Infrastructure Management – Forecasting the Changes to 2030

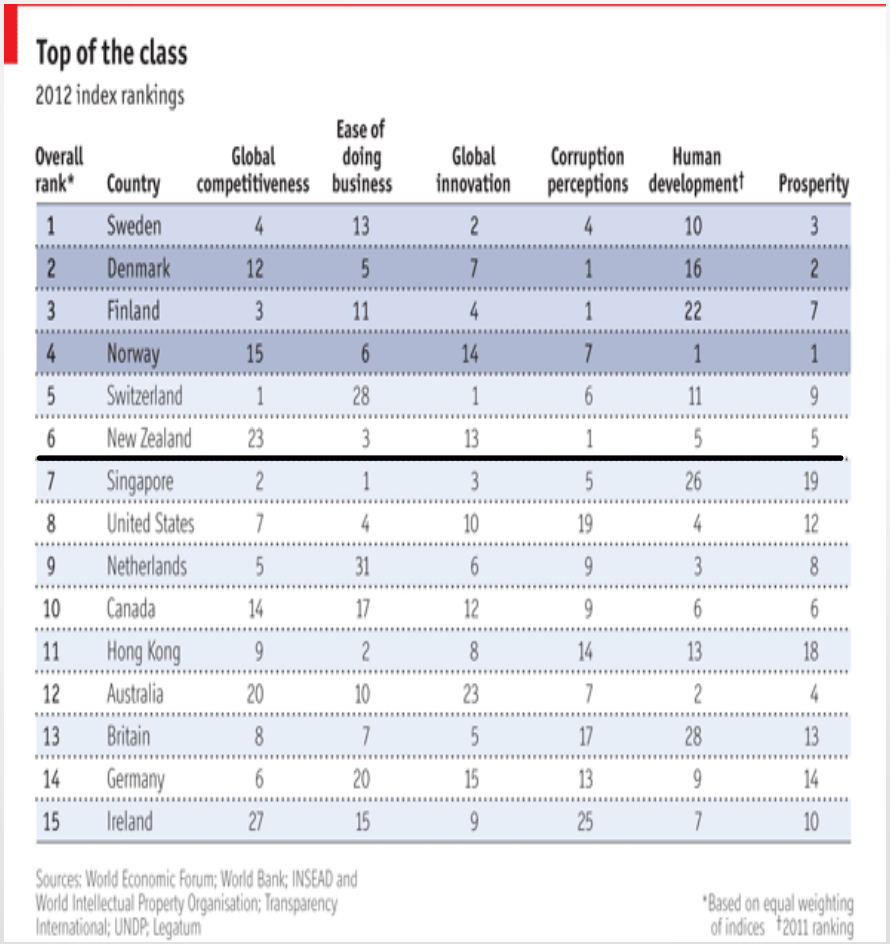
Ross Waugh, Waugh Infrastructure Management

Agenda

- NZ Doing Well
- Fiscal Challenges
- Population and Demography
- Future Implications – Planning
- Future Implications – Transport
- Future Implications – Utilities
- Future Implications – Parks and Property
- Resolving the Triangle
- Doing More With Less

63 page paper and these slides will be available on Ingenium Conference website and waughinfrastructure.co.nz

Top of the Class



Top of the class

2012 index rankings

Overall rank*	Country	Global competitiveness	Ease of doing business	Global innovation	Corruption perceptions	Human development†	Prosperity
1	Sweden	4	13	2	4	10	3
2	Denmark	12	5	7	1	16	2
3	Finland	3	11	4	1	22	7
4	Norway	15	6	14	7	1	1
5	Switzerland	1	28	1	6	11	9
6	New Zealand	23	3	13	1	5	5
7	Singapore	2	1	3	5	26	19
8	United States	7	4	10	19	4	12
9	Netherlands	5	31	6	9	3	8
10	Canada	14	17	12	9	6	6
11	Hong Kong	9	2	8	14	13	18
12	Australia	20	10	23	7	2	4
13	Britain	8	7	5	17	28	13
14	Germany	6	20	15	13	9	14
15	Ireland	27	15	9	25	7	10

Sources: World Economic Forum; World Bank; INSEAD and World Intellectual Property Organisation; Transparency International; UNDP; Legatum

*Based on equal weighting of indices †2011 ranking

Source: The Economist
Date: 2 February 2013

Government Expenses and Revenue 2010-2060

(% of nominal GDP)	2010	2020	2030	2040	2050	2060	Δ
Health	6.9	6.9	7.9	9.1	10.1	11.1	4.1%
Superannuation (NZS)	**4.4**	**5.3**	**6.5**	**7.2**	**7.3**	**8.0**	**3.6%**
Education	6.2	5.2	5.1	5.1	5.1	5.2	-1.0%
Other Op. Allow. Covered (e.g. Justice)	**8.3**	**7.4**	**7.4**	**7.5**	**7.5**	**7.6**	**-0.7%**
Non-NZS Welfare	6.8	4.9	4.6	4.3	4.1	3.9	-2.9%
Debt-financing costs (DFC)	**1.2**	**1.9**	**2.6**	**4.3**	**7.1**	**11.4**	**10.2%**
Total Expenses	**33.9**	**31.6**	**34.1**	**37.5**	**41.2**	**47.2**	**13.4%**
Revenue (majority tax)	30.2	32.3	32.6	32.5	32.5	32.6	2.4%
Gap to Balance Budget	3.7	-0.7	1.6	5.0	8.7	14.7	10.9%
Gap excluding DFC	**2.5**	**-2.6**	**-1.0**	**0.8**	**1.7**	**3.2**	**0.8%**
Core Crown Net Debt	**14.1**	**30.8**	**42.3**	**73.8**	**125.3**	**203.8**	**189.7**

Source: NZ Treasury
Date: February 2013

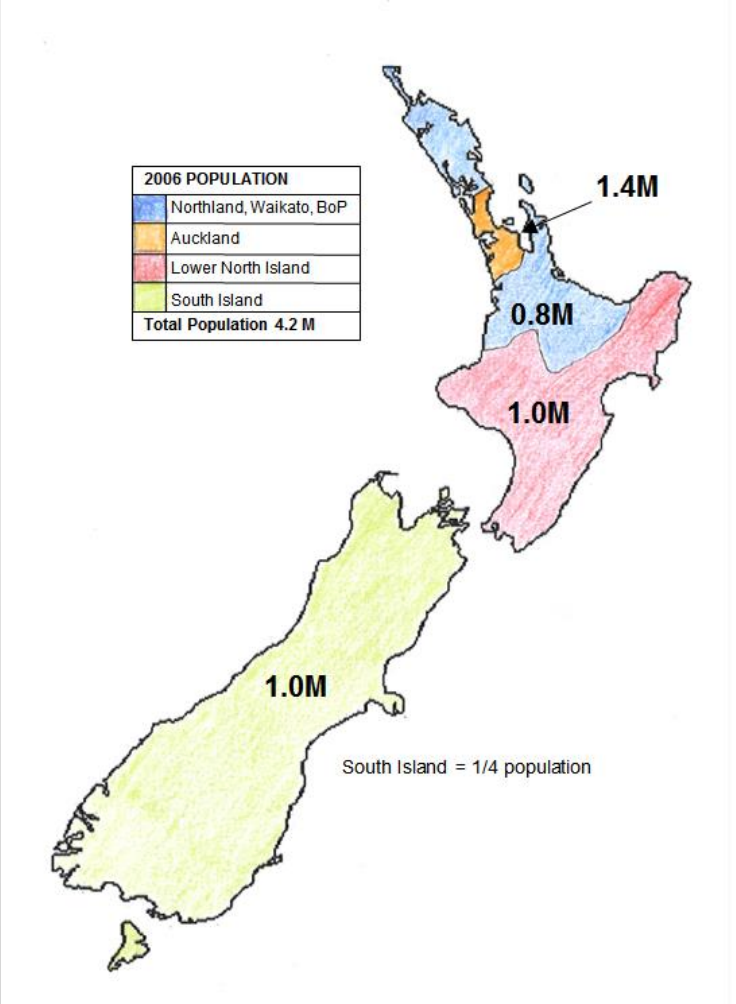
Council Debt Reaching Limits

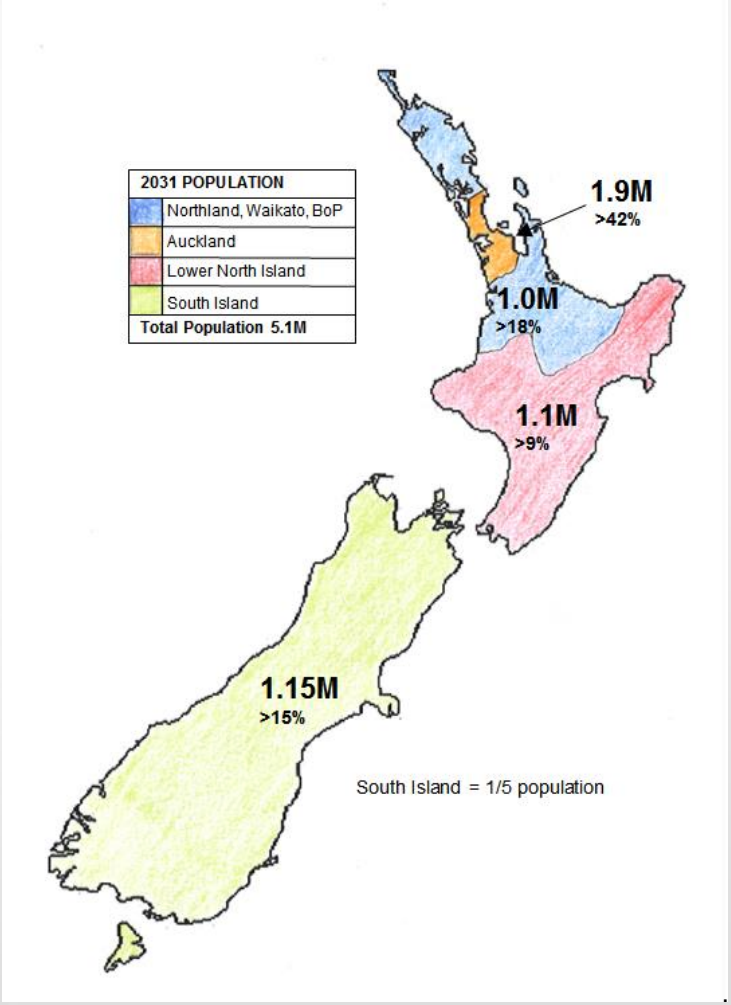
Average Debt per Ratepayer					
Group	**2008**	**2009**	**2010**	**2011**	**2012**
Metro Group	5,172	6,507	7,407	8,477	9,273
City Group	3,976	1,413	4,605	4,758	5,173
Prov/Rural Group	2,338	2,772	3,174	3,430	3,811
Rural Group	1,873	2,124	2,136	2,430	2,475
Total of all Groups	2,642	3,055	3,391	3,706	4,026
Total of all Groups (including Auckland)	2,681	3,112	3,441	3,834	4,176

- 2002 $1500 acceptable debt, $3000 max
- Inflation adjust $2000 acceptable, $3900 max
- Current Average Debt $4000 but interest rates are lower – for now. Metro/City higher debt

Source: Larry Mitchell Local Government League Table
Date: March 2013

New Zealand Population Changes



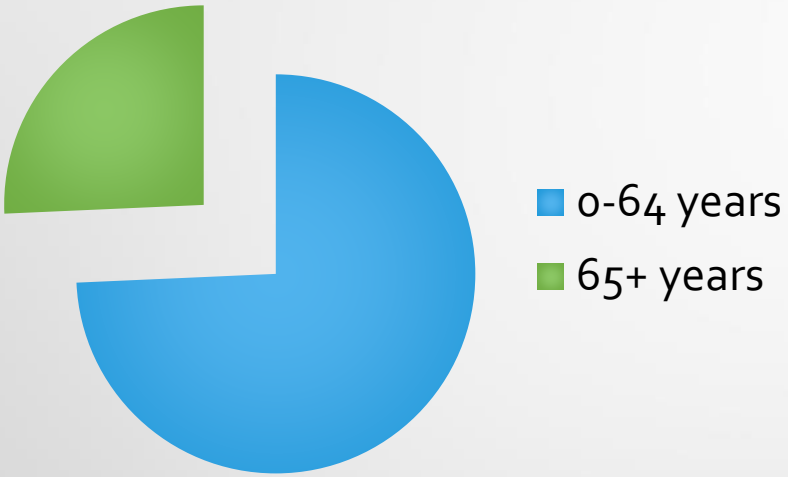


Source: National Infrastructure Plan
Date: 2011

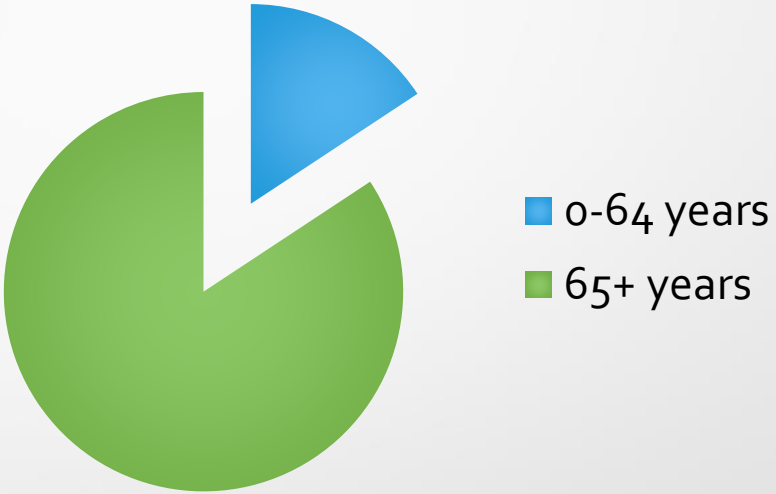
Canterbury Projected Growth 65+ years

Assumed ANM 2,760 from 2021

Canterbury
1996-2011



Canterbury
2011-2031



Source: Professor Natalie Jackson, NIDEA
Date: February 2013

NZ Still Developing Infrastructure

	NZ	Scotland	Ireland	Finland	Norway	Denmark
Land Area (sq. km)	268,680	78,352	70,289	304,473	307,442	42,394
Population (m) 2009 est.	4.3	5.2	4.4	5.3	4.6	5.5
Population (m) of largest city 2009 est.	1.4	1.2	1.6	1.3	0.6	1.8
Railways (km) 2006	4,128	2,745	1,919	5,919	4,114	2,667
Roads (km) 2006	93,576	55,838	96,602	78,821	92,946	72,362
Expressways (km)	**171**	**1160**	**200**	**700**	**664**	**1032**
If additional Expressways to 2030+	**552**					
Transport Ranking (IMD)	31	24 (UK)	35	7		4

Source: NZCID, Insights for NZ – Infrastructure Development in Comparative Nations
Date: October 2010

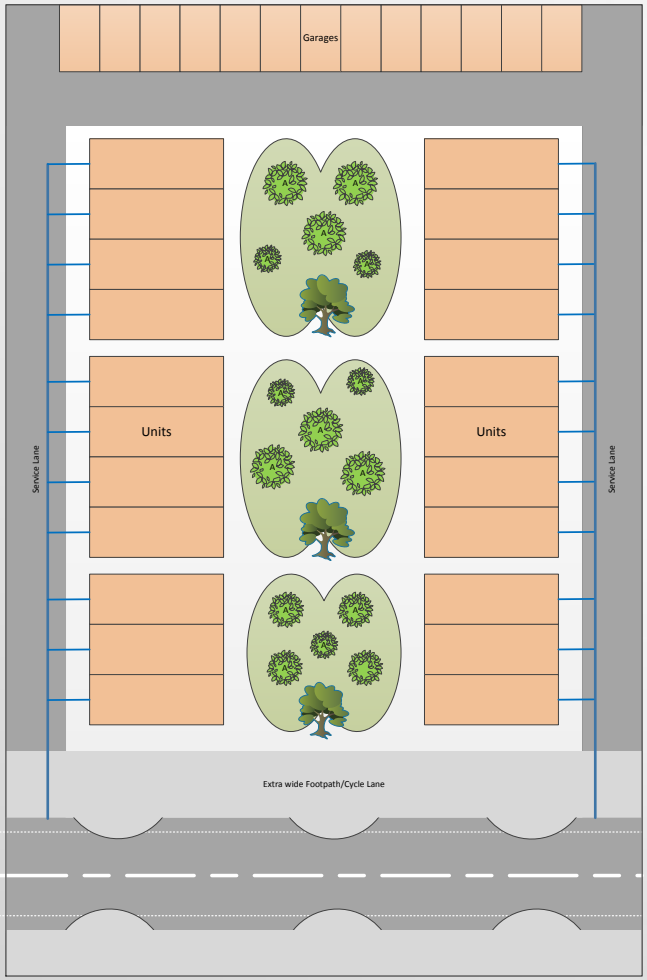
Possible Future Expressway Construction

Source: NZTA Road Maintenance Task Force Better Asset Management, Planning and Delivery
Date: 13 March 2012

Intensification to Town Centres

Source: Waugh Infrastructure Management
Date: March 2013

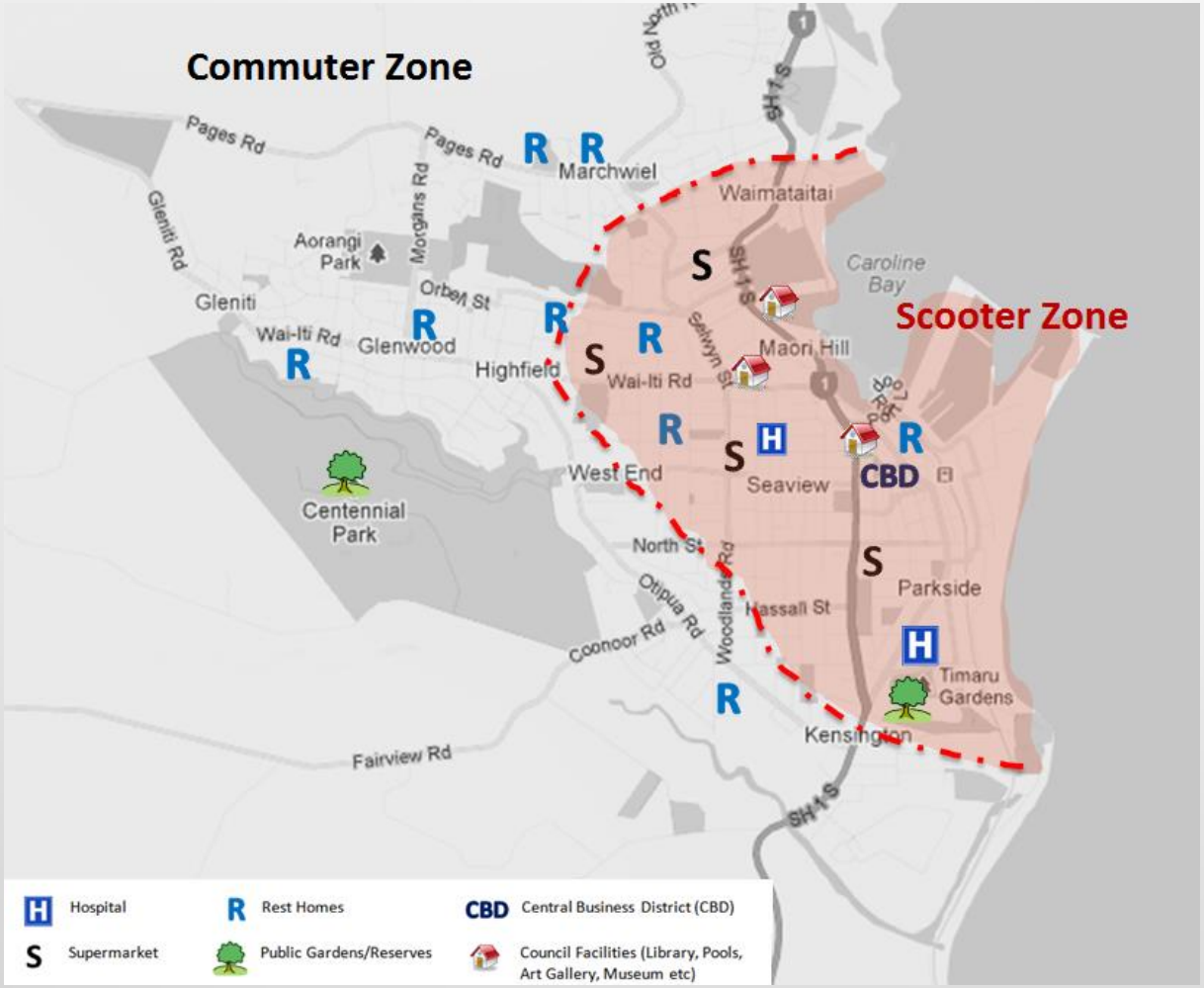
New Development Layouts



- Multiple Units per site
- Central common green
- Rear narrow service lanes
- Garaging / Storage
- Less cars, smaller cars
- More scooters
- More bicycles, cycle lane
- Wider footpath
- Traffic calming, narrower carriageway
- More public transport
- 2nd tier rental cars for market

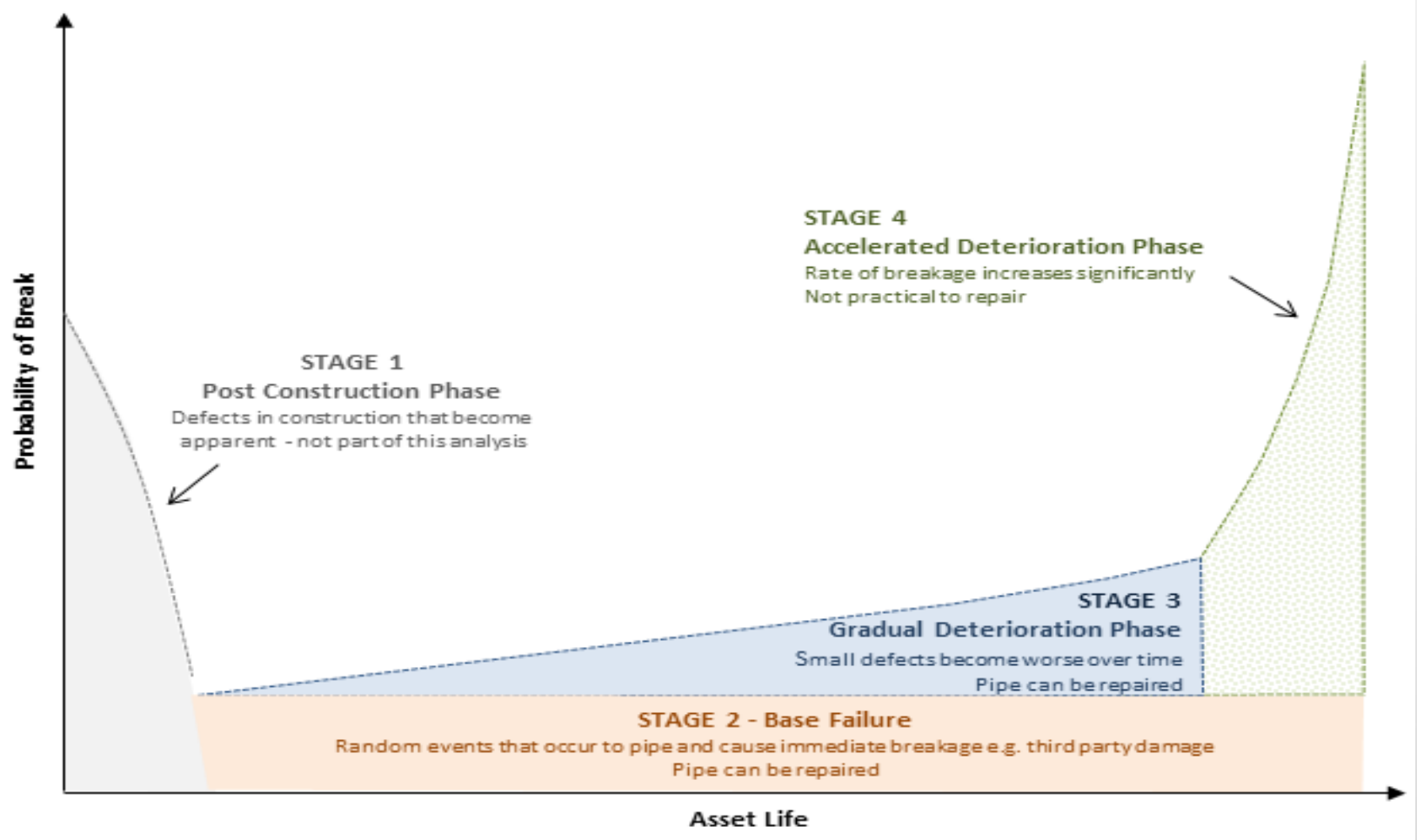
Source: Waugh Infrastructure Management
Date: March 2013

Transportation Scooter and Commuter Zones



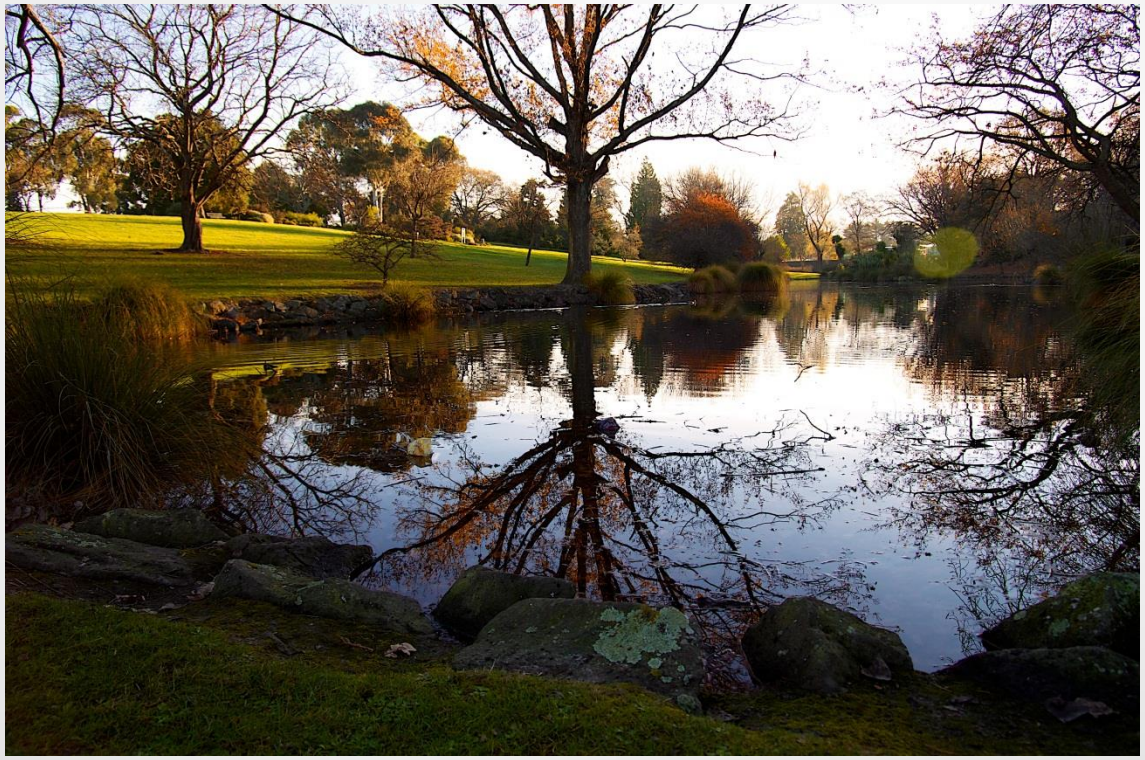
Source: Waugh Infrastructure Management
Date: March 2013

Utilities – Renewal Peak in next 30 years



Source: Dr Theunis.F.P. Henning, IDS Ltd
Date: May 2013

Parks And Property – More Demand?



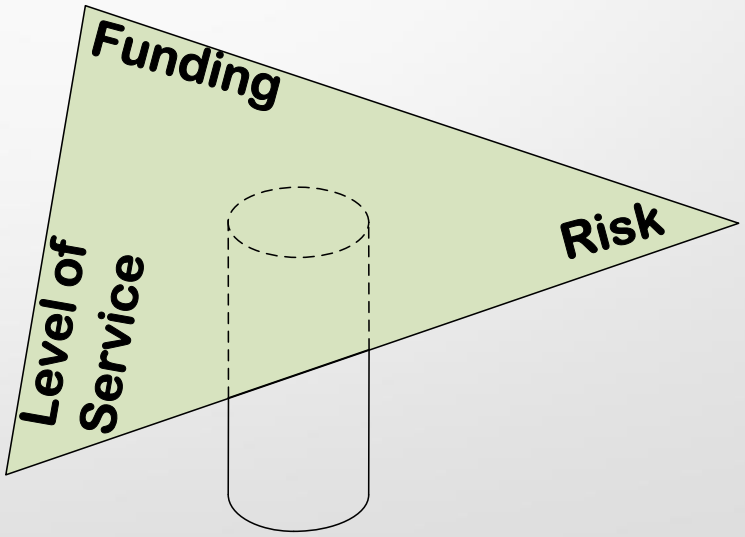
- Changing Urban forms – different assets?
- More demand for recreational assets
- How to fund in a constrained fiscal environment
- More use of volunteers?

Resolving the Budget-LOS-Risk Triangle

The combined consideration of Funding, Level Of Service and Risk

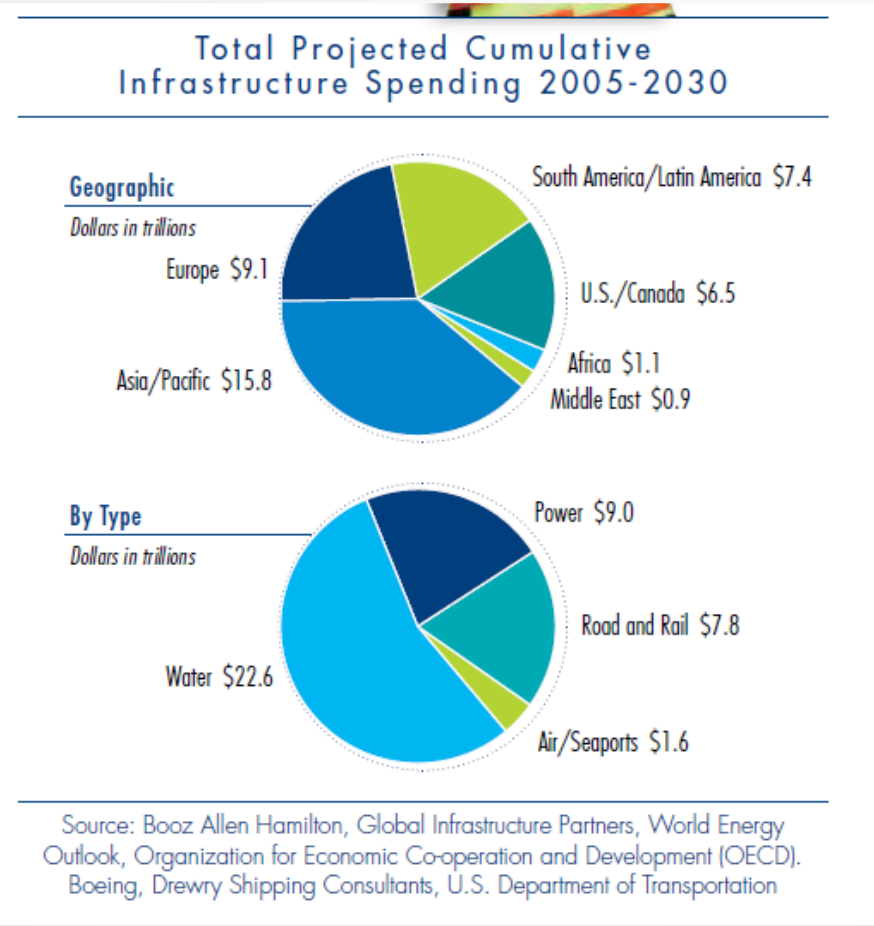
Initiated through the Road Maintenance Task Force

Is this a platform for 2015?



Source: Waugh Infrastructure Management
Date: March 2013

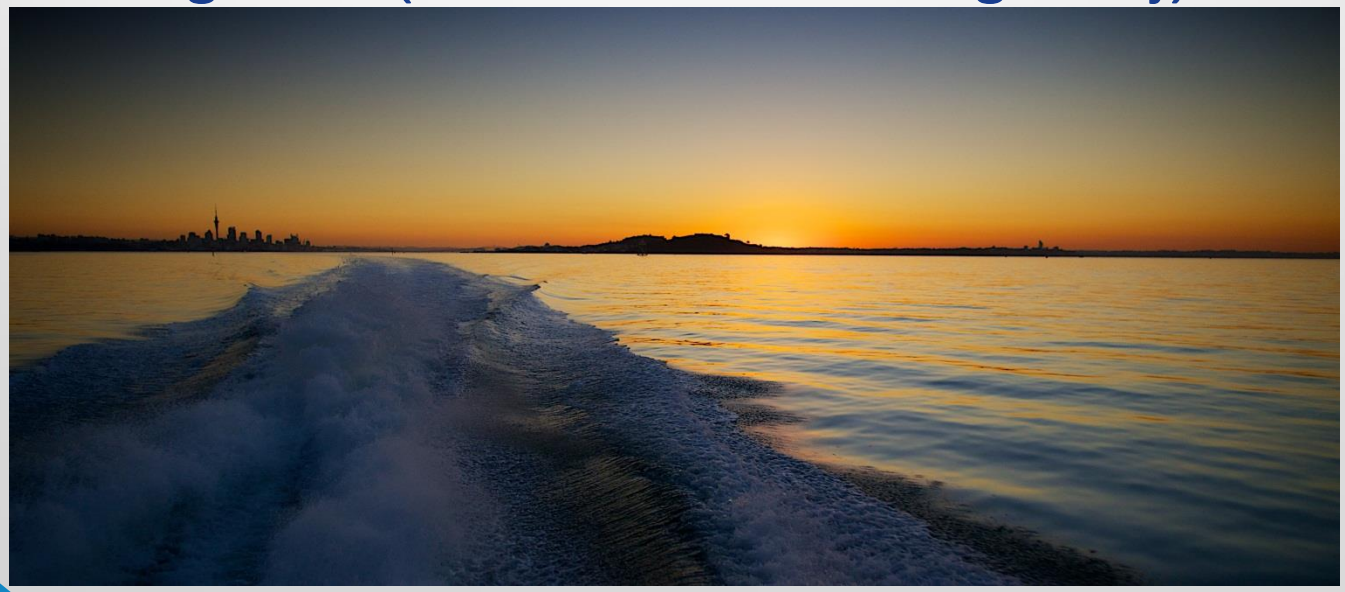
Engineering Skills Shortage – the major constraint?



2005-2030 USD $41 Trillion public infrastructure spend (15.8T in Asia-Pacific). No shortage of work for Engineers

Summary – AM to 2030

- Fiscal constraint for the whole period to 2030 and beyond
- Shifts of population and expenditure to upper North Island
- Most growth will be 65+ population
- Multiple urban network and space changes predicted
- More modelling required to optimise use of scarce resources
- Resolve the budget, level of service, risk triangle
- Shortage of engineering resources predicted
- **Make sure you are building the right assets in the right place, in the right form (no fiscal room for wasting money)**



Questions?