



First Class
Metals

Zigzag: The new project giving us exposure to two exciting metal markets

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ground running



A **perfect** fit for our growing Ontario portfolio

We were delighted to announce the completion of our earn-in to the Zigzag project earlier this year.

Like all our projects, it's based in Ontario, Canada. And as such, it benefits from the same backdrop of pro-mining legislation and established infrastructure that's been propelling our portfolio forward since we formed.

Where Zigzag really adds something new for us, however, is in its prospectivity for two critical minerals in particular: *lithium* and *tantalum*.

As we'll explore in this report, both are expected to enjoy soaring demand as their use in state-of-the-art technology grows...

But at the same time, the pair are also heading towards anticipated supply chain deficits in the face of underinvestment and an overreliance on foreign reserves.

As is the case with a lot of the commodities we explore for at **First Class Metals**, the dynamics are a perfect recipe for a structural bull market. As is also the case with many of our projects, the anticipation of soaring spot prices stands to maximise the value of any discoveries we make.

It's why we felt Zigzag would be such a perfect fit. It's also why we're so excited to begin our exploration efforts in the field now we've control of the project.

Especially given an exploration permit is already in place.

With all this in mind, let's take an in-depth look at what interests us about Zigzag and why it matters so much...

The **perfect** foundation for lithium exploration

The primary driver for our interest in Zigzag is its prospectivity for *lithium*.

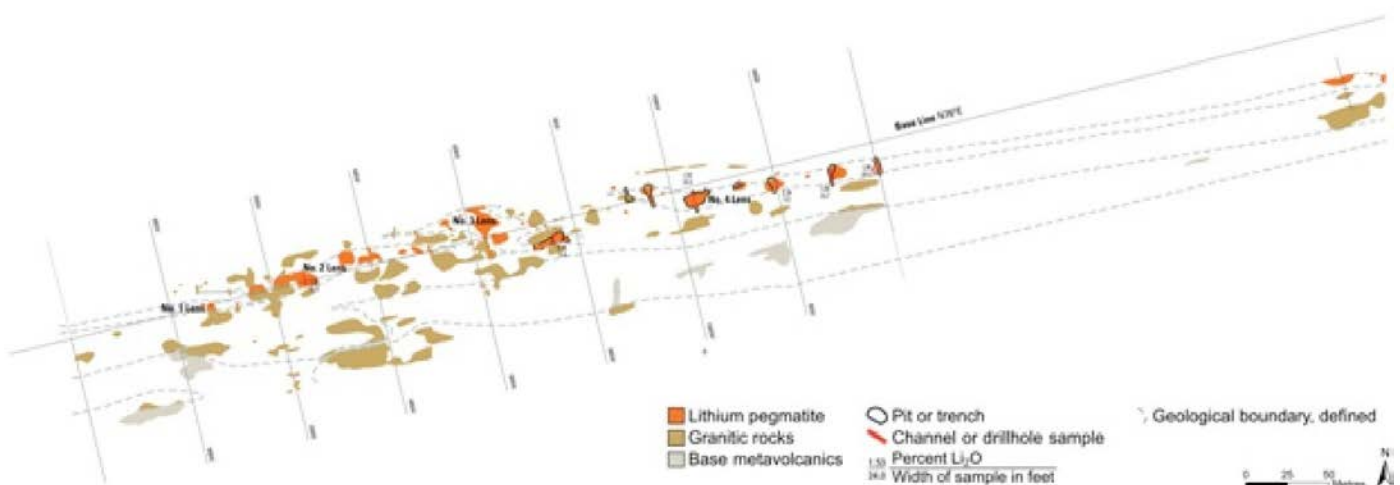
Shallow historic grades of up to 1.68% have been encountered at the project over 7.9m. These are themselves hosted within a structure reported to be more than 800m in length and around 20m thick at surface.

Alongside this, sampling by the project's previous operator returned very strongly anomalous lithium values peaking at 3.55% Li_2O .

That's not even to mention the fact that Zigzag lies in a proven lithium area with a growing list of hard rock discoveries. This includes Green Technology Metals' [Seymour project](#), which hosts a 9.9Mt Li_2O resource at 1.04% that remains open along strike and down dip.

Why is this prospectivity for lithium so important right now? Really, it comes down to three things in particular...

Zigzag claim block geology with main known lithium pegmatite's mapped



1. The right market

The world is going to need a lot more lithium moving forward.

It's because the metal is needed to produce virtually all the traction batteries used in consumer electronics and, most importantly, electric vehicles ("EVs"). You'll likely know these as *lithium-ion batteries*.

The trend is already in motion.

Back in 2015, batteries accounted for less than 30% of lithium demand [according to](#) research firm McKinsey. At that stage—which let's not forget was less than ten years ago—industrial applications such as ceramics and metallurgical powders accounted for the vast bulk of the metal's use.

But the Green revolution has advanced since then. Awareness of climate change, corporate support, and government promises for a net zero future have accelerated.

Today, [almost 60%](#) of lithium is mined for battery-related applications.

The thing is, this is just the start of a long-term movement; one being driven by the electrification of vehicles specifically.

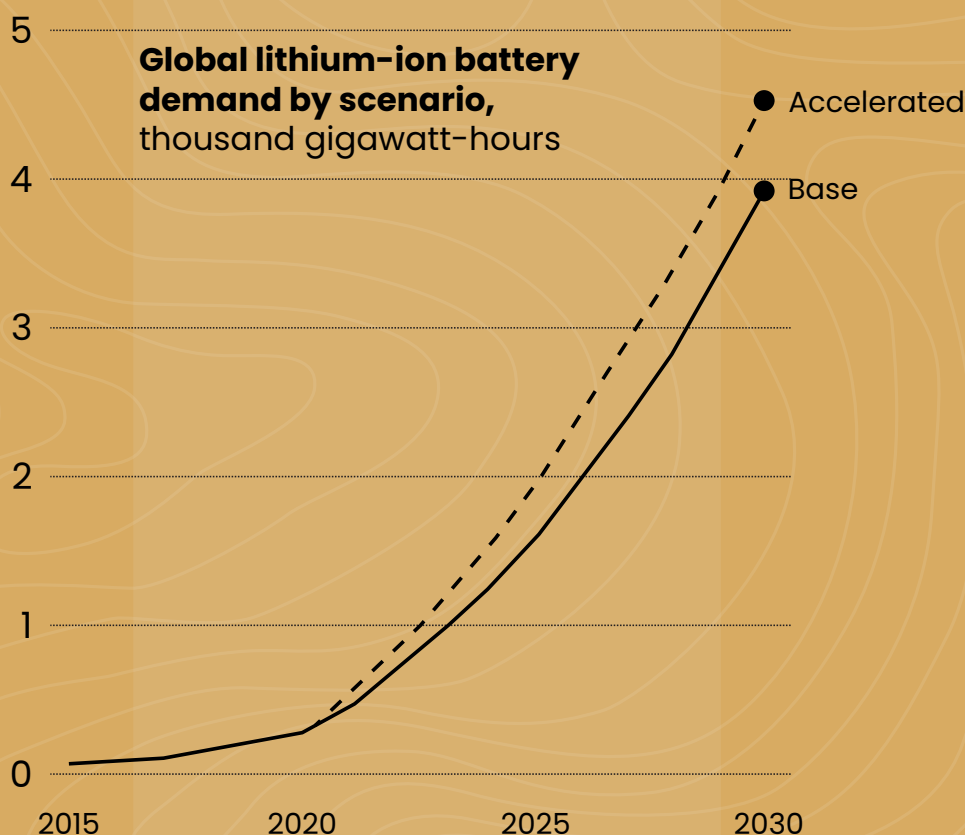
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Indeed, from around 16.5 million EVs on the world's roads today (already triple the number in 2018)... The IEA expects global EV stock to reach 350 million by the end of the decade. Moreover, with a growing number of countries pledging for their roads to reach net-zero carbon emissions by 2050, this figure is almost certain to rise even further beyond 2030..

More EVs, of course, means more EV batteries. And more EV batteries means more of a requirement for lithium.

In fact, the World Economic Forum states that each vehicle contains around 8kg of the metal. As such, batteries are expected to account for 95% of total lithium demand by 2030.

Global lithium demand could reach 4,500 gigawatt-hours by 2030



Source: *McKinsey battery demand model*

It's largely because of this that experts believe lithium demand itself will rise from around 500,000 tonnes today to anywhere between 3 million and 5 million tonnes by 2030. Who knows where it will go from there?

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The problem, as is the case with virtually all battery metals suddenly being thrust into the limelight, is whether lithium supplies will be able to keep up.

According to McKinsey, today's pipeline of projects should enable production of lithium to rise from around 0.54 million metric tonnes today to 2.7 million metric tonnes by 2030. It's a decent rise, but it's at serious risk of falling short.

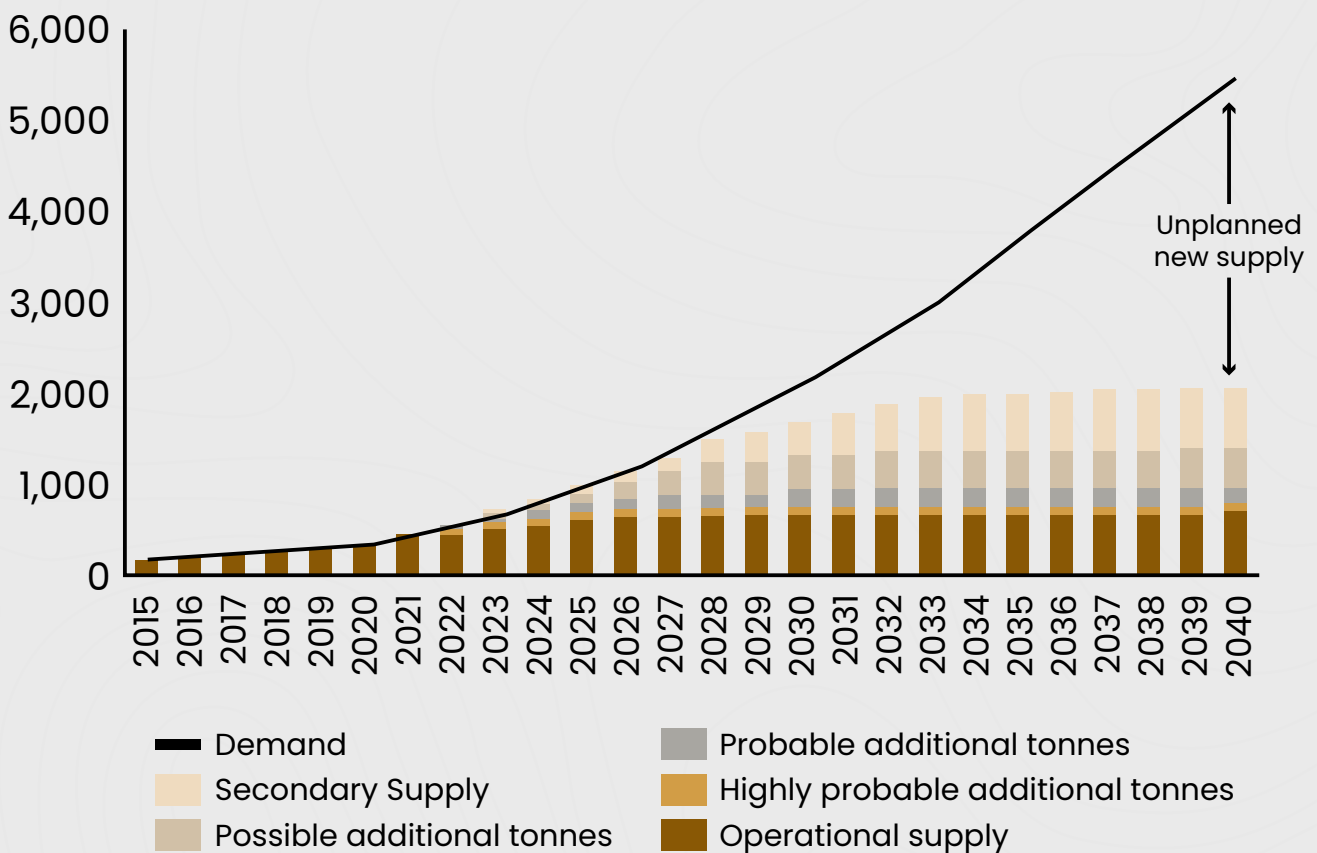
New technologies will no doubt add to this supply forecast in the intervening years...

But the reality is, entirely new deposits of lithium will need to be discovered not just to plug the deficit over the near-term, but also to power the EV revolution in the decades beyond.

It's already leading the price of the metal to surge. And with a project prospective for the metal in a mining friendly jurisdiction, we are primed to benefit in the event of exploration success.

This leads us on to our second point...

Lithium Demand vs Supply Forecast



Source: *Institutional Investor*

2. The right location

As we've established, the supply of lithium is a long-term concern. It's why exploration budgets for the metal are [increasing](#) by as much as 25% year-on-year.

But an added element that stands to benefit **First Class Metals** in particular is the fact that supply chains for the metal are currently extremely narrow.

Consider:

Almost all lithium mining currently occurs in Australia, Latin America, and China—[98% of it](#), in fact, according to McKinsey. More pertinently, China specifically owns between [70-80%](#) of the supply chain for Li-ion batteries according to the World Economic Forum.

So, given the degree to which lithium demand is expected to grow....

The security of new supply of the metal in either domestic or geopolitically friendly and stable jurisdictions has never been more pertinent in the Western world.

It's why so many countries have added lithium to their Critical Minerals list. And Canada, where Zigzag is based, is one of the countries that stands to emerge as one of the biggest players of all.

Right now, Canada does not domestically produce lithium. What it *does* already have, however, is a significant portion of the world's reserves of the metal.

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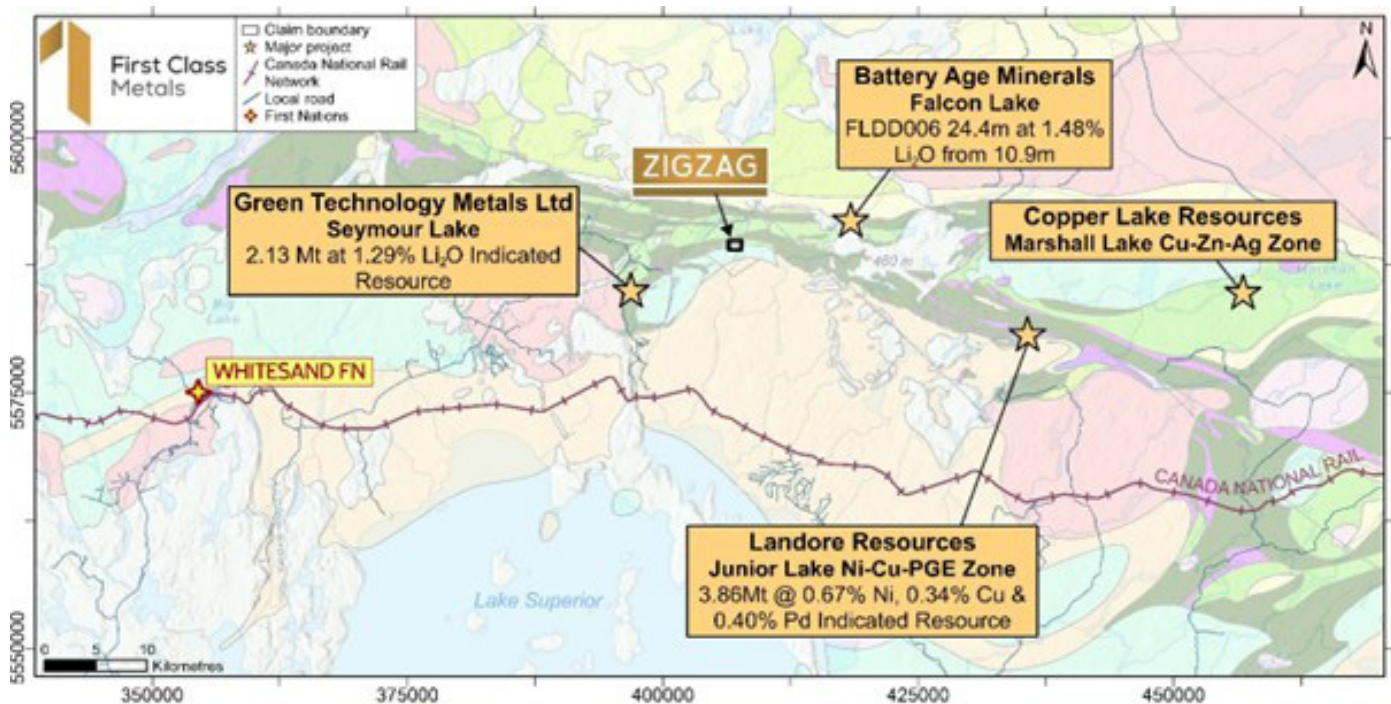
Its outstanding prospectivity is one of the reasons the country is now positioning itself as a key supplier. Not only has it given the green light to advance lithium projects in areas like James Bay towards production, but it's earmarked plans for considerable funding.

One area emerging as a key hotbed of exploration activity on this front is Ontario.

Thanks to its attractive geology and pro-mining legislation, the territory is host to a growing number of explorers seeking out the next big lithium deposit.

This includes Green Technology Metals right by Zigzag, as mentioned. But it also includes names like Battery Age Minerals, Copper Lake Resources, Landore Resources, Lithium One Metals, Frontier Lithium, and Avalon Advanced Materials.

The list goes on.



Likewise, on the upstream side of things, Volkswagen is planning to build a local battery cell plant in preparation for the future surge in production. Magna International, meanwhile, has invested \$470m in an Ontario factory to help Ford keep up with surging demand for F-150 Lightning electric pickup trucks.

We, of course, are in the early stages of exploration at Zigzag. But if we find something, it's hard to think of a better neighbourhood in which to be situated when it comes to monetising any potential discovery.

3. The right geology

We've established Zigzag's prospectivity, and its perfect timing and location are great. But there's a third thing to consider: its specific geological setting.

We don't want to get into too much technical detail here. But it's important to recognise that there are two types of lithium used in EVs: lithium carbonate and lithium hydroxide.

Right now, lithium carbonate is the most used of the pair. But many analysts believe that the spread will gradually swing in lithium hydroxide's favour moving forward as it is better suited to the latest generation of Li-ion EV batteries.

Moving on, and as well as two types of lithium, there are also two dominant sources of lithium on offer. The first is a salty brine that is pumped out of the ground. The second—which is also the one we are targeting at Zigzag—is spodumene, a mineral contained in hard rocks that is mined from the ground.

Out of the two sources of lithium, there is a strong case to be made that spodumene is the more attractive as demand for the metal soars.

You see, brines can only produce lithium carbonate. While this can subsequently be converted into the lithium hydroxide increasingly being favoured by EV firms, doing so incurs a significant additional cost.

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Spodumene, however, can produce both lithium carbonate and lithium hydroxide. And it's because of this flexibility that the lithium industry is increasingly favouring hard-rock-hosted lithium discoveries.

As with overall demand/supply dynamics and Ontario's growing lithium industry, this is yet another trend positioned to increase the value any discovery we make at Zigzag.

Zigzag pegmatite with very coarse grained lithium-bearing spodumene crystals



Source: Invest Ontario

Tantalising tantalum potential

Clearly, Zigzag is well positioned for a valuable lithium discovery. Interestingly, however, that isn't where this project's potential ends; it's also prospective for tantalum.

Specifically, historic grades of up to 0.168% tantalum have been encountered over 2.54m within the same pegmatite where lithium grades were found. Nuinsco was also able to encounter significant amounts of the metal, with samples reach up to 836 parts per million.

Although tantalum may not be as well-known as lithium, its presence at Zigzag is nonetheless important. After all, it has similarly been listed as critical mineral on lists by Canada and the US as well as a technology-critical element by the European Commission.

Why?

Well, the blue-grey metal is extraordinarily stable and tough, with extreme resistance to heat and corrosion. As a result, it is critical in a number of significant and rapidly growing high-performance applications.

For example, tantalum is being widely used in medical equipment

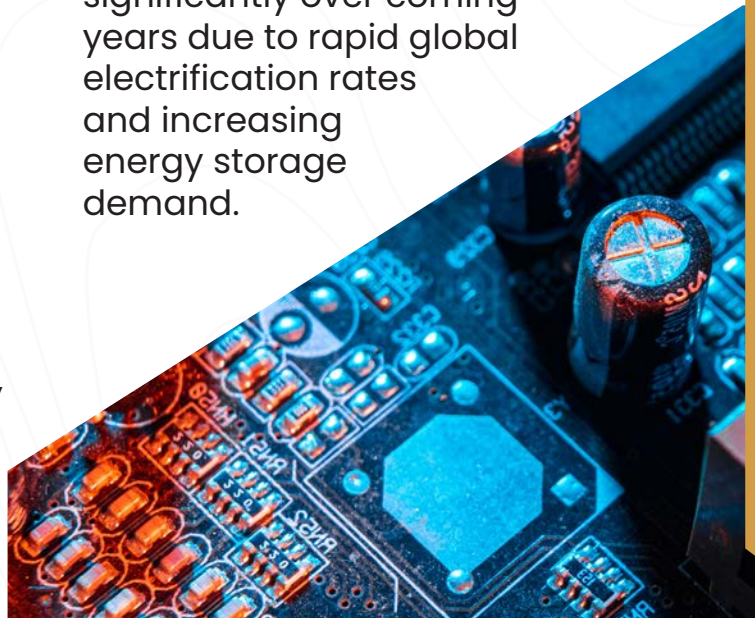
because it is totally inert to bodily fluids. This makes it an ideal material for surgical implants—particularly bone implants where it has the ability to stimulate bone growth.

Similarly, it is also used in the production of semiconductors as a thin film diffusion layer where its performance is very reliable...And in gas turbines and nickel-based superalloys, which take advantage of its high melting temperature, corrosion resistance and long life.

Tantalum's most significant application, and probably the one that is expected to enjoy the most significant growth moving forward, however, is in capacitors.

These devices are used to energy in all manner of electronic devices. And while they accounted for 37% of total consumption 2019, according to Andrada Mining...

This figure is expected to rise significantly over coming years due to rapid global electrification rates and increasing energy storage demand.



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This covers everything from high end aerospace and military applications to electric/autonomous vehicles, 5G network infrastructure, and consumer electronics.

All-in-all, Roskil expects total tantalum demand to grow at 4.6% per annum over the next decade to reach 3,595 tonnes. And as with lithium, this is expected to outstrip anticipated global supply of 3,214 tonnes by the end of the same period.

Given this demand figure is only likely to continue growing beyond 2030, it means that new sources of production are likely to be highly sought after. Especially those in safe and stable jurisdictions like Ontario.

There's a reason tantalum is increasingly being recognised as the critical mineral it is. And if we are able to successfully build on the early signs of prospectivity for the metal at Zigzag...

Then it could stand as yet another source of significant project upside for investors.

Hitting the ground **running**

Rounding-up, and Zigzag has strong geological potential for both lithium and tantalum: two minerals with attractive long-term supply/demand dynamics.

Not just that, but the project's basis in an established, pro-mining jurisdiction potentially stands to make any discoveries we make all the more valuable.

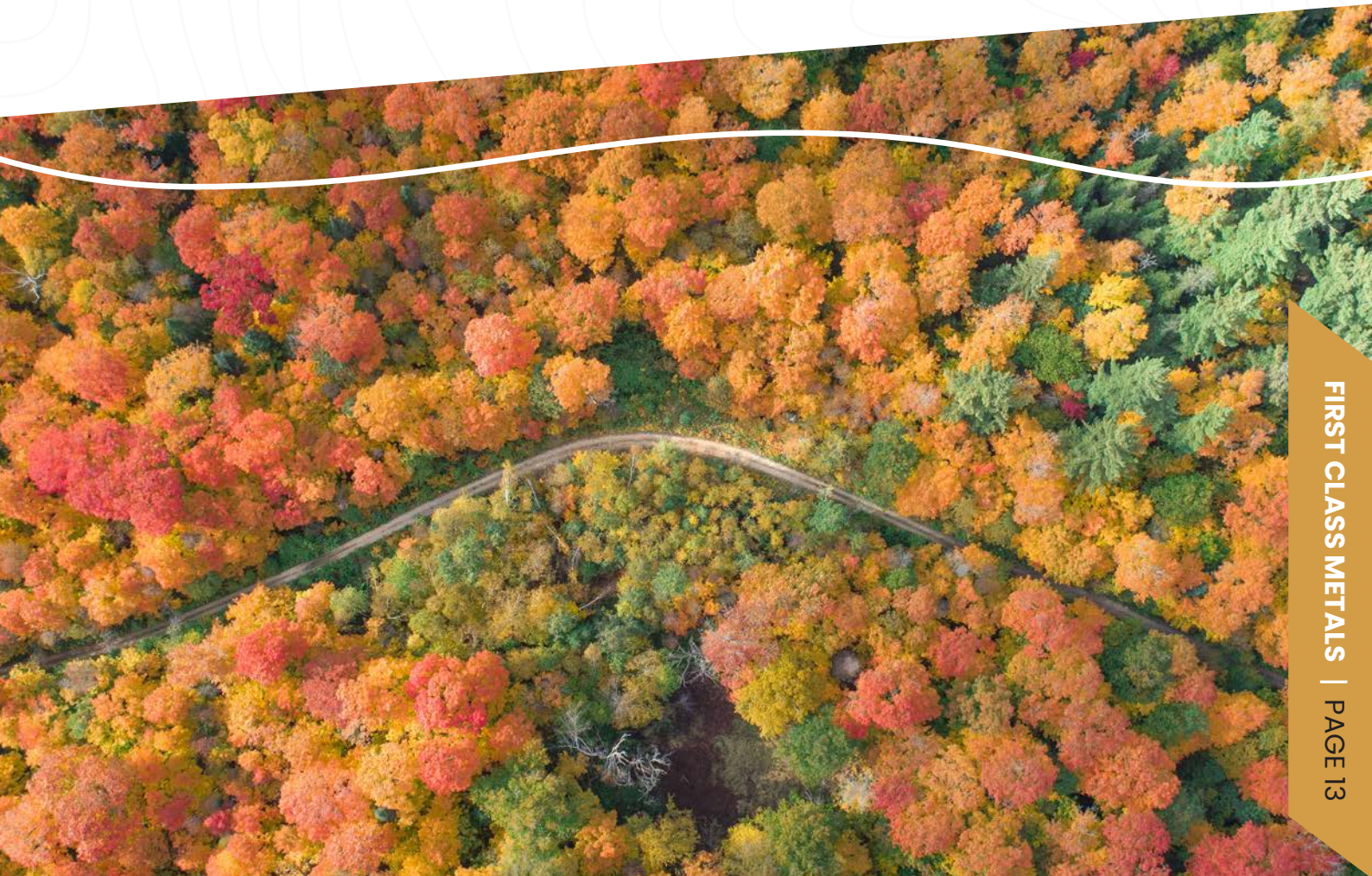
With this in mind, we're very much looking forward to getting started with our exploration work on the ground.

And with an exploration permit already in place, we expect to be able to do this as soon as possible.

Of course, we don't know what we'll find.

What we do know, however, is that this project's potential complements our portfolio of quality projects prospective for a variety of attractive metals excellently.

We look forward to providing updates and initial findings over the coming weeks and months.





First Class Metals

www.firstclassmetalsplc.com