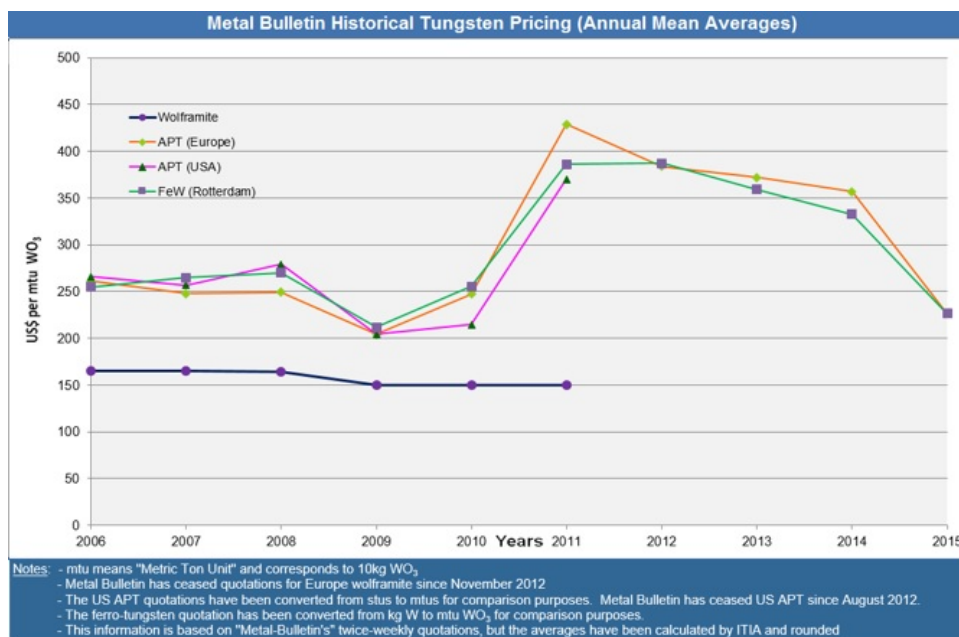


The Wolastoq grandmothers with Jacinda Mack, August 2017. Photo: Tracy Glynn.

Key Points for Investors and Other Stakeholders:

- The mine is on the territory of six Maliseet communities, members of the Wolastoq Nation, who oppose it.¹⁹¹ Currently, grandmothers from the communities are occupying the mine site and intend to remain there. They have broad public support.
- The Sisson Mine would be 5-10 times bigger than most other tungsten mines in the world, but the ore grade (the percentage of tungsten and molybdenum in the ore) is 3-7 times lower. The Sisson low ore grades appear to make the Sisson Mine the biggest tungsten waste management project in the world.
- There is little market for tungsten at this time and there are other tungsten mines developing. The USGS writes: *In late 2015 the sole tungsten mine in Canada [Cantung] suspended operations because of low W prices and was placed on care-and-maintenance status. Eight large Chinese tungsten producers plan to reduce output of W concentrates. Bucking this negative trend a new tungsten mine began production in Zimbabwe in 2015; a large new mine in Vietnam has ramped up production for APT and tungsten oxides, the Drakelands tungsten mine in Devon, UK, started production in August 2016, and new ferrotungsten plants also began production in Russia and the Republic of Korea.*¹⁹²
- The mine is not currently economically feasible, given low commodity prices¹⁹³ Prices in the feasibility study from January 2013 were based on \$350US/Mtu for tungsten and \$15US/lb for molybdenum.¹⁹⁴ In December 2017, although the price of APT tungsten had risen, it was still only \$315US/mtu.¹⁹⁵

- In 2013, the operating costs for the Sisson Mine were projected to be US \$153.3/Mtu (allowing for a credit from molybdenum mining of \$107.8/mtu.)¹⁹⁶



- The Sisson Mine Project is a limited partnership with Todd Minerals of New Zealand that appears to limit liability for the mine. Its only asset is the mine itself, and the corporate structure means any transfer pricing would be invisible to investors and would make it difficult for governments to hold the company accountable.¹⁹⁷ The company is still seeking investors to make the project a reality.¹⁹⁸
- The Sisson Project may be unable to guarantee a return to its investors given the metrics given above. In addition, one of the two partners in the mine is struggling with another tungsten mine. The Wolf Minerals' Drakelands Mine, 32.3% owned by Todd Corporation, is deeply in debt and has had technical problems.

HDI Rathdowney Resources – Olza Mine, Poland

The company states:

Strong potential financial returns are indicated for a 6,000 tpd low-cost, bulk-tonnage underground operation and conventional treatment facility, producing two clean, low-iron, marketable concentrates (Preliminary Economic Assessment). In addition, extensive property-wide historical drilling by the Polish State as well as recent drilling by Rathdowney have shown excellent potential to expand mineral resources to support a long-life mine.¹⁹⁹

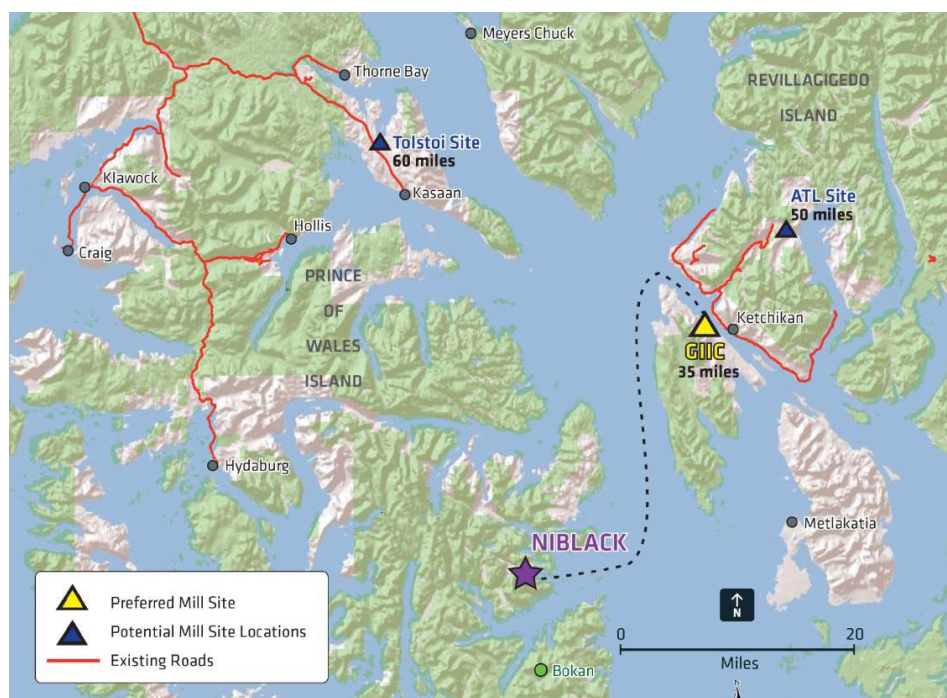
Key Points for Investors and Other Stakeholders

HDI Rathdowney Resources intends to develop a small, underground lead-zinc project in an old mining region of Poland. Based on older Russian studies, Rathdowney conducted a preliminary economic assessment for the mine. Currently, the company has been carrying out engineering design work for the project

and is negotiating permitting. So far, further development is stalled by low lead and zinc prices. It is in the advanced exploration stage.

Heatherdale Resources – Ni-black Mine, Alaska

The Ni-black copper-zinc mine is expected to be a small 1000-1500 tpd underground mine, using paste backfill for tailings with a ten-year life of mine. It will use a brownfield processing site near Ketchikan for processing and will barge the ore to the plant.²⁰⁰ It is still having to negotiate for substantial investment from Alaska in order to proceed, and commodity prices still appear to make the mine uneconomic.²⁰¹



Appendix A. HDI Historic Companies and Projects

Company	Mineral project	Where	Commodity	HDI involvement	Issues
North American Minerals	Golden Bear (expanded beyond original plan)	BC	Gold	1986-1987 - Homestake takeover	Tahltan forced IBA; costs ballooned; mine flooding not predicted; still on care & maintenance.
Continental Gold	Mt. Milligan (expanded beyond original plan)	BC	Copper-gold	1988-1990. buy out by Placer Dome	PDI wrote down in 1991, later sold to a series of mine operators, still \$800 million in debt; destroyed Nkadzli territory; tailings risk
Continental Minerals	Xietongmen	Tibet	Copper-gold	2001-2011 - sold to Chinese Jinchuan Mining Group	Strong opposition from local villagers/priests and from pro-Tibet forces.
EL Condor Resources	Kemess South (expansion beyond original plan)	BC	Copper-gold	1990-1995-delineate resource, helped negotiate with province, bought by Royal Oak	Mine cost the province \$104 million; Royal Oak paid \$67.9million, Sekani got nothing; tailings risk; constant expansion
Farallon Resources	Camp Morado G9	Mexico	zinc	2005-2011 - put mine into production; sold to Nyrstar	No feasibility study. Sold to Nyrstar for \$409 million. In 2017, Nyrstar sells for \$20million. Violence in Guerrero.
Great Basin Gold	Hollister Mine	NV	Copper gold	1997-2007; Thiessen and Coughlan still on board to 2013; other involvement	Bankruptcy in 2013. 22 subsidiaries. Credit Suisse and other sue, allege fraud; settled in 2017. Mine sold for \$15million in 2013
	Burnstone Mine	South Africa	gold	1997-2008 - some involvement to 2011	2012-Southgold subsidiary in liquidation; over \$800 million spent on development; Rescue plan-sold to Witswatersrand for \$7.25million (and a reduced debt). Sold to Sibanye for \$40 million in 2013.
Atlatsa/Anooraq	Bokoni Mine, other projects later rolled in.	South Africa	gold	1999-2010; some involvement after that.	2004- Pelawan RTO; 2008-Lebowa Mine Purchased/renamed. Worked closely with Angloplats (labour strife), problems BEE, planning, resource estimates. In liquidation as of July 2017
Rockwell Ventures/Rockwell Diamonds	Industrial alluvial diamonds	South Africa	diamonds	1993 - Rockwell Ventures; 2006-2013 - Rockwell Diamonds;	Bankruptcy 2017; Problems working with BEE, communities and gov't regulation; some areas mined out;
Detour gold	Detour Gold (expansion beyond original plan)	ON	gold	2006-2008; Thiessen still on board now (HDI set up company; first IPO)	Small involvement by HDI- mostly Panneton. Enormous wet tailings impoundment

Appendix B. HDI-Affiliated Current Companies and Projects

Taseko Mines	Gibraltar Mine (expansion beyond original plan)	BC	Cu, Mb, Ag	Company since 1966, Gibraltar since 1999-present. HDI's only operating mine opened 2004;	Marginal, still debt financed; pays little tax; gov't subsidy; poor relations with Secwepemc and Tšilhqot'in; discharges into Fraser river; under-funded liabilities. Spins off other projects.
	New Prosperity	BC	Gold, Cu	1993-present	Turned down twice by CEAA – Taseko suing (x3); lawsuit against federal government was lost. Tšilhqot'in strongly opposed. Regulatory capture in BC but new government.
	Florence copper	Arizona	Cu	2009-present. Was Curis Resources until 2014, when Taseko made it a subsidiary	In-situ leach copper project adjacent to community drinking water aquifer. Town strongly opposed. Under-funded liabilities.
Amarc Resources	Ike project	BC	Cu, Mb	1993-present. Ike (2014-) pet project of Robert Dickinson	In Dasiqox Tribal Park – strongly opposed by Tšilhqot'in. In serious debt. Partnership with HudBay.
Heatherdale Resources	Ni-black	Alaska (SE)	Zinc, Cu	2009-present (exploration)	Will be a small 1500 tons per day underground mine, with barging to process site; 10 year mine life. Copper and zinc prices low- may be uneconomic
Rathdowney Resources	Olza	Poland	Zinc, lead	2012-present (PEA)	Small underground mines in Silesia (old mining area). 6000 tpd, paste backfill Not sure about community response. Zinc prices low right now – may be uneconomic
Northcliff Resources	Sisson	NB	Tungsten (w)	201-present. Partnership with Todd Minerals	Not currently economic; strong opposition from First Nations; likely unfunded liability from tailings impoundment
Northern Dynasty	Pebble	Alaska	Cu, Gold, Mb	1983-present. Advanced exploration; no completed feasibility study	3 majors have already walked from project and written off expenditures; state and public strongly opposed (salmon fishery). Legal costs from EPA fight US\$15.1million Cannot proceed without major JV partner. Claim will build smaller mine, but expansion likely if it goes ahead. Tailings risk.
Quartz Mountain	none			Incorporated 1982-present	Appears to be a shell

Appendix C. Directorships in HDI-Affiliated Companies

Name	Company	Title	Date started	Date finished
Scott Cousens	HDI	Director		
	Anooraq/Atlatsa	director	Sept 96	June 2009
	Amarc	director	Sept 1995	present
	Continental Minerals	director	June 1994	April 2011
	Detour Gold	director	August 2006	June 2007
	Farallon	director	December 1995	April 2007
	Great Basin Gold	Director	March 1993	November 2006
	Misty Mountain Gold	Director	June 1994	March 2001
	Northern dynasty Minerals	director	June 1996	June 2016
	Northcliff Resources	Director	June 2011	February 2012
		Director	May 2012	2012?
	Rockwell diamonds	director	November 2000	November 2008
	Taseko	Director	October 1992	July 2014
	Heatherdale Resources	Chairman and Director	November 2009	June 2017
	Quartz Mountain	Chairman and Director	November 2012	December 2011
	Rathdowney	Director	June 2012	

T. Barry Coughlan	HDI	Director		
	Taseko Mines Limited	Director	October 1992	June,2015
	Amarc	Director	February 2009	Present
	Casamiro Resources	Director	February 1995	August 2002
	Continental Mineral Corporation	Director	May 2006	December 2006
	Farallon Resources Ltd	Director	March 1998	January 2011
	Great Basin Gold Ltd.	Director	February 1998	June 2013
	Quartz Mountain Resources	Director	January 2005	December 2011
	Casamiro Resource Corp	Director	February 1995	August 2002
	Northcliff	Director	June 2011	Present
	Rathdowney	Director	March 2011	Present
	Quartz Mountain	Director	January 2005	December 2011
	Quadro Resources (formerly Tri- gold)	President, CEO and director	June 1986	present

Robert Dickinson	HDI	Chairman		
	Anooraq	Chairman	November 1990	September 2004
		Director	October 2004	September 2004
		Co-chairman	October 2004	September 2004
	Amarc	Director	April 1993	
		Co-chairman	September 2000-	April 2004
		Chairman	April 2004	
	Continental Minerals Corp	Director	June 2004	April 2011
		Chairman	June 2004	January 2006
		Co-chairman	January 2006	April 2011
	Curis Resources	Director	November 2010	November 2012
		Chairman	November 2010	December 2010
	Detour gold	Chair	July 2006	March 2009

		Director	July 2006	May 2011
	Farallon Resources Ltd.	Director	July 1991	September 2004
		Chairman	April 2004	September 2004
		Co-chairman	September 2004	April 2006
	Great Basin Gold Ltd.	Director	May 1986	
		Co-Chairman	September 2000	April 2004
		Chairman	April 2004	December 2005
		Co-chairman	December 2005	
		President and CEO	September 2000	December 2005
	Heatherdale Resource	director	November 2009	
	Northcliff Resources	Director	June 2011	
		Chairman	June 2011	January 2013
	Northern Dynasty Minerals Ltd.	Director	June 1994	
		Co-chairman	November 2001	April 2004
		Chairman	April 2004	
	Quartz Mountain Resources	director	December 2011	
		Chairman	December 2011	November 2012
	Rathdowney Resources Ltd.	Director and Chairman	March 2011	December 2011
	Rockwell Diamonds	President and CEO	November 2000	September 2006
		Chairman	September 2000	September 2007
	Rockwell Ventures Inc	Director	November 2000	September 2007
		Chairman	November 2000	September 2007
	Taseko Mines Limited	Director	January 1991	Present
		Chairman	April 2004	July 2005
		Co-Chairman	July 2005	May 2006
		President	January 1991	September 2000
		CFO	February 1991	November 1998
		CEO	November 1998	Sept 2000
		Chair-Gibraltar Mines	?	present

David Elliott	HDI	Director	????	No longer
	Anooraq Resources Corporation	Director	April 2005	Sept 2004
	Great Basin Gold Ltd.	Director	July 2004	June 2011
	Northern Dynasty Minerals	Director	July 2004	June 2012
	Taseko Mines Limited	Director	July 2004	2016

Wayne Kirk	Anooraq Resources	Director	July 2005	September 2004
	Great Basin Gold Ltd.	Director	July 2004	Jan 2012
	Northern Dynasty Minerals	Director	July 2004	June 2016
	Taseko Mines Limited	Director	July 2004	2013
	Homestake Mining company	Vice-President, General counsel and corporate secretary	September 1992	December 2001

Ronald Thiessen	HDI	CEO	?	Present
	Amarc	Director	September 1995	
		President	September 2000	November 2014
		Chief Executive Officer	September 2000	
	Anooraq/ Atlasta	Director	April 1996	June 2011
		President and CEO	September 2000	June 2011
	Casamiro Resource Corp	Director and President	February 1990	August 2002
	Continental Minerals Corp.	Director	November 1995	April 2011
		President and CEO	September 2000	January 2006
		Co- chairman	January 2006	April 2011
	Detour gold	Director	July 2006	May 2013
		Chairman	July 2006	March 2009
	Farallon Resources Ltd	Director	August 1994	January 2011
		President and CEO	September 2000	September 2004
		Co-Chairman	September 2004	April 2006
		Chairman	April 2006	January 2011
	Great Basin Gold Ltd.	Director	October 1993	June 2013
		President and CEO	September 2000	December 2005
		Co-Chairman and Chairman	December 2005	June 2013
	Northern Dynasty Minerals Ltd	Director	November 1995	Present
		President and CEO	November 2001	Present
	Quartz Mountain	President, CEO and Director	December 2011	
	Rockwell Ventures Inc	Director	November 2000	2006?
		President and CEO	November 2000	2006?
	Taseko Mines Limited	Director	October 1993	
		President and CEO	September 2000	July 2005
		Co-chairman	July 2005	May 2006
		Chairman	May 2006	
	Tri-Gold Resources Corp -Now Quadra	director	July 1992	

Robert G Hunter	Amarc	Director	April 1993	Deceased September 2007
		Co-Chairman	September 2000	2007
		Chairman	April 1993	September 2000
		CEO	September 1995-	September 1998
	Anooraq	Director	April 1996	Sept 2004
		Co-Chairman	September 2000	Sept 2004
		Chairman	September 1996	September 2000
		CEO	September 1996-	February 1999
	Farallon	Director	July 1991	2007

		Co-Chairman	September 2000	2007
		Chairman	December 1994	September 2000
	Misty Mountain gold	Director	November 1995	2001
		Co-chairman	September 2000	2001
	Taseko took over Misty Mountain in 2001	CEO (including Chairman and director of Gibraltar Mines Ltd.)	November 1995	June 1998
		Chairman	June 1998	September 2000
	Northern Dynasty	Director	June 1996	2007
		Chairman	October 1996	
	Taseko Mines	Director	February 1991	2007
		Co-Chairman	September 2000	?
		Chairman	January 1993	September 2000
		CEO	February 1991	November 1998
	El Condor Resources	director	November 1990	January 1996
		Chairman	November 1990	January 1996
		CEO	November 1990	January 1996

Jeffrey R. Mason	HDSI	Principal and CFO, Secretary	Dec 1996	2008
	Amarc Resources	Director	September 1995	
		Treasurer and CFO	September 1995	July 2008
		Secretary		
	Anooraq/Atlasta	Director	April 1996	June 2007
		Treasurer and CFO	April 1996	June 2007
	Continental Minerals	Secretary	Nov 1995	February 2008
		CFO	June 1998	February 2008
	Detour gold	CFO and Secretary	Aug 2006	Nov 2007
		Director	Aug 2006	present
	Farallon	Director	December 1995	2008
		Secretary and CFO	December 1997	2008
	Great Basin Gold	Director	February 1994	Nov 2006
		CFO	February 1998	Nov 2006
		Secretary and Treasurer	February 1994	June 1998
	Misty Mountain Gold	Secretary	June 1996	2001
		CFO and Treasurer	June 1998	2001
		director	June 1994	2001
	Northern Dynasty Minerals	Director	June 1996	August 2008
		CFO	June 1996	August 2008
		Secretary	June 1996	February 2008
		Treasurer	May 1997	June 1998
	Rockwell	Director	November 2000	September 2007
		CFO	November 2000	Sept 2007
	Taseko Mines Limited	Director	March 1994	July 2008

		Secretary	March 1994	2008
		CFO and Treasurer	November 1998	2008
		Including CFO, Secretary and Director of Gibraltar Mine	November 1998	Present (Director?)
	Casamiro Resources Corp	Director	February 1995	August 2002
		Secretary-Treasurer		August 2002
	Quartz Mountain	CFO	Jan 2005	Feb 2008

David J. Copeland	HDI	Director		present
		Director of Project Development		present
	Amarc	Director	September 1995	2013
	Anooraq	Director	September 1996	2004
	Continental	President and CEO		2011
	Detour Gold	director	August 2006	June 2007
	Farallon	Director	December 1995	2007
	Great Basin Gold	Director	February 1994	June 2008
	Misty Mountain Gold	director	June 1989	2001
		VP development	June 1989 June 1997	February 1996
	Northern Dynasty Minerals	Director	June 1996	June 2012
	Rockwell Ventures	Director	November 2000	2006
	Rathdowney	Director, Chairman	2011	present
	Taseko Mines Limited	Director	October 1992	2010
		Gibraltar Mines- director		Present?
	Heatherdale	Chairman and CEO	June 2017	

David S. Jennings	HDI	director	From beginning	Deceased May 2005
	Anooraq	director	September 1996	2005
	Farallon	director	July 1991	2005
		President	July 1991	September 2000
		CFO	June 1996	December 1997
	Misty Mountain gold	director	June 1998	February 2001
	Taseko Mines	director	January 1994	2005
	Quartz Mountain Resources	President and CEO	May 1988	2005
		director	August 1986	2005

Russell Hallbauer	HDI	Director	2005	present
	Curis Resources Ltd	Chairman	December 2010	September 2012
		Co-chairman	September 2012	November 2014
		director	November 2010	November 2014

	Northern Dynasty Minerals	director	April 2008	June 2016
	Taseko Mines Limited	President/ CEO/director	July 2005	present

Rene G. Carrier	Quartz Mountain	President	June 2005	December 2011
		CEO	Jan 2007	December 2011
	Rockwell	President	April 1993	Nov 2000
		director	April 1993	November 2008
	Amarc	Director	May 2008	present
	Curis	Director	November 2010	?
	Rathdowney	Director	March 2011	present
	Heatherdale	Director	November 2009	present
	Continental Minerals	Director	February 2001	April 2011

Marchand Snyman	HDI	Director, (from 2006) COO		present
	HDSI	COO	?	?
	Continental Minerals	CFO	2008	2008
	Northern Dynasty	CFO	2008	Feb 2016
	Heatherdale		2009	2012
	<i>Anglo Platinum Ltd</i>	<i>GM, corporate finance</i>	<i>1996-2002</i>	
	Northcliff Resources	Chairman	2013	present
	Rathdowney	Director	?	March 2011

Appendix D. Financial Analysis of Hunter Dickinson Inc., Northern Dynasty and the Pebble Project, D.T. Cochrane¹, Sept. 19, 2017

Introduction

Of the companies that have passed through the stable of Hunter Dickinson (HDI) affiliation, two are more important than the others: Taseko (TGB) and Northern Dynasty (NDM).²⁰² The two are important for very different reasons. Since 2000, TGB is the only HDI-affiliated company to regularly generate a profit. Additionally, since 2013, TGB has been responsible for over 80 percent of the total asset value of HDI-affiliated companies. NDM has never turned a profit. And, it controls only 13 percent of HDI-affiliated asset value. However, in 2016, NDM accounted for almost 70 percent of the market capitalization of HDI-affiliated companies. Additionally, since 2000, Northern Dynasty has made up an increasing share of the fees paid to HDI by publicly traded firms.²⁰³

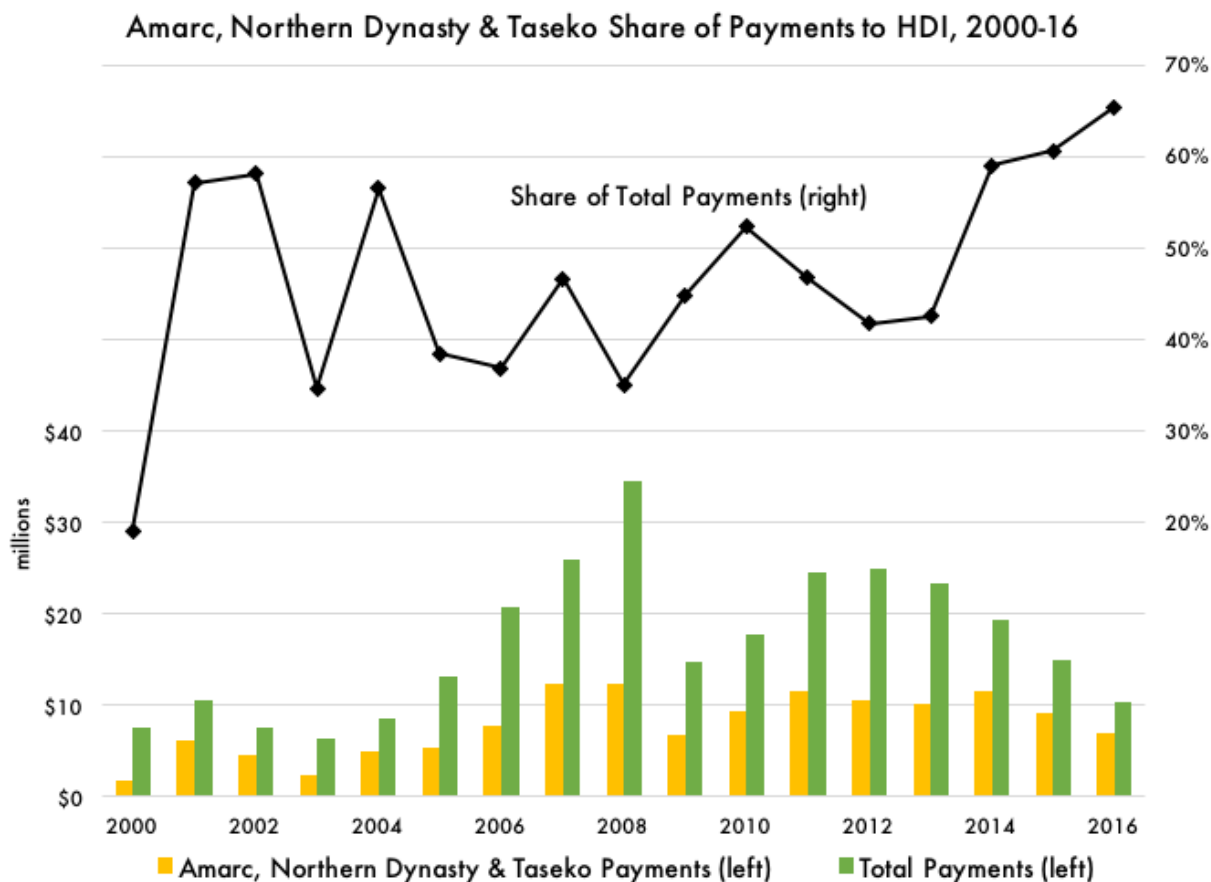
This report will examine three aspects of HDI's agglomeration of companies. First, it will consider the shifting – and waning – payments made to HDI by its affiliated companies for various services rendered. Second, it will examine the make-up of assets among the HDI-affiliated companies, with a focus on TGB and NDM. Third, it will consider the history of market capitalization of the HDI-affiliated firms, again focusing on TGB and NDM. Then, the report will conclude with an analysis of assets and market capitalization among Canadian capital to show that NDM is a unique company even among the unique business of the Canadian junior mining companies. Specifically, NDM has existed in a state of sustained speculative optimism directly tied to the Pebble project. This optimism has generated an unusually high market capitalization.

Service Payments

From 2000 to 2016, HDI received service payments from 14 different affiliated, publicly traded firms. Three companies have made payments to HDI over that entire time period: Amarc, TGB and NDM. From 2000 to 2014, the share of payments coming from the trio has averaged 44.4 percent. In 2015, that share broke through the 60 percent mark for the first time and in 2016, it rose to 65.2 percent. The rising share is due entirely to a marked decline in the total payments made to HDI.

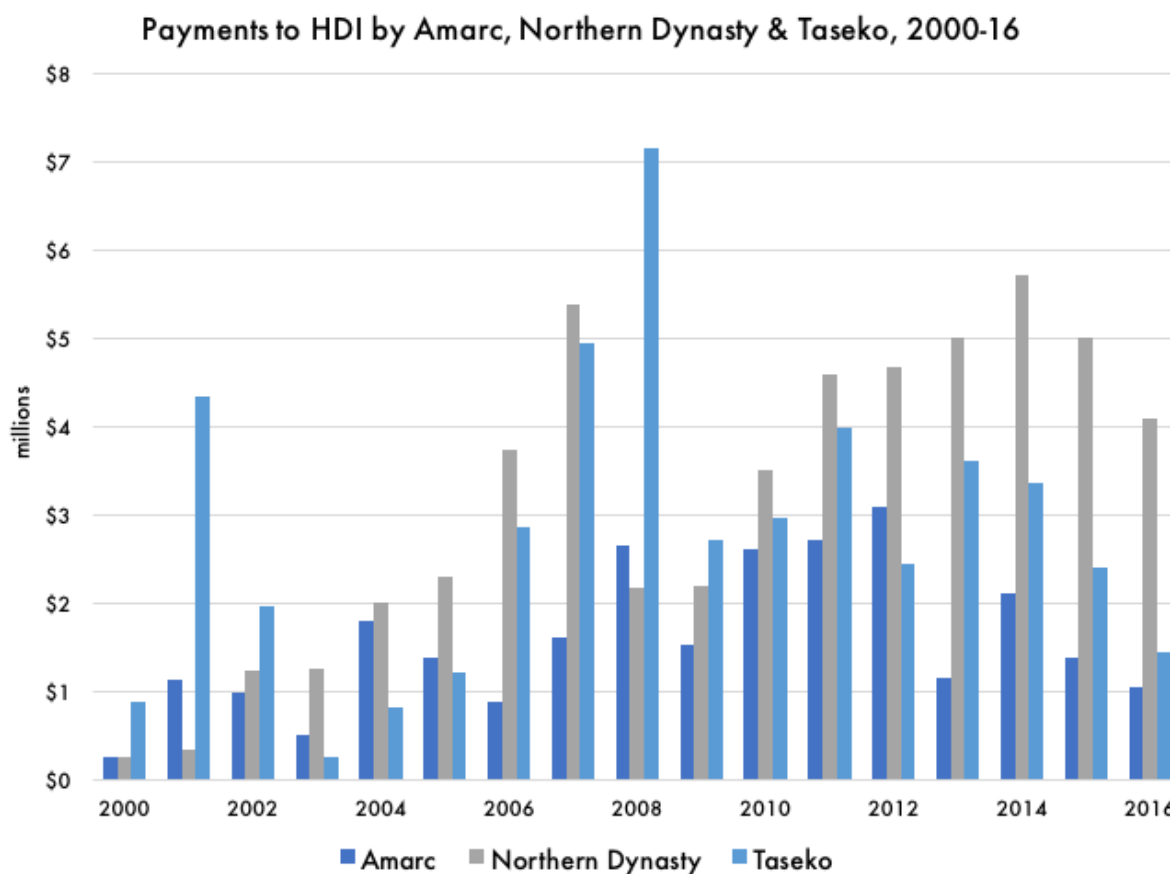
The first figure shows the total payments made to HDI by publicly traded HDI-affiliated firms and the payments that went to the core trio (left axis). It also shows the trio's share (right axis).

¹ Dr. D.T. Cochrane is a father, partner, and economic researcher. He is a post-doctoral research fellow at Ryerson University, a lecturer at York University and a member of anexact, a trans-disciplinary research collective. Dr. Cochrane is currently contributing research and analysis to the exhibition *Work of Wind: Air, Land, Sea* at the University of Toronto's Blackwood Art Gallery.



In addition to the growing share of the core trio is the fact that after total payments grew for six consecutive years from 2003 to 2008, they have since fallen and failed to recover the earlier heights. Indeed, from 2003 to 2008, payments to HDI grew at an annualized rate of 42 percent. They fell by 58 percent in 2009 and after four years of renewed growth, payments have fallen for the last four years and are below the value in 2009. Additionally, although the core trio's share of payments has increased, their total payments have also fallen for the last three years.

The next figure shows the annual payments of the three members of the core trio from 2000 until 2016.



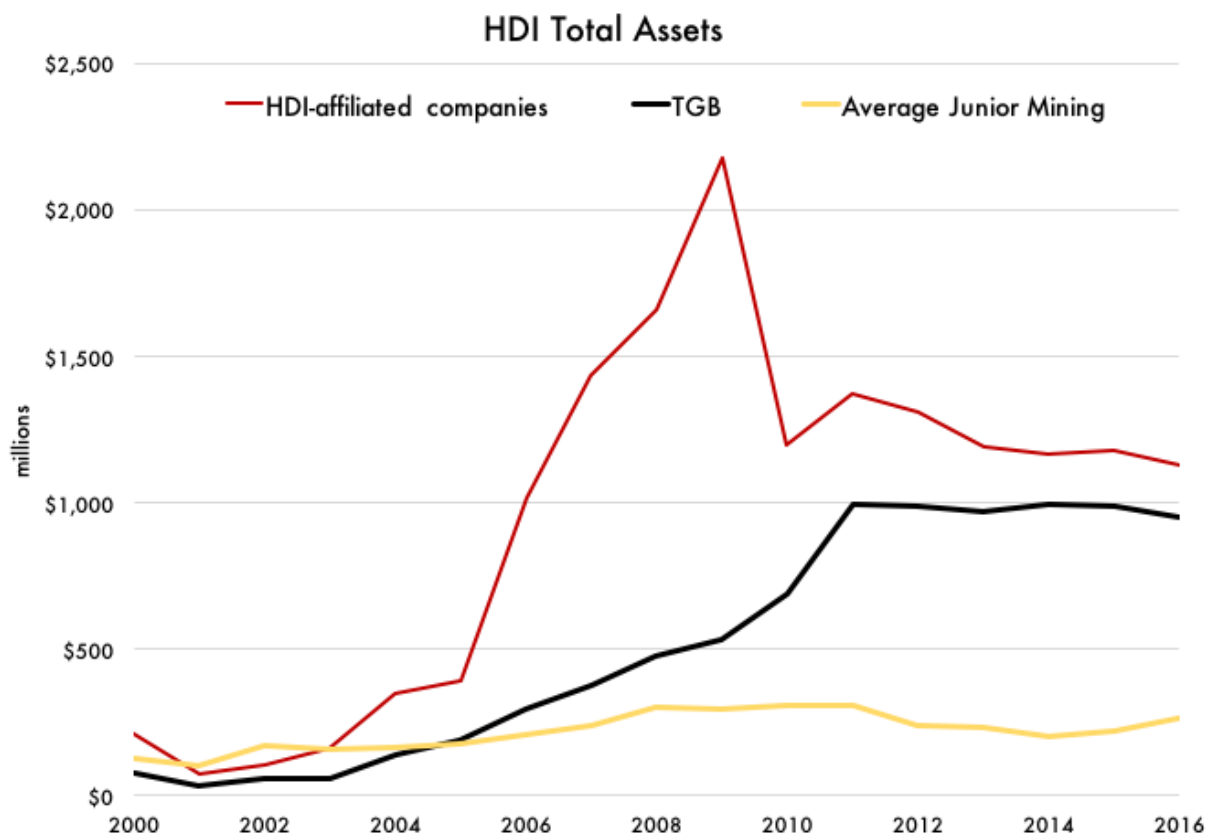
The increasing importance of NDM for payments to HDI in the post-2008 era is clear. In 2008, only 6.3 percent of the payments to HDI came from NDM. TGB was responsible for 20.9 percent. However, payments by TGB fell by 46 percent in 2009, almost as much as the overall payments. In subsequent years, the growth of payments by NDM far surpassed Amarc and TGB. By 2014, the year of NDM's largest payment – \$5.7 million, the company was providing 30.1 percent of total payments to HDI. However, even NDM's payments have fallen over the last two years.

The majority of the payments to HDI for 2013-16 were for “general and administrative” services.²⁰⁴ From 2013-16, these payments averaged 58.5 percent of the total payments, while 29.2 percent was for “technical” services. The remainder was “reimbursement of third party expenses.” The decline in payments in all three categories resulted in a slight increase to 59.4 percent of the 2016 payment going to “general and administrative” services.

Taseko's Assets

An accepted part of the junior mining industry is that companies will lose money for years as they develop potentially profitable properties. However, all these companies must eventually become profitable. The bridge to profitability is the acquisition of productive assets. For junior mining companies these are largely properties with extractive potential.

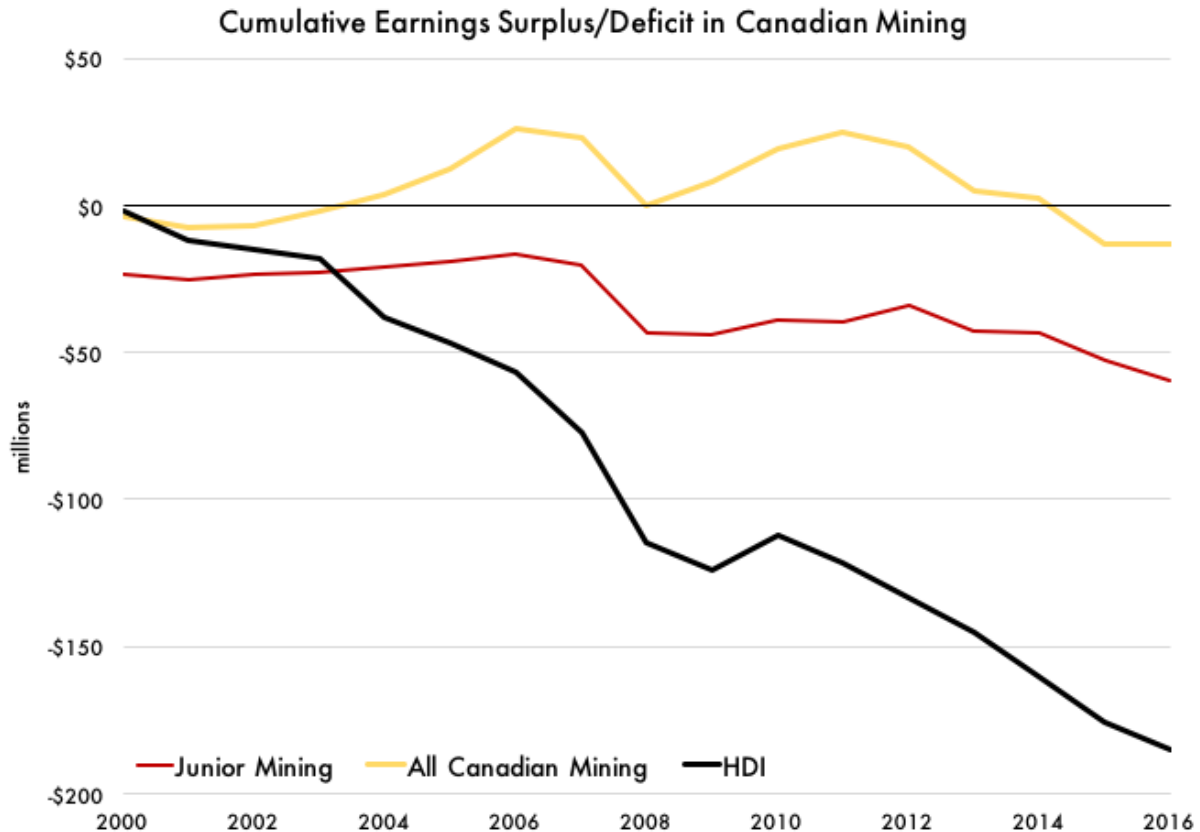
The figure below shows that the assets of HDI-affiliated companies grew substantially through the early-2000s.



From 2005 to 2009, asset values grew at an annualized rate of 53 percent per year. However, in 2010, the total asset value of HDI-affiliated companies dropped significantly. This is almost entirely due to Atlatsa ending its relationship with HDI. In 2009, Atlatsa had increased its assets from \$12.9 million to over one billion dollars. This was due to the acquisition of a controlling share in another mining company. In 2009, Atlatsa's assets comprised 46.7 percent of the total assets of HDI-affiliated companies. The next year, when Atlatsa's assets ceased to be part of the HDI-affiliated group of companies, the loss of those assets was responsible for 104 percent of the decline in HDI-affiliated total assets. That same year, Taseko increased its assets by \$152 million. The following year, Taseko would increase its assets by another \$307 million. In 2016, Taseko held 84 percent of the total assets controlled by HDI-affiliated firms.

Briefly, it is worth noting the profit/loss situation of HDI-affiliated companies. The only year post-2000 where the HDI stable of companies collectively generated a profit was 2010, of which Taseko was responsible for 144 percent.

Because HDI-affiliated firms are in the junior mining industry they take losses most years. However, even within an industry built on negative earnings, HDI's losses are extraordinary, as seen in the figure below.



The lines in this figure trace the average cumulative surplus/deficit of all Canadian mining companies, a subset comprised of junior mining companies and the total cumulative deficit of HDI-affiliated companies.²⁰⁵ In years when the group posts positive net earnings, the line moves up. When the group posts losses, the line moves down. The figure shows that cumulative losses for all three groups have piled up over recent years, with Canadian mining as a whole moving from a surplus into a deficit. The average Canadian mining company lost \$19 million from 2011 to 2016. The average junior mining company lost \$38 million and the HDI-affiliated companies lost a combined \$64 million. Companies that were previously affiliated with HDI, but are no longer have not fared any better. Between 2011 and 2016, post-HDI publicly traded companies increased their deficit to \$474 million.

Northern Dynasty's Capitalization

Like many in the junior mining business, HDI has been on a market roller coaster via its publicly traded companies, as seen in the next figure. Between 2001 and 2007, HDI-affiliated firms saw annualized growth of 97.8 percent per year, from \$72.5 million to \$4.3 billion. Three companies – TGB, NDM and Atlatsa – were responsible for 63.6 percent of the growth. The following year brought a loss of 67 percent, with those same three companies responsible for 73.5 percent of the decline. 2010 would be the last year for Atlatsa's affiliation with HDI.

The Political Speculation of Northern Dynasty and the Pebble Project

Market capitalization and asset value are two important evaluations of a company. They differ in important ways.

On the balance sheet, assets are broken down into current assets and non-current assets. The former includes cash and other financial vehicles easily converted into cash. The latter are not as easily liquidated and include the productive capacity of the company, such as factories and mines. Asset values are calculated based on the acquisition costs of an asset. They are backward-looking. Conversely, market capitalization is forward looking. Investors buy and sell the shares, continually re-establishing a price for the company: the share price multiplied by the number of shares outstanding. The price that investors establish is based on expectations for the company's future profits. Those expected profits ultimately depend on the ability to generate a long-term positive cash flow from non-current assets.

The ratio of market capitalization to non-current assets (M/N) offers a measure of the pessimism or optimism of investors about a company's future. A ratio below one suggests a pessimistic evaluation. The greater the ratio is above one, the more optimistic are investors about the company.

From this perspective, TGB and NDM are a study in contrasts. For 2000 to 2016, TGB averaged an M/N of 0.84. For the last five years, TGB averaged 0.41. Its highest ratio was 2.6 in 2006. The M/N for NDM during the years 2000-16 was 5.05. Its highest ratio was 15,000 in 2003. The extreme value happened because the company had only \$12,000 in non-current assets on the books while its closing market capitalization for the year was \$182 million. The following year, NDM would put its initial investment in the Pebble project on the books, valued at \$12 million while its capitalization increased to \$278 million, leaving an M/N of 22.7.

NDM is far from alone among Canadian companies with capitalizations many multiples greater than the value of their non-current assets. The phenomenon is particularly common among junior mining companies, which are typically speculative ventures for investors.

Two things set NDM apart. First, it is one of just a handful of Canadian junior mining companies to maintain an M/N greater than 5 for more than ten years from 2000 to 2016.²⁰⁶ Second, among that handful of companies, NDM has had the highest capitalization. In 2016, NDM's capitalization of \$750 million was greater than the capitalization of the other nine companies combined. From 2009 to 2016, NDM's average capitalization was over \$500 million. The next largest average belonged to Ngex Resources, which averaged just over half that.

This suggests that NDM is an unparalleled optimistic speculative investment among junior mining companies. The Pebble project is at the very heart of this reality. NDM closed 2016 up over 700 percent from its 2015 close. That jump is almost certainly due to developments at the EPA favourable to the future of the project.

Table A: HDI-affiliated companies (both current and historic)

Amarc	Active 2000-16
Atlatsa	2000-09
Continental	2000-09
Curis	2010-14
Detour	2006-08
Farallon	2000-10
Great Basin	2000-08
Heatherdale	2008-16
Northcliff	2010-16
Northern Dynasty	2000-16
Quartz Mountain	2002-10, 2012-16
Rathdowney	2010-16
Rockwell	2001-13
Taseko	2000-16

Appendix E. Partial List of Charitable Donations made by current HDI-affiliated companies

Company Name	Recipient	Total Amount	Date Range
Hunter Dickinson	Minerals Ed	>\$20,000	2009-2013
	BC Museum of Mining	Unspecified	2012
	Association for Mineral Exploration in Canada	Unspecified	2008-2010
	Prospectors & Developers Association of Canada	>\$10,000	2005-2006; 2011-2013
	BC Cancer Foundation	\$5,000-\$24,999	Cumulative to 2010
	BC Children's Hospital Foundation	\$25,000-\$40,000	2011
	Nature Trust of British Columbia	Unspecified	2012
	Junior Achievement of Central Ontario	\$1,000-\$4,999	2005-2006
HDI	Association for Mineral Exploration in Canada	Unspecified	2012-2014
Northern Dynasty	Prospectors & Developers Association of Canada	Unspecified	2012-2013
	Britannia Mine Museum	>\$1,000,000	2010
	BC Museum of Mining	>\$1,000,000	2012
Taseko Mines	Canadian Cancer Society	Unspecified	2008-2009
	Canadian Cancer Society, BC & Yukon Division	Unspecified	2008-2009
	Heart & Stroke Foundation of Canada	\$3,000-\$29,999	Cumulative to 2015
	Vancouver General Hospital	Unspecified	2010-2011
	VGH and UBC Hospital Foundation	\$1M-\$2.5M; >\$1M	Cumulative to 2015; 2016
	St. Paul's Hospital Foundation (Saskatoon)	>\$3,000; >\$10,000	2007-2012; 2012-2015
	BC Children's Hospital Foundation	\$25,000-\$99,999; \$10,000-\$99,999	2011; 2012
	Ronald McDonald House BC	\$5,000-\$9,999	2013-2014
	Alzheimer Society of BC	\$18,000-\$44,994	2008-2015
	Arts Club Theatre Co.	\$20,000-\$39,999	Cumulative between 2010 and 2015
	MineralsEd	>\$40,000	2009-2013
	Science World at TELUS World of Science	>\$500,000	2011-2012
	BC Museum of Mining	>\$500,000	2012
	Britannia Mine Museum	>\$500,000	2010
	BC Institute of Technology	\$10,000-\$99,999	2006-2008
	Thomson Rivers University	\$2,000-\$9,999	2015-2016
	Pacific Salmon Foundation	>\$10,000	Cumulative to 2014

Endnotes

¹ The pro-forma cautionary statement on 2017 documents states [emphasis added]: *Assumptions used by the Company to develop forward-looking statements include the following: the Pebble Project will obtain all required environmental and other permits and all land use and other licenses; studies and development of the Pebble Project will continue to be positive, and no geological or technical problems will occur. The likelihood of future mining at the Pebble Project is subject to a large number of risks and will require achievement of a number of technical, economic and legal objectives, including obtaining necessary mining and construction permits, approvals, licenses and title on a timely basis and delays due to third party opposition, changes in government policies regarding mining and natural resource exploration and exploitation, the final outcome of any litigation, completion of pre-feasibility and final feasibility studies, preparation of all necessary engineering for surface or underground mining and processing facilities as well as receipt of significant additional financing to fund these objectives as well as funding mine construction. Such funding may not be available to the Company on acceptable terms or on any terms at all. There is no known ore at the Pebble Project and there is no assurance that the mineralization at the Pebble Project will ever be classified as ore. The need for compliance with extensive environmental and socio-economic rules and practices and the requirement for the Company to obtain government permitting can cause a delay or even abandonment of a mineral project. The Company is also subject to the specific risks inherent in the mining business as well as general economic and business conditions. For more information on the Company, Investors should review the Company's filings with the United States Securities and Exchange Commission and its home jurisdiction filings that are available at www.sedar.com.*

² Taseko Management Information Circular April 2017, page 37.

³ The only HDI affiliated company paying taxes to provincial or federal governments is Gibraltar Mine, and – other than a portion of the BC Mineral Tax- it does not pay taxes unless it earns a profit.

⁴ Taseko was clearly affiliated with HDI from 1991 until 2016, and continues to share a number of directors with HDI and to purchase services from HDSI. Taseko subsidiaries also share HDI directors.

⁵ Taseko financial Statements for 2015 and 2016; news release dated August 22, 2017.

⁶ Despite the enormous size and risk of the enormous size and risk from the tailings impoundment, in 2017, Taseko only has \$30,535,000 in a line of credit and a cash deposit of \$7,500,000 with BCMEM as their “provision for environmental rehabilitation” for Gibraltar (and Florence together) [Taseko Financial Statements for 2015 and 2016, page 22].

⁷ The Bokoni Mine, currently on care and maintenance, is owned by Atlatsa Resources (previously known as Anooraq Resources). HDI was involved until 2010. It had previously been called the Lebowa Mine. Unanticipated low PGM prices and labour unrest forced its closure.

⁸ Tirisano was to be the flagship of the alluvial diamond mines brought into production by Rockwell Diamonds. HDI was involved with Rockwell until February 2013.

⁹ The Campo Morado G9 Mine in Mexico was rushed into production by HDIFarallon without a feasibility study. Plummeting zinc prices in 2009 and then violent gang activity led to its closure in early 2015. Nyrstar closed it and sold it for \$20 million.

¹⁰ Burnstone in South Africa was forced into receivership by its creditors in 2013.

¹¹ Hollister Mine in Nevada was forced into receivership by its creditors in 2013.

¹² Opposed by the T̓silhqot'in as it lies in the heart of Dasiqox tribal park.

¹³ Opposed by five of six Maliseet (Wolastoq) communities.

¹⁴ Opposed by the Town of Florence and others as they fear for their drinking water aquifer.

¹⁵ The Sisson mine is not currently economically feasible, given low commodity prices. Current prices for APT tungsten and for molybdenum are \$160US/Mtu¹⁵ for tungsten (WO₃) and \$5.65US/lb for Molybdenum (Mb).¹⁵ Prices in the feasibility study from January 2013 were based on \$350US/Mtu for tungsten (two times higher than today's market) and \$15US/lb for molybdenum (nearly 3 times higher).

¹⁶ Heatherdale's Ni-black (copper-zinc) Mine has resource estimates only from 2011. Those estimates were based on: US\$50 Net Smelter Return (NSR) cut-off uses long-term metal forecasts: gold US\$1150/oz, silver US\$20.00/oz, copper US\$2.50/lb, and zinc US\$1.00/lb; Recoveries (used for all NSR calculations) to Cu concentrate of 95% Cu, 56% Au and 53% Ag with payable metal factors of 96.5% for Cu, 90.7% for Au, and 89.5% for Ag; to Zn concentrate of 93% Zn, 16% Au, and 24% Ag with payable metal factors of 85% for Zn, 80% for Au and 20% for Ag. The company is still trying to advance the project.

¹⁷ Rathdowney's Olza project is not yet permitted, and until/if zinc prices rise, is highly unlikely to proceed.

¹⁸ Ike is a very early stage exploration copper-silver-molybdenum project.

¹⁹ The Framework agreement that spells out the terms of the negotiation over the option with First Quantum Minerals is filed with other Northern Dynasty filings on sedar.com, dated December 15, 2017.

²⁰ Taseko Technical Report, prepared by Scott Jones, June 15, 2015, page 12, and http://intel.rscmme.com/report/Taseko_Mines_Ltd_Gibraltar_Mine_15-6-2015; http://mssi.nrs.gov.bc.ca/Gibraltar/Gibraltar_2014_DSI.pdf; Taseko Audited Financial Statements for 2016, note 19, pages 28-29; Hoekstra, Gordon. BC's Gibraltar Wants to increase amount of effluent discharged to the Fraser River. Vancouver Sun. Sept 28, 2015. <http://www.vancouversun.com/Gibraltar+mine+wants+increase+amount+effluent+discharged+Fraser+River/11395132/story.html?lsa=ed51-4693>.

²¹ There is a substantial potential unfunded liability for investors from this mine, as the mine is located very close to the drinking water aquifer for Pinal County and the Town of Florence. The consequences of accidents are not covered in the reclamation bond for the mine. Leakage into aquifers from in-situ leach wells – no matter how carefully constructed – is a real concern. Water

availability is huge issue in Arizona and there is substantial opposition to the mine from the Town of Florence, from citizens' groups, and from developers South West Value Partners and Pulte Homes, who all believe that the mine endangers the drinking water aquifers.

²² Homestake saw capex more than double once they took over NAM in 1986 as the costs had been underestimated. Although the mine operated for only 8 years, current owner Goldcorp has had to maintain it since 2005.

²³ Placer Dome (PDI) paid \$258 million for the HDI Mt. Milligan deposit in 1990, and then wrote it off in 1992 when gold prices dropped. This very marginal copper-gold mine was put finally brought into production in 2014, but carrying a \$782 million gold stream agreement with Royal Gold. In 2016, now carrying \$800 million in debt, it was sold again to Centerra, which paid \$175.6 million in cash and assumed the debt. The gold stream agreement was renegotiated to include copper.

²⁴ The Bokoni Mine in South Africa struggled for years to be profitable, despite enormous financial assistance from Amplats. It has been on care and maintenance since July 2017.

²⁵ Campo Morado in Mexico was rushed to production by HDI Farallon and sold to Nyrstar for \$409 million in 2011. Faced with unpredicted low zinc prices and violence in the state, Nyrstar closed the mine and sold it in 2015 for \$20 million.

²⁶ Northern Dynasty Financial Statements for September 30, 2017.

²⁷ <http://www.hdimining.com/s/AboutHDI.asp>

²⁸ http://www.hdimining.com/s/TrackRecord.asp?ReportID=400170&_Type=Track-Record&_Title=Project-Development

(downloaded September 2017).

²⁹ Taseko was clearly affiliated with HDI from 1991 until 2016, and continues to share a number of directors with HDI and to purchase services from HDSI. Taseko subsidiaries also share HDI directors.

³⁰ Taseko Financial Statements for 2015 and 2016, news release dated August 22, 2017.

³¹ Despite the enormous size and risk of the enormous size and risk from the tailings impoundment, in 2017, Taseko only has \$30,535,000 in a line of credit and a cash deposit of \$7,500,000 with BCMEM as their "provision for environmental rehabilitation" for Gibraltar (and Florence together) [Taseko Financial Statements for 2015 and 2016, page 22].

³² See case studies.

³³ New Prosperity and Prosperity Mine proposals.

³⁴ <https://decisions.fct-cf.gc.ca/fc-cf/decisions/en/item/301824/index.do>

³⁵ Opposed by the Tšilhqot'in as it lies in the heart of Dasiqox tribal park.

³⁶ Opposed by five of six Maliseet (Wolastoq) communities.

³⁷ Opposed by the Town of Florence and others as they fear for their drinking water aquifer.

³⁸ The Sisson mine is not currently economically feasible, given low commodity prices. Current prices for APT tungsten and for molybdenum are \$160US/Mtu³⁸ for tungsten (WO₃) and \$5.65US/lb for Molybdenum (Mb).³⁸ Prices in the feasibility study from January 2013 were based on \$350US/Mtu for tungsten (two times higher than today's market) and \$15US/lb for molybdenum (nearly 3 times higher).

³⁹ Heatherdale's Ni-black (copper-zinc) Mine has resource estimates only from 2011. Those estimates were based on US\$50 Net Smelter Return (NSR) cut-off using long-term metal forecasts: gold US\$1150/oz, silver US\$20.00/oz, copper US\$2.50/lb, and zinc US\$1.00/lb; Recoveries (used for all NSR calculations) to Cu concentrate of 95% Cu, 56% Au and 53% Ag with payable metal factors of 96.5% for Cu, 90.7% for Au, and 89.5% for Ag; to Zn concentrate of 93% Zn, 16% Au, and 24% Ag with payable metal factors of 85% for Zn, 80% for Au and 20% for Ag. The company is still trying to advance the project.

⁴⁰ Rathdowney's Olza project is not yet permitted, and until/if zinc prices rise, is highly unlikely to proceed

⁴¹ Ike is a very early stage exploration copper-silver-molybdenum project.

⁴² The Framework agreement that spells out the terms of the negotiation over the option with First Quantum Minerals is filed with other Northern Dynasty filings on sedar.com, dated December 15, 2017.

⁴³ Taseko Technical Report, prepared by Scott Jones, June 15, 2015, page 12, and http://intel.rscmm.com/report/Taseko_Mines_Ltd_Gibraltar_Mine_15-6-2015; http://mssi.nrs.gov.bc.ca/Gibraltar/Gibraltar_2014_DSI.pdf; Taseko Audited Financial Statements for 2016, note 19, pages 28-29; Hoekstra, Gordon. BC's Gibraltar Wants to increase amount of effluent discharged to the Fraser River. Vancouver Sun. Sept 28, 2015. http://www.vancouversun.com/Gibraltar+mine+wants+increase+amount+effluent+discharged+Fraser+River/11395132/story.html?_lsa=ed51-4693

⁴⁴ There is a substantial potential unfunded liability for investors from this mine, as the mine is located very close to the drinking water aquifer for Pinal County and the Town of Florence. The consequences of accidents are not covered in the reclamation bond for the mine. Leakage into aquifers from in-situ leach wells – no matter how carefully constructed – is a real concern. Water availability is huge issue in Arizona and there is substantial opposition to the mine from the Town of Florence, from citizens' groups, and from developers South West Value Partners and Pulte Homes, who all believe that the mine endangers the drinking water aquifers.

⁴⁵ Homestake saw CAPEX more than double once they took over NAM in 1986 as the costs had been underestimated. Although the mine operated for only 8 years, current owner Goldcorp has had to maintain it since 2005.

⁴⁶ Placer Dome (PDI) paid \$258 million for the HDI Mt. Milligan deposit in 1990, and then wrote it off in 1992 when gold prices dropped. This very marginal copper-gold mine was put finally brought into production in 2014, but carrying a \$782 million gold stream agreement with Royal Gold. In 2016, now carrying \$800 million in debt, it was sold again to Centerra, which paid \$175.6 million in cash and assumed the debt. The gold stream agreement was renegotiated to include copper.

⁴⁷ The Bokoni Mine in South Africa struggled for years to be profitable, despite enormous financial assistance from Amplats. It has been on care and maintenance since July 2017.

⁴⁸ Campo Morado in Mexico was rushed to production by HDI Farallon and sold to Nyrstar for \$409million in 2011. Faced with unpredicted low zinc prices and violence in the state, Nyrstar closed the mine and sold it in 2015 for \$20million.

⁴⁹ Dr. Cochrane's full report is available as Appendix D.

⁵⁰ For the purpose of a constructing a statistical subset for the analysis, junior mining companies were defined as those that had never posted a cumulative surplus greater than \$1 billion between 2000 and 2016.

⁵¹ D.T. Cochrane (Appendix D). Research derived from company annual reports and the Compustat-Capital IQ database. (September 2017).

⁵² Northern Dynasty- First Quantum Framework Agreement, section 3.2(pages 6-7) and section 7 (page 11)

⁵³ Northern Dynasty Interim Financial Statements to September 30, 2017, page 5

⁵⁴ Ibid.

⁵⁵ Taseko Annual Information Return for 2016, page 13.

⁵⁶ The System for Electronic Document Analysis and Retrieval (SEDAR) is a filing system developed for the Canadian Securities Administrators to:

- facilitate the electronic filing of securities information as required by Canadian Securities Administrator;
- allow for the public dissemination of Canadian securities information collected in the securities filing process; and
- provide electronic communication between electronic filers, agents and the Canadian Securities Administrator

⁵⁷ Taseko Management Information Circular April 2017, page 37.

⁵⁸ Service payments vary with company and a general description is provided in the public company financial statements. The payment includes salary and fees to key KMP, explorations services, offices, legal and investor relations.

⁵⁹ *The aggregate value of transactions with KMP, being the Group's directors, Chief Financial Officer ("CFO") and senior management including the Senior Vice President ("VP") Corporate Development, VP Corporate Communications, VP Engineering, VP Public Affairs, Chief Executive Officer of the Pebble Partnership ("PLP CEO"), Chairman of Pebble Mines Corp ("PMC Chair"), Senior VP Corporate Affairs of the Pebble Partnership ("PLP Senior VP") and Company Secretary, Northern Dynasty Financial Statements for years ending December 31, 2015 and 2016, page 29.*

⁶⁰ *The [NDM] Group directly employs its non-executive directors, PLP CEO, PMC Chair and PLP Senior VP. Payments represent short term employee benefits incurred, including salaries and directors' fees... Includes the cost of DSUs issued to non-executive directors for annual compensation payable (note 7(e)) and RSUs issued to the Group's Chairman, CEO and CFO (note 7(f)) in the current year).*

⁶¹ *The [NDM] Group's Chairman, CEO, CFO and senior management (other than disclosed in 2 below) are employed by the Group through Hunter Dickinson Services Inc. (Northern dynasty Financial Statements 2015-2016, pages 29-30).*

⁶² Amarc Financial statements, for years ended March 31, 2015, 2016, 2017, page 20.

⁶³ Northcliff, Financial Statements for years ended October 31, 2015 and 2016, pages 25-26.

⁶⁴ Rathdowney Financial Statements for the years ended December 31, 2105 and 2016, pages 25-26

⁶⁵ Heatherdale Financial Statements for the years ended October 31, 2015 and 2016, pages 23-24.

⁶⁶ This amount included payments to companies controlled by HDI directors.

⁶⁷ Taseko Annual Financial Statements to December 31, 2015- 2016, page 39.

⁶⁸ *For the year ended December 31, 2016, the Company incurred total costs of \$1,440 (2015: \$2,407) in transactions with HDSI. Of these, \$643 (2015: \$854) related to administrative, legal, exploration and tax services, \$517 related to reimbursements of office rent costs (2015: \$490), and \$280 (2015: \$280) related to director fees for two Taseko directors who are also principals of HDSI. For the year ended December 31, 2015, the Company also incurred costs of \$783 through HDSI related to compensation of Taseko's CEO.*

⁶⁹ See Appendix E.

⁷⁰ See Appendix E.

⁷¹ This section is excerpted from a report prepared by D.T. Cochrane PhD for MiningWatch Canada, which is attached as Appendix D.

⁷² <https://www.kerrisdalecap.com/wp-content/uploads/2017/02/Northern-Dynasty-Minerals-NAK.pdf>

⁷³ Northern Dynasty, Wardrop Technical Report 2011, page 84.

⁷⁴ Northern Dynasty, Gaunt Technical Report , April 2014, page 23-24.

⁷⁵ Wardrop Technical Report 2011, page 71.

⁷⁶ Northern Dynasty Investor Presentation, January 2018, slides 5 and 7.

⁷⁷ Northern dynasty Corporate Presentation January 2018, slide 14

⁷⁸ EDC. Capital Cost Over-run and Operational Performance in the Mining Industry, May 2016 Slide 9.

⁷⁹ Northern Dynasty, Financial Statements for 2015-2016, page 29.

⁸⁰ Northern Dynasty consolidated financial statements 2015-2016, page 33.

⁸¹ In May 2017, the EPA settled lawsuits from the Pebble Partnership by agreeing to lift the Clean Water Act suspension that had been in place since July 2014. This was the subject of the Steptoe Johnson agreement. However, on January 26, 2017, the EPA announced that it was suspending withdrawal of the regulatory action under CWA404C initiated at Pebble in July 2014.

⁸² NDM Corporate Presentation, June 2017, page 35.

⁸³ NDM Consolidated Financial Statements for 2015 and 2016 (page10)

⁸⁴ Northern Dynasty Financial Statements for September 30, 2017.

⁸⁵ https://seekingalpha.com/article/4109850-top-gold-stocks-buy-forget-northern-dynasty-minerals?auth_param=1e5pum:1csnuh:8bb8795b78dff9a7e7ce5b708e55a2ab&uprof=14&dr=1

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- ⁸⁶ Market capitalization is the number of shares x share value
- ⁸⁷ The other companies are Aldever Resources, Exeter Resources, First Energy Metals, Golden Queen Mining, Miranda Gold Corp., New Nadina Explorations, Newport Explorations, Ngex Resources and Titanium Corp.
- ⁸⁸ Table and quotation from D.T. Cochrane report (Appendix D)
- ⁸⁹ <https://www.marketwatch.com/investing/stock/nak>
- ⁹⁰ <http://www.hdimining.com/s/Historic.asp>
- ⁹¹ Goldcorp Sustainability Report 2006, page 11
- ⁹² Troubled Past is no Longer an Albatross Around Golden Bear. September 20, 1993 <http://www.northernminer.com/news/troubled-past-is-no-longer-an-albatross-around-golden-bear-s/1000178187/>
- ⁹³ Ibid.
- ⁹⁴ Ibid.
- ⁹⁵ Ibid.
- ⁹⁶ <http://www.northernminer.com/news/weather-halts-construction-of-golden-bear-leach-pad/1000188062/>.
- ⁹⁷ Goldcorp Sustainability Report, 2006, page 11.
- ⁹⁸ Ibid.
- ⁹⁹ Ibid.
- ¹⁰⁰ Ibid.
- ¹⁰¹ Yukon News, March 28, 2015. <http://www.yukon-news.com/news/tahltan-nation-shares-success-story/>; see also: <http://www.firstnations.de/mining/tahltan.htm>.
- ¹⁰² Yukon News, March 28, 2015. <http://www.yukon-news.com/news/tahltan-nation-shares-success-story/>
- ¹⁰³ <http://www.hdimining.com/s/Historic.asp>.
- ¹⁰⁴ <http://www.northernminer.com/news/windy-craggy-settlement-prompts-kemess-development/1000095084/>
- ¹⁰⁵ <http://www.hdimining.com/s/Historic.asp>.
- ¹⁰⁶ Northern miner.com Low grade, capital cost force Placer to shelve Mt Milligan, February 10, 1992
- ¹⁰⁷ <http://business.financialpost.com/commodities/mining/centerra-gold-inc-to-acquire-thompson-creek-metals-co-for-nearly-176-million>
- ¹⁰⁸ <http://fnwarm.com/latest-report-on-nakadzli-and-shus-nadloh-mt-milligan-mine/> (October 2010)
- ¹⁰⁹ ibid
- ¹¹⁰ Mt. Milligan Technical Report. June 2006, page 11.
- ¹¹¹ Northern miner.com. Low grade, capital cost force Placer to shelve Mt Milligan, February 10, 1992.
- ¹¹² Northern Miner. Taking Lessons from Mount Milligan, February 10, 1992.
- ¹¹³ <http://www.canadianminingjournal.com/features/terrane-set-to-go-with-mount-milligan/>.
- ¹¹⁴ <http://business.financialpost.com/commodities/mining/centerra-gold-inc-to-acquire-thompson-creek-metals-co-for-nearly-176-million>.
- ¹¹⁵ Ibid.
- ¹¹⁶ Ibid.
- ¹¹⁷ <http://www.mining.com/centerra-expects-more-gold-from-kumtor-but-issues-still-loom/>.
- ¹¹⁸ <http://business.financialpost.com/commodities/mining/centerra-gold-inc-to-acquire-thompson-creek-metals-co-for-nearly-176-million>.
- ¹¹⁹ <https://www.reuters.com/article/us-centerra-gold-kyrgyzstan/canadas-centerra-settles-mine-dispute-with-kyrgyzstan-shares-up-idUSKCN1BM1JB>.
- ¹²⁰ <http://fnwarm.com/latest-report-on-nakadzli-and-shus-nadloh-mt-milligan-mine/> (October 2010)
- ¹²¹ <http://www.hdimining.com/s/Historic.asp>
- ¹²² Continental Minerals. Technical Report 2009, page 14.
- ¹²³ <http://www.rangzen.net/2011/02/15/tibetans-severely-beaten-and-held-for-opposing-rampant-mining/>.
- ¹²⁴ <https://www.treehugger.com/corporate-responsibility/canadian-mining-companies-looting-occupied-tibet.html>, and <http://www.phayul.com/news/article.aspx?id=12938>.
- ¹²⁵ Asian News International, 28 June 2009. Continental Response.
- ¹²⁶ <http://www.hdimining.com/s/Historic.asp>.
- ¹²⁷ <http://www.hdgold.com/i/fan/pdf/FANInitialtionSept092010.pdf>.
- ¹²⁸ <http://www.nyrstar.com/investors/en/news/Pages/1477571.aspx>.
- ¹²⁹ <http://globalnews.ca/news/1947920/canadian-miners-grapple-with-security-risks-in-mexico/>.
- ¹³⁰ <http://www.marketwatch.com/story/telson-resources-inc-announces-closing-of-the-purchase-of-the-campo-morado-mine-guerrero-state-mexico-from-nyrstar-mining-ltd-2017-06-14>.
- ¹³¹ <http://www.hdimining.com/s/Historic.asp>.
- ¹³² Cv15-00040 - Credit Suisse Ag Vs Ferdinand Dippenaar Et Al(B13).
- ¹³³ http://www.miningweekly.com/article/burnstone-2013-07-15/rep_id:3650
- ¹³⁴ http://www.miningweekly.com/article/successful-southgold-business-rescue-precedent-setting-lawyer-2014-07-03/rep_id:3650
- ¹³⁵ <http://www.miningmx.com/news/gold/20129-wits-gold-delivered-on-a-plate-to-sibanye/>
- ¹³⁶ <http://www.hdimining.com/s/Historic.asp>
- ¹³⁷ <http://www.sabc.co.za/wps/portal/news/main/tag?tag=Bokoni%20Platinum%20Mine> (bokoni workers protesting closure)

¹³⁸ <http://www.newswire.ca/news-releases/atlatas-announces-a-financial-restructure-plan-for-atlata-group-a-conditional-disposal-of-mineral-rights-to-anglo-american-platinum-and-a-care-and-maintenance-strategy-for-bokoni-mine-635807053.html>

¹³⁹ The Anoroaq AIF dated April 2006, page 57, describes the HDI relationship as follows: “*Management Contracts: HDI is one of the largest independent mining exploration groups in North America and as of March 21, 2006, HDI employed or retained on a substantially full-time basis, 23 geoscientists, including six with advanced degrees (two PhDs and five M.Sc.s), eight professional geologists (PGeo), and four professional engineers (PEng); six engineers, including four mining engineers and one civil engineer, all with professional engineer designations; one professional agrologist, one biologist (MSc); 11 accountants (including six Chartered Accountants, one CMA and two CGAs) and 28 administrative and support personnel. It has supervised mineral exploration projects in Canada (British Columbia, Manitoba, Ontario, Québec, Yukon and Northwest Territories) and internationally in Brazil, Nevada, Mexico and South Africa. HDI allocates the cost of staff input into projects, such as the Gibraltar project, based on the time records of involved personnel. Costs of such personnel and third party contractors are billed to the participating public companies on a full cost recovery basis (inclusive of HDI staff costs and overhead) for amounts which are considered by the Company management to be at a cost that is competitive with arm’s-length suppliers. The shares of HDI are owned by each of the participating public corporations (including the Company) for as long as HDI’s services are retained by such participating company. However a participant surrenders its single share of HDI at the time of termination of the standard form of services agreement. The agreement can be cancelled on 30 days’ notice. HDI is managed by the directors of the Company, who are generally the controlling directors of the other corporate participants in the arrangements with of HDI.*”

¹⁴⁰ <http://www.miningweekly.com/article/burnstone=2013-07-15>.

¹⁴¹ In July 2009, Atlatsa and its wholly-owned subsidiary, Plateau Resources Proprietary Limited (“Plateau”), entered into agreements with Anglo American Platinum Limited (“Anglo American Platinum”) and Rustenburg Platinum Mines Limited (“RPM”), a wholly-owned subsidiary of Anglo American Platinum to refinance, restructure and recapitalize Atlatsa and its subsidiaries. *The Bokoni Acquisition sought to transform Atlatsa into a significant and sustainable, HDSA controlled PGM producer. It comprised a cornerstone empowerment transaction for Anglo American Platinum in complying with the 2014 HDSA ownership requirements, as required by the Mining Charter for the conversion of its “old-order” mining rights to “new-order” mining rights in terms of the Mineral and Petroleum Resources Development Act of South Africa.*

[<http://www.newswire.ca/news-releases/restructure-recapitalisation-and-refinancing-plan-for-anoroaq-and-the-bokoni-group-of-companies-further-cautionary-announcement-509540641.html>]

¹⁴² Anoroaq Resources, Form 20F 2002.

¹⁴³ The 2008 Reserve estimates, as stated in the Anglo Platinum Mine Plan, are based on applying modifying factors to the mineral resources, and are not derived from a scheduled mining plan. Although Mining plans for both reefs existed, these were not used during reserve estimation. [Atlatsa Technical Report 2009, page 99].

¹⁴⁴ See D.T. Cochrane. Economic risk analysis, pages 4-5.

¹⁴⁵ <http://www.bbc.com/world-africa-19848915>.

¹⁴⁶ Anoroaq Resources 20-F for 2012, page 101.

¹⁴⁷ <http://www.hdimining.com/s/Historic.asp>

¹⁴⁸ Rockwell Diamonds news release. Rockwell applies for delisting from TSX and concurrent listing on NEX, August 21, 2017

¹⁴⁹ Rockwell Diamonds News Release. October 3, 2017. Rockwell Announces Voting Results of the Annual General and Special Meeting of Shareholders.

¹⁵⁰ CEC Engineering is a related company owned by HDI’s David Copeland.

¹⁵¹ Described in detail in the longer Rockwell Diamonds case study.

¹⁵² <https://www.forbes.com/profile/beny-steinmetz/>.

¹⁵³ <http://www.hdimining.com/s/Historic.asp>.

¹⁵⁴ It should be noted that since 2016, HDI no longer lists Taseko as either a historic or current affiliate of HDI. Until the end of 2015, five of the Taseko directors were HDI and currently, Thiessen, Dickinson and Hallbauer are key HDI and Taseko directors. In 2017, following a shareholder revolt from Raging River Capital over the HDI connection, two new directors were added to the Taseko Board. The terms of the HDSI agreement were set out in the MIC April 2017, page 37ff. For the purposes of our analysis we consider Taseko to be both a historic and current HDI affiliate. Taseko is listed as an HDI accomplishment on slide 22 of the June 2017 Northern Dynasty investor presentation.

¹⁵⁵ <https://www.tasekomines.com/properties/gibraltar>.

¹⁵⁶ Taseko AIF for 2016, page 13.

¹⁵⁷ Ibid.

¹⁵⁸ Katsura Report, <https://katusaresearch.com/exclusive-report-financial-activism-view-hedge-fund-manager/>.

¹⁵⁹ Taseko AIF for 2006, page 17.

¹⁶⁰ The mine was effectively a gift to Taseko as Boliden was anxious to avoid paying for remediation. Taseko documents describe the transaction:

“Pursuant to the terms of the acquisition, Gibraltar acquired mining equipment, parts and supplies inventories valued at \$19 million, an existing British Columbia Government environmental deposit of \$8 million, and mineral interests valued at \$3.3 million, and received \$20.1 million in cash over 18 months from closing, of which \$17 million was received pursuant to a 10-year non-interest bearing convertible debenture issued to Boliden. Gibraltar assumed the estimated reclamation liability pertaining to the Gibraltar mine of \$36.7 million and Taseko guaranteed Gibraltar’s obligations to Boliden. The principal sum advanced under the debenture is convertible into Taseko common shares in the first year at Cdn\$3.14 per Taseko share. The conversion price escalates Cdn\$0.25 per Taseko share each year over the 10-year term of the debenture on each July 19th anniversary of closing.

The conversion price at September 30, 2006 is Cdn\$4.89 per Taseko share. The debenture is due on July 19, 2009. After five years, the debenture can be converted at Taseko's option at then-prevailing market prices for Taseko shares or paid out in cash at Taseko's election. Taseko retains certain rights of first refusal respecting any proposed sale of shares acquired by Boliden under the debenture." (Taseko AIF for the year ended September 30, 2006, page 9-10).

¹⁶¹ <http://www.marketwired.com/press-release/as-support-grows-raging-river-capital-lp-taseko-mines-limited-shows-disturbing-signs-2100962.htm>.

¹⁶² EBITDA is an acronym for Earnings before interest, tax, depreciation and amortization

¹⁶³ Taseko Technical Report, prepared by Scott Jones, June 15, 2015, page 12, http://intel.rscmme.com/report/Taseko_Mines_Ltd_Gibraltar_Mine_15-6-2015

¹⁶³ http://mssi.nrs.gov.bc.ca/Gibraltar/Gibraltar_2014_DSI.pdf

¹⁶⁴ Taseko Audited Financial statements for 2016, note 19, pages 28-29.

¹⁶⁵ <https://www.desmog.ca/2017/11/20/taseko-s-contaminated-water-discharge-fraser-river-prompts-resignation-community-mine-group>, and Hoekstra, Gordon. BC's Gibraltar wants to increase amount of effluent discharged to the Fraser River. Vancouver Sun. Sept 28, 2015.

http://www.vancouversun.com/Gibraltar+mine+wants+increase+amount+effluent+discharged+Fraser+River/11395132/story.html?_lsa=ed51-4693

¹⁶⁶ <http://visitthewestchilcotin.com/Desktop/First-Nations.html>.

¹⁶⁷ <http://www.marketwired.com/press-release/as-support-grows-raging-river-capital-lp-taseko-mines-limited-shows-disturbing-signs-2100962.htm> and <https://katusaresearch.com/exclusive-report-financial-activism-view-hedge-fund-manager/>.

¹⁶⁸ Taseko AIF 2017, page 25.

¹⁶⁹ Curis Resources is included in the HDI historic projects, but not in current mines. It was made a subsidiary of Taseko in 2014.

¹⁷⁰ <https://www.florencecopper.com/>.

¹⁷¹ Technical Report Florence Copper Project 2017, page 222.

¹⁷² Ibid.

¹⁷³ Curis AIF 2013-4, page 26.

¹⁷⁴ Technical Report Florence Copper Project 2017, page 222.

¹⁷⁵ Florence Copper Technical Report 2017, page 138.

¹⁷⁶ <https://www.tasekomines.com/properties/new-prosperity>

¹⁷⁷ <https://www.tasekomines.com/assets/docs/pdf/notice-of-civil-claim-filed-11-feb-2016.pdf>.

¹⁷⁸ <https://www.tasekomines.com/assets/docs/pdf/Notice-of-Application-filed-November-29-2013.pdf>.

¹⁷⁹ <https://www.tasekomines.com/assets/docs/pdf/Notice-of-Application-filed-26-March-2014-stamped.pdf>.

¹⁸⁰ Federal court citations 2017 FC1099 and 2017 FC1100

¹⁸¹ <http://www.bcauditor.com/sites/default/files/publications/reports/OAGBC%20Mining%20Report%20FINAL.pdf>.

¹⁸² <http://www.vancouversun.com/technology/tale+would+mines/9349562/story.html>. As further examples: CEO Russell Hallbauer made a \$50,000 donation in November 2010. Ronald Thiessen made a similar \$50,000 donation in May 2011. In 2009, Taseko Mines alone donated over \$25,000 to the BC Liberals, in 2012 - \$50,000, and in 2013-\$32,000 (from Integrity BC).

¹⁸³ <http://desmog.ca/2015/04/01/b-c-mine-approvals-too-much-too-fast-according-alaskans-downstream-0>.

¹⁸⁴ <http://amarcresearch.com>.

¹⁸⁵ <https://www.desmog.ca/2015/09/16/dasiqox-headwaters-tsilhqot-territory-threatened-amarc-mine-exploration>.

¹⁸⁶ Amarc, corporate presentation, dated September 2017, Slide 13, from company website.

¹⁸⁷ Amarc Financial Statements for 2015-2016-2017, page 22.

¹⁸⁸ *In January 2017, Thompson Creek (having been taken over by Centerra Gold Inc.) relinquished its option under the IKE Agreement and elected to exchange its 10% participating interest for a 1% Conversion Net Smelter Royalty from mine production, capped at a total of \$5 million. As a result, the Company maintains a 100% interest in the IKE Project.* (page 17).

¹⁸⁹ <http://www.resourceinvestor.com/2005/05/23/manitoba-smelter-no-1-north-america-lead-mercury-air-pollution>

¹⁹⁰ <http://www.northcliffresources.com/s/Home.asp>

¹⁹¹ Poitras, Jacques. How Province Pressured 6 First Nations to accept Sisson Deal. CBC news February 13, 2017.

<http://www.cbc.ca/news/canada/new-brunswick/first-nations-sisson-mine-agreement-1.3980330>.

¹⁹² <http://minerals.usgs.gov/minerals/pubs/commodity/tungsten/mcs-2016-tungs.pdf>.

¹⁹³ <http://minerals.usgs.gov/minerals/pubs/commodity/tungsten/mcs-2016-tungs.pdf>.

¹⁹⁴ Northcliffs' Feasibility Study, January 2013, pages 23 and 24. Downloaded from <http://sedar.com/DisplayCompanyDocuments.do?lang=EN&issuerNo=00030606>.

¹⁹⁵ <https://www.metalbulletin.com/Article/3778585/Trade-log-January-2018-Ferro-tungsten-APT.html>

¹⁹⁶ Northcliff Resources. Technical Report for the Sisson Mine, 2013, table22-7

¹⁹⁷ Northcliffs Annual Information Return (AIF), January 29, 2016 pages 8-10.

¹⁹⁸ Northcliffs Investor presentation, December 2015, slide 6.

¹⁹⁹ Rathdowney News Release, July 12, 2017.

²⁰⁰ Heatherdale company presentation, June 2017.

²⁰¹ Heatherdale, Management Discussion and Analysis to June 2017, page 4 and page 7.

²⁰² Companies are deemed HDI-affiliated if they a) have been identified as a past or current company on hdimining.com; b) have a board director associated with HDI; and c) reported fee payments to HDI in financial statements. Taseko is an exception as it is

no longer listed on hdimining.com as either a past or present HDI-affiliated company, despite numerous ties, including CEO Russell Hallbauer and Chairman Ronald W. Thiessen. Table A includes the list of HDI-affiliated companies and the years of affiliation since 2000.

²⁰³ Figures based on data collected from annual reports and the Compustat-Capital IQ database. All monetary values converted to Canadian dollars.

²⁰⁴ These were the only years NDM offered this breakdown of HDI payments.

²⁰⁵ For the purpose of constructing a statistical subset for the analysis, junior mining companies were defined as those that had never posted a cumulative surplus greater than \$1 billion between 2000 and 2016.

²⁰⁶ The other companies are Aldever Resources, Exeter Resources, First Energy Metals, Golden Queen Mining, Miranda Gold Corp., New Nadina Explorations, Newport Explorations, Ngex Resources and Titanium Corp.