



Council Business Case

Road Train Implementation Assessment

1. Executive Summary	2
2. Strategic Context	3
3. Background.....	3
3.1 History on existing prime mover.....	3
3.2 Options for replacement	4
3.3 Additional requirements to operate a road train	5
4. Comparative Analysis	6
4.1 Base Cost Analysis.....	6
4.2 Operating Cost Comparatives.....	7
4.3 Advantages and Disadvantages	8
4.4 Comparative efficiency table.....	9
4.5 Estimated time to complete Construction Program	10
6. Risk Assessment	11
7. Other Considerations.....	12
8. Associated Documents	13

1. Executive Summary

One of the Shire of Jerramungup's ongoing key focus areas is to ensure that built infrastructure is well utilised and maintained. Therefore the Shire is using modern plant and equipment to deliver their services to a high standard.

The following business plan has been coordinated to consider upgrading Council's existing prime mover truck to a road train rated machine with the ability to haul a second trailer of gravel or associated road building material. The business plan has carried out an assessment on the merits of an upgrade based on the following:

- Base costing for replacement and/or upgrade of the existing semi-trailer.
- Analysis of the level of demand for updating the fleet to accommodate current and future workload.
- Identify the comparative costs of utilising a contract road train service.
- Discuss advantages and disadvantages of operating a road train versus a semi-trailer setup.
- Determine license requirements and current employees with appropriate licenses.

The recommendation of the report which will be put to Council is as follows:

That Council resolve to amend the 2013/2014 budget as follows to purchase a prime mover truck rated to at least 90,000kg GCM through WALGA's preferred supplier panel.

- 1) Increase the budget provision for the purchase of the prime mover to \$200,000**
- 2) Finance the remaining deficit after trading Council's 2005 Isuzu Giga from the \$22,000 in savings made on the light utilities and the balance from the plant reserve.**

2. Strategic Context

The Shire of Jerramungup Strategic Community Plan 2012-2015 reflects the longer term community and local government aspirations, priorities and strategic direction for the organisation.

Aspiration 10a focusses on developing an Asset Management Strategy and aims for:

“A community where transport infrastructure is constructed and maintained using best practice principals”

A budget of \$140,000 has been allocated in the 2013/2014 annual budget for the purchase of a new prime mover to replace the existing 2005 Isuzu Giga. This was a planned replacement stemming from Council’s plant replacement program which formulates part of Council’s Long Term Financial Plan.

3. Background

3.1 History on existing prime mover

The Council’s existing prime mover, a 2005 Isuzu Giga, was purchased in 2005. For the last eight years, it has been a valuable part of the Shire’s plant and was continually in use by the Works Department. It’s primary role is based around the construction of roads and gravel sheeting however it has also been used on rural road maintenance and in projects such as the Jerramungup Bowling Green. The truck has travelled approximately 350,000km and given the current age and mileage of the prime mover, regular machine servicing will be required more often and future maintenance costs are very likely to increase.

With the intention of retaining an attractive resale value, the replacement of the prime mover has been scheduled for this financial year- 2013/2014.

3.2 Options for replacement

A substantial part of work conducted by the Shire of Jerramungup Works Department is the maintenance and re-sheeting of local gravel roads.

Currently, the Works Department is utilising Council's Isuzu Giga which hauls a side tipping trailer of approximately 18m³ capacity. Under existing arrangements on gravel sheeting works additional contractor resources are employed regularly to assist hauling road building materials from pits to the job site. The following options are presented to consider the possibilities for retaining / increasing efficiency in the haulage of road building materials.

Option 1

Replacement of the Isuzu Giga with a like for like machine and continue hiring additional sub-contractors to haul gravel when required. This provides approximately 18m³ of capacity per load.



Option 2

Replacement of the Isuzu Giga with a road train rated prime mover (>70 tonne GCM¹) and dry hire of lead trailer and dolly when required to cart gravel for re-sheeting work conducted by Council's own staff. Alternatively Council may also consider purchasing a lead trailer and dolly however this is beyond the capacity of the current budget unless loan funding is utilised. This provides approximately 36m³ of capacity per load.



Option 3

Replacement of Isuzu Giga with a road train rated six-wheeler with ring-feeder combination and hire dolly as well as utilising Council's existing side tipper. This provides approximately 27m³ of capacity per load.



¹ In this context GCM stands for Gross Combination Mass and means the greatest possible sum of the maximum loaded mass of a motor vehicle, and any vehicle that may be lawfully towed behind it at one time.

3.3 Additional requirements to operate a road train

The operation of a road train requires a number of issues to be considered and planned for to minimise risk and comply with associated legislation.

Driver's License Requirements

- The legal requirement for a B-double or road train arrangement is a MC (Multi-Combination) driver's license.

At present, the Shire of Jerramungup Works Department employs two staff members, who meet those requirements. It is likely that additional staff would need to be trained for a MC license to minimise the risk of the truck being out of service due to the lack of a qualified driver. Alternatively the rear trailer could be unhooked and driven with a HC license.

Supporting Documentation

- *Restricted Access Vehicles – Prime Mover, Trailer Combinations and Truck, Trailer Combinations Notice 2012.*
- Operating conditions, as outlined in Road Traffic (Vehicle Standards) Regulations 2002
- Schedules of approved roads (RAV Road Networks) would need to be considered and adhered to.

Prime Mover and Trailer Registration/Licensing (Department of Transport)

Estimated costs for licensing a road train²:

- Prime Mover: \$350.00
- Trailer \$24.50
- Dolly \$40.00

Fatigue Management (WorkSafe)

- As per definition of a "Commercial Vehicle Driver" in the Fatigue Management for Commercial Vehicle Drivers Code of Practice, Shire staff operators are not classed as a "Commercial Vehicle Driver". As such the Shire is not required to implement a fatigue management plan.

Accreditation Certificate (Main Roads WA)

- Requirement of accreditation certificate issued to the owner or operator of a vehicle: the Council, as being a Local Government Department, is exempt from the accreditation requirement (including log book requirement).

Signage Requirements

- A Road Train over 22 metres in length but not over 30 metres that has one or more dog trailers must display a Road Train sign or Long Vehicle sign on both the front and rear.

² For this calculation it has been assumed that Local Government Concession applies to all registered items.

4. Comparative Analysis

4.1 Base Cost Analysis

To ensure quality and value for money considerations are met, several quotes from WALGA's preferred panel of suppliers have been collected to allow comparison between the different options. The table below displays the main key focus areas of the different quotes. Not all quotes were submitted with information available relating to turning circle.

Semi Trailer Vs Road Train Assessment on Base Costs								
	Replace + upgrade existing truck		Buy new Prime Mover, Road Train					
Make	Isuzu GIGA	Isuzu GIGA	Mack	Western Star	IVECO	SCANIA	UD	VOLVO
Model	CXZ 455	CXZ 411 Prem	Granite Prime Mover MP8 710	Constellation Series II 5800SS	2014 Stralis AD500	G 480 LA6X4MNA	GW26470HAA	FM13 6x4 Prime Mover Air Ride
GCM	57000kg	54000kg	136000kg	106000kg	90000kg	85000kg	70000kg	90000kg
Horsepower	455hp		500hp	500hp	500 hp	480hp	470hp	500hp
Engine Type	Isuzu 6WG1-TCC, 6 cylinders	Isuzu 6WG1-TCC, 6 cylinders	Mack MP8 Eu5 12.8l, 6 cylinder Diesel	Detroit DD15 ERG , 6 cylinder Diesel	Euro V Cursor 13l	Scania DC13	GE13-TD	Eu5 SCR 13l
Transmission	Manual 18 Speed	A-MT 12 Speed	A-MT 12 Speed	A-MT 18 Speed	Auto 16 Speed	Manual 14 speed	Auto 18 Speed	Volvo I-Shift Auto 12 Speed
Turning Circle*	16.1m		17.3m		16.5m			
Price	\$ 142,431.47	\$ 143,214.07	\$ 240,200.00	\$ 199,659.00	\$ 194,900.00	\$ 225,023.00	\$ 206,225.00	\$ 218,500.00
Extras	evertrans equipment	evertrans equipment						
	\$ 19,100.00	\$ 19,100.00						
Total Vehicle Price	\$ 161,531.47	\$ 162,314.07	\$ 240,200.00	\$ 199,659.00	\$ 194,900.00	\$ 225,023.00	\$ 206,225.00	\$ 218,500.00

Note: Prices above are GST exclusive

Indicative pricing has also been obtained for the purchase of a lead tri-axle side tipping trailer and dolly from Evertrans which is presented below. This is beyond the current purchasing capacity of the 2013/2014 budget unless loan funding is utilised.

Tri-axle side tipping semi-trailer	\$90,000 excluding GST
Tandem axle dolly	\$26,000 excluding GST
Total	\$116,000 excluding GST

4.2 Operating Cost Comparatives

Upgrading a semi-trailer to a road train arrangement will incur additional or increased expenses. The following table demonstrates and compares Council's current operating costs for a semi-trailer as well as the estimated operating costs for a road train ensemble.

Operating Costs Semi-Trailer VS. Road Train		
Expenses	Semi-Trailer	Road Train
Fuel	1.8km/l	1.4km/l
Tyres	22 tyres at \$300	42 tyres at \$300
Insurance (annually)	Prime Mover \$2322 Trailer \$ 1511	Prime Mover \$4500 Trailer 1 \$1511 Trailer 2 \$2000 Dolly \$600
Registration (annually)	Prime Mover \$264 Trailer \$24.50	Prime Mover \$350 Trailer \$24.50 Trailer \$24.50 Dolly \$40
Number Plates (once)	3 total \$48	5 total \$96
Accreditation	Not applicable	Not applicable

4.3 Advantages and Disadvantages of a Road Train Operation

Advantages:

- Volume of material hauled will be double that of a single trailer (18m³ vs 36m³) meaning more production, efficiency, and less hours to complete jobs.
- Most re-sheeting jobs will be able to be completed in-house meaning a significant cost saving on hiring from sub-contractors.
- Delivery of materials such as aggregate for sealing (600 tonne required for Devils Creek) will be able to be completed in-house and not by sub-contractors.
- Maintenance on rural roads (especially patching blowouts at harvest time) will be able to be completed more efficiently and with less damage to roads as 36m³ will be hauled in a single trip as oppose to 5m³ on the single axel maintenance truck.
- Materials required for town services can be hauled in house and stockpiled in the depots making operations more efficient and providing a supply of materials to the community.
- Blowouts on haul roads from gravel pits to re-sheets will be less prominent, because with the smaller trucks which are in use now, overloading is an issue to meet schedule and budget requirements meaning significant increases in loading per axel.
- Resale value on a road train rated prime mover will be significantly more than a current prime mover as it is far more appealing to the market.

Disadvantages

- Greater turning circles required for turnarounds on haulroads (minimum 18m required in the road corridor).
- MC licence required to operate vehicle along with more experience.
- Maintenance costs will increase slightly due to having the requirements of an extra trailer and dolly (tyres, brakes etc.).
- Increase in running costs (rego, fuel consumption).

4.4 Comparative efficiency table

The main objective of buying and utilising a road-train for the Shire of Jerramungup is to decrease the overhead expenses for the road construction program.

The spreadsheet below demonstrates the potential savings from engaging Council's own road train compared to hiring additional contractor truck and haulage resources for the scheduled jobs. The utilisation of a Council owned road train arrangement rather than the existing semi-trailer arrangement has the potential to save around \$34,000 per annum based on our existing road construction program which is likely to be replicated in size in future years. This is achieved through a reduction in days required to complete the gravel haul. At present to achieve job efficiency external contract trucks are utilised of which the cost is presented below as well.

Single Trailer Vs Road Train Assessment on Construction Jobs 2013 / 2014												
Calculations based on one 18m3 Trailer												
Construction Job location	Approx Gravel Required (m3)	No. Loads Required for single trailer (18m3 / trailer)	Length of Lead from gravel pit to center of job (km)	Number of loads per hour to job	Total loads per day (8 hr working time)	Total Volume hauled per day	Total days to complete	Charge out rate on single trailer + prime mover / hr	Operator Cost \$/Hr	Charge out rate / day (8 hours working time)	Total cost to complete jobs	Total cost haul per m3
Rabbit Proof Fence	5,500	306	4.00	3	24	432	12.73	100	27	1016	\$ 12,935.19	\$ 2.35
Devils Creek Road	10000	556	1.00	3	24	432	23.15	100	27	1016	\$ 23,518.52	\$ 2.35
Marnigarup West	8000	444	3.50	3	24	432	18.52	100	27	1016	\$ 18,814.81	\$ 2.35
Monjebup Road	8000	444	4.50	2.5	20	360	22.22	100	27	1016	\$ 22,577.78	\$ 2.82
Boxwood Ongerup	6000	333	15.00	1	8	144	41.67	100	27	1016	\$ 42,333.33	\$ 7.06
Fitzgerald Road	6000	333	20.00	1	8	144	41.67	100	27	1016	\$ 42,333.33	\$ 7.06
TOTAL / AVG											\$ 162,512.96	\$ 4.00
Calculations based on one 36m3 Road Train												
Construction Job location	Approx Gravel Required (m3)	No. Loads Required for Roadtrain (36m3 / trailers)	Length of Lead from gravel pit to center of job (km)	Number of loads per hour to job	Total loads per day (8 hr working time)	Total Volume hauled per day	Total days to complete	Charge out rate on Road Train + prime mover / hr	Operator Cost \$/Hr	Charge out rate / day (8 hours working time)	Total cost to complete jobs	Total cost haul per m3
Rabbit Proof Fence	5,500	153	4.00	2	16	576	9.55	140	27	1336	\$ 12,756.94	\$ 2.32
Devils Creek Road	10000	278	1.00	2	16	576	17.36	140	27	1336	\$ 23,194.44	\$ 2.32
Marnigarup West	8000	222	3.50	2	16	576	13.89	140	27	1336	\$ 18,555.56	\$ 2.32
Monjebup Road	8000	222	4.50	2	16	576	13.89	140	27	1336	\$ 18,555.56	\$ 2.32
Boxwood Ongerup	6000	167	15.00	1	8	288	20.83	140	27	1336	\$ 27,833.33	\$ 4.64
Fitzgerald Road	6000	167	20.00	1	8	288	20.83	140	27	1336	\$ 27,833.33	\$ 4.64
TOTAL / AVG											\$ 128,729.17	\$ 3.09
TOTAL SAVING BY USING A ROAD TRAIN COMPARED TO SINGLE TRAILER											\$ 33,783.80	\$ 0.91
Cost Hiring Extra Side tipper for Re-sheeting Works (Single trailer)												
Construction Job location	Rate	Hours / Day	Days Required	Total								
Rabbit Proof Fence	\$ 145.00	8	0	\$ -								
Devils Creek Road	\$ 145.00	8	15	\$ 17,400.00								
Marnigarup West	\$ 145.00	8	10	\$ 11,600.00								
Monjebup Road	\$ 145.00	8	10	\$ 11,600.00								
Boxwood Ongerup	\$ 145.00	8	12	\$ 13,920.00								
Fitzgerald Road	\$ 145.00	8	10	\$ 11,600.00								
TOTAL				\$66,120.00								
Cost Hiring Extra Side tipper for Re-sheeting Works (Road Train)												
Construction Job location	Rate	Hours / Day	Days Required	Total								
Rabbit Proof Fence	\$ 160.00	8	0	\$ -								
Devils Creek Road	\$ 160.00	8	10	\$ 12,800.00								
Marnigarup West	\$ 160.00	8	7	\$ 8,960.00								
Monjebup Road	\$ 160.00	8	7	\$ 8,960.00								
Boxwood Ongerup	\$ 160.00	8	10	\$ 12,800.00								
Fitzgerald Road	\$ 160.00	8	10	\$ 12,800.00								
TOTAL				\$56,320.00								

4.5 Estimated time to complete Construction Program

One of the major points that need to be considered in this assessment is the estimated time to complete the construction program. The key concern is that the construction crew may run out of jobs if the time to complete each one is reduced significantly.

To assess this, a time management plan for the construction program on Marnigarup West Road is displayed in the table below. The estimated time-frame for completion of that program is 30 days with 13 of those days being scheduled for hauling gravel. Utilising Council's semi-trailer, the works crew will not be able to finish the cartage of gravel in the set time. At this point, the engagement of sub-contractors is necessary to guarantee the completion of the job according to the time schedule.

For that reason, purchasing a road train arrangement could result in the reduction of expenses, not through time-savings but through saving the costs of external sub-contractors. Another benefit resulting from this is the elimination of the risk of dependency on external contractors, to finish Council's work.

Marnigarup West Construction Program																																						
WORKS CREW																																						
Day			1	2	3	4	5		6	7	8	9	10		11	12	13	14	15		16	17	18	19	20		21	22	23	24	25		26	27	28	29	30	
Clearing / Grubbing																																						
Forming / Earthworks																																						
Cut to fill																																						
Installing Culverts																																						
Carting / Conditioning / spreading gravel																																						
Final Trim / Roll																																						
Program = 13 days to move required gravel																																						
SINGLE TRAILER																																						
Construction Job location	Approx Gravel Required (m3)	No. Loads Required for single trailer	Length of Lead from gravel pit to center of job (km)	Number of loads per hour to job	Total loads per day (8 hr working time)	Total Volume hauled per day	Total days to complete																															
Marnigarup West	8000.0	444.4	3.5	3.0	24.0	432.0	18.5																															
To complete job in require timeframe an additional trailer needs to be hired:																																						
Construction Job	Rate	Hours / Day	Days Required	Total																																		
Marnigarup West	160.0	8.0	6.0	\$ 7,680.0																																		
ROAD TRAIN																																						
Construction Job location	Approx Gravel Required (m3)	No. Loads Required for single trailer	Length of Lead from gravel pit to center of job (km)	Number of loads per hour to job	Total loads per day (8 hr working time)	Total Volume hauled per day	Total days to complete																															
Marnigarup West	8000.0	222.2	3.5	2.0	16.0	576.0	13.9																															
Therefor by utilising our in house road train the job can be completed within the timeframe without the use of subcontractors.																																						

6. Risk Assessment

Identified Risks	Risk Assessment		Risk Rating	Treatment Options
	Consequence	Likelihood		
1.1 Workforce Changeover results in no qualified operator	Moderate	Likely	High	<p>Control</p> <p>Ensure that at least 2-3 staff are qualified and trained to operate the Road Train.</p> <p>Administrative - Training Administrative - Licenses</p>
1.2 Staff absence resulting in no qualified operator during a job	Moderate	Likely	High	<p>Control</p> <p>Ensure that at least 2-3 staff are qualified and trained to operate the Road Train. Or release the rear trailer to allow HC licensed to operate the machine at a reduced capacity.</p> <p>Engineering - Modification Administrative - Licenses</p>
1.3 Not having “turnaround spots” big enough to accommodate Road Train	Moderate	Almost Certain	Extreme	<p>Control</p> <p>Widen designated sections of road and fill in drains at the side of the road.</p> <p>Engineering - Modification Administrative - Induction</p>
1.4 Change in Legislation increases licensing requirements	Minor	Possible	Medium	<p>Control</p> <p>Keep abreast of Main Roads WA and Department of Transport requirements in relation to Road Train operation</p> <p>Administrative - Licenses</p>
1.5 Plant breakdown results in no gravel haul	Major	Possible	Extreme	<p>Control</p> <p>Maintain relationships with contractors for backup and ensure preventative maintenance is carried out</p> <p>Engineering - Maintenance Administrative – Panel Contract</p>

Table 2: Likelihood Matrix

Level	Descriptor	More Detail	As a guide...
A	Almost certain	Is expected to occur in most circumstances	Once in a year
B	Likely	The event will probably occur at least once	Once in 3 years
C	Possible	The event might occur at some time	Once in 10 years
D	Unlikely	The event is not expected to occur	Once in 30 years
E	Rare	The event may occur only in exceptional circumstances	Once in 100 years

Table 3: Level of Risk

		Consequence				
		1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
Likelihood	A Almost Certain	High	High	Extreme	Extreme	Extreme
	B Likely	Medium	High	High	Extreme	Extreme
	C Possible	Low	Medium	High	Extreme	Extreme
	D Unlikely	Low	Low	Medium	High	Extreme
	E Rare	Low	Low	Low	High	High

7. Other Considerations

The 2013/2014 budget currently includes a \$75,000 net changeover figure for the Isuzu Giga Prime Mover. This consists of \$140,000 for the purchase of the new prime mover and \$65,000 for the trade of the old machine.

Should Council seek to resource a higher costing machine the following options are recommended for endorsement through a budget amendment:

- 1) Utilise savings made from the purchase of the light utilities - \$22,000
- 2) Utilise the Plant Reserve - \$75,000 has been transferred to this reserve in 2013/2014 and the current balance is \$110,798

The original budget for the trade in of Council's 2005 Isuzu Giga was \$65,000. Current market data suggests that the trade in figure is more likely to be in the vicinity of \$50,000. This will need to be accounted for when finalising the purchase of the machine.

A Fatigue Management Plan might need to be considered in the case of extraordinary working conditions (Bushfire etc. may result in changing the state of driver to "Commercial Vehicle Driver", reference Code of Practice, Fatigue Management Commercial Vehicle Drivers)

8. Associated Documents

- Various quotes for prime mover, trailer and dolly
- Road Traffic Act 1974
- Road Traffic Regulations 2002
- Occupational Health and Safety Act 1984, Code of Practice Fatigue Management Commercial Vehicle Drivers
- Advice from Main Roads WA in relation to accreditation and fatigue management

CEO Authorisation: _____ Date: _____