

The robots (and AI) are coming fast

One of my first glimpses of our now emerging technological future came in the 1987 film RoboCop where an artificially intelligent cyborg takes on the criminals.

That future is now here though it's nowhere near as dark. Justin Flitter, who heads New Zealand.AI will give his keynote address at this year's fast-approaching QuarryNZ conference on how AI is transforming our lives and workplaces. (See story page 5).

Justin will be spelling out the profound changes rapidly emerging as AI does away with jobs in the four Ds – dirty, dangerous, dull and dear – which while applicable to many sectors has particular relevance to ours.

This will likely be one of the most important presentations in recent memory at a QuarryNZ conference – another

reason to confirm your attendance if you've not already done so.

It's our first conference since the new Government took office so we have much in the way of change to consider. Not least is the fast-track legislation now taking shape. AQA CEO Wayne Scott has been observing this closely and has made it clear to the Government that quarries must be front and centre of what emerges from all the changes to resource management law. (See story page 4).

The extraordinary level of detail demanded under current laws is illustrated by our coverage (pages 2 and 3) on the Environment Court rejecting McCallum Bros' consent application for continued sand extraction off Pakiri north of Auckland.

Callum McCallum is adamant that his company has done more research on that



beach than has been done on any other stretch of coastline in NZ and as we went to print he was considering his options including a court appeal. Meanwhile, the loss of Pakiri sand will continue to play out in the issues of supply to the crucial Auckland concrete market.

Getting back to the technology theme, hats off to AQA Technical Adviser Mike Chilton and the AQA Technical Committee for their work with GNS Science, which now sees our database of 2500+ New Zealand quarries able to be accessed by customers and local councils. (See Technical update page 6).

This is a real step forward for our industry. Sadly, Mike's update also includes a link to the now complete 2022 NZPAM production data.

It shows that our industry supposedly only produced a total tonnage of 30.94Mt – including limestone and other products – in the 2022 calendar year. What it's really showing is that not much more than half our quarries are reporting their production. That number is down by nearly a third on just a couple of years earlier.

Frankly, this is simple, robotic reporting. Perhaps we need some AI robocops to go out there and do some enforcement.

Hope to see you in Rotorua.

Jayden Ellis
Chair, AQA



The joint QuarryNZ run by the AQA and IOQNZ is on again in July in Rotorua. Jayden is pictured here at last year's conference site visit with IOQNZ President Tim Kennedy.

Messages in the sand decision

There are messages for the wider extractive industry from the Environment Court's rejection of a bid for continued sand extraction near Mangawhai, north of Auckland, says AQA CEO Wayne Scott.

In April, the Environment Court upheld the earlier decision of Commissioners for Auckland Council to not renew resource consents for McCallum Bros who have been extracting sand off the Pakiri coastline for 80 years.

Wayne Scott says the court decision reinforces the need for companies engaging in major projects to have undertaken and produced extensive scientific evidence prior to seeking any resource consent or any renewal.

While reforms to the RMA were underway, he doubts that these sorts of requirements will be weakened, let alone by-passed.

He says the judges said a court has to be satisfied that it has sufficient information to make an appropriate decision. They noted that the last study done on sand extraction was nearly 30 years ago and there had been continued extraction since.

"There was a lot of science provided to challenge what McCallums produced and also a comment from the judges that it was up to an applicant to prove its case, not for anyone to disprove it."

The court acknowledged McCallums had withdrawn its consent bids for inshore and midshore areas off Pakiri while seeking a renewal for offshore extraction.

It said while this was likely to cause less erosion or other adverse effects it did not have enough information to reach a firm conclusion.

"We do not think we can simply assume that these areas are appropriate for further dredging because they have been dredged in the past," said the judges.

The judges did accept there were clear economic benefits from the continued extraction of sand from the Mangawhai – Pakiri embayment which had provided a cheap and plentiful source of sand for decades.



McCallum's extraction barge off Pakiri.

But it said these economic benefits to Auckland and to McCallum Bros and others came at a direct cost to mana whenua and the embayment itself.

They noted how a consent needed to achieve the sustainable management purpose of the Resource Management Act and seek to control and minimise effects where possible. The judges said the information provided to them on the environment and the effects of dredging were patchy and inconclusive and on the shore effect incorrect.

They said in the absence of ecological information, the Applicant relied on grab samples over a small proportion of the total area and studies to be undertaken prior to any renewed extraction commencing.

The court said it could not form a view as to the level of risks involved in the absence of sufficient information.

There were deep concerns held by scientists and others for the continued degradation of the Gulf area and the Mangawhai – Pakiri embayment shows the same signs of degradation.

While this may be a combination of factors which may or may not include the activities of McCallum Bros and other

earlier extractions, the judges said they could not be satisfied that McCallum Bros could undertake extraction without causing new or further effects.

"Further work will need to be conducted to demonstrate that sand could be extracted safely from the embayment and how."

They also commented that a local iwi, Ngati Manuhiri, which has consistently opposed dredging for 80 years, had been imposed on for long enough and were within their rights not to engage after the earlier Commissioners' decision in their favour.

However, the judges said the engagement attempts by McCallum Bros were genuine, exercised in good faith and seemed a considerable improvement on previous engagements by other consent holders for sand extraction in the embayment.

The application proposed sand extraction by means of a trailer suction dredge to a maximum total of two million cubic metres of sand over the 20-year term of the consents between depths of 25 metres and 40 m. In addition, it was proposed to undertake seabed sampling and related monitoring work. **AQA**

McCallums won't rest on 'novel' judgement

McCallum Bros will either appeal the Environment Court decision or seek fast track processing of its efforts to secure ongoing sand extraction off Pakiri.

Managing Director Callum McCallum says the judgement created novel decisions which ignored much of the scientific evidence presented. He says the company called more than 20 scientific and other experts with 1000+ pages of evidence.

It had also been monitoring Pakiri beach for sand loss and other factors since 1996.

"Pakiri is probably the most monitored beach in New Zealand."

Callum McCallum says monitoring over the past six months alone had shown that more than 1 million m³ of sand had accreted across the beach.

At its maximum, McCallum Bros had extracted around 200,000 cubic metres of sand and in its submission to the Environment Court, it had offered to halve this. These volumes were 'infinitesimal' compared to that produced by a major storm event such as Cyclone Gabrielle.

"We have measured the beach (using drone surveys) before and after storms, and seen up to 400,000m³ removed from the beach in a single event. The resource of sand in the Mangawhai Pakiri Embayment is in the billions of m³ of sand."

He says all extraction is from outside the depth of closure as agreed by all the coastal experts at the Environment Court. This means it will not result in any effects on the shoreline because there is no transport of sand from outside the depth of closure to the inner areas.

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– Callum McCallum



As for local Maori tribal opinion, he says one major iwi was supportive of the company's bid for continued extraction while another to the south was opposed.

An earlier temporary consent won by McCallum Bros does allow it to continue extracting 76,000m³ of sand off the far shore of Pakiri for another two years. However, Callum McCallum says this will only provide about a third of the sand the company was able to produce for the Auckland market and he says major shortages are inevitable.

The Aggregate & Quarry Association appreciates the support of our members





A case in point, planning for Transmission Gully didn't include quarries.

More focus on quarries needed for fast track

The AQA has told the Parliamentary Committee considering the Fast-track Approvals Bill that aggregate extraction needs to be put front and centre in the legislation.

CEO Wayne Scott told MPs that while the AQA supports the legislation, it needed to be enhanced.

"That means the fast-track bill should provide for the approval of quarries needed to support the nationally and regionally significant projects considered under the Bill. In other words, quarries need to be among some of perhaps 100 projects expected to be considered under the fast-track provisions."

Wayne says with aggregate already in short supply in many parts of our country – and for much more than projects approved for a fast track – the bill also needed to reflect good planning processes to ensure access to potential aggregate resources was not shut off.

The industry also wants the Expert Panels to have the necessary resources to consider the fast-track projects.

"If the Expert Panels are not adequately resourced, that risks slowing down the objective of having fast track processes. They need to have the strong economic and environmental analysis required within the tight timeframes envisaged."

Wayne says no one in the quarry sector should think Expert Panels would simply rubber-stamp projects which meet economic criteria.

"We've worked too hard as a sector to lift our game on environmental, social and governance (ESG) expectations. I don't accept any decrease in such standards is warranted or even envisaged by the Ministers who will receive the fast-tracked recommendations."

He believes consent approval timelines can be cut without declines in ESG performance.

He reminded MPs that the quarry sector has decades of experience of major infrastructure projects being unveiled, without any consideration of where the fundamentally necessary rock, aggregate and sand will come from.

The example of Transmission Gully was cited with materials imported from as far away as Taranaki.

The AQA is also welcoming the outline given of the first of the Resource Management bills to replace the Labour Government's reforms.

Due for introduction in May (ahead of this publication's deadline) Infrastructure Minister Chris Bishop said it will contain targeted changes to the hierarchy of obligations in the National Policy Statement (NPS) on Freshwater Management and also halt creation of further Significant Natural Areas (SNA).

Wayne expects wider issues around bio-diversity and Highly Productive Land will be addressed in the second RMA Bill 2 due for introduction in August.

This legislation is also expected to address a dozen different National Direction instruments.

"These are a complex array of tools but we in the quarry sector have been doing work on such an instrument ourselves. We propose to keep promoting this as a way through the conflicting policy settings which currently stymie access to quarry resources," he adds.

"It would also give the Government a mechanism to ensure that crucial provision for quarries is included in district and regional council plans." **AQA**



Bolt into your seats for some mind boggling AI

If you think Artificial Intelligence (AI) is something in the future for the quarry sector, wait until you hear QuarryNZ 2024 keynote speaker Justin Flitter.

“You will be absolutely blown away by what I am going to present at the conference,” he says.

The founder of New Zealand.AI, Justin says even he has trouble keeping up with just how quickly AI is changing the workplace and the world.

For example, in April, four billion people – half the planet’s population – were given access to generative AI as customers of Meta which owns Facebook, Instagram and WhatsApp. MetaAI will answer your questions, fact check posts, or design photos from simple text prompts.

Justin says an indication of how fast things are changing is illustrated by another AI platform Sora; in January, its text-to-video tools created three second video clips; Sora will soon produce videos up to 60 seconds long.

“What’s the next leap from there? An hour of video? A Hollywood film?”

Justin says there are huge implications for the workforce from AI. He predicts his year-old daughter will never need to operate a keyboard or learn to drive.

“In 18 year’s time, I don’t imagine insurers will want people driving cars or machinery – it’s too dangerous.”

He says AI will replace work in the four Ds – dull, dirty, dangerous and dear.

“That’s every work sector summed up including quarries. Humans don’t need to be doing this work anymore.”

He will be framing his presentation in Rotorua around how quarries can benefit from using AI to replace humans working in

the four Ds, but says it won’t take all the jobs.

“Your job is just going to change. We have to think about how AI can 10x our capability.”

As a simple example, AI is already capable of ensuring aggregate was graded to the right consistency and anything not correct is rejected.

“If you are doing the same thing every day, a robot can probably do it better than you.”

Justin says it is also able to improve health and safety such as by failsafe mechanisms to avoid or alert workers from getting in harm’s way.

“AI is not an optional thing anymore. You’re either leaning into AI or you are going to become irrelevant.”

He acknowledges that the implications of AI can be challenging for most people at all levels.

Many New Zealand business leaders are not conversant with the proliferation of new technology coming out of the USA, Europe or China and elsewhere which was transforming every industry.

In the lead-up to QuarryNZ he will be researching what AI can already bring to the sector – and what’s on the horizon.

He says there will be huge opportunities in areas including waste management, machinery optimisation and demand analysis.

“Everyone will walk away with a far better understanding of what AI can do in their operations.” **AQA**

AQA Technical update

NZ Quarry Database is now live

- After a few years collecting and editing quarry information and locations, the AQA's database of over 2500 New Zealand quarries is live for viewing on Koordinates.com
- AQA and GNS Science have been working closely for the last couple of years collating information into a format that can be publicly published and viewed. Thanks to GNS Science for support with spatial mapping and geological interpretation.
- This database aims to provide name and location data for customers and local authorities wishing to purchase quarry products and will be periodically updated.
- There is still editing to complete so please, if you notice details that are incorrect, please email the correction to Mike Chilton tech@aqa.org.nz so it can be corrected. The Q_INDEX is a unique identifier for each quarry in the database so if you reference that number we can easily update it.

NZPAM Production Statistics

- The 2023 quarry production survey at www.nzpam.govt.nz
- The industry has now had two poor reporting years. This

badly skews production figures and therefore minimises the importance of the quarrying industry to our infrastructure and economy.

- Please complete your company's returns as promptly as possible and ask AQA for help if you need it.
- NZPAM now also has access to the NZ Quarry database now so better reporting is hoped for this year. NZPAM will be QuarryNZ and anyone wanting help people fill in their quarry production can do so on-site at the conference.

Inspiring Futures Foundation

- The latest round of grant applications closed at the end of April and the IFF are processing the applications.
- AQA's project developing quarry products training material and videos is behind schedule but will be completed during 2024.
- The Technical Committee has been working on the video content and training package, with some guidance to content given from the Institute of Quarrying Australia's training. **AQA**

Mike Chilton
Technical Adviser, AQA

AQA works for the quarry industry – join us today

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