



NATIONAL INFRASTRUCTURE PLAN & RESILIENCE

7 November 2012



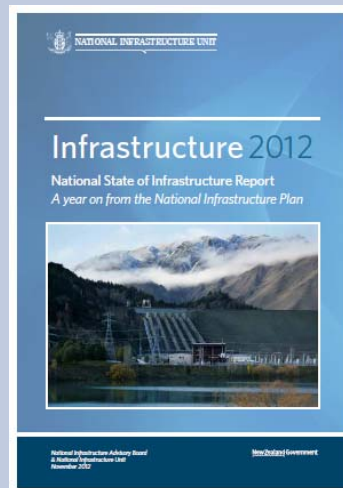
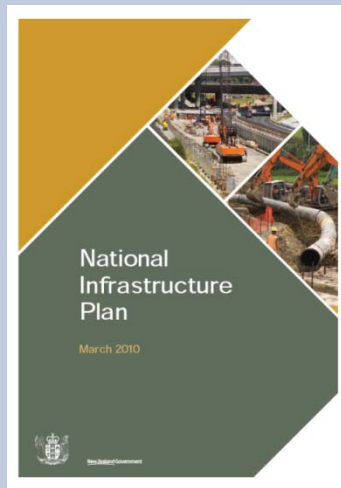
NATIONAL INFRASTRUCTURE UNIT



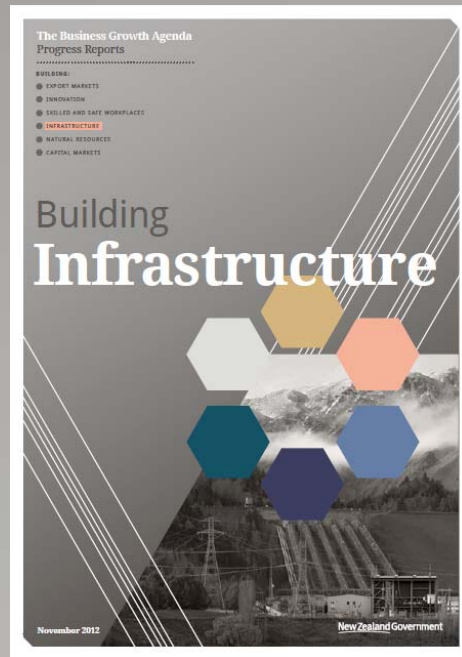
Focussed on the Plan Principles

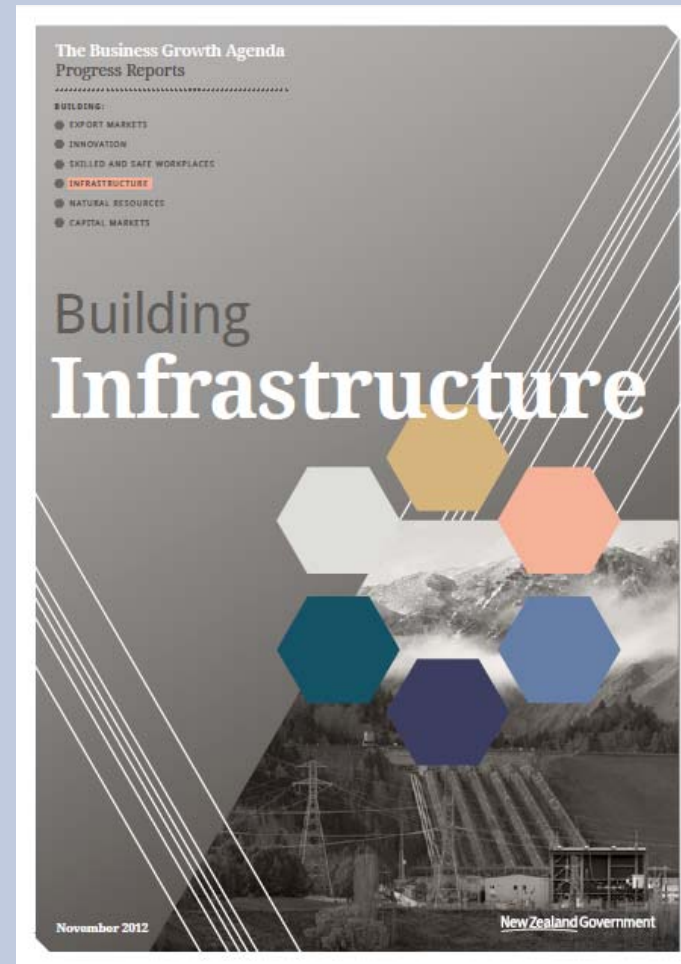
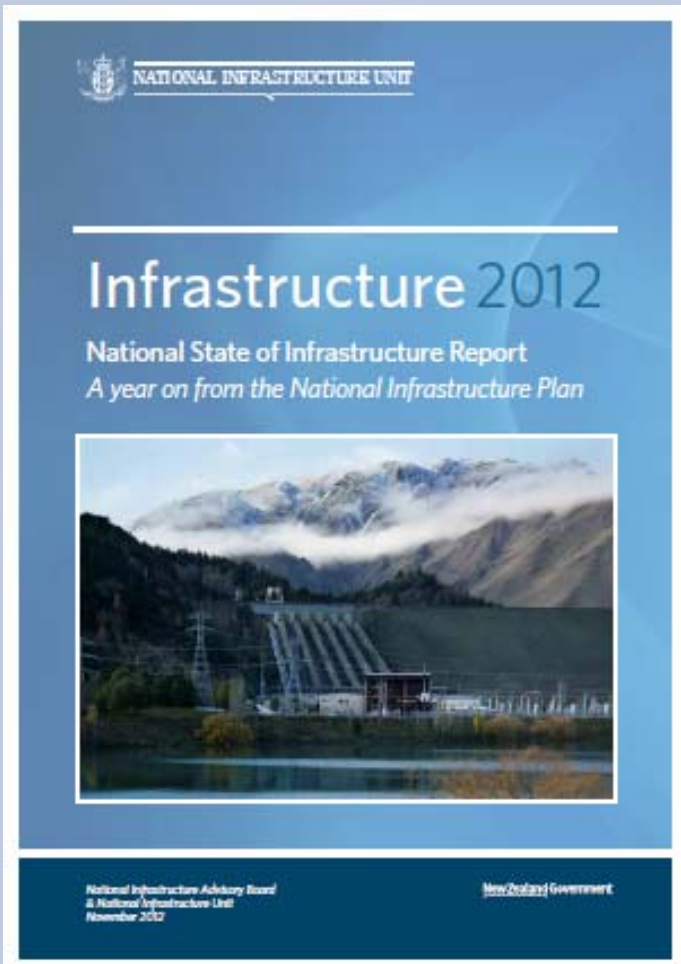
BLG; RMA; Productivity Commission – freight, housing; Transport investment; Oil security; Part 4 Regulation; Auckland Plan; Capital Investment; Chch recovery; 24G; UFB/RBI; Clifford Bay

Evolution of National Infrastructure Plans



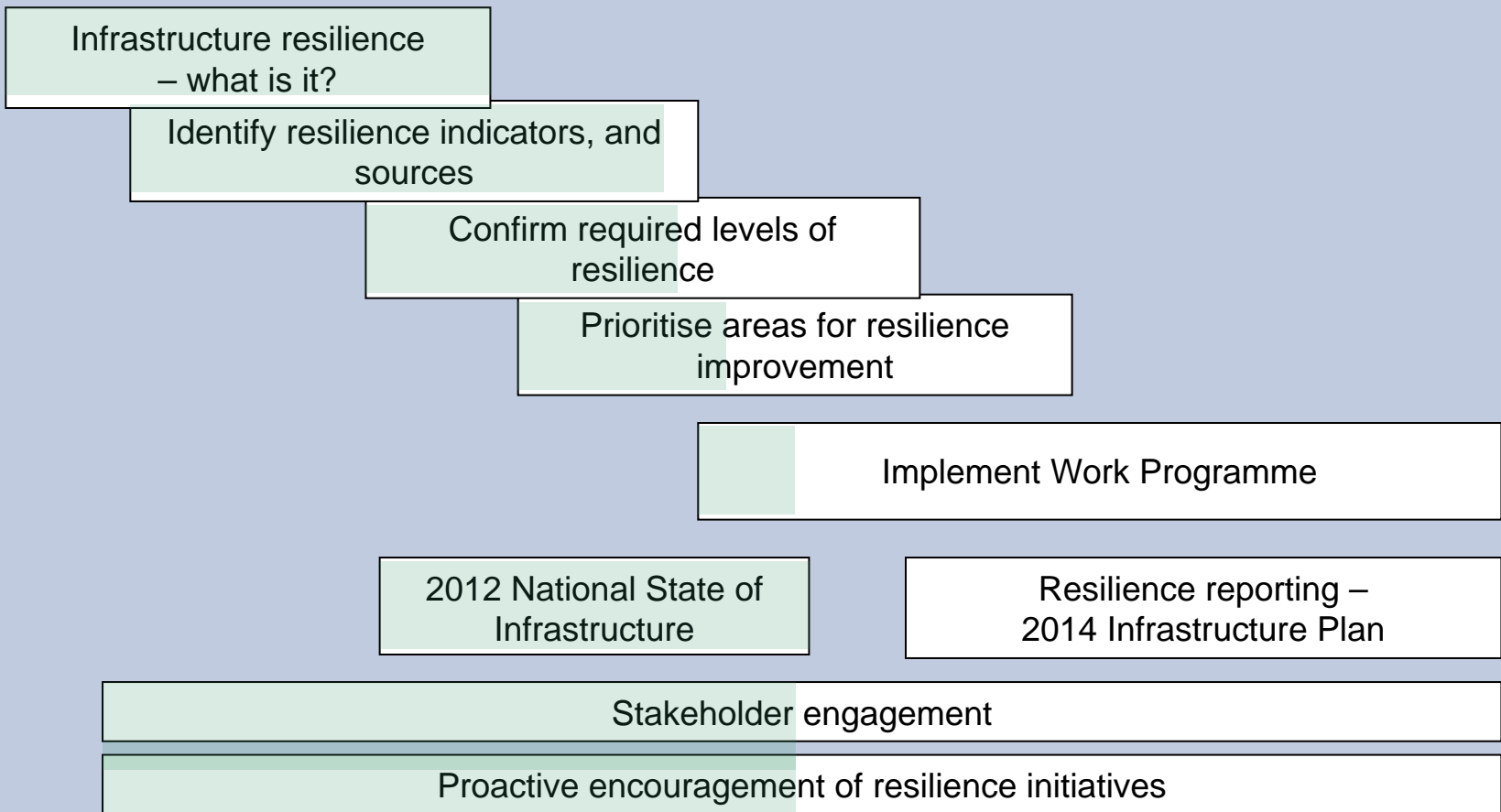
The six key areas in the Business Growth Agenda are:





Framework	Focus	Key questions	Work programme (Action Plan)
Pressure	Future Infrastructure demands – drivers of demand	<ul style="list-style-type: none"> • What are the future drivers of demand? • How consistent is this view across the sectors? • Where are the most significant forecast deficits and the relative priorities of these? 	<ul style="list-style-type: none"> • Scenario modelling • Macro-regional planning • Resilience framework and issues
State	Current state and performance of infrastructure	<ul style="list-style-type: none"> • What quantity/volume of infrastructure do we have? • Where is it located? • What is the quality? • Does it deliver the appropriate level of resiliency? • What capacity do we have, how well is it utilised? • What is it costing? The price? 	<ul style="list-style-type: none"> • Performance Indicators framework • Resilience framework and issues
Response	Regulatory setting Funding arrangements	<ul style="list-style-type: none"> • How is it funded? • Who should be making the investment? • Are the regulatory settings optimised to facilitate the required level of investment? 	<ul style="list-style-type: none"> • Capital Intentions Plan • Demand management • Alternative sources of funding • Regulatory settings analysis

Resilience Pathway





Resilience Attributes

- **Service Delivery**
 - Focus on national, business and community needs in the immediate and longer term
- **Adaptation**
 - National infrastructure has capacity to withstand disruption, absorb disturbance, act effectively in a crisis, and recognises changing conditions over time
- **Community Preparedness**
 - Infrastructure providers and users understand the infrastructure outage risks they face and take steps to mitigate these. Aspects of timing, duration, regularity, intensity, and impact tolerance differ over time and between communities
- **Responsibility**
 - Individual and collaborative responsibilities are clear between owners, operators, users, policy-makers and regulators. Responsibility gaps are addressed

Resilience Attributes(cont)

- **Interdependencies**

- A systems approach applies to identification and management of risk (including consideration of interdependencies, supply chain and weakest link vulnerabilities)

- **Financial Strength**

- Financial capacity to deal with investment, significant disruption and changing circumstances

- **Continuous**

- On-going resilience activities provide assurance and draws attention to emerging issues, recognising that infrastructure resilience will always be a work in progress

- **Organisational Performance**

- Leadership and culture are conducive to resilience, including: Resilience Ethos, Situational Awareness, Management of Keystone Vulnerabilities and Adaptive Capacity. Future skills requirements are being addressed

Indicators

From a National perspective, not all elements of infrastructure require high resilience

Infrastructure networks can not guarantee supply of services at all times

Indicators Hotspots Pinchpoints

Example Only Transport



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance
					Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices
Local Roads	Suburban	Low	Low	-	
	Main arterial with alternate	Medium	Medium	-	
	Main arterial – no alternate	Medium	Medium	-	
	Strategic freight routes	High	Medium	↑	
National Roads	National with alternate	Medium	Medium	-	
	National – no alternate	High	Medium	↑	
Road/Rail Link Span	Cook Straight ferries & terminals	Medium	Medium	-	
Rail	Suburban (incl .rolling stock)	Medium	Low	↑	
	National (incl. rolling stock)	High	Medium		
	National Train Control Centre	High	Low	↑	
Ports	Individual Ports	Medium	Medium	-	Compliance International Ship and Port Security Code
	Ports with specialist facilities	High	Medium	↑	Compliance International Ship and Port Security Code
	Ports Network	High	Medium	↑	Compliance International Ship and Port Security Code
Airports	Regional airports	Medium	Medium	-	
	Airways NZ	High	High	-	
	International airports	Medium	Medium	-	

Example Only

Energy - Electricity



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance
Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IIMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices					
Generation	Individual Generator <300MW	Low	Medium	-	
	Individual Generator >300MW	Medium	Medium	-	
	River Chain >300MW	Medium	Medium	-	
Transmission	66kV	High	Medium	↑	
	110kV	High	Medium	↑	
	220kV & >	High	Medium	↑	
	HVDC	Medium	Medium	-	
Distribution	Embedded generation	Low	Medium	-	
	Distribution <	Medium	Medium	-	
	Distribution 11kV	Medium	Medium	-	
	Distribution	Medium	Medium	-	
Retail	Retail functionality	Low	Medium	-	
	Customer Interface	High	Medium	↑	

Example Only

Energy – Gas



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance
					Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IIMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices
Sources	Gas Fields < X TJ/day	Low	Medium	-	MED?
	Gas Fields > X TJ/day	Medium	Medium	-	MED?
	Imported LPG	Medium	Medium	-	MED?
Transmission	Maui	High	High	-	Commerce Commission, GIC
	Vector – to Huntly	Medium	Medium	-	Commerce Commission, GIC
	Vector – Huntly to Auckland	High	Medium	↑	Commerce Commission, GIC
	Vector – National	Medium	Medium	-	Commerce Commission, GIC
	Large Commercial	High	Medium	↑	Commerce Commission, GIC
Distribution	Residential/small commercial	Low	Medium	-	Commerce Commission, GIC
	Large commercial	Medium	Medium	-	Commerce Commission, GIC
	LPG Bottled	Medium	Medium	-	MED, LPGA?
	LPG Networked	Low	Medium	-	MED, LPGA?
Retail	Retail functionality	Low	Medium	-	?
	Customer Interface	High	Medium	↑	?

Example Only

Energy - Oil



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IIMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices
International	International supply ex Australia			↑	National Energy Security Organisation (NESO)
	International supply ex Asia			↑	National Energy Security Organisation (NESO)
	International supply ex elsewhere			↑	National Energy Security Organisation (NESO)
Refinery	Refinery			-	
	Refinery to Auckland (RAP)			↑	
	Coastal distribution			-	
Regional Storage	Auckland, Wellington, Christchurch			↑	
	Elsewhere			-	
Distribution	Urban			-	
	Rural			-	
Retail	Retail – Individual sites			-	
	Retail – Area availability			↑	
	Customer Interface			↑	

Example Only

Telecommunications



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance
					Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IIMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices
International	Cables		Low Resilience	↑	Full redundancy on Southern Cross cable capacity
	Satellite		Medium Resilience	↑	
Backhaul (Main trunk lines)	National		Medium Resilience	↑	
	Regional		Medium Resilience	↑	
	Local exchanges		Medium Resilience	↑	
Access (to local exchanges)	Landline - voice	Medium Resilience	Medium Resilience	-	
	Landline – Data (incl Broadband)	Medium Resilience	Medium Resilience	-	
	Mobile	Medium Resilience	Medium Resilience	-	
Radio Telephony		Low Resilience	Medium Resilience	-	
111	6 Telecom Core Exchanges		Medium Resilience	↑	
	2 Telecom ICAP Exchanges (Palmerston North & Christchurch)		Medium Resilience	↑	
ICAP = Initial Call Answering Platform	2 ICAP call centres (Wgtn & Chch, warm backup Palmerston North)		Medium Resilience	↑	
Television	Regional	Medium Resilience	Medium Resilience	-	
	National		Medium Resilience	↑	
Radio	Regional	Medium Resilience	Medium Resilience	-	
	National		Medium Resilience	↑	
Retail	Customer Interface		Medium Resilience	↑	

Example Only

Water



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IIMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices
	Lakes	Low	Low	-	
	Rivers	Medium	Medium	-	
Rural Water	Irrigation	Low	Medium	-	
	Reticulation	Medium	Low	↑	
Urban Water	Private laterals	Low	Low	-	
	Street	Medium	Medium	-	
	City mains	High	Medium	↑	
	Reservoirs	High	Medium	↑	
Urban Wastewater	Private laterals	Low	Low	-	
	Street	Medium	Medium	-	
	City mains	High	Medium	↑	
	Treatment facilities	High	Medium	↑	
Urban Stormwater	Private laterals	Low	Low	-	
	Street	Medium	Medium	-	
	City mains	High	Medium	↑	
	Discharge	High	Medium	↑	

Example Only

Social



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IIMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices
Education	Pre-School	Low	Medium	-	
	Primary School	Medium	Medium	-	
	Secondary School	Medium	Medium	-	
	University/Post Secondary	Medium	Medium	-	
Justice	Police	High	Medium	↑	
	Corrections	Medium	Medium	-	
	Courts	Low	Medium	-	
Health	Laboratories	High	Medium	↑	
	Medical Centres	Medium	Medium	-	
	Local/Specialised Hospitals	Medium	Medium	-	
	Regional Hospitals	High	Medium	↑	
Housing	Individual Houses	Low	Medium	-	
	Housing Blocks	Medium	Medium	-	
	Suburbs	Medium	Medium	-	
Defence	Airforce Assets	High	High	-	
	Navy Assets	High	High	-	
	Army Assets	High	High	-	

Example Only

Water



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	Lakes	Low	Low	-	
	Rivers	Medium	Medium	-	
Rural Water	Irrigation	Low	Medium	-	
	Reticulation	Medium	Low	↑	
Urban Water	Private laterals	Low	Low	-	
	Street	Medium	Medium	-	
	City mains	High	Medium	↑	
	Reservoirs	High	Medium	↑	
Urban Wastewater	Private laterals	Low	Low	-	
	Street	Medium	Medium	-	
	City mains	High	Medium	↑	
	Treatment facilities	High	Medium	↑	
Urban Stormwater	Private laterals	Low	Low	-	
	Street	Medium	Medium	-	
	City mains	High	Medium	↑	
	Discharge	High	Medium	↑	

Example Only

Interdependencies



		Resilience Expectations	Assessed Resilience	Desired Movement	Indicator Sources/Points of Assurance
Transport	Telco	Medium	Medium	-	Transport global : Transport Monitoring Indicator Framework (TMIF) Best Practice Asset Management Plans eg. PAS 55 or IIMM 2011 Business Continuity Management eg. Standards NZ BCM Annual Financial Reports Resilient Organisations Practices
	Energy	Low	Medium	↑	
	Water	Low	Medium	-	
	Social	Low	Medium	-	
Telco	Transport	Low	Medium	↑	
	Energy	Medium	Low	↑	
	Water	Low	Medium	-	
	Social	Low	Medium	-	
Energy	Transport	Medium	Medium	-	
	Telco	Low	Medium	↑	
	Water	Medium	Medium	-	
	Social	Low	Medium	-	
Water	Transport	Medium	Medium	-	
	Telco	Low	Medium	↑	
	Energy	Low	Medium	↑	
	Social	Low	Medium	-	
Social	Transport	Medium	Medium	-	
	Telco	Low	Medium	↑	Health only
	Energy	Low	Medium	↑	Health only
	Water	Low	Medium	↑	Health only

Pinchpoints – Nationally Significant

- Northland
 - New Zealand Refining Company (NZRC)
- Auckland
 - Ports of Auckland
 - Auckland International Airport
- Wellington
 - Avalon Tower, Lower Hutt
 - Wilton Substation
 - Central Park Substation
- Canterbury
 - Wastewater Treatment Plant & ocean outfall
 - Cass Peak air traffic control radar installation
- Otago
 - Dunedin Fuel Terminal

Hotspots – Nationally Significant

- Auckland
 - Wiri Oil Terminal
 - Auckland Harbour Bridge
 - Greenlane Roundabout
 - Newmarket viaduct
- Wellington
 - Thorndon / Kaiwharawhara
 - Haywards
 - Paekakariki / Pukerua Bay
- Canterbury
 - Lyttelton Road Tunnel and control centre
 - Ferrymead Bridge
 - Timaru Port & Tank Farm

Work Programme

Vision National Infrastructure Plan 2011					
Outcome 1- Better use of existing			Outcome 2 – Better allocation of new		
Infrastructure Resilience					
Coordination	Economic/ Financial	Indicators	Regional/ Community	Research	Outreach
Cross (Government Agency Infrastructure Resilience	Awareness – meet with banking, financial and insurance parties	Transport – MoT & NZTA Telecommunicati ons – MBIE Energy – MBIE	Regional vulnerability mapping	Encourage research related to resilience	LGNZ Conference – July National Lifelines Forum – November
Climate Change Adaptation	Precedents – seek exemplars of economic and financial resilience considerations	Sector priorities: Eg. strategic freight routes, oil supply security	Service level restoration times	Maintain list of past, current and future research	Infrastructure Newsletter ~ monthly
Best practice guidelines	Economic modelling		Community engagement	Ports – review of exposure to natural hazards	Hosted seminars