

# KAREEBERG LOCAL MUNICIPALITY



## ROAD AND STORM-WATER MAINTENANCE PLAN

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# ROADS & STORM-WATER MAINTENANCE PLAN

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## PROPOSAL

### INFRASTRUCTURE ASSET MAINTENANCE PLAN

#### 1. DEFINITIONS

**Maintenance:** all action necessary for retaining an asset in or restoring it to its original state of condition.

**Maintenance Provider:** A service provider appointed by a Municipal Council to maintain on behalf of or, with the Municipality its property, plant or equipment.

**Maintenance Standard:** a measure of the condition that an asset is required to meet and be fully functional during its operation.

**Criticality:** a measure defining how critical the function of an asset is in respect of the delivery of the core function that of service delivery output.

**Functionality:** a measure of how well an asset fits in with the operational or designed usage, intended purpose and meeting the requirements of the institution's mandated obligations.

**Life cycle costs:** Total expense of maintaining an asset during its life time and including procurement, operating and maintaining an asset as well as disposal costs.

**Minor New Works:** Works / repairs that are required to enhance assets / facilities to standards suitable for their intended function. This includes refurbishments.

**Utilization:** a measure of determining an asset's relevance to its intended requirements by defining how intensively the asset is used.

#### 2. INTRODUCTION

An Asset Maintenance Plan serves as a strategic document containing a systematic approach towards the maintenance of Municipality's Asset in order to optimize and enhance the effective usage of the Municipality's physical assets.

Through effective maintenance the risks of future financial burdens and operational malfunctioning of Municipal assets will be minimized. Poor maintenance of assets results in unavoidable damages and deterioration in the condition of the assets and, as a result major repairs or in some instances capital replacement of the assets becomes necessary. Neglect of maintenance obligations can give rise to safety hazards and the institution may be found legally liable for any injuries and damages to citizen's properties.

The general perception with respect to planned maintenance remains that through regular expenditure of small amounts obtained from dedicated maintenance funds votes, this will optimize the working life of assets and it will become cost effective than large sums of capital injections every 3 years or so towards capital replacements of assets due to unplanned and or lack of maintenance.

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### **3. OBJECTIVES**

The asset maintenance plan provides the structure within which to strategically manage the maintenance and to optimize the life cycle of the Municipality's assets in accordance with the service delivery requirements and towards achieving the needs of the communities that the Municipality is responsible for.

The key objectives are:

- Assets are maintained to perform at optimum levels during their life cycle, reducing service disruptions and losses due to failure.
- Critical areas are identified early and managed.
- Performance of assets is reviewed to suit service delivery and to ensure assets are fit for the purpose.
- The costs of maintaining the assets over their life cycle are quantified and justified.
- Information is gathered to assist future decision-making and budgeting.

### **4. METHODOLOGY**

The methodology involves organizing and maintaining the property, plant and equipment owned by the Municipality in a systematic process rather than ad-hoc response, monitoring of its service and reducing emergency corrective maintenance. It contains a daily response system detailing the responsible Municipal staff for urgent repairs during emergency corrective maintenance.

**Maintenance has been categorized according to why and when it happens as:**

**Backlog Maintenance:**

Maintenance that is necessary to prevent deterioration of the asset or its function but which has not been carried out.

**Planned Maintenance:**

Maintenance work to prevent failure of the asset during its life cycle.

**Corrective Maintenance:**

Performed as a result of failure, to restore an item or asset to its original state or condition, as far as practicable. Corrective maintenance may or may not be programmed.

**Preventative Maintenance:**

Performed to retain an item or asset its original condition as far as practicable by providing systematic inspection, detection prevention of incipient failure.

**Emergency Corrective Maintenance:**

Outside of routine maintenance and works programs that must be initiated immediately for health, safety, security, hazard reasons or that may result in the rapid deterioration of the plant or equipment if undertaken.

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### **Deferred Maintenance:**

Maintenance planned to be carried out the current financial year, but due to shortage of funds and or unforeseen circumstances is not carried out and added to the Backlog Maintenance awaiting attention.

### **5. SCOPE**

The Asset Maintenance Plan applies to the Municipal building assets and associated fixed plant and equipment. It includes building fabric and structures, fixed plant and equipment that are part of a building's services, civil works (roads, paved areas fencing) and site services (electricity and storm water drainage systems)

The Assets Maintenance Plan only applies to assets for which the Local Municipality has been assigned responsibility and ownership for. It does not apply to site services owned by the District Municipality (Water Services Authority), computers, telephones, vehicles or to specialist equipment under the control of the Budget and Treasury offices.

These assets are commonly described as "infrastructure assets". While there is no universally accepted definition of infrastructure assets, these assets usually display some or all the following characteristics:

- (a) They are part of a system or network
- (b) They are specialized in nature and do not have alternative uses
- (c) They are immovable
- (d) They may be subject to constraints on disposal

This Draft Asset Maintenance Plan has been developed to cover the following functional areas:

- Roads Maintenance
- Storm water Maintenance Plan

### **6. ROAD MAINTENANCE PLAN**

#### **Introduction**

Roads network that is properly looked after provides the foundations of a good economy that sustains community's livelihoods. This is said in the broadest terms and includes meeting domestic and social critical needs of the populace, supporting local economic activities required to reach economic growth objectives and maintain the environment. All this is intended to improve overall traffic ability of Municipal roads in accessing essential basic amenities and critical services for the population in all weather conditions.

To achieve these goals and objectives a framework of roads network infrastructure assets and resources is required that will support the growth path and development within the Municipality. There is need to anticipate and plan for future population growth and effectively manage the increased traffic volumes that comes with it, without compromising the various aspects of ecological sustainability such as Borrow pits and water sources in meeting social and/or economical needs.

#### **Background**

The decline in the quality of our roads network infrastructure can be attributed to amongst other factors as a consequence of population growth resulting in higher traffic volumes, increased economic activity as well as general improvements in lifestyle patterns as well as changing climatic resources available that are entrusted with preserving the working life of such roads network infrastructure by imposing an added and under pressure on an already stretched and grossly overworked and ageing plant component entrusted with the responsibility of maintaining

our roads. Substantial capital investments gradually phased into effect periodically are required urgently to replace or upgrade our ageing roads network infrastructure otherwise we will be faced with serious problems in the not so distanced future.

Climate change through rising mean surface temperatures will as is already happening have negative effects on the mean return periods of roads maintenance intervals and hence the life cycle surface run-off. Droughts and floods increase in frequency with greater volatility in weather patterns outcomes. This leads to increased wearing course erosion and storm water facility will more frequently require unblocking.

### **Recommendations**

New approaches to strengthen capacity in all spheres of operation are required to improve the proper implementation of strategies to offset the risks threats and challenges to the roads network infrastructure asset and the availability thereof.

**Integrated planning** – At all levels of development in the Municipality’s roads network infrastructure, maintenance must be taken into account in all planning decisions. Make short term interventions where provision of basic services depends on completion of long term, large scale projects. Where communities cannot be serviced by large scale infrastructure projects, small scale interventions may be implemented.

**Resource management** – The municipality may introduce and seek to enforce a more structured monitoring and maintenance system with regards to plant preservation and usage management, with periodic inspections on the general mechanical and structural condition, as well as demand and supply analysis management system.

**Future projections-** Educating and providing general awareness to the public on the value and importance of preserving the roads network infrastructure from vandalism and unscrupulous handling of assets is an essential and on-going exercise and responsibility that should be shared amongst the leadership of communities, so as to instill good values in communities of securing our needs across generations. In so doing public attitudes behaviors and general perceptions towards infrastructure intended for public use will gradually be positively influenced to value and look after such assets. It is essential to establish partnerships with all every stakeholder in the roads infrastructural maintenance fraternity and utilizing such association on all possible avenues be they information and/or data sharing; resources mobilization for the attainment of a common goal which is to provide a safe and trafficable roads network infrastructure in all weather conditions throughout the length and breadth of the Municipal area.

## **6.1 LEGISLATIVE REQUIREMENTS**

The Roads Management Act 2004 requires the Council of a Municipality (the Roads Authority as per section 37 (1), ii-iv) to inspect, repair and maintain public Roads (section 40) for which is a Roads Authority.

This applies to any part of a public road which is:

- A roadway
- A pathway
- A road shoulder, or
- Road infrastructure, for which Council is the Road Authority

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The Municipality as a Road Authority in terms of:

- Section 41 (1) determine the standard to which will construct, inspect, maintain and repair its road infrastructure. In relation to inspections, it may also determine the inspection intervals.
- Section 41 (2) (c) In relation to maintenance determine the programs the maintenance work to be performed in the course of regular maintenance and the standard to which the maintenance is to be performed.
- Section 41 (2) determines in relation to the repair of defects reported or found on inspection.
  - i. The matters which are to be treated as defects which require repairs or warning
  - ii. The circumstances in which intervention action is to be taken
  - iii. The type of intervention to be taken
  - iv. The period within which the intervention is to be taken
  - v. The priority to be given to the intervention action.
- Section 41 (3) may during the undertaking of the above action conduct repairs, erect warning signs or reduce or remove risk.

### **6.2 OPERATIONAL DESCRIPTION**

The routine road maintenance plan establishes key routine roads maintenance practices for Council managed roads including:

- Inspection
- Defect target levels of service
- Maintenance target levels of service

#### **6.2.2 Inspection**

The Municipality has developed a systematic inspection process, including unscheduled inspections in response to the community's advices these are either conducted routinely after heavy or consistent rains; on call from public; emergency inspections. The inspections will identify defects and key maintenance items such as storm water goods. Defects requiring attention which will be treated in accordance with the defects table timeframes, following a risk assessment.

The maintenance items identified will be assessed, prioritized and added to maintenance works programs, to ensure that the high risk maintenance items are attended to in order of priority, taking into account roads hierarchy and traffic volumes.

The Municipal staff will report any risk or maintenance issues they may observe as they move around the Municipality in the course of their duties. Municipality's technical staff will respond to urgent works generally within the most appropriate time upon receipt of a report.

Complaints and reports from the community will be recorded on the Complaints Register. The technical team will be assigned to conduct a visual inspection to determine the extent of damage or defect within 48 hours using a Road Inspection Form. The findings or maintenance requirements will then be prioritized based on the severity and hazard to road users and be included in the Responsive Maintenance Schedule.

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### **6.2.2 Defect & Routine Maintenance Target Levels of Service**

The Service Levels have been developed taking into consideration the *current work, available resources and the service delivery requirements* in conjunction with the predetermined deliverables as per the Municipal Service Delivery and Budget Implementation Plans (SDBIP) and the objectives of the Integrated Development Plans (IDP).

### **6.2.3 Emergency Works**

Emergency works will among other things include traffic incidents management, floods, storms and potential spillages that may undermine and damage the surface layers.

The response to emergency work shall take precedence over some of the activities planned on the Roads Maintenance Program including inspections and may to some extent the timeframes set on the approved Road Maintenance Program. The level of response to the identified hazards shall be in accordance with the severity of the emergency and the availability of Municipal resources.

### **6.2.4 Roads Maintenance Program**

The Municipality will through its proactive maintenance systems ensure that the target levels of service are achieved, within the constraints of available resources as planned on the Table 3 below Roads Maintenance Program.

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TABLE 1 – ROADS SCHEDULE OF INSPECTION

| ACTIVITY   | INSPECTION TYPE   | URBAN ACCESS ROAD                  | RURAL ACCESS ROAD                     | BRIDGES/STREAM CROSSINGS/MINOR STRUCTURES  | TRACKS/ OTHERS |
|--|---|------------------------------------|---------------------------------------|--|----------------|
| Inspections<br>Regular inspections of the road asset to be undertaken by a suitably qualified and experienced staff to determine condition, compliance with standards and risk | <b>(a) Condition Assessment Inspection</b> are undertaken to determine the condition of an asset, its relative life and where relevant, asset renewal requirements including asset register maintenance.  | As per the Asset Management Policy |                                       |  |                |
|  | <b>(b) Condition &amp; Risk inspections</b> are undertaken to identify defects against set standards. Defects are rectified in accordance with the Table 2- Defect Table in this document. Significant maintenance issues are also identified as part of this inspection process. | Quarterly                          | Once yearly & on receipt of compliant | Quarterly – Within urban settlement<br><br>Once yearly – Within rural settlement | On request     |
|  | <b>(c) Routine Maintenance Inspections</b> are undertaken in conjunction with routine maintenance patrols to determine compliance with maintenance target intervention standards set out in, and programmed in accordance with the Maintenance Program                            | As per the Maintenance Program     |                                       |  |                |



|  |  |   |
|--|--|---|
|  | <p><b>(D) Responsive Inspections</b> are undertaken in responsive to community complaints / reports, office or municipal staff reports.</p> <p>Identified defects works are rectified in accordance with the defects table.</p> <p>Identified maintenance works are programmed in accordance with the maintenance program.</p> | <p>With 48 hours on receipt of report or complaint.</p> |
|--|--|---|

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TABLE 2 – DEFECTS RESPONSIBLE TABLE

| DEFECT TYPE              | DESCRIPTION   | CRITICAL LIMIT - EMERGENCY  | TIMELINE OF RESPONSIBLE  |
|--------------------------|---|---|--|
| SEALED ROADS<br>Potholes | These are defined as small breaks and depression in the sealed surface where loss of pavement wearing surface has occurred.   | D001. When pothole > 300 mm in depth & > 1000mm wide or rapid deterioration is likely.  | 48 hours   |
| Surface Defects          | Defined as rough surface caused by rutting, depressions or failure areas of pavement  | Rectify when the failed area reaches the following intervention levels<br>a)D002. Rutting & depressions > 10m <sup>2</sup><br>b) D003. Broken out pavement >10m <sup>2</sup><br>c) D004. Loose stones (>20mm stones) > 20m <sup>2</sup> at <b>intersections &amp; other</b> | Currently not attended to due to insufficient resources.<br><br>Repairs are prioritized under capital rehabilitation since a lot of these roads have reached their Expected Useful life. |
| Edge Breaks              | These are defined as fretting along the seal edge resulting in reduced seal width. Usually associated with eroded or weak shoulders in the vicinity of the bitumen. | D007. When edge breaks exceeds 150mm laterally, for a 20m length.   | Same response as per Surface Defects   |
| Shoulder “Drop off”      | These are defined as results of erosion of the unsealed road shoulder adjacent to the seal edge resulting in “drop off” at the seal edge                            | D008. When the drop off from pavement exceeds 100mm (Vert.) for a 20m length.   | Same response as per Surface Defects   |
| Regulatory Signs         | Covers the replacement of damaged or missing regulatory signs.  | D009. Missing or legible regulatory signs   | Report to Community Services within 36 hours from identification   |

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TABLE 3 – ROADS MAINTENANCE PROGRAMME

| STREET NAMES        | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS        | DURATION (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|---------------------|--------------|--------------|------------------------|-----------------|--------------------|------------------|---------------------------|
| Mouton Street       | 481,01       | Gravel       | Regravelling / Grading | 4               | 03/06/2019         | 06/06/2019       | R44 800,00                |
| Margaretha Prinsloo | 270,43       | Surfaced     | Pothole repairs        | 6               | 03/06/2019         | 10/06/2019       | R52 800,00                |
| Visser Street       | 349,94       | Gravel       | Regravelling / Grading | 3               | 07/06/2019         | 11/06/2019       | R24 300,00                |
| Merwe               | 271,28       | Gravel       | Regravelling / Grading | 2               | 12/06/2019         | 13/06/2019       | R16 200,00                |
| South Street        | 840,54       | Surfaced     | Pothole repairs        | 6               | 11/06/2019         | 19/06/2019       | R52 800,00                |
| Recreation Street   | 270,84       | Gravel       | Regravelling / Grading | 2               | 14/06/2019         | 18/06/2016       | R16 200,00                |
| Marais Street       | 171,56       | Gravel       | Regravelling / Grading | 2               | 19/06/2019         | 20/06/2019       | R16 200,00                |
| Vermeulen Street    | 473,96       | Gravel       | Regravelling / Grading | 4               | 21/06/2019         | 26/06/2019       | R44 800,00                |
| Koel Street         | 75,51        | Gravel       | Regravelling / Grading | 1               | 27/06/2019         | 27/06/2019       | R8 100,00                 |
| Connan Street       | 418,36       | Gravel       | Regravelling / Grading | 4               | 28/06/2019         | 03/07/2019       | R44 800,00                |
| Rail Street         | 75,04        | Gravel       | Regravelling / Grading | 1               | 04/07/2019         | 04/07/2019       | R8 100,00                 |

| STREET NAMES        | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS        | DURATION (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|---------------------|--------------|--------------|------------------------|-----------------|--------------------|------------------|---------------------------|
| Zahn Street         | 806,89       | Surfaced     | Pothole repairs        | 9               | 20/06/2019         | 02/07/2019       | R79 200,00                |
| Hanau Street        | 858,97       | Surfaced     | Pothole repairs        | 9               | 03/07/2019         | 15/07/2019       | R79 200,00                |
| Oos Street          | 297,41       | Gravel       | Regravelling / Grading | 3               | 05/07/2019         | 09/07/2019       | R24 300,00                |
| Skou Street         | 302,76       | Gravel       | Regravelling / Grading | 3               | 10/07/2019         | 12/07/2019       | R24 300,00                |
| Biblioteek Street   | 489,3        | Gravel       | Regravelling / Grading | 4               | 15/07/2019         | 18/07/2019       | R44 800,00                |
| New Street          | 390,02       | Paved        | Sweeping               | 4               | 03/06/2019         | 06/06/2019       | R6 000,00                 |
| Victoria            | 483,69       | Surfaced     | Pothole repairs        | 5               | 16/07/2019         | 22/07/2019       | R44 000,00                |
| Church Street       | 282,57       | Surfaced     | Pothole repairs        | 3               | 23/07/2019         | 25/07/2019       | R26 400,00                |
| Daniel Street       | 80           | Surfaced     | Pothole repairs        | 1               | 26/07/2019         | 26/07/2019       | R8 800,00                 |
| Grey Street         | 345,84       | Surfaced     | Pothole repairs        | 4               | 29/07/2019         | 01/08/2019       | R35 200,00                |
| River Street        | 402,9        | Surfaced     | Pothole repairs        | 4               | 02/07/2019         | 07/08/2019       | R35 200,00                |
| Johanna Street      | 336,59       | Gravel       | Regravelling / Grading | 4               | 19/07/2019         | 24/07/2019       | R44 800,00                |
| High Street         | 216,38       | Gravel       | Regravelling / Grading | 2               | 25/07/2019         | 26/07/2019       | R16 200,00                |
| Jacob Street        | 190,99       | Gravel       | Regravelling / Grading | 2               | 29/07/2019         | 30/07/2019       | R16 200,00                |
| Van Riebeeck Street | 653,3        | Surfaced     | Pothole repairs        | 7               | 08/08/2019         | 19/08/2019       | R61 600,00                |
| kronkel way         | 186,98       | Gravel       | Regravelling / Grading | 3               | 31/07/2019         | 02/08/2019       | R24 300,00                |
| Alheit Street       | 653,93       | Surfaced     | Pothole repairs        | 7               | 20/08/2019         | 28/08/2019       | R61 600,00                |
| Van Zyl Street      | 199,05       | Surfaced     | Pothole repairs        | 3               | 29/08/2019         | 02/09/2019       | R26 400,00                |

| STREET NAMES       | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS        | DURATION (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|--------------------|--------------|--------------|------------------------|-----------------|--------------------|------------------|---------------------------|
| De villiers Street | 416,21       | Gravel       | Regravelling / Grading | 4               | 05/08/2019         | 08/08/2019       | R44 800,00                |
| Stasieweg          | 1441         | Gravel       | Regravelling / Grading | 15              | 12/08/2019         | 30/08/2019       | R121 500,00               |
| Industrial Street  | 1061         | Gravel       | Regravelling / Grading | 11              | 02/09/2019         | 16/09/2019       | R89 100,00                |
| Esterhuizen St     | 417,04       | Gravel       | Regravelling / Grading | 4               | 17/09/2019         | 20/09/2019       | R44 800,00                |
| Sonop St           | 392,8        | Gravel       | Regravelling / Grading | 4               | 23/09/2019         | 27/09/2019       | R44 800,00                |
| Masolkweg          | 844,4        | Gravel       | Regravelling / Grading | 9               | 30/09/2019         | 10/10/2019       | R72 900,00                |
| Greeff St          | 418,01       | Gravel       | Regravelling / Grading | 4               | 16/10/2019         | 21/10/2019       | R44 800,00                |
| Mostert St         | 863,8        | Surfaced     | Pothole repairs        | 9               | 03/09/2019         | 13/09/2019       | R79 200,00                |
| Kidd St            | 96,29        | Gravel       | Regravelling / Grading | 1               | 22/10/2019         | 22/10/2019       | R8 100,00                 |
| Van Rensburg St    | 293,22       | Gravel       | Regravelling / Grading | 3               | 23/10/2019         | 25/10/2019       | R24 300,00                |
| Smit St            | 82,58        | Gravel       | Regravelling / Grading | 1               | 28/10/2019         | 28/10/2019       | R8 100,00                 |

| STREET NAMES  | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS        | DURATION (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|---------------|--------------|--------------|------------------------|-----------------|--------------------|------------------|---------------------------|
| Sterreberg St | 309,57       | Surfaced     | Pothole repairs        | 3               | 16/09/2019         | 18/09/2019       | R26 400,00                |
| End St        | 309,91       | Gravel       | Regravelling / Grading | 3               | 29/10/2019         | 31/10/2019       | R24 300,00                |
| Mark St       | 1690         | Paved        | Sweeping               | 17              | 07/06/2019         | 02/07/2019       | R25 500,00                |
| Boezak St     | 413,55       | Gravel       | Regravelling / Grading | 4               | 01/11/2019         | 06/11/2019       | R44 800,00                |
| Biesenbach St | 316,43       | Gravel       | Regravelling / Grading | 3               | 07/11/2019         | 11/11/2019       | R24 300,00                |
| Hartwig St    | 146,12       | Gravel       | Regravelling / Grading | 2               | 12/11/2019         | 13/11/2019       | R16 200,00                |
| Appies St     | 93,53        | Gravel       | Regravelling / Grading | 1               | 14/11/2019         | 14/11/2019       | R8 100,00                 |
| Koopman St    | 219,98       | Gravel       | Regravelling / Grading | 2               | 15/11/2019         | 18/11/2019       | R16 200,00                |
| Phiefer St    | 389,88       | Gravel       | Regravelling / Grading | 4               | 19/11/2019         | 22/11/2019       | R44 800,00                |
| Tuin St       | 357,45       | Gravel       | Regravelling / Grading | 4               | 25/11/2019         | 28/11/2019       | R44 800,00                |
| Jaftha St     | 50,62        | Gravel       | Regravelling / Grading | 1               | 29/11/2019         | 29/11/2019       | R8 100,00                 |
| Beest St      | 132,33       | Gravel       | Regravelling / Grading | 2               | 02/12/2019         | 03/12/2019       | R16 200,00                |
| Panos St      | 542,45       | Gravel       | Regravelling / Grading | 5               | 04/12/2019         | 10/12/2019       | R40 500,00                |
| Garden St     | 118,5        | Gravel       | Regravelling / Grading | 1               | 11/12/2019         | 11/12/2019       | R8 100,00                 |
| Pasonge St    | 144,35       | Surfaced     | Pothole repairs        | 2               | 19/09/2019         | 20/09/2019       | R17 600,00                |
| Hospital      | 318,06       | Surfaced     | Pothole repairs        | 3               | 23/09/2019         | 30/09/2019       | R26 400,00                |

| STREET NAMES    | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS        | DURATION (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|-----------------|--------------|--------------|------------------------|-----------------|--------------------|------------------|---------------------------|
| 1st Avenue      | 243,8        | Paved        | Sweeping               | 2               | 03/07/2019         | 04/07/2019       | R3 000,00                 |
| 1st Avenue      | 92,98        | Paved        | Sweeping               | 1               | 05/07/2019         | 05/07/2019       | R1 500,00                 |
| Vanwyksvlei way | 251,05       | Paved        | Sweeping               | 2               | 08/07/2019         | 09/07/2019       | R3 000,00                 |
| Lang St         | 784,03       | Paved        | Sweeping               | 8               | 10/07/2019         | 19/07/2019       | R12 000,00                |
| Burger St       | 172,58       | Paved        | Sweeping               | 2               | 22/07/2019         | 23/07/2019       | R3 000,00                 |
| Biesenbach St   | 113,9        | Paved        | Sweeping               | 1               | 24/07/2019         | 24/07/2019       | R1 500,00                 |
| Boom St         | 222,04       | Paved        | Sweeping               | 2               | 25/07/2019         | 26/07/2019       | R3 000,00                 |
| 2nd Avenue      | 186,09       | Paved        | Sweeping               | 2               | 29/07/2019         | 30/07/2019       | R3 000,00                 |
| 3rd Avenue      | 326,61       | Paved        | Sweeping               | 3               | 31/07/2019         | 02/08/2019       | R4 500,00                 |
| 4th A venue     | 237,89       | Paved        | Sweeping               | 2               | 05/08/2019         | 06/08/2019       | R3 000,00                 |
| Alfa St         | 837,27       | Paved        | Sweeping               | 8               | 07/08/2019         | 19/08/2019       | R12 000,00                |
| Carnarvon 19    | 393,88       | Gravel       | Regravelling / Grading | 4               | 16/01/2020         | 21/01/2020       | R44 800,00                |
| carnarvon 32    | 316,46       | Gravel       | Regravelling / Grading | 3               | 22/01/2020         | 24/01/2020       | R24 300,00                |
| Carnarvon 42    | 335,23       | Gravel       | Regravelling / Grading | 3               | 27/01/2020         | 29/01/2020       | R24 300,00                |
| Carnarvon 43    | 65,42        | Gravel       | Regravelling / Grading | 1               | 30/01/2020         | 30/01/2020       | R8 100,00                 |

| <b>STREET NAMES</b> | <b>DISTANCE (m)</b> | <b>TYPE OF ROAD</b> | <b>TYPE OF REPAIRS</b> | <b>DURATION (Days)</b> | <b>PROJECT START DATE</b> | <b>PROJECT END DATE</b> | <b>ESTIMATED BUDGET REQUIRED</b> |
|---------------------|---------------------|---------------------|------------------------|------------------------|---------------------------|-------------------------|----------------------------------|
| Carnavon 44         | 61,85               | Gravel              | Regravelling / Grading | 1                      | 31/01/2020                | 31/01/2020              | R8 100,00                        |
| Carnavon 48         | 142,01              | Gravel              | Regravelling / Grading | 1                      | 03/02/2020                | 03/02/2020              | R8 100,00                        |
| Carnarvon 41        | 61,15               | Paved               | Sweeping               | 1                      | 20/08/2019                | 20/08/2019              | R1 500,00                        |
| Carnavon 46         | 58,64               | Paved               | Sweeping               | 1                      | 21/08/2019                | 21/08/2019              | R1 500,00                        |
| Carnavorn 45        | 48,66               | Paved               | Sweeping               | 1                      | 22/08/2019                | 22/08/2019              | R1 500,00                        |
| Carnavorn 135       | 48,91               | Paved               | Sweeping               | 1                      | 23/08/2019                | 23/08/2019              | R1 500,00                        |
| Carnavorn 18        | 85,77               | Paved               | Sweeping               | 1                      | 26/08/2019                | 26/08/2019              | R1 500,00                        |
| Carnavorn 68        | 312,89              | Paved               | Sweeping               | 3                      | 27/08/2019                | 29/08/2019              | R4 500,00                        |
| Carnavorn 67        | 95,81               | Paved               | Sweeping               | 1                      | 30/08/2019                | 30/08/2019              | R1 500,00                        |
| Carnavorn 136       | 236,79              | Paved               | Sweeping               | 2                      | 02/09/2019                | 03/09/2019              | R3 000,00                        |
| Carnavorn 40        | 102,81              | Paved               | Sweeping               | 1                      | 04/09/2019                | 04/09/2019              | R1 500,00                        |
| Carnavorn 134       | 177,77              | Paved               | Sweeping               | 2                      | 05/09/2019                | 06/09/2019              | R3 000,00                        |
| Carnavorn 60        | 64,21               | Paved               | Sweeping               | 1                      | 09/09/2019                | 09/09/2019              | R1 500,00                        |
| Carnavorn 58        | 60,21               | Paved               | Sweeping               | 1                      | 10/09/2019                | 10/09/2019              | R1 500,00                        |
| Carnavorn 59        | 124,06              | Paved               | Sweeping               | 1                      | 11/09/2019                | 11/09/2019              | R1 500,00                        |
| Carnavorn 61        | 63,7                | Paved               | Sweeping               | 1                      | 12/09/2019                | 12/09/2019              | R1 500,00                        |
| Carnavorn 62        | 52,95               | Paved               | Sweeping               | 1                      | 13/09/2019                | 13/09/2019              | R1 500,00                        |
| Carnavorn 65        | 73,88               | Paved               | Sweeping               | 1                      | 16/09/2019                | 16/09/2019              | R1 500,00                        |
| Carnavorn 64        | 249,56              | Paved               | Sweeping               | 2                      | 17/09/2019                | 18/09/2019              | R3 000,00                        |
| Carnavorn 63        | 44,45               | Paved               | Sweeping               | 1                      | 19/09/2019                | 19/09/2019              | R1 500,00                        |
| Carnavorn 07        | 100,81              | Paved               | Sweeping               | 1                      | 20/09/2019                | 20/09/2019              | R1 500,00                        |
| Carnavorn 06        | 92,25               | Paved               | Sweeping               | 1                      | 23/09/2019                | 23/09/2019              | R1 500,00                        |



| STREET NAMES  | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS | DURATION (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|---------------|--------------|--------------|-----------------|-----------------|--------------------|------------------|---------------------------|
| Carnavorn 05  | 63,7         | Paved        | Sweeping        | 1               | 25/09/2019         | 25/09/2019       | R1 500,00                 |
| Carnavorn 08  | 199,2        | Paved        | Sweeping        | 2               | 26/09/2019         | 27/09/2019       | R3 000,00                 |
| Carnavorn 12  | 66,25        | Paved        | Sweeping        | 1               | 30/09/2019         | 30/09/2019       | R1 500,00                 |
| Carnavorn 13  | 81,47        | Paved        | Sweeping        | 1               | 01/10/2019         | 01/10/2019       | R1 500,00                 |
| Carnavorn 14  | 165,99       | Paved        | Sweeping        | 2               | 02/10/2019         | 03/10/2019       | R3 000,00                 |
| Carnavorn 16  | 64,2         | Paved        | Sweeping        | 1               | 04/10/2019         | 04/10/2019       | R1 500,00                 |
| Carnavorn 01  | 90,65        | Paved        | Sweeping        | 1               | 07/10/2019         | 07/10/2019       | R1 500,00                 |
| Carnavorn 151 | 38,58        | Paved        | Sweeping        | 1               | 08/10/2019         | 08/10/2019       | R1 500,00                 |
| Carnavorn 128 | 110,32       | Paved        | Sweeping        | 1               | 09/10/2019         | 09/10/2019       | R1 500,00                 |
| Carnavorn 145 | 45,13        | Paved        | Sweeping        | 1               | 10/10/2019         | 10/10/2019       | R1 500,00                 |
| Carnavorn 11  | 42,2         | Paved        | Sweeping        | 1               | 11/10/2019         | 11/10/2019       | R1 500,00                 |
| Carnavorn 66  | 36,86        | Paved        | Sweeping        | 1               | 14/10/2019         | 14/10/2019       | R1 500,00                 |
| Carnavorn 57  | 119,77       | Paved        | Sweeping        | 1               | 15/10/2019         | 15/10/2019       | R1 500,00                 |
| Carnavorn 137 | 57,31        | Paved        | Sweeping        | 1               | 16/10/2019         | 16/10/2019       | R1 500,00                 |
| Carnavorn 138 | 65,15        | Paved        | Sweeping        | 1               | 17/10/2019         | 17/10/2019       | R1 500,00                 |
| Carnavorn 142 | 148,31       | Paved        | Sweeping        | 2               | 18/10/2019         | 21/10/2019       | R3 000,00                 |
| Carnavorn 133 | 72,78        | Paved        | Sweeping        | 1               | 22/10/2019         | 22/10/2019       | R1 500,00                 |
| Carnavon 154  | 81,57        | Paved        | Sweeping        | 1               | 23/10/2019         | 23/10/2019       | R1 500,00                 |
| Carnavorn 131 | 68,17        | Paved        | Sweeping        | 1               | 24/10/2019         | 24/10/2019       | R1 500,00                 |
| Carnavorn 130 | 61,01        | Paved        | Sweeping        | 1               | 25/10/2019         | 25/10/2019       | R1 500,00                 |
| Carnavorn 129 | 64,5         | Paved        | Sweeping        | 1               | 28/10/2019         | 28/10/2019       | R1 500,00                 |

**Carnarvon Grand Total = R 2 177 500.00**

**Vanwyksvlei**

| <b>STREET NAMES</b> | <b>DISTANCE (m)</b> | <b>TYPE OF ROAD</b> | <b>TYPE OF REPAIRS</b> | <b>DURATION (Days)</b> | <b>PROJECT START DATE</b> | <b>PROJECT END DATE</b> | <b>ESTIMATED BUDGET REQUIRED</b> |
|---------------------|---------------------|---------------------|------------------------|------------------------|---------------------------|-------------------------|----------------------------------|
| Herbert Alston St   | 522,3               | Gravel              | Regraveling / Grading  | 5                      | 04/02/2020                | 10/02/2020              | R40 500,00                       |
| Moolman St          | 294,52              | Gravel              | Regraveling / Grading  | 2                      | 11/02/2020                | 12/02/2020              | R16 200,00                       |
| President St        | 340,75              | Paved               | Sweeping               | 3                      | 29/10/2019                | 31/10/2019              | R4 500,00                        |
| Skool St            | 634,72              | Gravel              | Regraveling / Grading  | 6                      | 13/02/2020                | 20/02/2020              | R48 600,00                       |
| Tuin St             | 3,2 km              | Gravel              | Regraveling / Grading  | 20                     | 21/02/2020                | 19/03/2020              | R162 000,00                      |
| Plein St            | 404,12              | Gravel              | Regraveling / Grading  | 4                      | 20/03/2020                | 25/03/2020              | R32 400,00                       |
| Kerk St             | 401,42              | Gravel              | Regraveling / Grading  | 4                      | 26/03/2020                | 01/04/2020              | R32 400,00                       |
| President St        | 187,88              | Gravel              | Regraveling / Grading  | 2                      | 02/04/2020                | 03/04/2020              | R16 200,00                       |
| Noord St            | 296,22              | Gravel              | Regraveling / Grading  | 3                      | 06/04/2020                | 08/04/2020              | R24 300,00                       |
| Dorp st             | 218,42              | Gravel              | Regraveling / Grading  | 2                      | 09/04/2020                | 10/04/2020              | R16 200,00                       |
| Koejong St          | 291,54              | Gravel              | Regraveling / Grading  | 2                      | 13/04/2020                | 14/04/2020              | R16 200,00                       |
| Hanekam St          | 305,82              | Gravel              | Regraveling / Grading  | 3                      | 15/04/2020                | 17/04/2020              | R24 300,00                       |

| STREET NAMES  | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS       | DURATION (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|---------------|--------------|--------------|-----------------------|-----------------|--------------------|------------------|---------------------------|
| Hanekam St    | 823,37       | Paved        | Sweeping              | 8               | 01/11/2019         | 12/11/2019       | R12 000,00                |
| Hostel Street | 453,85       | Gravel       | Regraveling / Grading | 4               | 20/04/2020         | 23/04/2020       | R32 400,00                |
| Vooltjie St   | 942,05       | Gravel       | Regraveling / Grading | 9               | 24/04/2020         | 06/05/2020       | R72 900,00                |
| Sonneblom     | 835,88       | Paved        | Sweeping              | 8               | 13/11/2019         | 22/11/2019       | R12 000,00                |
| Kappertjie St | 117,96       | Gravel       | Regraveling / Grading | 2               | 07/05/2020         | 08/05/2020       | R16 200,00                |
| Skool St      | 628,64       | Gravel       | Regraveling / Grading | 6               | 09/05/2020         | 16/05/2020       | R48 600,00                |
| kokerboom     | 655,28       | Gravel       | Regraveling / Grading | 6               | 17/05/2020         | 24/05/2020       | R48 600,00                |
| Aster St      | 189,28       | Paved        | Sweeping              | 2               | 25/11/2019         | 26/11/2019       | R3 000,00                 |
| Suring        | 308,03       | Paved        | Sweeping              | 3               | 27/11/2019         | 29/11/2019       | R4 500,00                 |
| Vygie         | 131,06       | Gravel       | Regraveling / Grading | 2               | 27/05/2020         | 28/05/2020       | R16 200,00                |
| Bloukno Cres  | 326,38       | Gravel       | Regraveling / Grading | 3               | 29/05/2020         | 01/06/2020       | R24 300,00                |
| Karoo Cres    | 113,47       | Gravel       | Regraveling / Grading | 2               | 02/06/2020         | 03/06/2020       | R16 200,00                |
| Vuurry Avenue | 51           | Gravel       | Regraveling / Grading | 1               | 04/06/2020         | 04/06/2020       | R8 100,00                 |

**Vanwyksvlei Grand Total = R 915 700.00**

### VOSBURG

| STREET NAMES     | DISTANCE<br>(m) | TYPE OF<br>ROAD | TYPE OF REPAIRS        | DURATION<br>(Days) | PROJECT<br>START DATE | PROJECT<br>END DATE | ESTIMATED<br>BUDGET<br>REQUIRED |
|------------------|-----------------|-----------------|------------------------|--------------------|-----------------------|---------------------|---------------------------------|
| River Street     | 873,86          | Gravel          | Regravelling / Grading | 8                  | 18/06/2020            | 29/06/2020          | R64 800,00                      |
| Market Street    | 879,98          | Gravel          | Regravelling / Grading | 8                  | 30/06/2020            | 09/07/2020          | R64 800,00                      |
| Smit Street      | 620,87          | Gravel          | Regravelling / Grading | 6                  | 10/07/2020            | 17/07/2020          | R48 600,00                      |
| Church Street    | 582,57          | Surfaced        | Pothole repairs        | 5                  | 01/10/2019            | 07/10/2019          | R44 000,00                      |
| victoria Street  | 746,66          | Gravel          | Regravelling / Grading | 7                  | 20/07/2020            | 28/07/2020          | R56 700,00                      |
| Plein Street     | 197,88          | Gravel          | Regravelling / Grading | 2                  | 29/07/2020            | 30/07/2020          | R16 200,00                      |
| Steyn Street     | 1 284,65        | Gravel          | Regravelling / Grading | 9                  | 31/07/2020            | 11/08/2020          | R72 900,00                      |
| Meader           | 705,6           | Gravel          | Regravelling / Grading | 7                  | 12/08/2020            | 20/08/2020          | R56 700,00                      |
| Van heerden      | 573,15          | Gravel          | Regravelling / Grading | 5                  | 21/08/2020            | 27/08/2020          | R40 500,00                      |
| Van Rensburg St  | 568,55          | Gravel          | Regravelling / Grading | 5                  | 28/08/2020            | 03/09/2020          | R40 500,00                      |
| Cilliers Street  | 611,61          | Gravel          | Regravelling / Grading | 5                  | 04/09/2020            | 10/09/2020          | R40 500,00                      |
| Terrington       | 593,41          | Gravel          | Regravelling / Grading | 5                  | 11/09/2020            | 17/09/2020          | R40 500,00                      |
| Carnarvon Street | 466,53          | Gravel          | Regravelling / Grading | 4                  | 18/09/2020            | 23/09/2020          | R32 400,00                      |

| STREET NAMES      | DISTANCE (m) | TYPE OF ROAD | TYPE OF REPAIRS        | DURATIO N (Days) | PROJECT START DATE | PROJECT END DATE | ESTIMATED BUDGET REQUIRED |
|-------------------|--------------|--------------|------------------------|------------------|--------------------|------------------|---------------------------|
| Soutbos           | 412,43       | Surfaced     | Pothole repairs        | 4                | 08/10/2019         | 13/10/2019       | R35 200,00                |
| Driedoring Street | 339,91       | Paved        | Sweeping               | 3                | 06/12/2019         | 10/12/2019       | R4 500,00                 |
| Ganna Street      | 219,62       | Paved        | Sweeping               | 2                | 11/12/2019         | 12/12/2019       | R3 000,00                 |
| Granaatbos        | 366,38       | Paved        | Sweeping               | 3                | 13/12/2019         | 17/01/2020       | R4 500,00                 |
| Karobos Street    | 182,81       | Paved        | Sweeping               | 2                | 20/01/2020         | 21/01/2020       | R3 000,00                 |
| Brosdoring Street | 376,56       | Paved        | Sweeping               | 4                | 22/01/2020         | 27/01/2020       | R6 000,00                 |
| Melkbos           | 181,19       | Paved        | Sweeping               | 2                | 28/01/2020         | 29/01/2020       | R3 000,00                 |
| Spekbos           | 398,54       | Paved        | Sweeping               | 4                | 30/02/2020         | 04/02/2020       | R6 000,00                 |
| Vyebos            | 790,14       | Paved        | Sweeping               | 7                | 05/02/2020         | 13/02/2020       | R10 500,00                |
| Soutbos           | 177,44       | Gravel       | Regravelling / Grading | 2                | 24/09/2020         | 25/09/2020       | R16 200,00                |
| Church Street     | 122,96       | Gravel       | Regravelling / Grading | 1                | 28/09/2020         | 28/09/2020       | R8 100,00                 |

**Vosburg Grand Total = R 719 000**

## **ROADS & STORMWATER MAINTENANCE PLAN**

### 6.2.5 Blading & Re-gravelling Responsibility Maintenance

Responsive maintenance is performed in response to received community complaints, municipal staff reports and other. Identified defect works are treated in accordance with the Defects Table 2. The findings or maintenance requirements will then be prioritized based on severity and hazard to road users and be included in the Responsive Maintenance Schedule (attached as Annexure C).

Currently the municipality has captured all community complaints received regarding Roads & Storm water defects in a Responsive Maintenance Schedule attached as Annexure C.

**ROADS & STORMWATER MAINTENANCE PLAN**

6.2.6. Projected 3 year Roads Maintenance Plan

Below is Table 3 which provides a list of surface roads identified as requiring a specific type of maintenance with a three (3) year period. This table will only be populated and finalized upon completion of the GRAP complaint Infrastructure Asset Register which will entail current of all the roads under the authority of Kareeberg Municipality.

**Table 4. Proposed Surface Roads Requiring Maintenance within a three (3) year period.**

| No. | Street/Road Name | MAINTENANCE TYPE               |   |         |                |                |
|-----|------------------|--------------------------------|---|---------|----------------|----------------|
|     |                  | Routine<br>Pothole<br>patching | Periodic<br>(Edge<br>breaking,<br>Rutting repairs,<br>Crocodile<br>cracks) –<br>Slurry sealing<br>& edge<br>reconstruction<br>– sunken kerb<br>installation | Special | Rehabilitation | Reconstruction |
|     |                  |                                |   |         |                |                |
|     |                  |                                |   |         |                |                |
|     |                  |                                |   |         |                |                |
|     |                  |                                |   |         |                |                |
|     |                  |                                |   |         |                |                |
|     |                  |                                |   |         |                |                |
|     |                  |                                |   |         |                |                |

