

TRANSCRIPT OF EVENT

Valedictory: Public sector science leadership with Dr James Johnson,
CEO of Geoscience Australia

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PETER CHESWORTH:

Welcome this morning to this sweet, bitter occasion as these valedictories often are, because we get to acknowledge someone who's made such an incredible contribution to this country. But at the same time, we see all that knowledge, skill, and capability walk out the door. But my last question when we have our fireside chat is, "James, what's next?" Dr. James Johnson has been the Chief Executive Officer since April 2017 of Geoscience Australia. He's a geologist with 35 years' experience, including private sector mining and mineral exploration. He's led teams of geoscientists for over 25 years with several diverse achievements. These range from discovery of over 2 million ounces of gold reserves in industry. Yeah, a new suit. 2 million ounces of gold mate to national-scale, pre-competitive geoscience programmes that have attracted exploration investment to Australia. These are long-term initiatives and benefits, colleagues. Dr. Johnson joined Geoscience Australia in 2006, and in that time has been head of various divisions with diverse duties including carriage of energy and minerals programmes.

He's also been a member of the board of the National Computational Infrastructure at the Australian National University since 2017. A member of the Australian Antarctic Science Council since 2018 and joined the Science in Australia Gender Equity SAGE in 2024. Dr. Johnson is also a fellow at the Australian Academy of Technology and Engineering. Dr. Johnson has a Bachelor of Science majoring in geology from the University of Sydney and a PhD from the ANU. His vision for Geoscience Australia is one of deploying integrative geoscience for the economic, social, and environmental benefit of Australians. And his driving strong agenda of inclusiveness has led Geoscience Australia towards bronze accreditation in the Science in Australia Gender Equity Initiative and now pursuing silver accreditation. He's also driving Geoscience Australia's engagement with Aboriginal and Torres Strait Islander peoples. Dr. James Johnson.

DR JAMES JOHNSON:

Thank you, Pete, for the very kind introduction. I need to update that bio because it's now 40 years, which is why I'm leaving. But look, it's great to be here this morning and I thank you all for coming out, especially so early in the morning at this time of year when everyone's tired and just wants to stop. So, I thank you very much for being here, and I thank Kate and the IPAA team for the opportunity to speak and for basically looking after me so well. Before I really get going, I do want to highlight that Geoscience Australia, although we have most of our people here in Canberra, we work across the entire nation and on the countries

of our First Nations people. And we like to think of them in terms of the businesses that we're in, and our First Nations people are our first miners, mappers, and navigators.

And I want to acknowledge the traditional owners and custodians of the land where we're on today, the Ngunnawal people, and acknowledge their continuing connection to land, waters, and community. And pay my respects to the people, cultures, and elders past and present. And I extend that respect to any First Nations people here today. Now, I've been to a few of these IPAA events and some of them have been valedictories and I've always been a little bit awed by the speakers, often secretaries or long-serving deputies, and they're giving erudite talks about years of public policy development and career stints in the centrals along with service delivery for social programmes. Topics about, I know very little, about which I know very little. And I've always felt like I was listening to the grown-ups, David Gruen for example, and I've always been a little bit intimidated by that.

So, when Kate asked me, "Did I want to speak at this, the last IPAA event of the year?" My first response was, "No, Kate." I'm a geologist. I spend all my time on a technical and scientific delivery of programmes, not the stuff that IPAA's covering. If anything, I'm an accidental public servant. And Kate said, "That's why I want you to speak." So, this is going to be a bit of a story about an accidental public servant. So let me start with something that's fundamental to our understanding of the world everyday lives and our future, and that is geoscience. So, for those of you who don't think about it often, geoscience or earth science is just the study of the earth. Its processes, its composition, its shape, its history, how the planet works, and the systems that sustain life. It's a field of work that is often behind the scenes, and I'll touch on some of that because the impact of it touches every aspect of our lives.

Geoscience Australia's tagline is "Earth sciences for Australia's future," and that's not an exaggeration. From the minerals that power our technology to the water that we drink, the work we do at Geoscience Australia enables us to use these finite resources responsibly and sustainably. Climate change is one of the most urgent challenges of our time, and I'm sure you're all aware of the Australian government's commitment to reach net-zero emissions by 2050, and geoscience is a key part of that agenda. Geoscientists study the history of the earth over millions of years helping us to understand natural climate patterns, setting the context for how in recent times human activities are altering

them. But geoscience does more than just diagnose problems. It offers solutions from geological storage of carbon dioxide to using spatial analysis to map the best places to generate wind and solar energy and hydrogen from those wind and solar resources and sourcing the minerals that we need for wind turbines and solar panels.

Transitioning to clean energy will be a monumental task, but geoscience provides the foundation for this shift. Geoscience also saves lives by studying tectonic movements and monitoring earthquakes and weather patterns and shaping the shape of the sea floor, geoscience can help communities prepare for and mitigate against disasters. Things like earthquakes, tsunamis, cyclones, early warning systems, evacuation plans, and hazard map all stem from geoscientific research. And beyond its practical applications, geoscience also inspires. Let's face it, everyone loves a map, and everyone likes to find their house on a satellite image, so it's no coincidence whenever we get a new minister, the first thing we do is produce a Landsat image of their electorate, frame it, and take it up to Parliament House and then we're sweet for the next three years. Geoscience drives curiosity. It ignites innovation and it pushes boundaries of what we thought was possible.

So, I look forward to sharing some of the exciting work that we're doing at GA a little bit later. But first I'm going back to the beginning, my beginning though, not the beginning of time. So, I'm a Canberra kid. My father was a professor of classics at ANU and other roles in the arts faculty for about 20 years from the 1960s through to early 1980s. But mum was a scientist. She did a botany degree in the early 1950s, which if you think about it, is a radical thing to have done. And that's where I gained an interest in science because some of the dinner table conversations were about the things mum was interested in. And to be honest, I wasn't very kind as a son. I was going, "Oh God, she's talking about plants again." But in fact, it ignited a curiosity about how the world works.

I grew up in Curtin way over that way, and when we moved there in the mid-60s, it was the southern frontier of Canberra. I remember going to one fireworks night down the hill from Theodore Street across a paddock, through a farm gate, and then there was a community-built bonfire there, and we had a great night. That's now the site of the Philip swimming pool and ice-skating rink and has been for about 50 years. As a kid, I did like knowing how things work, but I never really identified that as science. Fast-forwarding to finishing school, like

many Canberra kids of my time, my first job out of school was in fact in the public service. I took the public service entry exam, and I subsequently was offered a job in... Here's some acronyms for you, the DFRDB and the AGRBO. Does anyone know what they are?

It was the Defence Force Retirement and Death Benefits Office in the Australian Government Retirement Benefits Office. Think how inspirational that was Renata and Rob. And that was an experience that made me vow never to pursue a career in the public service. I processed the same yellow paper form, I can still see it, day in, day out for a year, and it was in Cameron offices out in Belconnen. And I remember that feeling of dread as those brutalist architecture buildings came into view out of the bus window every morning when I was going to work, it was soul-destroying. I captured my feelings one time when I was working there, drawing a stick figure, head in hands, leaning against this big brick or blocky cement edifice, a picture of despair. So, I decided to pursue any career that would take me outdoors. I decided that marine science sounded good because dolphins are cool.

And I went to Sydney University, and I recall the moment that I discovered I wanted to pursue geology. I took geology as a soft filler subject in first year because I knew my limitations. I knew I was going to struggle with maths, and I knew I was going to struggle with chemistry, and I needed something to fill up the units. But on a Friday afternoon in the third week of the first term, we had a geology practical that involved looking at air photos, paired air photos through a device called a stereoscope. And if you get the pictures aligned just at the right separation, suddenly the photographic image jumps into three dimensions and it was like, "Wow." And I was able to trace sedimentary rock units around the side of the hill and see it coming out over the other side. I was genuinely able to see the potential to map things out using this, which is the way it was done back then.

And you've got to remember, this is largely pre-digital era and there were no 3D images on screens. So, the novelty of it was just fantastic. And from that moment, I was hooked and that ultimately became an enjoyable and exciting 40-year career. My first job out of university was as a mine geologist working underground in a nickel mine in Kambalda. It was fascinating and fantastic to me. Every day we'd drive about eight kilometres down underground, down this winding tunnel, a decline as we called it, to a depth of around 800 metres below the surface. And it was dark, and it was damp, and it was filled with diesel fumes,

and I loved it. And one of the things that I really loved about it is you're walking around inside an orebody. And one of the really rewarding things, and it's still a hobby even though I'm sort of not a geological practitioner anymore, is that every rock tells a story if you know how to interpret it.

So, I'm going to give you an example of those nickel deposits, which were just fascinating. They're basically volcanic flows. If you picture a modern-day landscape like Iceland and lava flowing out... Well, the Iceland that we see in photographs, of course, is emergent from the sea, it's on land, but those same lava flows go out onto the seafloor. And much of the seafloor globally is made from this same basalt. And it's that thing that these orebodies were except way back when 2700 million years ago, the earth was a lot hotter and some of these lavas were like 1600 degrees C instead of the relatively cool 1100 degrees C basalts. And they contained a lot of nickel, and nickel forms as sulphide droplets. And because the lava was so runny, they had a chance because they're dense to settle to the bottom.

And what you got was this sheet of nickel sulphide, sort of like that. Well, it would've been like that when it was first deposited on the seafloor. Then it gets buried and then tectonic forces come into play and continents collide and all that good stuff, and it gets squeezed. And so, as it did, you get structural disruption, you get faults, you get stacking of these orebodies one on top of another, and you get to interpret that as a mind geologist. And then I must pay credit unwillingly, I guess, to mining engineers. There's a long-standing animosity between geos and mining engineers. But anyway, they're clever at designing mines. And they would have this dipping piece of slab of nickel, probably only one to maybe five metres thick. And they would develop this winding tunnel down and down and down beneath it in what we call the footwall.

And they'd punch drives out into the ore, and then the miners themselves would mine along those horizons within the ore because that's where the money is, and then mine upward from there. And then they'd fill the stope with sand, and they'd do it again above their heads. But one of the great things about being a geologist in a mine like that, indulged me for a moment with this graphic illustration. You are a miner, you are putting in a drive along that nickel orebody and then suddenly you come to a full face of basalt, you've lost the ore because it's been faulted in a different direction like that. It's basically a very simple geological problem. But a miner needs to keep drilling on ore to make money. And so, when you tell them, "Just turn left, take

two cuts, should we back on it, no worries." They thank your magic.

And I love that. I love that immediacy of relevance in the work that we did. And it was sort of grudgingly that I left that job, but I left it because there was an even better opportunity. There'd been a new deposit discovered in the early '80s called Olympic Dam in South Australia. And I was fortunate enough to be selected for a company-sponsored PhD at the ANU to work on that deposit. And it was about understanding how old the deposit was, a thing called geochronology because that's relevant to where should you look for more of these in the same sort of aged geological environment. And I worked there as a mine geologist for 12 months. And one of my standout memories was an opportunity over the course of just one month to drill out an underground area soon to be mined. And in the space of a month, we drilled out about \$30 million worth of copper.

And in today's money, that's more like \$80 million. So again, the immediacy, the relevance to the success of that operation was just thrilling to me. In total, I worked for about 20 years in the mining and mineral exploration industry, most of that time in Western Australia. So how the heck did I end up coming across to Geoscience Australia as what was then called Chief of Minerals Division? so, I was only vaguely aware of Geoscience Australia when I was working in WA, I was working in gold exploration at the time. And I was an exploration manager, but I had been tasked to coordinate our external research programmes with organisations like the CSIRO with the University of Western Australia and Cooperative Research Centre CRCs, but also through those CRCs teams at the GA. And there was this one pivotal moment where I was invited to the annual showcase of the Predictive Mineral Discovery CRC to go along and listen to the talks of that showcase.

And the CEO of the organisation asked me at the end of it, I could just do a five minute reflect to the researchers on what I had observed, because I was a new pair of eyes for that CRC and give my impressions and views. And I was really impressed by a lot of the technical work that they did, and I told them as much. But one thing that struck me was in the corner of every slide was the logo of the CRC, which included a map of Australia. And I knew full well that CRCs are federally funded organisations. And I was a bit brutally honest with them because there was no cohesion and none of these projects were talking to one another. And I pulled them up on that and said, "You're taking this national

money, but you're just doing your own thing."

And some people nodded and smiled and just said, "Yeah, he is right." And some people looked down and really annoyed and said as much later, just glaring daggers at me because they wanted to keep being funded to do whatever it is they wanted to do. But now there's a GA person in the audience that day called Russell Korsch, and he said, "Hey, there's going to be a job at GA coming up soon, head of minerals division. You ought to think about it when it comes up. You might be good in that." And I just, again, still with that phobia from the 1980s said, "Oh, government, no." But anyway, he ultimately did send me the link when the job available. And I read through it, and I thought, serendipitously, I tick a lot of those boxes because I've got the private sector experience, but I've also been liaising with the research world.

Anyway, the planet's aligned, I applied for it. We wanted to move east anyway because by then we had two small kids who I wanted to know their grandparents and vice versa. And yeah, everything turned out well and I got the job and started at GA in 2006. So, I didn't expect to find myself as an executive in the Australian Public Service almost as much as I didn't expect to find a 40-year career in geology from one class. I never sought to solve mega scale problems. I've always sort of played the ball in front of me, so to speak, using a sporting analogy, and always just wanted to make the part that was within my sphere of influence a better place to be, a better place to work. I started by managing a team of four back in industry and I ended up with an organisation of 650, but the motivations that I've brought to it haven't really changed because after all, it is the people that make the jobs worthwhile.

And I had such a sense of relief moving from industry where I'd frankly gotten tired of this mantra being that God is the shareholder and everything you do is for the benefit of the shareholder. And the stakeholders in the APS are all our citizens in this country, and I really responded to that. I also love the fact that instead of all my work being constrained to a mining or mineral exploration tenement, suddenly Australia was the national canvas to work on. And that's incredibly stimulating if you're of that mindset.

So, you might think that science and the public service seem like different worlds. I certainly did for a time, and perhaps on some levels they are. So, indulge me for a moment because I'm going to generalise and I hope I don't offend anyone, but I've been in rooms of deputy secretaries and former department heads, I can say

former now because I won't be impugning anyone currently serving, listening in awe and wonder to what seemed to me like a meandering dialogue that was vaguely around an issue and sometimes circling close to it and sometimes drifting away, and then suddenly somehow landing on a stunningly clear and incisive solution.

And I'm sitting there baffled thinking, "How the hell did we get to that?" I mean, I agree with the outcome, but I don't get it. And scientists are trained, I guess, more to work in linear analysis and logic. If condition A applies, then it follows that result B will emerge. But how would it look if our assumption about condition C is correct? Okay, we better test condition C to see if it's true. Okay, what new knowledge do we now have about the outcome we seek? And it's just different ways of approaching a problem. And I think we need all of that in the mix of how we think about things. Finally, when I was early, I was still acting in this role. So earliest days at this level, I was brave enough to pipe up with some straightforward linear views on a particular issue.

And it seemed that the secretary valued the cut through and just said, "Simply, you should speak more often," which was hugely beneficial to my confidence at the time. But rather than focus on differences, I usually prefer to look at the threads that unite us, and I'll come back to that point at the end of this speech. But I do believe it's fundamentally important that the ABS, APS, ABS 2 has robust science input. Science offers the opportunity to put evidence at the centre of decision-making, and it offers scientific analysis on what the physical truth is, be it geoscience or any science. Science organisations enable policies to be informed not by short-termism, but by long-term physical realities. And it's my contention that the current paradigm is that lawyers and economists run the nation, and it's probably right that that's the case, but I think it's hugely important to bring the understanding enabled by scientific analysis as one of the key inputs to decision making.

And it's important that the Australian government continues to invest in all science, not just geoscience. It's never been more apparent to me and with a great sense of relief than in this year's federal budget where the Albanese government made a significant commitment to invest in science and put resources at the heart of the future made in Australia policy and now legislation. They announced that our new Resourcing Australia's Prosperity initiative would receive \$3.4 billion over 35 years, which is unprecedented for our organisation and possibly across government. They're

investing in a generation of geoscience. They're putting their confidence in Geoscience Australia, in our people in the work that we do. So, let's turn to that now. Geoscience Australia at its most fundamental provides advice and information on the geology and the geography of our nation. We deliver information and knowledge that provides an evidence base for decision-making by government, communities also, and industry.

And it's all about enhancing economic, social, and environmental prosperity. And the huge breadth of expertise within GA extends not from just what we see on the surface, but also what's below our feet and up into outer space. So, I should add that this data and information is made freely available to all of you, to all citizens, for anyone to use. Our space division, it delivers the national infrastructure for accurate and reliable GPS positioning in Australia in real time. So, we're building a system that takes all the signals from navigation satellites over Australia at any one time and processes all those signals into the single best correction to give you the most accurate positioning answer. We then beam that up to a communication satellite that is in geostationary orbit. It's always over Australia, and it broadcasts this corrected signal to the whole nation for free and ultimately will enable us all to have 10-centimetre accuracy on our GPS.

So, for farmers, that means that they can enable tractors to be accurately guided along designated furrows, maximising crop yields, allowing seeds, water, fertiliser and herbicide to be applied directly over plants not broadcast across the landscape, so far, less wastage. For livestock managers, it means that they can deploy low cost on animal positioning devices to monitor and control the location and movement of grazing animals, to enable fenceless farming and reducing livestock loss. For you and me, it means that we can track our Uber right to the door and share our location with our loved ones. We can get directions to that new restaurant and know how long, and which is the best route to take to get there. It's incredible stuff. And with the programmed I just outlined with the satellite augmentation, it's world leading stuff. And without the geodetic framework maintained by Geoscience Australia, none of it would work.

Our Space Division also leads Australia's involvement in the Landsat Next Satellite Programme, which is run by NASA and the US Geological Survey. The Landsat Next Programme is going to provide Australia access to the next generation of Landsat satellite data, which will deliver the best and clearest views of our landscape of

our planet that we've ever had. And we can view these images in time series, which is immensely powerful. We can monitor all the changes in the landscape over that satellite data archive period, so decades. And that leads to the ability for much better natural resource management. It can help us better understand how climate, water, and environment. For First Nations community and the communities in the Northern Territory, it means they can inform investigations to help endangered turtle species threatened by rising sea levels. For the National Aerial Firefighting Centre, it means they can integrate satellite data into decision-making and decision support tools for planning aerial firefighting operations by identifying fresh water sources for water tankers to reload. Let's think about our place in communities' division.

It encompasses a wide array of functions including Marine and Antarctic geoscience, spatial location science and data and community safety services. This includes the award-winning digital Atlas of Australia, which was launched earlier this year by the Minister for Resources, the Honourable Madeleine King. This is a fantastic new platform for representing data based on location. Not only traditional spatial data like roads and rivers and topography, but also socioeconomic data like the ABS census data, or financial benefits data from the Department of Social Services all suitably aggregated and de-identified. The spatial enablement though of these data sets is providing new insights for place-based policy design and decision-making. We have a range of scientific tools to help emergency services, plan and prepare for natural hazards with the goal of reducing their impact and strengthening the resilience to earthquakes, floods, fires, and cyclones. For emergency managers, this means they can support informed decision-making for reducing bushfire risks, using the National Bushfire Boundaries data set, which covers the historical bushfires, and indeed current bushfires as they develop.

And for environmental managers, our work in mapping and characterising the seabed has helped identified rare and unique geological features and bathymetric features that now have special protection under the Antarctic Treaty System. Our Minerals, Energy and Groundwater Division is building Australia's resources wealth to maximise the benefits to society from our nation's resources. Our economy's underpinned by our resource's exports with over 60% of our export earnings being attributable there. So, the royalties, the corporate taxes, the personal income taxes from that sector are a huge contribution to our ability to afford government services for the nation. At GA, our work is

about ensuring the health of this sector into the future. So, we map and understand where the best potential for resources lies. And this in turn attracts exploration investment from the global industry leading to wealth creating discoveries for our nation. Our current focus is on critical minerals to power the net-zero future, commodities for wind turbines, solar cells, and batteries are clearly in focus.

So, your smartphone that everyone uses contains up to 62 different types of metal, including many critical minerals, and most of those are found and produced within Australia. Including lithium, Australia's the largest global producer of lithium and it's massively important in lithium-ion batteries, in smartphones and many other devices.

Australia has also the world's largest nickel resources, which is a metal used in the very microphone I'm using right now because it vibrates in response to sound waves. We also focus on groundwater as the driest inhabited continent on earth, much of our country relies on groundwater and it meets up to 30% of our national water consumption. Bringing it more local for the Wilcannia community in New South Wales, this has meant new sources of groundwater in what is a perennially drought-stricken area. One of the most important things about our science is communicating it to the wider public.

It's about inspiring the next generation of geoscientists through our education and outreach programme. And we currently have up to 10,000 schools' students visiting our Education Centre at GA annually. It's about sharing the work that we do and the impact that it has with all of you. So, it's all important that all science organisations do that to raise awareness and to be valued by society. So, earth science touches your life every single day from the car that brought you here, searching best coffee near me, to mapping your route home. From switching on a light and turning on a tap, geoscience leads to societal wellbeing. And at two thirds of our export earnings, minerals, and energy are an essential plank in our economy. So, we're not just nerdy scientists at Geoscience Australia, although I will gladly own that label. We're leaders and pioneers and we are working for the betterment of society.

As I reflect on my career, I feel a lot of satisfaction. I value the opportunities that I've had to work on tangible things, products that people can use, and there are many people I'd like to thank from my mining colleagues of 20 plus years ago, one of whom is in the room here and now working in government with Ian here. We go back to Kalgoorlie days. Through to everyone I've had the privilege to work with at GA, the different ministers I've had, including the wonderful current Minister Madeleine King, APS colleagues, many of whom are here today. So, thank you for coming along. Being trusted advisors and friends and guiding us through what to me is the policy landscape that I still feel like a babe in the woods within. And of course, family, none of this would've been anywhere near the fund without the great safe launching pad that family provides.

I feel privileged to have had a career that put me in touch with deep time, geological time. It gives you a sense of perspective. To a geologist, 1 million years ago is not just some bizarre abstraction, it's tangible and it's recent. And our near relative Homo Erectus was already walking around on the planet, and that is a discreet and starkly different time to a hundred million years ago when dinosaurs walked the earth, they probably worked it as well. And again, starkly different to 400 million years ago when all vertebrate animals still lived in the oceans. And take it even further back to 2700 million years ago when photosynthetic cyanobacteria first brought oxygen to our atmosphere, a tipping point in the global system that without which none of us would be here. So, understanding that sense of time gives your perspective. People commonly speak of slow things in society, moving at glacial speed. To me, glaciers are so, so fast when they move metres a year.

I think some familiarity with deep time brings a level of humility because of that perspective. With this frame of reference, you're less inclined to think of yourself as super important. Your time in any given role, senior or not is very short. So, you should make the most of it while you're there and do the things that you want to do while you're there. You realise that we're all bit players in something a whole lot bigger than us and the planet just marches on. That helps me to realise the importance of not taking things too seriously. That's not to say that you don't try to do a good job, just that it's easier to let go of things when you need to. It also impresses on me the need to try and get a smile out of people every day. And that's why poor GA people have suffered week in, week out with a bad joke every Friday.

At the end of the day, regardless of anything that we might do within our social institutions and constructs within our environmental stewardship, whether we get on top of climate change or not, the planet will march on regardless. It's agnostic to us. So, rather than become a nihilist about with this line of thinking, it takes me to the realisation that what really matters in our day-to-day is the people and how we treat them, the people you work with, the people you serve, the people you lead. There is no government imperative, there's no organisational imperative that is more important than people. Good leadership, whether you're working in a mine or as a CEO of a science agency, whether you're leading just one person or a whole organisation, is putting people at the centre and creating environments for them to thrive. It's about fostering a positive culture and working together towards a common goal, celebrating the small wins and working toward the big ones.

Earlier, I touched on my impression of different modes of thinking between those literates in design of public policy and those of us on more mission-oriented science programmes, but I also said that I usually prefer to think of the threads that unite us. And as public servants, to me, what we have in common is that we're all working to set the frameworks and deliver the services and products that enable Australian citizens and businesses to thrive. And that makes all of us in this APS part of a noble institution. Policy agencies, science delivery agencies, and science... Sorry, service delivery agencies and science agencies, we all have a role to play in that endeavour. And we're all working at solving problems to improve lives, and I feel immensely privileged to have worked in this APS environment for 19 years. Thank you.

PETER CHESWORTH:

James, thank you so much for those words. And for myself, who's only been in this area as head of Minerals and Resources Division in DISR for about 18 months, I always thought Geoscience Australia was about dirt and it's so much more than that. It's about data, it's about space, it's about measurement, and it's about so many things and the way in which Geoscience Australia is an enabler for so many things that happen in this country. It's just wonderful to see, and we appreciate your legacy. James, we were discussing earlier one of the challenges for an agency such as Geoscience, an agency such as the Australian Bureau of Statistics, an agency such as IP Australia for the NHMRC, all these agencies is getting a technical workforce. People who really know what they're talking about and in a way, can match it with the industry or those in academia or others that you're dealing with.

What's Geoscience Australia's value proposition to get those people to work? How do you get that technical workforce in when it's so much easier to go for the coin in the mining industry?

DR JAMES JOHNSON:

Well, the flippant answer would be to use our new-found larges from this budget to pay ridiculous salaries. But I know that that's not sustainable and won't happen, so we won't do that. Look, I think it's about appealing to the people who have different aspirations for why they're working. And I alluded in my talk to being strongly motivated when I realised the work of GA to working on behalf of the nation. And there are a lot of people for whom that's really stimulating. It's very much a multi-threaded issue, but one of the best things we've done over the last decade or so is transform the culture of the organisation so that it's a whole lot more inclusive, there's a whole lot better at starting with gender equity and better conditions there. We've got gender balance at the top three layers of the organisation, which is in stark contrast to the one woman in the senior leadership team when I started in 2006.

We've created tangible differences that make people want to come and work at GA. And I'm not exaggerating there. I've had phone calls from people saying, "Hey, I'm looking for a new role, and I've heard about the culture at GA. Is there any opening?" And that is music to CEO's ears. It doesn't happen every day, but it has happened. So, value proposition, you're working on behalf of the nation, you're doing stimulating work. You do have the opportunity to work across a range of diverse things from geological to geospatial to space related. I contend that anyone who's working at GA and has been in one role for long enough to start to feel like they're ready for a change. If they make that known, in large measure, we can make it happen, and lateral moves into something equally interesting happen regularly. And part of the value proposition.

PETER CHESWORTH:

That's just lessons, therefore, many of us both in the regular APS as well. James, you touched in your address on how-

DR JAMES JOHNSON:

Nickel orebodies.

PETER CHESWORTH:

Nickels are tough mineral now with global markets, as is lithium. You touched on how the work of Geoscience Australia can enable and improve the lives of First Nations groups. Certainly, in my division, I feel that we have a lot to do and that perhaps in the APS sometimes our positive rhetoric can't be matched by what we do on the ground. Would you be able to elaborate a little bit more on the things that Geoscience Australia has been able to do to improve a lot of our First Nations brothers and sisters?

DR JAMES JOHNSON:

Yeah, thank you. That's a pertinent question and we're still on a journey there, but I'll tell a little bit of a story about that journey. So, we only started to recognise that just acting within the law and doing what we were legally having a right to do, wasn't going to cut it anymore. And this is, I don't know how long ago, I'm going to call it 10 years, and if anyone wants to dispute it, they can. And we realised what we need is some more consistent engagement, and if we want land access to do our programmes, it's going to take a lot longer. And that was step number one, we set up a group dedicated to that, but that outlived its usefulness because we became aware. It should have been obvious in that first instance. But as I said, we're learning that if your first approach to a First Nations community is, "Hey, we want access to your land for our programme," that's not a good footing.

So, we recognise the need to have more consistent engagement. So, Andrew here in the front row runs our resources programme, and the new Resourcing Australia's Prosperity Programme is factoring in much longer lead times for engagement with First Nations communities. And it's about not just, "Here's what we want to do," it's about told us the sorts of things you are interested in. We collect a lot of useful, we think data that would be useful to you. What out of that is of interest to you, how can we best package that for you as well as putting it out to the nation? So, we have engagements with, for example, Lake Eyre Basin Rangers, and they're very interested in groundwater. So, we are bringing them in to not only understand what we would like to do in groundwater but have them go out and sample various water bores around because they're interested in what's potable water and good quality for them, what can they use.

Similarly, they're interested in the satellite imagery because that provides an insight into a country that is deeply personal and intimate to them. And seeing it all from one vantage point above, stringing together what they know from thousands of years of ground truth is powerful. And indeed, on many occasions, emotional

for them. So, it's just about sincerity of engagement and planning and connecting at some level before you want something.

PETER CHESWORTH: Indeed, it's almost a bit late to turn up at the gate and say, "We want to do this, give us the permission."

DR JAMES JOHNSON: And we have legal-

PETER CHESWORTH: And off we go.

DR JAMES JOHNSON: ... rights to. So, get out of my way.

PETER CHESWORTH: Indeed.

DR JAMES JOHNSON: No, no, not at all.

PETER CHESWORTH: Something about good faith in that message. James, 2024 has been a huge year for Geoscience Australia. You mentioned Landsat Next and Resourcing Australia's Prosperity as two of the very large budget measures, ably, stewarded, and duchess through the political system by Minister King. One of the things that I observed was the incredible way in which Geoscience Australia and the APS worked collegiately. And I was just wondering if you could reflect on that a little bit, because I've got some amazingly smart people in my area and Michelle Dowdell from our data group, but we do not have that level of technical expertise that you have, but we seem to bridge the gap between the two very, very well to get an excellent outcome for the nation.

DR JAMES JOHNSON: Yeah. Look, remiss of me not to have thanked you and your team already. And indeed, Michelle, it's a synergy. We absolutely could not have achieved those important budgetary outcomes, certainly at an organisational level, but arguably for the nation without the expertise in DISR to steward us through the process. And I think our teams worked extremely well together because it's been a learning process for our technical folks to understand how you must package a message. And it's not about telling everyone everything you know about the science. It's about why does it matter? Why should the government care about funding it? And then the depth of expertise within your team, it is just staggering and helped steer us through with every permutation and every question coming back from the Minister's office or from anywhere else, frankly, often the Department of Finance as to why do we want to put money into this? So yeah, we need to be more policy literate, but I think when we get the teams together across the divide, it works beautifully.

PETER CHESWORTH:

By the way, we have a lot in common. I grew up in Garran, the next suburb, my parents moved here in 1965 and my first job in the APS was to process speeding fines at City Police Station. But having said that, I still feel very intimidated going to Symonston with my Bachelor of Arts degree in my back pocket and being confronted by all these PhDs. You mentioned also Landsat Next, I've always felt that this is something that has gone under the radar a little bit, but the Landsat Next, the capability of this infrastructure is going to almost exponentially transform the amount of data that we had. Would you be able to talk a little bit more about that? Because for everywhere, I'm sure the chief statistician, there's a thing of two about data. It's almost like we've felt there's too much data and yet it's still going to come at us. What are we going to be able to do with that?

DR JAMES JOHNSON:

Oh, there's going to be clever people figuring out storage solutions. And thank heavens for that because it'll be wonderful to have the extra data. Landsat Next is going to deliver the same amount of data in a single year as the whole 35 years of the satellite data archive from Landsat to date. And it's not just about volume of data, it's about why is it different and better? It'll be higher spatial resolution, it'll be higher temporal resolution IE, the return time of satellites over one given area. It'll have far more spectral bands. Now, what that enables, it means that there'll be far greater subtlety of analysis, enabled in terms of what are we seeing signals from through those different spectral bands reflected up to the satellite.

So, things like, for example, identifying maybe even individual species, if they're invasive species, things you want to manage will have far greater insights into what at a detailed level is going on the Earth's surface. And so as for natural resources management, that will be hugely helpful. I noticed that David's left the room, so the storage solution will work solely with the ABS. I don't really know how we're going to cope with that data deluge, but I know that we have smarter people than me at GA who are going to figure it out.

PETER CHESWORTH:

Thank you.

DR JAMES JOHNSON:

Help me out here.

PETER CHESWORTH:

One of the great irritations of my role is seeing how much everyone likes Geoscience Australia. When we go to estimates, we have a final time and then Geoscience Australia come on and the rose petals are thrown and those sorts of thing. And what you said about the picture that you provide to the minister, I

mean, Michelle and I were getting very excited about the incoming government briefs that we're going to be providing somewhere in the first six months of next year. But something that I've heard third hand from many, many jurisdictions is geosciences relationships with the states and territories. Just last Tuesday, we had colleagues in the Northern Territory government in town, and they just talk so much about that relationship. That relationship doesn't sound like it's just a monetary one.

DR JAMES JOHNSON:

No.

PETER CHESWORTH:

Obviously, but there's something cohesive. Many of us in this room would kill for a relationship with states and territories like that. Have you got any hints that you can give us in relation to that?

DR JAMES JOHNSON:

That strength of that relationship, at least on the geological side will and truly predates me. Every state jurisdiction has its own mining act and therefore has its own regulator and geological survey. And my predecessors in this role when I first came on board, told me about the bad old days, which is really going... Probably finishing in the late '90s about where there was competition about who should be doing what and duplication. And I don't know how it was, but they decided... Oh, sorry, there's one other ingredient. There is an annual meeting of the chief geologists of each jurisdiction. There are quarterly online meetings, but one annual face-to-face meeting and it usually includes a field trip, which may sound like a junket, but honestly, that's where the real stuff gets talked about. And you develop real relationships.

There's nothing like having a road trip with someone to get to know them. And it means you can pick up the phone and say, "Hey, I think we've got a problem here," and not have it be a personal attack. You can work it through. But in the late '90s with that dynamic in play, they talked through, what are we going to do as states that you are no longer going to do as federal? Because while we duplicate each other's efforts, then it's the kiss of death for us all.

So, demarcations were set. Geoscience Australia no longer does just straight up geological maps at a particular scale. That's the state's jurisdiction. They have not done that, we know that. We provide a coordination service for geophysical data acquisition that is of huge value to them, and it means we get the data. So, it's synergistic. There's a whole range of things that we do where we have agreed who's doing what. Because technically, we can't work within a

jurisdiction without their invitation. So, we need good relationships.

But we've developed them, and we hunt as a pack internationally to attract investment with the Australian Minerals Initiative when Andrew and his team goes over to Prospectors & Developers Association of Canada meetings, the biggest mining forum congress in the world, and every jurisdiction is wearing the same tie. It's the Australian Minerals tie, and it goes to a sense of cohesion that, "Oh, if you want to talk about investing in Australia, go to that booth. Don't go to these seven." And even within Canada, they can't get their act together. Every province has its own booth and they're competing with one another. And they say, "How do you guys do it? Well, we talk to each other." So, it's a good start.

PETER CHESWORTH: That is a good start. And perhaps we can take the idea of field trips on board instead of interdepartmental committees, that sounds like a much better approach.

DR JAMES JOHNSON: Well, at least go to dinner with them.

PETER CHESWORTH: Indeed. Absolutely. James, last question, and that is the Australian Actuary has some data on what happens to middle-aged men when they retire. And that data indicates that if you stay very busy, you will continue to lead a long and fruitful life. What's next for James Johnson?

DR JAMES JOHNSON: Well, you're going to hate this answer. I'm going to live small for a while. I'll be busy with making sure the gardens fantastic. I'll be busy with getting enough sleep and enough exercise to return to how I would like to feel and less fatigued. And then after maybe a few months of that, I'll resurface, and I'll stay on the board of SAGE because it's a cause I believe in. I don't want to fill up the dance card to have a quasi-executive life. I've seen other folks do that, and I just think that's not what I want. So, my true answer is I'll do whatever I like in my own good time.

PETER CHESWORTH: I'm right behind you (in terms of geological timeframes). Colleagues, Dr. James Johnson.