NEW ZEALAND INFRASTRUCTURE COMMISSION
Te Waihanga

Episode eleven

TRANSCRIPT

Planning for an uncertain future

Infrastructure for a better future

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Please note: the transcript has been edited to make reading as easy as possible.

Introduction: Welcome to Infrastructure for a better future, a series where we have honest conversations about the infrastructure challenges we are facing and how we can build a better Aotearoa. In each episode we talk to experts from here and overseas about what works when it comes to addressing these issues.

Nadine Dodge: So, Brad, could you tell us a bit about yourself and what you do?

Brad Singh: Yeah. I work for Wellington City Council. My official title is manager of transport and infrastructure. I'm an electrical engineer by profession. My team basically looks after the transport network maintenance operations from street cleaning and sweeping and emptying bins, to looking after traffic signals and everything else in between. And we're also responsible for the capital delivery of new transport assets. So, whether it be a new retaining wall, seawall, cycleway – we build the new stuff.

Nadine Dodge: I was describing it to my colleague, and I said that my understanding of it was sort of you have technical engineer type people below you who are technical experts in their area. And then above you, you have like strategy, people thinking about the big vision, and you're the person stuck between those levels? Is that accurate?

Brad Singh: Yeah, it is kind of accurate. The role is quite diverse, it's probably the most diverse role that I've ever had. It can be extremely reactive, to operational, to tactical, to strategic. And you have to be able to just swing between those five or six times a day, changing hats and thinking differently and operating differently.

Nadine Dodge: Very interesting. The reason we got you in here today is that we recently published a paper that is about infrastructure and uncertainty, and about what infrastructure providers should do to plan and operate their infrastructure in an uncertain world. Very frequently, we think the world is quite certain, we say, 'What's the medium-growth forecast', for example, and then we say, 'OK, well, we'll just plan the infrastructure for that and we'll deliver it over the next 10 years'. But, actually what tends to happen out in the world is that

it's quite uncertain and if you just plan for that central case often that doesn't happen. And if you haven't quite anticipated that other futures might arise, you might get hung out to dry. We thought that you would be a good person to talk to about how that actually plays out in practice. I was wondering if you could talk a little bit about the sources of uncertainty that you're seeing that play out on the Wellington transport network – that play into what you have to think about in terms of what you'll have to be doing in the next year or three to ten years?

Brad Singh: There's obviously the uncertainty that everyone is probably well aware of and some of that uncertainty is the uncertainty associated with it. So, when you think about stuff, like climate change, whilst is uncertain as to how rapid the onset will be, and how quickly things will move, where we're all pretty certain is that we're in the middle of climate change, we're starting to see that happen, we're starting to experience it. And whilst it is certainty that it's happening, the uncertainty is how bad is it going to get? What is this year's storm season going to look like? What's this year's slip season going to look like? And those are the things that are uncertain.

COVID taught us a lot about uncertainty as well, right? The uncertainty of what the market is going to do? Materials shortages, labour shortages, that sort of stuff. It brought into perspective the fact that if your planning is too rigid you end up stuck. And so, building flexibility into your planning is key in facing an uncertain future, particularly where you can identify the uncertainties. If you can identify, 'Look there's an uncertainty around what the labour market is going to look like in Wellington going forward', you can start to plan around that, because that's where the uncertainty is. And you can start to build flexibility into your planning as to how you manage that going forward. I think one of the things that I've seen is particularly where we start to forecast infrastructure build and we want certainty around that. Most funders, most regulators, they want some sort of certainty around if you plan on building infrastructure, 'When is it going to be built by?' 'What's the cost going to be of that infrastructure?' And, there needs to be some sort of certainty associated with that.

When you've got variables that are uncertain – around cost fluctuations, around like labour and materials shortages, that sort of thing – you need to be able to be flexible in those parts to still guarantee some of that certainty. Still being able to guarantee the costs, still being able to guarantee the delivery date. And that's kind of been the complexity that we've been navigating of the last little bit in terms of trying to manage the network whilst still being able to build stuff across Wellington.

Nadine Dodge: Very interesting. Sounds like a lot of different moving parts at the same time. Can you talk about perhaps some examples of how you're seeing uncertainty play out in the real world in your business, and also what approaches you're using to build robustness to uncertainty and those in those projects?

Brad Singh: So, one of the bits of uncertainty has always been for me has always been labour. And has always been having a skilled workforce to be able to maintain the existing assets and renew the existing assets and keep that BAU [business as usual] maintenance renewals ticking along, but also have enough labour to be able to build new infrastructure. I think the way we're starting to influence that, and the way we're planning around that is identifying what the market looks like, and planning around what the existing market looks like. I'll give you an example of one of the things that we've been doing, and we're about to land in the next few weeks. Within the Wellington transport labour market there are a limited number of role players. We can probably count them with less than the fingers on one hand in terms of who actually does transport-related construction work in Wellington. One of the things that I noticed though, was – and if you tie yourself to that labour market and you're kind of tied to the market in terms of what you can do and how you can deliver – one of the things that we noticed was, there were a lot of local suppliers that weren't engaging with government and weren't engaging directly with local government. And you'll see the suppliers doing stuff like private-property driveways, working for developers, working for commercial industry, but they're not engaging directly with local government. So, we started to approach these suppliers and bring them on board. The thinking behind that is encouraging local suppliers to engage directly with local government, and thereby guaranteeing them a stream of work in order for them to be able to progress their companies and their businesses forward. So, they've got a guaranteed line of work, they've got guaranteed income, they can start to invest into their business and the other good news story is local money going back into local pockets.

We've started to do this, we've got a supplier panel that we're signing up in the next few weeks supply, the supplier panel will have ten suppliers on it. Two or three of them are the big players that everyone kind of knows about. But seven of them are really small niche companies that are local Wellington-based companies that we're looking to grow and develop. And that's one of the ways we're trying to create that flexibility of being able to have more players than are currently available in order to guarantee some certainty in an uncertain labour market.

When you're looking at the uncertainties around stuff like climate change, I suppose some of the things that we're starting to consider is what does that mean for us when we don't quite understand what the impact of climate change is going to be on the city. Two aspects to that is around increased rainfall, we know that there's going to be increased rainfall. And last year, July and August, we saw the most landslips in our recorded history from a Wellington city perspective. And it was really impactful, I think we had something like over 1000 slips over two months, which is equivalent to what we'd get over a year probably so in two months was really busy. We're not sure what that's going to look like this year, next year, the years coming. But all you can do is plan around the certainty aspects. Whilst we know that Wellington has a huge number of unsupported slopes and all these unsupported slopes are at some sort of risk in some manner. The certainty that we can work on is where the emergency routes are. Whilst we can't plan to go and retain every single unsupported slope in the city, we can prioritise. And we can say, 'Well, these are key routes for us to be able in an emergency to get emergency services moving, get emergency supplies into the city out of the city in a major event'. So, we can start to shore up those routes and retain those routes.

From a from a sea-level perspective, whilst we're uncertain as to when sea levels will rise to the point that we're going to need to do something with our seawalls, what we can do is when we renew seawalls we can strengthen them. One of the things we do at the moment is when we renew a seawall, we strengthen it to the point that it can be raised by a metre at any point in the future. Whilst the seawall will usually be the same height that it started off at, it's strong enough that at any point in the future if we need to raise it by a metre we can. That's trying to create some sort of certainty where you're not quite sure what's going to happen and how it's going to happen.

Nadine Dodge: That's a really good example of what we're talking about in the paper, which is real options analysis, which is basically making choices today that leave several options open in the future. I think the seawalls example is a really good one of leaving a different option available in the future to build on the current seawall rather than having to tear it down and start again. But Wellington is definitely in a different situation than a lot of places in New Zealand with the amount of walls and difficult topography. How does that play in with the thing that you were talking about in terms of the construction market? Because presumably, when a slip happens, you don't really have any advance warning about that, that just happens. And you just have to react.

Brad Singh: So that's kind of the genesis of the supplier panel that we've created is because historically, for the last few years, what we've been doing is we've been using the crews that deliver our maintenance and renewals programme to deliver new infrastructure as well. The risk associated with that is when you do have a major event, all those crews disappear, to go clear up slips, to go unflood streets that have been flooding, and clean sumps and that sort of thing. What you end up doing is prioritising the major event ahead of infrastructure build. And so creating two separate portions where you've got a group of companies that are dedicated to new build and you've still got the labour secured for reactive was the reason that we set that up is to allow us to still be able to continue building infrastructure, even when some unforeseen situation has happened, because we've got reactive crews to deal with, with that sort of thing. It's always been a bit of a challenge for us over the last few years that I've been around in terms of being able to prioritise your resources into the right space. And generally, when you're going through a major event that's the thing that ends up getting prioritised over anything else.

Nadine Dodge: Absolutely. And I feel like it's this human tendency of thinking about these unexpected events as being like, 'Oh, how could we possibly seen this coming?' And while you may not know exactly what day it's going to happen, or how bad this year will be compared to next year, it is somewhat foreseeable, I would imagine, that extreme weather events will happen and you will have to clean up after them.

Brad Singh: One hundred percent. I think one

of the things that that we've started to do over the last, I want to say year and a half, maybe two years, is to start to build that flexibility in terms of relationships. So, the other councils in the region – we often talk to each other. I talk to my counterparts all the time. And, when one area is getting hit a bit harder than the rest of us, we kind of surround that person and say, 'Hey, what do you need?' 'Do you need some help?' 'Do you need us to alleviate some of your crews?' 'Some of your engineers?' Having that sort of flexibility and not being siloed into thinking this is my thing and I need to worry about this also helps in that uncertainty because whenever a major storm comes through, you're not quite sure which one of the councils is going to get hit the hardest, but just having those relationships and being able to lean on them has been quite beneficial.

It goes beyond councils as well, right? It goes through stakeholders and that sort of thing as well. So, when you're talking something from a council perspective – streetlights and dealing with streetlights, well, we've got an electricity provider locally as well that could also assist with some of the issues that we're going through. And we've been leaning on some of those relationships to actually be able to work together. And I find that helps a lot when you're facing that uncertainty and you're not sure what's going to happen is knowing that there's a relationship that you can lean on, whether it's a stakeholder or another council.

Nadine Dodge: It reminds me of when I joined Te Waihanga, the Infrastructure Commission, I heard a lot of people in central government, talking about Forward Works Viewer. But that kind of work is definitely being seen by central government as a way of collaborating across different types of infrastructure providers that would have a lot of value at the country-wide level. So, it's quite interesting.

Brad Singh: Forward Works Viewer has been really good for us. So, over the last year, Wellington, you would have heard that whole city in transition, city of transformation, all that sort of stuff. And when you go outside and you just need to walk around the central city, the amount of scaffolding and road cones is just unbelievable. It's the most that I've ever seen in the city. And it's not just council building infrastructure, you've got utility companies, upgrading the infrastructure, whether it be Wellington Water or Wellington electricity with the cable network, you've got developers, you've got property owners, commercial properties undergoing development. So, there's a lot of work happening in the city. And being able to bring everybody around the table once a month, and talk about what work is going – geospatially laying it out – and trying to make sure that everyone can get access to the part of the city that they need access to when they need access to it to be able to build the infrastructure or do whatever they need to do has been just a game changer for us. It's starting to really come into its own in terms of us being able to coordinate stuff across the city and not just do a first come, first serve.

Nadine Dodge: Thanks for talking a bit about that. Going back to our paper, the approach that we used was I had a reference group across central government, which included both system leaders like Ministry for the Environment (MfE), as well as infrastructure providers like Waka Kotahi and the Ministry of Education. I was quite surprised talking to them that while a lot of them want to use approaches to build robustness to uncertainty, the central government infrastructure providers, they saw a lot of barriers to doing so that fit in kind of quite a lot of categories. I wonder if you could talk a bit about the barriers that you see, if any, to building robustness to uncertainty, and what we might be able to do about them.

Brad Singh: I think for me, the biggest one comes in the form of risk. And I think that if you want to build uncertainty into your planning, you have to take risk. And that's where the difficulty comes. Because you're not sure how much risk you're actually taking, or what sort of risk you're taking. I'll give you an example. Kiwi Point Quarry is in Ngauranga Gorge and that's one of the strategic assets for the council that I manage. A few years ago, we identified that the northern part in Kiwi Point Quarry was reaching end of life and we would need to do something with the site. We hedged our bets, and we said we will quarry the southern end of the quarry. At the time, we weren't certain as to what the quality of the rock was there or if the quality if there was sufficient drop to make it a viable option, but we spent money doing a district plan change, getting resource consenting done. And whilst doing that in parallel, we did drill holes, we did modelling of what was there, and then we built the strategy around 'What is the future of the quarry actually look like?' 'Will it continue to be acquiring?' 'Will it become a resource recovery center?' 'Why do we actually want to do with that site?'

Long and short of it is we hedged our bets and whether it was luck or really good planning, it ends up that it will be acquired, and it ends up that there is really good rock, and it ends up that there is a need for the quarry in the Wellington region – a strong need for the quarry in the Wellington region. So, taking that risk of spending money doing a district plan change, all those years trying to get a district plan change across the line, getting resource consenting done, and all the work required to get the resource consent was a risk of time and money gone if it ended up that there wasn't good rock in the southern end, if it ended up that actually there is no need for acquire in the Wellington region or another quarry in the Wellington region and we ended up doing something different with the site, we would have ended up spending time and money on stuff that wasn't really required. I think one of the biggest things associated with planning for uncertainty is risk and having the mandate and the ability to take risk. And I think that's kind of the big barrier that I see around our risk-averse nature means that it is quite difficult to take on risk, particularly in our environment where you're working with public funds it's not really good practice to be taking risks. The Kiwi Point example was probably a little skewed in the fact that we could kind of see the future. There was not as much uncertainty with taking that risk as they might be with some other projects. But I think, yeah, in my opinion, planning for uncertainty requires taking risks.

Nadine Dodge: Absolutely. And I think the way you describe it is true, and that you need the license from decision-makers or from the public or whoever, to spend money now that may not end up being worthwhile. That's kind of the nature of thinking about the future in an uncertain way. And the paper that we looked at, we're looking at the context of buying land for a project, even if there's kind of only a 50/50 shot of the project going ahead. And in retrospect, that can make a lot of sense if, 'Oh, if you hadn't bought the site in advance, and the project could never go ahead'. But if you're living in the counterfactual of 'Oh, this infrastructure providers spent a whole lot of money buying this land and took it away from people, and it was all for nothing, that could make them actually look quite bad in the long run as well. It's definitely a matter of risk and bravery and thinking a bit intentionally about what are all those future scenarios that could happen? And what's the path I can take now, that's maybe minimising the regret, because there's always some chance of regret.

Brad Singh: And I think one of the things that we looked at from the Kiwi Point example was, 'What does that worst case scenario look like – if we go and spend this time and money and it ends up we don't actually intend on putting a quarter you're continuing to carry at that site?' 'What does a worst case look like?' 'How much would we have spent?' 'How much time would we have spent on it?' 'Is it something that we would be able to justify?' 'Can we reduce that?' So, the money that we're spending on this, how best can we reduce that so that we're not taking too much risk? And we can show that, 'Hey, we did this as cheaply as we could'. And I think it's identifying what the worst-case scenario is and trying to put a few mitigations around that or even just some remediations to try and minimise that as much as possible.

Nadine Dodge: I can imagine the worst-case scenario on the other side being even worse, though, where if there was no quarry, or not a big enough quarry to serve Wellington region the cost of that I can see being quite substantial or even just an inability to deliver the projects that we're trying to be delivered it.

Brad Singh: The aggregate market is huge in Wellington at the moment. We definitely wouldn't be able to supply the market without Kiwi Point in existence. We would, actually, but the cost would be huge. We did a little bit of analysis here, in order to be able to supply the local market with the type of aggregate that comes out of Kiwi Point it would require 200 truck movements a day from the Rangatikei to come in. So that you think about the carbon emission cost, you think about the actual cost of aggregate to bring it in from up north, it would just push into restructure projects, to the point where some projects may just not get the green-light because they would be too expensive to construct.

Nadine Dodge: That's really interesting. And I think thinking about those wider impacts are really important as well. Well, I think I'm getting to the end of my list of questions. Do you have any closing comments or anything else that you think you might be interesting to think about in this area?

Brad Singh: I'm a big believer in looking back to look forward. And I think when we look back, across even just Wellington's history, right, we can look at decisions that were made in the past. And we can question why they make that

decision: why they built the port, where they built the port, why they build those properties, or where they built those buildings. And I think wherever you've got infrastructure, you're always going to face uncertainty – people have faced it in the past and people will continue to face it in the future. We're just a moment in time trying to predict what's going to happen and all we can do is our best. And at the end of the day, future generations will look back and say they either did a decent job or did a terrible job. Our purpose is to try and make sure that we're doing the best possible decision-making around the future that we can with the information that we've got.

Nadine Dodge: Awesome. Well, thanks so much for coming in today. I think that idea of thinking about it as an intergenerational issue is really important. Thanks so much.

Brad Singh: Thanks, Nadine.

Narrator: Thanks for listening. Find out more about the work Te Waihanga is doing to transform Aotearoa at **tewaihanga.govt.nz**