

Architecture's brave new world

Standing on the shoulders of giants, Waiheke architect Nick Dalton is at the forefront of a Māori architecture renaissance. He talks with Liza Hamilton about 3D printing his home and reimagining the future of Aotearoa New Zealand through architecture.

If all goes to plan, when architect Nick Dalton builds his family home on Waiheke this Christmas, it will be the first 3D printed house in the southern hemisphere.

And, if all goes to plan, this home will be a prototype to disrupt and revolutionize New Zealand's dysfunctional housing market.

As one of Aotearoa's most exciting young architects, Dalton is leading a charge to innovate, but he brings elements of Māori ancestral wisdom into the mix which are equally radical. Reclaiming architecture to improve the lives of all is central to his drive and he believes 3D printing concrete houses could be a gamechanger.

A staple of the New Zealand Architecture Awards in recent years, Dalton's designs are earthy, striking and sleek. He has marked himself out with his bold vision, winning accolades and backing and attracting international media attention.

You can expect to see him on our screens in the coming months, featuring on *Grand Designs New Zealand* and *Designing Dreams*, both celebrating the best of our nation's architecture. In one he brings the film crew to Waiheke to talk about Chris Tate's black fin home; inspirational to him for its conceptual bravery.

A jam-packed busy schedule meant two *Weekender* interviews were canned last-minute, but we finally snatched an hour with him for a glimpse into the multitude of projects he has spinning in his orbit.

Dalton (Te Arawa, Ngāi Tūhoe, Tūwharetoa, Ngāti Whakaue, Ngāti Pikiao, Pākehā) set up Tamaki Makaurau Office Architecture (TOA) just over a decade ago. It is now the largest Māori-owned practice in the world, with a staff of 28. Of these, 14 are Māori, and half of them count te reo Māori as their first language. Another 35 staff will be brought on board in 2022 to meet TOA's expansion plans.

"Māori architecture is a bit of a hot topic right now, for a number of reasons, but it's been a long time in the making, a number of decades really," Dalton told *Weekender*. "We call it the start of the upswing of the decades of activism and that Māori voice really becoming more vocal and saying, 'We want something that celebrates culture, something different'."



"I was immersed in that language of architecture, the models, the drawings, it was my whole upbringing." Photo Merrie Heweston

"We want what's ours and to me it's clear there's a global realization that indigenous knowledge is really powerful and aligns with looking after the planet. So, the stars are all aligning and I'm just in the right place at the right time; right upbringing, right whakapapa."

Dalton says a lot of TOA's projects are driven from an environmental perspective.

"We call it the 'mauri framework'. We are not looking at it in a capitalist way, like 'How do we cut it up and make the most profit?'"

"The korero is more like, 'where are the rivers? What's the current condition of all of the natural aspects around an area?' And anything that we put in has to enhance the mauri [life force]. So, the project has to actually give back more than it takes."

Brought up in a bi-cultural household in Rotorua, Dalton has both Māori and Pākehā heritage.

"I say that I was crafted or brought up with aroha from both my Māori and my Pākehā sides, so I really only understand the love," he says. "I get a bit upset when I see tension or racism, I have no space for it. That [aroha] is one of my big drivers."

Unhappy at the lack of Māori expression in architecture when he first stepped out as a new graduate, Dalton founded TOA with a bold new vision.

"Innovation is a big part of my drive. TOA is literally Māori for bravery and strength and cutting new ground or doing things differently and so innovation is something that we are constantly pushing and not

just for the sake of it, but in the context of 'how do we do it better?'"

Dalton found himself telling the makers of *Grand Designs* he planned on 3D printing a house, before the idea had fully crystallized. He laughs when he says he got off the phone in a mild panic about the actual logistics. Fortunately, his blue sky thinking panned out.

"I said I always wanted to try 3D printing and then I got off the phone and said, 'I hope someone does that in New Zealand'."

"I googled it and there is an epic Egyptian guy who is based in Hamilton and, full credit to him, he got the system compliant."

Wafaey Swelim, founder and director of New Zealand's first 3D printing concrete company, has been working closely with

WILD ESTATE
FIRESIDE FRIDAYS

Live music Fridays
from 5.30pm-8.30pm
open for dinner
and drinks

Call 372 3434
wildestate.co.nz

GAS Ostend has closed for renovation.
We are upgrading our shop and forecourt.
Come and fuel your car, or grab yourself a coffee and hot food when we reopen in mid-August.
Apologies for the inconvenience and see you soon!

2 Albert Crescent, Ostend, Auckland 1081 | 09 372 8949

gas.
Petrol Service Stations

WE'RE 100% HERE FOR YOU KIWI.



Designs for TOA's 3D printed pods – "Innovation is a big part of my drive. TOA is literally Māori for bravery and strength and cutting new ground or doing things differently."



3D printing trials with QOROX in Hamilton. It's 75% faster and reduces waste by 70% when compared to traditional construction.

Dalton, and plans are under way to bring his 3D robot to the island to print the house on-site in Surfdale. They have made a commitment to support one another going forward.

"He got a panel created in the Netherlands where the mother company is based and got them shipped to Wellington and approved to New Zealand standards," said Dalton.

"He has been doing a lot of landscape retaining walls and furniture for councils; this will be the first house."

Dalton takes inspiration from civic works in Europe, where 3D concrete printing has been used for large scale projects like bridges. His 3D roof will effectively be a scaled down version of one of these bridges, with a truss.

"Often people can't reconcile this, if it's a scale shift," he says. "If it's done on a big scale it's going to be easy to do at a small scale too."

Initial research and development on the project is promising, with experimentation

on a six-metre long wall, and a little trial and error on the way. Dalton opens up a video on his phone to show me this in action. A high-tech robot – think Mr Whippy meets the Terminator – uses a special nozzle to form architecture from concrete. It's exciting to watch; the robot arm darting about to add layer upon layer with speed and precision, according to the Dalton's specifications.

"That was good, because we were just trying different things, we printed this large piece and we tried to move it and it did break," says Dalton. "So now I have convinced him [Swelim], and I got the structural engineer to confirm, that the slab can take the weight of the robot, so we're currently planning at the moment that it's going to be onsite and printed. That's the plan."

There were some reservations about transporting the robot to Waiheke on the ferry, but those have been ironed out.

"I said, 'Mate, it came from the Netherlands'. We are meeting with council next

week to make sure we can get it all through and hopefully get consent in the next couple of months.

"So, we will be printing it by Christmas. I'm super excited. It will take three days to print it and then you put all the windows and stuff in."

Dalton's wife Bianca is a beauty therapist, so the couple will dedicate a portion of their Waiheke section to create a luxury spa, featuring 3D printed concrete pods overlooking the creek that runs through their land.

"The whole idea is that we can print these things, do the foundations and just lower it in. We want to be able to repeat it, but the first thing we are going to do are these two pods."

The expectation is these 3D printing trials will lead to rollouts elsewhere.

"We are the guinea pigs basically," he says. "The whole idea is we want to make these pods because we often work with iwi in remote locations, we're on most of the is-

lands from the Chatham Islands to Aotea (Great Barrier) and Hauturu (Little Barrier) and the issues are the same where housing is a major problem.

"So, what better system? Everyone talks about time. If we can deliver something in a really short timeframe that's quite cost effective, it's a win. The base cost is similar to a weatherboard home, except you don't have to wait 18 months."

At 42, Dalton jokes he has been practicing architecture for 39 years. His mother keeps an original floorplan he sketched out as a pre-schooler in the family album.

From age three he would accompany his architectural designer dad into his Rotorua office or onsite.

"I was immersed in that language of architecture, the models, the drawings, it was my whole upbringing," he said. "From the earliest ages I was brought to sites by Dad, he would take me to a lot of dairy factories, back in the day. He would also work on

WARMER IN WINTER : : COOLER IN SUMMER

RETRO DOUBLE GLAZE YOUR HOME

- Warmer drier environment
- Reduced condensation
- Reduced noise intrusion
- Energy saving
- Reduced UV damage

We fit real double glazing into your existing Joinery

IPM
GLASS

Call IPM Glass on

0800 444 789 or text 021 444 848

russell@ipmltd.co.nz www.ipmltd.co.nz

• Professional Service • Workmanship Guaranteed • Waiheke Based

schools for the Ministry of Education, things like that. Dad encouraged the architecture side of me."

Fast-forward to high school and university, Dalton loved people and excelled in the creative subjects like art, technical drawing and photography.

"I wasn't an all-rounder, I was quite focused," he says. "I still remember the head of the architecture school at Victoria University, having to meet with me and my dad and he said he thought that I would really struggle academically."

In his first year at Victoria, Dalton came top of the school of design, but he failed calculus. The next year he got a B+ in calculus, but it still wasn't enough to go through to the next professional year.

With some encouragement from Mum and Dad, Dalton transferred to the University of Auckland where he went on to complete his Bachelor of Architecture with first class honours. He then smashed the competition to win the prestigious national award for Design Student of the Year, for his project Ngā Puna Ora, at Auckland's Bastion Point.

With this came a scholarship to go overseas and explore the finest architecture in Europe, soaking up inspiration in a total of 23 countries.

"It was the second time I had been to Europe, and I just really got immersed in the love of culture over there and how ancient it is and from an architectural perspective how it is celebrated," he said. "Portugal blew me away, the battle scenes on the walls of their town squares and the mosaics, they are celebrating their history with their architecture and so, coming back home, I really wanted to

fuse those two things."

Channeling the stoicism and permanence of that ancient architecture, Dalton likes to incorporate a modern, high-tech approach, fused with te ao Māori [the interconnectedness of living and spiritual realms] and tika Māori [the Māori way of doing things].

This vision has won favour for TOA on a number of fronts. From the Waka Māori for the 2015 Rugby World Cup to Māori Modular Housing and Mahitahi Kainga, a ground-breaking social housing project in Otara.

TOA is now working on a new centre in Auckland to celebrate the legendary Polynesian navigator Kupe, who discovered Aotearoa some 1000 years ago.

"Some say that it was his wife that named it Aotearoa," says Dalton. "He came here by the stars, using celestial navigation. He is one of the most recognized figures, but he was a tenth-generation navigator and his ancestors found Antarctica."

"We are creating a centre in Point Chev where all the schoolkids can go through and learn about celestial navigation, but also our history which will be part of the national curriculum for schools."

The Māori Modular Housing (MMH) is something TOA has been championing for the past five years with hopes to address a multitude of issues. It started as TOA's own initiative, but Dalton says they are now partnering with iwi and government.

"It is a concern that our building laws are the worst allowable, by law, in the world. That's a bit of a problem," he says. "For us building warm, safe, dry, should just be a given. We shouldn't be building anything



TOA has been working on Māori Modular Housing for the past five years.

that's not those things.

"We want to create houses with a soul, with wairua. And so they have a name, they are borne of something, they are crafted, they're beautiful, but they are made from a supply chain which basically allows them to be able to put be put together."

Architecture isn't just about beautiful buildings though. The less glamorous subject of sewage and wastewater systems are part of the process, and innovation needs to happen here too.

Turning waste into bio-fuel is 100 per cent where we need to go as a nation, believes Dalton. "I think the iwi, together with government, will champion that," he says. "Which is hugely powerful. It needs to happen. It's always, 'It's too hard, it's too expensive', it's all reactionary, but we're growing in population and we are already not coping and then they just bolt on another pond."

Developing a project in Porirua in recent weeks, Dalton has been working hard with the client to take a more progressive approach.

"I'm going to put my hand up because we have to walk into this, because at the moment, and I think it's a nationwide problem, our wastewater systems are woefully inadequate and in Porirua it actually spills quite regularly, raw sewage into the beautiful harbour and you just go, 'What are we doing?' We're like cave people."

Covid and lockdowns have provided an opportunity for society to reboot, says Dalton, and design a world we actually want to live in.

"I think Covid has taught us something. For me personally, we were at Bianca's family bach and it was amazing how grounding it was. You weren't running around. Half the meetings are Zoom now. That notion of being able to work and play in a close proximity and then go away to recharge is great," he says.



Te Taumata o Kupe - Pt Chevalier under construction.



Home delivery direct to your door.

Beer, Wines, Spirits & so much more...



Waiheke Wine Centre

Order online at
waihekewinecentre.com
 or phone 372 6139
 153 Ocean View Road, Oneroa Village

THIS WEEK



news : kawepūrongo

GULF NEWS

sports : hākinakina

ONLY \$2

entertainment : whaka ngahau

Power surge

Will government rebates really help Waiheke's bid to become pinnacle of electric vehicles?

Cup runneth over

United tumble out of Chatham Cup after heartbreaking loss to top opposition.

Wet, wild and mucky

Waiheke Primary School photo special of their amazing "mud run".

AVAILABLE AT ALL ESSENTIAL RETAILERS ISLAND WIDE



One of the TOA artworks for Taumata o Kupe project by Matekitātahi Rawiri TOA, East Coast.

"We talk about vertical papa kāinga – the idea is a village and not just for housing. In days of old, everything happened onsite. You played together, you trained for war, you tended the gardens, everything was in close proximity and so we have been developing over the last five years or so, this notion of 'what does that mean in a higher density model?'"

Find your happy place

Talk to Waiheke's walking track specialists.

Call Gary Wilton
on 027 201 8816
or check us out at
www.maketracks.co.nz



"It definitely has green infrastructure at the heart of it, it has a mauri framework, it has learning at the centre of it. So it's not just a bricks and mortar exercise, it's not just a place for sleeping and getting up and into your car and driving for two hours. It's trying to reset all of that."

The Daltons moved to Waiheke two years ago and love it. "The community is incredible," he says. "We have lived all over Auckland and with Waiheke, there's just no comparison. I think that's where I am lucky, I can recharge here and on Thursdays I try and work from home."

"On the island you are surrounded by nature and that is good for your soul. The community is amazing, we have made lots of really good friends, everyone is just on a similar vibe eh, just caring about the planet."

Daughter Arabella is attending bilingual classes at Te Huruhi School's Nga Purapura Akoranga and Dalton is the iwi representative on the board of trustees there.

"We just celebrated Matariki with all the schools of Waiheke, and laid a hangi for 800, it was one of my favourite weekends of all time," he says. "We always talk about blue sky thinking and being really aspirational and everything is larger than life. I think it's really important to have your feet on the ground too."



Three generations – brought up in a bi-cultural household in Rotorua, Dalton has both Māori and Pākehā heritage.

"I'm determined to be a good dad and husband and those things don't always come together. So that balance of feet on the ground, being part of the community. Being rooted here. We've got our lives here ahead of us. Arabella is only six, I want her to go to high school here, so I am committed to this community just as much as I am committed to all my other aspirations."

Inspired in his workplace by the fluent te reo speakers, Dalton is dedicated to becoming fluent and has embarked on a learning journey with his family. Keeping up with Arabella is a daily spur.

"At bedtime she will crack into a karakia or a mihi and I will go, 'Oh man, I need to catch up and be up there with her'. I am really fortunate that my work allows me to be surrounded by te reo Māori speakers, every day is truly a gift."

"It's becoming more and more apparent that I have to be fluent and I want to be. I think there's a lot of talk around 'I wish I learned', but you have to commit and really push into it."

Being in tune with the environment is key to understanding te reo, which Dalton describes as a wairua-based language.

"It's not a transactional language," he explains. "All languages have strengths. English is highly functional, transactional, is

the international language of science. Whereas Māori to me is metaphoric, it's poetic, it's deeply rooted in values and the environment, and it is intrinsic to this place, Aotearoa."

"I think that's where people don't quite get it. You don't ask for an apple in Māori, you korero about sustenance for the whānau or the tribe. They are simply different languages. Both are important and have their place. The more I get into the mahi that I'm doing, the more I'm compelled to keep my aim."

It was through Arabella, then attending Pirihiti Childcare, that Dalton learned his tribe Te Arawa made their first landfall on Waiheke on the long voyage from Hawaiki.

"I found out that my waka landed here in the 1400s and they re-lashed the whole thing from local fibres and sat in Pūtiki Bay for a year," says Dalton, who learned this from local kaiako and knowledge holder Nani Maikara Ropata.

"It might sound weird, but it kind of felt like it, it does feel like home here."

Seafaring is a big part of Dalton's life. "I used to have a yacht and I spent a lot of time on the water around Waiheke and Motutapu; down at Man O' War was a favourite spot to anchor up."

Ancestors loom large in Dalton's world-



LICENCED BUILDING PRACTITIONER & REGISTERED MASTER BUILDER

For all your building requirements including total project management of new builds and renovations.



Contact Steve Somerville

027 204 4737 | info@somervillebuilders.co.nz



PROBLEM WITH YOUR SEPTIC TANK? WE'RE AVAILABLE 365 DAYS OF THE YEAR - CALL US ON 0800 735 464

Known for our service, S3 provides maintenance, inspections, and emergency call-outs for thousands of residential and commercial wastewater treatment systems.

0800 735 464 | info@s3ltd.nz



SEWAGE SYSTEM SERVICES

view, from those first explorers to his parents and grandparents. Their drive and curiosity have been passed down the line. His mother got up every morning at 5am, setting a fine example on how to use every corner of time available.

"It's in my DNA," he says. "Both my grandfathers on my Māori and my Pākehā side were entrepreneurs. My Māori koro, Mutu Loffley was a musician and could play any instrument by ear. He spoke multiple languages fluently, including te reo Māori. Just always had ten different things happening."

"My grandfather on my Pākehā side, Lon Dalton was equally as driven. He started New Zealand hydroponics in 1977. He invented a number of things, including a movement called 'zero grass' which effectively turned barley seed into foot-long grass in less than seven days. Lon wrote books on hydroponics in the 1980s and they are still the bibles today. And Lon brought colour photography to New Zealand."

"Some people look at me and say, 'how do you do it all?' But I still feel like I'm in their shadow. I don't have that many languages, I can't play all those instruments, but I have been given a gift of ability and



The TOA designed Mahitahi Kainga Trust social housing project in Otara, Auckland, was officially opened by Prime Minister Jacinda Ardern earlier this year.

support and I want to use that. Not everyone is in that fortunate position, so a big part of my drive is giving back and using those skills and talents and that support that I have had, to do some good."

Through TOA, Dalton is working with many iwi on their future, exploring masterplans for the next 50, 100 and even 500 years.

"We talk about being clean and green, but we really need to live that more. And so we are really trying to work with all of our iwi and government clients and say, 'How do we do better?'"

"What's really interesting, when you go long, long term, is you realise how irrelevant you are. What you want, what you have problems with are kind of irrelevant. It really makes it what is important for your children's grandchildren."

"That enhances that idea of the environment and the mauri framework. We need to get this right, because if we carry on with the status quo we are in trouble."

Such is the success of TOA that expansion plans are also in the offing, with a new practice in Wellington and potential for others around the country.

"We're working with iwi on a number of projects, quite transformative proj-

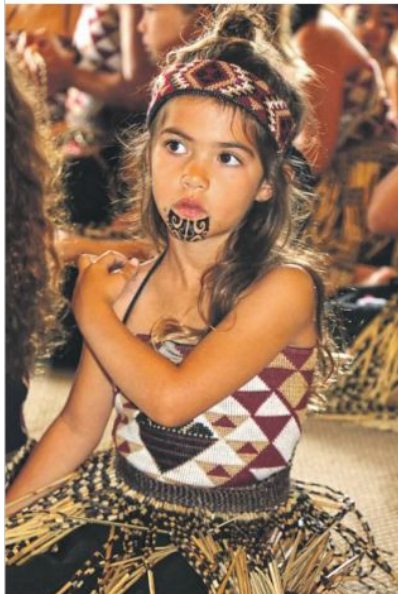


Dalton's wife Bianka is a beauty therapist, so the couple will dedicate a portion of their Waiheke section to create a luxury spa, featuring 3D printed concrete pods overlooking the creek that runs through their land.

ects, in terms of creating communities. I think at a scale that hasn't really been realized.

"I guess what I am excited about is, 'What does it look like post-Covid?'. If there was a button pretty much anywhere in the world, if they had access to a button that could bring them to New Zealand, there would be a lot of people pushing it, right?"

"For us we need to think about, as a nation, what kind of country we want to be? And it's not grabbing the wealthiest. It's the right people of all cultures that want to be in a community as well, that have love for the planet and I think that it's really exciting to be able to reimagine a lot of our cities and our small towns to be, it sounds a bit cheesy, but these bastions of the future." •



Daughter Arabella is attending bilingual classes at Te Huruhi School's Nga Purapura Akoranga and Dalton is the Māori Community Representative on the Board of Trustees there. Photo Merrie Hewetson



For Lease - 4 Totara Road

Excellent parking and suitable for a range of commercial industrial and some retail purposes.

Left Side	Size	Right Side	Size
Unit 1	42sqm	Unit 1	Leased
Unit 2	Leased	Unit 2	98sqm
Unit 4	56sqm		
Unit 5	66sqm		
Unit 7	66sqm		

* units 4,5,7 can be combined

For further details or a site visit please contact Nole Irvine of Courtney Commercial Ltd, 021 731 894
noleirvine@gmail.com