



# **NZ Log Export Port Operations Management**

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## C3 Overview

- Established in 1950's
- 12 New Zealand ports + Australian sites
- More than 800 employees
- Three main legs to the business:





## NZ Log Export Overview

- Significant growth in last 5 years
- 2012 Harvest – 24 million tonnes
- Export Log Volume – 14 million Tonnes (58%)
- Approx. 600 logging crews nationally
- 12 NZ log export ports
- NZ harvest is growing



## C3 and NZ Log Exports

- C3 operates in 12 NZ Ports
- Handles approximately 10 million JAS
- Approx. 40% of received in 5 hours from 0600 to 1100
- Approx. 22% of NZ's harvest (40% of the 64% exported) is received at 12 ports in a 5hr window, Mon-Fri
- C3 log marshalling is a relatively small part of the supply chain, but often a contentious part



# Port Management Issues

- Receiving wood (road / rail / barges)
- Storage space – a scarce resource
- Vessel loading
- Communication and information management



# Innovations and Initiatives







# RFID in Ports







# RFID - Gisborne





# Truck Times Between Readers (60 Minute Intervals)

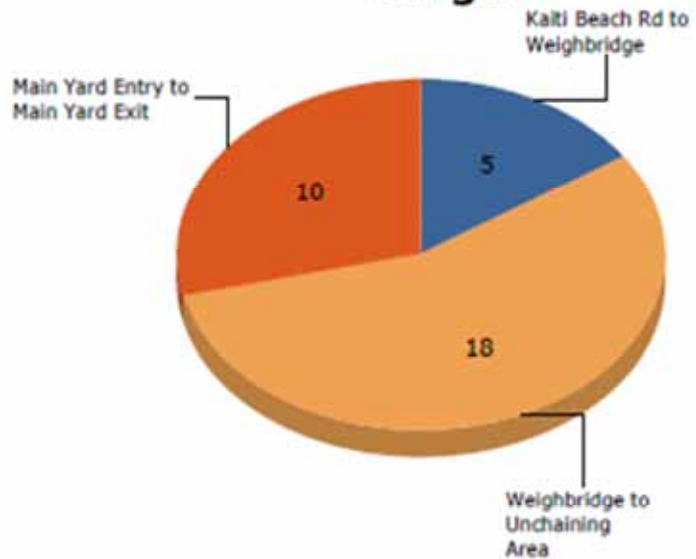
Branch = GIS, Start Date = 01/03/2012, End Date = 01/03/2012, Time Start = , Time End =



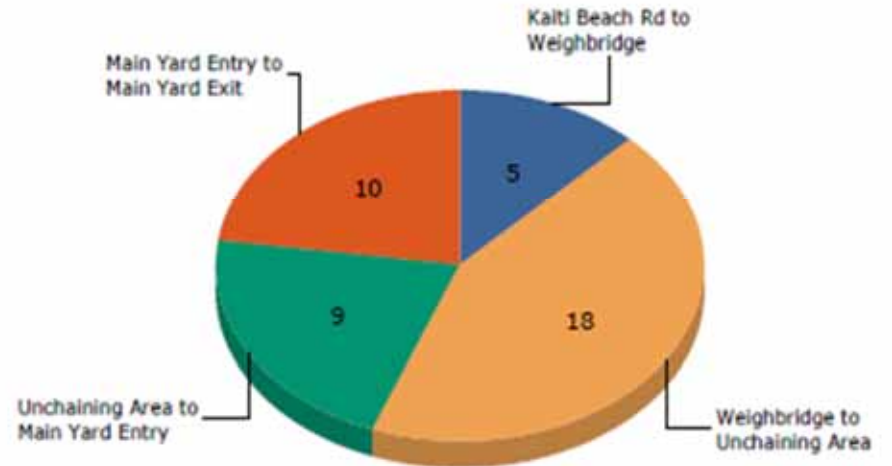
## Overall Summary Stats

	Truck Count	Average Minutes	Min Minutes	Max Minutes
Reader A (Kaiti Beach Rd) to Reader B (Weighbridge)	152	5	0	63
Reader B (Weighbridge) to Reader D (Unchaining Area)	154	18	0	41
Reader D (Unchaining Area) to Reader E (Main Yard Entry)	128	9	1	26
Reader E (Main Yard Entry) to Reader F (Main Yard Exit)	99	10	2	21

## C3 Controlled - Avg Minutes per Lap Stage



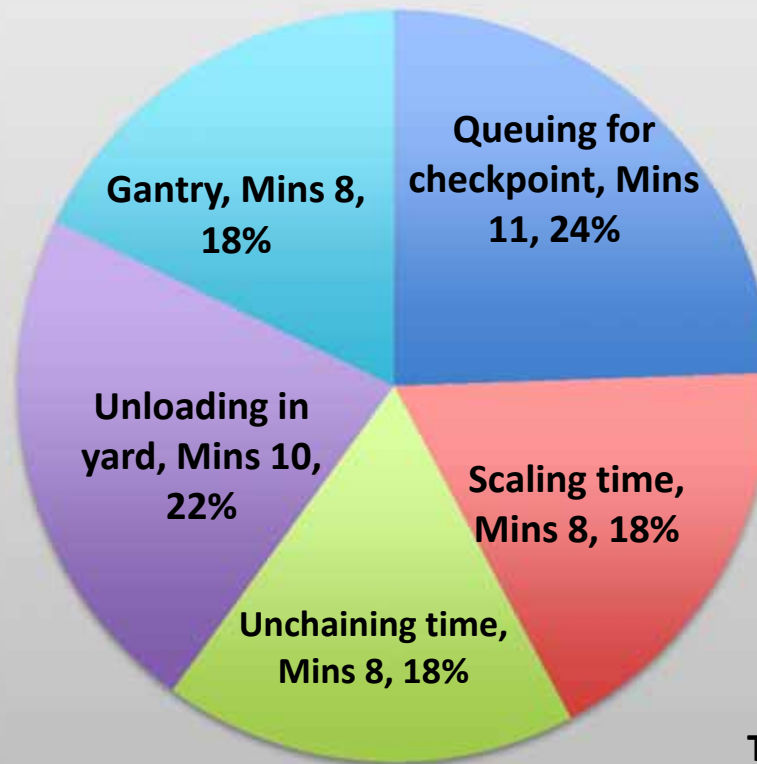
## Average Minutes per Lap Stage





# Time spent in Ports for logging trucks

## Time spent in Ports by activity for logging trucks



Total time of 45 Mins



## RFID in Ports

- A collaborative approach by stakeholders to improve truck flow and materials handling efficiency
- Measures truck time through various port phases
- Provides real time, objective information
- Provides easy to understand reporting
- Identifying times doesn't solve the problem.
- We need to Minimise delays & deliver on JAS/hr targets



# Log Storage in Ports

Available area in ports is a constraint compounded by;

- Increasing volumes
- More customers, grades and lengths



# Port Chalmers





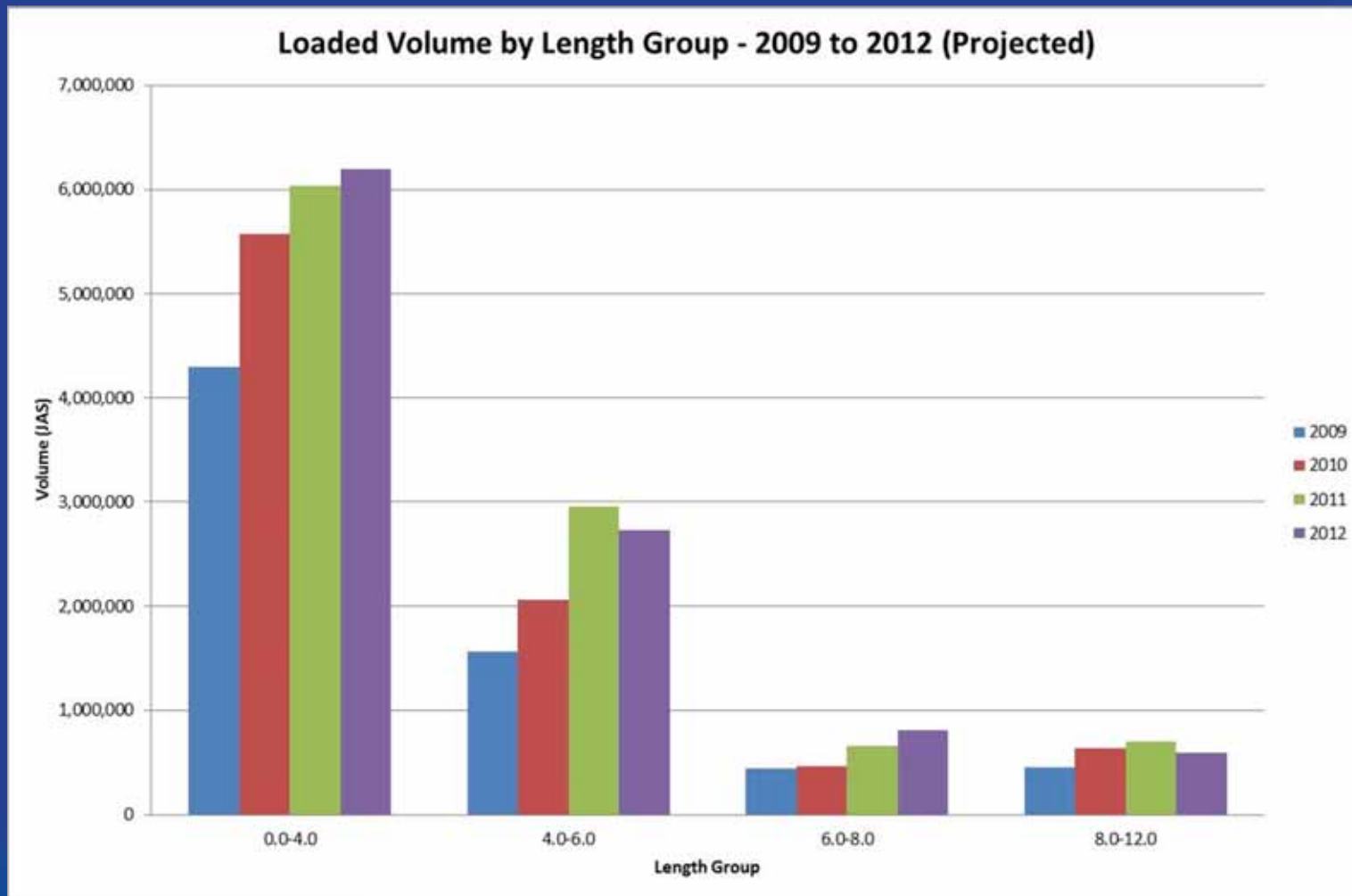
## Less Land, More Volume

### Port Chalmers Export Volume and Wharf Storage

Year	JAS Exported	Log Storage Hectares	JAS/ha Equivalent Throughput	Increase
2001	339,000	8	42,375	
2011	514,000	3.1	165,807	291%



# Log Volume by Log Length







# Storage management

- Machinery development
- Bookends
- Volume allocation
- Stock turnover
- Yard layout
- Increased row length and height





# Vessel Loading Initiatives

Productivity studies for less machinery

- Nelson; Canterbury University studies
  - Machine numbers & delays
- Port Chalmers; C3 Benchmarking exercise
  - Machine numbers & productivity



# Vessel Loading





# Vessel Loading - UC

- ▶ Heave/Cycle defined as heaving one load onto vessel, unloading, and having the strops in a position to have the next bunk load.

Heaves per Hour	Crane				
Shift:	1	2	3	4	Average
D	8	8	9	11	9
N	6	7	6	7	6

- ▶ Utilisation:

Utilisation	Crane				
Shift	1	2	3	4	Average
D	84.60%	79.17%	95.65%	86.35%	86%
N	70.81%	75.11%	70.80%	69.41%	72%



# Vessel Loading - UC

## ▶ Average Cycle Times:

Average of cycle time (min)	Crane				
Shift	1	2	3	4	Average
D	6.03	6.02	5.18	4.53	5.36
N	6.40	6.65	6.64	5.90	6.39

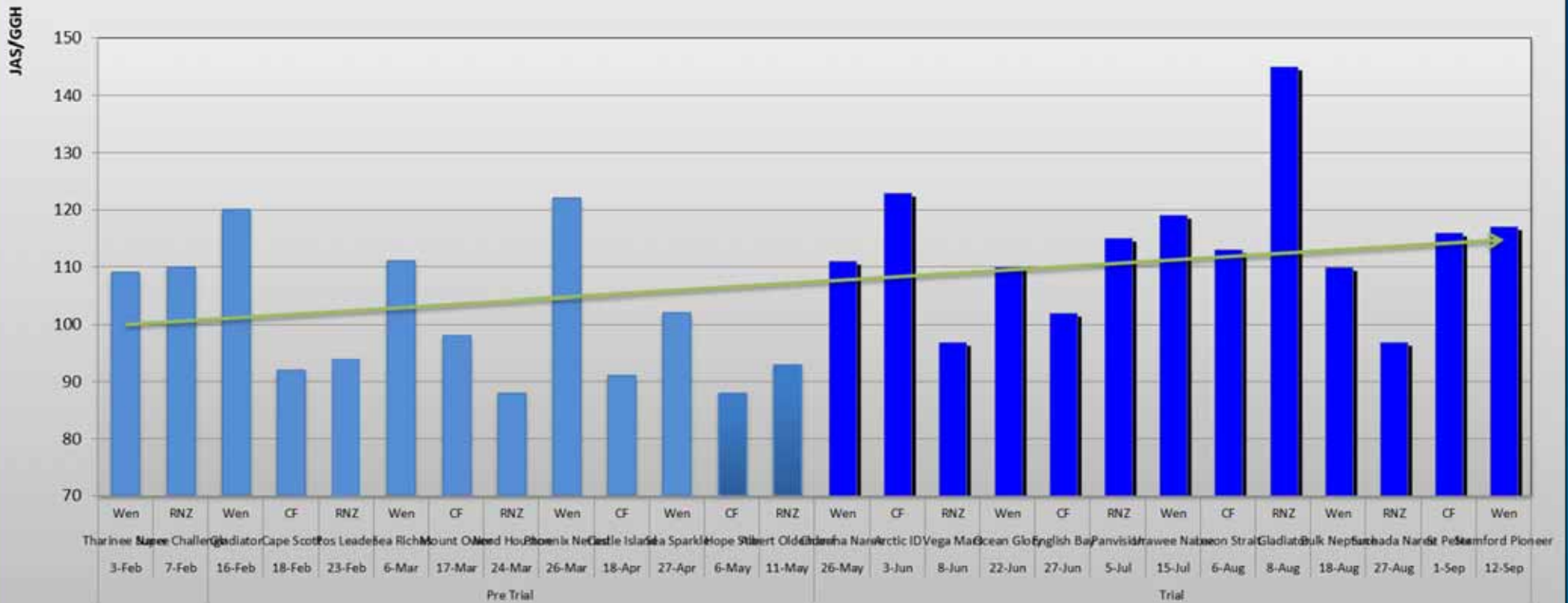
## Results

- Less machines produced more heaves (cycles) per hour (19%)
- Greater crane productivity
- Less congestion on Wharf (safer)



# Vessel Loading- Port Chalmers

Port Chalmers - Load Rates





# Optimising Resources

## Port Chalmers Machinery Trial Results

	Load Rate Improvement	Piece Size Change
Customer 1	23%	Slightly improved
Customer 2	15%	Slightly improved
Customer 3	1%	Significantly Decreased
13 Vessel Average	12%	



## Summary

- Capital and labour intensive business
- Consider the entire supply chain
- Balanced decisions based on objective information
- Efficient allocation of resources