Working together to bring a new industry to the South-East

HILLGROVE
RESOURCES

Copper: the '*green energy enabler*'

This booklet outlines Hillgrove's collaborative plan for community and economic growth in the South-East.

The first step is exploration over several years to discover a supply of copper to feed a new industrial hub. The booklet explains how we plan to go about this and the negligible impact of exploration upon the land.

If we succeed in making a discovery, Hillgrove could move to the next stage of building an important new industry for the South-East that would thrive in a world of expanding renewable energy.

We seek your support to build a partnership as we take our first steps, and welcome your comments and questions.

What a new industry could mean for you

Imagine a new industry in the South-East that pumped $200 million and 300 full-time jobs into the local economy in only eight years. Local businesses would thrive. Hundreds of jobs and apprenticeship opportunities would be created. Public health and community services would flourish as workers and their families moved into the area.

Now also imagine this new industry occupied just 280 hectares of land and was completely safe for the environment. Any regional community would welcome such a major boost.

Would you feel differently if I told you this new industry was an industrial estate for mining and processing copper? You might assume mining can't coexist with farming, that it's bad for the environment and maybe even the whole planet. In fact, none of these assumptions are true.

The worst thing about these misconceptions is they could deny you, your family and your community incredible opportunities that few other industries could bring to your region.

Hillgrove has contributed $200 million to local businesses and employees and created 300 full-time jobs within an hour of Kanmantoo – keeping the financial and employment benefits within the community.

The scenario I ask you to imagine is real. The figures are from our Kanmantoo Copper Mine near Mount Barker in the Adelaide Hills, which completed open pit mining in 2019 after eight years of production. In that time, Hillgrove Resources spent $200 million with local business and employees and created 300 full-time jobs. This does not include payments to mining and other specialist contractors – all of that $200 million was paid to local employees, local contractors and businesses within one hour's drive from the mine.

Copper has been known for over 20 years to exist in the South-East, and there is now a major demand for the metal to assist the world change to renewable energy based power networks and electric vehicles. Countries around the world are racing to find new sources of copper to meet this new demand for its use. Copper is the *'green energy enabler'*. We can be part of that exciting global story, and there is no better place than right here in South Australia's South-East region with its strong governance, and environmental and community protections.

Let's unlock the full potential of this fabulous region and keep the benefits for local communities.

Peter Rolley

Chief Geologist and Exploration Manager, Hillgrove Resources

Copper is the '*green energy enabler*'

Hillgrove is in the business of finding copper, upgrading it to a saleable product, and supplying it to the world market. We know a lot about copper thanks to many years of experience at our Kanmantoo Copper Mine, in the Adelaide Hills.

We also know the world needs much more copper. In fact, the generation and supply of reliable energy to local users depends on finding more copper.

That's right – metalliferous mining is not the problem when it comes to creating a more sustainable world, it's a big part of the solution. For example, a battery electric vehicle contains about 80 kg of copper, compared to only 8 to 22 kg for a conventional vehicle.[1] And renewable sources of energy such as solar and wind need many times the amount of copper compared to coal-fired generators to produce the same amount of energy.[2]

Copper is everywhere in our lives, but it is geologically one of the rarer industrial commodities relative to how much of it we use. Even with recycling the world faces the real risk of a major shortage.[3]

That's why Hillgrove's new search for copper in the South-East is an important step towards creating a more sustainable world.

At the completed Kanmantoo copper open pit, we are backing up these words with our actions. Hillgrove is now assisting AGL to use our completed open pit as a site for Pumped Hydro Energy Storage, which will help to deliver cheaper, greener power to South Australians.

At Hillgrove, mining is not just about digging holes in the ground. It's about turning our copper discoveries into valuable copper products, building new industries, supporting local communities and ultimately doing our part to make the world a better place. So we are asking you to join with us in the first step - the exploration for copper in this area.

[1] Copper Development Association Inc.
[2] US National Academy of Sciences
[3] Phil McFadden, former chief scientist, Geoscience Australia

A quick summary

Although copper is known to exist in the South-East, we don't know if there are zones large enough for mining, but exciting new ideas suggest it could be very prospective. The first step is to go exploring and as exploring is not mining, exploration will not leave an impact upon you or the land. And if we do make a discovery that is worthy of becoming a mine, the amount of land we eventually need is often smaller than most farms in the area.

But that's getting ahead of ourselves. Exploration will take several years and success is highly uncertain. This booklet outlines answers to questions that you might have about mineral exploration and is the first step in starting a conversation with South-East communities.
I encourage you to join with us and to be part of the change to a new renewable energy world in a socially and environmentally responsible business.

I also invite you to sign up for regular updates via our website. By taking an interest in our activities in the South-East and gaining a better understanding of the facts about mineral exploration, you can help the quest to create a major new industry for the South-East.

Hillgrove's track record: *Kanmantoo*

Hillgrove has contributed $200 million to local businesses and employees and created 300 full-time jobs - keeping the financial and employment benefits within the community.

The following pages explain how we achieved this.

Finding an ore body is not that easy!

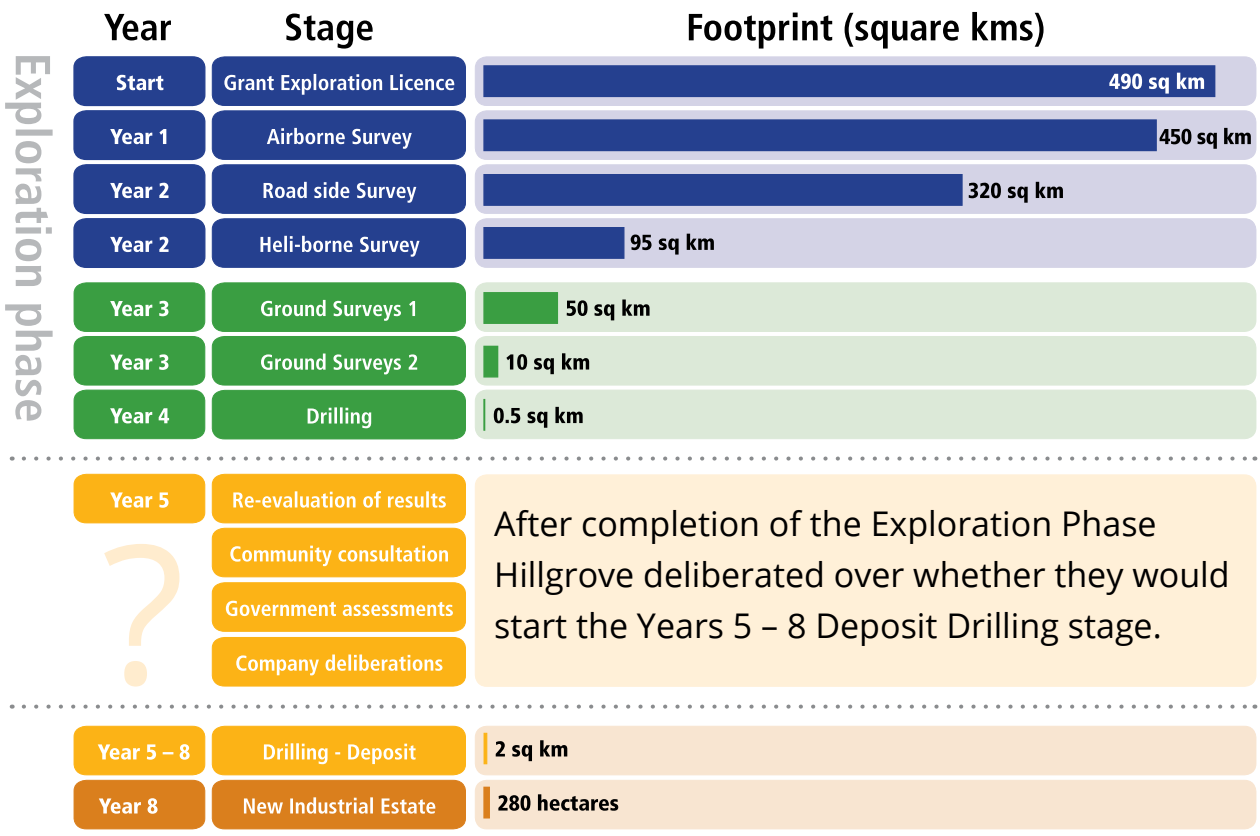
Finding a mineral deposit – especially one that is not visible at the surface – is almost as difficult as finding a needle in a haystack. It often involves sleuthing for clues from various types of data from afar and at great depths, and interpreting this data in various ways. Just like a Dan Brown mystery traversing across all of Europe! An Australian expert in the economics of mineral exploration, Richard Schodde, recently estimated that there is less than a 1-in-137 chance of success, which is equivalent to betting on 'red' coming up on a roulette wheel seven times in a row.

We think we can improve the chances of locating a new copper business in the South-East by looking methodically across a very broad area, using the latest technology and ideas, and taking a lot of time and care to understand what the rocks tell us.

The exploration journey that led Hillgrove to Kanmantoo is a good way to illustrate what to expect in our new search in the South-East. The bar chart (opposite) shows the many steps along the way and how the footprint of our search area shrank from 490 km^2 at the beginning, down to a mine area of just 280 hectares after eight years.

Exploration is the pathway to discovery.

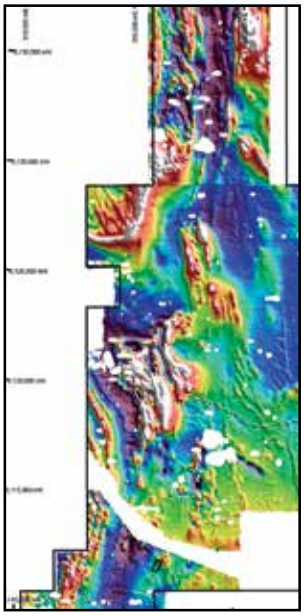
The long road to discovery



If no economic minerals are found as a result of the drilling, then ... we leave. The Exploration Licence is surrendered back to the Government.

How to find an ore body

Year 1 **490 sq km**



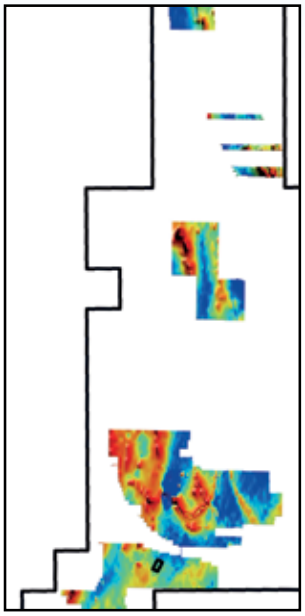
Airborne magnetics: *As a result of the survey, Dark blue and green areas on the survey will be ignored as these areas are unlikely to be volcanic areas of interest.*

In year 1, we explored across almost the entire permit area, but we did not step anywhere on private land or interfere with anyone's activity. This initial phase consisted of a highly accurate survey from the air of the magnetic character of the rocks. This produced a magnetic map, which gives us important clues about the nature of the rocks buried under a blanket of sediments and soils. The red zones are possibly areas of ancient volcanoes just like the volcanoes in Papua New Guinea, which over the past 30 years have produced some of the world's largest copper and gold mines.

Surveying is initially conducted with a light aircraft.

Exploration is ... aerial surveying ...

Year 2 **95 sq km**



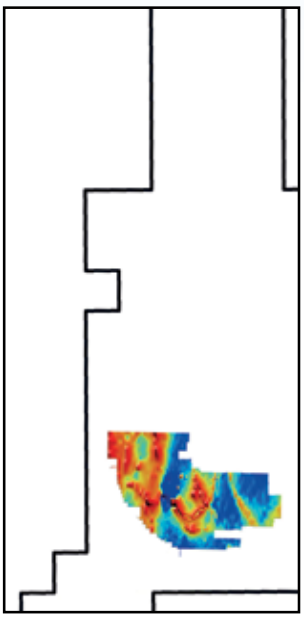
Helicopter Electro-Magnetics: *A helicopter is then used to fly over 95 sq kms of areas interpreted to be volcanics. As a result of the helicopter survey further areas (blue and green) can be dismissed as areas of interest.*

In year 2, we still didn't need to go on to anyone's land. We started by travelling public roads and taking samples of the material we found and and measured various physical phenomena of the earths crust to help understand the properties of the deeper rocks. Local councils were kept fully informed and we followed safety rules at all times. Later that same year, we carried out a second survey from the air but over a much-reduced area of 95 km^2. This time, we used a helicopter to fly a very specialised antenna over the ground at a height of about 30 metres. This survey measured the electrical conductivity of the ground, which told us even more about the type of rocks below. *(You might be interested to know that metal ores are far more electrically conductive than ordinary rocks)*. Before we began the helicopter survey, we contacted all landowners in areas where we wanted to fly and took any concerns into account.

Measuring the ground properties along public roads.

... measuring (still not on anyone's ground) ...

Year 3 **50 sq km**

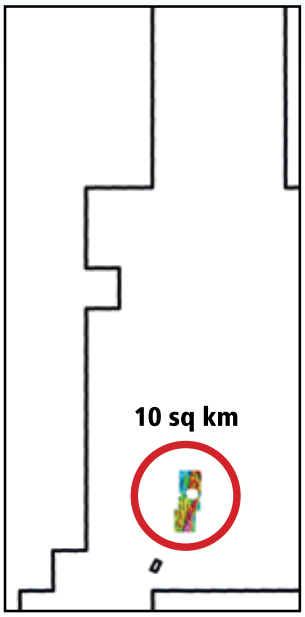


By year 3, all the exploration work of the previous two years meant we could reduced our search area to just 50 km^2. Compare that to the start, when we were looking at 490 km^2 and 2,900 properties! Before doing any work on anyone's land we personally contacted all landowners by phone and personal meetings to get their approval and agree the timing and type of work we would do whilst on their land. This work was the same as the road side work, collecting samples and measuring data from the earths crust. After the work was completed, we checked in with the landowner to get their feedback. Still no interference with landowners activities, water or land values.

Measuring data and collecting samples of soil and rocks.

... measuring data and analysing results ...

Year 3 **10 sq km**



Ground surveys:
As a result of the ground work we were able to reduce our search area to 10 sq kms.

Also in Year 3, we collected information about the magnetic and electrical conductivity properties of the deeper rocks by walking with various instruments over specific areas of interest. The magnetics survey covered only 25 km^2, while the conductivity survey was limited to only 10 km^2. There was no disturbance to the land. Again, all landowners were contacted before the survey. We carefully followed any specific requests they had including respecting fire hazard warnings, drainage zones, pipelines, and livestock areas. After completion we asked landowners for their feedback after we had finished.

Measuring the ground magnetics is a walking, non-disturbance activity.

... respecting people and property.

Hillgrove's track record: *Kanmantoo*

Year 3 – 4 **0.5 sq km**

After three years of gathering clues across a vast area, we were finally ready to drill test the targets that we believed could be copper zones. Drilling activities in Year 4 took place in a number of locations, but the total area of land disturbed was only 0.5 km^2 – just 50 hectares. The permission of all affected landowners was sought (and granted) before drilling began. We modified the location and the timing of our drilling activities to suit landowners. We also worked closely with the landowners to utilise existing tracks or place tracks in convenient locations to access the drill sites. If necessary, we took an alternative route. In addition, we watered the unpaved public roads in proximity to the drilling activity to minimise all dust hazards and road wear. Overall, exploration uses minimal water, and all water is continually recycled. Exploration drilling through areas with aquifers followed all Water Authority regulations. There was never an error, or a change in any existing water bores or water supplies. Again, there is minimal impact upon the land or its use as a result of exploration activities.

Drilling is still no guarantee of a discovery, but it is the only way to test what all the science and geology tells us might be under the ground. It is important to remember there is no loss of land use as a result of drilling. When we have finished, we take care to put the land back exactly as we found it and restore the vegetation.

After drilling, the site has fully recovered.

Year 5 – 8 2 sq km

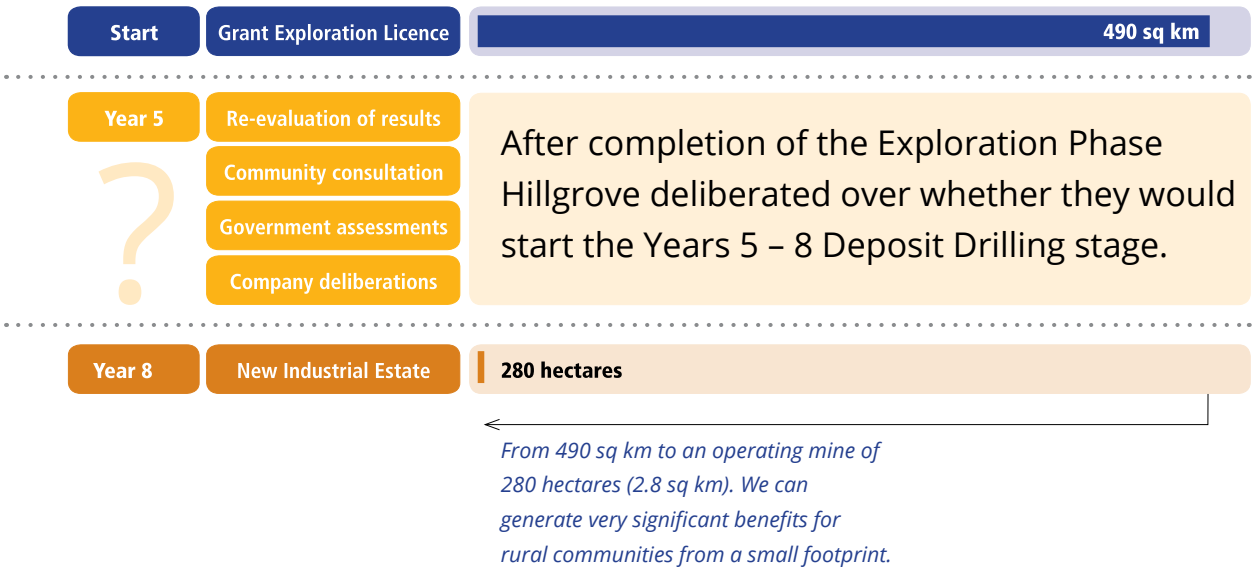
Year 5 was an important time for the Kanmantoo exploration program. If drilling had not found economic minerals, we would have left and surrendered the exploration licence back to Government. But we did get encouraging results, and the discovery of new copper lodes was confirmed between year 5 and year 8 by a large number of drill holes in a small area of only 200 hectares. At Year 5, we take time to carefully consider whether everything is in place to make a success of a possible mine. This is not just about the amount of copper in the ground.

Is the community supportive? Is the government supportive? Is it the right development for Hillgrove? The total area of the mine and the associated processing facilities for copper and gold was only 280 hectares, which is less than 0.6% of the area of our exploration licence of 490 km^2.

If no economic minerals are found as a result of the drilling, then ... we leave. The Exploration Licence is surrendered back to the Government.

Year 8 280 hectares

From this small area, we produced a valuable new industry that generated spending of ***$200 million and the creation of 300 full-time jobs in the local economy in only eight years of operation***.
On top of this spending, Hillgrove paid an estimated $25 million in royalties, taxes and rates to State and Local Governments.



From 490 sq km to an operating mine of 280 hectares (2.8 sq km). We can generate very significant benefits for rural communities from a small footprint.

Why is it like an industrial estate?

Just about everyone has an opinion about mining, but very few people have the opportunity to visit a working mine and form an opinion based on first-hand experience. So you might be surprised to learn that mining is not simply digging rocks out of the ground. Mining is about obtaining a natural resource and upgrading it into a more valuable product that can be transported efficiently to buyers. In many ways, mining is the same as manufacturing bulk paper from trees, or abattoirs transforming livestock to chilled meat products, which are industries that have co-existed with and supported communities in the South-East for decades. The analogy between mining and other industries is also true in the nature and the size of our operations. For example, our Kanmantoo Copper Mine, and all the processing facilities that go with it to refine the copper and gold, only occupies 280 hectares.

Hillgrove's revegetation at the Kanmantoo Copper Mine site.

This would be even smaller if it were an underground mine. On the ground, it's hard to tell a mine is even there. In fact, if the signposts to the Kanmantoo Copper Mine were changed to Kanmantoo Industrial Estate, nothing would look out of place to those driving by.

A new industry to co-exist with and support communities

Working with the local community

Hillgrove has established a track record at Kanmantoo as a good neighbour to the local community.

Well before mining operations began in 2011, we set up the Kanmantoo Callington Community Consultative Committee (K4C) to provide the local community with a forum to raise issues, provide comments and suggestions.

Side-by-side with mining activity, we have worked hard to improve the surrounding environment, which had not always been left in the best state by previous activities.

For example, our re-vegetation programs in historically denuded areas have been praised by the Department of the Environment and Energy. We have established our own, world-class plant nursery, which has earned an enviable reputation for being able to harvest seeds from a wide range of native plant species for re-vegetation.

The whole region has benefitted from our work with the Mount Barker District Council to dispose of residential grey water, saving rate payers millions of dollars for waste water storage and treatment.

More recently, K4C and Hillgrove have worked closely to develop an innovative Master Plan that maximizes benefits for the local community following the closure of the mine. This includes support for new local facilities and the development of a stronger tourism industry.

In 2018, the Master Plan received a commendation in the South Australian Premier's Awards in Energy and Mining, in the category Excellence in Working with Communities.

The whole region has benefitted from our work with the Mount Barker District Council to dispose of their residential grey water

About Hillgrove Resources

Hillgrove is a publicly owned South Australian company with its headquarters in Adelaide. We are best known as the respected operator of the Kanmantoo Copper Mine, just a few kilometres east of Mount Barker in one of South Australia's most valuable agricultural districts. Hillgrove has a track record of award winning community involvement, of custodianship of Federally listed Heritage vegetation areas, of no impact on agricultural water or aquifer use, of Nationally Accredited training programs and certification, and of employing local residents.

With copper becoming the *'green energy enabler'*, Hillgrove is stepping up exploration for new copper deposits, with our focus on a region of exciting new potential in the South-East.

Above: the Kanmantoo Copper Mine is now being converted to a Pumped Hydro Energy Storage.

The open pit at the Kanmantoo Copper Mine is now being converted to Pumped Hydro Energy Storage to store the renewable energy from solar and wind farms

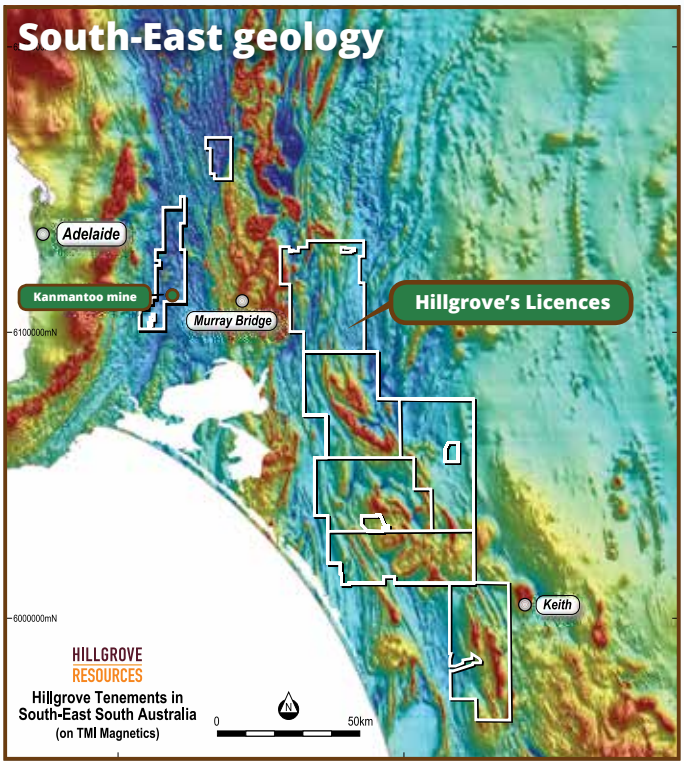
Why the South-East?

The State Government has granted Hillgrove a number of licences to explore for minerals in the South-East. We have six permits with a combined area of 5,600 km^2, stretching in a continuous belt from east of Murray Bridge to south of Keith.

Whilst copper is known in the area there is no history of copper mining and very little previous exploration. So why are we so interested? To answer that question, it helps to understand the big picture about mineral exploration.

In the South-East, the rocks hidden underneath the sands and soils of the Murray Basin were created by intense volcanic activity, similar to what is seen today in the '*Rim of Fire*' that extends around the Pacific Ocean. The '*Rim of Fire*' contains the largest number of copper and gold deposits in the world, and so by analogy we are prospecting the deeper rocks in the Murray Basin to find out if similar copper deposits are hidden therein.

We believe that hidden beneath the surface in the South-East could be the next generation of copper deposits that are so important to transition our societies into renewable and sustainable economies.



As at January, 2020

Our exploration team is led by Peter Rolley, who was raised on the land and understands rural communities. Peter has explored in some of the world's richest copper districts, including Chile, Peru and Canada, and believes there is great potential for discoveries in our own backyard.

We seek your support as we take our first steps to build a new industry in the South-East, and welcome your comments and questions.

Please get in touch!

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