Resource Efficiency & Energy TKH Environment Subgroup

Supply & Demand of Aggregates (TAR 19-03)

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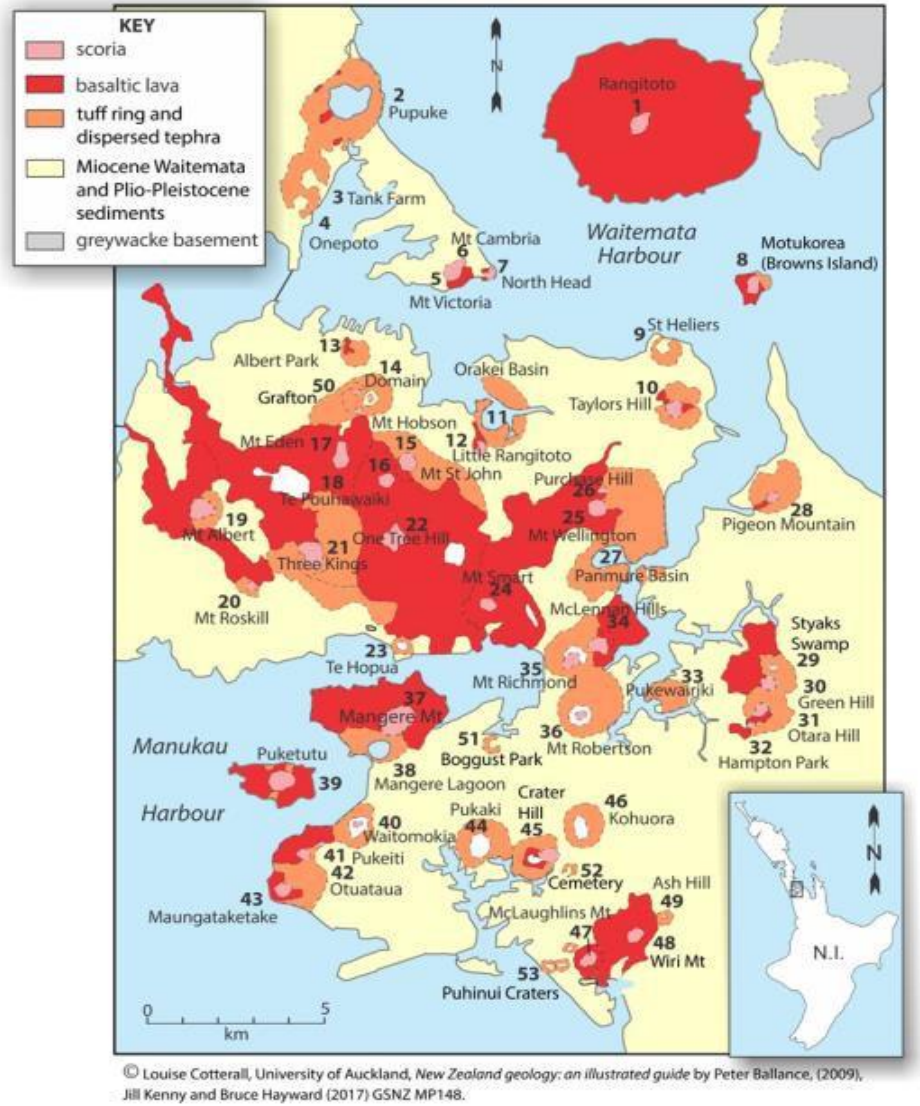


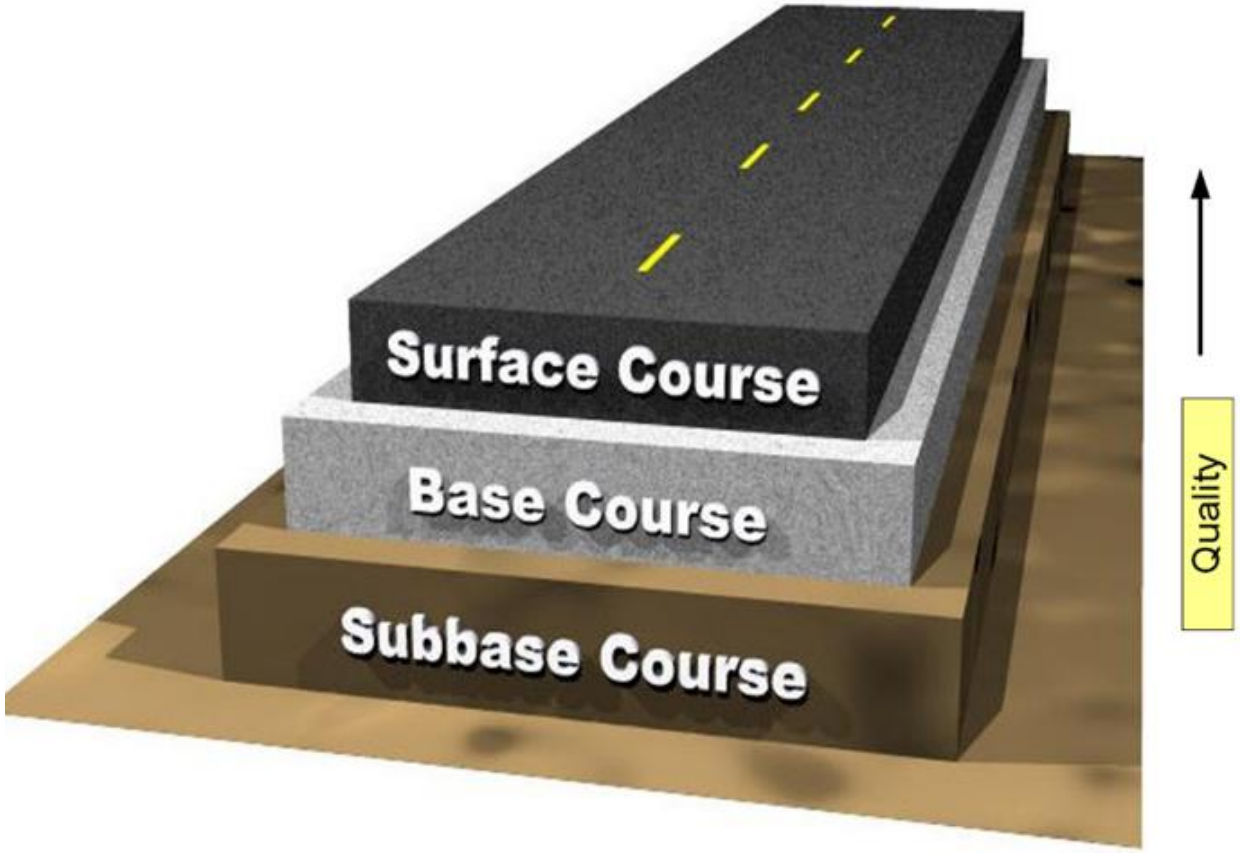
© Louise Cotterall, University of Auckland, *New Zealand geology: an illustrated guide* by Peter Ballance, (2009), Jill Kenny and Bruce Hayward (2017) GSNZ MP148.

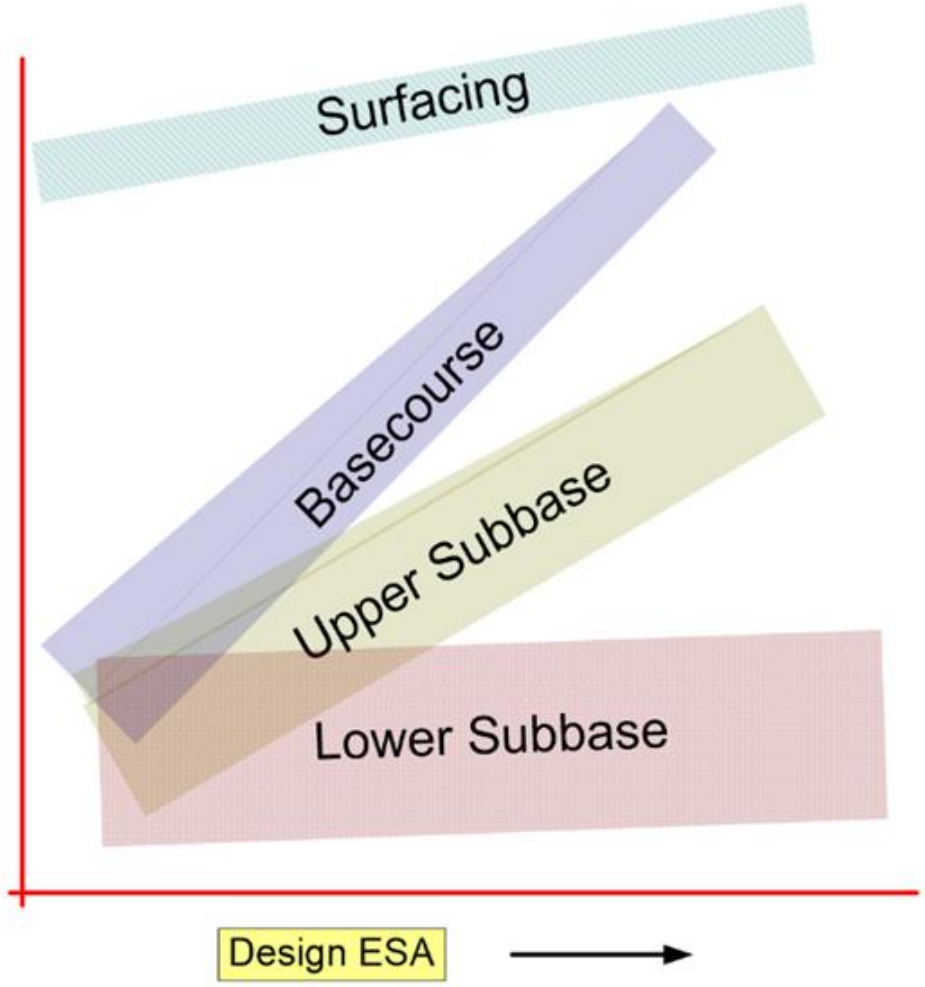
1 Aggregate Consumed in Infrastructure

MP Steven Joyce (National Finance Minister in 2017) was quoted as describing infrastructure as *"all the big unsexy stuff that allows the sexy stuff to happen"*.

SH20 Waterview Tunnel consumed **74,500 m³** of aggregate as backfill alone - ~30 Olympic Sized swimming pools – NZ Herald, Brian Roche, Chair of AQA

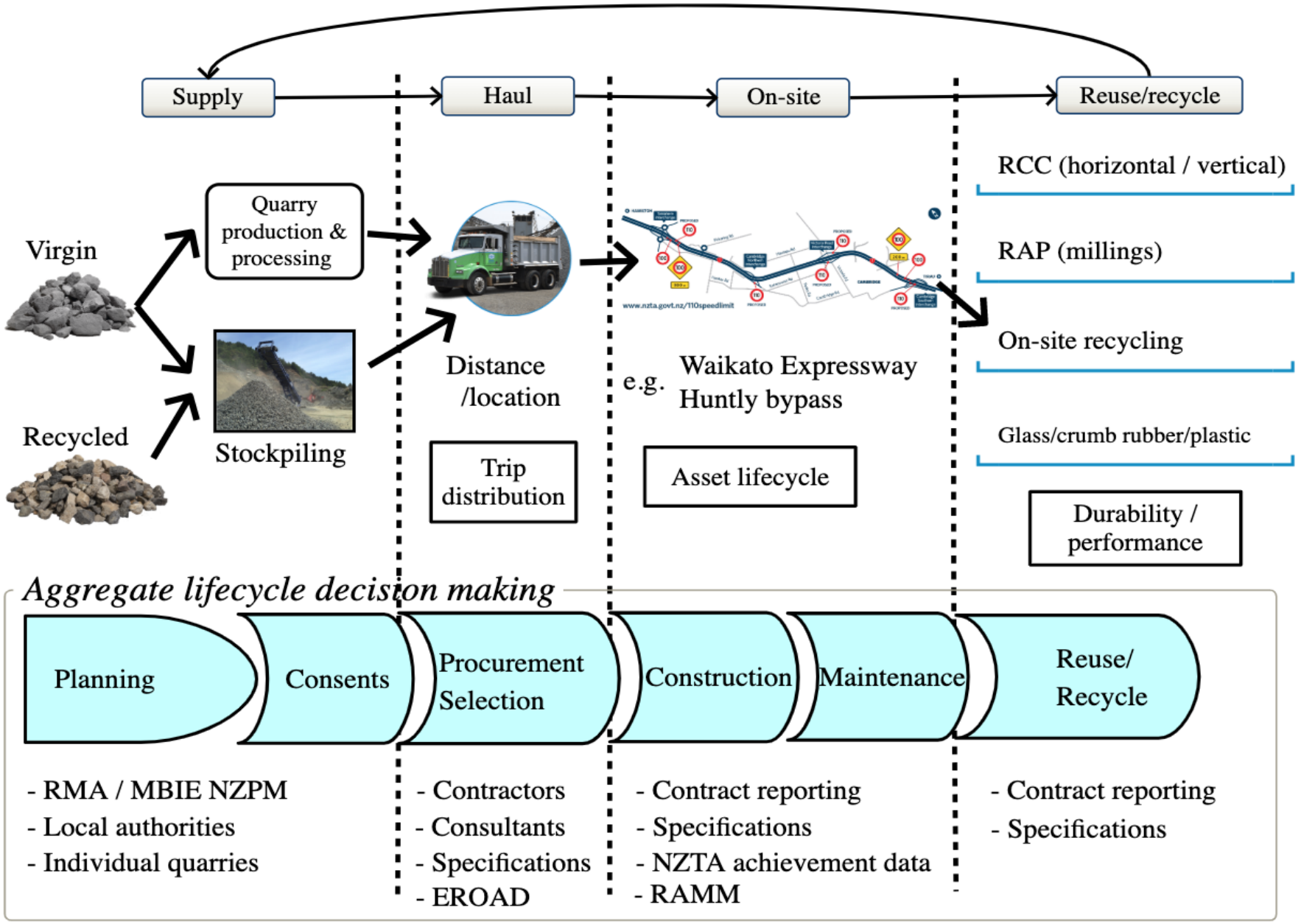
Aggregate Demand & Product Quality



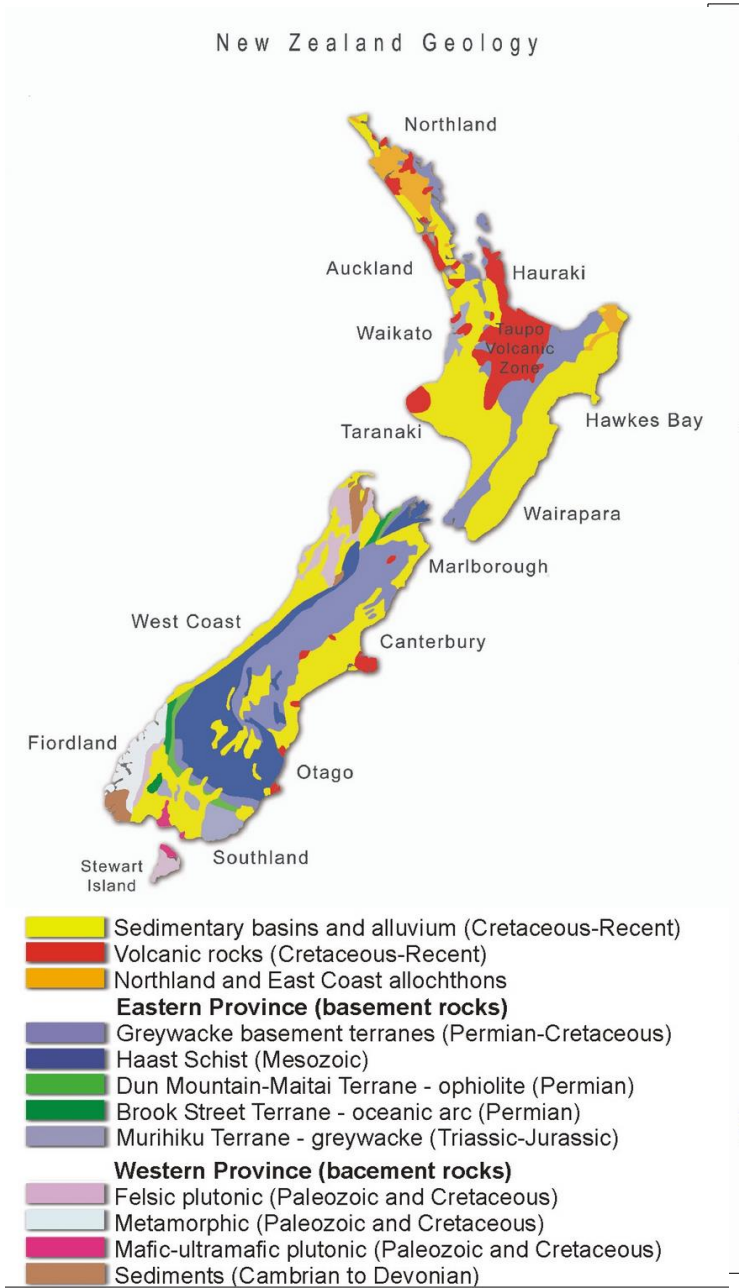


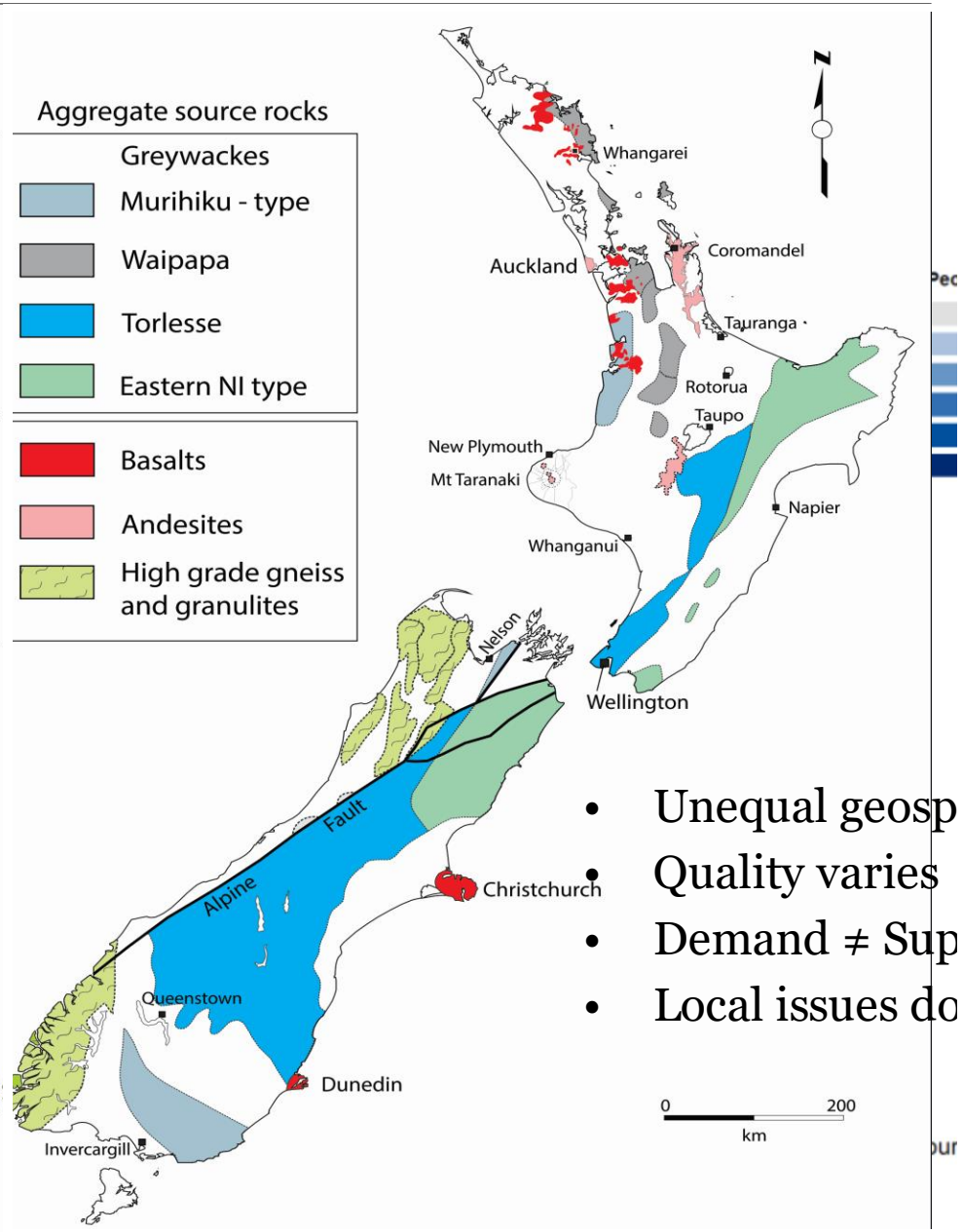
MBIE, University of Auckland, Leveraging Aggregate Resources Project 18. 03. 2019.

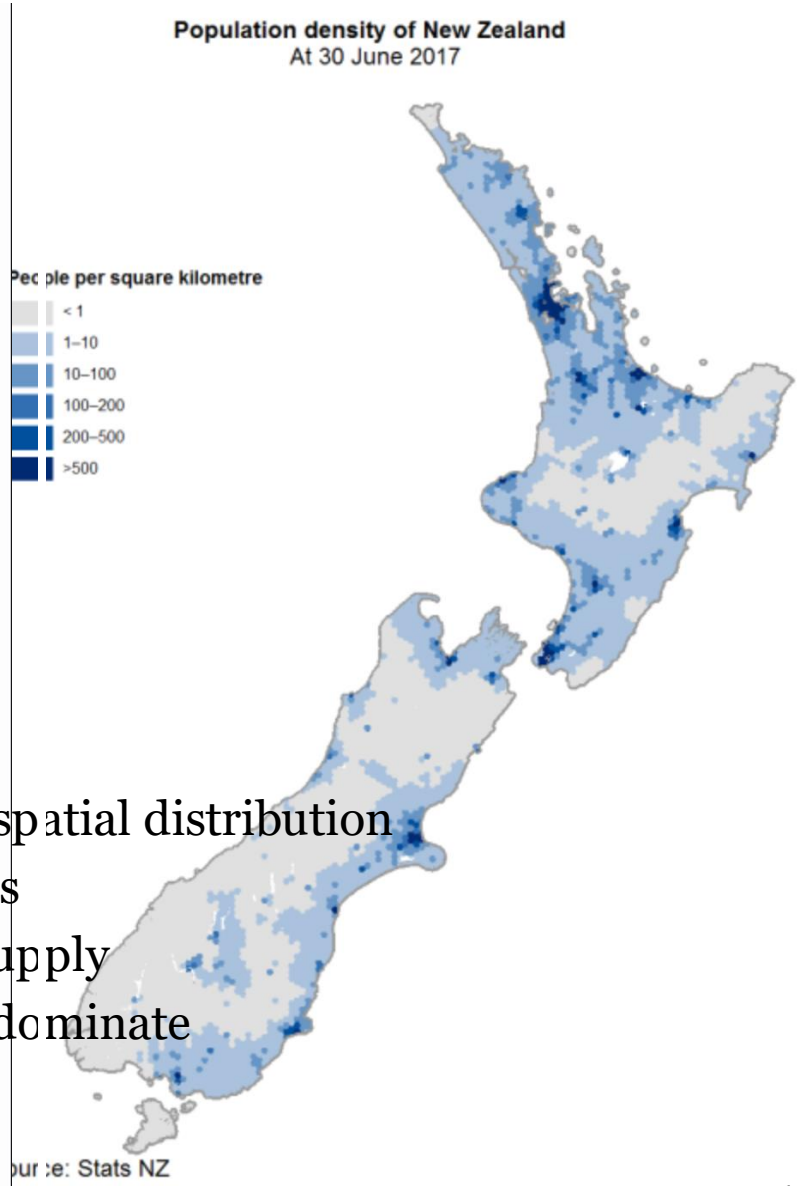
Aggregate Decision Making processes



3 Aggregate Resource Endowment & Population

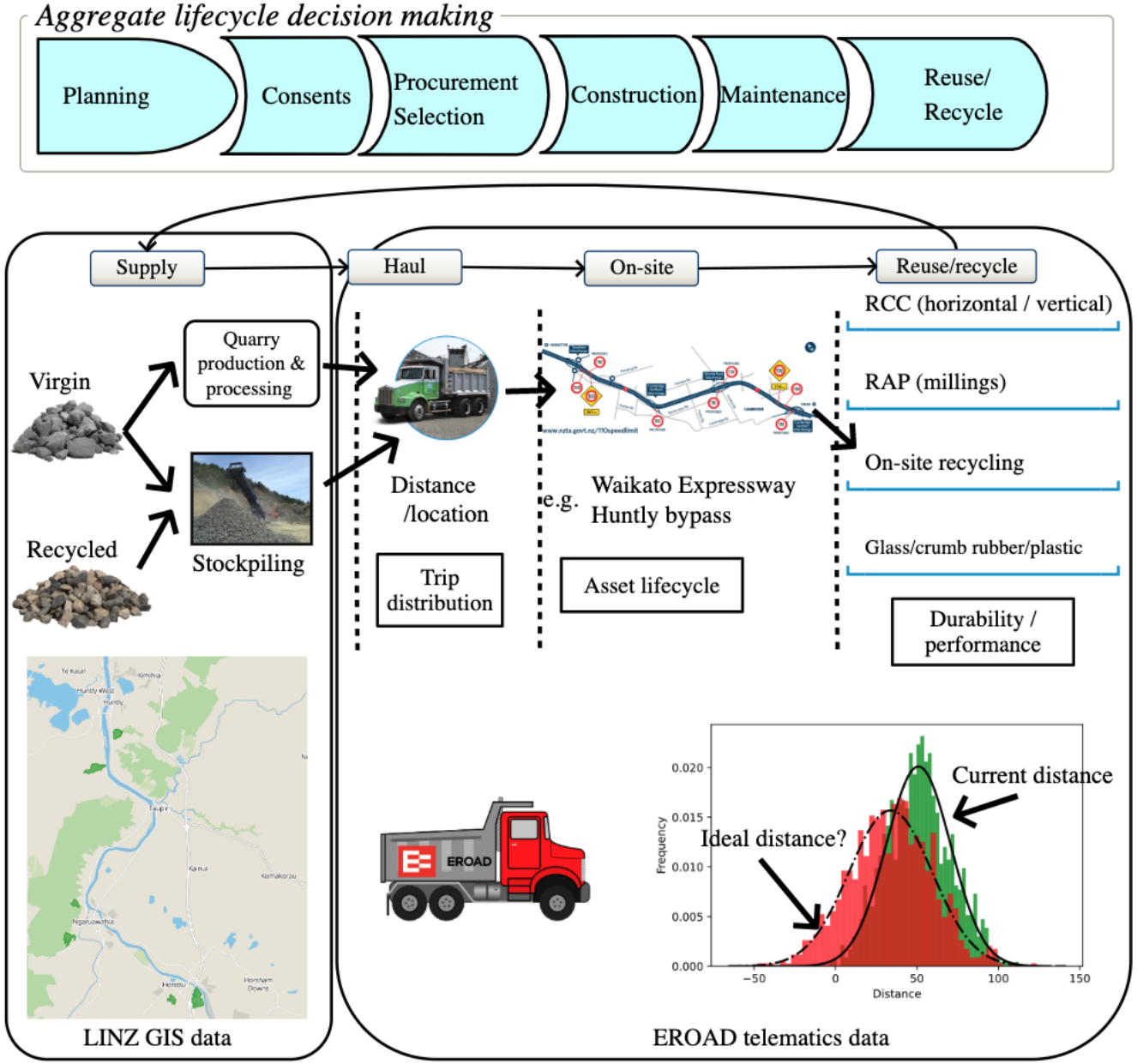




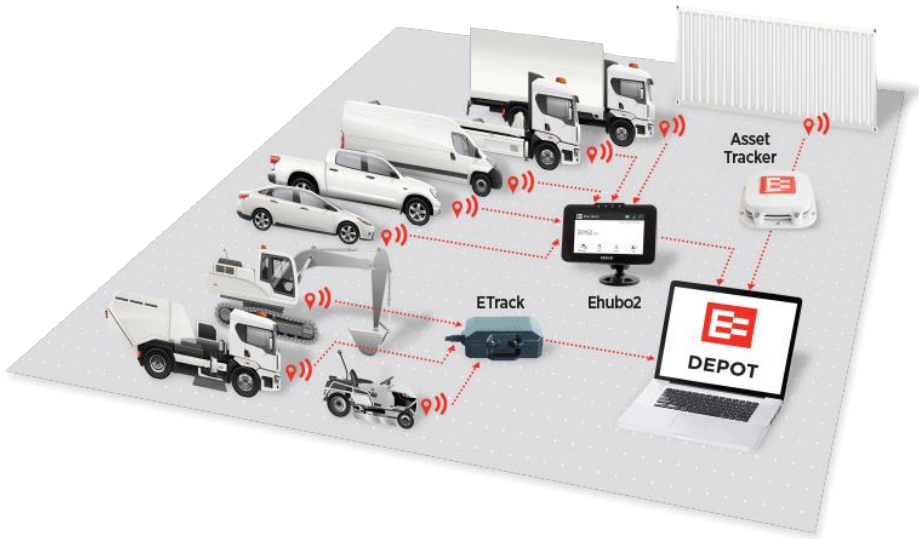


- Unequal geospatial distribution
- Quality varies
- Demand ≠ Supply
- Local issues dominate

4 Use of Telematics data



EROAD provides GPS tracking of trucks and commercial vehicles



EROAD

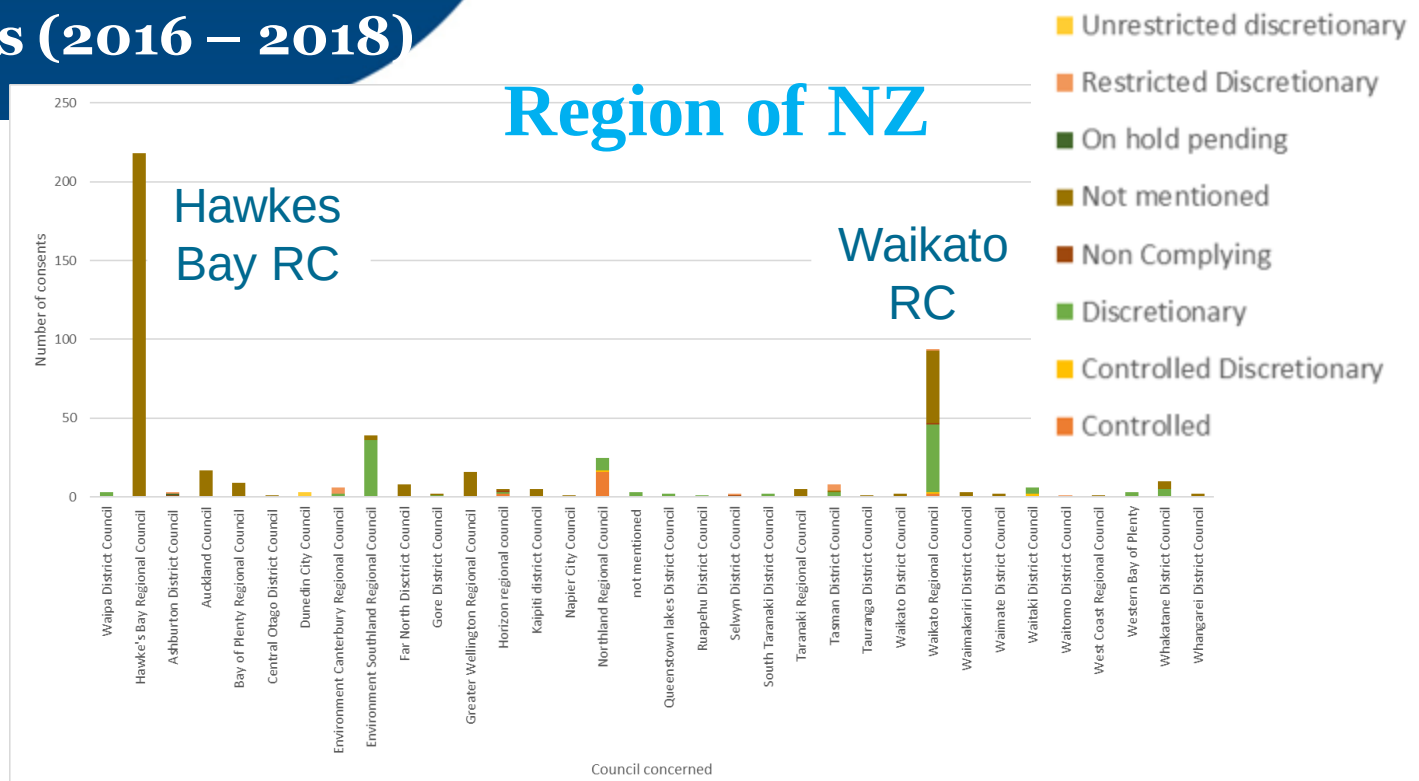
Resource Consents Granted by TLAs (2016 – 2018)

Lack of consistency in data

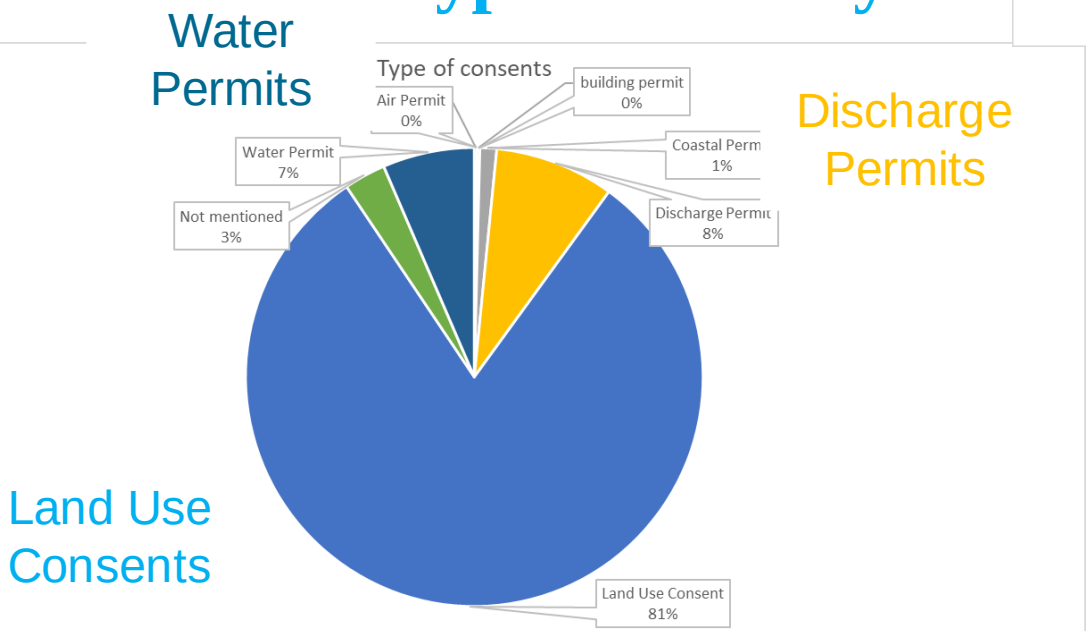
Inferences:

- 45% consents for < 1 year
- 84% consents did not specify truck movements
- 68% of consents did not mention type of activity

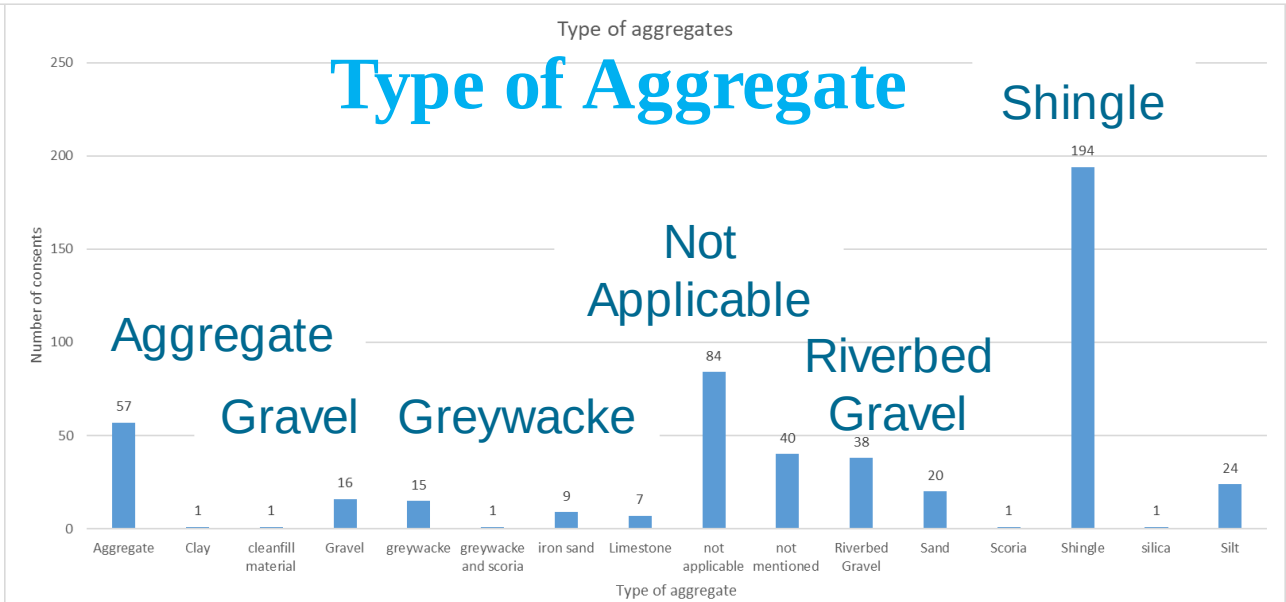
Region of NZ



Type of Activity



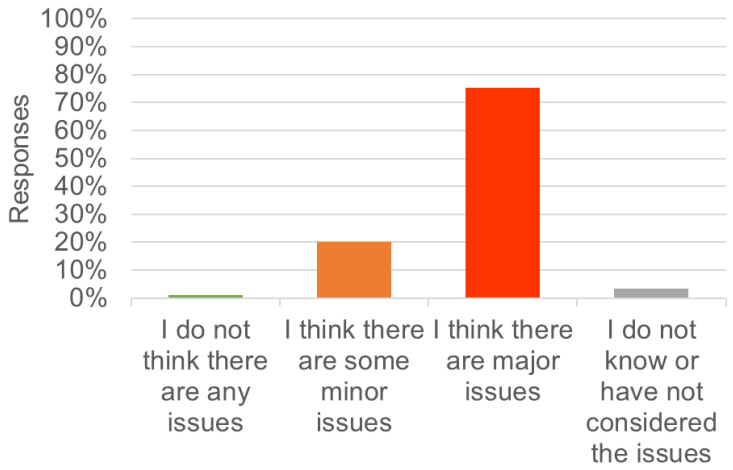
Type of Aggregate



Industry Survey - Multichoice - Are there aggregate supply issues in New Zealand?

a) Yes

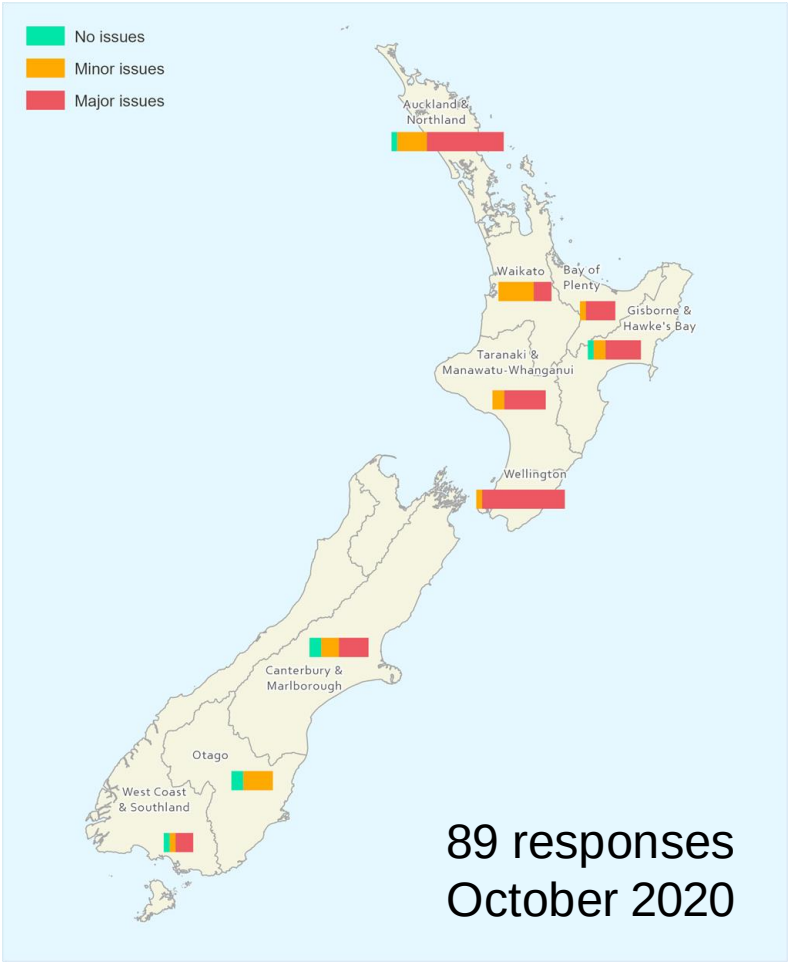
With high quality aggregates



"..transport costs for gravel from designated river areas inflates the cost of materials."

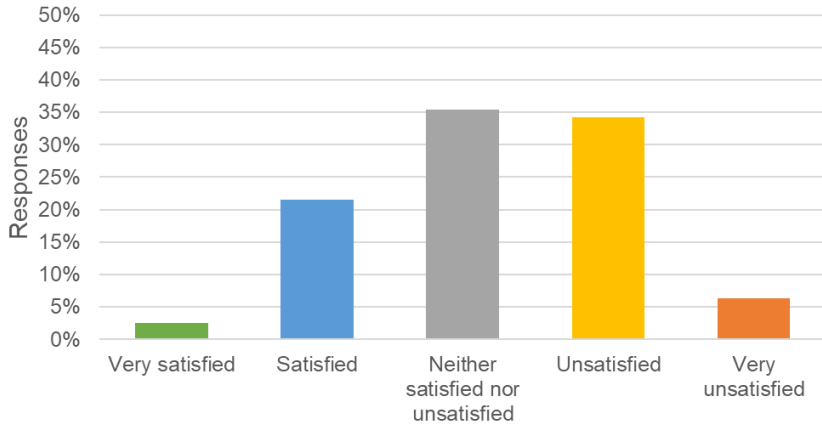
"Multiple projects being allocated to a particular region at once puts large strain on quarries."

b) It depends where



c) It is hard to know

Satisfaction with information



'Many operators don't like disclosing annual volumes to competitors.'

'Lack of confidence around the accuracy of aggregate use and the future trends.'

6 Developing an aggregate demand forecasting model

Developing a National model:

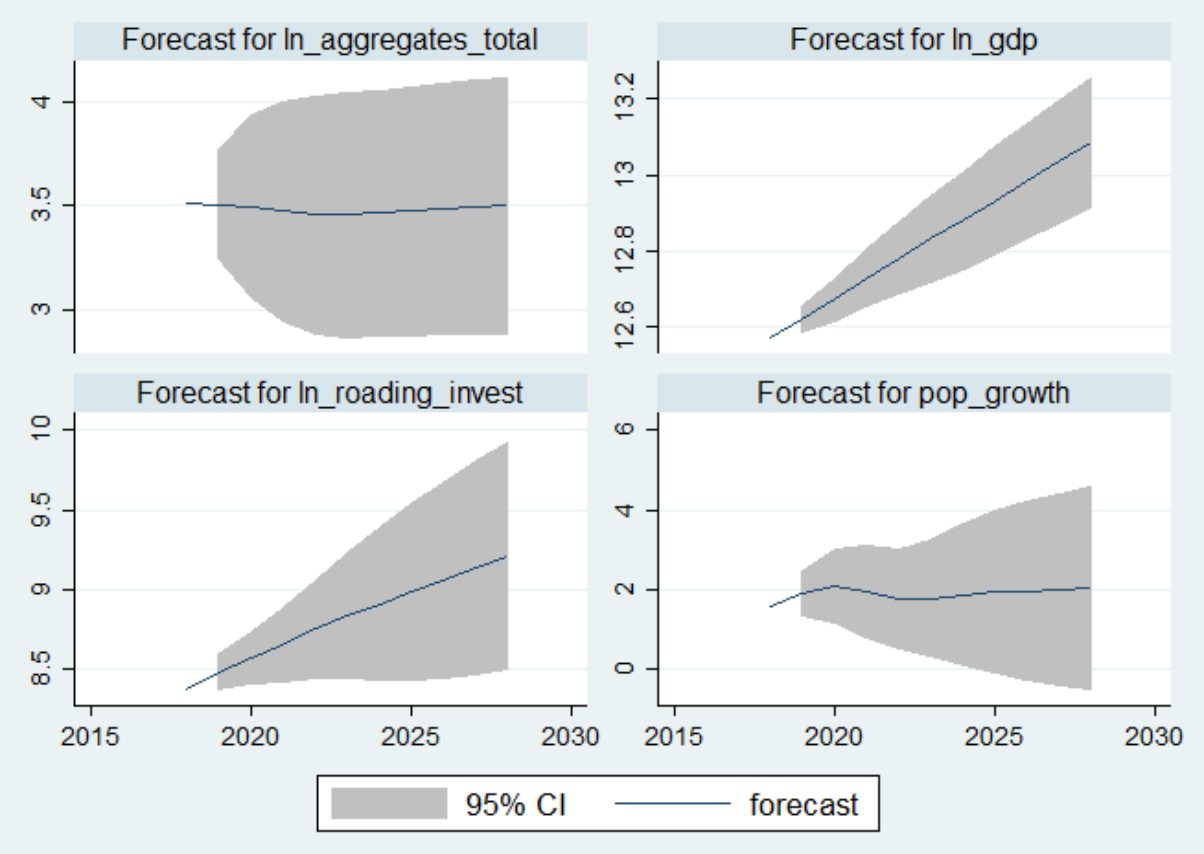
- Dependent variable: production of aggregates (million tonnes) at time *t*
- Explanatory variables: GDP ($NZD in millions), roading investments ($NZD in millions) and the population growth rate (%), all at time *t*.
- Data timeframe: 2000 – 2018.

Two main results with scenario analysis:

1) A 10% increase in roading investments from NZTA and local authorities will boost the production of aggregates by 12%.

2) An increase in roading investments and population growth will also increase our GDP.

The model performs well – and will improve with time and more data.



A forecast for the next decade

7 Summary and Discussion

Aggregate represents the largest volume of raw material used for land transport infrastructure.

Key issues in regards to sustainable use and reuse of materials are:

- ✓ Limited premium aggregate resource availability in some areas
- ✓ Increasing transport costs and impacts (environmental, energy social, cultural and economic)
- ✓ Planning issues e.g. development pressures on consenting quarries and water resources
- ✓ Currently, data is scarce and in many cases of poor quality
- ✓ Limited use / advantage in using recycled & alternative materials
- ✓ Over-reliance on premium aggregates
- ✓ Long term issues with sustainability of supply of premium aggregates
- ✓ Māori perspectives of Papatūānuku, whenua, and mauri required.
- ✓ We must do better in sustainably managing non-renewable resources