



ECONOMIC IMPACT OF HPV FOR WOODCHIP TRANSPORT IN AUSTRALIA

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**Transport Technology
& Productivity 2010**



Overview

- Where the current fleet sits
- Increased freight task in Green Triangle
- HPV with available technology
 - Quad B-double
- HPV with new technology
 - Steerable wheel

***FOCUS ON POTENTIAL ECONOMIC
IMPACT FROM PBS APPLICATION***

Case study 1




Evaluation of current fleet



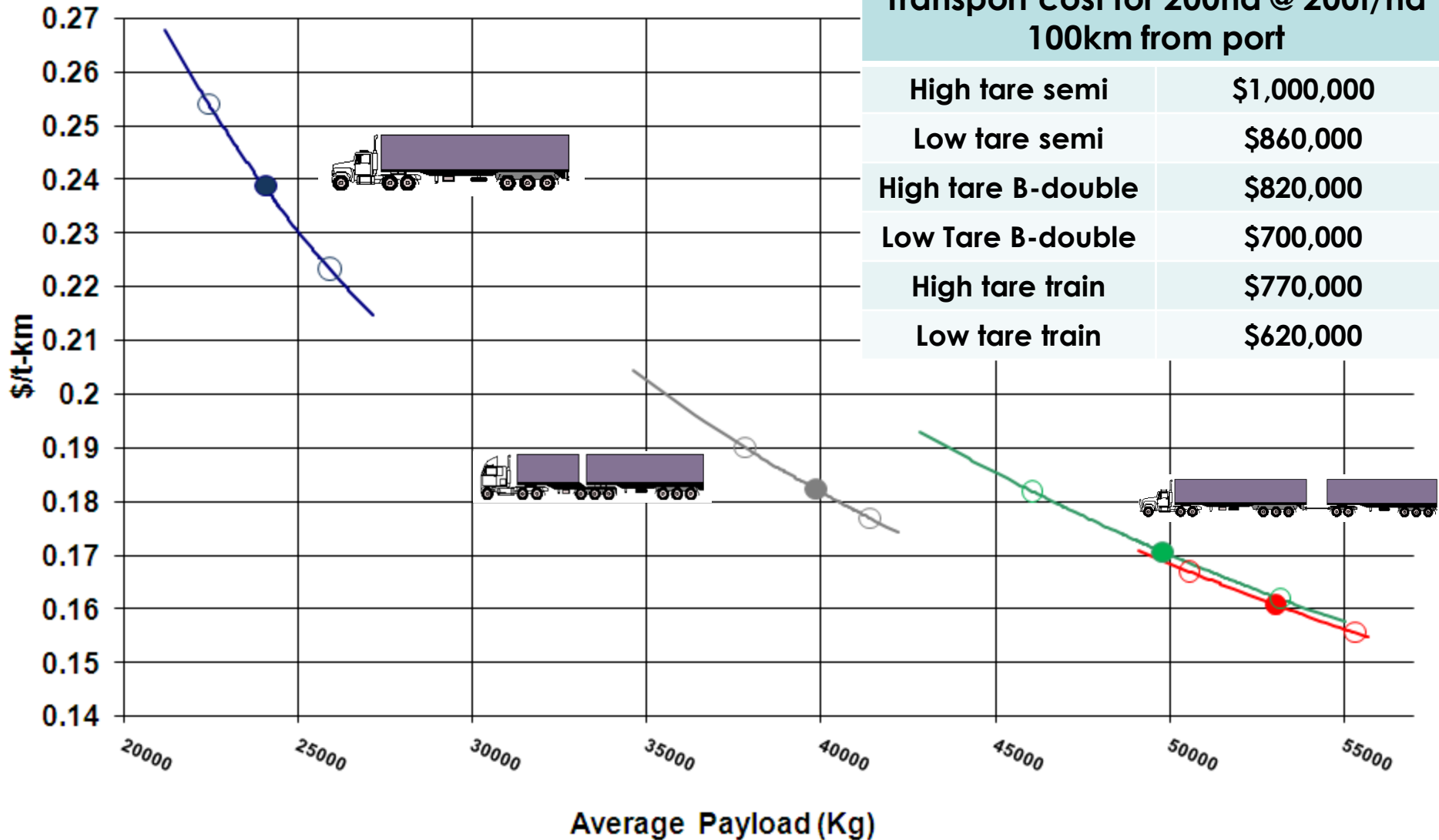
- Collected weigh bridge data
 - 6 companies
 - 6 to 12 months of deliveries each
 - Included
 - Date/time
 - Vehicle ID
 - Empty (tare) weight
 - Payload
 - etc

Case study 1

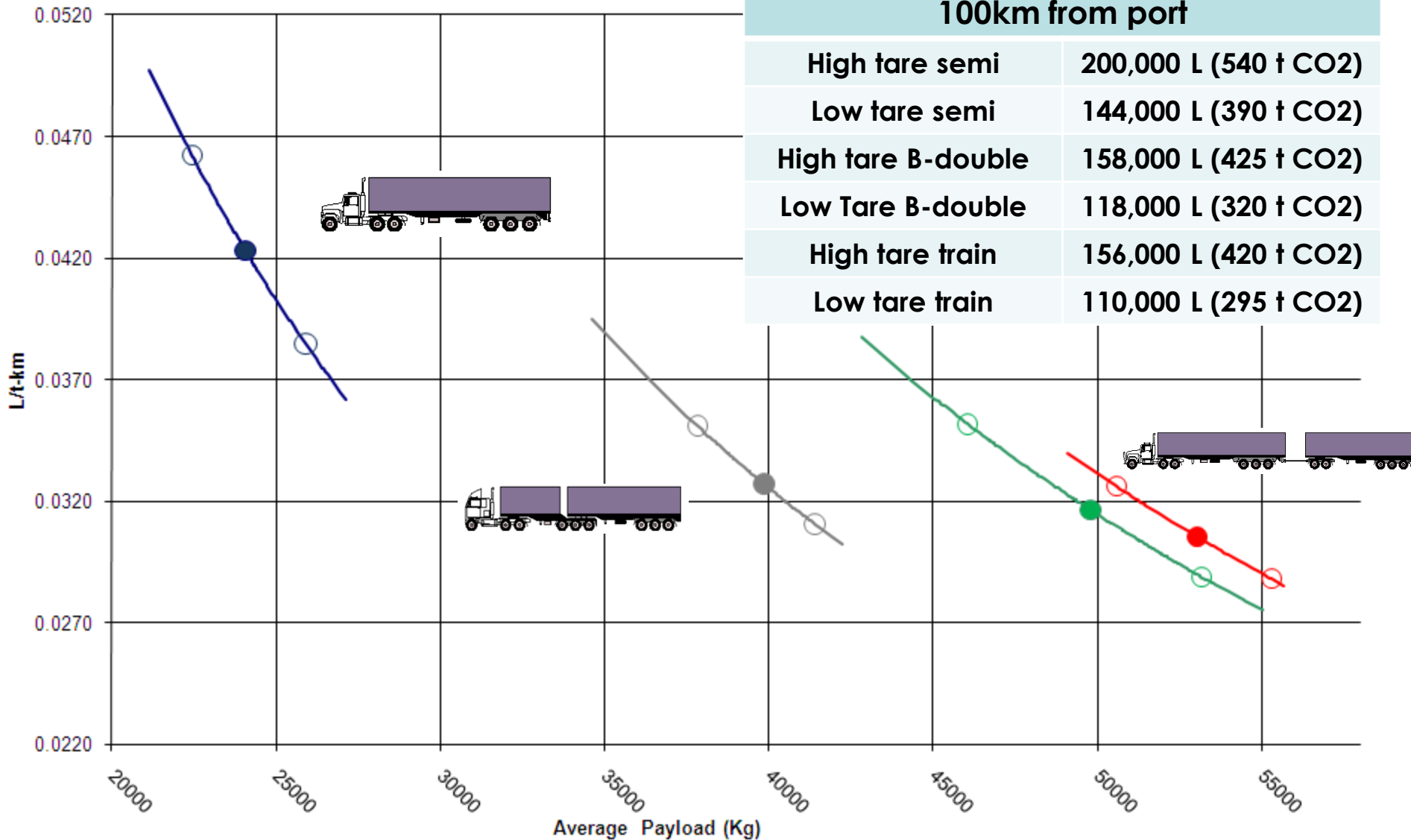
Evaluation of current fleet

	# Trucks	# Loads	Legal GVM (t)	Average Tare (t)	Average Potential Payload (t)
 Semi-Trailers	97	9962	42.5	18.3	24.2
 B-doubles	87	17212	62.5	22.7	39.8
 79t Road Trains	209	20071	79.0	28.6	50.4

Importance of Payload



Importance of Payload



**Transport cost for 200ha @ 200t/ha
100km from port**

High tare semi 200,000 L (540 t CO₂)

Low tare semi 144,000 L (390 t CO₂)

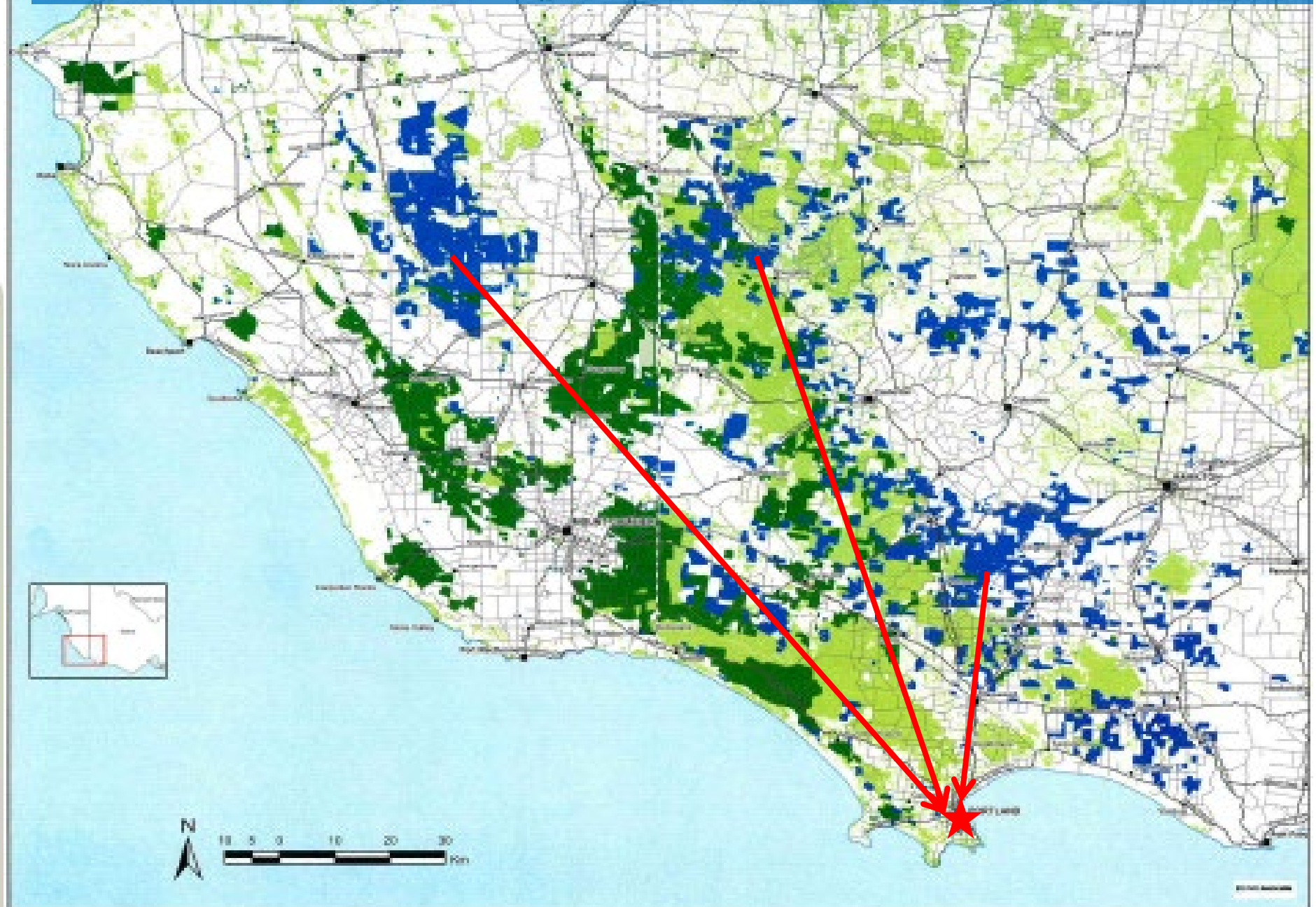
High tare B-double 158,000 L (425 t CO₂)

Low Tare B-double 118,000 L (320 t CO₂)

High tare train 156,000 L (420 t CO₂)

Low tare train 110,000 L (295 t CO₂)

350 million t-km annual freight task from blue areas to Portland



Available technology

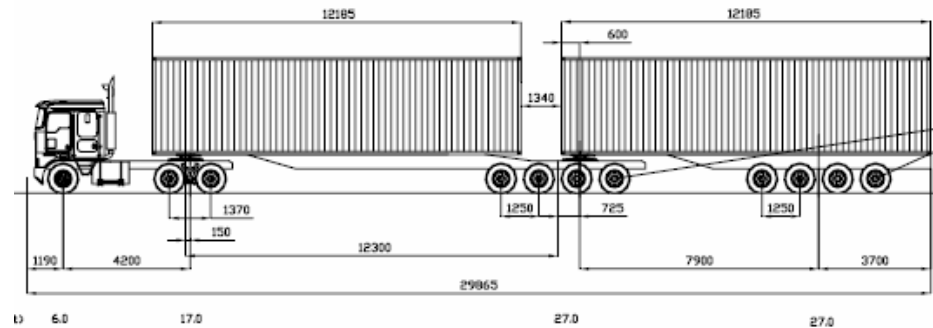
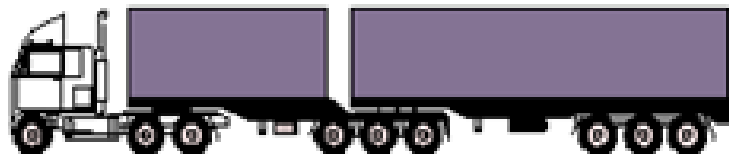
Quad B-Double



- Uses proven technology
 - B-double trailer design
 - Self steer axles
- Has PBS approval through NTC Blueprint (www.ntc.gov.au)

Available technology

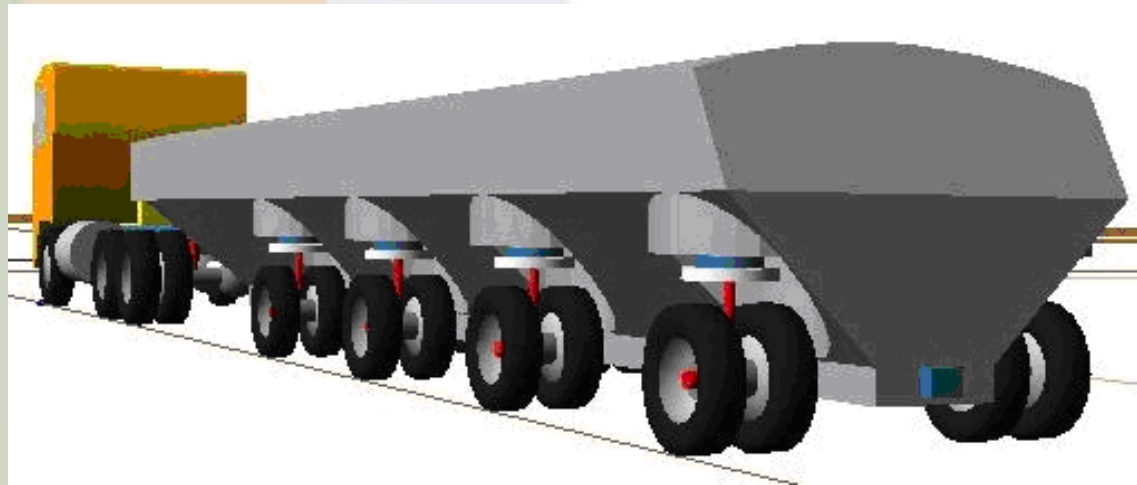
Quad B-Double



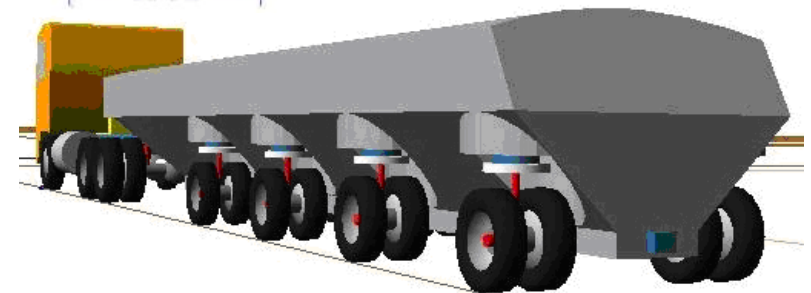
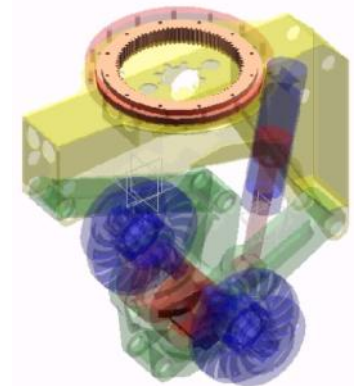
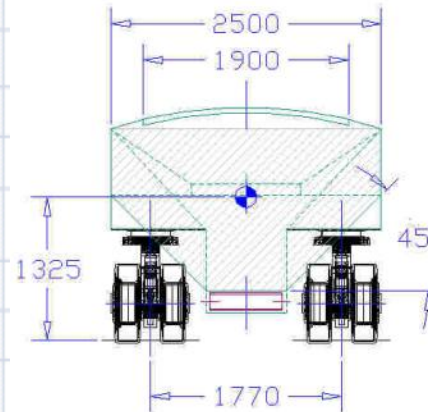
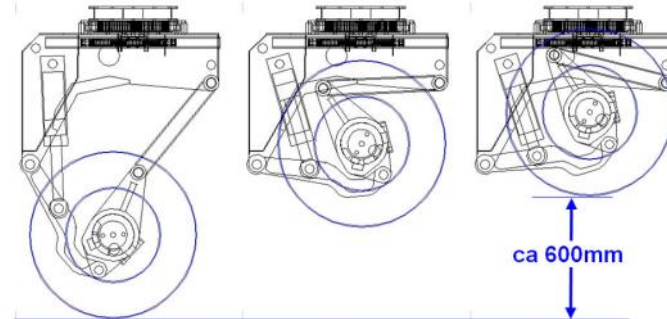
	B-double	Quad-B-double	Difference (%)
Payload (t)	39.8	51.9	30.4%
Fuel use (l/t-km)	0.033	0.029	12.1%
Operating cost(\$/t-km)	0.181	0.148	18.2%
Trips per year	70,352	53,950	23.3%

New Technology Steerable Wheel

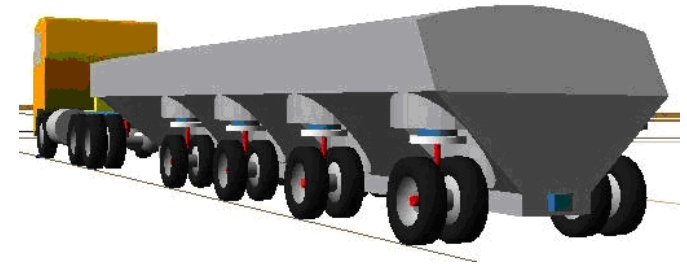
- Modular steerable wheel groups
- Limited use in indivisible loads
- Prototype trailer planned for bulk transport



Performance Standard	Performance Value
	Bulk products
1 Startability	24%
2 Gradeability	
a) Maintain forward motion on grade	33.20%
b) Minimum speed on 1% grade	93.7km/h
3 Acceleration Capability	
4 Tracking Ability on a Straight Path	2.8m
5 Overtaking Provision (Level of Service)	18.75 OAL
6 Low-Speed Swept Path Width	5.9m
7 Frontal Swing	
a) Prime mover	0.3m
b) Semi-trailers	
i) maximum of difference (MoD)	n/a
ii) difference of maxima (DoM)	n/a
8 Tail Swing	0.19m
9 Steer Tyre Friction Demand	34.00%
10 Static Rollover Threshold	0.67g
11 Rearward Amplification	1
12 High-Speed Transient Offtracking	0.1m
13 Yaw Damping Coefficient	1
14 Directional Stability Under Braking	ABS/EBS

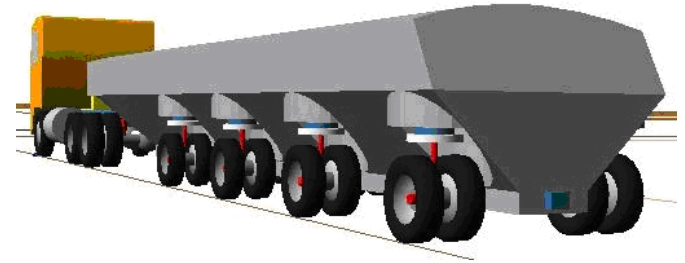
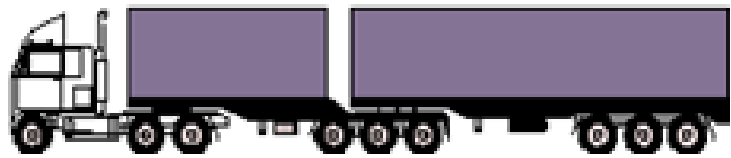


New Technology 19m Steerable Wheel



	Semi trailer	18.75-SW-L1	Difference (%)
Payload (t)	24.2	34.9	44.2%
Fuel use (l/t-km)	0.042	0.031	26.2%
Operating cost(\$/t-km)	0.238	0.209	12.2%
Trips per year	28,926	20,058	30.7%

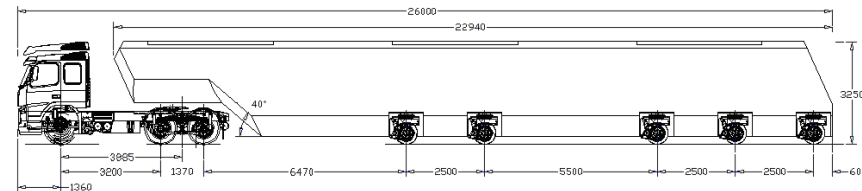
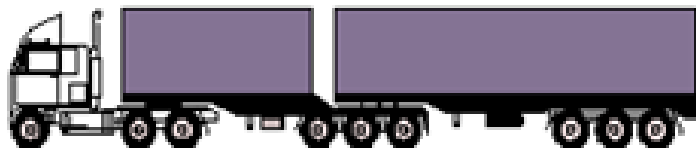
New Technology 19m Steerable Wheel



	B-double	18.75-SW-L2	Difference (%)
Payload (t)	39.8	41.3	3.8%
Fuel use (l/t-km)	0.033	0.027	18.2%
Operating cost(\$/t-km)	0.181	0.174	3.9%
Trips per year	70,352	67,796	3.6%

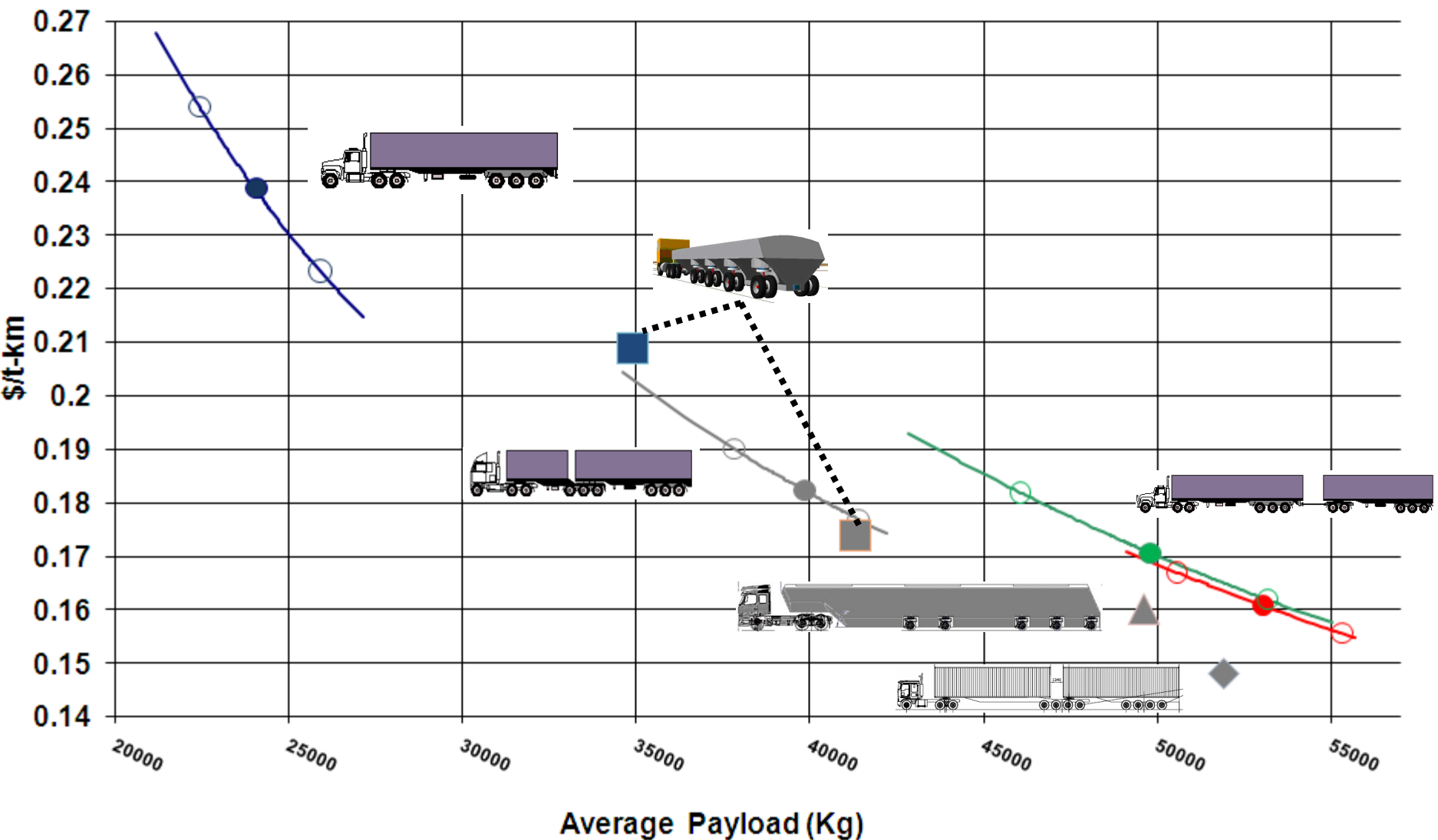
New Technology

26m Steerable Wheel Concept



	B-double	26-SW-L2	Difference (%)
Payload (t)	39.8	49.6	24.6%
Fuel use (l/t-km)	0.033	0.026	21.2%
Operating cost(\$/t-km)	0.181	0.160	11.6%
Trips per year	70,352	56,452	19.8%

High Productivity Vehicles in context



Conclusion

- Major new freight task in GT
- Opportunity in existing fleet to improve
- Blueprint Quad B-double offers good alternative to B-double
- Steerable wheel offers good alternatives for whole task



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IRTEENZ

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