



Greenfield Technical Services
Geraldton

GRAIN HAULAGE ROUTE OPTIONS STUDY

***Access to Geraldton –Mt Magnet Rd between
Eradu North Rd and Yuna-Tenindewa Rd***

Prepared for:

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1.0 INTRODUCTION

Within the localities of Eradu, Ambania and Tenindewa, there are a number of roads which provide access for farm properties north of the Geraldton-Mt Magnet Rd during the grain harvest. Some of these crossings are restricted to a maximum heavy vehicle length of 30m because of limited stacking distance to the railway crossing. However, heavy vehicles >30m long are currently using these restricted routes illegally or travelling through private property to gain access to the Geraldton-Mt Magnet Road.

The City of Greater Geraldton (CGG) has previously investigated alternative grain haulage routes and options, including (i) a new rail crossing and 2.5km realignment associated with Peter Rd and (ii) creation of a new access via an extension of Cream Rd. This previous work resulted in a report to Council at the Ordinary Meeting of 26 February 2013. At this meeting Council resolved to undertake an options analysis for truck transport in this district, particularly access and movement on and off the Geraldton-Mt Magnet Road, and that such analysis should:

- a) make an assessment of actual traffic volumes of the State and local roads in the localities;
- b) quantify the expected demand and nature of the traffic;
- c) develop road transport options for servicing the localities and include analysis of connectivity to other areas such as the Yuna - Tenindewa Rd;
- d) provide indicative cost estimates for each of the options considered

CGG engaged Greenfield Technical Service (GTS) to undertake the analysis as detailed above.

2.0 BACKGROUND

In Western Australia the movement of large heavy vehicles (>19.0m in length) is regulated by Main Roads WA (MRWA) via the Restricted Access Vehicle (RAV) permit system. In the localities of Eradu, Ambania and Tenindewa, the local roads listed in Table 2.1 access the Geraldton-Mt Magnet Rd via a crossing over the railway line operated by Brookfield Rail. Note that RAV Network 5-8 allows access for all vehicles up to 36.5m in length.

Item	Road	MRWA RAV Classification
1	Peter Rd	Network 8
2	Desmond Rd	Network 8
3	Tenindewa North Rd	Network 8
4	Eradu North Rd	Network 7 – Between Geraldton-Mt Magnet Rd and the boundary of property A61109 and A8908 Network 8 – North of the boundary of property A61109 and A8908
5	Yuna-Tenindewa Rd	Network 8

Table 2.1 Summary of road access over trail line and associated RAV network classification

However, intersections located in the immediate vicinity of rail crossings require a certain “stacking distance” to allow the RAV vehicles to safely fit between the rail crossing and the intersection. The current intersection configurations for roads 1, 2 and 3 listed above only provide sufficient stacking distance for RAV network 4 vehicles (up to 27.5m long). This has resulted in MRWA putting a condition on RAV network access over these crossings which states that no access is permitted for combinations exceeding 30m in length.

Currently this leaves only Eradu North Rd and Yuna – Tenindewa Rd as the only permitted access points for RAV network 5-8 vehicles in this area. It is worth noting that Eradu North Rd has limited stacking distance on the north side of the crossing where it intersects with Rose Rd. However, it appears that as Rose Rd is a no through road and that this crossing is approx 1.9km north of the Geraldton-Mt Magnet Rd, MRWA have decided not to put a restriction on it.

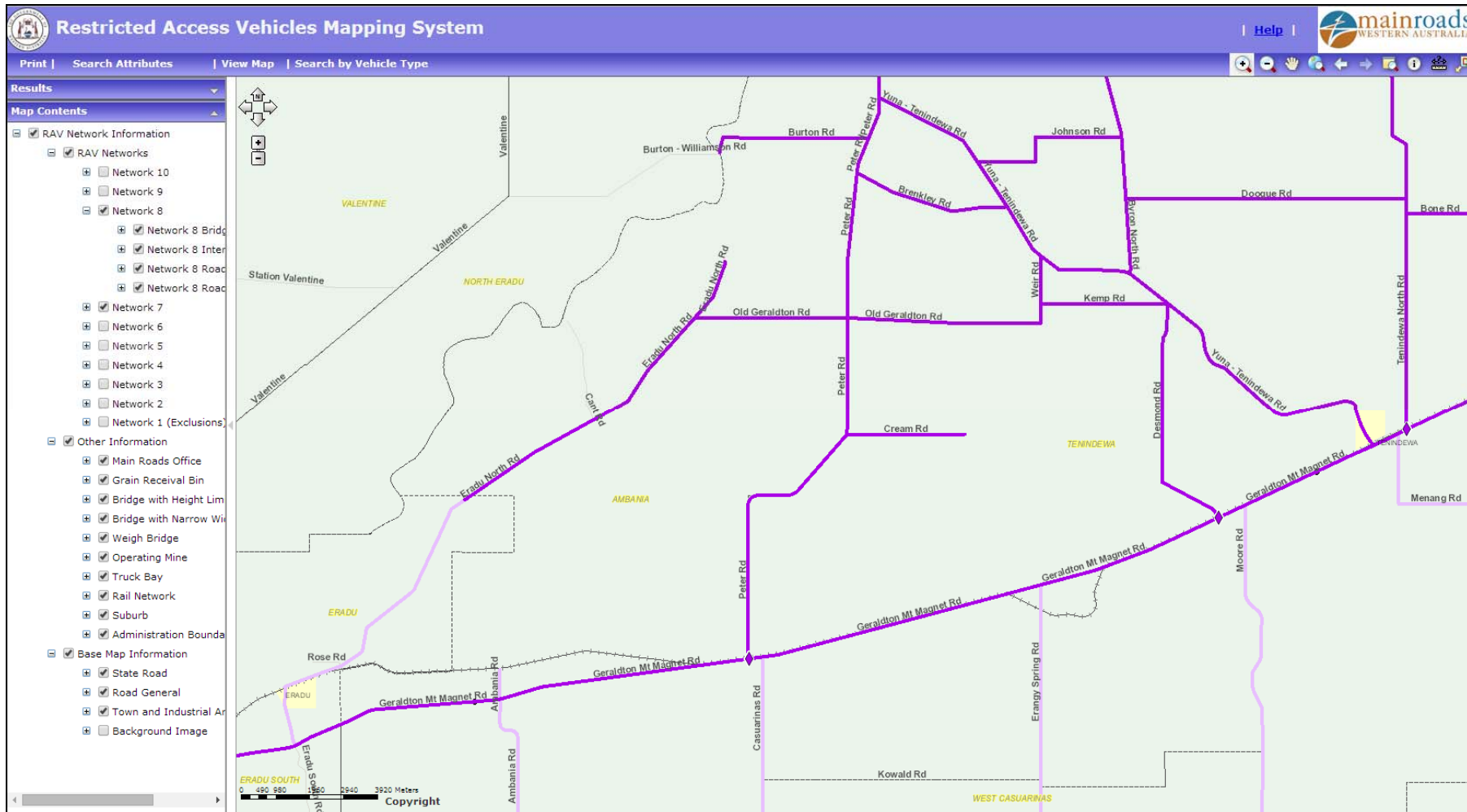


Fig 2.1 Summary of road access over rail line and associated RAV network classification

◇ Denotes special conditions relating to the railway crossings

3.0 SCOPE OF ROUTE OPTIONS STUDY

The scope of the includes :

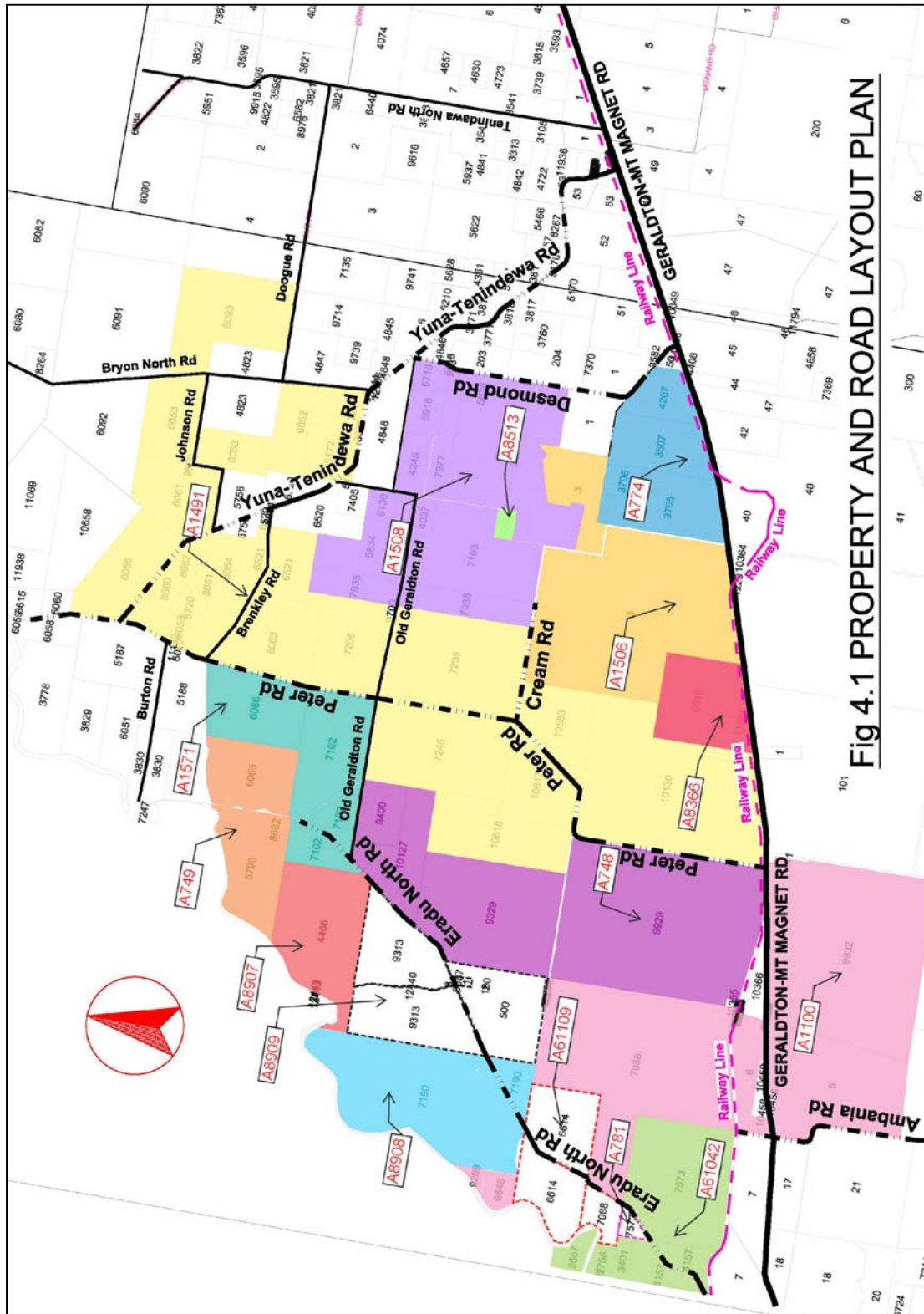
- (i) **Desktop assessment of all routes & options**
- (ii) **Development of an assessment matrix for all options**
The matrix should include current and future traffic demand, risk assessment, cost of upgrades and cost benefit.
- (iii) **Production/Demand for identified properties**
This will also include potential growth projections (actual or anecdotal).
- (iv) **Traffic counts at all intersection listed as well as growth projections**
- (v) **Identify and assess risk (inc required approvals) for Environment/Heritage**
- (vi) **Identify and assess risk for Land Requirements**
- (vii) **Identify (using DBYD) and assess risk for Service Relocations**
- (viii) **Stakeholder Consultation inclusive of property owners**
- (ix) **Study Report**
- (x) **Study Program to implement any recommendations**

4.0 PROPERTY OWNERS

CGG provided a list of property owners in the study area. Refer Table 4.1 and Fig 4.1 below.

Property Stakeholder No	CGG Land Rate No	Property Address	Owner's Name
A	A748	515 Peters Rd ABMANIA WA 6632	PT Freeman Pty Ltd
B	A1491	90 Brenkley Rd TENINDEWA WA 6632	Nino Messina Pty Ltd
C	A8366	Lot 9316 Geraldton-Mt Magnet Rd TENINDEWA WA 6632	National Parks & Nature Conservation Authority
D	A1506	357 Desmond Rd TENINDEWA WA 6632	Wangagulu Nominees Pty Ltd
E	A1508	786 Old Geraldton Rd TENINDEWA WA 6632	Glenn Charles Thomas
F	A8513	Lot 7349 Old Geraldton Rd TENINDEWA WA 6632	State of WA
G	A774	6827 Geraldton-Mt Magnet Rd TENINDEWA WA 6632	Murray Allan Smith
H	A1100	6632 Geraldton-Mt Magnet Rd AMBANIA WA 6632	Green Nominees (DA & DE Green)
I	A61109	Lot 6614 Eradu North Rd ERADU 6532	
J	A61042	199 Eradu North Rd ERADU 6532	Leslie Francis Cream
K	A781	Lot 7573 Eradu North Rd ERADU 6532	
L	A8908	Lot 719 Cant Rd ERADU 6532	Bundear Nominees Pty Ltd
M	AA1571	287 Old Geraldton Rd AMBANIA 6630	Peter Barnetson
N	A8909	Lot 500 Eradu North Rd ERADU 6532	
O	A8907	Lot 4466 Cant Rd ERADU 6532	Samberco Pty Ltd
P	A749	Lot 6790 Peters Rd TENINDEWA 6630	Koorinya Pty Ltd

Table 4.1 Summary of property owners in study area



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5.0 TRAFFIC ANALYSIS

5.1 CGG Traffic Counts

CGG provided two series of traffic counts for each of the roads listed in the study as follows:

Count No 1 : 14 day count from 05 Nov to 19 Nov 2013

Count No 2 : 30 day count from 19 Nov to 19 Dec 2013

These counts recorded all RAV and Non-RAV traffic on these roads. Although the maximum vehicle permitted on these roads is a RAV Network 8, there were RAV Network 9 and 10 vehicles recorded on both Desmond Rd (4) and Yuna-Tenindewa Rd (31). For comparative purposes and based on the estimated volume of material carted by each vehicle, a conversion factor of 1.5 has been applied to convert these vehicles to equivalent RAV Network 8 vehicles.

A combined summary of these vehicle counts is shown in Table 5.1 below. Please note that GMM in the location column refers to the Geraldton-Mt Magnet Rd.

Count No	Road Name	Location	Total No of Vehicles	Average No of Vehicles Per Day	NON RAV – Light Vehicles & Trucks up to 19.0m		RAV 2 - 4 19.0m< Trucks <30m		RAV 5 - 8 Trucks >30.0m	
					Count	%	Count	%	Count	%
1	Ambania Rd (Nth)	Near GMM Rd	19	1.7	19	100	0	0	0	0
2	Desmond Rd	100m from GMM Rd	938	21.3	907	96.7	12	1.3	20	2.1
3	Eradu Nth Rd	400m from GMM Rd	2410	54.8	2053	85.2	151	6.3	206	8.5
4	Peter Rd	300m from GMM Rd	1811	41.6	1334	73.7	34	1.9	443	24.5
5	Yuna Teninndawa Rd	400m from GMM Rd	1520	34.5	1221	80.3	68	4.5	231	15.2

Table 5.1 Summary of total 44 day traffic (Combination of Count No 1 and 2)

Please note that in Table 5.1 the count for Ambania Rd was only an 11 day count due to damaged cables.

Based on the fact that no RAV vehicles were recorded on Ambania Rd it has not been included in any of the traffic analysis below.

The traffic data was analysed in terms of the different RAV categories and the distribution across the various roads in the area, as summarized in Table 5.2 below.

Item	Vehicle Class	TOTAL VEHICLE COUNT	VEHICLE COUNT Desmond Rd			VEHICLE COUNT Eradu North Rd			VEHICLE COUNT Peter Rd			VEHICLE COUNT Yuna-Tenindewa Rd		
			Total	Daily	%	Total	Daily	%	Total	Daily	%	Total	Daily	%
1	NON RAV Light Vehicles & Trucks up to 19.0m	5534	907	20.6	16.4	2053	46.7	37.1	1334	30.3	24.1	1221	27.8	22.1
2	RAV 2 - 4 19.0m< Trucks <30m	265	12	0.3	3.3	151	3.4	41.4	34	0.8	9.3	68	1.5	18.6
3	RAV 5 - 8 Trucks >30.0m long	900	20	0.5	2.2	206	4.7	22.9	443	10.1	49.2	215	4.9	23.9

Table 5.2 Distribution of RAV categories for the 44 day combined count (Combination of Count No 1 and 2)

5.2 Analysis of Traffic Count Data

As stated in Section 1.0 and 2.0, only Eradu North Rd and Yuna-Tenindewa Rd are permitted for RAV Network 5-8 vehicles. However the traffic counts reveal that the overwhelming majority of RAV Network 5-8 vehicles in the area are using Peter Rd.

6.0 CONSULTATION WITH STAKEHOLDERS

6.1 Property Stakeholders

A questionnaire was issued to all the property owners in the area to gain some feedback about current and future heavy vehicle route requirements in relation to both the existing and possible future level crossing configurations. Refer Appendix B Questionnaires.

The questionnaire included questions related to the current and future harvest yields, current and future grain transport logistics and feedback on both a preferred as well as other possible upgrade options.

There were 14 properties identified in the study area. These properties belonged to 11 different owners. Completed questionnaires were received from 7 of the 11 owners. The results of these questionnaires are summarised in Table 6.1.

6.2 Trucking Contractors

Pirone's Sand Supplies provides transport services in the Midwest region and is employed by a number of the farmers in the area. John Pirone made contact with GTS on the suggestion of some of the farmers in the area.

Mr Pirone expressed his, and his driver's concerns regarding the current Eradu North Rd and Geraldton-Mt Magnet Rd intersection layout. Although there is no stacking distance issue at this intersection, Mr Pirone noted that the location of this intersection is on the inside of a curve in a dip which results in limited sight distance to the east and west for vehicles exiting Eradu North Rd. Mr Pirone suggested that any upgrade of the Eradu North Rd link should include improvements to this intersection.

6.3 Main Roads and Brookfield Rail

The Geraldton – Mt Magnet Rd is under the authority of Main Roads. Any modifications to the alignment or to the layout of intersections on this road are subject to the approval of Main Roads.

Also, any new road rail crossing is subject to approval from both Main Roads and Brookfield Rail.

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Property Stakeholder No	Assessment No	Property Address	Owner's Name	Address	Total Area of Grain Growing Land in Study Area (Ha)	Total Estimated Harvest 2013-14 (Tonnes)	Total Estimated Harvest 2020 (Tonnes)	Truck Length Used (m)	Grain Receiving Point	Crossing Currently Used for Harvest	Preferred Crossing for Future 36.5m Harvest based on Study Options	
A	A748	515 Peters Rd ABMANIA WA 6632	PT Freeman Pty Ltd (Mr Erling Freeman)	62 Glendinning Road TARCOOLA BEACH WA 6530	3,500*	7,000*	8,500*			Peter Rd*		
B	A1491	90 Brenkley Rd TENINDEWA WA 6632	Nino Messina Pty Ltd	PO Box 1 MULLEWA WA 6630	11,000	20,000 - 23,000	30,000	34	Geraldton Port	Peter Rd	Peter Rd	
D	A1506	357 Desmond Rd TENINDEWA WA 6632	Wangagulu Nominees Pty Ltd	PO Box 198 TENINDEWA WA 6632	5,000	5,000	5,000	30	Geraldton Port	Yuna - Tenindegwa Rd	Yuna - Tenindegwa Rd	
E	A1508	786 Old Geraldton Rd TENINDEWA WA 6632	Glenn Charles Thomas	PO Box 119 MULLEWA WA 6630	6,910	10,000 - 11,000	13,000 - 14,000	27.5 and 36.5	Geraldton Port	Peter Rd (75%) Yuna - Tenindegwa Rd / Tenindegwa North Rd (25%)	1) Peter Rd 2) Cream Rd	
G	A774	6827 Geraldton-Mt Magnet Rd TENINDEWA WA 6632	Murray Allan Smith	PO Box 195 TENINDEWA WA 6632	1,100	2,200	2,600*			Desmond Rd*		
H	A1100	6632 Geraldton-Mt Magnet Rd AMBANIA WA 6632	Green Nominees (DA & DE Green)	68 Glendinning Road TARCOOLA BEACH WA 6530	5,100	10,000	12,250	36.5	Geraldton Port and Moonyoonooka	Direct Access (50%) Eradu North Rd (20%)	Eradu North Rd	
I	A61109	Lot 6614 Eradu North Rd ERADU 6532		1,000	2,000	2,400	Ambania South Rd (30%)					
J	A61042	199 Eradu North Rd ERADU 6532	Leslie Francis Cream	199 Eradu North Rd ERADU WA 6532	2,600	3,000	3,900	27.5	Geraldton Port and Moonyoonooka	Eradu North Rd	Eradu North Rd	
K	A781	Lot 7573 Eradu North Rd ERADU 6532		400	500	600	Eradu North Rd					
L	A8908	Lot 719 Cant Rd ERADU 6532	Bundear Nominees Pty Ltd	42 Glendinning Road TARCOOLA BEACH WA 6530	1,500*	3,000*	3,600*			Eradu North Rd*		
M	AA1571	287 Old Geraldton Rd AMBANIA 6630	Peter Barnetson	PO Box 139 MOONYOONOOKA WA 6532	1,250	2,500	5,250	36.5	Geraldton Port	Peter Rd	1) Eradu North Rd 2) Ambania Rd	
N	A8909	Lot 500 Eradu North Rd ERADU 6532		1,250	2,500	5,250	Eradu North Rd					
O	A8907	Lot 4466 Cant Rd ERADU 6532	Samberco Pty Ltd	PO Box 188 MULLEWA WA 6630	680	1,200	1,400	36.5	Geraldton Port and Moonyoonooka	Eradu North Rd	Ambania Rd	
P	A749	Lot 6790 Peters Rd TENINDEWA 6630	Koorinya Pty Ltd	C/- Post Office TENINDEWA WA 6632	900*	1,800*	2,100*			Eradu North Rd*		
TOTAL					42,190	72,700	96,350					
Desmond Rd					1,100	2,200	2,600					
Eradu North Rd					8,350	14,000	19,300					
Peter Rd					20,933	38,875	53,875					
Yuna-Tenindegwa Rd					6,728	7,625	8,375					

Note : * denotes estimated

Table 6.1 Summary of questionnaire responses received from property owners

Note CGG to determine whether this table should be deemed confidential information

7.0 ROUTE ASSESSMENT AND IMPROVEMENT OPTIONS

The summary of the route assessment details below is shown in Tables 7.4 and 7.5 (pages 18, 19 and 20).

The basic layout plans of each of the routes are shown in Appendix A.

7.1 YUNA-TENINDEWA RD

7.1.1 Associated Land and Yield

The Yuna-Tenindewa Rd (Y-T Rd) route currently services multiple property stakeholders representing **approximately 6,500Ha of growing land and 7,500 tonnes of grain per annum within the study area**. However it is important to understand that the traffic volumes summarised in Section 5.0 include catchment from outside of the study area.

7.1.2 Existing Rail Crossing and Intersection

The Y-T Rd approach to Geraldton-Mt Magnet Rd is straight and intersects at approximately 90deg. The current rail crossing provides safe stacking distance for a maximum vehicle length of 36.5m between the rail and Geraldton-Mt Magnet Rd. There is more than 400m of Safe Intersection Sight Distance (SISD) to the east and the west which is more than that required by Austroads design standards.

7.1.3 New Users

The Y-T Rd route is the furthest east of all the routes. In that sense it is not likely to attract many new users from land west of Y-T Rd as this would increase the haul distance as a result of a large amount of backtracking as summarised in Table 7.1 below.

This is confirmed in the completed questionnaires which indicated that only one land owner nominated the Y-T Rd crossing as the preferred development option. This land owner also currently uses the Y-T Rd crossing.

Item	Current Crossing Used	Additional One-Way Haul Distance Resulting from Using Yuna-Tenindewa Rd (km)
1	Desmond Rd	>10
2	Peter Rd	Approx 30
3	Eradu North Rd	Approx 45

Table 7.1 Summary of additional haul distance based on using Yuna-Tenindewa Rd access

7.1.4 Proposed Upgrade Work

This route currently provides permitted access to allow RAV Network 5-8 vehicles over the rail crossing. Therefore the improvement options would largely be focused on improving access to this route for possible new users. However there is already reasonably good RAV Network 7 to Y-T Rd via Old Geraldton Rd, Kemp Rd and Brenkley Rd for properties to the west.

7.1.5 Impact on Utility Services

There is no route development envisaged, therefore no impact on utility services.

7.1.6 Required Clearances and Approvals

There is no route development envisaged, therefore there are no clearances required.

7.2 DESMOND RD

7.2.1 Associated Land and Yield

The Desmond Rd route currently services one property stakeholder representing approximately 1,100Ha of growing land and 2,200 tonnes of grain per annum within the study area.

7.2.2 Existing Rail Crossing and Intersection

The Desmond Rd approach to Geraldton-Mt Magnet Rd incorporates a right hand curve followed by a straight approximately 200m long and intersects at approximately 90 degrees. The current rail crossing provides safe stacking distance for a maximum vehicle length of 30m between the rail and Geraldton-Mt Magnet Rd. There is more than 400m of SISD to the east and the west which is more than that required by Austroads design guidelines.

7.2.3 New Users

The Desmond Rd route is the second furthest east of all the routes. In that sense it is not likely to attract many new users as this would increase the haul distance as a result of a large amount of backtracking as summarised in Table 7.2 below.

This is confirmed in the completed questionnaires which indicated that none of the land owners nominated the Desmond Rd crossing as the preferred development option.

Item	Current Crossing Used	Additional One-Way Haul Distance Resulting from Using Desmond Rd (km)
1	Peter Rd	Approx 25
2	Eradu North Rd	Approx 40

Table 7.2 Summary of additional haul distance based on using Desmond Rd access

7.2.4 Proposed Upgrade Work

Notwithstanding the above, if this route were upgraded to provide permitted access for RAV Network 5-8 vehicles, the only feasible option is to realign Geraldton-Mt Magnet Rd. This would require offsetting the Geraldton – Mt Magnet Rd to the south (*by approx 15m at the intersection*) over a distance of approx 800m to provide the sufficient stacking distance on Desmond Rd.

7.2.5 Impact on Utility Services

Any realignment of the Geraldton-Mt Magnet Rd is likely to impact on the Telstra distribution cable in the southern verge. This cable will need to be relocated to accommodate the new road alignment.

7.2.6 Required Clearances and Approvals

The road realignment works will require a clearing permit and a heritage survey.

There will also be approximately 1.2Ha of land acquisition required as well as approval from Main Roads to undertake the road realignment. It is most likely that any re-alignment of Geraldton-Mt Magnet road will want to be managed by Main Roads.

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7.3 CREAM RD

7.3.1 Associated Land and Yield

Cream Rd intersects with Peter Rd however it does not currently connect to the Geraldton – Mt Magnet Rd. There are no property stakeholders currently dependant on the Cream Rd route.

7.3.2 Existing Rail Crossing and Intersection

There is no existing rail crossing on Cream Rd and there is no existing intersection with the Geraldton-Mt Magnet Rd.

7.3.3 New Users

A proposal to extend Cream Rd to intersect with Geraldton – Mt Magnet Rd could possibly attract users currently on Desmond Rd. There is a possibility that some users currently on Peter Rd could use the proposed Cream Rd route however this is not likely given that it would increase the haul distance as a result of backtracking as summarised in Table 7.3 below.

This probable lack of new users is confirmed in the completed questionnaires which did not include any nomination of Cream Rd as the preferred development option.

Item	Current Crossing Used	Additional One-Way Haul Distance Resulting from Using Cream Rd (km)
1	Peter Rd	Approx 10
2	Eradu North Rd	Approx 35

Table 7.3 Summary of additional haul distance based on using Cream Rd access

7.3.4 Proposed Upgrade Work

Notwithstanding the above, if this route were upgraded to provide permitted access for RAV Network 5-8 vehicles, the scope of works would generally include the following:

- construction of approx 7km of new Cream Rd extension to create new intersection with Geraldton – Mt Magnet Rd
- upgrade of existing 2km length of Cream Rd

The likely location for the intersection with Geraldton-Mt Magnet Rd is approximately 250m west of the Erangy Springs Rd intersection. Based on this location, the rail crossing on Geraldton-Mt Magnet Rd is approximately 750m to the west and the end of the westbound passing lane is approximately 400m to the east.

This proposed location will result in vehicles turning right out of Cream Rd having to accelerate up a steady incline which will have a large impact on fast moving traffic coming from the east. Given that there is already a passing lane immediately to the east, this situation is not satisfactory and any such proposal is unlikely to be supported by Main Roads.

7.3.5 Impact on Utility Services

The extension of Cream Rd will cross the AARNet cable as well as the Telstra fibre optic cable. It is likely that both these cables will require protection and pits on either side of the road crossing.

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7.3.6 Required Clearances and Approvals

A heritage survey will be required for this work. However, depending on the exact location of the proposed alignment, a clearing permit may or may not be required.

As the road extension will go through some existing farmland, approval will be required from the affected landowners. The road extension will require approximately 10.4Ha of land acquisition.

Approval will also be required from Main Roads for the new intersection with Geraldton-Mt Magnet Rd.

7.4 PETER RD

7.4.1 Associated Land and Yield

The Peter Rd route currently services multiple property stakeholders representing **approximately 20,000Ha of growing land and 37,000 tonnes of grain per annum within the study area**. However it is important to understand that the traffic volumes summarised in Section 5.0 are likely to include catchment from outside of the study area.

7.4.2 Existing Rail Crossing and Intersection

The Peter Rd approach to Geraldton-Mt Magnet Rd is straight and intersects at approximately 90 degrees. The current rail crossing provides safe stacking distance for a maximum vehicle length of 30m between the railway and Geraldton-Mt Magnet Rd. At the intersection there is more than 400m of SISD to the east and the west.

7.4.3 New Users

The Peter Rd route is fairly central to the study area however it is unlikely to attract many new users given that:

- the properties further to the east are likely to use the Yuna-Tenindewa Rd route which is sealed and already permits RAV network 5-8 vehicles
- the properties further to the west are likely to use the Eradu North Rd route which already permits RAV network 5-8 vehicles

If those currently using the Eradu North Rd route were to use Peter Rd, this would increase the one-way haul distance by approximately 25km due to a large amount of backtracking.

This probable lack of new users is confirmed in the completed questionnaires which did not include any nomination of Peter Rd as the preferred development option by anybody not currently using it.

7.4.4 Proposed Upgrade Work

Notwithstanding the above, if this route were upgraded to provide permitted access for RAV Network 5-8 vehicles, the scope of works would generally include retention of the existing crossing and realignment of approximately 0.8km of Geraldton – Mt Magnet Rd (*offset to the south by approx 15m*).

7.4.5 Impact on Utility Services

The realignment of the Geraldton-Mt Magnet Rd is likely to impact on the Telstra distribution cable, and possibly the Telstra fibre optic, in the right hand verge. These cables are likely to need to be relocated to match the new road alignment.

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7.4.6 Required Clearances and Approvals

A heritage survey and clearing permit will be required for this option. This option will require approximately 1.2Ha of land acquisition as well as approval from Main Roads to undertake the road realignment. Preliminary discussion with Main Roads have indicated that they would have no objections to this option as long as Austroads road design standards are met. It is most likely that any re-alignment of Geraldton-Mt Magnet road will want to be managed by Main Roads.

7.5 ERADU NORTH RD

7.5.1 Associated Land and Yield

The Eradu North Rd route currently services multiple property stakeholders representing **approximately 8,000Ha of growing land and 14,000 tonnes of grain per annum within the study area**. However it is important to understand that the traffic volumes summarised in Section 5.0 are likely to include catchment outside of the study area.

7.5.2 Existing Rail Crossing and Intersection

Although there is no restriction for RAV network 5-8 vehicles at the existing rail crossing, there are a number of safety issues with the existing rail crossing as well as the intersection with Geraldton – Mt Magnet Rd.

Geraldton-Mt Magnet Rd Intersection : The Eradu North Rd approach to Geraldton-Mt Magnet Rd incorporates a left hand curve followed by a straight approximately 100m long and intersects the highway at approximately 90 degrees. The intersection is located on the inside of a curve in a sag and only provides approx 200m of SISD which is significantly less than the minimum 350m recommended by Austroads design standards. Therefore trucks turning right out of Eradu North Rd are likely to have an adverse impact on fast moving traffic from the east.

Rail Crossing: Rose Rd is a no through road with apparently little traffic and forms a T-junction on the curve with Eradu North Rd just north of the rail crossing. The stacking distance on the north side of the rail crossing is barely sufficient to safely stack a RAV network 5-8 vehicle. It appears that Eradu North Rd is effectively the through road and Rose Rd is the terminating road. Refer plan layout in Appendix A.

At this crossing the road also navigates between some farm buildings. In particular there is one building on the inside of the tight 90deg left hand curve (*curve radius approx 30m*) on the northern approach to the rail crossing. This building creates a blind corner so that vehicles on Eradu North Rd approaching the crossing have no sight distance through the corner to see if there is a vehicle coming from the opposite direction. Additionally the width of the gravel road running surface is only about 6m wide which is not sufficient for two roadtrains to pass each other.



Fig 7.1 Northern approach to Eradu North Rd rail crossing

7.5.3 New Users

Although the existing Eradu North Rd crossing of the railway line does not have a restriction for RAV network 5-8 vehicles, due to safety concerns it seems somewhat unlikely that farmers from the eastern end of the district will change their current preferred route to utilise the Eradu North Rd crossing.

This probable lack of new users is confirmed in the completed questionnaires which did not include any nomination of Eradu North Rd as the preferred option by anybody not currently using it.

7.5.4 Proposed Upgrade Work

The above issues relating to the rail crossing and the intersection with Geraldton – Mt Magnet Rd are a significant safety concern for the current traffic volumes, let alone any possible increase in the future. Quite apart from any recommendation in this report, we suggest that CGG investigate opportunities to improve road safety at both the rail crossing and the Geraldton-Mt Magnet Rd intersection.

Geraldton-Mt Magnet Rd Intersection : Increasing the number of trucks travelling through this intersection is likely to increase the risk of an accident at this location. Accordingly, any proposal to improve the Eradu North Rd route would need to include improvements to the SISD at the Geraldton - Mt Magnet Rd intersection to at least 350m. Having said that there is little opportunity available to improve the SISD without costly earthworks to raise the height of the intersection as well as remove existing rock embankment and vegetation from the inside of the curve on Geraldton-Mt Magnet Rd.

Rail Crossing: If the existing road alignment is retained, the width of the road through this curve would need to be a minimum of 16m to allow two roadtrains to pass each other safely. This may be expensive given the services and the dwelling on the inside of the curve.

Additionally there should also be sight distance provided through the curve. This will only be possible if the existing dwelling is removed.

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There is little opportunity for relocation of the crossing to the east as the rail track is duplicated immediately east of the existing crossing. Brookfield Rail have previously indicated that they unlikely to allow road rail crossings over two rail tracks.

7.5.5 Impact on Utility Services

The road widening required at the rail crossing is likely to encroach on the AARNet cable as well as both the Telstra fibre optic and Telstra distribution cables and pits. It is likely that all these cables and associated pits will need to be protected / relocated.

7.5.6 Required Clearances and Approvals

A heritage survey and clearing permit will likely be required for any intersection modifications. Further, approval will also be required from Main Roads to undertake any intersection modifications. It is most likely that any modifications to the Geraldton-Mt Magnet road will want to be managed by Main Roads.

Any modifications to the road rail crossing will likely impact the adjacent dwellings and therefore approval will be required from the affected property owners.

7.6 AMBANIA RD (North)

7.6.1 Associated Land and Yield

Ambania Rd extends south from Geraldton – Mt Magnet Rd. There is an extension of Ambania Rd north of Geraldton-Mt Magnet Rd (*a track which is referred to as Ambania Rd Nth*) currently permitted for RAV Network 7 vehicles however this route resembles a formed access track rather than a formal road. The Ambania Rd (Nth) route currently services just one northside property stakeholder which represents approximately 1,000Ha of growing land and 2,000 tonnes of grain per annum in the study area.

7.6.2 Existing Rail Crossing and Intersection

The existing Ambania Rd (Nth) is approximately 900m long. The road approach to Geraldton-Mt Magnet Rd is straight and intersects at approximately 70 degrees. The current rail crossing is located at the northern end of the road. The location of the intersection with Geraldton-Mt Magnet Rd presents some problems. Firstly the current location of the Amabania Rd (Nth) intersection is directly opposite the Ambania Rd (Sth) intersection which creates a 4-way uncontrolled intersection. Secondly the existing intersection is located :

- on the inside of a horizontal curve
- at the end of a long crest vertical curve immediately to the west and
- towards the end of an extended upward grade from the east.

This results in SISD in the order of 200m to the west. The intersection is located on the inside of a curve in a sag and only provides approx 200m of SISD which is significantly less than the minimum 350m recommended by Austroads design standards.

7.6.3 New Users

A proposal to construct an extension of Ambania Rd (Nth) to connect it to Eradu North Rd might possibly attract users currently on Eradu North Rd.

7.6.4 Proposed Upgrade Work

Notwithstanding the above, if this route were upgraded to provide permitted access for RAV Network 5-8 vehicles, the works would generally include construction of approximately 4.5km

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of new Ambania Rd (Nth) extension to create new intersection with both Eradu North Rd and Geraldton – Mt Magnet Rd.

Allowing a large number of trucks to travel through the existing intersection is likely to increase the risk of an accident at this location. Good engineering practice is to avoid 4-way uncontrolled intersection layouts but instead, offset one of the terminating legs to create two staggered T-junctions. Moving the intersection further to the west reduces the SISD to the east and does not improve the SISD to the west as the intersection is now located further within the crest vertical curve. Therefore the Ambania Rd (Nth) intersection with Geraldton-Mt Magnet Rd would need to be moved a minimum of 250m to the east.

7.6.5 Impact on Utility Services

The new road Ambania Rd (Nth) construction will cross both the AARNet cable as well as the Telstra fibre optic cable which run parallel to the rail line. It is likely that both these cables will require protection and pits on either side of the road crossing.

7.6.6 Required Clearances and Approvals

A heritage survey will be required for this work. However, depending on the exact location of the proposed alignment, a clearing permit may or may not be required.

As the road extension will go through some existing farmland, approval will be required from the affected landowners. The road extension will require approximately 10.0Ha of land acquisition.

Approval will also be required from Main Roads for the new intersection with Geraldton-Mt Magnet Rd. Approval will also be required from Main Roads and Brookfield Rail for the new rail crossing. Based on previous discussions with Brookfield Rail, it is likely that any approval of a new crossing will be subject to removal of the existing Ambania Rd (Nth) crossing.

7.7 INDICATIVE COSTS FOR ROUTE DEVELOPMENT OPTIONS

An indicative preliminary cost estimate has been developed for each of the route development options presented in this report and summarised in Table 8.1 below. It should be noted that these estimates are first order only for budgetary and comparative purposes, and should not be used for setting firm construction budgets.

The costs for utility service modifications are estimates only as service authorities do not usually provide estimates based on concept layouts.

The indicative rail crossing costs are based on verbal advice from Brookfield rail that a basic rail crossing that didn't require boom gates and flashing lights was likely to cost in the order of up to \$150,000. However these additional controls are usually warranted if the crossing is in a high speed environment and/or there is poor sight distance along the rail line approaching the rail line.

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Item	Route Development Option	Estimated Indicative Costs					
		Land Acquisition	Utility Services Modifications	Rail Crossing Works	Road Construction	Admin & Contingency	TOTAL
1	Yuna-Tenindewa Rd	N/A	N/A	N/A	N/A	N/A	N/A
2	Desmond Rd	\$10,000	\$90,000	\$0	\$600,000	\$130,000	\$830,000
3	Cream Rd	\$30,000	\$80,000	\$0	\$1,360,000	\$260,000	\$1,730,000
4	Peter Rd	\$10,000	\$130,000	\$0	\$600,000	\$130,000	\$870,000
5	Ambania Rd (Nth)	\$20,000	\$80,000	\$150,000	\$920,000	\$360,000	\$1,380,000
6	Eradu North Rd	\$10,000	\$180,000	\$0	\$840,000	\$190,000	\$1,220,000

Table 7.4 Summary of indicative preliminary cost estimates of route development options

Disclaimer : Given the level of detail that was available to put this estimate together, the order of accuracy would be +/-30%. Please note that the estimate costs cover actual construction costs only. Project management overheads and design costs have not been included.

	Current Max RAV Network Vehicle Permit on Road	Current Max RAV Network Vehicle Permit at Intersection with Geraldton-Mt Magnet Rd	Existing Road Standard	Warranted Road Standard	Stacking Length Currently Provided at Existing Crossing	Estimated 2014 Grain Catchment (Ha)	2014 Estimated Harvest Yield (Tonne)	2020 Estimated Harvest Yield Based on Existing Crossing Location (Tonne)	Existing Crossing 2013 RAV Network 5-8 Traffic on Approach Road (6 week count)	Other Issues With Existing Crossing	Issues with Existing Intersection with Geraldton - Mt Magnet Rd
Yuna-Tenindawa Rd	Network 8	Network 8	Sealed	Sealed	45m to Geraldton-Mt Magnet Rd	Approx 7,000	Approx 8,000	Approx 8,000	215		Existing intersection on flat straight section of Geraldton-Mt Magnet Rd.
Desmond Rd	Network 8	Network 4	Unsealed	Unsealed	29m to Geraldton-Mt Magnet Rd	Approx 1,000	Approx 2,000	Approx 3,000	20		Existing intersection on flat straight section of Geraldton-Mt Magnet Rd. There appears to be a truck pullover bay entrance / exit directly opposite the Desmond Rd intersection.
Cream Rd	Network 8	N/A	Unsealed	Unsealed	There is no rail crossing of any sort on Cream Rd.				0	Cream Rd is not at the standrd required for public traffic.	
Peter Rd	Network 8	Network 4	Unsealed	Sealed	28m to Geraldton-Mt Magnet Rd	Approx 21,000	Approx 39,000	Approx 54,000	443		Existing intersection on flat straight section of Geraldton-Mt Magnet Rd.
Ambania Rd (North)	Network 7	Network 7	Unsealed	Unsealed	There is a crossing to the north of Geraldton-Mt Magnet Rd which is >1000m to the rail line. This crossing seems to resemble a private access crossing.				0	The road constructed to the north of Geraldton-Mt Magnet Rd is not to the basic 8.0m wide standard. The road is more like an access track and terminates at the crossing. Therefore there are connectivity issues with the existing crossing.	The intersection is located on the inside of a curve in a sag and only provides approx <200m of Safe Intersection Sight Distance (SISD) for vehicles exiting Eradu North Rd at the intersection with Geraldton - Mt Magnet Rd. Austroads design standards require at least 350m of SISD. Increasing the number of trucks travelling through this intersection is likely to increase the risk of an accident at this location.
Eradu Road North Rd	Part Network 7 and Part Network 8	Network 7	Unsealed	Unsealed	36m to Rose Rd.	Approx 8,000	Approx 14,000	Approx 19,000	206	There is a dwelling on the inside of the curve on the north side of the crossing which is limiting sight distance. The width of pavement on the north side does not allow two trucks to pass each other.	The intersection is located on the inside of a curve in a sag and only provides approx 200m of Safe Intersection Sight Distance (SISD) for vehicles exiting Eradu North Rd at the intersection with Geraldton - Mt Magnet Rd. Austroads design standards require at least 350m of SISD. Increasing the number of trucks travelling through this intersection is likely to increase the risk of an accident at this location.

Table 7.5a Summary of route assessment – Part 1

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	Basic Details of Proposed Upgrade	Likely Increase of 2013 RAV Network 5-8 Traffic Based on Upgraded Crossing	New Rail Crossing Requirements	Close Existing Rail Crossing	Estimated Cost of New Rail Crossing	Length of Road Realignment / New Construction Required (kms)	Estimated Road Realignment / New Construction Costs	DEC Approval Required for Associated Clearing	Heritage approval Required	Estimated Land Acquisition Required (Ha)	Estimate Potential Cost of Land Acquisition	Landowner Consent Required	Relocation / Modification of Existing Services Required	Basic Details of Modifications to Existing Services	Potential Existing Services Costs	Total Project Costs (inc Admin + Contingency)
Yuna-Tenindawa Rd	No crossing or realignment upgrade proposed as this crossing already provides for 36.5m long vehicles.	Increase not likely	Existing crossing retained	N/A	\$ -	0	\$ -	N/A	N/A	0	\$ -	N/A	NO	N/A	\$ -	\$ -
Desmond Rd	Realign approx 800m of Geraldton-Mt Magnet Rd offset 15m to the south.	Increase not likely	Existing crossing retained	N/A	\$ -	0.8	\$ 600,000	NO	YES	1.6	\$ 10,000	YES	YES	Likely 1 long crossing of Telstra distribution cable	\$ 90,000	\$ 830,000
Cream Rd	Upgrade existing 3.5km section of Cream Rd plus extension of approx 6.8km to the south to create new intersection with Geraldton-Mt Magnet Rd approx 150m to the west of the Erangy Springs Rd intersection.	Increase of up to approx 90 roadtrains possible	No rail crossing required	N/A	\$ -	6.8	\$ 1,360,000	YES	YES	13.6	\$ 30,000	YES	YES	Likely 1 crossing of Telstra Fibre Optic & 1 crossing of AARNet	\$ 80,000	\$ 1,730,000
Peter Rd	Realign approx 800m of Geraldton-Mt Magnet Rd offset 15m to the south.	Increase not likely	Existing crossing retained	N/A	\$ -	0.8	\$ 600,000	YES	YES	1.6	\$ 10,000	YES	YES	Likely 1 long crossing of Telstra Fibre Optic cable & 1 long crossing of Telstra distribution cable	\$ 130,000	\$ 870,000
Ambania Rd (North)	Construct new crossing and intersection with Geraldton-Mt Magnet Rd approx 250m to the east. Construct new north and south road approaches to new crossing to form intersections with Geraldton-Mt Magnet Rd and Eradu Nth Rd also. Total length of new road construction approx 4.6km.	Increase of up to approx 90 roadtrains possible	New crossing required subject to ALCAM	YES	\$ 150,000	4.6	\$ 920,000	NO	YES	9.2	\$ 20,000	YES	YES	Likely 1 crossing of Telstra Fibre Optic & 1 crossing of AARNet	\$ 80,000	\$ 1,380,000
Eradu Road North Rd	Widen road and remove dwelling on north side of rail crossing. Raise intersection at Geraldton-Mt Magnet Rd and excavate embankment and clear vegetation on inside of curve on east and west approaches.	Increase not likely	Existing crossing retained	N/A	\$ -	1.4	\$ 840,000	YES	YES	2.8	\$ 10,000	YES	YES	Likely 1 crossing of Telstra distribution cable, 1 crossings of Telstra Fibre Optic & 1 crossing of AARNet	\$ 180,000	\$ 1,220,000

Table 7.5b Summary of route assessment – Part 2

8.0 DISCUSSION

8.1 Networks Downgrades

As noted in Section 2.0, there is an anomaly within the RAV permit system in so far as RAV 5-8 vehicles are permitted to use local roads but not permitted to cross local rail crossings at Desmond Rd and Peter Rd.

The options detailed in this report look at overcoming this anomaly by providing improved safer access to the Geraldton-Mt Magnet Rd for the RAV Network 5-8 vehicles. If the anomaly cannot be overcome, the option exists to downgrade the RAV Network classification for Peter Rd and Desmond Rd from RAV 8 to RAV 4 so that they match the RAV Network restriction associated with the road rail crossing on these roads.

The process for a downgrade in RAV Network classification is governed by Main Roads and is subject to a consultation process. The process is initiated by CGG but ultimately it needs to be approved by Main Roads Heavy Haulage operations. Preliminary discussions with Main Roads indicate that unless there is support from a large majority of stakeholders, particularly the heavy haulage users, the Heavy Haulage Operations are not likely to be supportive of a downgrade.

8.2 Alternative Peter Rd treatments

The Peter Rd / Geraldton-Mt Magnet Rd intersection is an uncontrolled T-junction. There is approximately 34m from the edgeline of the Geraldton-Mt Magnet Rd back to the nearest rail. Therefore, allowing for roadtrains to pull up 1m from the edgeline on Geraldton-Mt Magnet Rd and for the Main Roads requirement of a minimum 3m clearance between the nearest rail and the back of the vehicle, this provides safe stacking distance for a maximum vehicle size of 30m (*refer Section 7.4.2*).

This option reported in this study (re-align Geraldton-Mt Magnet Road) is to increase the stacking distance between road and rail.

CGG has noted an additional opportunity for providing the minimum stacking distance at Peter Rd. This option involves construction of an island between the rail crossing and Geraldton-Mt Magnet Rd. The purpose of the island is to manoeuvre the roadtrains into a snaky configuration such that they can safely stack between the rail and Geraldton-Mt Magnet Rd. This concept requires the roadtrain to make a hard left turn over the railway followed by a hard right turn to square up to the Geraldton-Mt Magnet Rd. However this turning manoeuvre relocates the roadtrain entry onto Geraldton-Mt Magnet Rd approximately 30m east of the existing intersection.

This concept layout needs to be consider the following points:

- a) A non-mountable island will be required to ensure the roadtrains follow the designated path. Main Roads require intersection lighting at any rural intersection incorporating a non-mountable island.
- b) The principal roadtrain turning movements at this intersection are LEFT-IN from Geraldton and RIGHT-OUT to Geraldton. However, if the intersection has to accommodate all four normal turning movements the intersection will need to be very large and with that, the large island it is likely to lack definition. Therefore to limit the size of the intersection and thus ensure that all turning movements are clearly

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defined, it is likely that movements RIGHT-IN from Mullewa and LEFT-OUT to Mullewa would not be permitted.

- c) The shape of the island is quite large (*approximately 20x20m*) and is considered to be non-standard. Main Roads generally do not look favourably on non-standard intersection layouts. We expect that this would be the case with regard to this alternate Peter Rd layout.

The alternate Peter Rd layout (*restricting RIGHT-IN and LEFT-OUT turning movements*) is shown in Fig 8.1 below.

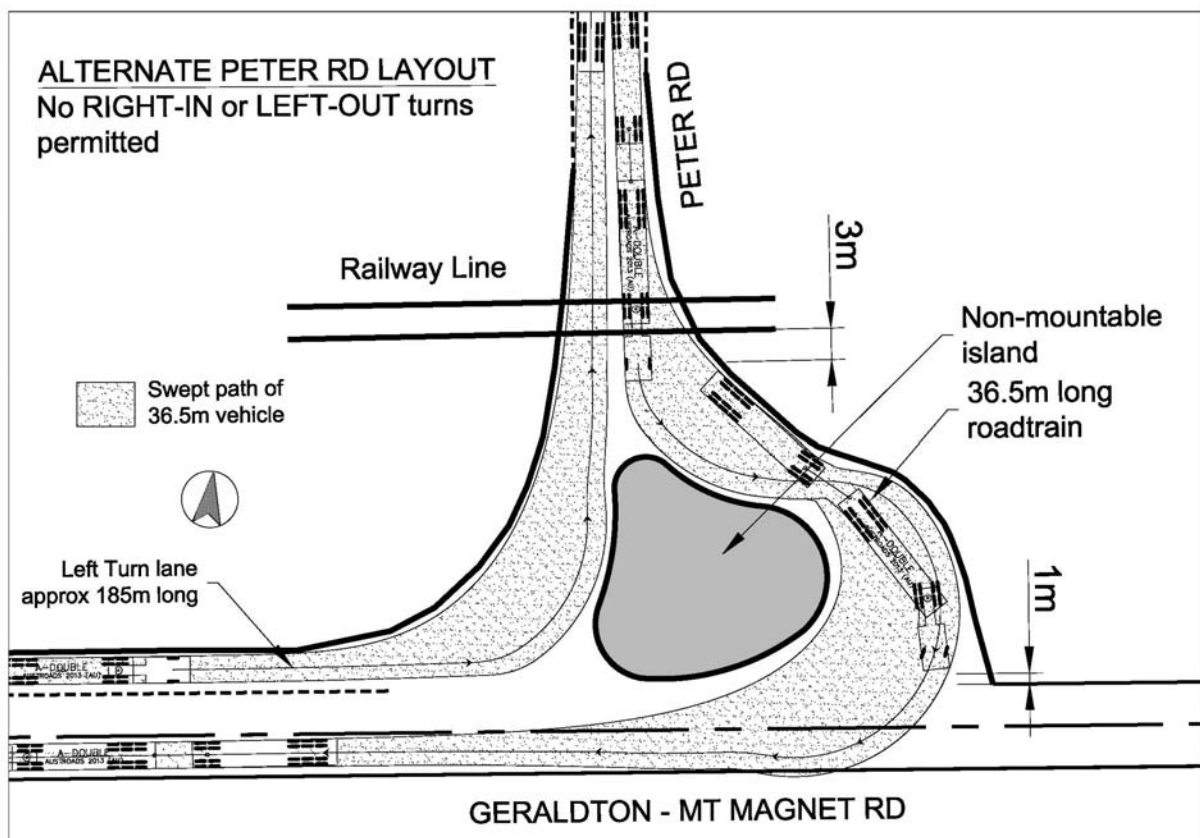


Fig 8.1 Alternate Peter Rd layout

It is worth noting that we worked closely with Main Roads to develop and detail a solution for a similar stacking distance issue on the Wubin-Mullewa Rd related to 36.5m roadtrains accessing the CBH access just north of Perenjori townsite. The solution at this location was to offset the Wubin-Mullewa Rd approximately 10m which is similar to the option detailed in section 7.4.

8.3 Previous Peter Rd realignment

It is worth noting that compared with the Peter Rd option detailed in this report, the previous Peter Rd realignment would be considered a less attractive solution in terms of both overall cost and risk. The previous Peter Rd realignment required more land acquisition and service relocations and also required the construction of a new rail crossing.

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9.0 CONCLUSION

Peter Rd recorded the highest number of RAV Network 5-8 vehicles during the 6 week counts in the December 2013 harvest.

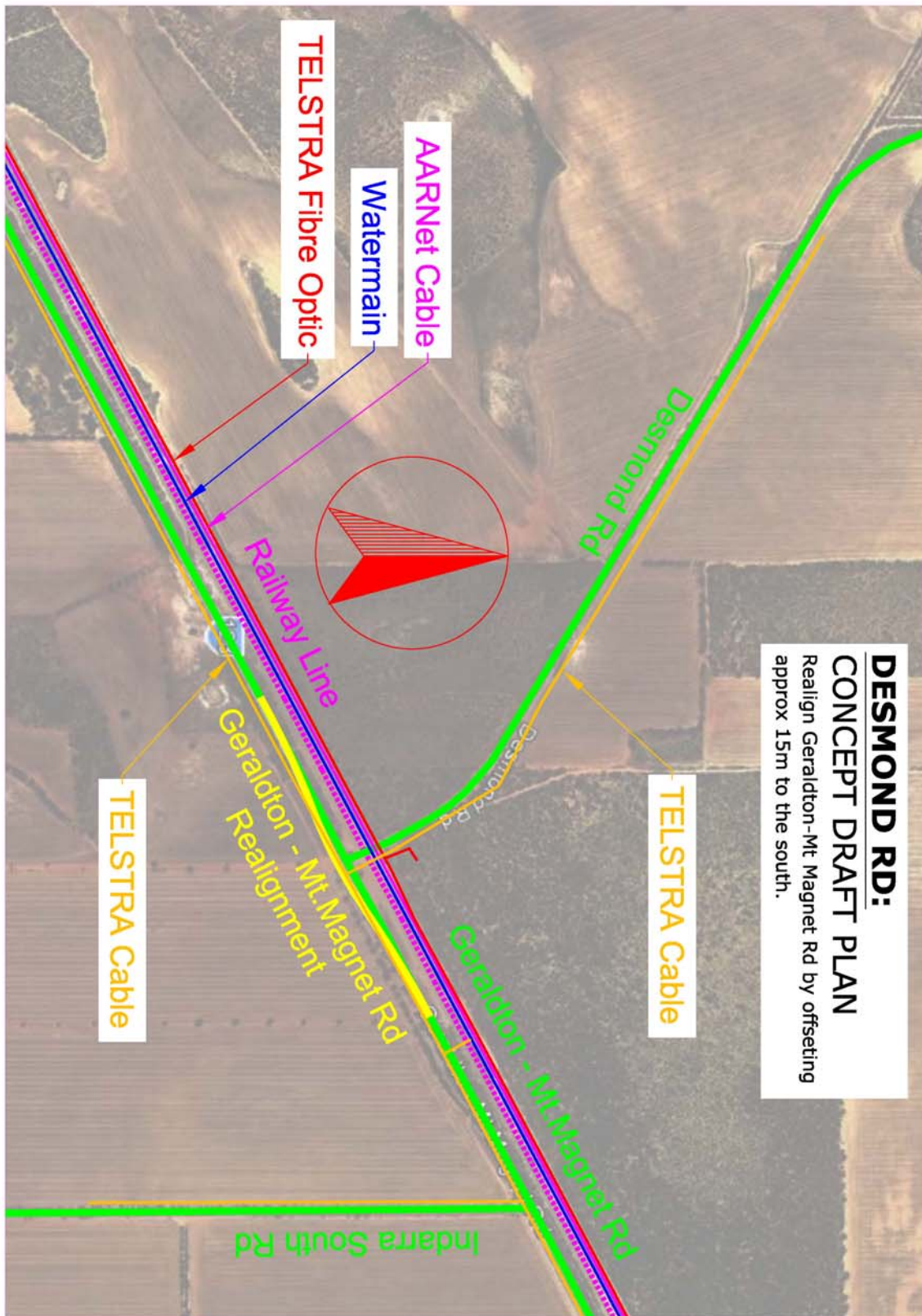
In consideration of all of the issues noted in Section 7.0 above, this report identifies that Peter Rd offers the best option for improving access for the most number of RAV Network 5-8 vehicles over the rail line.

Matt Barns

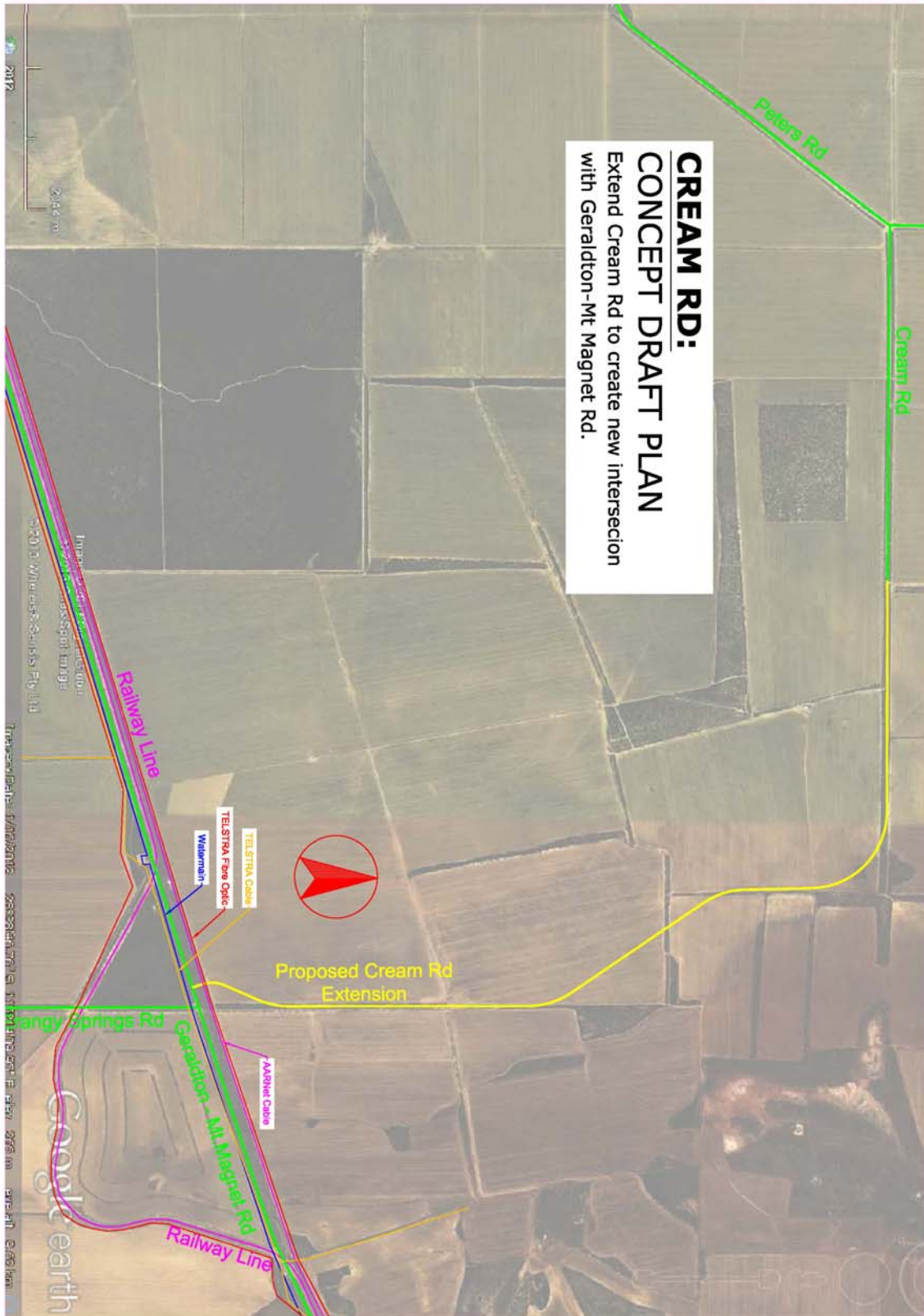
Civil Engineer,
Greenfield Technical Services.
21 May 2014

Greenfield Technical Services

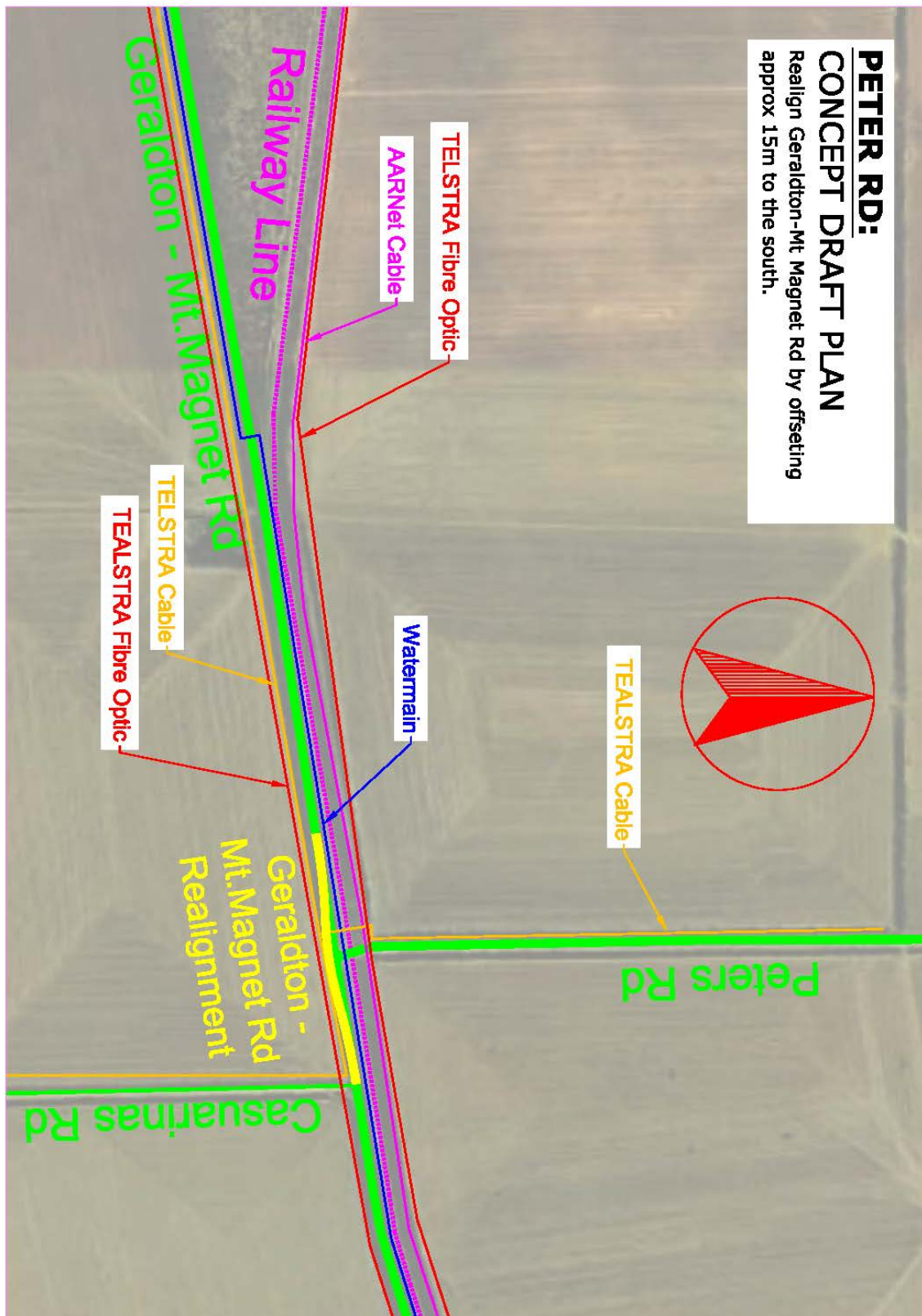
APPENDIX A – Concept Road Layouts

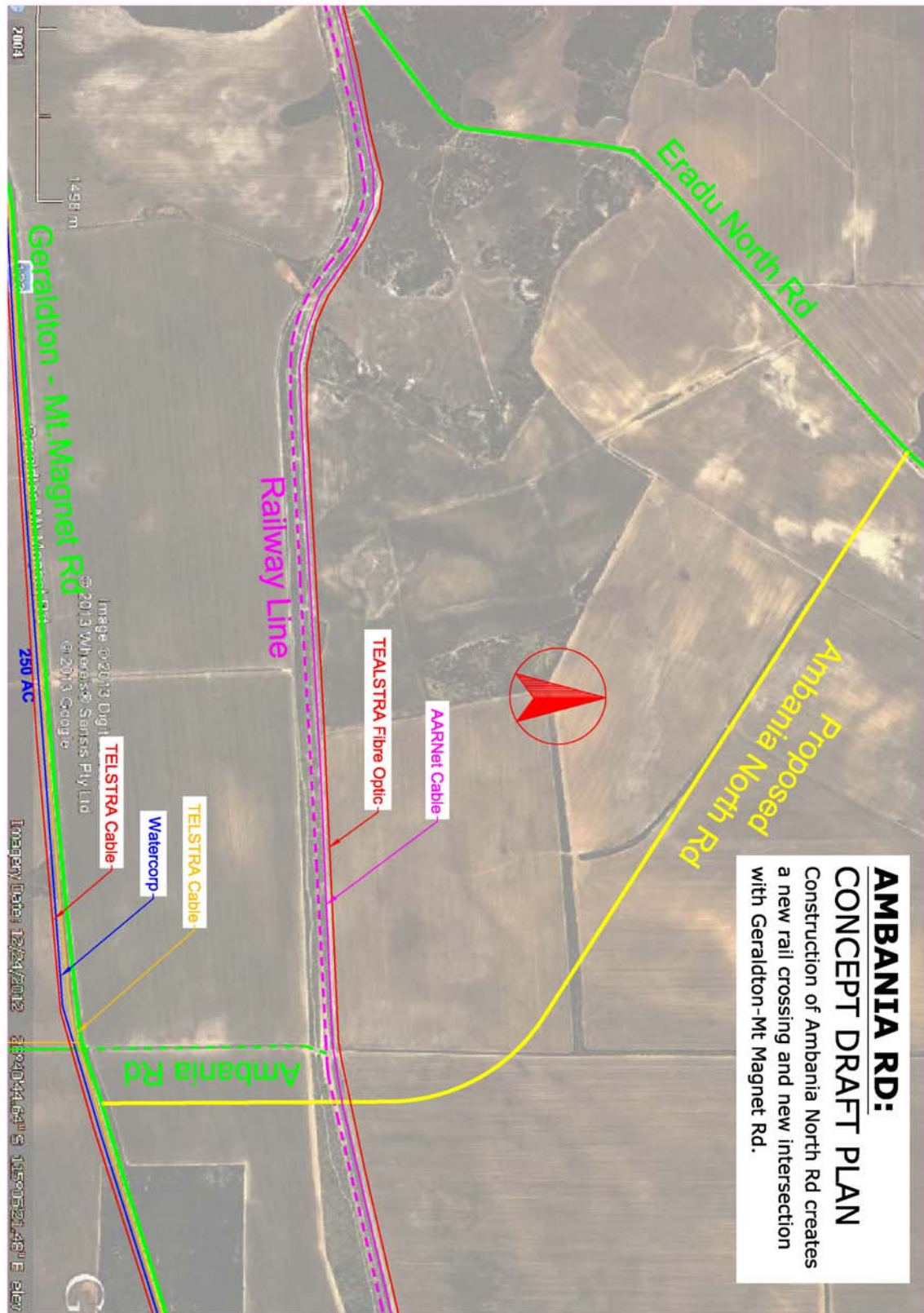


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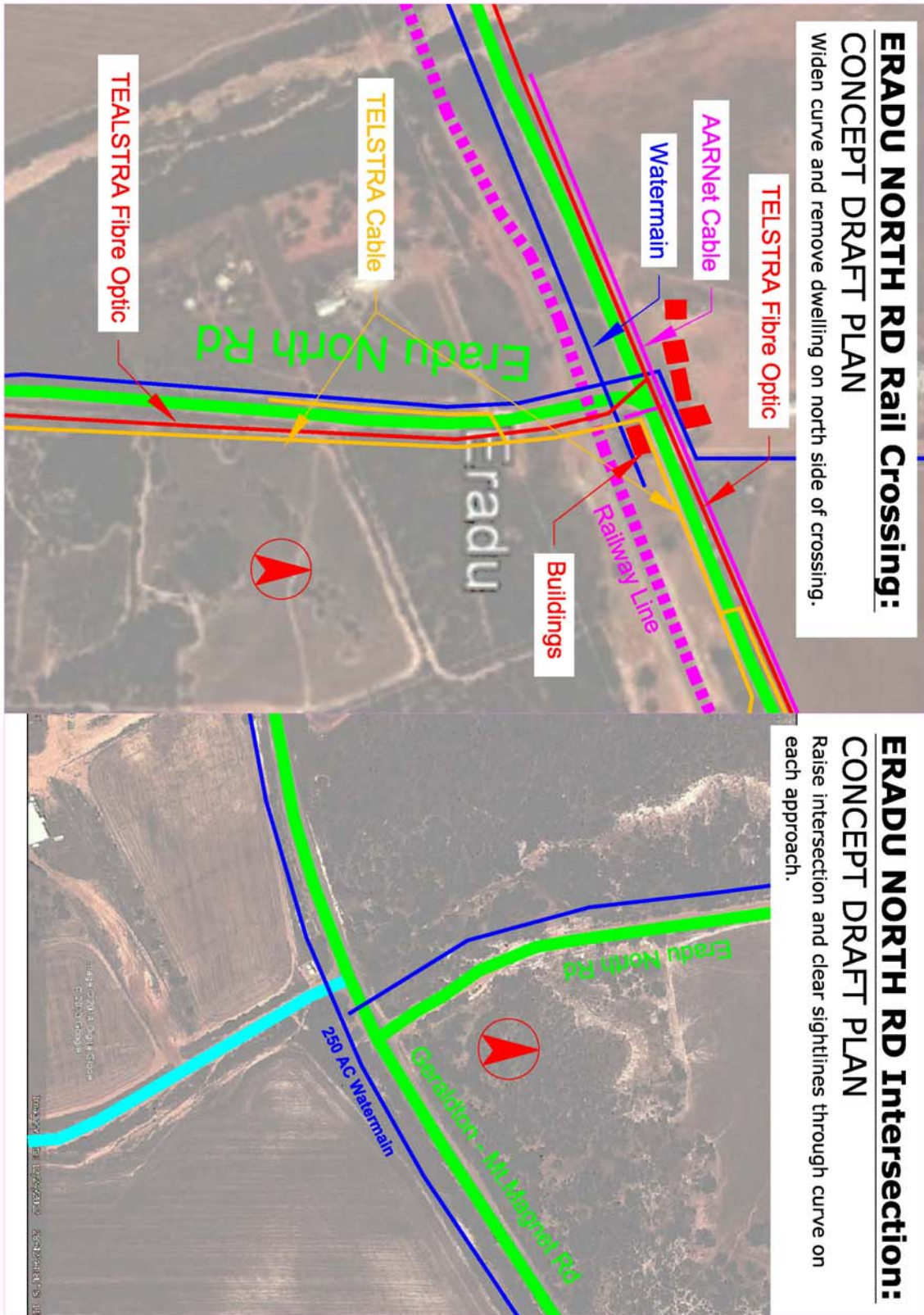


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APPENDIX B – Received Property Owner Questionnaires

Greenfield Technical Services

Our Ref: D-14-10078
 Your Ref:
 File Ref: TT/6/0001
 Enquiries: Matt Barns

14 February 2014

GRAIN TRANSPORT STUDY QUESTIONNAIRE

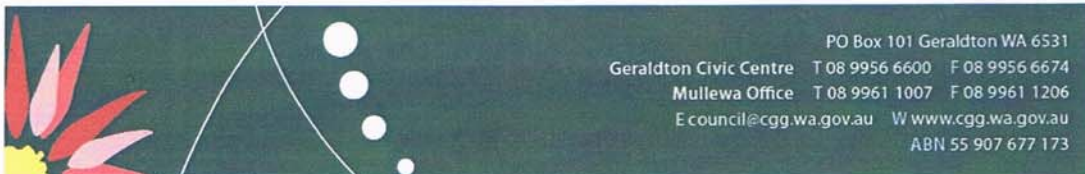
Greenfield Technical Services has been engaged by City of Greater Geraldton to conduct a Grain Transport Study for the purpose of identifying a preferred route for 36.5m long vehicles servicing the district north of Geraldton –Mt Magnet Road between Eradu and Tenindewa.

Council has resolved to undertake an options analysis for transport in the Ambania and Eradu districts, with particular regard to access and movement onto and off the Geraldton-Mt Magnet Road and that such analysis:

- Make an assessment of actual traffic volumes on the State and local roads in the localities;
- Quantify the expected demand and nature of the traffic;
- Develop options for servicing the localities and include analysis of connections to other areas such as the Tenindewa- Yuna Road;
- Provide approximate cost estimates for each of the options and report back with the findings for final consideration by Council on the matter;

All landowners within the catchment are invited to assist the Study by responding to the questionnaire below. The purpose of the questionnaire is to establish the relative cost-benefit of alternative route improvements.

- 1) What is the total estimated area of grain-growing land on your properties within the study area?
 680ha
- 2) What is your estimated total harvest tonnage for these properties?
 1200 tonnes
- 3) Do you anticipate your future harvest yield increasing above that for this harvest?
 If Yes, please indicate expected yield 2020.
 1400 tonnes
- 4) Which receival point do you cart your grain to?
 Geraldton + Moonyoonooka



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- 5) What vehicle types (length) do you typically use for grain haulage?
 road train
- 6) Which rail crossing/s do your trucks use for haulage of grain?
 eradu north rd
- 7) Is it likely that the receival point you cart grain to may change in the future?
 If Yes, where is your new receival point likely to be?
 no
- 8) If Yes, what vehicle type (length) will you use for grain haulage to the new receival point?

- 9) Which rail crossing/s will your trucks use for haulage of grain to the new receival point?

In the Eradu-Tenindewa district there are rail crossings that do not provide sufficient stacking distance for 36.5m long vehicles travelling via Geraldton-Mt Magnet Road. The City of Greater Geraldton proposes to designate at least one preferred crossing point which will legally cater for 36.5m long vehicles to access the Geraldton-Mt Magnet Road.

This study seeks to identify those crossings which offer the highest local benefit for the lowest development cost. Development cost includes rail crossing work, rail crossing approaches, road extensions / re-alignments to cater for increased traffic load.

Based on your estimated future grain haulage requirements,

10A) If the Study identified Yuna-Tenindewa Road as the preferred 36.5m route, how much of your transport task would you route through **Yuna-Tenindewa Road**?

..... none

Would you still require an additional route for 36.5m vehicles?
 If so, where and why?

.....

10B) If the Study identified Desmond Road as the preferred 36.5m route, how much of your transport task would you route through **Desmond Road** ?

..... none

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Would you still require an additional route for 36.5m vehicles?
If so, where and why?

.....
.....
.....

10C) If the Study identified Cream Road as the preferred 36.5m route, how much of your transport task would you route through Cream Road? – assumes new link road to Peter Road.

none

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

.....
.....
.....

10D) If the Study identified Peter Road as the preferred 36.5m route, how much of your transport task would you route through Peter Road?

none

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

.....
.....
.....

10E) If the Study identified Ambania Road as the preferred 36.5m route, how much of your transport task would you route through Ambania Road? – assumes new link road to Eradu North Road and improvements to cater for traffic from Peter Road / Old Geraldton Road

100% - a much safer option compared to Eradu North Rd,
in terms of entering onto the Geraldton-
Mt Magnet Rd.

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Would you still require an additional route for 36.5m vehicles?
If so, where and why?

no......
.....
.....

10F) If the Study identified Eradu North Road as the preferred 36.5m route, how much of your transport task would you route through **Eradu North Road** ? – assumes Eradu North Road improved to cater for traffic from Peter Road / Old Geraldton Road.

100% (current option).....

Would you still require an additional route for 36.5m vehicle?
If so, where and why?

no......
.....
.....

Questionnaire completed by Liam Mann.....

Contact Details 1275 Naraling - East Yuna Rd

YUNA WA 6532

9920 3048 / ~~0488 215 540~~ 0428 387 799

(property at Cant Rd,
AMBANIA)

Please return your completed questionnaire to

Matt Barns
Greenfield Technical Services
PO Box 2840
GERALDTON WA 6531
matt.greenfield@westnet.com.au

The closing date for return of completed questionnaires is **Friday 28 February 2014.**

If you have any queries in relation to this questionnaire, please contact Matt directly on 0428 215 540.

* Have you considered the traffic numbers in relation to "in-coming"
ie. trucks carting limesand and/or fertiliser.



Our Ref: D-14-10078
 Your Ref:
 File Ref: TT/6/0001
 Enquiries: Matt Barns

14 February 2014

GRAIN TRANSPORT STUDY QUESTIONNAIRE

Greenfield Technical Services has been engaged by City of Greater Geraldton to conduct a Grain Transport Study for the purpose of identifying a preferred route for 36.5m long vehicles servicing the district north of Geraldton –Mt Magnet Road between Eradu and Tenindewa.

Council has resolved to undertake an options analysis for transport in the Ambania and Eradu districts, with particular regard to access and movement onto and off the Geraldton-Mt Magnet Road and that such analysis:

- Make an assessment of actual traffic volumes on the State and local roads in the localities;
- Quantify the expected demand and nature of the traffic;
- Develop options for servicing the localities and include analysis of connections to other areas such as the Tenindewa- Yuna Road;
- Provide approximate cost estimates for each of the options and report back with the findings for final consideration by Council on the matter;

All landowners within the catchment are invited to assist the Study by responding to the questionnaire below. The purpose of the questionnaire is to establish the relative cost-benefit of alternative route improvements.

1) What is the total estimated area of grain-growing land on your properties within the study area?

..... 3000 Ha

2) What is your estimated total harvest tonnage for these properties?

..... 3500 T

3) Do you anticipate your future harvest yield increasing above that for this harvest? If Yes, please indicate expected yield 2020.

..... YES 4500 T

4) Which receival point do you cart your grain to?

..... GERALDTON PORT, MOONYBOONOOKA



PO Box 101 Geraldton WA 6531
 Geraldton Civic Centre T 08 9956 6600 F 08 9956 6674
 Mullewa Office T 08 9961 1007 F 08 9961 1206
 E council@cgg.wa.gov.au W www.cgg.wa.gov.au
 ABN 55 907 677 173

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5) What vehicle types (length) do you typically use for grain haulage?
 SEMI WITH 2 TRAILERS (50T)

6) Which rail crossing/s do your trucks use for haulage of grain?
 ERADU NORTH ROAD

7) Is it likely that the receival point you cart grain to may change in the future?
 If Yes, where is your new receival point likely to be?
 No

8) If Yes, what vehicle type (length) will you use for grain haulage to the new receival point?

9) Which rail crossing/s will your trucks use for haulage of grain to the new receival point?

In the Eradu-Tenindewa district there are rail crossings that do not provide sufficient stacking distance for 36.5m long vehicles travelling via Geraldton-Mt Magnet Road. The City of Greater Geraldton proposes to designate at least one preferred crossing point which will legally cater for 36.5m long vehicles to access the Geraldton-Mt Magnet Road.

This study seeks to identify those crossings which offer the highest local benefit for the lowest development cost. Development cost includes rail crossing work, rail crossing approaches, road extensions / re-alignments to cater for increased traffic load.

Based on your estimated future grain haulage requirements,

10A) If the Study identified Yuna-Tenindewa Road as the preferred 36.5m route, how much of your transport task would you route through Yuna-Tenindewa Road?
 NONE

Would you still require an additional route for 36.5m vehicles?
 If so, where and why?

YES, AT ERADU. IT IS A GREAT DISTANCE FROM ERADU TOWNSITE, UP ERADU NORTH RD, ALONG OLD YUNA-TENINDEWA GERALDTON ROAD, ALONG ~~BATES~~ ROAD AND BACK AGAIN TO ~~ERADU~~ ~~ALONG~~ THE GERALDTON-MT MAGNET ROAD.

10B) If the Study identified Desmond Road as the preferred 36.5m route, how much of your transport task would you route through Desmond Road?
 NONE

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Would you still require an additional route for 36.5m vehicles?
If so, where and why?

..... YES - ERADU NORTH RD

..... TOO FAR OUT OF WAY AND TOO EXPENSIVE

10C) If the Study identified Cream Road as the preferred 36.5m route, how much of your transport task would you route through Cream Road? – assumes new link road to Peter Road.

..... NONE

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

..... YES - ERADU NORTH RD

..... TOO FAR OUT OF WAY

10D) If the Study identified Peter Road as the preferred 36.5m route, how much of your transport task would you route through Peter Road?

..... NONE

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

..... YES - ERADU NORTH ROAD

..... TOO FAR OUT OF WAY

10E) If the Study identified Ambania Road as the preferred 36.5m route, how much of your transport task would you route through Ambania Road? – assumes new link road to Eradu North Road and improvements to cater for traffic from Peter Road / Old Geraldton Road

..... ONE THIRD

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Would you still require an additional route for 36.5m vehicles?
If so, where and why?

YES - ERADU NORTH RD
AMBANIA INTERSECTION IS STILL A BLIND
CORNER AND HEAVY TRUCKS WOULD BE PULLING UPHILL.

10F) If the Study identified Eradu North Road as the preferred 36.5m route, how much of your transport task would you route through **Eradu North Road** ? – assumes Eradu North Road improved to cater for traffic from Peter Road / Old Geraldton Road.

TWO THIRDS - OTHER THIRD USES ERADU SOUTH + WICHERINA RDS.

Would you still require an additional route for 36.5m vehicle?
If so, where and why?

NO.
I AM INTERESTED TO KNOW HOW ERADU NORTH RD
WILL BE IMPROVED AND HOW INTERSECTION AT GERALDTON -
MT MAGNET ROAD WILL BE ALTERED.
ALSO CONSIDERATION FOR SCHOOL BUS DROP OFF/PICK UP FOR
FAMILIES ON BOTH NORTH AND SOUTH RDS.
Questionnaire completed by ...SUSAN CREAM.....
Contact Details ph... 9924 4046 (preferred)
mob... 0428 244 048
smcream@wn.com.au



Please return your completed questionnaire to

Matt Barns
Greenfield Technical Services
PO Box 2840
GERALDTON WA 6531
matt.greenfield@westnet.com.au

The closing date for return of completed questionnaires is **Friday 28 February 2014**.

If you have any queries in relation to this questionnaire, please contact Matt directly on 0428 215 540.

Greenfield Technical Services

Our Ref: D-14-10078
 Your Ref:
 File Ref: TT/6/0001
 Enquiries: Matt Barns

14 February 2014

GRAIN TRANSPORT STUDY QUESTIONNAIRE

Greenfield Technical Services has been engaged by City of Greater Geraldton to conduct a Grain Transport Study for the purpose of identifying a preferred route for 36.5m long vehicles servicing the district north of Geraldton –Mt Magnet Road between Eradu and Tenindewa.

Council has resolved to undertake an options analysis for transport in the Ambania and Eradu districts, with particular regard to access and movement onto and off the Geraldton-Mt Magnet Road and that such analysis:

- Make an assessment of actual traffic volumes on the State and local roads in the localities;
- Quantify the expected demand and nature of the traffic;
- Develop options for servicing the localities and include analysis of connections to other areas such as the Tenindewa- Yuna Road;
- Provide approximate cost estimates for each of the options and report back with the findings for final consideration by Council on the matter;

All landowners within the catchment are invited to assist the Study by responding to the questionnaire below. The purpose of the questionnaire is to establish the relative cost-benefit of alternative route improvements.

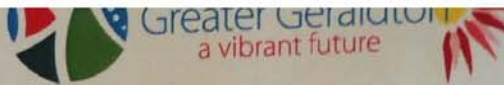
1) What is the total estimated area of grain-growing land on your properties within the study area?
ANDROMEDA HA 5000 HECTARES

2) What is your estimated total harvest tonnage for these properties?
5000 t

3) Do you anticipate your future harvest yield increasing above that for this harvest?
 If Yes, please indicate expected yield 2020.
NO

4) Which receival point do you cart your grain to?
GERALDTON

Greenfield Technical Services



5) What vehicle types (length) do you typically use for grain haulage?
 30 METER ROAD TRAINS.....

6) Which rail crossing/s do your trucks use for haulage of grain?
 TENINDEWA NORTH.....

7) Is it likely that the receival point you cart grain to may change in the future?
 If Yes, where is your new receival point likely to be?
 NO.....

8) If Yes, what vehicle type (length) will you use for grain haulage to the new receival point?
 -.....

9) Which rail crossing/s will your trucks use for haulage of grain to the new receival point?
 -.....

In the Eradu-Tenindewa district there are rail crossings that do not provide sufficient stacking distance for 36.5m long vehicles travelling via Geraldton-Mt Magnet Road. The City of Greater Geraldton proposes to designate at least one preferred crossing point which will legally cater for 36.5m long vehicles to access the Geraldton-Mt Magnet Road.

This study seeks to identify those crossings which offer the highest local benefit for the lowest development cost. Development cost includes rail crossing work, rail crossing approaches, road extensions / re-alignments to cater for increased traffic load.


Based on your estimated future grain haulage requirements,

10A) If the Study identified Yuna-Tenindewa Road as the preferred 36.5m route, how much of your transport task would you route through Yuna-Tenindewa Road?
 60%.....


Would you still require an additional route for 36.5m vehicles?
 If so, where and why?
 NO. WE HAVE A ROAD TRAIN ACCESS POINT OPPOSITE THE ERANGY SPRING ROAD.....

10B) If the Study identified Desmond Road as the preferred 36.5m route, how much of your transport task would you route through Desmond Road?
 10%.....

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Would you still require an additional route for 36.5m vehicles?
If so, where and why?

YES, WE HAVE LAND ON THE YUNA ROAD
THAT NEEDS TO BE CARTED THROUGH TENINDEWA

10C) If the Study identified Cream Road as the preferred 36.5m route, how much of your transport task would you route through **Cream Road**? – assumes new link road to Peter Road.

0%

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

YES, ALONG THE TENINDEWA YUNA ROAD

10D) If the Study identified Peter Road as the preferred 36.5m route, how much of your transport task would you route through **Peter Road**?

0%


Would you still require an additional route for 36.5m vehicles?
If so, where and why?

YES, AT TENINDEWA


10E) If the Study identified Ambania Road as the preferred 36.5m route, how much of your transport task would you route through **Ambania Road**? – assumes new link road to Eradu North Road and improvements to cater for traffic from Peter Road / Old Geraldton Road

0%

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Greater Geraldton
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Would you still require an additional route for 36.5m vehicles?
If so, where and why?

YES

10F) If the Study identified Eradu North Road as the preferred 36.5m route, how much of your transport task would you route through **Eradu North Road** ? – assumes Eradu North Road improved to cater for traffic from Peter Road / Old Geraldton Road.

0%

Would you still require an additional route for 36.5m vehicle?
If so, where and why?

COMMENT - PETERS ROAD IS THE MOST SENSIBLE ROAD TO UPGRADE. CREAM RD WOULD MAKE OUR FARM DANGEROUS & WOULD INCREASE THEFT OF MACHINERY, FUEL, GRAIN & FERTILISER.

Questionnaire completed by TIM CRITCH

Contact Details 0428 625 045
timandjen@westnet.com.au

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GERALDTON WA 6531
matt.greenfield@westnet.com.au

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- Quantify the expected demand and nature of the traffic;
- Develop options for servicing the localities and include analysis of connections to other areas such as the Tenindewa- Yuna Road;
- Provide approximate cost estimates for each of the options and report back with the findings for final consideration by Council on the matter;

All landowners within the catchment are invited to assist the Study by responding to the questionnaire below. The purpose of the questionnaire is to establish the relative cost-benefit of alternative route improvements.

- 1) What is the total estimated area of grain-growing land on your properties within the study area?

..... 6,100 HA

- 2) What is your estimated total harvest tonnage for these properties?

..... 12,000 Tonne

- 3) Do you anticipate your future harvest yield increasing above that for this harvest?
 If Yes, please indicate expected yield 2020.

..... ~~NO~~ YES

- 4) Which receival point do you cart your grain to?

..... GERALDTON & MOONYOONDOKA (LUPINS)



PO Box 101 Geraldton WA 6531
 Geraldton Civic Centre T 08 9956 6600 F 08 9956 6674
 Mullewa Office T 08 9961 1007 F 08 9961 1206
 E council@cgg.wa.gov.au W www.cgg.wa.gov.au
 ABN 55 907 677 173

Greenfield Technical Services



5) What vehicle types (length) do you typically use for grain haulage?

ROAD TRAIN, LONG VEHICLE

6) Which rail crossing/s do your trucks use for haulage of grain?

*ERADU CROSSING & AMBANDA CROSSING
WICKERINA HILL*

7) Is it likely that the receival point you cart grain to may change in the future?

If Yes, where is your new receival point likely to be?

NO

8) If Yes, what vehicle type (length) will you use for grain haulage to the new receival point?

9) Which rail crossing/s will your trucks use for haulage of grain to the new receival point?

In the Eradu-Tenindewa district there are rail crossings that do not provide sufficient stacking distance for 36.5m long vehicles travelling via Geraldton-Mt Magnet Road. The City of Greater Geraldton proposes to designate at least one preferred crossing point which will legally cater for 36.5m long vehicles to access the Geraldton-Mt Magnet Road.

This study seeks to identify those crossings which offer the highest local benefit for the lowest development cost. Development cost includes rail crossing work, rail crossing approaches, road extensions / re-alignments to cater for increased traffic load.

Based on your estimated future grain haulage requirements,

10A) If the Study identified Yuna-Tenindewa Road as the preferred 36.5m route, how much of your transport task would you route through Yuna-Tenindewa Road?

NIL

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

10B) If the Study identified Desmond Road as the preferred 36.5m route, how much of your transport task would you route through Desmond Road?

NIL

Greenfield Technical Services



Would you still require an additional route for 36.5m vehicles?
If so, where and why?

.....
.....
.....

10C) If the Study identified Cream Road as the preferred 36.5m route, how much of your transport task would you route through Cream Road? – assumes new link road to Peter Road.

..... *100%*

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

.....
.....
.....

10D) If the Study identified Peter Road as the preferred 36.5m route, how much of your transport task would you route through Peter Road?

..... *NIL*

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

.....
.....
.....

10E) If the Study identified Ambania Road as the preferred 36.5m route, how much of your transport task would you route through Ambania Road? – assumes new link road to Eradu North Road and improvements to cater for traffic from Peter Road / Old Geraldton Road

..... *THREE THOUSAND TONNE APPROX*

Greenfield Technical Services



Would you still require an additional route for 36.5m vehicles?
If so, where and why?

YES — OUR FARM IS ON BOTH SIDES OF
GERALDTON M7 MAGNET RD
NEED ACCESS BOTH SIDES

10F) If the Study identified Eradu North Road as the preferred 36.5m route, how much of your transport task would you route through **Eradu North Road**? – assumes Eradu North Road improved to cater for traffic from Peter Road / Old Geraldton Road.

TWO THOUSAND TONNE APPROX

Would you still require an additional route for 36.5m vehicle?
If so, where and why?

ERADU RD
OUR FARM IS ON BOTH SIDES OF GERALDTON/
M7 MAGNET RD

Questionnaire completed by DAVID GREEN

Contact Details DAVID GREEN
CHABELLA FARMS
68 GLENDINNING RD
TARLOOLA BEACH
0428 939954

Please return your completed questionnaire to

Matt Barns
Greenfield Technical Services
PO Box 2840
GERALDTON WA 6531
matt.greenfield@westnet.com.au

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14 February 2014

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- Develop options for servicing the localities and include analysis of connections to other areas such as the Tenindewa- Yuna Road;
- Provide approximate cost estimates for each of the options and report back with the findings for final consideration by Council on the matter;

All landowners within the catchment are invited to assist the Study by responding to the questionnaire below. The purpose of the questionnaire is to establish the relative cost-benefit of alternative route improvements.

- 1) What is the total estimated area of grain-growing land on your properties within the study area?

11000 ha (27500 acres)

- 2) What is your estimated total harvest tonnage for these properties?

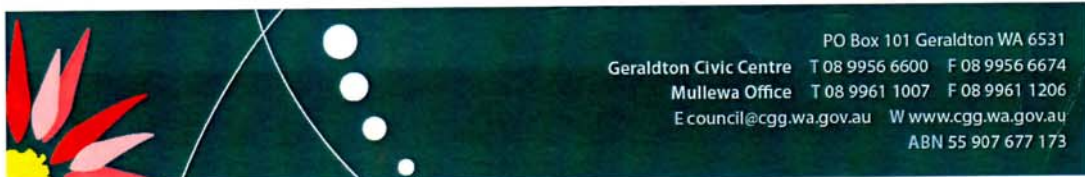
20 000 - 23 000 tonnes

- 3) Do you anticipate your future harvest yield increasing above that for this harvest?
 If Yes, please indicate expected yield 2020.

30000 tonnes

- 4) Which receival point do you cart your grain to?

Geraldton Port



Greenfield Technical Services



- 5) What vehicle types (length) do you typically use for grain haulage?
 34m - 3 Axle prime mover with 3 trailers
- 6) Which rail crossing/s do your trucks use for haulage of grain?
 Peter Rd.
- 7) Is it likely that the receival point you cart grain to may change in the future?
 If Yes, where is your new receival point likely to be?
 No - Geraldton Port
- 8) If Yes, what vehicle type (length) will you use for grain haulage to the new receival point?
 -
- 9) Which rail crossing/s will your trucks use for haulage of grain to the new receival point?
 -

In the Eradu-Tenindewa district there are rail crossings that do not provide sufficient stacking distance for 36.5m long vehicles travelling via Geraldton-Mt Magnet Road. The City of Greater Geraldton proposes to designate at least one preferred crossing point which will legally cater for 36.5m long vehicles to access the Geraldton-Mt Magnet Road.

This study seeks to identify those crossings which offer the highest local benefit for the lowest development cost. Development cost includes rail crossing work, rail crossing approaches, road extensions / re-alignments to cater for increased traffic load.

Based on your estimated future grain haulage requirements,

- 10A) If the Study identified Yuna-Tenindewa Road as the preferred 36.5m route, how much of your transport task would you route through Yuna-Tenindewa Road?

Zero - Nil

Would you still require an additional route for 36.5m vehicles?
 If so, where and why?

Peter Rd.

As my property extends the length of Peter Rd. It would be uneconomical to travel backwards (EAST) a further 50 km round trip.

- 10B) If the Study identified Desmond Road as the preferred 36.5m route, how much of your transport task would you route through Desmond Road?

Zero - Nil

Greenfield Technical Services



Peter Rd.

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

Please see 10 A) - Additional 40-50 km round trip.

10C) If the Study identified Cream Road as the preferred 36.5m route, how much of your transport task would you route through Cream Road? – assumes new link road to Peter Road.

NIL

Peter Rd.

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

See 10 a) - It would add a extra 40 km. round trip

10D) If the Study identified Peter Road as the preferred 36.5m route, how much of your transport task would you route through Peter Road?

100%

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

No

10E) If the Study identified Ambania Road as the preferred 36.5m route, how much of your transport task would you route through Ambania Road? – assumes new link road to Eradu North Road and improvements to cater for traffic from Peter Road / Old Geraldton Road

NIL

Peter Rd

Greenfield Technical Services



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a vibrant future



Peter Rd

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

It's a dangerous exit onto Mullaewa Rd. Steep hill and corners both ways. Plus fast traffic 100km/h. Also traffic coming from Amberia South.

10F) If the Study identified Eradu North Road as the preferred 36.5m route, how much of your transport task would you route through Eradu North Road? - assumes Eradu North Road improved to cater for traffic from Peter Road / Old Geraldton Road.

NIL

Would you still require an additional route for 36.5m vehicle?
If so, where and why?

Peter Rd

Again very very dangerous. Fast traffic, steep descent onto road when exiting, not all trucks use two-way. I have personally seen 3 near misses. It should be closed to local traffic only. PAUL MESSINA

Questionnaire completed by

Contact Details

0428 611 525
paul.e.koogerena.com.au

Please return your completed questionnaire to

Matt Barns
Greenfield Technical Services
PO Box 2840
GERALDTON WA 6531
matt.greenfield@westnet.com.au

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All landowners within the catchment are invited to assist the Study by responding to the questionnaire below. The purpose of the questionnaire is to establish the relative cost-benefit of alternative route improvements.

- 1) What is the total estimated area of grain-growing land on your properties within the study area?

..... 2500 ha

- 2) What is your estimated total harvest tonnage for these properties?

..... 5000 t

- 3) Do you anticipate your future harvest yield increasing above that for this harvest?
 If Yes, please indicate expected yield 2020.

..... 5500 t

- 4) Which receival point do you cart your grain to?

..... Geraldton



PO Box 101 Geraldton WA 6531
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 Mullewa Office T 08 9961 1007 F 08 9961 1206
 E council@cgg.wa.gov.au W www.cgg.wa.gov.au

Greenfield Technical Services



5) What vehicle types (length) do you typically use for grain haulage?

36.5

6) Which rail crossing/s do your trucks use for haulage of grain?

Peters Rd / Eradu Nth Rd

7) Is it likely that the receival point you cart grain to may change in the future?
If Yes, where is your new receival point likely to be?

No

8) If Yes, what vehicle type (length) will you use for grain haulage to the new receival point?

.....

9) Which rail crossing/s will your trucks use for haulage of grain to the new receival point?

.....

In the Eradu-Tenindewa district there are rail crossings that do not provide sufficient stacking distance for 36.5m long vehicles travelling via Geraldton-Mt Magnet Road. The City of Greater Geraldton proposes to designate at least one preferred crossing point which will legally cater for 36.5m long vehicles to access the Geraldton-Mt Magnet Road.

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Based on your estimated future grain haulage requirements,

10A) If the Study identified Yuna-Tenindewa Road as the preferred 36.5m route, how much of your transport task would you route through **Yuna-Tenindewa Road**?

None

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

No

10B) If the Study identified Desmond Road as the preferred 36.5m route, how much of your transport task would you route through **Desmond Road** ?

None

Greenfield Technical Services



Would you still require an additional route for 36.5m vehicles?
If so, where and why?

No

10C) If the Study identified Cream Road as the preferred 36.5m route, how much of your transport task would you route through **Cream Road**? – assumes new link road to Peter Road.

None

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

No

10D) If the Study identified Peter Road as the preferred 36.5m route, how much of your transport task would you route through **Peter Road**?

None

Would you still require an additional route for 36.5m vehicles?
If so, where and why?

No

10E) If the Study identified Ambania Road as the preferred 36.5m route, how much of your transport task would you route through **Ambania Road**? – assumes new link road to Eradu North Road and improvements to cater for traffic from Peter Road / Old Geraldton Road

All of it

Greenfield Technical Services



Would you still require an additional route for 36.5m vehicles?
If so, where and why?

No

10F)

If the Study identified Eradu North Road as the preferred 36.5m route, how much of your transport task would you route through **Eradu North Road** ? – assumes Eradu North Road improved to cater for traffic from Peter Road / Old Geraldton Road.

All of it

Would you still require an additional route for 36.5m vehicle?
If so, where and why?

No

Preferred option

Questionnaire completed by

Peter Barnetson

Contact Details

0421 213335

99264026

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matt.greenfield@westnet.com.au

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