

Presented to
Low Volume Roads Workshop

Heavy Transport Network Use Make the Connections

September 2013
Presented by Steve Maddigan



MWH[®]

BUILDING A BETTER WORLD

Background – Tasman District Council

- Council has a network length of 1,721 km, of which 1,390 km (80%) has traffic volumes < 500 vpd.
- There is no rail transport in the Nelson/Tasman region.
- Approximately 1.8 million cubic metres of forest is harvested in the Nelson region annually.
- Prior to 2000 Council generally had a reactive approach to gathering forest harvesting information.
- Communication channels with forestry industry were sporadic and irregular.
- Safety of the road user was compromised and the reactive nature of attending to pavement failures was very disruptive and costly.



Objective

- Move from the previous reactive approach to the 'no surprises' proactive management and information gathering. Eg identify key personnel contacts, arrange stakeholder discussions/meeting, and ensuring regular communication.
- Reduce the impact on roading programmes where resources and money have to be taken from programmed work to deal with unscheduled roading failures.
- Programme and budget for asset improvements that are required before harvesting. Eg bridge upgrades, safety sight distance improvements and unsealed road strengthening.



Methodology and Development of Forest Impact Strategy

Who are our stakeholders and what do we need to consider?

- Road User – reliable access, driver comfort and safety.
- Ratepayer – value for money as contributes to maintenance expenditure on the network.
- Council – owner of the network asset and responsible for timely and economic decision making.
- Forest Owners – Small and large block owners who want to get there product to destination point at minimum cost.
- Haulage Contractors – Transport product to processing point safely by shortest route possible and with minimum wear and tear to vehicle.



Who did we talk to?

- Talked with large forest owners which included consultant representatives.
- Some smaller lot owners and log buyers. Time consuming to track down all.

What information was requested?

- Ownership and Location of Forest Blocks.
- Year of harvesting.
- Volumes to be harvested and number of truck movements across the network to destination point eg Processing Plant, Port.
- Exit and entry points from the forest blocks onto the roading network and route travelled to destination point.



What information was provided?

- Spreadsheets and/or maps were provided by forest owners with varying degrees of detail and accuracy. Eg shape files, manually drawn maps.
- We needed to get very specific about the entry/exit points from forests.
- Quality and accuracy of supplied information. Needed to go back several times to clarify information required eg type, kind and details.
- In early days, there were suspicions of why this information was being requested.



Harvest Routes/Tonnage

	Forest	HFM Road Name	Exit	HFM Road Exit Point TDC Road RP	Goldpine	Mill	NPI	Port	Goldpine	Mill	NPI	Port
2011	Richmond	Heslops Rd	Heslops Rd, Richmond,	Aniseed Valley Rd RP 6.391	SH6, Valley Rd, North Road to end	SH6, Ellis Street, Waimea West Rd	Main Rd Stoke, Salisbury Rd, Richmond De	SH6 to NCC	127	443	190	507
2011	Richmond	Raine Farm Rd	Raine Farm Rd, Richmond,	Saxton Rd East - NCC Duristiction	Main Rd Stoke, Salisbury Rd, Richmond D	Main Rd Stoke, Salisbury Rd, Richn	SH6, Lower Queen St RP 0 to RP 2.125	Main Rd Stoke, Salisbury Rd, Richmond	866	3031	1299	3464
2011	Lee Valley	Irvines Rd	Irvines Rd, Lee Valley, Lee	Lee Valley Rd RP 0.123	River Terrace Rd, SH6, Valley Rd, North R	River Terrace Rd, SH6, Ellis Street,	Pig Valley Rd, Church Valley Rd, Edward S	River Terrace Rd, SH6 to NCC	22370	49713	17396	24138
2011	Waimea	Andrews Rd	Andrews Rd, Waimea,	Wairoa Gorge Rd RP 12.768 (via O	Pig Valley Rd, Church Valley Rd, Edward	Pig Valley Rd, Church Valley Rd, Ec	Pig Valley Rd, Church Valley Rd, Edward S	Pig Valley Rd, Church Valley Rd, Edwa	10802	32406	2700	8101
2011	Waimea	Boundary Rd	Boundary Rd, Waimea,	Wairoa Gorge Rd RP 12.768 (via O	Pig Valley Rd, Church Valley Rd, Edward	Pig Valley Rd, Church Valley Rd, Ec	Pig Valley Rd, Church Valley Rd, Edward S	Pig Valley Rd, Church Valley Rd, Edwa	386	1157	1919	10615
2011	Orinoco	Frenches Rd	Frenches Rd, Orinoco,	Thorpe-Orinoco Rd RP 4.224	Thorpe Orinoco Rd, Dovedale Rd, Motueka	Thorpe Orinoco Rd, Dovedale Rd RP	Thorpe Orinoco Rd, Dovedale Rd, Neudorf R	Thorpe Orinoco Rd, Dovedale Rd, Neud	7821	10949	3128	9385
2011	Orinoco	Foots Rd	Foots Rd, Orinoco,	Thorpe-Orinoco Rd RP 4.42	Thorpe Orinoco Rd, Dovedale Rd, Motueka	Thorpe Orinoco Rd, Dovedale Rd RP	Thorpe Orinoco Rd, Dovedale Rd, Neudorf R	Thorpe Orinoco Rd, Dovedale Rd, Neud	6983	9776	2793	8380
2011	Greenhill	Silcocks Rd	Silcocks Rd, Greenhill, Orin	Thorpe-Orinoco Rd RP 2.65	Thorpe Orinoco Rd, Dovedale Rd, Motueka	Thorpe Orinoco Rd, Dovedale Rd RP	Thorpe Orinoco Rd, Dovedale Rd, Neudorf R	Thorpe Orinoco Rd, Dovedale Rd, Neud	7077	6848	3003	8794
2011	Harakeke	Old Coach Rd	Old Coach Rd, Harakeke,	Tasman View Rd	SH60, SH6, Valley Rd, North Road to end	SH60, Moutere HWY, Waimea Wes	SH60, Lansdowne Rd, Lower Queen St RP	SH60, Lansdowne Rd, Lower Queen St,	3217	5170	804	2298
2011	Waiwhero	Ridge Rd	Ridge Rd, Waiwhero,	Waiwhero Rd RP 3.290	Waiwhero Rd, Motueka Valley Highway, M	Edwards Rd, Moutere Highway, Wai	Edwards Rd, Moutere Highway, SH60, Lans	Edwards Rd, Moutere Highway, SH60, L	3154	3785	631	5046
2011	Moutere North	Sharps Rd	Sharps Rd, Moutere North,	Pigeon Valley Rd RP 5.222	SH6, Valley Rd, North Road to end	Internal Roads	SH6, Lower Queen St RP 0 to RP 2.125	SH6 to NCC	2825	5650	1413	4238
2011	Moutere North	Shircliffs Rd	Shircliffs Rd, Moutere North,	Pigeon Valley Rd RP 4.255	SH6, Valley Rd, North Road to end	Internal Roads	SH6, Lower Queen St RP 0 to RP 2.125	SH6 to NCC	8929	17858	4465	13394
2011	Moutere North	Eves Valley	Eves Valley, Moutere North,	Eves Valley Rd RP 1.529	Waimea West Rd, Lord Rutherford Rd, SH	Internal Roads	Moutere Highway, The Coastal Highway, Ap	Moutere Highway, The Coastal Highway	29013	58026	14506	43519
2011	Eatwell	Pipers Rd	Pipers Rd, Eatwell,	Motueka Valley Highway RP 31.02	Main Road Tapawera, Motueka Valley High	Main Road Tapawera, Motueka Valle	Main Road Tapawera, Motueka Valley High	Main Road Tapawera, Motueka Valley H	0	0	580	3285
2011	Eatwell	Gourmet Rd (Stanley Brk)	Gourmet Rd (Stanley Brk),	Motueka Valley Highway RP 32.25	Main Road Tapawera, Motueka Valley High	Main Road Tapawera, Motueka Valle	Main Road Tapawera, Motueka Valley High	Main Road Tapawera, Motueka Valley H	2109	1883	904	2636
2012	Lee Valley	Irvines Rd	Irvines Rd, Lee Valley, Lee	Lee Valley Rd RP 0.123	River Terrace Rd, SH6, Valley Rd, North R	River Terrace Rd, SH6, Ellis Street,	Pig Valley Rd, Church Valley Rd, Edward S	River Terrace Rd, SH6 to NCC	22263	50093	16698	22263
2012	Greenhill	Silcocks Rd	Silcocks Rd, Greenhill, Orin	Thorpe-Orinoco Rd RP 2.65	Thorpe Orinoco Rd, Dovedale Rd, Motueka	Thorpe Orinoco Rd, Dovedale Rd RP	Thorpe Orinoco Rd, Dovedale Rd, Neudorf R	Thorpe Orinoco Rd, Dovedale Rd, Neud	3975	3549	1703	4969
2012	Waiwhero	Ridge Rd	Ridge Rd, Waiwhero,	Waiwhero Rd RP 3.290	Waiwhero Rd, Motueka Valley Highway, M	Edwards Rd, Moutere Highway, Wai	Edwards Rd, Moutere Highway, SH60, Lans	Edwards Rd, Moutere Highway, SH60, L	0	0	0	1643
2012	Moutere South	Ricketts	Ricketts, Moutere South,	Pigeon Valley South Branch Rd RP	Pigeon Valley Rd, SH6, Valley Rd, North R	Internal Roads	Pigeon Valley Rd, SH6, Lower Queen St RP	Pigeon Valley Rd, SH6 to NCC	1252	2504	626	2728
2012	Moutere North	Shircliffs Rd	Shircliffs Rd, Moutere North,	Pigeon Valley Rd RP 4.255	SH6, Valley Rd, North Road to end	Internal Roads	SH6, Lower Queen St RP 0 to RP 2.125	SH6 to NCC	6971	13942	3485	10456
2012	Moutere North	Sunrise	Sunrise, Moutere North,	Sunrise Valley Rd RP 3.629	Moutere HWY, Waimea West Rd, Lord R	Moutere HWY, Waimea West Rd, E	Moutere Highway, The Coastal Highway, Ap	Moutere Highway, The Coastal Highway	2506	5011	1253	3758
2013	Richmond	Raine Farm Rd	Raine Farm Rd, Richmond,	Saxton Rd East - NCC Duristiction	Main Rd Stoke, Salisbury Rd, Richmond D	Main Rd Stoke, Salisbury Rd, Richn	SH6, Lower Queen St RP 0 to RP 2.125	Main Rd Stoke, Salisbury Rd, Richmond	1698	5944	2547	6793
2013	Lee Valley	Irvines Rd	Irvines Rd, Lee Valley, Lee	Lee Valley Rd RP 0.123	River Terrace Rd, SH6, Valley Rd, North R	River Terrace Rd, SH6, Ellis Street,	Pig Valley Rd, Church Valley Rd, Edward S	River Terrace Rd, SH6 to NCC	189	424	141	189
2013	Waimea	Anslovs Rd	Anslovs Rd, Waimea, Lee	Wairoa Gorge Rd RP 12.768 (via O	Pig Valley Rd, Church Valley Rd, Edward	Pig Valley Rd, Church Valley Rd, Ec	Pig Valley Rd, Church Valley Rd, Edward S	Pig Valley Rd, Church Valley Rd, Edwa	6600	19801	1650	4950
2013	Waimea	Andrews Rd	Andrews Rd, Waimea,	Wairoa Gorge Rd RP 12.768 (via O	Pig Valley Rd, Church Valley Rd, Edward	Pig Valley Rd, Church Valley Rd, Ec	Pig Valley Rd, Church Valley Rd, Edward S	Pig Valley Rd, Church Valley Rd, Edwa	5517	16552	1379	4138
2013	Greenhill	Silcocks Rd	Silcocks Rd, Greenhill, Orin	Thorpe-Orinoco Rd RP 2.65	Thorpe Orinoco Rd, Dovedale Rd, Motueka	Thorpe Orinoco Rd, Dovedale Rd RP	Thorpe Orinoco Rd, Dovedale Rd, Neudorf R	Thorpe Orinoco Rd, Dovedale Rd, Neud	5410	4830	2319	6762
2013	Waiwhero	Ridge Rd	Ridge Rd, Waiwhero,	Waiwhero Rd RP 3.290	Waiwhero Rd, Motueka Valley Highway, M	Edwards Rd, Moutere Highway, Wai	Edwards Rd, Moutere Highway, SH60, Lans	Edwards Rd, Moutere Highway, SH60, L	7747	9297	1549	12395
2013	Moutere North	Rout Rd	Rout Rd, Moutere North, Va	Pigeon Valley Rd RP 5.272	SH6, Valley Rd, North Road to end	Internal Roads	SH6, Lower Queen St RP 0 to RP 2.125	SH6 to NCC	30868	61736	15434	46302
2013	Moutere North	Shircliffs Rd	Shircliffs Rd, Moutere North,	Pigeon Valley Rd RP 4.255	SH6, Valley Rd, North Road to end	Internal Roads	SH6, Lower Queen St RP 0 to RP 2.125	SH6 to NCC	10306	20612	5153	15459
2013	Moutere North	Eves Valley	Eves Valley, Moutere North,	Eves Valley Rd RP 1.529	Waimea West Rd, Lord Rutherford Rd, SH	Internal Roads	Moutere Highway, The Coastal Highway, Ap	Moutere Highway, The Coastal Highway	2316	4631	1158	3474



What did we do with this information?

Created maps to show information spatially with supporting spreadsheets eg ability to overlay onto the maps the following information

- Identify route deficiencies eg carriageway width, poor visibility, inappropriate vertical and horizontal alignments. (Refer spreadsheet).
- Forestry location/processing plants. Refer map forest stands/industrial sites.
- Forest size/yield.
- Haulage routes travelled to destination. Refer map tonnage by roads traversed.
- Forward works programmed eg pavement rehabilitation, bridge renewals, seal extension drainage, safety. Refer map forward work programme/posted bridges.

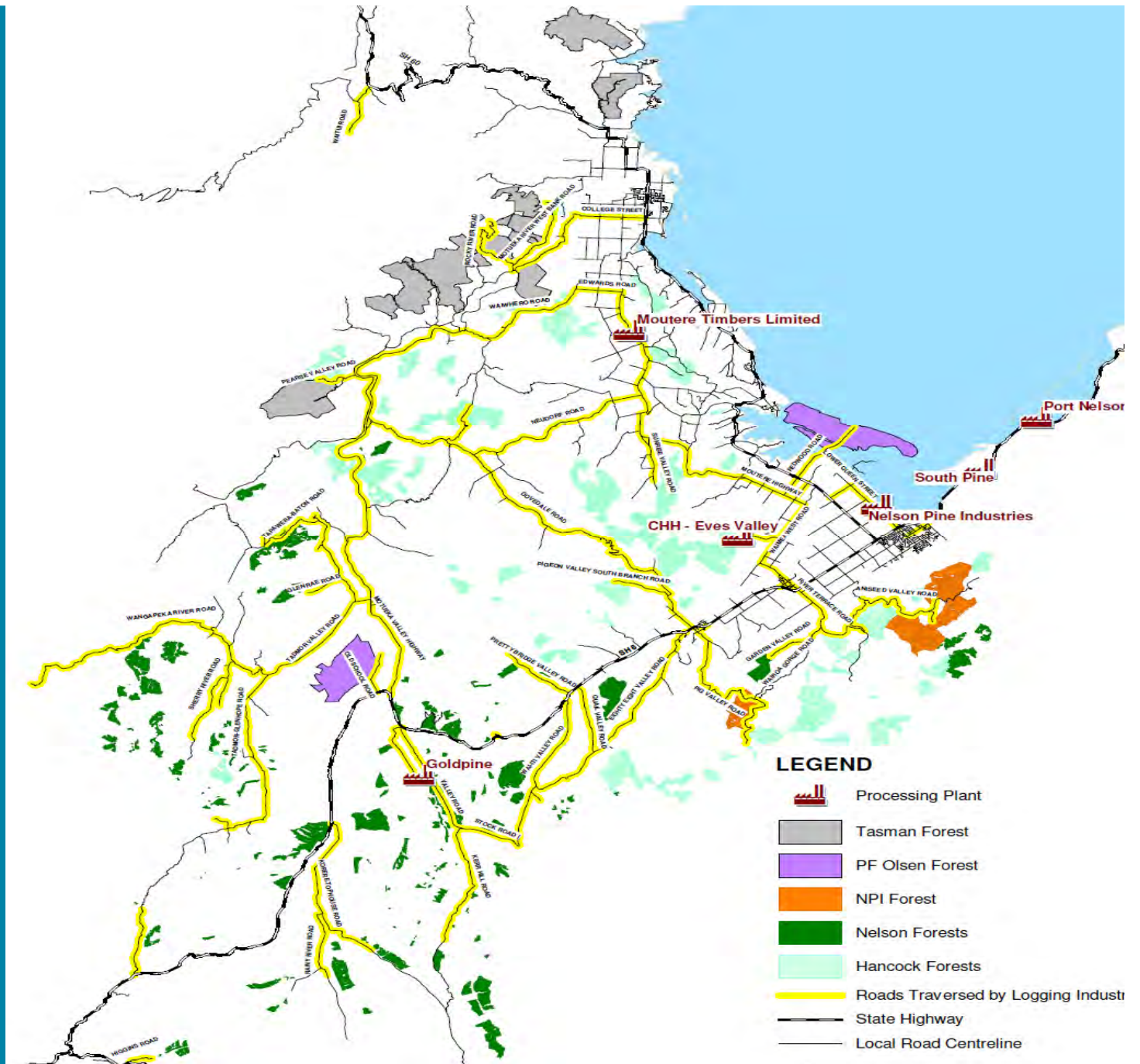


Road Deficiency Report

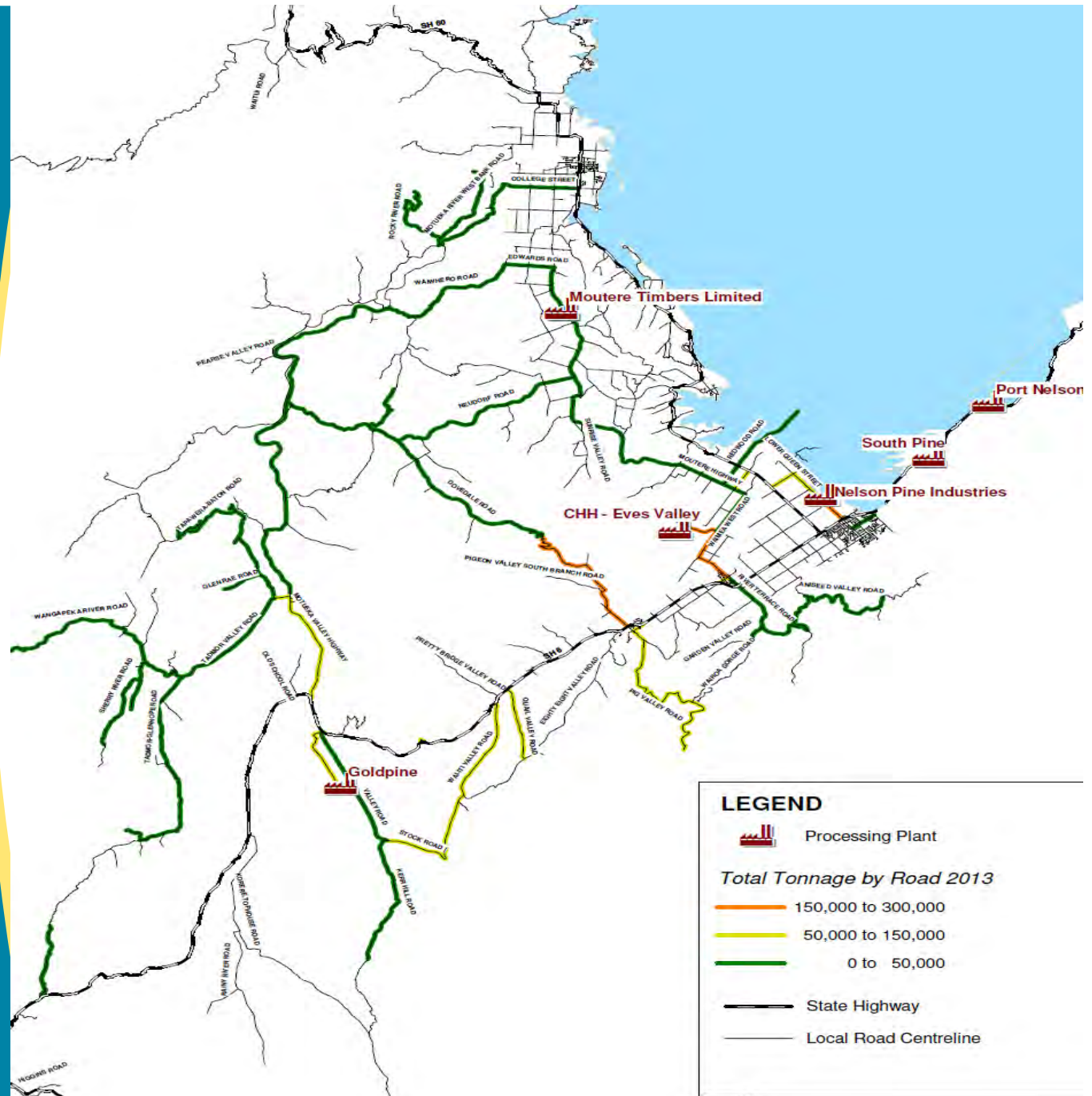
Road Name	AADT	Year	NAASRA (Average)	Hierarchy	Pavement type	Average width	Min width	Crossfall > 6%	Potholes	Rutting	Corrugation	HZ Align	Vert Align	Grade (%)	Aggregate Size	Drainage	Edge break	Potential Remedial Works	Planned Future Works
88 Valley	896	Jun-05	105	Collector	Both	4.5	4	YES	NO	NO	YES	STRAIGHT	GOOD	N/A	30	POOR	NO		SEAL EXTENSION / SEAL SMOOTHING / RESEALING
Apple Valley	22	Jan-03	N/A	Access Road	Unsealed	3.5	3	YES	YES	YES	YES	VARIES	POOR	0 - 6	35-60	POOR	N/A	UNFORMED ROAD OVER MOST OF ITS LENGTH	N/A
Berryman Road			N/A		Unsealed	3	3		YES	NO	YES	STRAIGHT	GOOD	N/A	N/A	POOR	N/A	UNFORMED ROAD OVER MOST OF ITS LENGTH	N/A
Bronte	261	Mar-03	85	Access Road	Both	3	3	YES	YES	YES	YES	VARIES	POOR	0 - 8	30	POOR	N/A	UNFORMED ROAD OVER MOST OF ITS LENGTH	N/A
Pigeon Valley		Jun-05	102	Collector	Both	6	4	YES	NO	NO	YES	STRAIGHT	GOOD	0 - 8	N/A	GOOD	NO		RESEALING / REALIGNMENT
Dovedale		Jun-05	65	Collector	Both	5.5	4.5	NO	YES	YES	YES	VARIES	GOOD	0 - 8	N/A	POOR	YES		RESEALING / REALIGNMENT / AWPT / WIDENING
Glenrae Road		Jun-05	N/A		Unsealed	4	3	YES	YES	NO	YES	STRAIGHT	GOOD	N/A	35	GOOD	N/A		
Hinetai Road	43	Apr-01	N/A	Access Road	Unsealed	3.5	2.5	YES	YES	NO	NO	STRAIGHT	GOOD	N/A	35-40	GOOD	N/A	WIDEN / CREATE PULL OFF AREAS	AWPT
Holdaway Road	19	Jan-03	102	Access Road	Unsealed	3.5	3	YES	YES	YES	YES	STRAIGHT	GOOD	N/A	30	GOOD	N/A	FORD SUITABLE FOR 4WD ONLY NEEDS WIDENING PAVEMENT STRENGTHENING	RESEALING
Ivines Road			N/A	Access Road	Unsealed	3	3	YES	YES	NO	YES	VARIES	GOOD	4	N/A	POOR	N/A	PAVEMENT STRENGTHENING WIDENING DRAINAGE NARROW WOODEN BRIDGE	
Thorp - Orinoco	55	Jun-05	100	Access Road	Both	4.5	3.5	YES	YES	NO	YES	STRAIGHT	GOOD	0 - 6	35	POOR	NO		SEAL EXTENSION / AWPT / RESEALING
Kaiteriteri - Sandy Bay	1222	Nov-02	159	Collector	Sealed	5.5	4	NO	NO	NO	NO	STRAIGHT	GOOD	0 - 7	N/A	GOOD	NO	N/A	SEAL SMOOTHING / RESEALING
Kerr Hill	506	Apr-02	64	Distributor	Sealed	7.5	6.5	NO	NO	NO	NO	VARIES	GOOD	5	N/A	GOOD	NO	N/A	SEAL SMOOTHING / RESEALING
Kinzett Creek	17	Apr-01	N/A	Access Road	Unsealed	3.5	3	NO	YES	YES	NO	STRAIGHT	GOOD	N/A	35	GOOD	N/A	VEGETATION NEEDS TRIMMING PAVEMENT STRENGTHENING WIDENING DRAINAGE	
Korere Tophouse	364	Apr-02	69	Distributor	Both	5.5	4.5	NO	YES	NO	YES	STRAIGHT	GOOD	1	35	GOOD	YES	N/A	SEAL EXTENSION
Lee Valley	394	Nov-99	96	Access Road	Sealed	7.5	7	NO	NO	NO	NO	STRAIGHT	GOOD	N/A	N/A	GOOD	NO	N/A	RESEALING
Maiseys Road	248	Jun-02	125	Collector	Sealed	6	5	NO	NO	NO	NO	STRAIGHT	GOOD	0 - 6	N/A	GOOD	N/A	N/A	RESEALING / SEAL WIDENING
Moutere Highway	2886	Dec-02	75	Arterial	Sealed	8	6.5	NO	NO	NO	NO	STRAIGHT	GOOD	N/A	N/A	GOOD	NO	N/A	RESEALING / SEAL WIDENING / MINOR SAFETY
Newport Road		Jun-05	N/A	Access Road	Unsealed	4	3.5	YES	YES	NO	NO	STRAIGHT	GOOD	N/A	40	POOR	N/A		AWPT
Nutall Road	2886	Dec-02	75	Access Road	Sealed	6	5	NO	NO	NO	NO	STRAIGHT	GOOD	N/A	N/A	GOOD	YES	N/A	RESEALING
Old Coach Road			92	Collector	Both	7	4	YES	NO	NO	NO	STRAIGHT	GOOD	0 - 5	N/A	GOOD	NO	N/A	RESEAL / SEAL EXTENSION
Old Mill Road			N/A	Access Road	Unsealed	4.5	4	N/A	NO	NO	NO	STRAIGHT	GOOD	4	65	GOOD	N/A	N/A	AWPT
Pearse Valley (right branch)	38	Jun-02	N/A	Access Road	Unsealed	4	3	YES	YES	YES	YES	VARIES	GOOD	0 - 6	35	GOOD	N/A	PAVEMENT STRENGTHENING DRAINAGE	
Pokororo			N/A	Access Road	Unsealed	3.5	3	YES	YES	YES	YES	STRAIGHT	GOOD	N/A	N/A	GOOD	N/A	PAVEMENT STRENGTHENING DRAINAGE	
Rainy River	49	Sep-00	N/A	Access Road	Unsealed	4	3.5	YES	YES	NO	NO	STRAIGHT	GOOD	0 - 3	30-50	GOOD	N/A	N/A	AWPT
Ricketts Road	39	Jun-05	N/A	Access Road	Unsealed	3.5	3	YES	NO	NO	YES	STRAIGHT	GOOD	5	35	GOOD	N/A		AWPT
Serpentine Road			N/A	Access Road	Unsealed	6	5.5	NO	NO	NO	NO	STRAIGHT	GOOD	N/A	35	GOOD	N/A		
Sherry River	69	Jun-05	N/A	Access Road	Unsealed	4.5	3	YES	YES	NO	YES	VARIES	GOOD	0 - 5	30-60	POOR	N/A		AWPT



Forest Stands Processing Plant



Tonnage by Road 2013

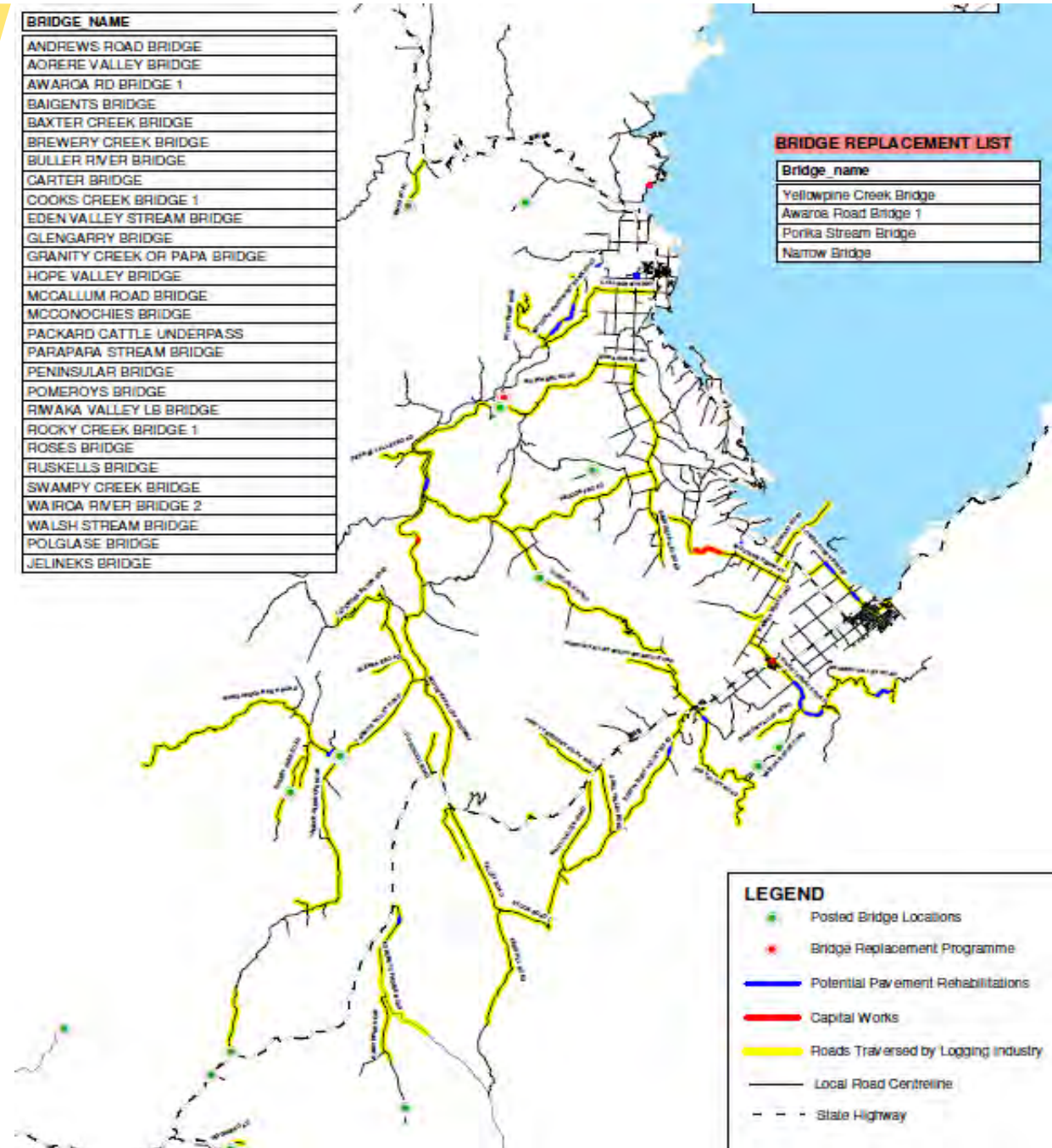


Forward Works 2011-2014

BRIDGE NAME
ANDREWS ROAD BRIDGE
AOPERE VALLEY BRIDGE
AWAROA RD BRIDGE 1
BAIGENTS BRIDGE
BAXTER CREEK BRIDGE
BREWERY CREEK BRIDGE
BULLER RIVER BRIDGE
CARTER BRIDGE
COOKS CREEK BRIDGE 1
EDEN VALLEY STREAM BRIDGE
GLENGARRY BRIDGE
GRANITY CREEK OR PAPA BRIDGE
HOPE VALLEY BRIDGE
MCCALLUM ROAD BRIDGE
MCCONOCHIES BRIDGE
PACKARD CATTLE UNDERPASS
PARAPARA STREAM BRIDGE
PENINSULAR BRIDGE
POMEROYS BRIDGE
RWAKA VALLEY LB BRIDGE
ROCKY CREEK BRIDGE 1
ROSES BRIDGE
RUSKELLS BRIDGE
SWAMPY CREEK BRIDGE
WAIROA RIVER BRIDGE 2
WALSH STREAM BRIDGE
POLGLASE BRIDGE
JELINEKS BRIDGE

BRIDGE REPLACEMENT LIST

Bridge name
Yellowpine Creek Bridge
Awaroa Road Bridge 1
Ponka Stream Bridge
Narrow Bridge



TASMAN DISTRICT FOREST INDUSTRY HARVESTING 2011-2014
POSTED BRIDGES AND FORWARD WORK PROGRAMME



Scale: 1:20,000

N.B. Only those forests where location data was either derived or mapped. All base data has been either sourced from LINZ or created by MWH

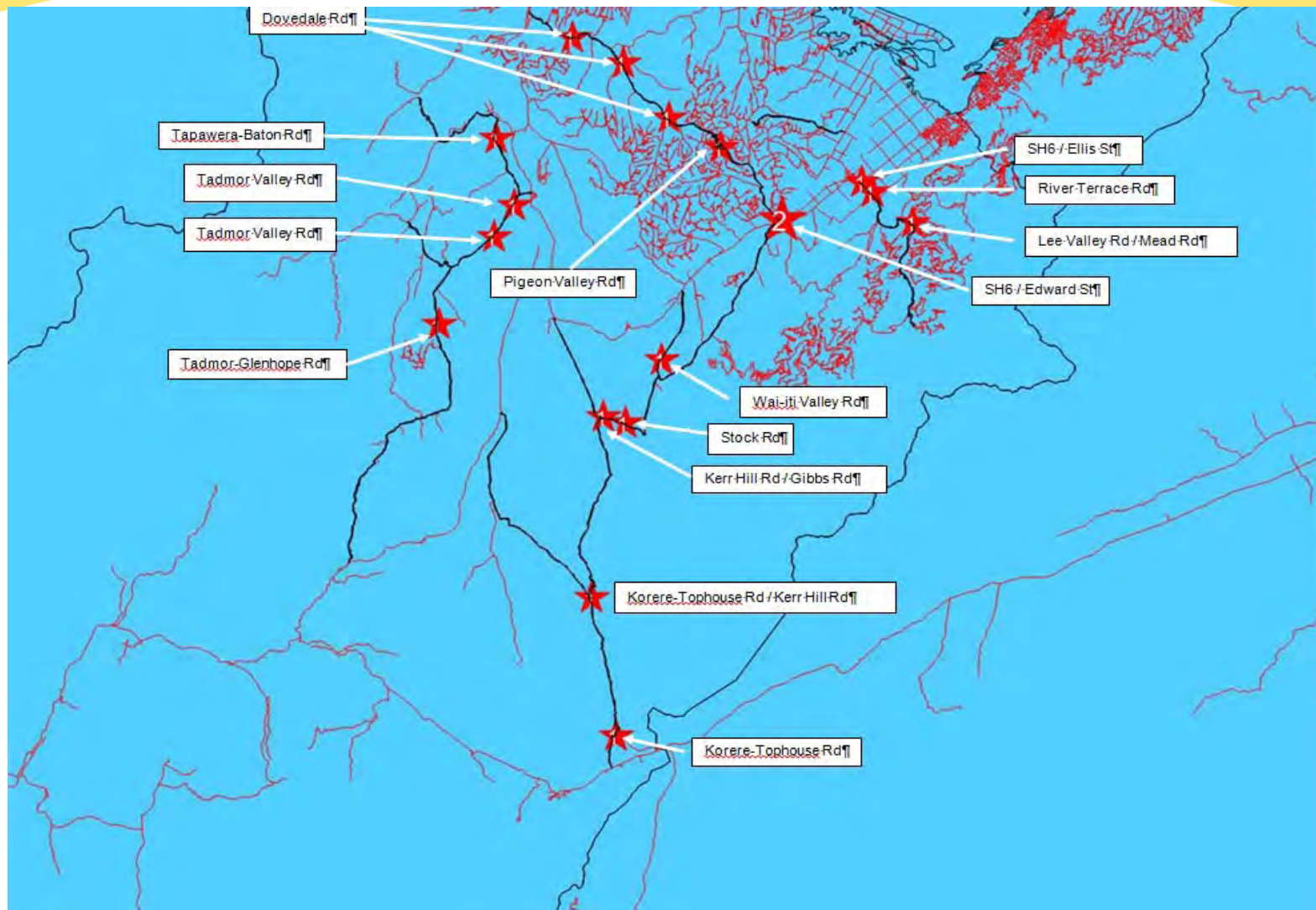
Original map aka: A3 Date: 12 April 2011

What did we find?

- Common routes travelled by haulage operators from various forest blocks annually.
- New routes were identified where there had been no previous forest traffic and now forest activity planned.
- High Speed Data (HSD) testing periodically on selected routes showed wheel track rutting in loaded lane. Ability to measure progression.
- Where we were unsure of the structural capacity of the road pavement we initiated pavement testing (Falling Weight Deflectometer) and testing pitting on specific sections.
- Undertook a crash analysis on the higher trafficked routes travelled which showed up a number of crashes involving trucks over a 10 year period eg 23% of total crashes being trucks.



Truck Crash Map



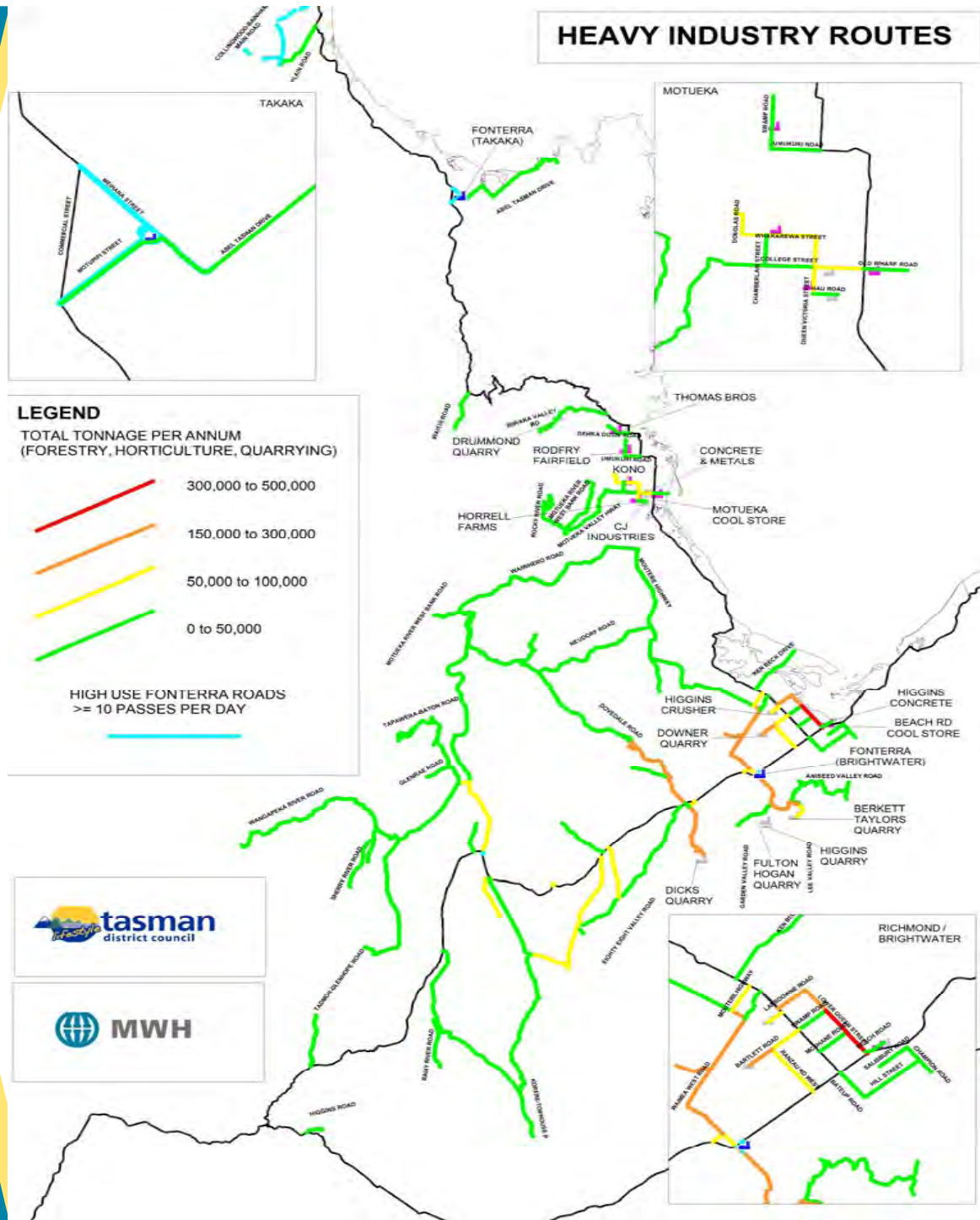
Updated Project Including other Industry Impact

- Horticulture main products assessed were apples and kiwi fruit. Information on pack house and cold storage location, route travelled and volume was accessed through the main cartage contractor.
- Quarry locations and ownership was researched through Council records with known operators and word of mouth. Record keeping and quality of information of route travelled and quantity of aggregate from the quarries varied.
- For dairy industry, contacts were made with both Fonterra and Westland Milk. Bulk information was provided on liquid and dry products.



Heavy Industry Map

HEAVY INDUSTRY ROUTES



Benefits to the Client

- Illustrates that the client knows and understands the demands and condition of the network.
- Periodic meetings and regular communication between key personnel has built up relationships and ability to react more efficiently.
- Ability to support maintenance and renewal funding requests to NZTA with factual and not subjective reasoning.
- Growing the regional economy by spending money on the network sections that are earning revenue for the district.
- Reduced CSR's eg happier communities and road users.
- Money saved from less reactive maintenance and the movement to programmed work.



Latest on HPMV Impact

- Testing was undertaken on bridge structure where required before route opened up to HPMV's. Some strong feeling by the industry on perceived delays however, stakeholders need to be aware of Council constraints.
- Ongoing dialogue six-monthly with parties is critical to provide regular feedback and response to market changes.
- Taking a risk on some pavements and approving routes with little or no pavement strength information.
- Monitoring to be undertaken using HSD testing and FWD to capture deterioration trends and manage risk.
- Growing collaboration between Council and stakeholders eg shared costs for analysis of significant structures.

