

# Groundbreaking Research Report on Scandium by Hallgarten Shines a Light on Imperial Mining's Crater Lake Project

written by Tracy Weslosky | December 5, 2023

In the ever-evolving world of mining and mineral exploration, certain elements periodically spring into prominence, reshaping industry landscapes and investment priorities. One such element, Scandium (Sc), has recently been thrust into the spotlight, thanks to a groundbreaking report by Christopher Ecclestone of Hallgarten + Company. This report shines a light on Imperial Mining Group Ltd. (TSXV: IPG | OTCQB: IMPNF), a company poised to become the first primary Scandium miner in North America.

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## Investor.Coffee (10.03.2023): Canadian futures mirror global sentiment

written by InvestorNews | December 5, 2023

Canadian futures are mirroring global sentiments, dipping lower due to hawkish comments from Federal Reserve officials which spurred U.S. bond yields and sent global stocks on a downward trend. Gold too, followed this trend with losses, while the U.S. dollar solidified its position, even as oil prices slipped amid

mixed supply signals.

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# **Unlocking Scandium's Potential: Jack Lifton with Imperial Mining Group's Pierre Neatby**

written by InvestorNews | December 5, 2023

In a recent interview, host Jack Lifton sat down with Imperial Mining Group Ltd.'s (TSXV: IPG | OTCQB: IMPNF) President and CEO, Pierre Neatby, to discuss the potential and importance of Scandium. Lifton noted that while Scandium is undervalued and underrated by the public, its true significance lies as a soon-to-be invaluable commodity.

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## **Imperial Mining Patents its Process in Next Steps to Become a Leading-edge Supplier**

# of Scandium and Rare Earths

written by InvestorNews | December 5, 2023

The race is on. It seems like there are a lot of junior miners out there working on new or improved technology to process or refine their commodity in a better, more efficient manner. This makes a lot of sense when you think about it. Obviously, the world is on a decarbonization kick, so it's only a matter of time before the carbon footprint of the raw materials starts to come into focus. It will help differentiate you from any competitors out there mining the same mineral, assuming you have any. If you happen to be fortunate enough to be located in a jurisdiction that is close to the demand centers and has abundant clean energy (like hydroelectric power) then that could make you the #1 supplier of a commodity.

One entity looking to control its own destiny, while being fortunate enough to be located in a key jurisdiction, is [Imperial Mining Group Ltd.](#) (TSXV: IPG | OTCQB: IMPNF). Imperial is a Canadian mineral exploration and development company focused on the advancement of its technology metals projects in Québec, Canada. The Company's flagship [Crater Lake Scandium-Rare Earth property](#) is located 200 km northeast of Schefferville, Québec, and is accessible via fixed-wing aircraft or helicopter. The property consists of 96 contiguous claims covering 47.0 km<sup>2</sup>, owned 100% by Imperial. The Company is led by an experienced team of mineral exploration and development professionals with a strong track record of mineral deposit discovery in numerous metal commodities.

In mid-2022, Imperial [announced the results](#) of a positive Preliminary Economic Assessment (PEA) for the Crater Lake TG Zone Scandium (Sc) – Rare Earth Element (REE) deposit from Imperial's independent consultants WSP Canada. The results show

positive cash flow, strong Internal Rate of Return (IRR), and positive Net Present Value (NPV) metrics at discount rates of up to 15% for a potential mining operation at the Crater Lake project. Highlights of the PEA include: a pre-tax NPV of C\$2.97 billion and an after-tax NPV of C\$1.72 billion (10% discount rate); pre-tax IRR is 42.9% and an after-tax IRR of 32.8%; and a pre-tax capital payback of 2.5 years from the start of production.

All of the PEA information was completed prior to the summer drilling program where the Company completed a total of 8 drillholes for 1,663.0 m. [Results](#) were encouraging and give inference to grade and tonnage increases to the TG North Lobe Deposit resource. Drilling indicates that the southern portion of the TG scandium Zone is composed of two different Sc bearing ferrosyenites and hosts a higher proportion of the higher-grade pyroxene-rich ferrosyenite. The mineralization of both Sc-bearing ferrosyenite zones is open at depth below the 200 m vertical level and along strike and appears to show great potential for additional scandium mineralization. With all of the results in, Imperial plans to undertake an updated 43-101 Mineral Resource Estimate with the goal of converting all of the Inferred Mineral Resources into the Indicated or Measured Mineral Resources category.

With all that said, the Company's latest news is my main focus today. Imperial Mining just [announced](#) the filing of patent applications for its two-stage hydrometallurgical methods and processes for the extraction of scandium and rare earth elements from Crater Lake project mineralization titled "HIGH PRESSURE CAUSTIC LEACH METHODS AND PROCESSES FOR RECOVERY OF SCANDIUM AND RARE-EARTH OXIDES". Imperial also provided an update on the Crater Lake Scandium Project flowsheet development program which commenced in early 2022 at SGS Canada, Quebec City and Peterborough and is partially financed by a \$245,355 grant from

the Quebec Ministry of Energy and Natural Resources. The flowsheet development program was focused on further optimization of the mineral processing flowsheet by rejecting olivine, a non-Sc-REE-bearing mineral from the mineral concentrate and processing the olivine-depleted mineral concentrate through the patent-pending high-pressure caustic leach process for recovery of Sc and REE. During the flowsheet development program, Imperial invented a patentable process for rejecting olivine from the scandium-bearing mineral concentrate.

I won't begin to try and explain the science of what this all means other than to say simpler is usually better. The easier and more efficiently you can do something typically equates to a lower carbon footprint and less of an environmental liability. Just having the right, in-demand resource isn't good enough anymore, at least in most parts of the world. The production of that resource has to be done in a responsible, sustainable manner. This C\$15 million market cap company is taking steps to be a leading-edge processor of Sc and REE which could help propel them to the top of the supply chain.

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## **Peter Cashin on Imperial Mining's newly discovered high-grade scandium zone**

written by InvestorNews | December 5, 2023

Chris Thompson interviews [Imperial Mining Group Ltd.](#)'s (TSXV: IPG | OTCQB: IMPNF) CEO and President Peter Cashin about an update on their Crater Lake Project in Quebec. Speaking about

their newly discovered [high-grade scandium zone](#), Peter explains how the discovery will positively impact the economics of the Crater Lake Project.

Peter goes on to provide an update on their [collaboration agreement](#) with Développement Economique Sept-îles Inc to establish Imperial Mining's scandium, rare earths and scandium-aluminum master alloys facility within the boundaries of the City of Sept-Iles. Recognized as a critical mineral in the US, Canada, Australia, and EU, Peter discusses how adding very small quantities of scandium to aluminum increases strength by up to 800%. Peter also provides an update on Imperial Mining's recently closed [private placement](#) which added new high net worth international investors as shareholders.

To access the full InvestorIntel interview, [click here](#)

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### **About Imperial Mining Group Ltd.**

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To learn more about Imperial Mining Group Ltd., [click here](#)

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# Peter Cashin on the increases in scandium and rare earths recoveries on Imperial Mining's Crater Lake Development Project

written by InvestorNews | December 5, 2023

In this InvestorIntel interview, host Tracy Weslosky talks to [Imperial Mining Group Ltd.](#)'s (TSXV: IPG | OTCQB: IMPNF) President and CEO Peter Cashin about a [recent announcement](#) on the increases in scandium and rare earths recoveries on its Crater Lake Development Project in Quebec.

Peter says: "We are also doing additional work to convert some of the inferred resources into indicated (resources). And in doing that work – we've actually found areas of mineralization that are thicker than we had anticipated. So it's probably going to add to the bottom line as well." He goes on to provide an update on the progress Imperial Mining has made to move the Crater Lake project towards a Feasibility Study. Peter also talks about the use of scandium in lightweighting applications to make vehicles fuel efficient and extend battery range in electric vehicles.

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# **Imperial Mining Group's Scandium-REE Preliminary Economic Assessment by the numbers**

written by InvestorNews | December 5, 2023

Last week [Imperial Mining Group Ltd.](#) (TSXV: IPG | OTCQB: IMPNF) released the results of a [Preliminary Economic Assessment](#) (PEA). The [results are impressive](#) with a projected 25-year mine life for its Crater Lake TG Zone Scandium-Rare Earth Element (Sc-REE) deposit 200 km NE of Schefferville, Quebec. Of particular note is Imperial Mining's CEO Peter Cashin, who has been in mining for decades and has been involved in rare earths and scandium for over a decade which puts him in a strong position to understand the idiosyncrasies of these critical materials.

Scandium is an element that has huge potential in automotive, aerospace, military, and applications where weight is critical

without sacrificing other properties. Scandium has the ability, when added in < 1% levels to aluminum, to produce a metal that is one-third the weight of steel but has the strength of steel. The main scandium production is in China and Russia, and major companies are looking for a reliable, long-term supply from a favorable jurisdiction before committing to a design using scandium-aluminum alloy. Scandium can be welded which is of interest to aircraft companies as it has been said that eliminating the rivets which is the current practice would reduce the weight of a plane by as much as 20%. The challenge is designing a new airframe can take up to a decade. Therefore other applications are needed near term to generate cash flow in the early stages of a project. A new car can take 2-3 years to produce from scratch but with the drive to EV vehicles where weight is a major consideration, this is a key area for product development. Being in Quebec, Imperial is well situated to work with the aluminum smelters in the province.

According to Imperial Mining's PEA, gross revenues projected are CA\$15.2 billion with gross earnings about 50% at CA\$6.25 billion. The NPV is just under CA\$3 billion at a 10% discount rate and an IRR (after-tax) of 32.8%. The initial CAPEX is projected at CA\$870.9 million with a payback of 2.5 years. Impressive numbers.

Regarding the scandium itself, the drill results have shown grades that rate among the highest globally, if not the highest.

The mine is an open-pit design, which will minimize costs, and the concentration phase would be done on-site with final processing being planned to take place in Sept-Iles. The strategy is to produce a master Sc-Al alloy in Sept-Iles along with a REE concentrate. The other notable calculation is Imperial Mining uses US\$1,500/kg for Sc203 which is significantly lower than other PEAs for scandium in the marketplace. In addition, the Sc(2%)-Al alloy is discounted by

40% from the US Geological Survey 5-year trailing average, which is another conservative approach and refreshing to see instead of reporting extreme numbers which would be difficult to defend.

As noted earlier, Imperial Mining plans to produce a rare earth concentrate. This is priced at a 70% discount to market prices in March 2022, which is realistic as the main target customer would be China, which is currently buying concentrate from MP Materials out of California. This discount is in keeping with how the Chinese would calculate the value, and even then the lanthanum would not be a significant contributor. The other key point of this revenue calculation was that it is based only on the 4 key magnetic elements plus lanthanum, which is realistic as the magnetic elements are where the main value is in all REE deposits globally. It is nice to see a company not running economics on separated REEs and saying it can sell everything it produces, which is not possible. This concentrate would help defray the scandium OPEX to a certain degree.

Overall, scandium is a situation of build it and they will come. The full report should be available by end of July.

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**Peter Cashin of Imperial Mining talks about scandium's importance and the need for**

# domestic supply

written by InvestorNews | December 5, 2023

In this InvestorIntel interview with host Byron W King during PDAC 2022, [Imperial Mining Group Ltd.](#) (TSXV: IPG | OTCQB: IMPNF) President and CEO Peter Cashin talks about the growing recognition and demand for scandium in specialized manufacturing, and the need for securing a reliable domestic supply.

In the interview, which can also be viewed in full on the InvestorIntel YouTube channel ([click here](#)), Peter describes the importance of scandium as an industrial metal: “As an alloy agent for aluminum in very, very small quantities of 0.2 to 0.4 percent you can increase the the mechanical properties of the alloy by 800%.” Peter also talks about the importance of scandium, used in defense, aerospace and automotive industries where strong, lightweight, heat and corrosion resistant metals are needed.

Peter goes on to say that only 35 tons of scandium are produced a year, mostly by Russia and China, but Imperial Mining – which just published a new PEA on its Crater Lake TG Zone Scandium-Rare Earth Element (Sc-REE) deposit – is located in Quebec, Canada. “We know that the consumers both in the the military establishment, the automotive industry and the aerospace industry have been looking for this stuff... and our intention is to produce and develop this thing to production to be able to satisfy the western and certainly North American manufacturing market.”

To access the full InvestorIntel interview, [click here](#)

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## **Peter Cashin on the “earth shattering” PEA for Imperial Mining’s Crater Lake Scandium-REE deposit**

written by InvestorNews | December 5, 2023

In this InvestorIntel interview with host Tracy Weslosky during PDAC 2022, [Imperial Mining Group Ltd.](https://www.imperialmining.com) (TSXV: IPG | OTCQB: IMPNF) President and CEO Peter Cashin talks about the company's recent PEA announcement, which confirms that its Crater Lake TG Zone Scandium-Rare Earth Element (Sc-REE) deposit has “the potential to be a long-term provider of critical Scandium and magnet Rare Earths to world markets.”

In the interview, which can also be viewed in full on the

InvestorIntel YouTube channel ([click here](#)), Peter discusses how with the new PEA “people will look at the financial metrics of this project, and they they stand up against any project that’s out there currently.” He talks about the results of the new PEA, which include a pre-tax net present value (NPV) of \$2.97 billion with a pre-tax internal rate of return (IRR) of 42.9%, with annual net revenues averaging \$608 million from the sale of high-purity scandium oxide (Sc2O3), scandium-aluminum Master alloy (ScAl) and rare earth element (REE) hydroxide concentrate, and a pre-tax capital payback of 2.5 years from the start of production.

Peter also talks about the importance of scandium, used in defense, aerospace and automotive industries where strong, lightweight metals are required, and when added to other metals in small amounts it makes them heat and corrosion resistant. Its lightness makes it an attractive “green” metal reducing vehicle weight for lower fuel consumption. “What we’ll ultimately end up doing is significantly reducing the carbon footprint of most manufactured platforms they have right now.”

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# Imperial Mining's Quebec scandium play is aluminum's best friend

written by InvestorNews | December 5, 2023

To me scandium sounds like it should be a country between Finland and Sweden in the Baltic Sea, but then again a lot of people have considered some of my thoughts pretty strange. However, scandium is becoming a critical metal of growing importance in aluminum alloys for auto, commercial aircraft, military armor and EV development, significantly reducing weight and manufacturing costs. It's used as a hardener and strengthener of common aluminum alloys, which are also heat and corrosion resistant. Its weight reduction applications in the automotive, aerospace, fuel cell and defense sectors in turn help reduce the overall carbon footprint by making aircraft and vehicles lighter and more fuel-efficient with lower emissions. Because of these tremendous applications, demand is expected to grow considerably from the current 35 tonnes per annum of product availability to western markets to as high as 2,000 tonnes by 2040.



Source: Imperial Mining Group [Corporate Presentation](#)

Obviously, I don't need to comment on the importance of supply

chains, “on-shoring”, etc. in light of what the world has seen over the last year or two. We’ll suffice it to say that domestic is better. Which leads us to today’s topic of conversation – [Imperial Mining Group Ltd.](#) (TSXV: IPG | OTCQB: IMPNF). Imperial is a Canadian mineral exploration and development company focused on the advancement of its [Crater Lake scandium-Rare Earth property](#) led by an experienced team of mineral exploration and development professionals with a strong track record of mineral deposit discovery in numerous metal commodities. The Company also has a pair of gold prospects, [Opawica](#) and [La Ronciere](#) all in Quebec.

However, what makes Crater Lake so special is that it is the only hardrock scandium deposit in the world and happens to be in the mining friendly jurisdiction of Quebec, close to hydroelectric capacity and Quebec’s aluminum metal production where 90% of Canada’s “Green” aluminum is produced. As well, it is looking like Bécancour in Quebec is becoming Canada’s battery cathode manufacturing hub with recent announcements from BASF regarding a [cathode active materials and recycling site](#) to support North American producers in their transition to e-mobility and [General Motors and POSCO Chemical’s \\$400 million facility](#) to produce cathode active materials for vehicle batteries. It would appear that Imperial could borrow a line from the real estate business and say their project is all about location, location, location.



Source: Imperial Mining Group [March 15, 2022 Press Release](#)

It also doesn’t hurt that Crater Lake already has 43-101 compliant resource estimate. In September Imperial received the inaugural [NI 43-101 Technical Report for the Crater Lake](#) TG Zone Mineral Resource Estimate.



Source: Imperial Mining Group Ltd. [press release Sep 23, 2021](#)

The results of the Resource Estimate for the Northern Lobe of the TG Zone far exceeded the minimum threshold resource Imperial internally set for a 20-25-year notional mining operation, or 10 million tonnes. And the good news is mineralization remains open laterally and at depth, demonstrating the potential to increase the mineral resource with additional drilling.

The Company has plenty of catalysts over the next several months to keep the news flow coming for investors. Work on a 43-101 Preliminary Economic Assessment (PEA) on the TG Zone scandium-rare earth zone resource is progressing and is expected to be completed in the next few weeks. A diamond drill program on the TG Zone (Northern Lobe and Southern Lobe) will commence in late June with up to 22 diamond drill holes for approximately 2,500 m. In addition, there is excellent potential to expand the mineral resources with further drilling on the Southern Lobe. In late Fall 2022, the new drill hole data from the summer program will be forwarded to a consultant to revise and update the previous 43-101 Resource Estimate of the TG Zone. This revised resource will allow Imperial to move forward with a Pre-Feasibility (PFS) or Feasibility (FS) Study.

During Summer 2021, Imperial collected a 50-tonnes bulk sample for use in a pilot plant study. It is expected that the remaining 32-tonnes will be shipped to Sept-Iles, QC by the end of July 2022 to be used in a pilot plant study to further test and optimize Imperial's patent-pending metallurgical process method. Additionally, Imperial has commissioned a hydrometallurgical flowsheet development program based on its patent pending two-stage hydrometallurgical method for the extraction of scandium and rare earth elements with SGS Canada. The program, which started on January 31, 2022, is partially

financed from a [\\$245,355 grant](#) from the Quebec Ministry of Energy and Natural Resources with expected completion at the end of Q3 2022. Results from the work will aid in the engineering design of Imperial's pilot program for the Crater Lake project for later in 2022.

As you can see, there is plenty on the go at Imperial Mining Group and the good news is they started May with C\$2.8 M in working capital and virtually no debt. The Company currently has a market cap of C\$14.7 million representing plenty of opportunities for a potential domestic supplier of an up and coming critical material.