



Left: Jean-Marc Lieberherr, Managing Director of Rio Tinto Diamonds

Right: Aerial view of the Diavik Diamond Mine in summer

NATURE'S BEST

NEW WORLD: GISELLE WHITEAKER SPEAKS TO JEAN MARC LIEBERHERR, MANAGING DIRECTOR OF MINING COMPANY RIO TINTO DIAMONDS

You moved to Rio Tinto back in 2005 but before that you were with Unilever and LVMH. What are the similarities you see between the businesses?

I was with LVMH for seven years. It's very much a brand-driven luxury environment and then I spent seven years with Unilever after that. I worked on the business-to-business (b2b) side, so what I'm doing today is really connecting the two. We sell primarily rough diamonds to diamantaires – we don't sell directly to consumers. But at the same time we work together with retailers, manufacturers and jewellery designers to create a pull through in the pipeline for our products. What's interesting is that you are at the junction of the mining world, which is very much an industrial world, and the luxury world, as we work with jewellery businesses and brands.

What's new to me is the mining side. I started in the marketing division of Rio Tinto Diamonds on branding and b2b practices for a business that was pretty much managed as a commodity business. In 2013, I took over

the whole business including the mining operations. I'm probably one of the only luxury goods marketers who is running a mining business. It's quite fascinating, the meeting of two worlds. The mining business does have similarities to at least the spirit industry, in that you work with what nature gives you, the same way as you do with champagne, cognac or wine. You've got to respect nature.

Of course, with the mine in Canada you have to deal with some pretty extreme conditions...

An interesting aspect of this business is how you're going to work with the hand you've been dealt. We have two main diamond mining operations. One is in the Northwest Territories of Canada: Diavik, and our other operation is in the Kimberley region of Western Australia, a very different environment. They are both very isolated. One is pristine, very white and barren and the other is among the red rocks and earth of Australia. When it's plus 40 degrees at one, it's

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minus 40 degrees at the other, at the same time. You couldn't imagine more contrasting environments.

It's even more interesting if you think about the product that comes out of the two mines. The product that comes out of Diavik looks like ice. It's pristine, it's white, and it's pure. The product that comes out of our Argyle mine in Australia looks like the earth – browns, rare pinks and blues and occasionally rare red diamonds. The product looks like the land it comes from, which is fascinating.

So you can almost tell the origin of your diamond by the colour?

Yes, you can. One is very white and pristine; the other is warm in colour as it's been subjected to very intense conditions – that's where you get the brown and red (*the remarkable hues in coloured diamonds come from trace elements that are trapped within the crystal structure in a process combining heat and pressure. Pink diamonds are an exception. Scientists continue to seek the reason for the pink tint. The Argyle Diamond*

Mine is responsible for more than 90 percent of the world's high quality pink diamonds and has been smashing sales records). The Diavik environment in contrast, comes with very nice pure crystals that are treated by nature. They are very easy to work with – they are easy to cut and develop a very nice colour once polished.

The other aspect is that the Diavik mine is effectively two mines. You've got a mine in the winter and a mine in the summer. The mine in the winter is surrounded by ice and you can't distinguish what's land and what's water. It's just white.

How do you access the mine during that time?

We have an ice road to take all the fuel and cement and heavy equipment we need because there's no other way to transport them to the mine. We rebuild the ice road every year. It's effectively a joint venture between the various mining companies that use it. It's open between January and March for six to ten weeks, depending on the

weather, and thousands of tonnes of materials are trucked in on the 350-kilometre road. The trucks go back and forth continuously on the ice road during the whole period, and then you've got to close it because it starts melting.

In the summer, we are effectively mining in a lake. We have to build dykes to keep the water out so that we have dry kimberlite to mine (*kimberlite is an igneous rock formed through the cooling and solidification of magma or lava kimberlite pipes. Kimberlite pipes are the most significant source of diamonds, yet only about one in every 200 pipes contains gem-quality diamonds*). We have to preserve the water that surrounds us - it is one of the most pristine environments on earth. It's quite an extraordinary place.

There must be a lot of considerations in terms of protecting the environment?

There are a number of things we do. We have a responsibility to keep the environment as pristine as we found it. For a mining business this is a challenge. The area around Diavik is also a hunting habitat for the local communities, so there are huge sensitivities around the fish habitat and the caribou migration. We've committed to maintaining the quality of the water, which is done through sophisticated water treatments (*Diavik's extensive water collection system collects run-off water through sumps, piping, storage ponds, and reservoirs, and treats it to remove suspended solids before it is released back into the environment*). We do regular sampling of the fish; we go and fish, and we taste together with the local community, to guarantee that the fish tastes the way it should. As part of the dykes that we built to mine underwater, we had to recreate fish habitats on the side of the dykes. When we close the mine in about 2023, we are going to be flooding the pits, so effectively the water will take back the mine and the fish habitat will be completely restored.

For the caribou, it's also an interesting one because they migrate near the mine, so one of the key elements is to make sure that the traffic on the mine site respects this. The caribou have the right of way, as does any wildlife at Diavik. It's an important principle, but then it's the way that you landscape your mine, with the rejects that come out of the pits that don't contain diamonds, and how we manage everything on the mine site, that has to be caribou compatible. None of it can be a barrier to normal caribou migration.

That's the only time I've heard a business use the term "caribou compatible".

I've never heard it before either, I must say, but it's a good way to put it. The other environmental initiative at Diavik is the wind farm. It's an extraordinary development. We commissioned the wind farm in 2012. As far I understand, it's the most northerly wind farm on Earth. It provides about 10 percent of the site's energy. It will have an eight-year payback period, until the end of the mine life. It's not a profit-generating investment. It pays for itself, but it is driven by our wish to reduce emissions at the site and we hope that others will emulate this and it will demonstrate that it's possible to be partly dependent on wind energy generation in that kind of environment.

You work closely with local communities. Is that particularly true for Diavik or are there also considerations in Australia?

It's true of everywhere we work. The two main diamond mines have an important community interface. In the case of our mine in Australia, we are mining in what is effectively a sacred site, so it involves respecting certain ways and traditions. The Aboriginal Dreamtime story is that the women were fishing for barramundi, a local fish, and the barramundi escaped from their nets, landing in a gap in the rocks. The fish shed its scales, which became the diamonds in all their colours. These stories are part of our stories as well.

On top of this, you've got to make sure that there is an appropriate level of economic benefit as well as training benefits derived by the local community. At Diavik, we work closely with the local communities on environmental matters. We have an environmental board that we've created together with the communities and the government. Another important aspect is our commitment to Aboriginal employment. We've put in place significant training and



This page: Aerial view of the Diavik Diamond Mine in winter

Below: Rough Diavik diamonds

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apprenticeship programmes to give access to employment at the mine to Aboriginal people. 45 Aboriginal individuals to date have completed the apprenticeships and today we have 34 apprentices, 15 of whom are Aboriginal, that's almost 25 percent. This is really quite a success of the mine - this connection that we've been able to create.

The other part is the economic contribution that mining makes to the Aboriginal communities. We make a point of buying northern goods as much as possible - about 70 percent of our buying is northern. To date the mine has spent 4.6 billion dollars with local businesses and 2.4 billion of that is with Aboriginal businesses. By doing that, not only do we invest money in the local community, but what we also do is try to create enduring benefits and help set up businesses which can then supply other mines or mining businesses when ours is gone. Catering, for example, is a local northern business; we don't work with any of the big catering companies, we work with a local company, which can then provide services to other businesses. It's the same thing with our jet passenger service. Given that road access to Diavik is only available for a couple of months per year, Diavik flies its workforce to the

mine site for their work rotations. The logistics firm that provides these services is an Aboriginal business. These are examples of things that you do to ensure we build a good partnership with local businesses and the businesses also provide a great service and skills that can be harnessed. These are win-win partnerships. We're leaving a legacy.

Canadian diamonds are all guaranteed conflict-free. What does this mean?

This dates back to the 1990s when there were civil wars in Africa, which were partly funded by diamonds. When we say 'conflict-free', this means the diamond adheres to the Kimberly Process - it can be traced to a country of production that is a member of the Kimberly Process and the diamond is sold with a Kimberly Certificate (*under the Kimberly Process Certification Scheme, each shipment of rough diamonds must be accompanied by a government validated certificate and shipped only to countries that are participants in the Kimberly Process*). We're far beyond being conflict-free though. We sell each diamond with an identified 'mine and country of origin', so every diamond can be traced back to the mine. We don't blend our Canadian, Zimbabwean or Australian production. We sell them all separately. There's a strong market in the US and Canada for identified diamonds of Canadian origin. In some cases our customers are polishing the stone and selling them as 'Diavik Mine-of-Origin' diamonds. They can trace it all the way back to the rock. They are creating a link between the polished rock and the mine, which we think is part of the story.





Left: Rough and polished Diavik diamonds

Right: Jean-Marc Lieberherr, Managing Director of Rio Tinto Diamonds

We look at this environment, 200 kilometres south of the Arctic Circle, and link it back to the nature of the diamonds as an eternal product and a symbol of eternal love and it all works well together. I'm very familiar with the luxury world and diamonds are the ultimate luxury product because they are truly a miracle of nature. The very fact that we manage to retrieve them – that they find a way to the surface – is in itself extraordinary. We found a diamond deposit 200 kilometres south of the Arctic Circle, in minus 40 degrees, under a lake. The fact that we found that is a miracle. What are the chances? Then there's the craftsmanship involved to transform the rough diamonds and the branding behind them. The whole story is incredible. There are few luxury goods brands that can tell such an extraordinary story about the ingredient that forms the basis of the product they are selling. That's unique.

What is it about diamonds that has kept them at the forefront and made them so enduring?

I don't know if you've ever put a diamond next to a ruby or a sapphire, but it has extraordinary properties. A diamond shines like nothing else. We also produce pink and red diamonds and you put them in front of even the most precious coloured gemstones and they shine in an incredible manner. These properties are there in the white diamonds as well. I think it's the properties of the product – its hardness, its fire, its rarity, and then it's probably been well marketed also – that makes it unlike anything else.

What happens to non-gem-quality diamonds?

At the time when the market wasn't familiar with lower quality diamonds, many were used for industrial purposes. Over time, with the popularity

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of diamonds growing and supply not growing at the same pace, manufacturers have learnt to cut and polish almost all qualities of diamonds for use in fine jewellery. It's a distinction that talks more to the quality of diamonds. A non-gem will have to be cleaved (*cut along the cleavage plane*), whereas with a gem diamond, often you'll be able to cut directly. How much purity there is, how much cleavage there is in the stone, will determine whether it's going to be used for jewellery or for industrial use. At least 95 percent of the diamonds now go into the jewellery market.

Of course, the big news for Diavik is that the fourth pipe has been agreed. What are the implications for the mine?

Today we are mining three pipes. Two started as open pit and one is underground, but now the three pipes are being mined underground at the same time using two different mining methods. It's a very complex, technical and demanding operation that requires, for example, permanent pumping of water out of the mine, because you're under a lake, so you have to take into account the water table underneath where you are mining or you'll flood the mine. It's one of the only mines in the world that you have to heat. We keep the temperature in the mine underground at six to 12 degrees so it doesn't

freeze. We've got massive heating and ventilation systems inside these underground pipes. Now we have received authorisation to develop a fourth pipe, called A21. It's very close to the others and is the smallest of the four, requiring an investment of about 350 million dollars.

It will start producing at the back end of 2018 and will continue to produce throughout the whole of our mine life to 2023. Between 2019 and 2023, all four pipes will be producing at the same time. It's a very sophisticated operation in difficult conditions.

Do these hardships play into the value of the diamonds?

I think there is a lack of awareness in what it takes to extract diamonds from the ground, and what it takes to find in them, develop a mine and then extract them. Whenever we welcome visitors to the mine, including customers, they realise the value of the product. When you see the scale and complexity of it, it's pretty humbling and you look at the product differently.

Given the mine's disparate locations, you must spend a significant amount of the time travelling?

I go to Diavik three times a year and to the other mines also three times a year, and then I travel to the markets. There is a lot of travelling, but it's necessary if you want to be close to the operations on one side and stay close to the market on the other side. The market is where I come from, that's my home. The operations, I have to learn, so I have to spend time in both. Technically, I live between London and Belgium, between the sites and the markets.

What are your main markets?

The US market is 35 to 40 percent of the world diamond jewellery market, so it is an essential market and it is important for Diavik and for Argyle, both of which produce diamonds that are suitable for that market. China is an increasingly important market as well at 12-15 percent market share. It's still smaller than the US and China's been slowing down generally, in the same way that the jewellery market has been slowing down, but it's still important. India is also an important market for us in the sense that it's growing quite rapidly and there's a strong diamond culture - India being the home of diamonds originally and the manufacturing powerhouse for cutting and polishing for the whole industry. The other markets are Japan and Europe, which are mature and aging markets.

Last year, you produced two million tonnes of ore at Diavik, which was above plan. How is it looking for 2015?

We will maintain our production at roughly the same levels as last year. It's going to be a good year. The most important consideration with diamonds is that if you don't run the place well you pay for it. In that environment you are punished very quickly if you're not careful and preserving the health and safety of our employees is our number one priority, before production. If we can't produce safely, we stop production until we can.

Does it help having local staff who are used to the conditions?

Yes and no. The mining environment is completely different from the open-air environment. We work underground, with heavy vehicles interacting with pedestrians in a pretty confined space. There are dangerous pieces of machinery and equipment. An underground environment has its own set of risks, purely from a technical point of view and that needs to be taken care of. What's really important for us is that we train properly, so that the staff understand and appreciate the risks and implement all the controls so that these risks are mitigated. In that environment things can deteriorate pretty quickly. It's a tough

environment and unless we realise that, we can't keep our people safe. That's what makes it so important to be disciplined in the way we implement our safety controls and procedures.

In photographs, Diavik is quite a beautiful thing. Do you see it that way?

For me, it's a sculpture. It is extraordinarily beautiful – these concentric circles coming down in the middle of a lake – and now it's even more beautiful because as we are mining them from underneath, effectively below this spectacle is a well. The host rock of granite is being exposed as we take the kimberlite out, so you've got not only these pits, but also a well underneath that is black and dark and deep. As you fly over it, it's an extraordinary sight. It's kind of an industrial sculpture and when you think that when we leave it, we'll flood it and it will all be gone, it's a bit like temporary art.

When you do leave, are all of the effects reversible?

From an environmental point of view, yes. What can stay are some elements of infrastructure and the wind farm, if it's of use to the Aboriginal or local people. It would break my heart to take the wind farm away at the end. It's a fantastic initiative and there'll be more mining in that part of the Northwest Territories, so I hope it will stay, but in principle every trace of the mine can disappear.

