

APPENDIX E:
PRE FEASIBILITY ANALYSIS 3:
ROAD CONSTRUCTION AND
MAINTENANCE SHARED SERVICE



Systemic Sustainability Study

Pre-Feasibility Analysis

Road Construction and Maintenance Shared Service

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Road Construction and Maintenance Shared Service

1.0 Introduction

The aim of this pre-feasibility analysis is to quantify the benefits available from moving towards greater regional integration of the Local Government works program, along with identifying the barriers to achieving these objectives and potential problems.

In assessing the potential benefits, the analysis will assume that the total fleet of all the Local Governments in the region are to be treated as one resource, the use of which can be optimised over the entire region.

Realising the potential benefits of shared service arrangements in road construction and maintenance will depend on two key enablers:

- the development of a comprehensive works program developed at a regional level that coordinates all human and physical capital; and
- a willingness on behalf of Councils to cooperate in this regard for the sake of efficiency and improved service delivery to the community.

Implementation would require both a thorough integration of the regional works program and a scheduled program for reducing the level of capital invested in plant and equipment. It will also involve rethinking changing works practices that have built up over the institutional life of the Local Government.

There is considerable scope to maximise the capital invested in plant and equipment through utilising cooperative sharing arrangements and greater integration of works programs. Survey work examined the utilisation of plant and equipment for truck, grader, backhoe, loader, prime mover and rollers.

Based on survey responses, there is approximately \$1.8 million of potential reductions in plant and equipment amongst respondent rural Local Governments. This represents a capital saving of approximately 21% of their annual expenditure on roads that could be achieved through the use of more integrated works programs.

These savings are substantial, but are only a small fraction of the total plant and equipment held by Local Governments. Based on survey responses, and corroborated through comparison with annual plant and equipment depreciation allowances in responding Local Government's financial statements, the respondents had invested a total of \$14.8 million in plant and equipment. The identified savings represents just over 12% of the capital invested in plant and equipment by respondents.

Alternatively, respondent Local Governments could take the savings as a reduced depreciation expense on a recurrent basis (minimum of \$180,000 per annum over 10 years). This saving is based on a conservative estimate of 10 year straight line depreciation of plant and equipment. Accounting standards recommend depreciation

rates of between two and ten years for plant and equipment, and if a shorter depreciation schedule was selected, then the recurrent savings would be higher. This reported level of savings also ignores a host of secondary benefits that flow from shared services of roads and are discussed below.

Extrapolating from responding rural Local Governments, the Mid-West Regional Road Group as a whole has the potential to reduce its capital invested in plant and equipment by approximately \$5.9 million.

When these results are extrapolated across the entire Local Government sector, the potential capital savings are in the order of \$87 million through reduced requirement for plant and equipment, with approximately \$46 million in rural and regional savings and the remaining \$40.6 million located in metropolitan plant and equipment reductions.

Alternatively, these savings could be taken as reduced depreciation expenses for the whole sector (\$8.7 million per annum, based on a conservative assessment of a 10-year depreciation allowance for plant and equipment).

These substantial savings do not include benefits associated with:

- lower capital cost – higher utilisation of plant and equipment will reduce the fixed costs associated with building and maintaining roads;
- improved plant and equipment – higher utilisation rates should lead to greater turnover and newer plant and reduced future maintenance costs;
- better performance monitoring and reporting – having an integrated regional works program should improve measurements of performance and utilisation. This will enable Councils to have an improved understanding of road maintenance and construction costs and improve their strategic decision making;
- reduced maintenance costs – newer plant will incur a reduced level of maintenance and operating costs;
- efficient use of labour – consolidating works programs throughout a region should enhance the ability to fully utilise labour, something that has not been assessed by this study;
- expanded plant and equipment – conducting regional works programs should enable the purchase of more specialised production plant and equipment that is not justifiable for individual Local Governments;
- greater professionalism – a larger works program should be able to remunerate sufficiently to attract professional staff, particularly at the strategic managerial level and also maximising the use of specialist skills; and
- consolidated administration costs – benefiting Local Governments through the tendering process and by reducing the upfront purchase cost.

2.0 Research Methodology

To assess the potential benefits of regional sharing of planting and equipment, CCI Economics conducted a survey of Local Governments. The survey was initially conducted with the assistance of the Local Governments within the Mid-West Regional Council. A copy of the survey is included as an attachment to this paper.

The survey was compiled with contributions from Local Government, WALGA staff, discussions with the Office of Shared Services, and interstate experiences¹, and covered a number of critical areas of road maintenance and construction. This included identifying major pieces of plant and equipment, their utilisation rates and their replacement costs. It also included identifying the number of people employed in the works program, hire rates for external equipment, and the size of the local road network.

The initial methodology was undertaken to estimate the savings that are potentially available under a regional grouping, but limited to a 100 kilometre diameter. The rationale was that a work-gang would always be, at worst, around 30 minutes away from the base of operations. This would facilitate workers being domiciled throughout the region, rather than basing the region on a large regional centre, which is often a major concern of Local Government in entering into shared service arrangements. To extrapolate from this model required responses from a number of Councils in each categorisation of the Australian Local Government Classifications (ALGC). However, the survey response rate required an adjustment in the methodology that involved assessing regional groupings based on Regional Road Groups.

The methodology use to assess the potential savings in plant and equipment involved a number of stages.

1. Find the average utilisation rate and replacement cost for each major piece of equipment of respondent Councils.
2. Estimate the total utilisation of each piece of equipment for all respondent Local Governments based on the reported levels and total quantities of that form of plant and equipment held by respondent Local Governments.
3. Estimate the total utilisation if each Local Government was able to achieve the average or maintain its current level of utilisation.
4. Consider the difference between the two total utilisation levels. This difference represents “excess” plant and equipment held by the regional Local Governments. The value of this excess plant and equipment was then calculated by comparing it with the average replacement cost for that type of plant and equipment.
5. Annual savings are calculated at a conservative estimate of ten year straight line depreciation of plant and equipment.
6. The excess plant and equipment is then expressed as a proportion of road and maintenance budget for the respondent councils and the regional savings are calculated from an equivalent ratio compared with the total budget of the regional road group.

¹ CCI Economics acknowledges their contribution but takes complete responsibility for the survey and its results.

3.0 Research Findings

The results for the Mid-West Regional Council and the Mid-West Road Group are detailed for major pieces of plant and equipment, as described in Table 1.

Table 1
Summary of Survey Responses

	Approximate Plant Value	Utilisation Rate		Excess Capacity	Average Replacement Value	Excess Plant Value
		Average	Range			
Truck	\$ 1,050,000	33960 kms/yr	21,000-40,000 kms/yr	18,407 kms/yr	\$ 150,000	\$ 81,303
Grader	\$ 7,049,002	1169 hrs/yr	56-1,451 hrs/yr	2,626 hrs/yr	\$ 334,687	\$ 751,678
Backhoe	\$ 435,000	545 hrs/yr	500-635 hrs/yr	90 hrs/yr	\$ 145,000	\$ 23,945
Loader	\$ 2,175,000	700 hrs/yr	300-1148 hrs/yr	1,699 hrs/yr	\$ 217,500	\$ 222,257
Prime Mover	\$ 1,265,000	55000 kms/yr	45,000-65,000 kms/yr	20,000 kms/yr	\$ 252,500	\$ 91,818
Roller	\$ 1,740,444	485.7 hrs/yr	200-1000 hrs/yr	1,375 hrs/yr	\$ 158,222	\$ 448,104
Tipper	\$ 1,096,000	30000 kms/yr	15,000-50,000 kms/yr	25,000 kms/yr	\$ 194,500	\$ 162,083
Total	\$ 14,810,446					\$ 1,781,188

Source: Mid-West Regional Road Group Survey Responses

Based on the survey responses, there is approximately \$1.8 million in capital invested in plant and equipment that can be reduced through integrating the works programs². This represents over 21% of the annual roads expenditure for the respondent Local Governments recorded by the Western Australian Grants Commission. It also represents approximately 12% of the capital employed in plant and equipment amongst responding Councils. The estimate of the level of capital employed by responding Local Governments in plant and equipment was in line with depreciation expenses recorded in available financial statements.

When this analysis is extrapolated across the entire Mid-West Regional Road Group, which has a roads expenditure budget of more than three times the respondents, the total savings are found to be over \$5.9 million. The survey responses suggest that there is considerable scope for Local Governments to dramatically reduce the level of capital employed in their plant and equipment involved with road maintenance. While this represents a “one-off” saving, this saving could be redeployed to enhance the professionalism of road maintenance and construction, bringing in-house services

² A past example of resource sharing, between the Shire and Town of Narrogin, was able to reduce the capital invested from between 25 per cent to ½, depending on the piece of plant and equipment.

which are currently engaged contractually, or to address the infrastructure backlog identified by Access Economics.

The annual depreciation savings, based on a conservative 10-year depreciation schedule, would be \$600,000 annually for the road group. This recurrent savings represents approximately 2.5% of its annual road expenditure. While this is not a large recurrent saving, and would require expanding the level of professional services employed by the road group to capture the benefits, it represents a conservative estimate of the ongoing benefits of regional co-ordination of works programs.

By extrapolating the potential savings of the Mid-West Regional Council across the Local Government sector, it is estimated that there are potential savings of approximately \$87 million under such an arrangement. This saving compares with annual road expenditure by the sector of over \$406 million. These savings are calculated by finding the level of capital that can be “freed-up” as a proportion of the annual roads expenditure budget. This proportion (approximately 21%) is then compared with each individual road group’s annual expenditure to achieve an estimate of the total capital savings available to the entire sector as described in Table 2.

Table 2

Local Government Sector, Potential Capital Reductions

	Annual Road Expenditure		Potential Capital Savings	
Great Southern Regional Road Group	\$	27,120,000	\$	5,809,478
South West Regional Road Group	\$	38,681,000	\$	8,286,003
Gascoyne Regional Road Group	\$	7,970,000	\$	1,707,284
Mid West Regional Road Group	\$	27,556,000	\$	5,902,875
Goldfields Esperance Regional Road Group	\$	26,904,000	\$	5,763,207
Kimberley Regional Road Group	\$	13,556,000	\$	2,903,882
Metropolitan Regional Road Group	\$	189,693,000	\$	40,634,853
Wheatbelt South Regional Road Group	\$	24,881,000	\$	5,329,853
Wheatbelt North Regional Road Group	\$	37,546,000	\$	8,042,870
Pilbara Regional Road Group	\$	12,440,000	\$	2,664,819
Total	\$	406,347,000	\$	87,045,124

Source: WA Grants Commission and Local Government survey responses

The basis of the analysis is the assumption that the respondent utilisation rates can be lifted to the average level, while those that are higher than the average can be maintained. This assumption is corroborated by the business case of the New England Regional Alliance (NERA) of Local Governments and its experience in implementing the business case. NERA has been able to obtain significant reductions in capital invested in plant and equipment through treating all Local Governments as one for the purpose of developing the works program. In fact, NERA was able to achieve substantial increases in its utilisation rates by introducing professional skills and setting competitive benchmarking. The magnitude of achieved capital savings in NERA also exceeds this study’s findings of the potential savings estimated as a proportion of reported capital employed in plant and equipment for road maintenance and construction.

The NERA experience has been to dramatically lift the level of utilisation as a result of their professional standards. If the NERA standard of efficiency is set for Western Australia, then the savings would represent over 29 % of the capital invested in plant and equipment.

At this level of savings, the Mid-West Regional Road Group would save almost \$16.4 million. If this level of capital savings were extended to the entire sector, then the total savings would be almost \$242 million in reduced capital being held as part of plant and equipment.

There are three other critical assumptions in this analysis:

1. excess capacity can be redeployed throughout the regions;
2. the Local Governments can gain access to the needed equipment during seasonal peaks; and
3. that regional population centres contain the same quantity of road maintenance and construction capital as rural Local Governments.

The first assumption can only work in conjunction with a professional dynamic assessment of utilisation rates across the region. However, this assumption breaks down in regions, such as the Kimberley, where there are substantial distances between Local Governments. The second assumption is reasonable if works programs act in collaboration on a state-wide level, a task that would be easier with fewer regional groups organising road maintenance and construction. The final assumption is reasonable since it represents a scaling approach to road expenditure, and initial survey responses suggest that the level of savings may be *higher* with metropolitan Local Governments.

It is also reasonable to assume a correlation between the plant and equipment held by a Local Government and its expenditure on road maintenance and construction. While social and environmental conditions may vary considerably throughout the state, the construction and maintenance of roads are essentially the same. The greatest difference could be between the rural and metropolitan Local Government tasks in maintaining roads. The survey responses from metropolitan Local Governments suggest potential savings at twice the rate of rural Local Governments as a proportion of capital employed. However, because the response rate for metropolitan Local Governments was very low, the rural capital savings ratio was used in the metropolitan setting.

The survey is based on the current level of plant and equipment utilisation. However there are two significant ways this measurement could be improved. The first would involve a dynamic utilisation measurement that assesses the level of use for each part of the Local Government's plant and equipment over the course of the year. Some pieces of plant and equipment have highly seasonal levels of demand. As a consequence, the measure of their level of use can either overstate or understate their annual usage. It is for this reason that the utilisation rate may be particularly low for plant and equipment held by the Mid-West. However, the utilisation rates were broadly in line with those of the New England Regional Alliance prior to moving towards a shared services model. They were able to make substantial savings through improved utilisation and strategic hiring of plant and equipment.

The second issue with the question of utilisation is the lack of comprehensive data. The Mid-West Regional Council commissioned a review of the plant and vehicle management systems, which found that there was insufficient attention currently employed to accurately measure the level of plant and equipment utilisation. Considering the importance of utilisation rates to procurement and fleet management and maintenance, this is an important area for Local Government to improve its level of professionalism.

To obtain the capital reductions identified in this study would require a considerable change in the policy and practice of Local Government works programs. The NERA experience highlights the importance of not underestimating the difficulty associated with moving towards effective shared services. A key element of actually achieving the potential benefits of a regional works program was a *“departure from standard Local Government practices, and the adoption of regular performance management reporting.”*

The potential savings for the Local Government sector identified in Table 2 also do not touch on the productivity gains that could be introduced under a regional works program. Nor does it describe the potential savings associated with labour and a potentially reduced workforce. Considering the difficulties that Local Governments are experiencing in attracting and retaining suitable staff, it may be that the workforce advantages could be significant.

No estimate of the costs associated with purchasing enabling IT software have been made due to the variability involved and the uncertainty associated with what services would be involved in a shared service arrangement. The NERA experience, which involved integration between five Local Governments, incurred technology costs equating to 107% of the savings from the works program. However, this information technology was used to completely integrate almost all functions of the NERA and so dramatically overestimates the expense of information technology for the Western Australian experience.

The methodology used to estimate the potential savings to Local Government potentially underestimates the savings that could be achieved through shared services. Whilst the methodology used in this analysis has its limitations, it does demonstrate the potential savings that could be achieved through the introduction of shared services of Local Government works program. If a dynamic analysis of work-flow utilisation is undertaken, and a less conservative approach to plant and equipment utilisation is adopted, the potential savings increase dramatically.

For instance, in moving to a regional works program, the NERA found that the average utilisation of the 14 graders was 1,090 hours per year, and that this utilisation ranged from 640 to 1,860 hours per year. The NERA works program set a target utilisation rate of 1,650 hours per year based on comparisons with construction company competitors, allowing for the number of graders to be reduced by 28.6%.

When considering regional shared services in Local Government, the rural utilisation of 22 graders was found to be 1,169 hours per year, with a range from 56 to 1,451 hours per year. The NERA works program, due to its higher integration and professionalism, was able to set the target utilisation rate 13.7% above the *highest* utilisation of respondent councils. If this study had applied this utilisation rate, then the respondent rural councils would have saved almost three times as much of the capital invested in graders. When this level of improvement is extrapolated across the entire sector, then the capital savings reaches \$241.9 million.

In the metropolitan setting, the NERA works program target utilisation rate was over 54% higher than the average grader utilisation rate of respondents. This is greater than for rural Local Governments, indicating that the substantial savings suggested by this study are potentially greater than these findings have concluded.

4.0 Recommendation

To obtain a comprehensive assessment of the total costs and benefits of integrating road construction and maintenance in each Regional Road Group, or suitable catchment of Local Governments, it is recommended that WALGA conduct an independent investigation into an integrated works program. This investigation could incorporate a dynamic analysis of the works program of individual Local Governments, along with setting competitive utilisation target rates and estimating potential labour efficiencies. This assessment would need to be placed in context of the Regional Model being developed by WALGA to ensure that an accurate costing of enabling information technology can be undertaken.

Attachment

Road Construction and Maintenance Shared Service Survey

1. What are the major components of your shire's plant / vehicle / equipment?

Plant / Vehicle / Equipment	Make / Model	Approximate Replacement Cost	Maintenance / Construction (%)	Utilisation Rate (hrs/yr)
1.				
2.				
3.				
4.				
5.				
6.				

2. What workforce supports your Shire's works program?

Position	Number of Employees

3. How is the total number of people employed in your works program?

4. What amount of external plan / vehicle / equipment hire do you use?

Plant / Vehicle / Equipment	Charge-out rate	Total Usage
1.		
2.		
3.		

5. Do you contract external expertise as part of your works program?

6. What is the size of your Shire's engineering budget?

7. What is the size of your Shire's road network?

Sealed	Unsealed

