

Manage RMM Projects

SARF THE SOUTH AFRICAN NATIONAL ROADS AGENCY

Welcome

I'VE COME HERE TO SHARE ALL MY EXPERIENCE AND KNOWLEDGE – IT'S UP TO YOU WHAT YOU TAKE AWAY WITH YOU

DODANA CONSULTING ENGINEERS (PTY) LTD

Lecturer: Marthinus Wilken

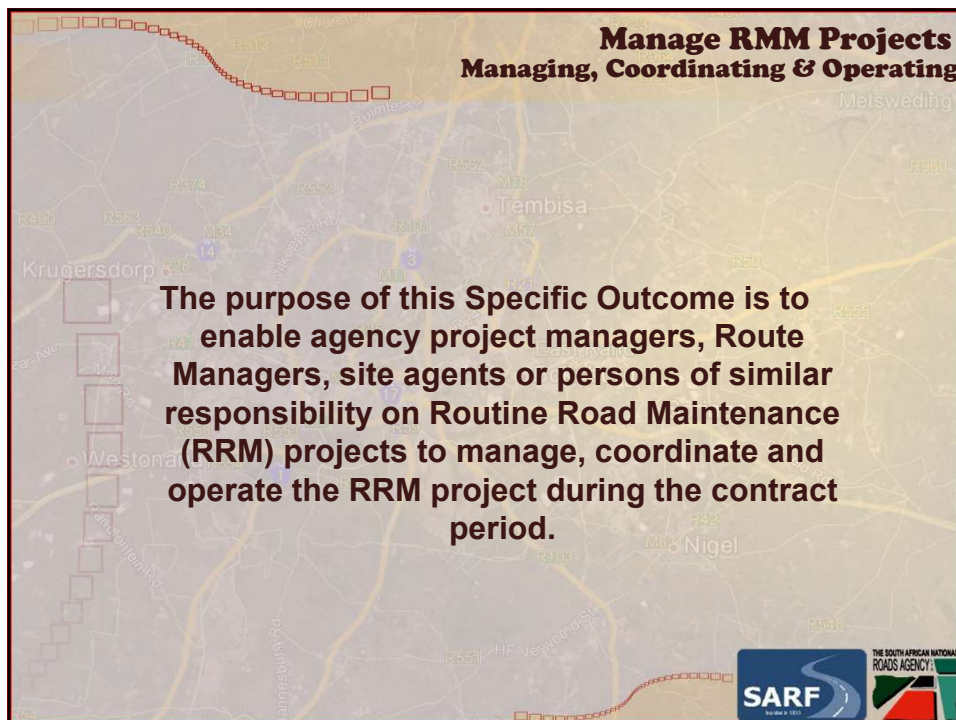
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Manage RMM Projects

**Specific Outcome 3:
MANAGE, COORDINATE AND OPERATE THE RRM PROJECT**

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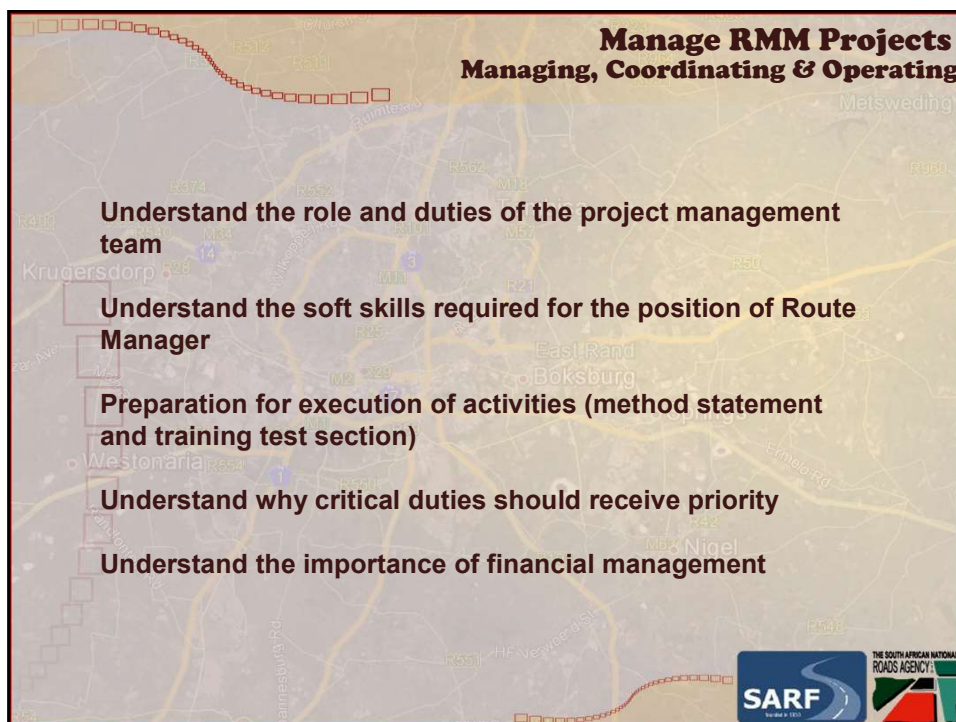


Manage RMM Projects
Managing, Coordinating & Operating

The purpose of this Specific Outcome is to enable agency project managers, Route Managers, site agents or persons of similar responsibility on Routine Road Maintenance (RRM) projects to manage, coordinate and operate the RRM project during the contract period.

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Managing, Coordinating & Operating

- Understand the role and duties of the project management team
- Understand the soft skills required for the position of Route Manager
- Preparation for execution of activities (method statement and training test section)
- Understand why critical duties should receive priority
- Understand the importance of financial management

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3.1 The role & duties

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Managing, Coordinating & Operating

The duties and functions of the PMT



The Client appoints a service provider to perform consulting engineering services (prepare tender documents, manage tender process, manage contract after award until completion) for a specific project.

A contractor is appointed by the client to execute the work for the project according to the specifications stated in the tender documents.

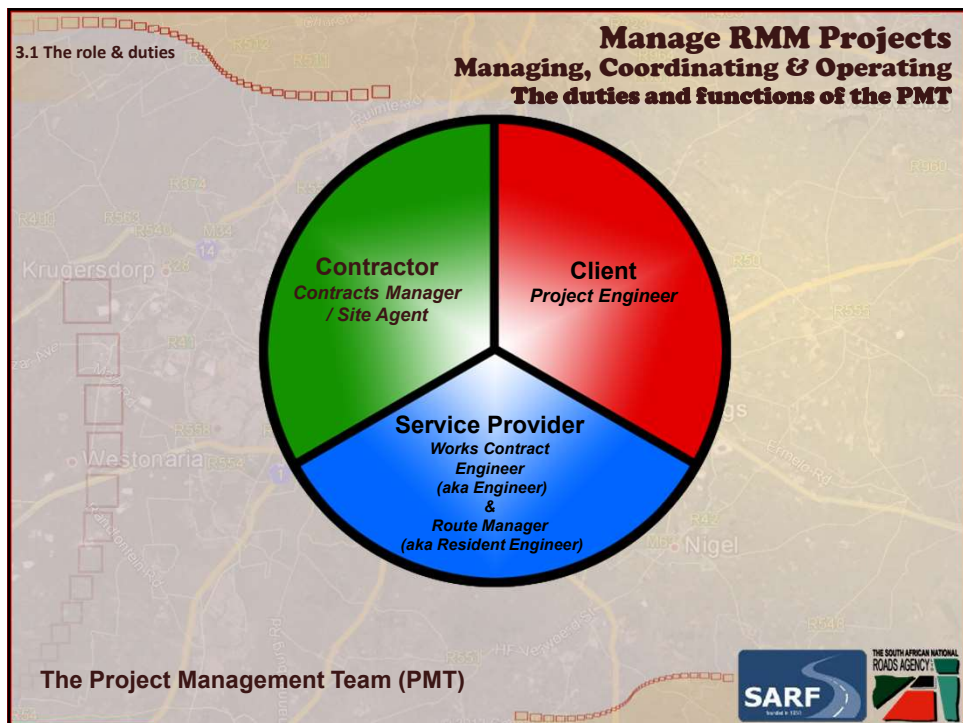
The representative of the client is called the project engineer. Normally, the representatives from the service provider are called the engineer and resident engineer.

The RRM environment the engineer is called the Works Contract Engineer and the resident engineer the Route Manager.

In the PMT the client takes the lead and acts as 'chairman' during meetings.

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Managing, Coordinating & Operating
The duties and functions of the PMT

3.1 The role & duties

- Determine the scope and extent of the works to be included in any particular subcontract;**
- Determine the target tender price for the subcontract, according to the scope of work and adjusting the target rates where relevant;**
- Make decisions regarding the tender pre-qualification process;**

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Managing, Coordinating & Operating
The duties and functions of the PMT

3.1 The role & duties

- Adjudicate and approve subcontract tenders;**
- Approve the extension of subcontracts, which shall be subject to satisfactory performance by the subcontractor;**
- Monitor the management of the subcontracts involving Targeted Enterprises;**
- Monitor the training, mentoring and development of Targeted Enterprises; and**
- Monitor the Contractor's performance evaluation system of Targeted Enterprises.**

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The duties and functions of the PMT

3.1 The role & duties
 3.1.1 The Works Contract Engineer


The Works Contract Engineer acts as agent of the Employer during the construction period, and is appointed in the contract when it is awarded to the service provider, based on the project team proposed at tender stage.

The Works Contract Engineer is responsible to administer the contract in accordance with the provisions of the contract.

He must carry out all duties and functions as required in terms of the contract.

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The duties and functions of the PMT

3.1 The role & duties
 3.1.1 The Works Contract Engineer

Order acceptance control tests, receive quality control test results from Contractor and consider approval.

Reference repair positions, pointing out of beacons and arranging re-installation of disturbed beacons.

Approval of the Contractor's signs, notices and advertisements on site.

Negotiations regarding borrow-pits and/or occupation of adjacent property by the Contractor.

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3.1 The role & duties
3.1.1 The Works Contract Engineer

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The duties and functions of the PMT

Assessment of any damage to the road or road furniture prior to commencement of the work and arrangement for repair of damage by the Contractor during the course of the project.

Ordering of remedial work when necessary.

Approving/disapproving the use of explosives.

Receiving and control of daily records from the Contractor.

Assessment of claims for additional compensation.

Arrangement of periodic meetings with Contractor and Client.

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3.1 The role & duties
3.1.1 The Works Contract Engineer

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The duties and functions of the PMT

Classification of different classes of excavation.

Establishing regular contact with community liaison officer.

Monitoring the execution of training.

Approving of Contractor's establishment on site and the extent thereof.

Determining the extent of provision of offices and communication and other facilities, etc., for the Engineer's personnel and approval thereof.

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3.1 The role & duties
3.1.1 The Works Contract Engineer

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The duties and functions of the PMT

Approval and control of proposed and actual measures taken to accommodate traffic for different maintenance activities. Also consider traffic safety officer, penalties.

Progress and weekly meetings to be held.

Monitor route patrol activities, assess and control daily reports.

Assess and control daily inspection reports.

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3.1 The role & duties
3.1.2 The Route Manager

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The duties and functions of the PMT

The Route Manager for a RRM project is appointed, along with the Works Contract Engineer, in the contract when it is awarded to the consulting engineers, based on the project team proposed at tender stage.

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Managing, Coordinating & Operating
The duties and functions of the PMT

3.1 The role & duties
 3.1.2 The Route Manager

- Monitoring and reporting of the Contractor's works programme.**
- Implement Engineer's quality control plan.**
- Monitor Contractor's quality control plan through on works inspections.**
- Site audits, inspection, quality control testing, approval, rejection of work.**
- Measurement and certification of completed work inclusive of cash flow forecasts.**

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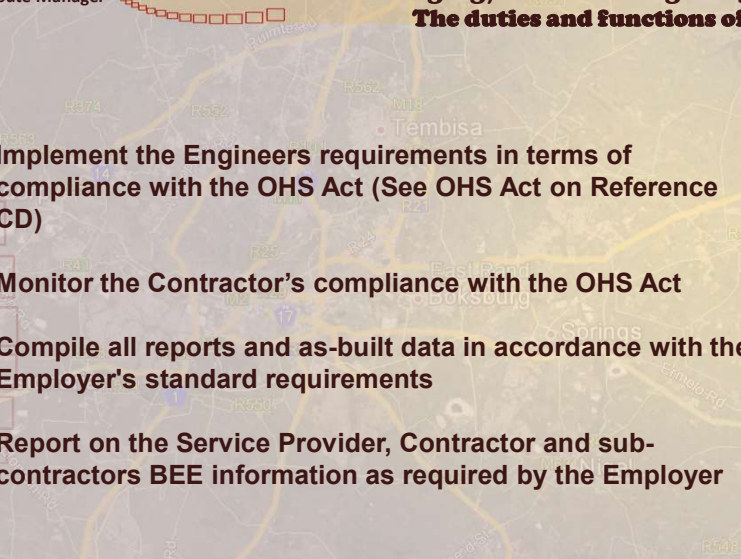
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Managing, Coordinating & Operating
The duties and functions of the PMT

3.1 The role & duties
 3.1.2 The Route Manager

- Regular Site Meetings with Contractor and Employer**
- Monitoring of the Contractor's third party claims**
- Monitoring and reporting of Contractor's CPG commitments**
- Supervision of traffic accommodation arrangements**
- Attend public liaison committee meetings**

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The duties and functions of the PMT

- 3.1 The role & duties
- 3.1.2 The Route Manager

- Implement the Engineers requirements in terms of compliance with the OHS Act (See OHS Act on Reference CD)
- Monitor the Contractor's compliance with the OHS Act
- Compile all reports and as-built data in accordance with the Employer's standard requirements
- Report on the Service Provider, Contractor and sub-contractors BEE information as required by the Employer

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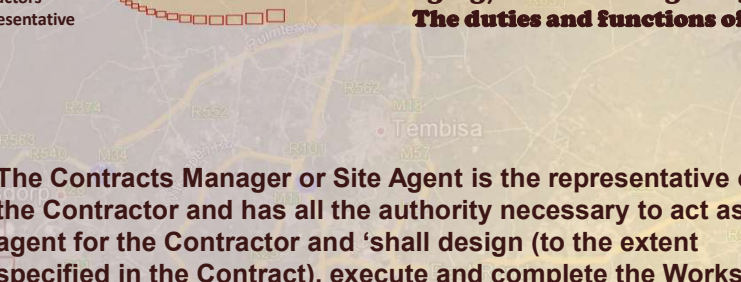
The duties and functions of the PMT

3.1 The role & duties

3.1.3 Contractors Representative

The Contracts Manager or Site Agent is the representative of the Contractor and has all the authority necessary to act as agent for the Contractor and 'shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Engineer's instructions, and shall remedy any defects in the Works'.

The Contractors Representative, (Site Agent), is appointed through the contract when the contract is awarded to the contractor.



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Managing, Coordinating & Operating
The duties and functions of the PMT

3.1 The role & duties
 3.1.3 Contractors Representative

The contractors' management team and experience is included in the contract document.

Experience requirements vary and can be specified in the contract document for example:

- Contract management experience – 5 years
- Routine road maintenance experience – 5 years
- Road rehabilitation experience – 3 years
- Community liaison experience – 5 years
- Road safety experience – 5 years

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Managing, Coordinating & Operating
The duties and functions of the PMT

3.1 The role & duties
 3.1.3 Contractors Representative

Other general responsibilities of the Contractor:

- Identify work to be executed, and submit these to the RM who will determine which work must be carried out;
- Institute a quality assurance system;
- Provide training, mentoring, guidance and assistance to Targeted Enterprises; and
- Ensure that the contract goals and objectives are achieved.

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Managing, Coordinating & Operating
The duties and functions of the PMT

The Site Agent is also responsible for the adequacy, stability and safety of all site operations and all methods of construction.

This function can be delegated by the contractor in writing to the safety officer, who's CV was submitted to the PMT and approved by the PMT.

In terms of the methods of construction utilised on site, it is crucial that the safety officer compile a risk assessment for each work activity, prepare a method for completing each work activity and describes the PPE required for the activity.

The risk assessment is submitted to the Works Contract Engineer who approves the risk assessment.



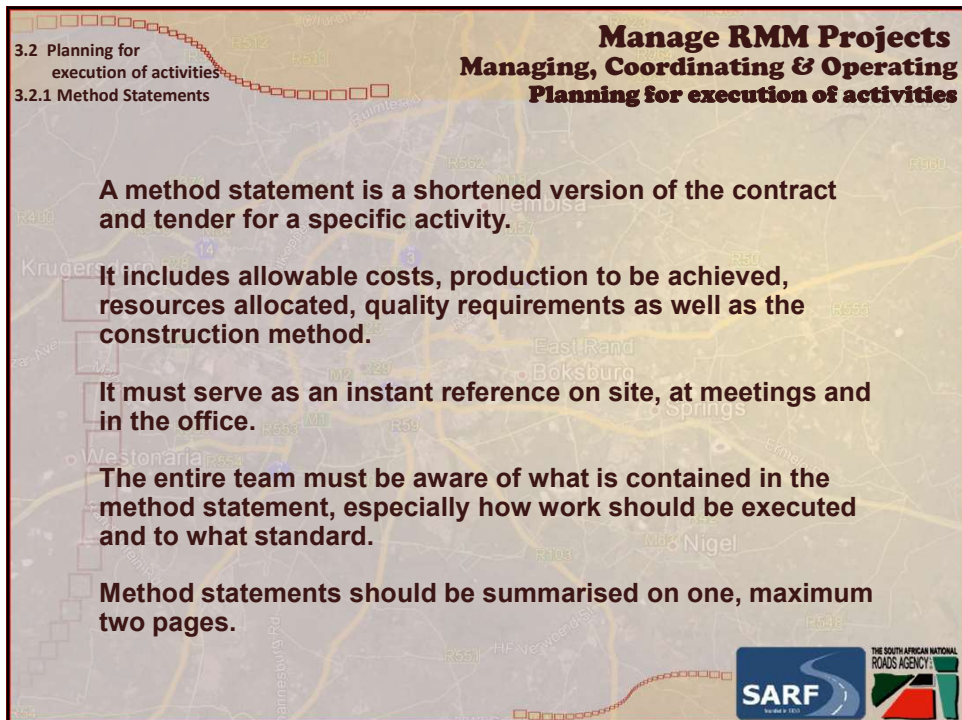
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Managing, Coordinating & Operating
Planning for execution of activities

Works planning should be done before any activities commence on a Routine Road Maintenance project.

Cooperation between the Contractor and the Engineer or Route Manager during this works planning phase, in terms of complete method statements for each activity and training test sections, will reduce the occurrence of misinterpretation of specifications and work that is not to standard.





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Managing, Coordinating & Operating
Planning for execution of activities

3.2 Planning for execution of activities
 3.2.1 Method Statements

A method statement is a shortened version of the contract and tender for a specific activity.

It includes allowable costs, production to be achieved, resources allocated, quality requirements as well as the construction method.

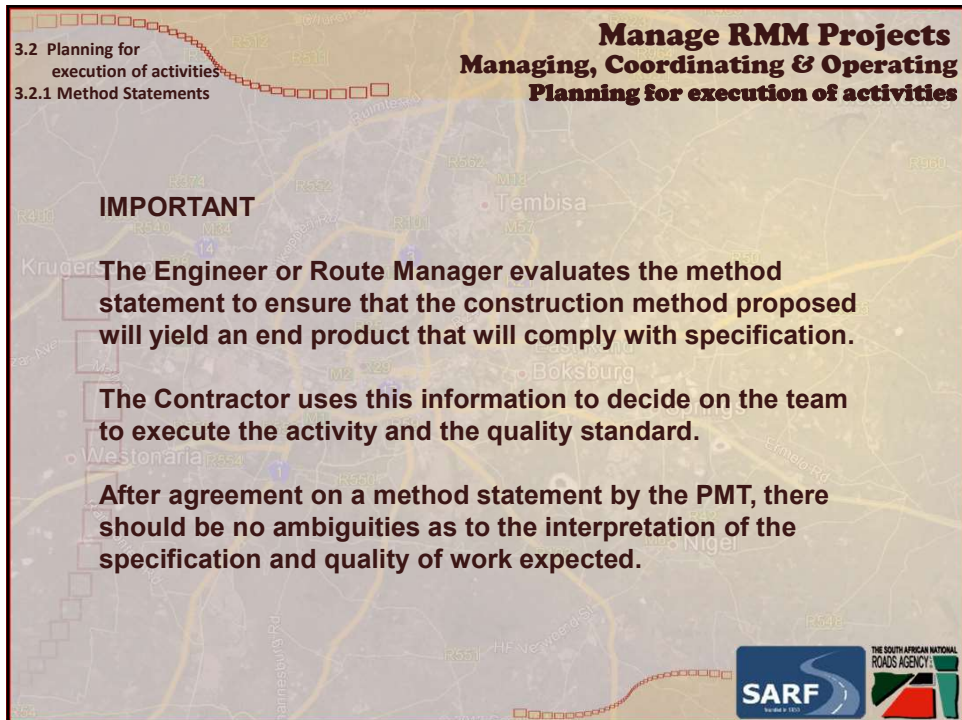
It must serve as an instant reference on site, at meetings and in the office.

The entire team must be aware of what is contained in the method statement, especially how work should be executed and to what standard.

Method statements should be summarised on one, maximum two pages.

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Managing, Coordinating & Operating
Planning for execution of activities

3.2 Planning for execution of activities
 3.2.1 Method Statements

IMPORTANT

The Engineer or Route Manager evaluates the method statement to ensure that the construction method proposed will yield an end product that will comply with specification.

The Contractor uses this information to decide on the team to execute the activity and the quality standard.

After agreement on a method statement by the PMT, there should be no ambiguities as to the interpretation of the specification and quality of work expected.

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Managing, Coordinating & Operating
Planning for execution of activities

3.2 Planning for execution of activities
 3.2.1 Method Statements

The method statement must include the following:

1. The re-tender sheet
2. The Standard Cross Section
3. The end product Specification
4. The construction method
5. The resource requirement
6. The tool requirement

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Planning for execution of activities

3.2 Planning for execution of activities
 3.2.2 Training test sections

The purpose of training test sections should be clearly distinguished from trial sections.

A trial section is defined as follows: 'prior to commencing with the construction of the specified layer, the contractor shall construct a trial section of the specified layer, ... to demonstrate the capability of the contractor to construct the specified layer in accordance with the specifications' or 'that the equipment and procedure he proposes to use will result in him constructing the layers in accordance with the specification'.

A training test section forms part of the Targeted Procurement Procedure as described in the contract document under the heading Training, Coaching, Guidance and Mentoring.

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3.2 Planning for execution of activities

3.2.2 Training test sections

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Planning for execution of activities

Training:

It would involve the theory of how to calculate the amount of cement required for a section at the percentage specified; how to calculate the spacing for setting out the cement bags; the mixing procedure for stabilisation; compaction and the curing of the layer.

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3.2 Planning for execution of activities

3.2.2 Training test sections

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Planning for execution of activities

Coaching:

The learners are taken to site to construct a cement stabilised layer. The coach would check every step of the construction of the layer to ensure it is done as explained during training. Once the learners understands and can do the task, he only checks in periodically.

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3.2 Planning for execution of activities

3.2.2 Training test sections

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Planning for execution of activities

Guidance:

Is anticipating where one might go wrong, or where one is doing a task in a complicated, inefficient or ineffective way, and giving advice as to how to achieve a better result. Guidance is mostly given by a person in the direct reporting line, such as a foreman, but can be given by anyone. Guidance is not imparting skills, but suggesting ways to improve performance.

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3.2 Planning for execution of activities

3.2.2 Training test sections

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Planning for execution of activities

Mentoring:

Is developing a person on a long-term career path. It is mostly about imparting skills that are often intangible and non-measurable. During the training test section, learners with potential leadership skills can be identified to mentor into becoming foremen.

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3.2 Planning for execution of activities

3.2.2 Training test sections

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Planning for execution of activities

PERFECTING THE METHOD OF CONSTRUCTION MUST LEAD TO OBTAINING THE SPECIFIED RESULT

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3.2 Planning for execution of activities

3.2.2 Training test sections

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Planning for execution of activities

Number	Item	Daily Costs		Allowed Cost
		Day Rate	Day Cost	
2	Section leader	120.00	240.00	
3	Worker (male)	85.00	170.00	
4	Worker (female)	60.00	120.00	
5	Concrete mixer operator	100.00	200.00	
Sub-Total			530.00	

Number	Item	Daily Costs		Allowed Cost
		Day Rate	Day Cost	
1	Plant (DN)	100.00	200.00	
2	Concrete mixer	100.00	200.00	
3	Self-Storage	100.00	200.00	
4	Self-Storage	100.00	200.00	
5	Self-Storage	100.00	200.00	
Sub-Total			500.00	

Number	Item	Daily Costs		Allowed Cost
		Day Rate	Day Cost	
1	Plant (DN)	100.00	200.00	
2	Concrete mixer	100.00	200.00	
3	Self-Storage	100.00	200.00	
4	Self-Storage	100.00	200.00	
5	Self-Storage	100.00	200.00	
Sub-Total			500.00	

Typical Cross Section - Feeder Roads			
4.00 m	2.00 m	2.00 m	2.00 m

Method Statement - Emulsion Treated Base Course	
<p>STEP 1 0.8 x 10 to baskets</p> <p>STEP 2 4 x 500 to 600 mm</p> <p>STEP 3 1 x 300 to 400 mm</p> <p>STEP 4 35 x wheelbarrows</p> <p>STEP 5 1 x 300 to 400 mm</p> <p>STEP 6 1 x 300 to 400 mm</p>	<p>STEP 1 0.8 x 10 to baskets</p> <p>STEP 2 4 x 500 to 600 mm</p> <p>STEP 3 1 x 300 to 400 mm</p> <p>STEP 4 35 x wheelbarrows</p> <p>STEP 5 1 x 300 to 400 mm</p> <p>STEP 6 1 x 300 to 400 mm</p>

Specification (C.V. 10)	
<p>Gravel 15% Flint 15% Lime 1% Emulsion 1.5%</p> <p>Concrete mixer capacity: 300 lbs Total daily cycle time: 76.5 loads/day (using 15.5 lb buckets)</p> <p>Gravel: 0.3 loose m³/85% = 0.255 loose m³/76.5 = 18.5 loose m³/day Flint: 0.3 loose m³/85% = 0.255 loose m³/76.5 = 18.5 loose m³/day Concrete: Total weight of material = 419kg/1.5% = 4.31 kg/m³ x 76.5 = 329kg Lime: Total weight of material: 439kg/0.5% = 2.15 kg/m³ x 76.5 = 165kg Emulsion: Total weight of material: 439kg/1.5% = 6.40 kg/m³ x 76.5 = 495 litres</p> <p>Emulsion: Total weight of material: 439kg/1.5% = 6.40 kg/m³ x 76.5 = 495 litres Emulsion: Total weight of material: 439kg/1.5% = 6.40 kg/m³ x 76.5 = 495 litres</p> <p>Emulsion: Total weight of material: 439kg/1.5% = 6.40 kg/m³ x 76.5 = 495 litres Emulsion: Total weight of material: 439kg/1.5% = 6.40 kg/m³ x 76.5 = 495 litres</p>	<p>DESCRIPTION 25.02 (a) (i) Road line shall comply with the requirements SABS 824 & shall bear SABS mark</p> <p>25.02 (a) (ii) Ordinary Portland cement shall comply with requirements SABS 871 Rapid Portland cement shall not be used.</p> <p>25.02 (c) (i) Continuous stabilising agents shall comply with the appropriate SABS. Stable grade bituminous emulsion (80% net bitumen, SABS 200 (emulsion) or SABS 948 (cationic))</p> <p>25.02 (a) Water used for setting emulsions shall be clean and free from any matter which will render the emulsion during dilution, and shall be tested for compatibility with the prescribed stabilising agent.</p> <p>24.02 (a) Base shall be constructed only where underlying layer meets all specification requirements and has been approved by the Engineer.</p> <p>24.02 (b) Pavement layer material shall be placed and broken down, watered if necessary mixed and removed oversize material.</p> <p>25.02 (a) Immediately after the stabilising agent has been properly mixed with gravel, the moisture content of the mix shall be determined, & the required amount of water as specified in section 24.02 shall be added. The moisture content of the material during compaction shall never exceed 80% of the saturation content of the material without adding stabilising agent, calculated at mass dry density.</p>

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Managing, Coordinating & Operating
Soft skills required for the position of the RM

3.2 Soft skills

A Route Manager must be able to manage people in order to successfully maintain a RRM road section.

Since Route Managers are technically qualified persons, they must put special effort into being effective managers.

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Soft skills required for the position of the RM

3.2 Soft skills

(Mann, 2002)

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3.3 Soft skills
3.3.1 Clarity

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Soft skills required for the position of the RM

Am I clear about what I want from this person?
And are they clear about what I want?

Without clarity it is very difficult to get anything done (Mann, 2002).

Example:
The RM instructs the contractor to cut a tree which is obscuring sight at an intersection, but does not clearly indicate which tree and how he wants it cut. The contractor continues with the work but on inspection the RM finds the wrong tree cut. Time and effort has been wasted where he could have given a schematic drawing to indicate the tree or indicate it on site.

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3.3 Soft skills
3.3.2 Commitment

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Soft skills required for the position of the RM

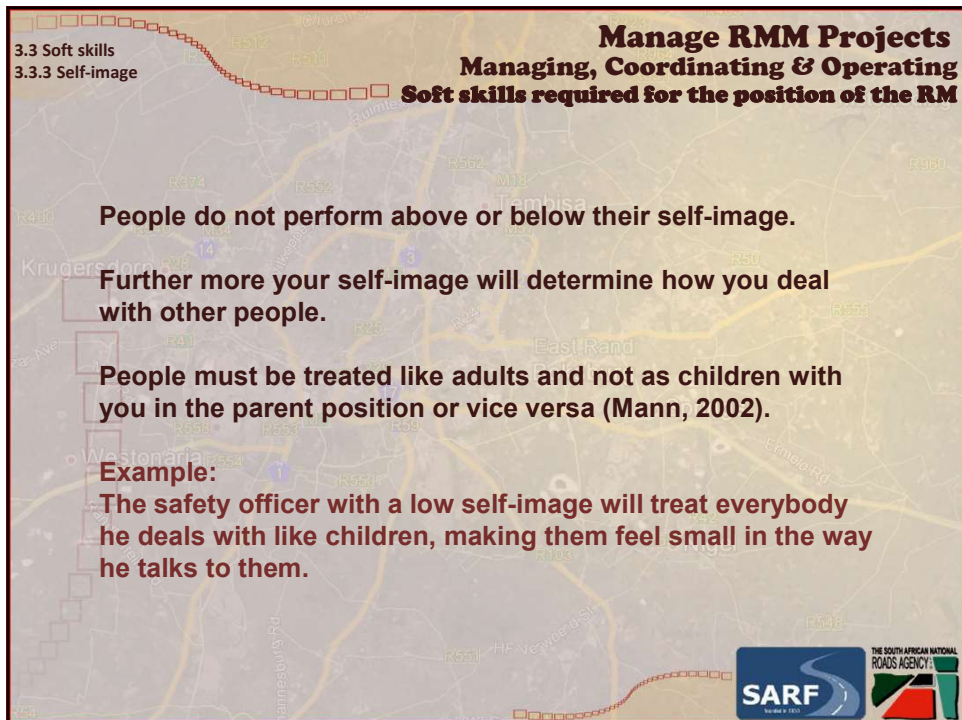
Commitment is essential in business and can operate on various levels; one can be committed to the company, or to the manager, or to a particular task. People are committed when they have a good reason for doing something (Mann, 2002). The difference between being committed and involved can be illustrated by considering the following:

The chicken is involved in breakfast by contributing the egg, but the pig is committed to breakfast by giving the bacon.

For example:
A RM that is committed to his work will inspect his route every day if possible and will follow up on all JIs to ensure his route is in the best possible condition it can be.

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Soft skills required for the position of the RM

3.3 Soft skills
 3.3.3 Self-image

People do not perform above or below their self-image.

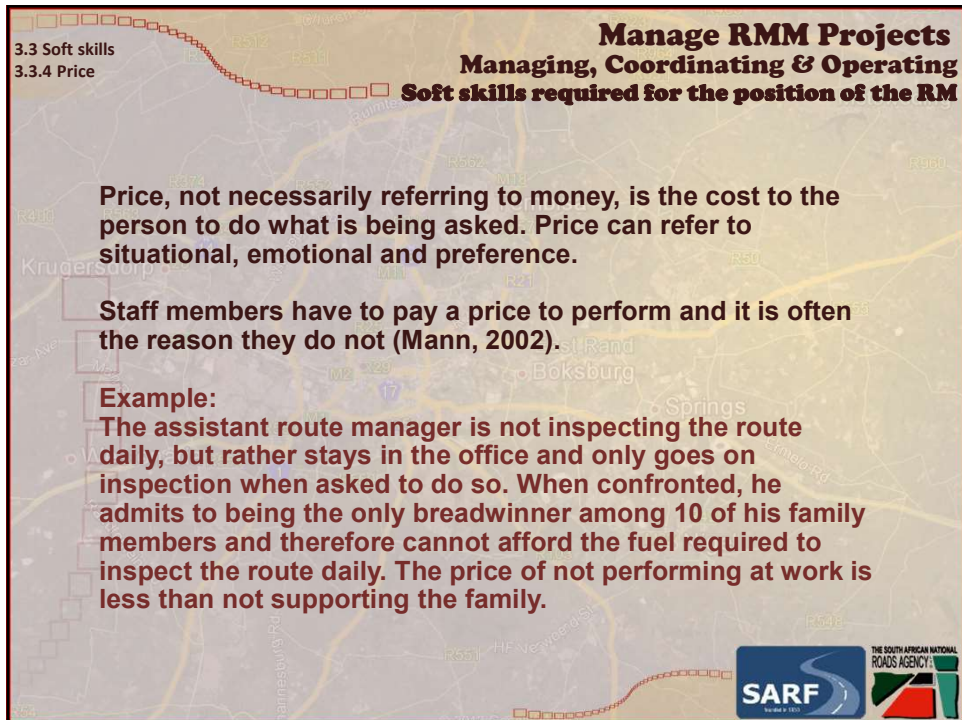
Further more your self-image will determine how you deal with other people.

People must be treated like adults and not as children with you in the parent position or vice versa (Mann, 2002).

Example:
 The safety officer with a low self-image will treat everybody he deals with like children, making them feel small in the way he talks to them.

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Soft skills required for the position of the RM

3.3 Soft skills
 3.3.4 Price

Price, not necessarily referring to money, is the cost to the person to do what is being asked. Price can refer to situational, emotional and preference.

Staff members have to pay a price to perform and it is often the reason they do not (Mann, 2002).

Example:
 The assistant route manager is not inspecting the route daily, but rather stays in the office and only goes on inspection when asked to do so. When confronted, he admits to being the only breadwinner among 10 of his family members and therefore cannot afford the fuel required to inspect the route daily. The price of not performing at work is less than not supporting the family.

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Soft skills required for the position of the RM

Example:

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Critical duties to receive priority

3.4 Critical duties

3.4.1 Site management system

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Critical duties to receive priority

Every agency should have its own site management system in place to provide a framework within which staff can operate. Such a system should aim to:

- Standardise site activities,**
- Limit errors in the delivery of road maintenance service and**
- Ensure high level of maintenance through quality work.**

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3.4 Critical duties

3.4.1 Site management system

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Critical duties to receive priority

Procedures and forms of a site management system:

Procedures	Forms
Accommodation of traffic	⚠ Amendment to existing Job Instruction
Attending to complaints	Procurement of materials
Bridge maintenance inspections	Drawings register
⚠ Completion of the daily activity report	As-built drawings transmittal
Environmental management plan	Bridge maintenance inspection
⚠ Incident Management System	⚠ Route patrol register
⚠ Inspecting and accepting the works	Materials register
⚠ Inspection for payment of performance based payment items	⚠ Site Instruction
⚠ Issuing of job instructions	⚠ Inspection request
⚠ Maintaining of the RE's site diary	⚠ Measurement of Work Done
Materials register	⚠ Measurement of work done query
Processing of interim payment certificates	⚠ Schedule of Work Done

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Critical duties to receive priority

3.4 Critical duties
 3.4.1 Site management system

Procedures and forms of a site management system (Cont.):

Procedures	Forms
⚠ Recording of the inspection of completed works and measurement of quantities for payment	Variation Order
⚠ Route patrol	⚠ Resident Engineer's Site Diary
Site filing system	⚠ Daily Activity Report
Statutory control on behalf of SANRAL	Information Request Book
Tendering by ABEs / SMEs	Communications Schedule
	⚠ Emergency Call-out Record
	⚠ Complaint / Request Registration
	⚠ Road accident report
	Audit Findings Report
	⚠ Monthly Self-Audit report
	⚠ Job Instruction (Specimen: Pre-printed)

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Critical duties to receive priority

3.4 Critical duties
 3.4.1 Site management system
 3.4.1.1 Regular inspection

Apart from the administrative guidance a site management system gives, it also relies on regular inspection of the road section to ensure a high level of maintenance through quality work.

IMPORTANT
 The Route Manager should inspect the entire RRM road section daily where possible.

The consultant's contract document includes a table stating the minimum acceptable inspection rate by the RM.

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3.4 Critical duties

3.4.1 Site management system

3.4.1.1 Regular inspection

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Critical duties to receive priority

Inspection of:	MINIMUM frequency:
Road traffic signs	Annually
Road marking	Annually
Guardrails	Weekly
Structures	Annually
Flexible road condition	Annually
Rigid road condition	Annually
Drainage	Monthly
Slope Instabilities and applicable recommendations	Varies
Informal settlements	Weekly
Illegal accesses and signage	Weekly
Fencing	Monthly

Minimum inspection frequencies

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3.4 Critical duties

3.4.1 Site management system

3.4.2.1 Regular inspection

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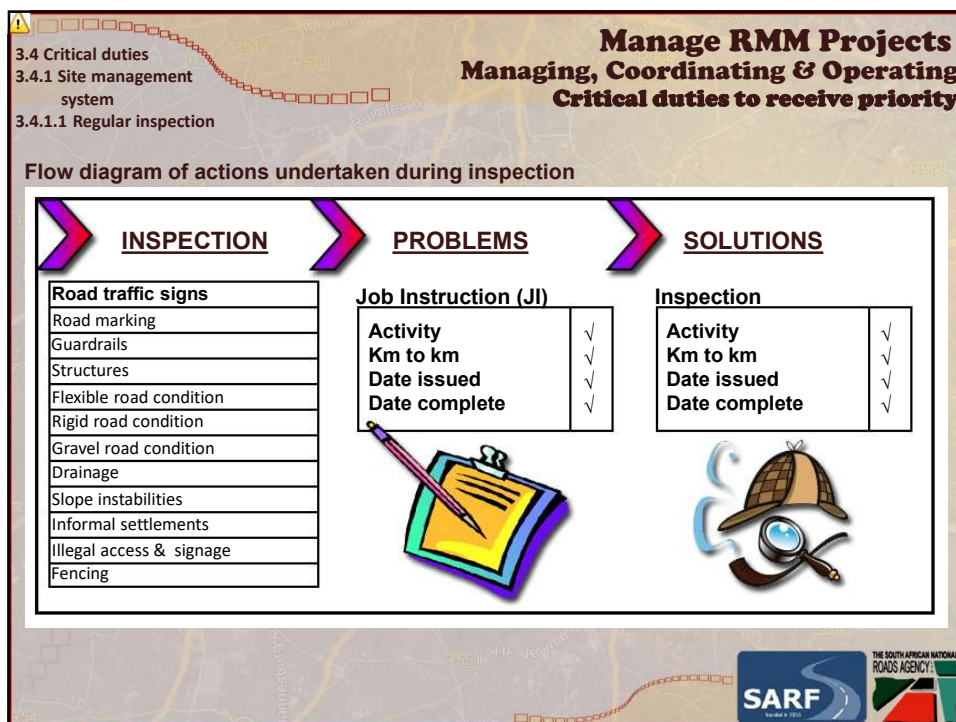
Critical duties to receive priority

Example:

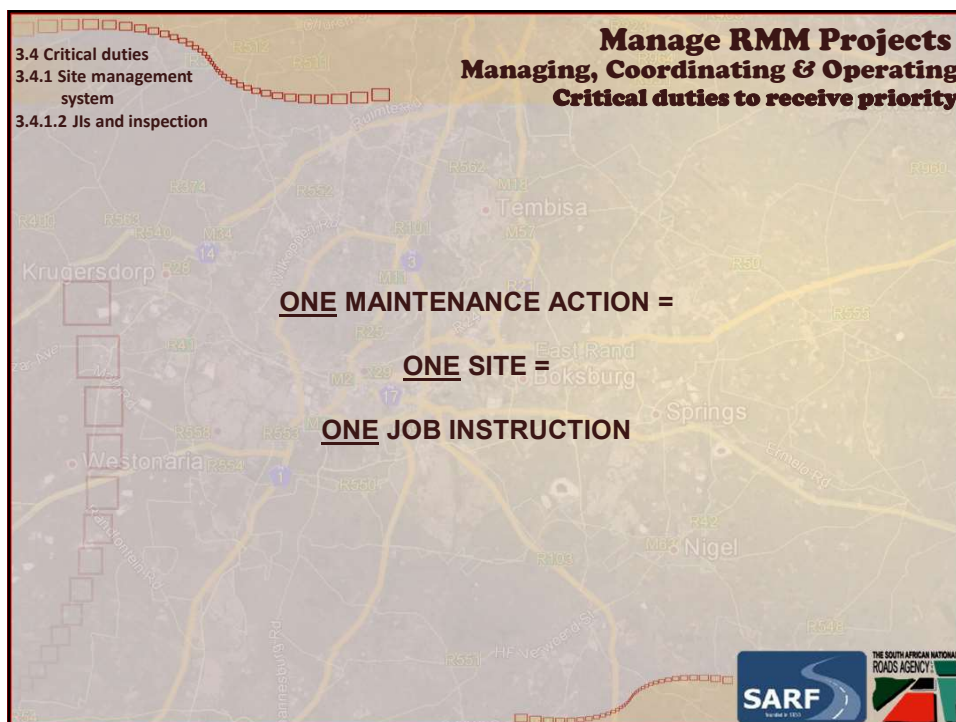
An 1050 km RRM project in the Northern Cape stretches from through Town A, B and C. The distances and traffic volumes or road usage is indicated in Figure 3.3. It is clear from Figure 3.3 that the first 600 km of the route is used more than the remaining parts, with the last 300 km barely being trafficked.

A ROUTE MANAGER SHOULD INSPECT THE RRM ROAD SECTION DAILY OR AS REGULAR AS POSSIBLE

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Critical duties to receive priority

3.4 Critical duties
3.4.1 Site management system
3.4.1.2 JIs and inspection

Agency logo

Jl numbers and date issued are used to cross check quantities in the payment certificate

Jl No: 112589
DATE: 12/05/2010

JOB INSTRUCTION

JOB CATEGORY : Routine ☒ Special Accident Other

POSITION OF WORK : Carriageway ☒ Interchange General

Route : N 1 Section : 15
Start km : 13.2 End km : 13.5
Direction : Positive (+) Negative (-) Both ☒

DESCRIPTION OF WORK : Repair 4 lengths of guardrails in median

VOs must be approved by the Employer

A brief description of the work required at the location of work should be given

VARIATION ORDER WORK : Yes No ☒ VO Number :
DAYWORKS : Yes No ☒ Section M9100 : Yes No ☒

COMPLETION DUE BY ☒ OR Date: 19/05/2010 Time: 16:00

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Manage RMM Projects
Managing, Coordinating & Operating
Critical duties to receive priority

3.4 Critical duties
3.4.1 Site management system
3.4.1.2 JIs and inspection

Accepted completion times are usually specified in the contract documentation

COMPLETION DUE BY ☒ OR Date: 19/05/2010 Time: 16:00
RESPOND BY

Engineer's Representative: M. Themba Date: 12/05/2010 Time: 08:30

COMMENCED ON: Date: 13/05/2010 Time: 07:00
COMPLETED ON: Date: 13/05/2010 Time: 15:00

Completion of this section is important when claims arise due to outstanding maintenance work

ALLOCATED PROJECT: Wheelbarrow Construction

SoQ item number, rate, quantity and estimated cost of job is noted in this section. This estimation is used to monitor expenditure during the month

Item No	Rate	Quantity	Cost
BM440.06 a	R 10	250	R 2500
BM440.06 e	R 10	3	R 30
BM440.06 f	R 10	15	R 150
Total estimated cost			R 2680

The instruction should reach the Contractor as soon as possible

Instruction received on behalf of Contractor: Z. Mzinga

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Manage RMM Projects
Managing, Coordinating & Operating
Critical duties to receive priority

3.4 Critical duties
 3.4.1 Site management system
 3.4.1.2 JIs and inspection

Example: A typical work inspection form

Agency logo		INSPECTION REQUEST		
ROUTE: N 1-15		JOB INSTRUCTION (JI) No.: 112589		
INSPECTION REQUESTED ON:		15/05/2010		
SUBCONTRACTOR:		Wheelbarrow Construction		
INSPECTION TO BE DONE BY:		M. Themba		
INSPECTION REQUEST RECEIVED ON:		16/05/2010		
ACTUAL INSPECTION:		DATE: 18/05/2010	TIME: 09:00	
SECTION	ACTIVITY	QUALITY OF WORK		ACCEPTED / FAILED BY ENGINEER?
		CONTR	ENG	
BM440.06 a	Removal of damaged and re- erection with new, recovered or renovated material guardrails	Z. M	M. T	Failed
BM440.06 e	Extra over for providing			

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ROADS AGENCY

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Manage RMM Projects
Managing, Coordinating & Operating
Critical duties to receive priority

3.4 Critical duties
 3.4.1 Site management system
 3.4.1.2 JIs and inspection

	erection with new, recovered or renovated material guardrails	Z. M	M. T	Failed
BM440.06 e	Extra over for providing additional guardrail posts - 5 was required	Z. M	M. T	Failed
BM440.06 f	Guardrail posts	Z. M	M. T	Failed
Here the item no. and activity is listed as on the JI with possible amendments				
MEASUREMENT OF WORK ACCEPTED AND SIGNED				
REMARKS		CONTR	ENG	
Not all bolts are tightened.				
Height & alignment of guardrails not as specified.				
Backfill in soil poor - can move posts by hand.				

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ROADS AGENCY

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3.4 Critical duties

3.4.1 Site management system

3.4.1.2 JIs and inspection

Manage RMM Projects

Managing, Coordinating & Operating

Critical duties to receive priority

GUARDRAIL CHECK LIST					
JINO:	112589	SUBCONTRACTOR:	Wheelbarrow Construction		
ROUTE:	N 1	SECTION:	15		
DATE:	18/05/2010	TIME:	09:00		
QUALITY OF WORK DONE					
	GOOD	POOR		GOOD	POOR
Alignment		X	Height		X
All bolts tightened		X	Overlap		
Backfill in soil		X	Backfill in concrete		
Reflectors re-erected			New reflectors		
Spacer blocks re-erected			New spacers		
Waste removed					
QUANTITIES					
ITEM	DESCRIPTION		UNIT	QUANTITY	
M44.01	Supply & erect new guardrails (galvanised)		m		
M44.02	Supply & erect new curved guardrails (galvanised)		m		
M44.03	Extra over for erection of guardrail posts				
	(a) Soilcrete		No		
	(b) Concrete		No		
M44.04	End-units				
	(a) End wings		No		
	(b) Terminal sections with single guardrails		No		
	(c) Terminal sections with double guardrails		No		
M44.05	Guardrail reflectors		No		
M44.06	Removal of damaged guardrails and re-erection With new, recovered or renovated material				
	(a) Guardrail section		m		
	(b) End wings		No		
	(c) Single terminal		N/A		

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3.4 Critical duties

3.4.1 Site management system

3.4.1.3 Writing skills

Manage RMM Projects

Managing, Coordinating & Operating

Critical duties to receive priority

It is one of the duties of the Route Manager to have monthly site meetings and to keep minutes of these meetings.

Minutes of meetings are extremely important as it will be used as evidence in disputes, litigation or mediation.

The minutes of meetings should be a true reflection of what was discussed and include record of any decisions that was taken.

Communication to the Employer and the Contractor in the form of letters, notifications, instructions or reports is also the responsibility of the Route Manager.

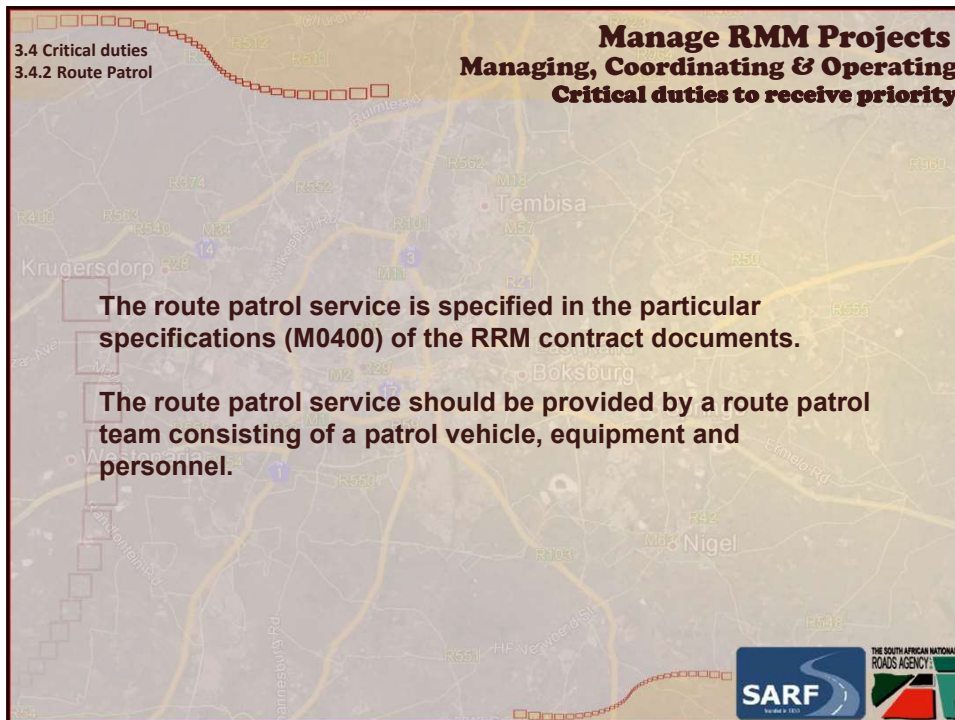
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Manage RMM Projects
Managing, Coordinating & Operating
Critical duties to receive priority

3.4 Critical duties
 3.4.2 Route Patrol

The route patrol service is specified in the particular specifications (M0400) of the RRM contract documents.

The route patrol service should be provided by a route patrol team consisting of a patrol vehicle, equipment and personnel.⁴



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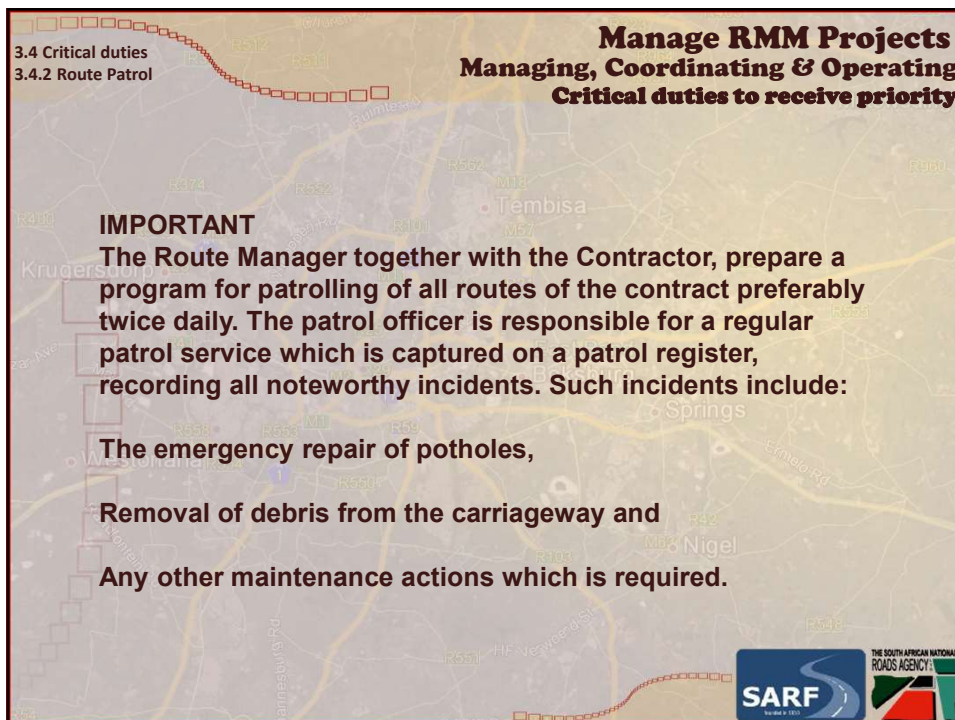
Manage RMM Projects
Managing, Coordinating & Operating
Critical duties to receive priority

3.4 Critical duties
 3.4.2 Route Patrol

IMPORTANT

The Route Manager together with the Contractor, prepare a program for patrolling of all routes of the contract preferably twice daily. The patrol officer is responsible for a regular patrol service which is captured on a patrol register, recording all noteworthy incidents. Such incidents include:

- The emergency repair of potholes,
- Removal of debris from the carriageway and
- Any other maintenance actions which is required.



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3.4 Critical duties

3.4.2 Route Patrol

Manage RMM Projects

Managing, Coordinating & Operating

Critical duties to receive priority

General duties of the route patrol service are listed in the form of a checklist below:

Items	Actions required:					
	Report on	Repair if possible	Remove			
Road pavement	Potholes	✓	✓			
	Damaged structures	✓				
Drainage	Block drains	✓				
	Ponding of water	✓		✓		
	Theft of grids	✓				
Fencing	Theft of fencing	✓				
Road furniture	Damaged road signs	✓		✓		
	Weather damage	✓		✓		
	Theft of road signs	✓				
	Theft of bridge handrails	✓				
Veld fires	Fire fighting until Emergency Services arrive	✓		✓		
Debris	ALL foreign articles	✓				✓
Accidents and traffic incidents	Relevant authority according to IMS	✓				
	Illegal pedestrians	✓				

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3.4 Critical duties

3.4.2 Route Patrol

Manage RMM Projects

Managing, Coordinating & Operating

Critical duties to receive priority

The Route Manager should receive the submitted route patrol register within 24 hours and react to any maintenance actions noted by the route patrol.

For the route patrol to be effective, the patrol officer and his personnel must patrol the route at low speeds (< 80 km/h). If the travelling speed is too high, required maintenance actions might be overlooked.

- If possible the patrol officer should have some knowledge of what defects to look for such as cracks, pumping, etc. to enable effective maintenance of a high standard. Training of the route patrol on a training trial section is advised, since the route patrol is the first line of defence on a maintenance project.


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Manage RMM Projects
Managing, Coordinating & Operating
Critical duties to receive priority

3.4 Critical duties
 3.4.2 Route Patrol

General duties of the route patrol service are listed in the form of a checklist below:

THE TRAVELLING SPEED OF THE ROUTE PATROL VEHICLE SHOULD BE SUCH THAT NO MAINTENANCE ACTIONS ARE OVERLOOKED DURING PATROL



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Manage RMM Projects
Managing, Coordinating & Operating
Budget control

3.5 Budget control

It is the Route Manager's duty to ensure that expenditure on the RRM contract remains within the yearly approved budget.

Works programming and cash flow forecasting will indicate if the approved budget will be sufficient to do the maintenance work as required.

- If the approved budget is not sufficient, a timeous request can be made to the client for additional funding.
- If funds are not available, the client will advise which work should be done.

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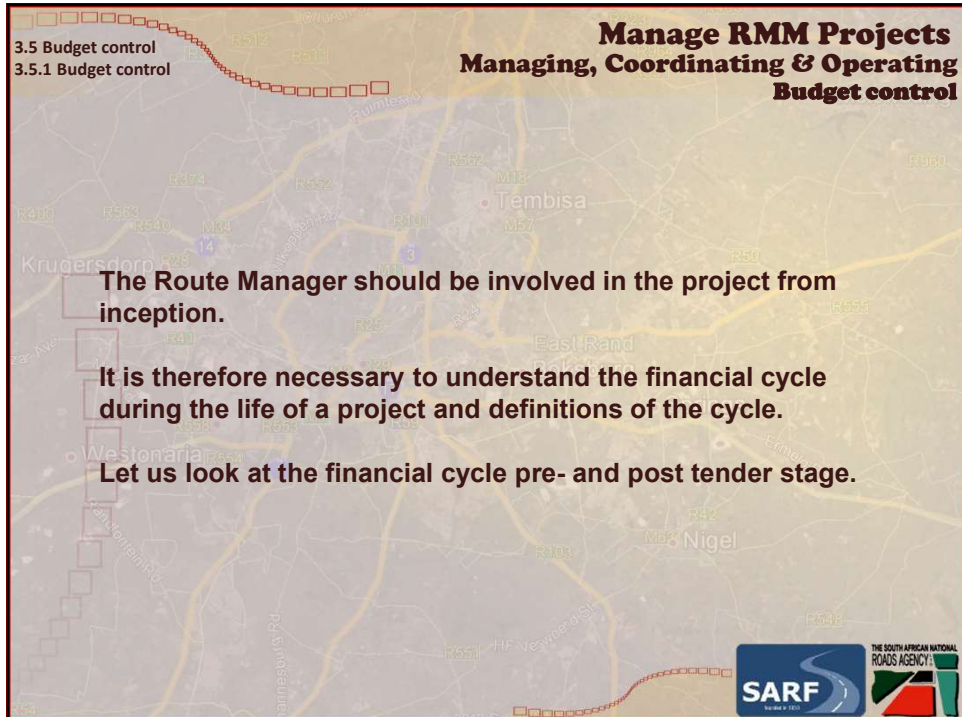
Manage RMM Projects
Managing, Coordinating & Operating
Budget control

3.5 Budget control
 3.5.1 Budget control

The Route Manager should be involved in the project from inception.

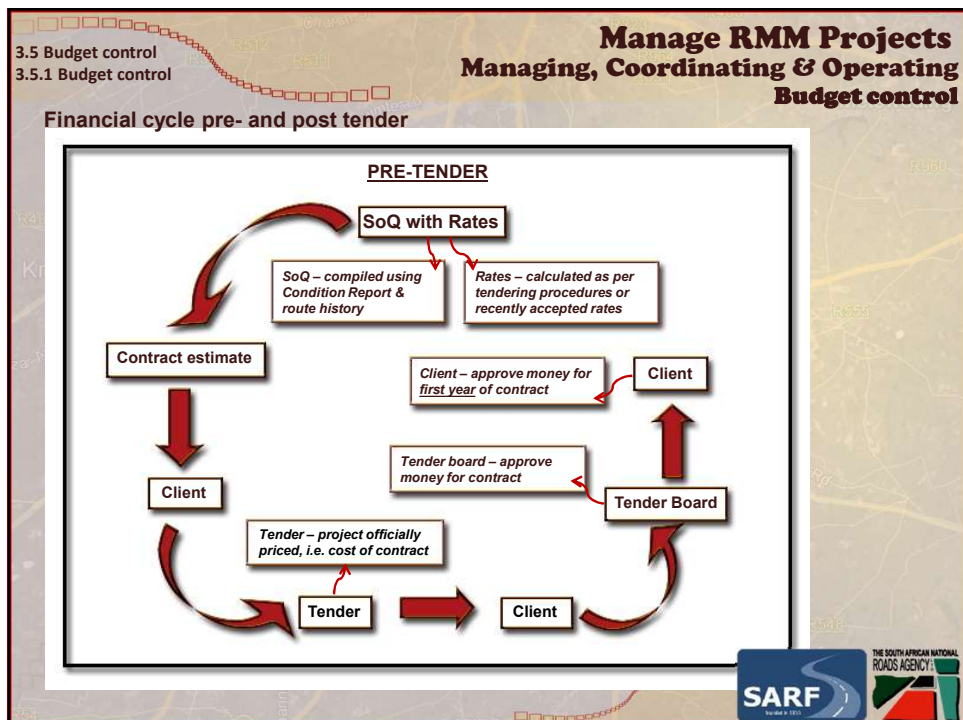
It is therefore necessary to understand the financial cycle during the life of a project and definitions of the cycle.

Let us look at the financial cycle pre- and post tender stage.

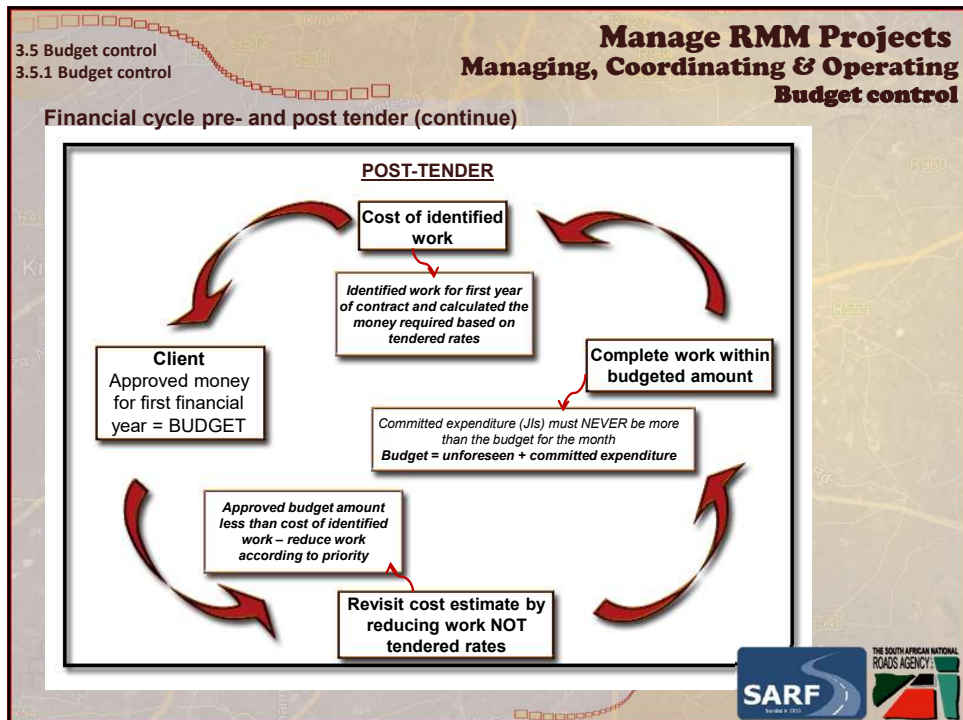


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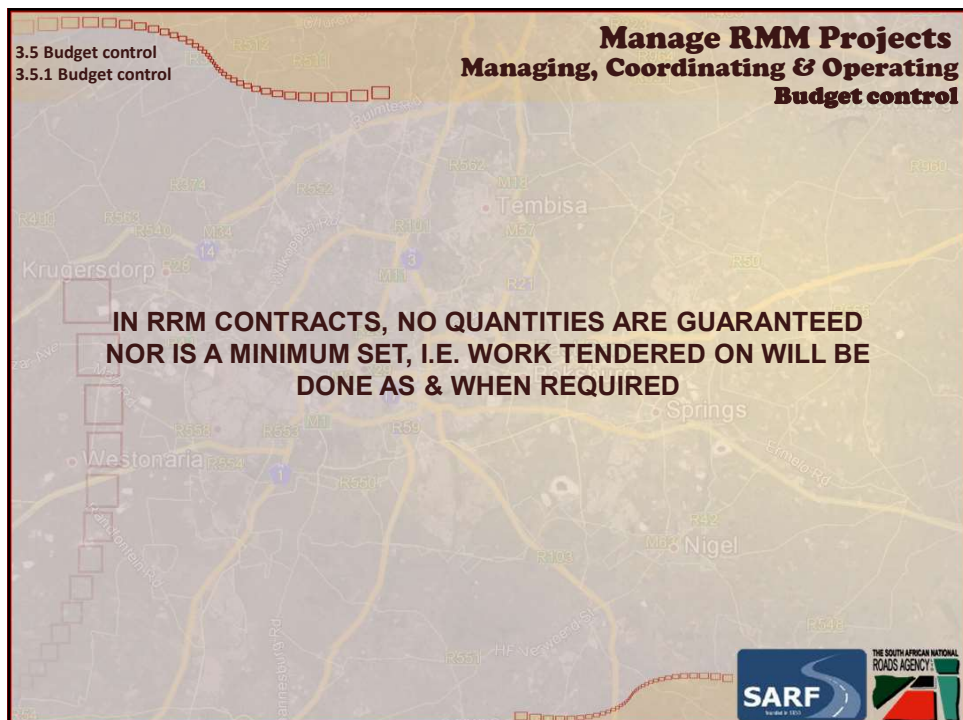
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3.5 Budget control

3.5.1 Budget control

3.5.1.1 Day to day monitoring

Manage RMM Projects

Managing, Coordinating & Operating

Budget control

An ideal financial management system:

- A list of JIs
- A list of job measurements per pay item code
- A list of job measurements per measurement number
- A cost summary of all issued JI's for the payment certificate period (indicating work completed and work still outstanding)

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3.5 Budget control

3.5.1 Budget control

3.5.1.1 Day to day monitoring

Manage RMM Projects

Managing, Coordinating & Operating

Budget control

List of JIs and dates issued

Detail regarding the JI

Date on which JI was approved

Certificate in which JI was paid and amount paid (value of job)

Proj	Job number	Date issued	Route	Section	Start km	Category	Closed	Measure	Date	Meas Final	Q-sched updated	On cert	Job value
1	95552.00	28-Apr-10				Other		95552.01	28-Apr-10	Yes	Yes	21	R 6 270.00
1	95626.00	20-Apr-10	3	12	20	Accident		95626.01	20-Apr-10	Yes	Yes	21	R 9 136.00
1	95627.00	28-Apr-10				Other		95627.01	28-Apr-10	Yes	Yes	21	R 25 435.58
1	95646.00	20-Apr-10				Other		95646.01	20-Apr-10	Yes	Yes	21	R 22 742.50
1	95649.00	20-Apr-10	3	12	33.33	Routine		95649.01	20-Apr-10	Yes	Yes	21	R 737.19
1	95665.00	15-Apr-10	12	18	13	Routine		95665.01	22-Apr-10	No	No	0	R -
1	95757.00	07-Jun-10	3	11	15.4	Routine		95757.01	07-Jun-10	Yes	Yes	22	R 20 000.00
1	97087.00	06-May-10	12	18	13.4	Routine		97087.01	01-Jun-10	Yes	Yes	22	R 14 216.40
1	97361.00	03-Jun-10				Other		97361.01	03-Jun-10	Yes	Yes	22	R 33 200.00

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates



Manage RMM Projects

Managing, Coordinating & Operating

Budget control

IMPORTANT :

A financial management system should also be able to easily produce payment certificates at the end of each month based on the day to day monitoring that was captured during the month.

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

Manage RMM Projects



Managing, Coordinating & Operating

Budget control

Steps to complete a specific months' payment certificate

```

graph TD
    A[Inspection of the route] --> B[Issue JI which refers to specification and payment item]
    B --> C[Inspect completion of JI based on specification]
    C --> D[Accept work according to specification]
    C --> E[Correct work to specification]
    C --> F[Fail work not according to specification]
    E --> C
    F --> C
    D --> G[Include quantities of accepted JI in Payment Certificate under payment item quoted on JI]
    G --> H[Complete Payment Certificate for specific month by combining quantities of all JIs accepted during the month]
          
```

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates



Manage RMM Projects
Managing, Coordinating & Operating
Budget control

Summary of contract expenditure per sub-section (continue)

SUMMARY OF CONTRACT EXPENDITURE									
MONTH NO.	DESCRIPTION AND LENGTHS OF ROAD					Carrageways			Total
CONTRACT PERIOD						Dual divided	Dual undivided	Single	
						16.20	0.00	0.00	16.20
ITEM DESCRIPTION	EXPENDITURE					COST PER KM			
	TENDERED AMOUNT	REVISED SCHEDULE	THIS MONTH	TOTAL TO DATE	TOTAL % TO DATE	SCHEDULED AVG/MONTH	THIS MONTH	AVG TO DATE/MONTH	AVG TO DATE/YEAR
M0200 : GENL REQUIREMENTS & PROVISIONS	120 400.00	120 400.00	0.00	10 000.00	14.0	226.46	0.00	31.76	300.00
M0300 : CONTRACTOR'S ESTAB ON SITE & GENL	2 587 000.00	2 587 000.00	15 000.00	6 500.00	1.9	607.78	0.00	6 731.92	80 783.06
M0400 : ROUTE PATROL SERVICES	648 150.00	648 150.00	2 000.00	0.00	0.0	503.38	0.00	1 379.63	16 555.55
M0500 : ACCOMMODATION OF TRAFFIC	715 500.00	715 500.00	0.00	1 524 250.00	213.0	1 261.90	3 796.30	2 688.27	32 269.26
M1100 : PAVEMENT LAYER REPAIR	821 200.00	821 200.00	0.00	0.00	0.0	1 448.32	0.00	0.00	0.00
M1200 : REPAIR OF POTHOLES	344 610.00	344 610.00	0.00	6 500.00	1.9	607.78	0.00	11.46	137.57
M1300 : SEALING OF ACTIVE CRACKS	285 415.00	285 415.00	0.00	0.00	0.0	503.38	0.00	0.00	0.00
M1500 : CRACK & JOINT SEALING OF CONCRETE PAV	0.00	0.00	0.00	0.00	0.0	0.00	0.00	0.00	0.00
M1600 : SURFACE TREATMENT - TEXT CORRECTION	97 500.00	97 500.00	0.00	0.00	0.0	171.96	0.00	0.00	0.00
M1700 : REPAIR OF SLOPE FAILURES & WASHAWAYS						101.41	0.00	0.00	0.00
M2100 : REPAIR & MAINT OF IN- & OUTLET STRUC						1 486.91	0.00	351.94	4 223.32
M2300 : CLEANING OF WATERWAY STRUC	34 750.00	34 750.00	0.00	0.00	0.0	61.29	0.00	0.00	0.00
M2400 : CLEANING OF PREFAB CULVERTS	378 000.00	378 000.00	0.00	104 147.47	27.6	666.67	0.00	183.68	2 204.18
M2500 : CLEANING OF CONCR DRAINS & CHANNELS	450 000.00	450 000.00	79 602.38	1 013 184.94	225.2	793.65	4 913.73	1 786.92	21 443.07
M2600 : CLEANING & MAINT OF EXISTING EARTH CHAN	138 420.00	138 420.00	0.00	39 351.00	28.4	244.13	0.00	69.40	832.83
M2700 : EDGE BUILD-UP REMOVAL	22 500.00	22 500.00	7 200.00	217 999.35	968.9	39.68	444.44	384.48	4 613.74
M2800 : CONCRETE CHANNEL CONSTR & MAINT	151 490.00	151 490.00	0.00	6 154.07	4.1	267.18	0.00	10.85	130.24
M3100 : FENCING	306 314.00	306 314.00	189 856.25	735 480.25	240.1	540.24	11 719.57	1 297.14	15 666.77
M3200 : COLLECTION & REMOVAL OF DEBRIS & LITTER	533 600.00	533 600.00	10 750.00	387 000.00	72.5	941.09	0.00	0.00	0.00

Amounts and calculations obtained in a similar manner as in Fig. 3.7

Sections of BoQ split into sub-sections, e.g. M1000:Pavement Maintenance is now split into M1100:Pavement Layer Repair, M1200:Repair of Potholes, etc.

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates



Manage RMM Projects
Managing, Coordinating & Operating
Budget control

Summary of contract expenditure per sub-section

SUMMARY OF CONTRACT EXPENDITURE									
MONTH NO.	DESCRIPTION AND LENGTHS OF ROAD					Carrageways			Total
CONTRACT PERIOD						Dual divided	Dual undivided	Single	
						16.20	0.00	0.00	16.20
ITEM DESCRIPTION	EXPENDITURE					COST PER KM			
	TENDERED AMOUNT	REVISED SCHEDULE	THIS MONTH	TOTAL TO DATE	TOTAL % TO DATE	SCHEDULED AVG/MONTH	THIS MONTH	AVG TO DATE/MONTH	AVG TO DATE/YEAR
M3300 : SHOULDER REPAIRS	329 360.00	329 360.00	0.00	8 502.00	2.6	580.88	0.00	14.99	179.94
M4100 : ERECTION & REPAIR OF PERM ROAD TRAFFIC SIGNS	555 879.00	555 879.00	0.00	0.00	0.0	0.00	248.20	270.94	3 251.27
M4200 : ROAD SIGN CLEANING	234 370.50	234 370.50	0.00	0.00	0.0	0.00	987.35	87.43	1 049.11
M4300 : ROAD STUDS	57 500.00	57 500.00	0.00	0.00	0.0	101.43	0.00	0.00	0.00
M4400 : GUARDRAIL ERECTION & MAINTENANCE	1 761 533.50	1 761 533.50	25 733.50	2 237 034.50	127.0	3 106.94	1 590.96	3 945.39	47 344.64
M4600 : ROAD MARKINGS	57 500.00	57 500.00	0.00	0.00	0.0	101.41	0.00	0.00	0.00
M5100 : GENERAL EROSION PROTECTION	70 890.00	70 890.00	0.00	0.00	0.0	125.19	0.00	0.00	0.00
M5200 : GABION PROTECTION	55 475.00	55 475.00	0.00	0.00	0.0	69.62	0.00	0.00	0.00
M5100 : GRASS CUTTING: SHL & GENL MOWING						4 315.39	1 141.98	4 781.00	57 371.98
M6200 : CHEMICAL CONTROL OF VEG & ERADICATION						441.00	0.00	388.84	4 666.04
M6300 : REMOVAL OF UNDESIRABLE VEG, PHYSICAL ERAD.	449 016.00	449 016.00	11 500.00	380 452.00	84.7	791.92	709.88	670.99	8 051.89
M6400 : MAINT & ESTABLISHMENT OF PLANTS, TREES	29 420.00	29 420.00	0.00	0.00	0.0	51.89	0.00	0.00	0.00
M6500 : ESTABLISHMENT OF GRASS	16 078.75	16 078.75	0.00	0.00	0.0	28.36	0.00	0.00	0.00
M7100 : EMERGENCY STANDBY TEAM	394 682.00	394 682.00	12 330.00	431 570.90	109.3	696.09	761.15	761.15	9 133.78
M7200 : ALL EMERGENCY NORMALISATION	159 690.00	159 690.00	1 020.00	45 473.00	28.5	281.64	62.96	80.20	962.39
M8100 : MINOR REPAIR OF STRUCTURES	115 000.00	115 000.00	0.00	0.00	0.0	202.82	0.00	0.00	0.00
M9100 : DAYWORKS SCHEDULE	116 879.50	116 879.50	0.00	219 291.07	187.6	206.14	0.00	0.00	0.00
TOTAL	15 627 574.25	15 627 574.25	610 658.04	15 307 681.43	98.0	27 562.24	37 562.24	37 562.24	37 562.24

Amounts and calculations obtained in a similar manner as in Fig. 3.7

Sections of BoQ split into sub-sections, e.g. M1000:Pavement Maintenance is now split into M1100:Pavement Layer Repair, M1200:Repair of Potholes, etc.

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Manage RMM Projects

Managing, Coordinating & Operating

Budget control

3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

Definitions of CPA formula (GCC, 2004)

X 	Proportion not subjected to adjustment, stated in the Contract Data and usually 0.1
a+b+c+d=1	Coefficients contained in the Contract Data representing proportions of labour, contractors equipment, material (excluding special materials) and fuel.
L 	Labour Index for the urban area nearest to the Site as stated in the Contract Data. It shall be the 'Consumer Price Index' of the area
P 	Plant Index shall be the 'Civil Engineering Plant Index' as published by Statistics South Africa or available on SAFCEC's website
M 	Material Index shall be the 'Civil Engineering Materials Index' as published by Statistics South Africa or available on SAFCEC's website
F 	Fuel Index shall be the 'Diesel Index' as published by Statistics South Africa or available on SAFCEC's website.
O 	Denotes base indices applicable to the base month as stated in the Contract Data, which is usually one month prior to the closing of the tender. This base date is extremely important.
t 	Denotes the current indices applicable to the month in which the last day of the period fall to which the relevant monthly statement relates

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Manage RMM Projects

Managing, Coordinating & Operating

Budget control

3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

CPA calculation sheet

Proportion subject to adjustment & coefficients as per Contract Data

Base date values for labour, plant, materials & fuel

Values for labour, plant, materials & fuel for August 2008

Base date, urban area, etc. as per Contract Data

2. Value of work claimed in Cert 1

#2 = CPA amount

$F = (1 - 0.15) \left(\frac{0.5(163.1)}{159.2} + \frac{0.2(175.4)}{168.3} + \frac{0.25(217.3)}{201.8} + \frac{0.02(419.9)}{519.9} \right)$

Month/Year	Cert. No	Lo	Po	Mo	Fo	Co	Factor (f)	Work done (ac p10)	CPA (ac p10)	to p 2
-	-	159.2	168.3	201.8	519.9	0.0				
-	-	Lt	Pt	Mt	Ft	Ct				
Aug-08	1	163.1	175.4	217.3	419.9	0.0	0.0257	24 421.00	628.39	628.36
Sep-08	2	163.6	175.4	218.8	394.3	0.0	0.0266	17 715.00	470.34	
Oct-08	3	163.4	175.4	219.6	377.4	0.0	0.0255	26 870.00	684.62	
Nov-08	4	163.9						9 186.00	1 260.40	3 043.75
Dec-08	5	162.5						829.00	902.01	3 945.75
Jan-09	6	162.8						984.00	974.01	4 919.76
Feb-09	7	164.9	193.0	215.7	271.3	0.0	0.0345	36 399.00	1 255.08	6 174.84
Mar-09	8	167.1	193.0	214.8	253.5	0.0	0.0380	30 398.00	1 153.65	7 328.49
Apr-09	9	168.0	193.0	213.3	250.2	0.0	0.0385	30 868.00	1 188.56	8 517.05
May-09	10	168.7	189.2	209.0	250.2	0.0	0.0320	16 594.00	531.12	9 048.17
Jun-09	11	169.8	189.2	209.9	250.2	0.0	0.0348	31 019.00	1 080.65	10 128.82
Jul-09	12	170.9	189.2	211.3	250.2	0.0	0.0403	43 506.00	1 753.38	11 882.20
Aug-09	13	171.8	190.9	210.1	250.2	0.0	0.0432	30 938.00	1 335.23	13 217.44

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

Manage RMM Projects

Managing, Coordinating & Operating

Budget control

CPA summary sheet for payment certificate no. 35

DETERMINING THE VALUE OF WORKS FOR CPA					
CONTRACT NO : N.003-120-2008/6			CERTIFICATE : 35		
PROJECT NO : MODJADJI VEGETATION CONTROL					
FROM PAGE	DESCRIPTION	ADDITIONS (R)	VALUE OF DEDUCTIONS (R)	TOTAL (R)	
3.4	TOTAL FOR SCHEDULED ITEMS	220 470.20			
4.4	100% MATERIALS ON SITE	0.00			
5.4	VO'S (CPA APPLICABLE)	0.00			
6.4	DAYWORKS (CPA APPLICABLE)	0.00			
TOTAL :		220 470.20			
7.4	NON-ESCALATABLE ITEMS IN SCHEDULE (S+D+E)		0.00		
9.4	TOTAL AMOUNT OF REDUCED PAYMENT (R)		0.00		
12	TOTAL ORIGINAL VALUE OF SPECIAL MATERIALS (G)		0.00		
13.4	TOTAL AMOUNT OF PENALTIES (P)		0.00		
TOTAL (S+D+E+R+G+P)			0.00		
TOTAL VALUE OF ESCALATABLE WORK (A=T-S-D-E-R-G-P)				220 470.20	
PREV CERT PREVIOUS TOTAL VALUE OF ESCALATABLE WORK (Ad)				210 581.00	
VALUE OF WORK FOR CPA TO PAGE 11 (Ac=A-Ad)				9 889.20	

Value of work done for Cert 35

Item which are deducted

Symbols as per definition (Section 3.5.1.2)

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

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Non-escalatable items in the BoQ

NON-ESCALATABLE ITEMS IN SCHEDULE					
Item number	Description	From page	Previous Certificates	Current Certificate	Total Amount
M020.06(a)	Engineering skills		R 27 940.00	-	R 27 940.00
M020.06(f)	The Contractor's overhead charges and profit in respect to sub-item DM020.06 (a) to (e)		R 2 794.00	-	R 2 794.00
M210.04(a)	Accessories		R 2 668 975.71	-	R 2 668 975.71
M210.04(b)	The Contractor's overhead charges and profit in connection with providing the service		R 266 146.27	-	R 266 146.27
M230.01(a)	Cleaning to waterway structures, inlet and outlet		R 1 000.00	-	R 1 000.00
M230.01(b)	The Contractor's overhead charges and profit in respect to sub-item BM230.01 (a)		R 100.00	-	R 100.00
M410.15(a)	Purchase of manufactured road signboards		R 966 455.72	-	R 966 455.72
M410.15(b)	The Contractor's overhead charges and profit in respect with sub-item M410.15(a)		R 96 645.57	-	R 96 645.57
M810.01(a)	Minor repairs to structures		R 19 095.00	-	R 19 095.00
M810.01(b)	The Contractor's overhead charges and profit in respect of sub-item M810.01(a)		R 1 909.50	-	R 1 909.50
M910.04(a)	Procurement of materials		R 1 312 640.42	-	R 1 312 640.42
M910.04(b)	The Contractor's overhead charges and profit in respect of sub-item M910.04(a)		R 133 423.84	-	R 133 423.84
M910.06(a)	Providing of security guards on site		R 47 331.75	-	R 47 331.75
M910.06(b)	The Contractor's overhead charges and profit in respect of sub-item BM910.06(a)		R 4 733.18	-	R 4 733.18
TOTAL TO PAGE 10.1			R 5 549 190.96	-	R 5 549 190.96

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

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Special materials in a RRM contract are usually materials such as bitumen and steel, which are materials where the raw material price can fluctuate significantly.

To calculate the adjustment to the value of the payment certificate claimed, the following formula is used with its definitions of symbols:

$$A_c = A - A_c$$

with

$$A = T - S - D - E - G$$

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

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Definitions of adjustment calculation

T	1. General Items; 2. Work done; and 3. The materials on Site	Summation of 1, 2 & 3 as certified under payment certificate under consideration. Without ANY deduction. BEFORE any adjustments made.
S	1. Amount actually expended & substituted for any PC sums; 2. Value of work done by Selected Sub-contractors; 3. Value of work done against Prov Sum; 4. Value of any extra/additional work.	Summation of 1 to 4 where special arrangements for price adjustments in respect of those amounts were made & recorded at the time the work was ordered.
D	Value of work included in T & done at a new fixed rate, where those rates were not based on layout, equipment or material costs in force at time of tendering.	
E	Amount included in T paid for any daywork executed at cost plus percentage allowances as set out in Conditions of Contract.	
G	Amount included in T for materials classified as 'special materials'. The variations in respect of a particular special material shall be calculated by multiplying the difference between the rate/price entered in the Contract Data by the Contractor for that material and the equivalent rate/price actually paid by the Contractor for the material by the quantity of the material in question.	

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3.5 Budget control

3.5.1 Budget control

3.5.1.2 Payment certificates

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Budget control

Special materials schedule

SPECIAL MATERIALS SCHEDULE										
Date	Description of Item	Invoice Ref	Quantity (Q)	Unit	RATES			TOTALS		Cert No
					Original (Ro)	New (Rn)	Diff (Rd)	Q x Ro	Q x Rd (+ or -)	
2008/08/31	Guardrails	1	296.00	m	87.93	176.25	88.32	26 027.28	26 142.72	0
2008/09/30	Guardrails	2	408.00	m	87.93	176.25	88.32	35 875.44	36 034.56	0
2008/09/30	150/200(B4) Pen Bitumen	1	0.09	t	1765.00	5851.00	4086.00	158.85	367.74	0
2008/10/30	Guardrails	3	580.00	m	87.93	176.25	88.32	50 999.40	51 225.60	0
2008/11/30	Guardrails	4	352.00	m	87.93	176.25	88.32	30 951.36	31 088.64	0
2008/12/31	Guardrails	5	532.00	m	87.93	176.25	88.32	46 778.76	46 986.24	0
2009/01/31	Guardrails	6	528.00	m	87.93	176.25	88.32	46 427.04	46 632.96	0
2009/02/28	Guardrails	7	2016.00	m	87.93	176.25	88.32	177 266.88	178 053.12	0
2009/03/31	Guardrails	8	0.00	m	87.93	176.25	88.32	0.00	0.00	0
2009/04/30	Guardrails	9	108.00	m	87.93	176.25	88.32	9 496.44	9 538.56	0
2009/05/31	Guardrails	10	384.00	m	87.93	176.25	88.32	33 765.12	33 914.88	0
2009/06/30	Guardrails	11	260.00	m	87.93	176.25	88.32	22 861.80	22 963.20	0
2009/07/31	Guardrails	12	284.00	m	87.93	176.25	88.32	24 972.12	25 082.88	0
2009/08/31	Guardrails	13	244.00	m	87.93	176.25	88.32	21 454.92	21 550.08	0
2009/09/30	Guardrails	14	100.00	m	87.93	176.25	88.32	8 793.00	8 832.00	0
2009/10/31	Guardrails	15	252.00	m	87.93	176.25	88.32	22 158.36	22 256.64	0
2009/11/30	Guardrails	16	140.00	m	87.93	127.50	39.57	12 310.20	5 539.80	0
2009/12/31	Guardrails	17	464.00	m	87.93	127.50	39.57	40 799.52	18 360.48	0
2010/01/31	Guardrails	18	304.00	m	87.93	127.50	39.57	26 730.72	12 029.28	0
2010/02/28	Guardrails	19	272.00	m	87.93	127.50	39.57	23 916.96	10 763.04	0
2010/03/25	Guardrails	20	332.00	m	87.93	127.50	39.57	29 192.76	13 137.24	0
TOTAL ORIGINAL VALUE OF SPECIAL MATERIALS					664 909.65					
FINAL/INTERIM TOTAL VALUE OF SPECIAL MATERIALS TO PAGE NO. 12.4										

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3.5 Budget control
3.5.1 Budget control
3.5.1.2 Payment certificates

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Budget control

Summary page of work done by the contractor and sub-contractors up to the payment certificate

SUMMARY PAGE OF WORK DONE TO 30 JUNE 2011															
CONTRACT NO : N.003-120-2008/6															
CERTIFICATE NO 35															
DETAILS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	VALUE OF SCHEDULED WORK DONE	VALUE OF MATERIALS ON SITE	VALUE OF VOS (CPA APPLICABLE)	VALUE OF UNSCHEDULED DAYWORKS (CPA APPLICABLE)	VALUE OF NON-ESCALING ITEMS NOT IN SCHEDULE	LESS: TOTAL AMOUNT OF REDUCED PAYMENTS	ADD: CONTRACT PRICE ADJUSTMENT	ADD/DEDUCT TOTAL VALUE OF SPECIAL MATS VARIANCE	DEDUCT: RETENTION	DEDUCT: PENALTIES	TOTAL	DEDUCT: PREVIOUS TOTAL (ITEM 11 ON PREVIOUS CERT)	TOTAL THIS CERTIFICATE	ADD: VAT AT 14%	NETT AMOUNT NOW DUE FOR PAYMENT
FROM PAGE	3	4	5	6	8	9	11	12			13				
PROJECT NO.															
Superway	4 893 568.62	0.00	0.00	0.00	0.00	0.00	187 507.35	0.00	0.00	0.00	5 081 075.97	4 936 545.98	144 529.99	20 234.20	164 764.19
Tsela	8 003 892.62	0.00	0.00	0.00	0.00	0.00	421 099.20	0.00	0.00	0.00	8 424 991.82	8 063 356.51	361 635.31	50 628.95	412 264.25
Conmemara	1 752 533.90	0.00	0.00	0.00	0.00	0.00	86 988.71	0.00	0.00	0.00	1 839 522.61	1 781 568.46	57 954.15	8 113.51	66 067.73
Modadji	220 470.20	0.00	0.00	0.00	0.00	0.00	10 472.50	0.00	0.00	0.00	230 942.70	230 942.70	0.00	0.00	0.00
L & S Cleaning	437 216.29	0.00	0.00	0.00	0.00	0.00	34 765.29	0.00	0.00	0.00	471 981.58	375 191.42	96 790.16	13 550.62	110 340.78
TOTAL Superway	15 307 681.63	0.00	0.00	0.00	0.00	0.00	740 833.05	0.00	0.00	0.00	16 048 514.68	15 387 605.07	660 909.61	92 527.35	753 436.96
GRAND TOTAL	15 307 681.63	0.00	0.00	0.00	0.00	0.00	740 833.05	0.00	0.00	0.00	16 048 514.68	15 387 605.07	660 909.61	92 527.35	753 436.96

T

S, D, E

CPA

G

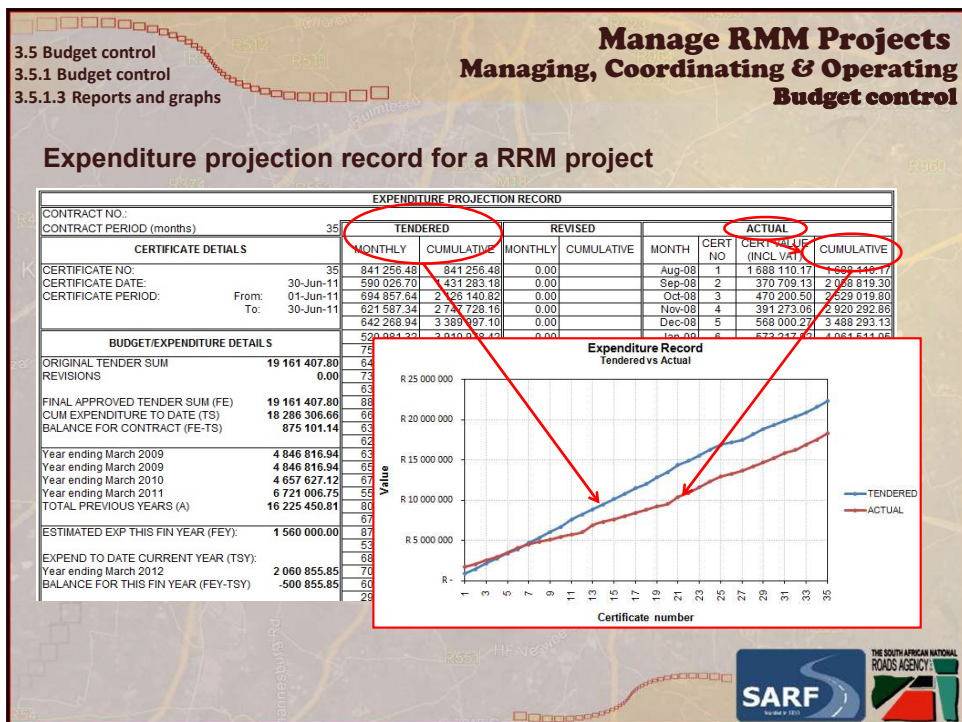
A_p

A_c = A - A_p

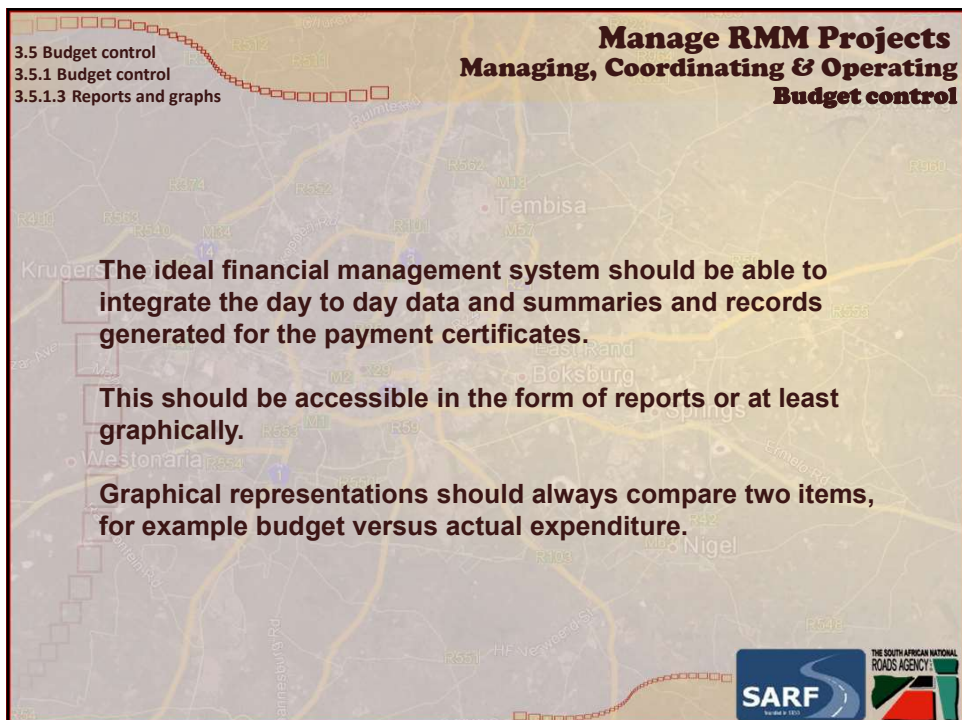
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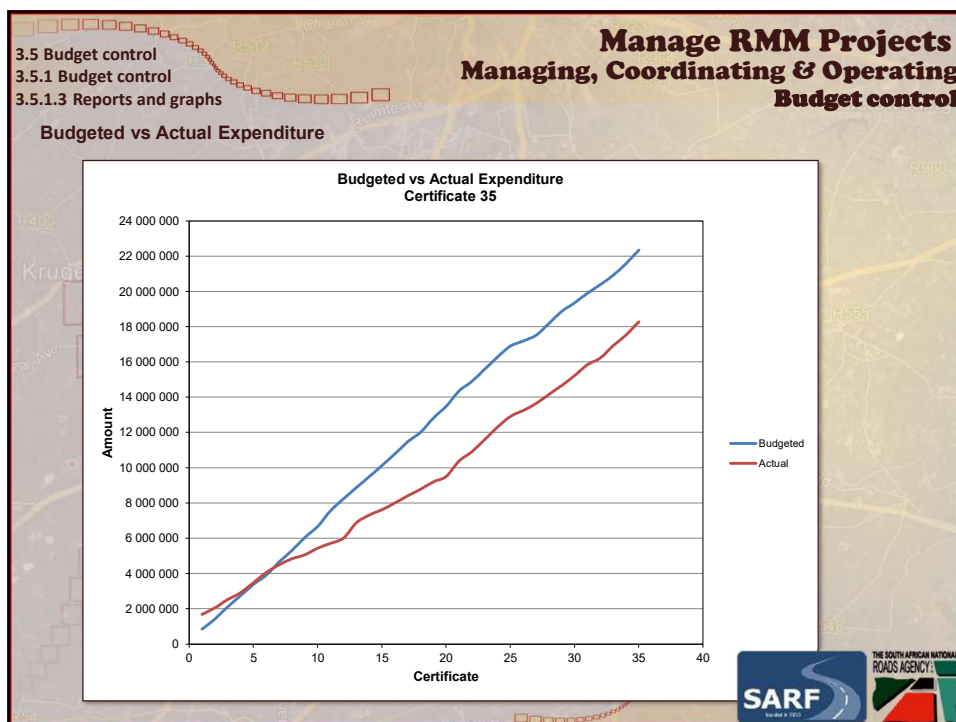
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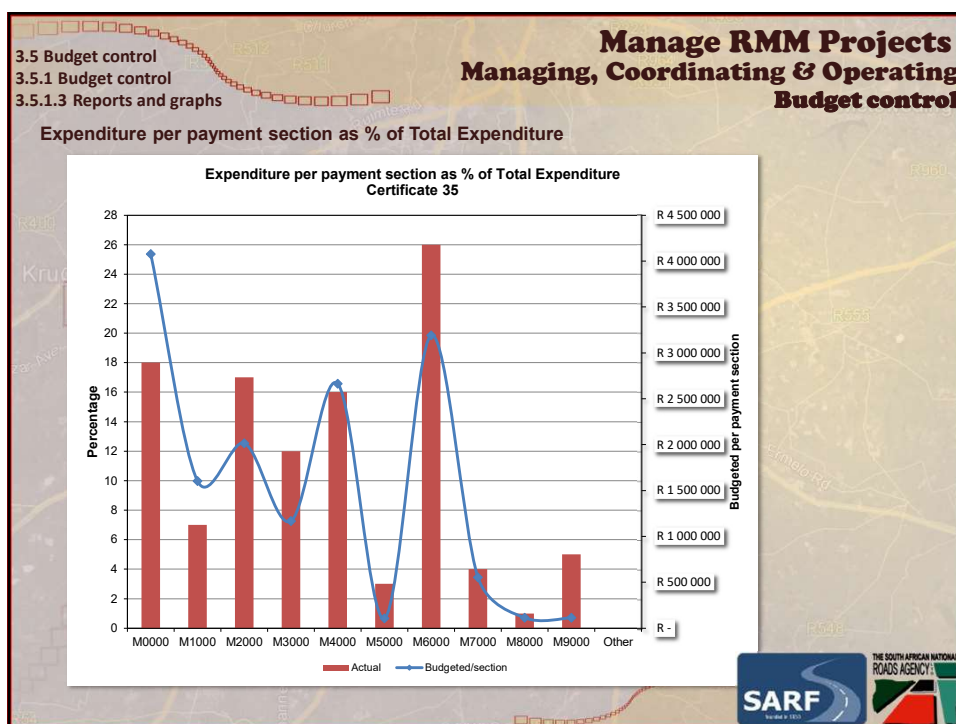
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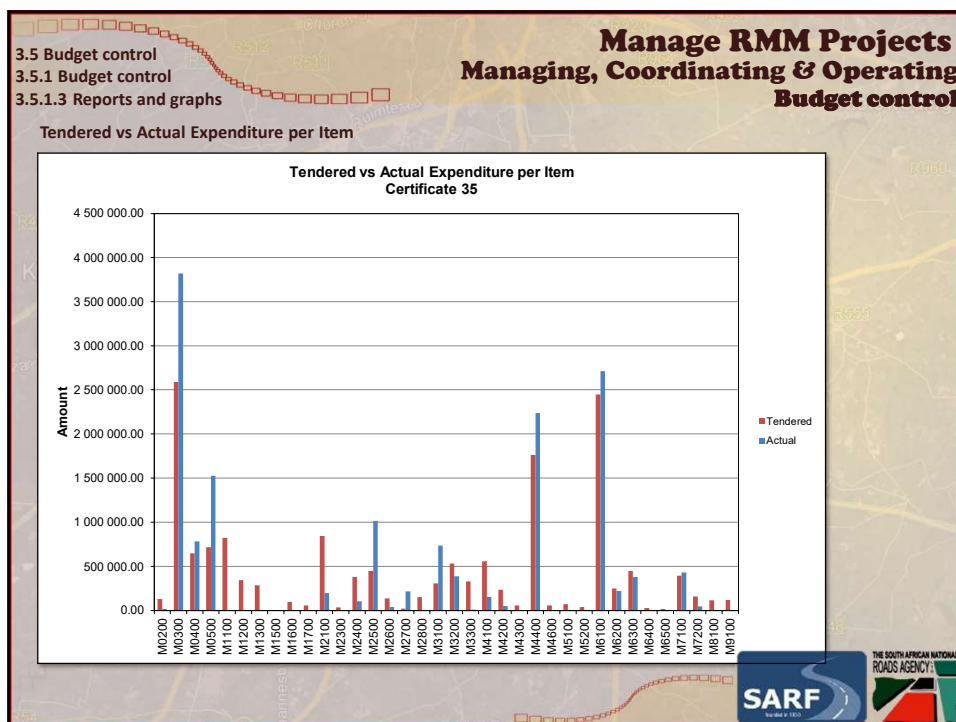
82



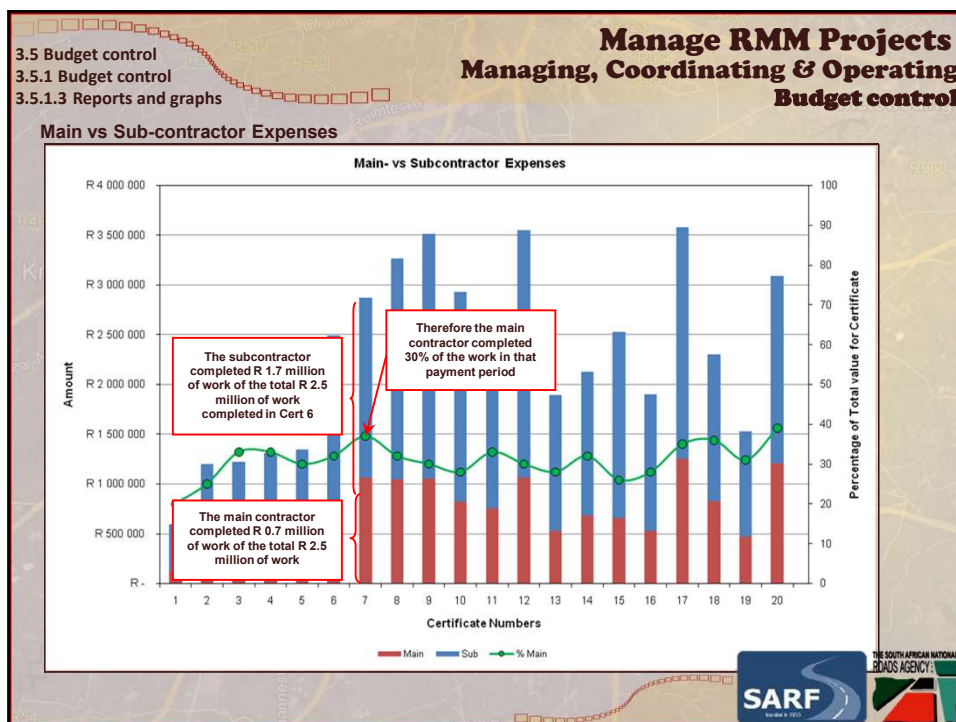
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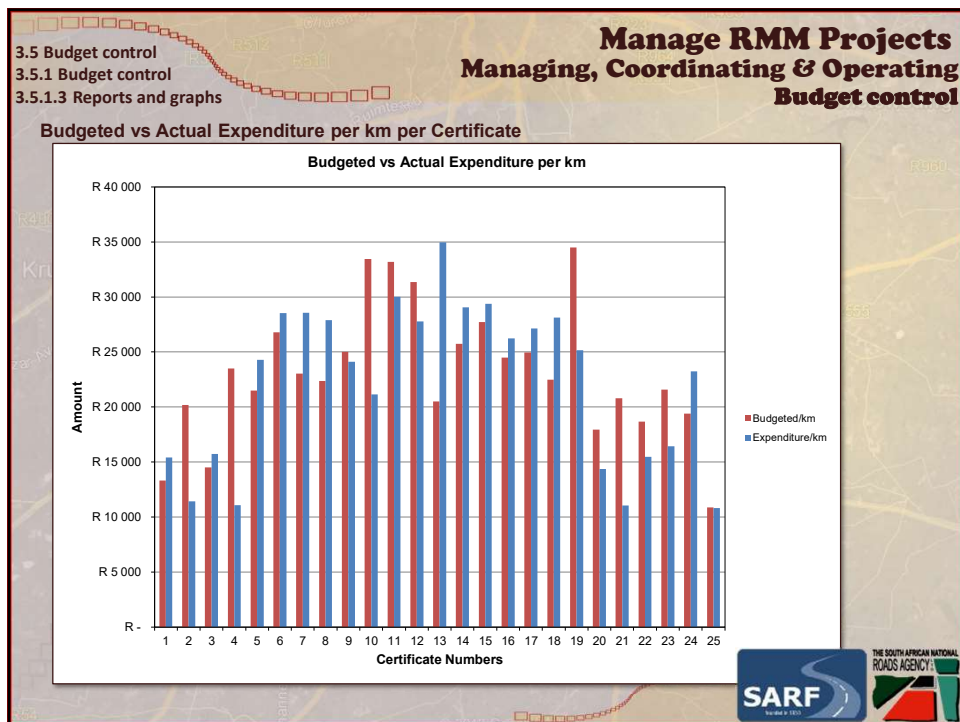
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Managing, Coordinating & Operating
Budget control

3.5 Budget control
 3.5.2 Variation Orders (VOs)

A variation order is issued for:

- Additional work for which there are rates in the Schedule of Quantities; or**
- There are no rates in the Schedule of Quantities; or**
- Amended or additional work executed as 'Day Work'.**

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3.5 Budget control
3.5.2 Variation Orders (VOs)



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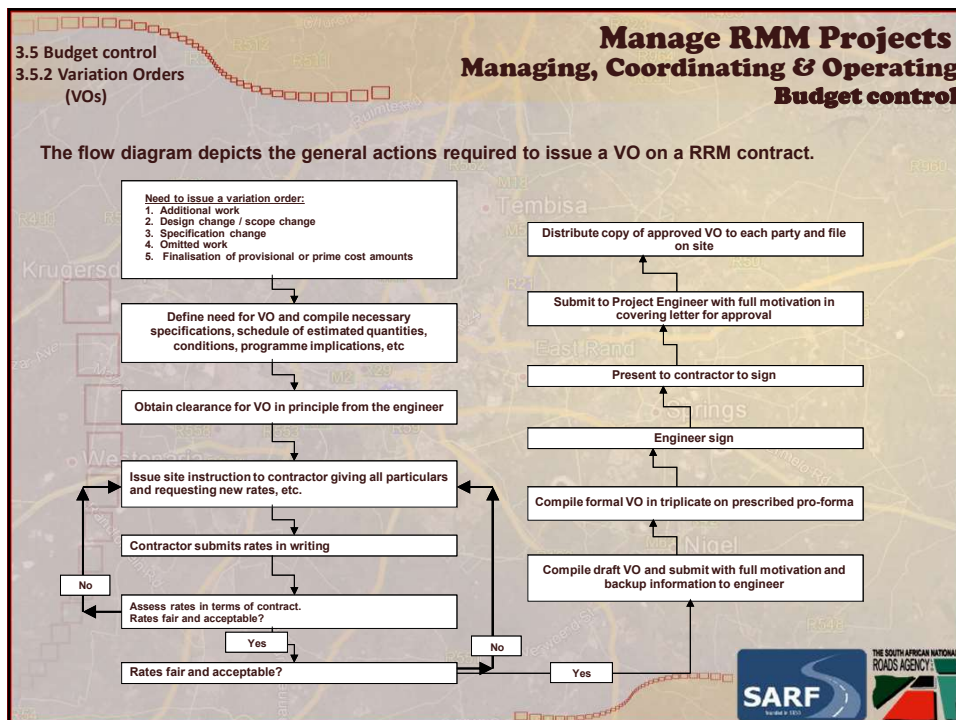
Budget control

A VO is required for the expenditure of provisional sums or additional work that is not covered under rates or day work schedules. Such a VO is for a specific purpose linked to a specific time-frame.

VOs must be approved by the client. VO will also indicate if the work will be done out of current budget provision or if additional funding is required.

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Manage RMM Projects



AS HAPPY AS OUR FRIENDS, THE TOAST OF THE WHOLE VILLAGE, WHICH THANKS TO THEM, HAS PRESERVED ITS MONUMENT INTACT!

BUT WHAT I NEVER DID UNDERSTAND IS WHY ANYONE WOULD PUT MONEY IN THAT CAULDRON INSTEAD OF ONION SOUP IN THE FIRST PLACE!

THE END

