Main Roads WA

Key Performance Indicators Manual

Updated July 2012

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Contents

NOTES:

- Performance indicators were substantially revised for the 2008-09 financial year after a Main Roads' submission to the Outcome Structure Review Group was approved in February 2008.

- In 2011-12 the methodology sheets were updated to incorporate recommendations from the Auditor Generals Report on Beyond Compliance: Reporting and Managing KPIs in the Public Sector. This change largely reflects a recommendation to identify Target Setting Rationale and consideration of unintended consequences.

INTRODUCTION

Main Roads uses performance measurement to gain insight into, and make judgements about, the effectiveness and efficiency of its programs, processes and people. We measure our progress in meeting strategic goals and outcomes, gather and analyse performance data and then use that data to drive improvements and successfully measure the deployment of actions into outcomes.

Our performance measures support managerial decision making by providing useful information on how efficient and effective our core processes are, if improvements are necessary, identification of potential risks, determination of customer and stakeholder satisfaction, and if we are meeting our own and Government goals.

Four of the measures are derived from an annual Community Perceptions Survey that seeks to reflect the satisfaction levels of customers in both metropolitan and rural areas of the State. These results are used to ensure that Main Roads' projects and customer service initiatives are targeted at the areas of greatest need.

Through the use of an external research company, the data was collected by way of telephone interview using a structured questionnaire. The results are based upon a random sample of 1,150 people (250 persons in the Metropolitan area and 900 persons in rural areas). When extending these results to estimate the percentage of satisfied Western Australians, the margin of error is approximately 2.9% at the 95% confidence level and is also weighted to reflect the actual population distribution based on ABS statistics.

The structure of the survey questionnaire is changed from time to time to capture improvements however, the questions used to derive the results for this indicator remain unchanged. As such, comparability with prior year results is not affected.

The four measures are Community Satisfaction with Main Roads, road safety, maintenance, and provision of cycleway and pedestrian facilities.

We have a well-established outcome based performance measurement framework that seeks to measure the organisation's success in terms of delivering on agreed Government goals and outcomes. Our performance measures are integrated with the monthly performance evaluation process undertaken by the Corporate Executive Leadership team.

The matrix on the next pages demonstrates the alignment between the Government's Goals and Main Roads Outcomes and Programs or Services.

A complete and comprehensive review of all of the performance measures is undertaken every five years, the next review is due during the 2012 to 13 Financial Year.

Full a full breakdown and analysis of the results including explanations of each of the measures in context please visit the Main Roads Annual Reports available direct from our website at www.mainroads.wa.gov.au .

SUMMARY OF MAIN ROADS OUTCOME BASED MANAGEMENT MATRIX AS USED FOR 2011-12

Government		Main Roads			
Goals	Outcomes	Programs	Outcomes	Effectiveness Indicators	Efficiency Indicators
State Building - Major Projects	Building strategic infrastructure that will create jobs and underpin WA's long term economic development	Infrastructure for State Development	Facilitate economic and regional development	a. Return on Construction Expenditure (as an average)	a. % of contracts completed on time b. % of contracts completed on budget
Outcomes Based Service Delivery	Greater focus on achieving results in key service delivery areas for the benefit of all Western Australians	Road System Management	Reliable and efficient movement of people and goods	a. Community Satisfaction b. Road network permitted for use by heavy vehicles c. Community satisfaction with travel times d. Network configuration (% of travel that occurs on roads meeting MRWA Investigatory Criteria for Roads and Bridges	a. Average cost of network management per million vehicle kms travelled
		Road Efficiency improvements			a. % of contracts completed on time b. % of contracts completed on budget
		Road Safety	A safe road environment	a. Community Satisfaction of Road Safety b. Blackpsot location indicator	a. % of contracts completed on time b. % of contracts completed on budget
		Office of Road Safety	Improved coord and community awareness of road safety in WA	a. Effectiveness of road safety campaigns	a. % of projects completed on time b. % of projects completed on budget
Stronger Focus on the Regions	greater focus on service delivery, infrastructure investment and economic development to improve the overall quality of life in remote and regional areas	Road Network Maintenance	A well maintained road network	a. Smooth Travel Exposure b. Community Satisfaction with road maintenance c. Preventative maintenance indicator d. Performance of traffic signals, road lighting and emergency telephones	a. Average cost of network maintenance per lane kilometre of road network
Social and Environmental Responsibility	ensuring that economic activity is managed in a socially and environmentally responsible manner for the long term benefit of the State	Infrastructure for community access	Improved community access and roadside amenity	a. % of the year that 100% of the Main Roads' state road network is available b. Community satisfaction with cycleways and pedestrian facilities	a. % of contracts completed on time b. % of contracts completed on budget

1. Community Satisfaction of Road Safety

Outcome	A safe road environment
Associated Program	Road Safety
Description	The Community Satisfaction of Road Safety Indicator represents how satisfied the community is with the overall performance in the safety of the State road network. This indicator is obtained through the Community Perceptions Survey and reflects the satisfaction level of customers in both metropolitan and rural WA.
Purpose	The results of the Community Perceptions Survey are used to ensure Main Roads' projects and customer service initiatives are targeted at the areas of greatest need in relation to road safety.
Reporting Cycle	Yearly
Methodology	*Note: The complete methodology adopted for the survey is included as part of the final report which will be provided to the Auditors.* An external research company is commissioned to undertake the Community Perceptions Survey and report on the findings on an annual basis. The data is collected by way of telephone interviewing using a developed structured questionnaire. The population for the purpose of the research is all Western Australian residents 17 years of age and over who possess an Australian driver's license. A sample of 900 residents from rural areas (100 respondents from each region) and 250 residents from the Perth metropolitan area are surveyed. A stratified random sample is taken from the population ensuring that each person is given equal opportunity of being selected. The total sample of 1,150 produces a sampling precision of +/- 2.9% at the 95% confidence interval. That is to say that we would be 95% confident that the results would be within +/-2.9% should a census of the population be undertaken. The collected data is weighted to reflect the actual population distribution based on ABS statistics. When combining response codes, such as excellent and good to make excellent plus good, it is not unusual for rounding to produce results that don't appear to add up. Weighting can magnify this issue. The reported % is taken directly from the survey report.
Target Setting Rationale	A common target of 90% has been established for all of the Community Perception Satisfaction measures. The target was selected based on reviewing the results over the last five years.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

2. Blackspot location index

Outcome	A safe road environment
Associated Program	Road Safety
Description	The Annual Key Performance Indicator for Road Safety (AKPIRS) is defined as the number of the Black Spot Qualifying Locations on the State Road Network per 100 MVKT for the entire road network in the state. The number of Black Spot qualifying locations is comprised of: a) Number of Black Spot Qualifying Intersections b) Number of Black Spot Qualifying Short Road Sections, <= 3 km c) Number of Black Spot Qualifying Road Lengths > 3 km The Black Spot Qualifying Locations are defined according to the State Black Spot Program criteria as the locations satisfying the following crash frequencies: **Intersections** Metro State Road 10 crashes over 5 years Rural State Road 3 crashes over 5 years **Short Sections (< 3 km)** Metro State Road 10 crashes over 5 years Rural State Road 3 crashes over 5 years **Road Length (> 3 km)** Metro State Road 3 crashes/km Rural State Road 1 crash/km For the purpose of the determination of the AKPIRS index, the Short Section and the Road Length are defined as sections/lengths of a road that do not overlap with any other sections/lengths satisfying the Black spot criteria.
Purpose	To assess and compare road safety performance on the State road network against previous years. The change in trend of the black spot indices is an indicator of the road safety performance over the observation period. The current relative index can be used as a guide for formulation and implementation of future road safety strategies and network improvement programs.
Reporting Cycle	Yearly
Audited by OAG	Yes

Methodology	• Perform annual extraction of all police reported crashes stored in the MRWA IRIS data base for the period of 5 calendar years.
	
	• Determine the unique number of the Black Spot Qualifying Locations for the current 5-year period satisfying the criteria stated above comprised of:
	
	    • the number of intersections,
	    • the number of non-overlapping short sections (< 3 km); and
	    • the number of non-overlapping road lengths (> 3km).
	
	• Use MVKT data calculated by RAP Branch based on ABS Stats including Experimental Estimates and Corporate MVKT estimates for missing years..
	
	    e.g. *Mean $MVKT_{2007} = (MVKT_{2003} + \dots + MVKT_{2007})/5$*
	
	• Calculate the AKPIRS for the current 5-year period as follows:
	
	$$ANKPIRS = \frac{\text{Total No. of Qualifying Black Spot Locations}}{\text{5-year MVKT average}}$$
	
	Eg. For the crash data period 2003 – 2007
	
	$$ANKPIRS_{2007} = \frac{\text{No. of Qualifying locations 2003 to 2007}}{\text{Average MVKT (2003 to 2007)}}$$
	
	• If required, calculate the predicted ANKPIRS index for the following 5-year period as follows:
	
	➢ Estimate the expected number of Qualifying locations as follows:
	
	Exp. No. of Qual. Loc. (QL) for the following year =
	
	$$\left(\frac{\text{Obs. no. of QL in the current 5-year period}}{\text{Obs. no. of QL in the preceding period}}\right) \times \text{Obs. No. of QL in the current period}$$
	
	➢ Estimate MVKT for the following year based on the MVKT for the last 4 years and calculate the 5-year average for the year using MVKTs for the last four years plus the estimate for the following year.
	
	➢ Calculate Predicted ANKPIRS as follows:
	
	$$ANKPIRS_{predicted} = \frac{\text{Exp. No. of QL}}{\text{Average MVKT for the 5-year period}}$$

Data sources	**Crash Data** *Number of Crashes* - Main Roads IRIS Crash Database which contains all road crashes that are reported to the police **MVKT** Australian Bureau of Statistics publication of Survey of Motor Vehicle Use 31 Oct 2005 (or the most recent publication) and Corporate MVKT estimates for the missing years.
Target Setting Rationale	Target is established based on the anticipated outcome based on the proposed future work program.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

3. Community Satisfaction

Stakeholder	Road Users
Strategy	Community & Relationships
Outcome	Reliable and efficient movement of people and goods
Associated Program	Road System Management, Road Efficiency Improvements
Description	The Community Satisfaction Indicator represents how satisfied the community is with Main Roads' overall performance in the construction, maintenance and management of the State road network. This indicator is obtained through the Community Perceptions Survey and reflects the satisfaction level of customers in both metropolitan and rural WA.
Purpose	The results of the Community Perceptions Survey are used to ensure Main Roads projects and customer service initiatives are targeted at the areas of greatest need.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	*Note: The complete methodology adopted for the survey is included as part of the final report which will be provided to the Auditors.* An external research company is commissioned to undertake the Community Perceptions Survey and report on the findings on an annual basis. The data is collected by way of telephone interviewing using a developed structured questionnaire. The population for the purpose of the research is all Western Australian residents 17 years of age and over. A sample of 900 residents from rural areas (100 respondents from each region) and 250 residents from the Perth metropolitan area are surveyed. A stratified random sample is taken from the population ensuring that each person is given equal opportunity of being selected. The total sample of 1,150 produces a sampling precision of +/- 2.9% at the 95% confidence interval. That is to say that we would be 95% confident that the results would be within +/-2.9% should a census of the population be undertaken. The collected data is weighted to reflect the actual population distribution based on ABS statistics. The weightings are applied in SPSS (specific research statistical software) and all statistical analysis is run in the SPSS environment. The weights applied are based ABS stats and applied individually to each case based on age, gender and region to ensure the data is representative of the state's population. The results reported are based on the weighted data from SPSS. **The reported % is taken directly from the survey report.**
Target Setting Rationale	A common target of 90% has been established for all of the Community Perception Satisfaction measures. The target was selected based on reviewing the results over the last five years.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

4. Road Network Permitted for use by Heavy Freight Vehicles

Outcome	Reliable and efficient movement of people and goods
Associated Program	Road System Management, Road Efficiency Improvements
Description	This indicator relates to the percentage of available state and national roads accessed by Class 10, Class 11 and Class 12 vehicles and in effect, the efficient movement of goods within Western Australia.
Purpose	The use of larger vehicles with greater payloads can increase the overall efficiency of freight transport operations, resulting in lower transport costs. However, to maintain road safety and guard against infrastructure damage, restrictions are placed on trucks that are larger than AUSTROADS Class 9. These include B-doubles (Class 10), double road trains (Class 11) and triple road trains (Class 12). Because of the relatively high efficiency of these vehicles, the proportion of roads accessible to them is an important factor in the overall efficiency of freight transport in this State.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	$$\frac{BD}{R} \times 100 = P10$$ $$\frac{DRT}{R} \times 100 = P11$$ $$\frac{TRT}{R} \times 100 = P12$$ P10 = Percentage of classified roads available to Class 10 vehicles P11 = Percentage of classified roads available to Class 11 vehicles P12 = Percentage of classified roads available to Class 12 vehicles R = Total length of all classified roads in the State BD = Length of classified roads available to Class 10 vehicles (typically B-doubles) DRT = Length of classified roads available to Class 11 vehicles (typically double rt) TRT = Length of classified roads available to Class 12 vehicles (typically triple rt) ANI Branch provides the total road length figures (R). HVO provides the information on road lengths available to various classes (BD, DRT and TRT) of vehicle by interrogation of the Vehicle Loading System (VLS) and networks built in IRIS.
Target Setting Rationale	This target is based on fact and takes into account anticipated increases in the network based on changes to Govt Policy or expansions to the network.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

5. Network Configuration – Roads

Outcome	Reliable and efficient movement of people and goods
Associated Program	Road System Management, Road Efficiency Improvements
Description	The Network Configuration (roads) indicator shows the percentage of travel that occurs on roads which are within the limits defined by the Investigatory Criteria for seal width, carriageway width and curve rating**. The indicator is calculated for sealed roads only.
Purpose	This indicator is a demand related measure of the effectiveness of improvement expenditure and gives an indication of Main Roads ability to plan for and maintain roads to desirable standards.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	• TRIM document D11#158606 outlines the business rules used in the calculation of this indicator. The business rules are replicated in the SAS code used to compile the KPI. • The data source for the calculation of the performance indicator is the Corporate Extract in SAS data set format. TRIM document D11#163293 contains the Instructions for creating the data in this format. To compile the indicator: 1. Ensure that the SAS format corporate extracts are copied to c:\work\corpex\SAS 2. Run the SAS Program *Run_NC.sas* located at \\dacsrv01\RdMaintstrat\PERFORMANCE EVALUATION\03 Corporate Performance Indicators\Annual Report\Master Directory\SAS code The SAS code compares the seal widths, carriageway widths and curve ratings of homogenous sections of the road network against the investigatory criteria for the link subcategory that applies to that same section. The section of road is considered deficient if it fails any of the criteria. The SAS code will compile the statistics for the KPI and will output an excel file containing the percentage of travel on roads that not meeting the investigatory criteria as well as composite statistics. 3. The Network Configuration KPI is the percentage of travel on roads that meet the criteria and is calculated as the complement (100% - value) of the percentage of travel on roads not meeting the investigatory criteria.
Target Setting Rationale	Target based on anticipated results taking into account known works programs and the likely impact on the measure.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

6. Network Configuration – Bridges

Outcome	Reliable and efficient movement of people and goods
Associated Program	Road Systems Management, Road Efficiency Improvements
Description	Extent to which bridges on main roads and highways do satisfy bridge width and strength standards.
Purpose	This standard provides for a safe and efficient road network, and is based upon standards relating to improved access and transport efficiencies. It gives an indication of MRWA's ability to plan for and maintain bridges to desirable standards on the important transport routes.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	Pedestrian bridges, rail bridges and sign gantries are excluded from the assessment because they cannot be crossed by vehicles. Special purpose bus bridges in the Metropolitan area are not included in the assessment because they are not intended for use by varied network vehicles. Each bridge is compared against the investigatory criteria using a standard IRIS report, identifying those bridges not meeting the strength and/or width criteria. A full explanation of the width investigatory criterion is contained on 06/3622. Previous years strength methodology compared each bridge to the investigatory criterion of 95% T44. The T44 design vehicle from the 92' Austroads Bridge Design Code is not a good indicator of capacity, particularly for long-span continuous bridges and is a poor representation of road train and other heavy vehicles, however this has been reported on for consistency and comparison against previous years. This year, the required rating index is compared with the actual rating index also, where the bridge rating index is on a rating of 1-6, defined as: 1. Load limit (posted with a gross load limit) 2. ≥ VSR (okay for as-of-right vehicles) 3. CLS (okay for higher mass limits, 22.5t triple axles and likely to be okay for concessional, 23.5t triple axles) 4. ≥ Full (full capacity and likely to be okay for Class 1 Extra Mass) 5. >95% G2V4 For platform type vehicles 6. >95%SM1600 current design vehicle – the optimum A full explanation of the revised strength criterion is on 09/360 ff 113-115. The indicator is the number of bridges that meet or are above the investigatory criteria recorded as a percentage of the total number of bridges. Note that these criteria are 'triggers' for investigation. A bridge not meeting a criterion may still prove to be adequate and safe for its current traffic needs without intervention. Hence the indicators are not a direct measure of deficient structures.
Target Setting Rationale	Target based on anticipated results taking into account known works programs and the likely impact on the measure.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

7. Unplanned road closure on the state road network

Outcome	Improved community access and roadside amenity
Associated Program	Infrastructure for Community Access
Description	Generally 100% of Main Roads road network responsibility is available to all road users and there will be unplanned road closures due to a number of reasons such as flooding due to cyclones, major bushfires, major road accidents, and they may be of varying durations. There may be any number of incidents or events that may close any or a number of our roads in any one day, particularly due to flooding in our north west during the cyclone season.
Purpose	To demonstrate the degree to which the sealed State road network under Main Roads responsibility is totally (100%) available to the road user
Reporting Cycle	Yearly with status updates provided each quarter
Audited by OAG	Yes
Methodology	The availability of our road network will be measured as a percentage of the 365 (or 366) calendar days that the whole network is available to the road user. By example, if there are 23 calendar days where the road network is not 100% available to the road users then our KPI for that year or reporting period will be (365 (or 366) – 23) / 365 (or 366). For this example in this reporting period (2007/08) that KPI would be (366-23) / 366 = 93.7 Readily available historical records from the Pilbara below over the past 5 years show that days of closure on their network for any vehicle for any duration during the day varied considerably each year. **Year 2003 2004 2005 2006 2007** **Closed 120 169 11 101 39** Closure will be determined by measuring the number of whole days that any section of our road or road network is closed. A day will be a period of 24 hours commencing from the time the road is closed.

Methodology	If the road is closed and then re-opened in the same day then that road will be considered to be Open because it is available to the road user on that day ie the period of closure is less than 24 hrs.

If the road is closed during day 1 and opened on day 2 and the duration is 24hrs or greater, the closure will apply to day 1, and day 2 will be considered to be open.

Examples are below:

1. Road Closed at 10:00am 11 Feb. 08 and Re-opened at 11:00pm 11 Feb. 08. The Road is considered **open** because the period of closure is less than 24hrs (or less than 1 day).

2. Road Closed at 10:00am 11 Feb. 08 and Re-opened at 2:00pm 12 Feb. 08. The Road is considered **closed** for 1 day because the period of closure is more than 24hrs (or more than 1 day). Note that the period of closure beyond 10:00am on day 2 is 4hrs which is less than 24hrs. Day 2 is considered to be open.

If, throughout the State there are many of our roads closed on the same day as determined by the above rules, then our road network will not be 100% available on that day.

See Table below for simplified example: ie closed 2 days

Road	Tuesday					Wednesday				Thursday				Friday				Closed
NWCH – site 1		■	■	■	■	■				■	■	■	■	■	■	■		2 days
NWCH – site 2				■	■	■				■	■	■	■	■	■	■		1 day
GNH – site 1	■	■	■															0 days
GNH – site 2	■	■	■	■														1 day
GNH – site 3			■	■	■													1 day
GEH – site 1				■														0 days
Eyre Hwy – site 1										■	■	■	■	■	■			1 day
Albany Hwy – site										■	■	■	■	■				1 day
CLOSED	YES					NO				YES				NO				2 days

Regions will update their own road closure spreadsheet titled **(Region Name) Road Closures.xls** monthly and download the updated file electronically into 'RURALOP on Dacsrv02' drive 028 KPI's and subfolder KPI 8 Unplanned Road Closures for each financial year.

The Calculation Owner will by the end of July (in the following financial year) will provide a summary by Region and State determining the degree of compliance with the target. This document titled **KPI 8 Summary and Calculation** will be electronically located in "RURALOP on Dacsrv02' under 028 KPI's and subfolder KPI 8 for each financial year. |
| *Target Setting Rationale* | Target based on previous years trends given it seeks to anticipate the annual impact of weather events and bushfires on the network. Whilst considered Acts of God and generally outside of our control there are instances where we could improve the results with built solutions. |
| *Unintended Consequences* | The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant. |

8. Community Satisfaction with Cycleways and Pedestrian Facilities

Outcome	Improved community access and roadside amenity
Associated Program	Infrastructure for Community Access
Description	The Community Satisfaction with Cycleways and Pedestrian Facilities Indicator represents how satisfied the community is with Main Roads' overall performance in the construction, maintenance and management of cycleways and pedestrian facilities on the Metropolitan road network. This indicator is obtained through the Community Perceptions Survey and reflects the satisfaction level of customers from both metropolitan and rural WA.
Purpose	The results of the Community Perceptions Survey are used to ensure Main Roads projects and customer service initiatives are targeted at the areas of greatest need in relation to cycleways and pedestrian facilities.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	An external research company is commissioned to undertake the Community Perceptions Survey and report on the findings on an annual basis. The data is collected by way of telephone interviewing using a developed structured questionnaire. The population for the purpose of the research is all Western Australian residents 17 years of age and over. A sample of 900 residents from rural areas (100 respondents from each region) and 250 residents from the Perth metropolitan area are surveyed. A stratified random sample is taken from the population ensuring that each person is given equal opportunity of being selected. The total sample of 1,150 produces a sampling precision of +/- 2.9% at the 95% confidence interval. That is to say that we would be 95% confident that the results would be within +/-2.9% should a census of the population be undertaken. The collected data is weighted to reflect the actual population distribution based on ABS statistics. The weightings are applied in SPSS (specific research statistical software) and all statistical analysis is run in the SPSS environment. The weights applied are based ABS stats and applied individually to each case based on age, gender and region to ensure the data is representative of the states population. The results reported are based on the weighted data from SPSS. **The reported % is taken directly from the survey report.**
Target Setting Rationale	A common target of 90% has been established for all of the Community Perception Satisfaction measures. The target was selected based on reviewing the results over the last five years.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

10. Smooth Travel Exposure

Associated Program	Road Network Maintenance
Description	The Network Configuration (roads) indicator shows the percentage of travel on the sealed road network that occurs on roads, which are within the roughness limits defined by the Asset Management Planning Investigatory Criteria.
Purpose	The purpose of the Smooth Travel Exposure KPI is to provide a measure of the effectiveness of network maintenance.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	• TRIM document D07#113021 details the Investigatory Criteria used to assess whether the road roughness is within an acceptable range. • TRIM document D11#158606 outlines the business rules used in the calculation of this indicator. The business rules are replicated in the SAS code used to compile the KPI. • The data source for the calculation of the performance indicator is the Corporate Extract in SAS data set format. TRIM document D11#163293 contains the instructions for creating the data in this format. To compile the indicator: 1. Ensure that the SAS format corporate extracts are copied to c:\work\corpex\SAS 2. Run the SAS program *Run_STE.sas* located at \\dacsrv01\RdMaintstrat\PERFORMANCE EVALUATION\03 Corporate Performance Indicators\Annual Report\Master Directory\SAS code. The SAS code compares the IRI roughness values for homogenous sections of the road network against the roughness investigatory criteria for the link subcategory that applies to that same section. The section of road is considered deficient if the roughness exceeds the criteria. The roughness figure used for the comparison are the Lane Quarter car IRI values which are calculated as: $iri\_left = (iri\_l\_owp + iri\_l\_iwp) / 2;$ $iri\_right = (iri\_r\_iwp + iri\_r\_owp) / 2;$ The SAS code will compile the statistics for the KPI and will output an excel file for each year of calculation containing the percentage of travel and percentage of road length not meeting the investigatory criteria as well as composite statistics. 3. The Smooth Travel Exposure KPI is the percentage of travel on roads that meet the criteria and is calculated as the complement (100% - value) of the percentage of travel on roads not meeting the investigatory criteria.
Target Setting Rationale	Target based on anticipated results taking into account known works programs and the likely impact on the measure.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

11. Community Satisfaction of Road Maintenance

Outcome	A well maintained road network
Associated Program	Road Network Maintenance
Description	The Community Satisfaction of Road Maintenance Indicator represents how satisfied the community is with Main Roads' overall performance in the maintenance of the State road network. This indicator is obtained through the Community Perceptions Survey and reflects the satisfaction level of customers in both metropolitan and rural WA.
Purpose	The results of the Community Perceptions Survey are used to ensure Main Roads projects and customer service initiatives are targeted at the areas of greatest need in relation to road maintenance.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	An external research company is commissioned to undertake the Community Perceptions Survey and report on the findings on an annual basis. The data is collected by way of telephone interviewing using a developed structured questionnaire. The population for the purpose of the research is all Western Australian residents 17 years of age and over. A sample of 900 residents from rural areas (100 respondents from each region) and 250 residents from the Perth metropolitan area are surveyed. A stratified random sample is taken from the population ensuring that each person is given equal opportunity of being selected. The total sample of 1,150 produces a sampling precision of +/- 2.9% at the 95% confidence interval. That is to say that we would be 95% confident that the results would be within +/-2.9% should a census of the population be undertaken. The collected data is weighted to reflect the actual population distribution based on ABS statistics. The weightings are applied in SPSS (specific research statistical software) and all statistical analysis is run in the SPSS environment. The weights applied are based ABS stats and applied individually to each case based on age, gender and region to ensure the data is representative of the states population. The results reported are based on the weighted data from SPSS. **The reported % is taken directly from the survey report.**
Target Setting Rationale	A common target of 90% has been established for all of the Community Perception Satisfaction measures. The target was selected based on reviewing the results over the last five years.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

12. Preventative Maintenance Indicator

Outcome	A well maintained road network
Associated Program	Road Network Maintenance
Description	The Preventative Maintenance Indicator compares the surface age of the road against the target maximum surfacing age (optimum target age) for the section of road and reports on the percentage of the sealed network falling into the category of 'Good'.
Purpose	To provide an indication of the extent that preventative (proactive) maintenance of road pavements is being adequately undertaken.
Reporting Cycle	Yearly
Audited by OAG	Yes
Methodology	• TRIM document D11#158606 outlines the business rules used in the calculation of this indicator. The business rules are replicated in the SAS code used to compile the KPI. • The data source for the calculation of preventative maintenance indicator is the Corporate Extract in SAS data set format. TRIM document D11#163293 contains the instructions for creating the data in this format. • Detailed job instructions for calculating the indicator can be found in TRIM document D11#158609. • The target maximum surfacing age (TA) is obtained from the Oliver model (refer business rules document D11#158606 Section 3.4.1 for details). To compile the indicator: 1. Ensure that the SAS format corporate extracts are copied to c:\work\corpex\sas 2. Confirm that the TA values used in the previous years' calculation are applicable and edit the SAS code to reflect the new values if there are changes. 3. Run the SAS Program *Run_PMI.sas* located at \\dacsrv01\RdMaintstrat\PERFORMANCE EVALUATION\03 Corporate Performance Indicators\Annual Report\Master Directory\SAS code (ensuring that any changes to the Seal optimum surfacing ages have been reflected in the code). The SAS code compares actual seal age (SA) against target age (TA) and assigns one of four categories to each homogenous section of road: Good: $SA < TA$ Mediocre: $SA = TA - (1.3 * TA)$ Poor: $SA = (1.3 * TA) - (1.6 * TA)$ Very Poor: $SA > (1.6 * TA)$ (The indicator in not applicable if the road has concrete pavement or is unsealed). Note that in the above description reference was made to the 2012 calculation year. For other years, corresponding subdirectories will have to be created for the current year, and files will have to be appropriately sourced relevant to the current financial year.
Target Setting Rationale	Target based on anticipated results taking into account known works programs and the likely impact on the measure.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

13. Performance of traffic signals, road lighting and emergency telephones (availability)

Outcome	A well maintained road network
Associated Program	Road Network Maintenance
Description	Availability of Traffic Signals, Road Lighting, Emergency Telephones The % of time the asset is fully operational
Purpose	This measures the availability of traffic signals, road lighting and emergency telephones throughout the road network as a percentage of the time the assets are fully operational..
Reporting Cycle	Quarterly and Annual
Audited by OAG	Yes
Methodology	The KPI's are calculated in accordance with Contract 3/98 TCIC annexure B11 (03/6088,D08#20733) and submitted by the contractor in their monthly claim at the end of each calendar month. The KPI's are monitored and recorded in \\Dacsrv01\metro region\Metropolitan Region\Term Contracts\TCIC\Quality Plan and Procedures\KPI monitoring.xls.
Target Setting Rationale	The targets have been established and are monitored regularly by the Management Team and Board overseeing the TCIC. The high target represents the importance of the assets to the effective operations of Main Roads. Targets have been rounded to whole numbers.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff or contractors to achieve the agreed targets is carefully considered and monitored by the Management Team and the Board as the meeting of the KPIs is related to performance payments.

14. Return on Construction Expenditure

Outcome	Facilitate economic and regional development
Associated Program	Infrastructure for State Development
Description	The Return on Construction Expenditure (RCE) KPI summarises the expenditure in the Road Infrastructure for State Development Program. The expenditure is summarised by the Benefit Cost Ratios (BCRs) of the projects upon which the expenditure was allocated.
Purpose	The RCE KPI indicates the extent which road and bridge construction will deliver future economic benefits to the community.
Reporting Cycle	Yearly
Audited by OAG	*Yes*
Methodology	- TRIM document *D08#92634* outlines the business rules used in the calculation of this indicator. The business rules are replicated in the SAS code used to compile the KPI. - The data source for the calculation of the performance indicator is an EXCEL spreadsheet obtained from Budget and Program Management Branch that summarises the expenditure by program for the reporting year. To compile the indicator: 1. Save the worksheet (of the Excel file) entitled *"PROPOSALS"* as *"EOY FINAL Cutup.csv"*; 2. Run the SAS program *KPI_RCE(step1).sas* located at \\Dacsrv01\rdmaintstrat\PERFORMANCE EVALUATION\03 Corporate Performance Indicators\Annual Report\2008-2009\KPI- Return on Construction Expenditure\SAS code which will generate the file *"For BCR Investigation.csv"*. This is a summary of projects in the Road Infrastructure for State Development Program for which expenditure has been recorded; 3. Undertake investigations into the BCRs for the projects identified in Step 2. Possible sources are RAPID and the RCE KPI compiled in previous years; 4. Save results of BCR investigations into an Excel file entitled *"BCR Investigations.xls"*. Then delete the column entitled *"Source"* and save as *"BCR Investigations.csv"*. 5. Run SAS program *KPI_RCE(step2).sas* which will compile three csv files: (a) *"Expenditure by Ind.csv"*; (b) *"Project Details.csv"*; and (c) *"Expenditure List.csv"*. 6. Copy the above csv files into the following worksheets of the Excel file "KPI RCE 2008-09.xls": (a) *"Expenditure by Ind.csv"* into Worksheet "Balance"; (b) *"Project Details.csv"* into Worksheet "RCE Projects"; and (c) *"Expenditure List.csv"* into Worksheet "RCE Funds". 7. For Excel file *"KPI RCE 2008-09.xls"*, enter the shaded green percentages in the last row of Worksheet *"RCE Funds"* into the table in Worksheet *"KPI".* Note that in the above description reference was made to the 2008-09 calculation year. For other years, corresponding subdirectories will have to be created for the current year, and files will have to be appropriately sourced relevant to the current financial year.
Target Setting Rationale	Target based on anticipated results taking into account known works programs and the likely impact on the measure.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

15. Effectiveness of road safety Campaigns

Outcome	Community Recognition of Road Safety Campaigns
Associated Program	Office of Road Safety
Description	This indicator represents the proportion of WA drivers who remember seeing Office of Road Safety community education campaigns. This indicator is obtained through campaign evaluation surveys undertaken at the end of major campaign period and demonstrates the extent of penetration, or success of major advertising campaigns.
Purpose	These results measure the extent to which WA drivers remember major road safety campaigns. They are also used for subsequent stages of campaign planning.
Reporting Cycle	Yearly, however the results of each individual campaign are reviewed at their conclusion
Audited by OAG	Yes
Methodology	An external research company is commissioned to undertake campaign evaluation surveys at the completion of major Office of Road Safety campaigns, defined as campaigns with a Television Commercial (TVC) component and total budget of at least $500,000 in media scheduling costs. The data is collected by way of an online survey using a developed structured questionnaire prepared by a professional agency. **The measure is based on prompted campaign recognition (ie. percentage of people who remember seeing any of the core campaign materials for a given campaign)** The population of the purpose of the research is Western Australian drivers 17 years of age and over. Results for each major campaign are based on a random sample of 300 Western Australian drivers 17 years of age and over, comprising: • n=200 responses from the Perth metro area • n=100 responses from rural WA. The collected data is weighted to reflect the actual population distribution based on ABS statistics. The weightings are applied in SPSS (specific research statistical software) and all statistical analysis is run in the SPSS environment. The weights applied are based on ABS stats and applied individually to each case based on age, gender and geographic location to ensure the data is representative of the state's population. The results reported are based on the weighted data from SPSS. A % prompted campaign recognition figure for all campaigns evaluated in a given year is recorded. 50% is regarded as being a realistic target for each campaign and will be used as a pass mark. **The reported % is the percentage of campaigns evaluated that reach the pass mark or higher.** Calculation: Number of campaigns reaching the pass mark divided by the total number of campaigns evaluated, multiplied by 100.
Target Setting Rationale	A target was established following discussions with marketing professionals engaged by ORS on what would be considered acceptable for penetration levels..
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

16. Percentage of contracts completed on time and budget

Associated Programs	Road Efficiency Improvements Infrastructure for Community Access Road Safety Infrastructure for State Development
Description	The indicator identifies the percentage of works projects within each Program that achieve on time on cost delivery
Purpose	Corporate indicators identifying the delivery of the works program in line with committed timeframes.
Reporting Cycle	Twice yearly. Forecast outcomes for Budget Papers and actual outcomes for Annual Reporting purposes. (Note: The KPI is also calculated on a monthly basis and reported to Corporate Executive in addition to the external reporting process)
Audited by OAG	Yes – for Annual Report.
	ELIGIBILITY CRITERIA: Projects that meet the following eligibility criteria are to be used to calculate the KPI: ● Infrastructure works on highways or main roads that are delivered by Contract, Direct Management or Local Government and where the estimated works value meets the Public Tender threshold (currently $150 000 incl GST) ● Infrastructure works on Local Roads where delivery is managed by Main Roads and where the estimated works value meets the Public Tender threshold (currently $150 000 incl GST). Note 1: The following contracts are excluded from the reporting process: MIW's (via TNC's) or MCW (via ISAs) < $150 000 (incl GST), Goods, Services, Consultancies, Plant Hire etc. All procurement less than $20 000 is considered to be a direct purchase rather than a contract and is also excluded. GENERAL: On award of an eligible works Contract information is entered into CAS, all information for calculation of this report is derived from an extract of CAS. Consistent with other State Road Authorities, the On Time target will incorporate a 10 % leeway on the initial Date for Practical Completion as identified at the award of the contract. This is to be known as the Target Date and will automatically be calculated during the extract of data from CAS. Where the 10% leeway on time results in the Target Completion Date falling within the next Financial Year then the outcomes are reported as part of the following Financial Year, even though the works may have been completed during the current Financial Year. In addition a 10% leeway is included on the award value of the tender, this is known as the Target Value. On establishment of the contract, the Program number should be entered into CAS on the Events tab – create an Event number XXX* and enter the Program number in the notes field.

	The following are the steps to be taken on a monthly and annual basis for the calculation of the measure:
	1. On the first working day after the 7th of the month Business Performance Branch request the "ARKPI_QueryExtract" from Supply and Transport Branch.
	2. Apply filters to the spreadsheet for each column and arrange date from oldest to newest. Delete any entries that have a target date beyond 30 June.
	3. Sort by Program Code on the column titled to filter out all contracts coded 1, 5 or 7. This is done as the performance measure is only reporting on Program Codes 2, 3, 4 and 6.
	4. Reset the filter for this column to show all remaining data including those not coded with a Program Code.
	5. Recalculate the On Budget column by adding the value of any variations to the existing Target Value and recalculate the On/Over Budget to recognise the inclusion of variations (note it was agreed to add variations as a "pure" value and not incorporate a 10% leeway given that variations can only be included based on approval in accordance with the delegation of authority manual).
	6. Extract information as follow:
Methodology	a. No. Contracts due for completion at month end – Count the number of contracts in the target range. Enter this figure into the summary sheet
	b. $ Contracts due for completion - Sum the $ value of contracts in the target range. Enter this figure into the summary sheet
	c. No. Contracts due for completion at year end – Count the total number of contracts in the data extract, Enter this figure into the summary sheet
	d. $ Contracts due for completion at year end - Sum the $ value of contracts in the data extract. Enter this figure into the summary sheet
	e. Contracts on time YTD – Filter the column titled "Works Completed On Time" to show those projects coded "On Time". Count the number of contracts in the target range and enter into the summary sheet. Calculate this number as a % of "contracts due for completion YTD".
	f. Contracts on budget YTD - Filter the column titled "Works Completed On Budget" to show those projects coded "On Budget". Count the number of contracts in the target range and enter into the summary sheet. Calculate this number as a % of "contracts due for completion YTD".
	g. Contracts on Time to 30 June XX - Filter the column titled "Works Completed On Time" to show those projects coded "On Time". Count the number of contracts to 30 June XX and enter into the summary sheet. Calculate this number as a % of "contracts due for completion 30 June XX
	h. Contracts on Budget to 30 June XX - Filter the column titled "Works Completed On Budget" to show those projects coded "On Budget". Count the number of contracts to 30 June XX and enter into the summary sheet. Calculate this number as a % of "contracts due for completion 30 June XX
	Refer to the example below for references incorporated within the Summary sheet

Summary Sheet

		31 December 2008				30 June 2009			
	Contracts due for completion	*On time YTD*		*On Budget YTD*		*Contracts due for completion*	*On time*		*On Budget*	
		No.	%	No.	%		No.	%	No.	%
No.	7a	n/a	n/a	7e	+7e/7a=%	7c	n/a	n/a	7f	+7f/7c=
$	7b					7d				

Target Setting Rationale	The target was based on research to determine what other jurisdictional road agencies were reporting on at the time of the 2007 review. At that time Qld, Vic and NSW all used a 90% target.
Unintended Consequences	The issue of unintended consequence to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

17. Average Cost of network management per million vehicle kilometres travelled

Outcome	Reliable and Efficient movement of people and goods
Associated Program	Road Systems Management
Description/Purpose	The indicator represents the financial efficiency of the Road Systems Management by showing the cost per Million Vehicle-Kilometres Travelled (MVKT) to manage the operations of the State road network (includes some operations on local roads such as traffic signals, which MRWA has responsibility for). The KPI includes some Finance and Other Costs spread over the Program.
Reporting Cycle	Yearly - (Note: For Budget Papers, this indicator is calculated in March, without using Deflators and using estimated expenditure figures for the current and next financial years. For Annual Report, this indicated is calculated in July, using Deflators (see methodology below) and actual expenditure figures)
Audited by OAG	Yes
Methodology	- Obtain the annual Road System Management expenditure data as at 30 June from Budget & Programming Branch. This data is extracted from the PBIS (Program Code 1) and provided by Budget and Program Mgt. - Forward the annual Road System Management expenditure data to Finance & Commercial Services Directorate to allocate Finance & Other Costs. After adding the Finance & Other Costs, this provides the total annual expenditure for the Road Network Operation Management Program (exp). - Use MVKT data calculated by RAP Branch based on ABS Stats including Experimental Estimates and Corporate MVKT estimates for missing years. Average cost of network managed = exp / MVKT *Comparison of previous indices with the current year:* - Obtain the Gross State Product (GSP) Price Index for the previous years and the current year from the Business Improvement Branch, who in turn obtains this information from the Department of Treasury & Finance. This information is usually available in late June. - For year n, obtain the Deflator (D_n) by dividing the current year's GPS Price Index (GPI_{cy}) by the GSP Price Index for the year n (GPI_n). Deflator for year n (D_n) = GPI_{cy} / GPI_n - For year n, historical expenditure (exp_n) is converted to Present Value (PV_n) by multiplying the historical expenditure (exp_n) by Deflator (D_n). (Note: For current year, Deflator D = 1) Present Value (PV_n) = D_n * exp_n - Use PV_n and MVKT for year n to calculate Average cost of network managed for year n.
Target Setting Rationale	A target is established based on the anticipated expenditure against an estimate of mvkt.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

18. Average Cost of road network maintenance per lane kilometre of network

Outcome	A well maintained road network
Associated Program	Road Network Maintenance
Description	*Indicator identifies the average cost of maintaining a lane kilometre of the State Freeway, Highway and Main Road network.*
Purpose	*General efficiency indicator that identifies the trend in the annual cost of maintaining the State Road Network.*
Reporting Cycle	Yearly
Audited by OAG	*Yes*
Methodology	1) Obtain report generated by Finance/Budget and Programming identifying final expenditure by Program. 2) For Program 5 (Road Network Maintenance) sort all projects on basis of Road Class and Project. 3) Separate National & State from Local Road outcomes. 3) For National and State proposals exclude Structures (Bridge) Program from road activities. Review Work Output Unit for M2 items to ensure no bridge proposals remain in Road Maintenance output. 4) Sum the proposals that relate to road maintenance on the National and State network. 5) Obtain from Technology and Environment Directorate the length of the State network in Lane Kilometres. 6) Divide Total Cost (as determined at step 4) by Lane Kilometre length to determine raw lane kilometre rate for current financial year. 7) Multiply raw lane kilometre rate by current year Overheads rate to determine reportable outcome for current financial year (as determined by step 1). 8) Obtain State Gross State Product (GSP) index from Manager Business Performance. 9) Divide current year GSP index by previous year's index to determine the multiplier to be applied to bring past year outcomes to current year dollars. 10) Obtain the reported lane kilometre outcomes used in the previous year's report. 11) Multiply the outcomes for each of the previous years by the multiplier determined at step 9 above. 12) Graph the results.
Target Setting Rationale	A target is established based on the anticipated expenditure against the length of road network.
Unintended Consequences	The issue of unintended consequences to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.

19. Percentage of ORS Projects completed on budget and on time

Outcome	Improved coordination and community awareness of road safety in WA.
Associated Program	Office of Road Safety
Description	This indicator identifies the percentage of projects within this Program that achieve delivery within a Targeted timeframe and budget.
Purpose	Corporate indicator identifying the delivery of approved annual projects in line with committed timeframes and budgets.
Reporting Cycle	Monthly
Audited by OAG	Yes

Methodology	***Eligibility Criteria***
	Each year the Minister for Road Safety approves the Road Trauma Trust Fund (RTTF) budget, which is made up of individual road safety projects (usually in the order of 70 to 80 per annum) to be completed by road safety stakeholders, including the Office of Road Safety (ORS). Each project is submitted for approval with agreed deliverables and budget. This indicator will be based on all ORS projects only approved by the Minister for Road Safety.
	
	Calculating the Indicator
	A summary spreadsheet will be created each year containing the complete listing of approved projects including columns for;
	• Name of Project
	• Name of Project Manager
	• Deliverables On time/Late
	• Approved budget YTD
	• Actual expenditure YTD
	• On Budget/Over Budget (including a 10% leeway)
	
	1. Each month the spreadsheet will be updated to indicate the current status of each project (On time/Late, On Budget/Over Budget)
	2. Late and over budget projects will get a red colour in the respective columns.
	3. The information will be summarized below the spreadsheet to indicate the:
	   a. Total number of projects
	   b. Number of projects late (with red shading in appropriate column)
	   c. Percentage of projects late (indicator)
	   d. Number of projects over budget (with red shading in appropriate column)
	   e. Percentage of projects over budget (indicator)

Target Setting Rationale	The target was based on research to determine what other jurisdictional road agencies were reporting on at the time of the 2007 review. The same principles were adopted for this indicator.
Unintended Consequences	The issue of unintended consequence to work practices as a result of efforts by staff to achieve this target were considered and found to be not relevant.