



**UNIVERSITY OF NAIROBI**

**FACULTY OF ENGINEERING**

**DEPARTMENT OF CIVIL AND CONSTRUCTION ENGINEERING**

**SURFACE CONDITION SURVEY OF THE THIKA MAGUMU ROAD  
(B20/D1315)**

**By**

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**F56/34619/2019**

A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of Degree of  
Master of Science in Civil Engineering (Transportation option)  
of the University of Nairobi

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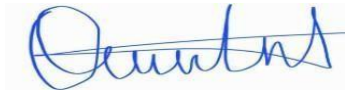
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## ABSTRACT

In developing countries, large sums of money are spent annually to enhance and maintain road networks as allocated by road authorities. The road users' needs in most countries all over the world is to have safe, economical, and smooth roads despite pressure on road authorities to further reduce expenditure. Money allocation for road infrastructure is among the many priorities competing for government funds thus causing the pressure. Proper rehabilitation strategies are therefore important to ensure the longevity and reliability of our road networks.

The objective of this thesis was to evaluate the performance of Thika- Magumu road, identify the defects on the pavement, and finally find the best remedy for the defects established. This was done by visual inspection in which the road was inspected, and photographs taken. Surface regularity tests were carried out to determine the extent of ruts on the road. Roughness measurement was carried out to determine the roughness of the road, Present Serviceability Rating to verify the rating of the road, traffic analysis was done to determine the axle loading on the Thika- Magumu road and the effect on the pavement and the deflection of the road was measured using the falling weight deflectometer.

There were different types of pavement distress that enhanced the cost of maintenance of this road. They included potholes, rutting, shoulder failure and cracks. These were corrected by pothole patching, overlay, reconstruction and crack sealing respectively.

The usefulness of the research findings was that it gave a guide on the process to prolong the life span of the pavement as mentioned above, it gave an estimate of the remaining life of the pavement. The finding was archived for future use in Thika Magumu road and as a guide to any similar road. They were also crucial in prioritizing the roads that need maintenance and budgeting for the road authorities.

The recommendations were; the need to reconstruct the road in sections where there was complete pavement failure and an overlay in sections where the defects were on the surface.

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# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background to the Study

This thesis covered a case study of surface condition survey of Thika-Magumu Road (B20/D1315) Pavement. The background to the study aimed at understanding the importance of well maintained road as they are critical components of our transportation system and how they affected safety, efficiency and economic development. It was essential to continually assess pavement performance, durability and quality so as to identify issues, prioritize maintenance, enhance road safety and improve the overall transportation services.

The pavement evaluation aimed at assessing the condition and performance of the road pavement to determine the road defects, identify maintenance needs and plan for future rehabilitation or reconstruction based on the findings and determine the remaining service life of the road. The project location was Kiambu and Nyandarua Counties in Kenya. The project started from Magumu then took an easterly direction and terminated at Thika (A2 junction). The total length of the road was approximately 67.54 kilometers. This research focused on the whole 67.54km which exhibited serious pavement defects.

It involved various techniques and methods for data collect and analyzed the condition of the Thika Magumu road pavement. The key aspects considered were the pavement type in which for Thika Magumu road was flexible, the materials used, construction method and its typical performance characteristics. Another key aspect was the pavement distress and deterioration mechanism. The road was subject to various distresses such as rutting, alligator cracks, longitudinal cracks, and potholes. The study examined the common distress types and probable causes, mitigation measures and identified the road's residual life. Over time the area in which the road traversed had grown fast and there were a lot of businesses such as transportation of farm produce, people were using the road as a bypass Thika to Naivasha and vice versa and tourism attraction due to the Kamae/Kiini Forest that hosts a lot of elephants among many species of trees. Due to these activities, the road was in a poor state that needed to be rehabilitated based on the findings of this report.

Effective pavement evaluation required a systematic approach to data collection and analysis. The study employed the recommended standard ways of data collection and analysis as per the Kenya Road Design manuals III, (1987) and Kenya Standard Specification for Roads

and Bridges (1986). The research was intended to show the best way of coming up with solutions to the mentioned defects. These defects could be corrected in various manners, according to McAsphalt Industries Limited, (1983) research paper which emphasized that the design criteria are of great importance in the mix whether it is a cold mix or hot mix. Some of the factors considered were asphalt emulsions which could be either cationic or anionic if it was a cold mix and emulsions if it was a hot mix for patchworks. The aggregates played a critical part so as to ensure that the mix stayed workable and cohesive depending on the surrounding factors such as climate.

Increase in economic, social and tourism activities in the area rendered the current road to be worn off and in need of rehabilitation due to the transportation of goods and people which remained to be the main livelihood of the community living there. The evaluation of the pavement was done to ascertain the performance of the road and offer possible solution to the defects which in return provided a longer life span of the pavement. The findings from the analysis were also documented to assist in future referencing of the same road and would be used as a case study for other roads. The road was important as it allowed ease of transportation of goods such as tea and pineapple which were grown in large scale over the two counties that is Nyandarua and Kiambu, it would lead to increase in speed, development of infrastructure along the road and decrease in accidents.

The comprehensive background study on surface condition survey of Thika Magumu pavement assisted road authorities and policy makers to gain valuable insights into the current state of the road networks, prioritise efforts and develop effective strategies for ensuring safe and durable roads.

## **1.2 Problem Statement**

Pavement failure is a common occurrence in roads that is attributed to various reasons; this could be due to exhaustion of the pavement life or poor workmanship during implementation causing the defects to be seen before the end of design life. Carrying out an evaluation of the pavement competence and settling on the maintenance or rehabilitation measures is of importance in the road sector. The kilometers of roads that fail before the completion of the design period have been alarming in the recent past.

Thika Magumu Road experienced defects such as pothole patching, rutting, cracks and edge failures hence the road could not achieve its design period. The road had

experienced increase in traffic with people using the road as a bypass, increase in agricultural activities led to increased trafficking of the road as farmers transported their food produce, presence of elephants and birds among other tourism attractions increased the tourism sector along the road thus there were more tourists frequenting the area. This among other issues highly contributed to the deterioration of the Thika Magumu making it impassible to the motorists. The effect on the motorists included decrease in speed, increased wear and tear of vehicles, increased number of accidents, long travel time and in the long run Thika Magumu was completely deteriorated thus making it completely impassable.

With the development and improvement of technology, modern methods of testing pavement strength had come up to ensure during construction all pavement layers achieved the required standards, so as to avoid untimely and unnecessary road defects. In order to choose the technique to use in pavement rehabilitation, there was need for surface condition survey, traffic studies and pavement structural condition survey. Every financial budget, a percentage of the national budget was allocated to the State Department of Infrastructure as per the treasury proposal, this was used to cater for road developments, railways, and any other kind of development. According to the budget review and outlook paper from the National treasury and planning economic (2021/2022), 7.2% of the financial budget was allocated to the State Department of Infrastructure as per the treasury proposal, The treasury also noted that 2.5% of the infrastructure budget allocation was used in the rehabilitation of roads.

Identification of the primary causes of pavement failures enabled us to get solutions for these defects. This formed the basis of my thesis.

## **1.3 Objectives**

### **1.3.1 Overall Objectives**

The main objective of the evaluation was:

To investigate the surface condition of Thika Magumu Road pavement in Kiambu, Kenya

### **1.3.2 Specific Objectives**

The specific Objectives sought to determine:

- i. To determine the present defects on the Pavement surface of Thika Magumu Road
- ii. To recommend appropriate pavement rehabilitation and overlay design.

iii. To assess the remaining design life of the pavement.

### 1.3.3 Research Questions

- i. What are the present defects on the Pavement surface of Thika Magumu Road?
- ii. What is the recommend appropriate pavement rehabilitation and overlay design?
- iii. What is the remaining design life of the pavement?

## 1.4 Scope and Limitations of the Study

### 1.4.1 Scope of the study

This thesis covered the evaluation of pavement defects on Thika Magumu Road. It identified the defects such as cracks, rutting, potholes and edge failure. The defects were identified by surface condition survey including visual surface condition survey, roughness and rut depth. Traffic surveys were also carried out which comprised of classified counts and axle loads surveys. Pavement structural condition survey comprising deflection measurement, trenching, material sampling and laboratory testing. Analysis on the data obtained from pavement evaluation was used to determine the intervention needs for the road.

### 1.4.2 Location of the Road

The project road from Magumu Km 0+000 to Jomoko Thika Superhighway Km 67+654 has been shown in figure 1.1.



SOURCE: Google map

**Figure 1. 1: Location of the Road**

### **1.4.3 Limitation of the study**

The thesis research experienced limitation in different aspects. One of the aspect was the extreme weather conditions especially in the forest area. The area in which the road traverses experienced high rainfall hence making it difficult to carry out several surveys that are required in pavement evaluation. Another key aspect was the geographical variability, Thika Magumu road had diverse sections with different conditions, the section from km 0+000 -27+000 was prone to extreme rainfall hence there were serious road defects that led to reconstruction, while the section from km 27+000 to km 67+540 had mild defects that required only pothole patching and overlay. This made it difficult to apply a one size fits approach for all.

Traffic disruption was a key aspect. The motorists were not happy with being stopped to answer few questions in traffic analysis. Some of the motorists sped by and were not willing to stop upon request. The need to maintain traffic flow during evaluation and rehabilitation was restrictive and impacted on the comprehensiveness of the evaluation.

These limitations were considered in the planning and execution of the pavement evaluation of the Thika Magumu Road to ensure accurate results and a strong and lasting road.

### **1.5 Justification for the Study**

The importance of this research was to ensure that the pavement evaluation provided the correct rehabilitation interventions of the road. Evaluation of the Thika Magumu Road led to safety of the road users by the identification and addressing issues such as pothole, rutting, cracks, edge failures and surface deterioration. The evaluation cut on cost because early identification of pavement issues allowed for cost effective repairs prevented more expensive reconstruction or rehabilitation measures. This exercise was important because it ensured maintenance planning, regular evaluations helped road authorities plan maintenance and repair schedules hence optimizing resources and minimizing disruptions.

Pavement evaluation of Thika Magumu road led to increased lifespan. Regular evaluation and maintenance was key in extending the lifespan of pavements and reducing the frequency of costly reconstruction projects. Environmental impact was also key since well-maintained pavements reduced the need for new construction, conserving natural resources and minimizing the carbon footprint associated with construction. This study increased public satisfaction because a well maintained Thika Magumu: decreased accidents, travel time also decrease, vehicle damage would be on the minimal as the road became smooth and travel speed increased.

It would lead to trade increase due to the ease of movement of goods and people from one place to another and the area along the road developed hence increased population, business and infrastructure. It would also reduce on liability because regular evaluation and maintenance would help reduce the liability of responsible entities in case of accidents or damages related to poor road conditions

In the Thika-Magumu Road, the residents/ locals along the road were advantaged as it led to an increase in development in the area. The valuation of the road increased the likelihood of developers to be interested in the area which would in return increase in job opportunities and development in the region.



## **CHAPTER TWO**

### **2. LITERATURE REVIEW**

#### **2.1 Introduction**

The government of Kenya through KeNHA carried out repairs on the 67.54 km Thika-Magumu Road (B20/D1315) road linking Thika town and magumu along the Nairobi-Nakuru highway. This project aimed at ensuring ease of transportation of goods and people. It was vital in pavement management to carry out the rating, so as to provide a basis for decision making and budget allocation during maintenance (Dabousab et al., 2019). Deterioration in the pavement was probabilistic in nature as several distress affected the performance of each structure in the pavement.

Based on the need to rehabilitated Thika Magumu Road B20/D1315, it was important to carry out tests on roads to identify the extent of the defects as of now and the various methods in which they could be corrected. The study was of great help as it assisted in remedying the present defects and thus led to a longer pavement life span. The impact on the same was that there was reduction in continuous maintenance of the pavement and hence the road users were satisfied.

The pavement evaluation of Thika Magumu road entailed three key aspects which were: data collection in the field, identification of the condition rating on the pavement and finally, quality management of the defects found.

#### **2.2 Evaluation of Visual Condition Surveys**

Visual assessments were employed to appraise the surface condition of the pavement, allowing for an examination of its impact on road users, the identification of likely factors contributing to surface wear, and the evaluation of maintenance and surface rehabilitation requirements. Visual condition survey on roads involved photography and recording of road layer defects and evaluation of drainage and shoulder conditions. The data was then recorded in a PSR rating form based on Kenya Road Design manuals V (1988). New advanced modern methods of evaluation of visual condition surveys included the the use of Google Earth imagery. In this research a screen shot tool was developed to automatically track the highway for collecting highway end-to-end images and Global Position System (GPS) as explained in A review on solutions for improving rutting resistance of asphalt pavement and test methods (Yinfei et al.,

2018). This method was found to be feasible, cost effective option for accurately rating and geographically visualizing projects.

Surface Condition Surveys were conducted to assess road riding quality and document surface distress. The Hawkeye-2000 Pavement Surface Profiler (PSP) which was used in this survey, was an automatic equipment that performed Roughness and Rutting measurements using the Laser Profiler Beam (LPB) and Pavement Surface Distress Logging using Pavement Logging Video Cameras (PLVC). Surface Distress was also captured manually to compliment the PSP data. The LHS (Left Hand Side) in this Chapter refers to Magumu towards Thika direction while the RHS (Right Hand Side) refers to Thika towards Magumu direction.

Pavement condition survey entailed visual inspection to determine the pavement distress features such as cracks, potholes, rutting, corrugation and edge failure. Gichaga & Neville, (1988) recommend that it is important to supplement by quantitative techniques such as crack, straight -edge and roughness measurements. Visual inspection identified and quantified surface distresses, and the condition was assessed using standard rating scales as explained in an Exploration of Recent Intelligent Image Analysis Techniques for Visual Pavement Surface Condition Assessment (Waqar et al., 2022). Pavement condition is assessed by measuring several pavement characteristics such as roughness, surface skid resistance, pavement strength, deflection, and visual surface distresses.

As per Kenya Road Design manuals V (1988) recommendation for pavement condition survey, the following inputs were investigated:

- Structural performance
- Axle load distribution

### **2.2.1 Advantages of Visual Condition Survey**

Visual Condition Survey was of great importance as it enabled the responsible road organization to have a detailed road inventory with all information on the condition of the road surface. The inventory had all the information on the type of pavement, last resurfacing that was carried out, length, width, present defects, and even suggestions and the probable mitigation measures.

Pavement evaluation through visual assessment provided a quick and cost effective means of gathering data, enabling agencies to assess large portions of their road networks regularly. This was essential for identifying issues early and planning maintenance activities efficiently. Also, visual surveys were non-destructive and did not interrupt traffic flow, making it a practical choice for continuous monitoring. In addition, visual condition surveys were suitable for various climates and regions, because they did not rely on specialized equipment that is affected by weather. This survey being human based provided an opportunity for trained personnel who could capture subtle signs of distress that automated system were likely to miss.

The completed visual condition survey was filed to be used in decision making. This is because in a scenario where there was not enough funding then the survey determined the most affected sections of the road that require urgent repair. This would be of great importance in making a comprehensive and economical budget. The survey was of great importance because it was carried out and stored for future reference. This was later used to determine when last the road was maintained in terms of resurfacing or patching. This information would be of great importance in knowing the history of the road.

### **2.3 Types of Visually Observed Defects on the Road**

This research determined accurate methods of getting the defects on the pavement evaluation of potholes, rutting, alligator cracks, and longitudinal cracks that were present on the road surface. Review of pavement defect detection methods. Wenming et al., (2020), stated that there are three methods used in road cracks detection which include the image processing, machine learning and 3D imaging based. Image processing algorithms mainly included threshold segmentation, edge detection and regional growing methods, which were used to process images and identify crack features. However, this was not applicable in Kenya due to lack of modern of technology. (NCDOT), (2008), recommended that for divided highways, each direction of travel would be rated as a separate section and it would evaluate the most distressed lane, generally the outside lane, in each direction. Each direction of travel (each lane) would total 100% of the section. The average daily traffic (ADT) for each direction would be the total (two-way) ADT for the highway.

It was noted to maintain road networks efficiently and ensure road safety, the systematic identification and evaluation of road defects played a critical role. Visual observation served

as a front line approach for assessing the structural integrity and condition of roadways. In this literature review, we delved into the extensive body of knowledge pertaining to visual observed defects on Thika Magumu road and their impact on road maintenance and safety. The visually observed defects encompassed a wide range of imperfections and structural anomalies found on the road surface. The identification and classification of them were central to proactive maintenance strategies. It was through these assessments that road agencies prioritized their maintenance activities and allocated resources judiciously.

Road pavement defect detection using high precision 3D surveying technology. Qingquan et al., (2017) explained the need to have an efficient and automated road pavement defect detection technology which could be used for large scale construction stage thus making the process quick and cost effective. (Aba, 2011) stated that minimum pavement life cycle disutility value led to the best optimum terminal serviceability index results in the finest pavement design. In this regard, all roads were designed and constructed to last longer with minimal repairs to provide smooth riding surface for the users. However, with time the road started to wear off and several defects were observed such as ruts, longitudinal cracks, and potholes.

These defects were discussed below:

### **2.3.1 Potholes on the Road**

A pothole is a type of defect in a road, it is a depression or hole in the pavement caused by the combination of various factors. Pothole formation is mainly caused by the delayed response to fixing common pavement distresses in the initial phase of their development as defined by Ghosh et. al., 2018, in Pothole prevention and innovative repair. They were mostly caused by penetration of water into the layers of the pavement over time, they were also caused due to increase in the axle load over a short time. When cracks formed and they were not repaired in time, water infiltrated into the pavement surface layer and accelerated the damage process. Other causes of potholes were poor subgrade condition, if the pavement design was substandard, lack of maintenance over time, the surrounding environmental conditions and landscape, and finally due to the age of the pavement.

In the study by Kamal et al., (2018) the main defects that affected the performance of roads and highway networks were potholes. Useful metrics for road distress measurement and

severity analysis were determined by the Metrological features of the pothole provided. These Metrological factors included rainfall in the area: the area of research was found to experience heavy rainfall hence any precipitation that remained on the road surface due to lack of proper drainage automatically seeped into the pavement layer causing a pothole in the long run. Depth of the water table was also a concern: the water table in the area was high hence the chances of water percolating unto the pavement layers was high, leading to a weakened pavement and as a result a pothole. Temperature was also another Metrological factor, this mainly affected the asphalt concrete. The dynamic modulus of asphalt concrete mixtures was very sensitive to temperature. Varying temperature distribution in our area of study was found to cause stiffness of the mixture throughout the sub layers which in return led to thermal cracking and as a result potholes formed.

### **2.3.2 Rutting**

A rut is a depression on the pavement surface, and it aligns itself as per the wheel path followed by the vehicles. Some of the causes of rutting was sub grade failure, poor mix design, and insufficient compaction. This was well explained by (Singh & Swamy, 2018). Wheel tracking test results showed significant scatter under extremely controlled laboratory conditions. The disperse was a result of variations in the materials, aggregate skeleton, specimen fabrication, and testing practices. Rutting was one of the main distress modes of asphalt pavement. Exploring effective methods to mitigate the rutting distress was of great significance for providing a long-life and safe road as explained by A review on solutions for improving rutting resistance of asphalt pavement and test methods (Yinfei et al., 2018). The Kenya Road Design Manual Part V recommended that condition assessment be based on one or a combination of the following: -

- Surface roughness measurements using a towed bump integrator unit developed by the TRRL as a standard in Kenya.
- Surface Distress measurement, which shows locations and extent of each defect observed. This includes cracking, longitudinal cracks, rutting and pothole patching.
- Subjective rating of the pavement riding quality and surface condition. A present- day serviceability value may be obtained by either subjectively rating the pavement through visual observations or by qualitative measurements of surface characteristics.

### **2.3.3 Longitudinal Cracks**

These are cracks that form parallel to the pavement centerline. They are mostly caused by poor joint construction hence leaving a weak point from which the cracks develop. This is well explained by (Tran & Tran, 2020): Crack detection, recognition, and organization were important stages in the management of pavement system. This assisted road agencies to come up with the best rehabilitation technique to be carried out on the pavement. Typically, crack detection was also carried out by checking images captured from road surveys manually.

#### **2.4 Overview of Falling Weight Deflectometer**

The falling weight deflectometer (FWD) is a specialized testing device that was used to assess the structural condition and load bearing capacity of road pavements. It was operated by dropping a heavy weight onto the pavement surface and measuring the resulting deflection of the pavement under load. This important test was used to determine the structural strength of the Thika- Magumu Road. This test determined the residual strength of the existing pavement and hence the overlay requirement for the pavement and established the most viable maintenance plan.

In an article by Wang & Birken, (2014), they noted that falling weight deflectometer measured the physical properties of a road pavement. (Ravindra et al., 2019) in their article noted that the deflectometer simulates the wheel passing on a road and then measures the vertical deflection on the pavement. Deflection on the pavement were identified using the FWD (Falling Weight Deflectometer) equipment that met requirement of (ASTM D4695 - 03, 1996) and (ASTM D4694 - 09, 2009). The deflection measurements were conducted on both lanes at intervals of approximately 100 m on the Outer Wheel Path (OWP) at an offset of about 0.7 m from the edge of the carriageway. At each drop point, raw deflection (rd) readings were taken for the fourteen (14) consecutive geophone points of 0, 20, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180, and 200 cm.

In rehabilitation of roads, the falling weight deflectometer relied on the material stiffness, back calculated from the deflection measurements taken from existing pavements this is well explained in Road pavement defect detection using high precision 3D surveying technology. (Qingquan et al., 2017). The deflection value obtained from FWD load application directly estimated the structural and function condition of the pavement. It is important to note that the Falling Weight Deflectometer (FWD) was the best device developed so far to simulate the magnitude and duration of actual moving loads (Lytton, 1975). Smith & Jones (1980) developed

a simple and adequate check on variability of deflection measurements by ten consecutive measured deflection values, considered as a group and their mean value calculated. In regard to this, all deflection values at the regular 100m spacing were used but only the maximum reading was taken from any one area tested on account of its surface distress or large deflection.

## **2.5 Methods of Treating Pavement Defects**

Possible solutions of the Defects on the Thika Magumu road were listed below as referenced from SDOT (2016):

- Cold-Patch: The pothole was well defined using a cutter. The pothole was cut to a regular shape, then all the loose debris on the pothole was properly removed, after that the pothole would be cleaned well and in case of the presence of dust, water would be poured to settle the dust. Once this is complete the material for patching was poured, spread, and compacted into the pothole. Cold- patch repairs are quick but temporary.
- Hot-Patch Semi-Permanent: The pothole was well cleaned; all the debris were swept and removed from the potholes. The hole should be in a regular shape and the surrounding pavement should be intact or sound. Tack coat should be applied on the hole, followed by hot heated asphalt mix as per the mix design. The asphalt mix was then compacted using a roller.
- The use of Spray-Injection. This is method was expensive. The equipment used was expensive, but the benefit was because it gave more productivity, and the material cost was less. This technique was superior to the hot-patch repairs, and it gave a more permanent solution than the cold-patch method. The downfall of this method is that it was not as durable and useful as the hot patch, especially for the deeper potholes. The procedure for the spray injection was that the asphalt together with the aggregates was injected into the potholes thus the patch was filled with a layer of aggregate.
- Edge Seal: This technique was used as a follow-up basis to ensure the pavement was sound. Once a defect has been remedied and dried, a thread of asphaltic tack material was placed on top of the patch edge and pavement surface. This was followed by a layer of sand so as to prevent tracking by the wheels or tires of vehicles. Once this was completed the road is opened for traffic.
- Rutting was treated by leveling and overlaying.

- Rutting could also be treated by strengthening the aggregate interlock, which was beneficial in improving rutting resistance, which could be achieved by using high friction-resistant aggregates with high angularity and surface texture or by selecting appropriate aggregate gradations, such as coarse-and/or gap-graded aggregates.
- Longitudinal cracks were treated by crack seals where the width was less than ½” or if more than the pavement layer would be removed and overlaid.

## **2.6 Literature Gap**

This research explored the development of standardized methodologies or frameworks for visually evaluating the road conditions in Thika Magumu and other roads in Kenya. This involved establishing different road elements, severity rating scales for pavement distresses and developing guidelines for data collection and analysis.

Once this gap was filled the transportation authorities and any interested party gained a better understanding of the current state of roads, identified areas that required maintenance, developed effective strategies for road maintenance or rehabilitation and planning and ultimately determined which road required first priority in financing with the limited resources. This contributed to the overall development and safety of the transportation infrastructure in the country.

## **2.7 Conclusion of Literature Review**

In conclusion, Surface Condition Survey of Thika- Magumu Road Pavement identified a literature gap as described above, which in my thesis provided a pavement evaluation inventory for future reference and decision making. Pavement maintenance played a significant role in enhancing the remaining serviceable life of a pavement. Pavement management systems were in use widely for in highway management ecosystem and for prioritizing of pavement maintenance. From the above discussion the main causes of defects on pavement structure were subject to the design and the implementation stage. However, as the life span of the road increased the pavement was prone to failure. Increase in traffic on the road also led to these failures before the design life span of the road was achieved. The defects present on the road surface included, potholes, rutting, cracking and edge failure among others. These defects were treated differently: for example, for potholes they were rectified by hot or cold asphalt mix pothole patching, rutting was treated by leveling and laying an overlay, longitudinal cracking were treated by crack sealing and edge failure were



treated by edge seal where a thread of asphaltic tack material was placed. Literature from the (MoRPW), 2007) and Kenya Roads Board (KRB, 2012-2014) was reviewed on the Vehicle Axle Loads along Thika Magumu Road. It enabled the establishment of the Vehicle Equivalent factors used in the research. The average traffic growth rate of 4.62% was obtained from the average of Kenya GDP growth rates from the year 2003 and 2012

(KNBS, 2012). It was used to obtain cumulative equivalent standard axles (CESA), projected for 5years, 10years, 15years and 20years respectively. Literature on the pavement design and the as-built records on Thika Magumu Road were reviewed. The Resilient Modulus of Subgrade Reaction (MR) of the pavement alignment and the as-built pavement materials properties in terms of their Equivalent Pavement Modulus (EP) were also obtained from the design records (MoRPW), 2007). A comparison between the as-built layer properties and the back- calculated values would indicate the performance of the flexible pavement. Therefore, the thesis provided the baseline performance evaluation of the pavement upon which future research would be based.

## **2.8 Conceptual Framework**

The conceptual framework illustrates how the independent and dependent variables are related and how they interact with each other. The independent variable in this study were the present defects on the pavement of Thika Magumu Road , The appropriate pavement rehabilitation and overlay design and the remaining life of the pavement. The study's dependent variables were the performance of the pavement surface condition of Thika Magumu Road in Kiambu Kenya. The moderating variables were the staff competence , quality of material and competence during construction.This is illustrated in Figure 2.1 below.

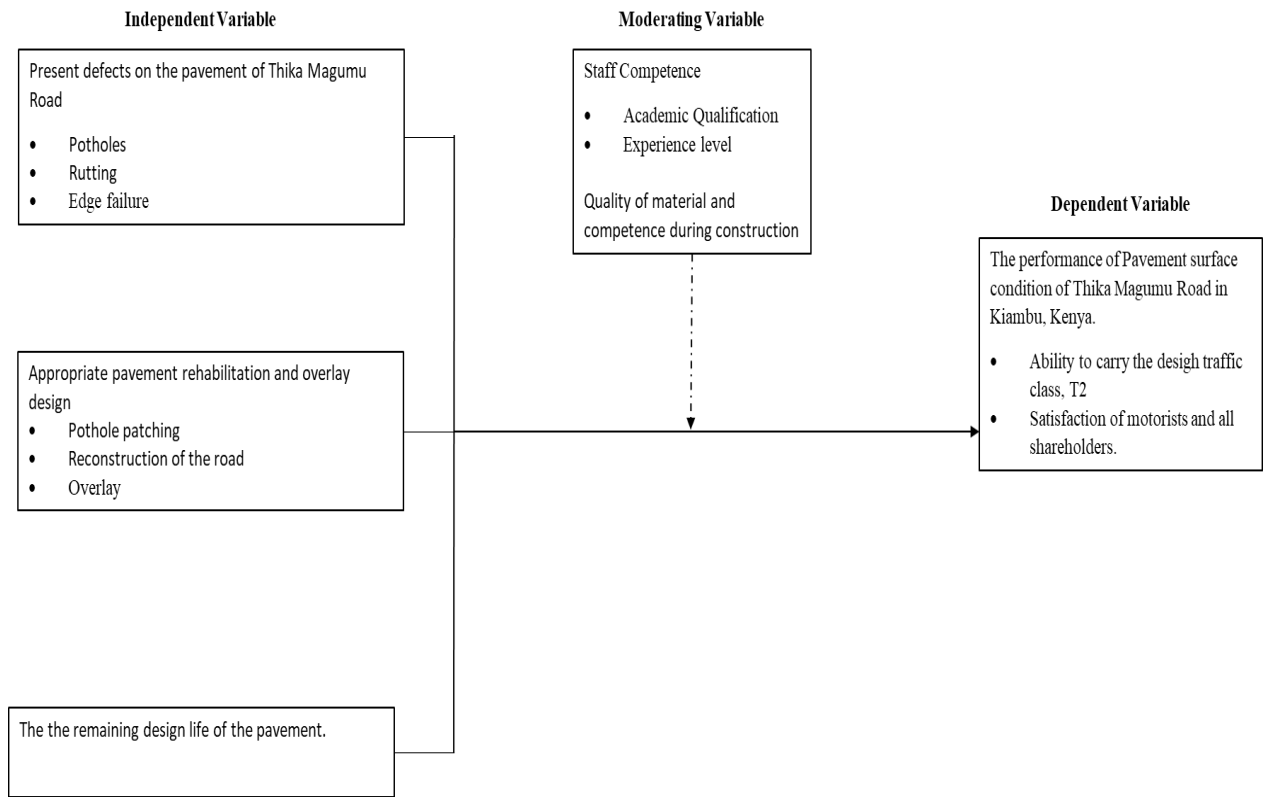


Fig. 2.1 Conceptual Framework

## CHAPTER THREE

### 3.0 Methodology

Overview of the methodology is a process by which steps are followed to get a final result. The project road traversed Kiambu and Nyandarua counties from eastern to western side of the Aberdares Ranges. It started at Thika Flyover at the junction with Nairobi – Thika (A2) Road and ended at the junction with Nairobi – Nakuru Road (A8) at the Flyover in Magumu. The road measured approximately 67.54 km. The road was last rehabilitated in 2010/2012 to the below listed scope with km 0+000 being referenced from Thika.

- Reconstruction of 1m shoulder on both sides of the road using subbase quality neat gravel and cement improved gravel base overlain with 25mm AC;
- Reconstruction of 10.5 km section between Km 0+000 – 22+000 (improved gravel base and subbase section) and approximately 8 km section between Km 22+000 – 67+540 (improved gravel subbase and GCS base section); and,
- Reinstatement and widening of carriageway from 5.5m to 6.0m and overlaying with 50mm AC.

Referencing the road from Magumu, the pavement structure of the existing road was as indicated in Table 3.1. The pavement structures corresponded to RDM III standard pavement structure types 7 and type 3 (section 2) for design traffic class T4 and design class S4.

**Table 3. 1: Current existing pavement of Thika -Magumu Road**

SECTION	LAYER	THICKNESS	MATERIAL
SECTION 1: KM 0+000 - KM 45+000	Surfacing	40mm	AC Type 1
	Base	125mm	GCS
	Subbase	120mm	Gravel
SECTION 2: KM 45+000 - KM 67+540	Surfacing	50mm	AC Type 1
	Base	150mm	CIG
	Subbase	150mm	Gravel

Legend:

AC : Asphalt concrete

GCS : Graded Crushed Stone

CIG : Cement In Gravel

The pavement, five years after it was rehabilitated, exhibited varied pavement failures/distress at different sections as detailed under visual condition survey section of this thesis. The road surveys were carried out by Kenya National Highways Authority and the Ministry of Transport, Infrastructure, Housing , Urban , Development & Public Works through the State Department of Infrastructure Material Testing and Research Division for the design of ongoing rehabilitation works of Thika Magumu Road. The methodology included:

- Visual condition survey entailed taking into account the current state of the road as viewed,
- Roughness measurement was also carried out to measure the smoothness of the road,
- Present serviceability was also carried out to determine the rating of the pavement, surface regulatory testing,
- Falling weight deflectometer,
- Traffic survey analysis and pavement and subgrade logging.

All these methods formed the basis of any pavement evaluation report and will be discussed below.

### **3.1 Visual Condition Survey**

A visual condition survey was carried out by a team from the Ministry of Transport, Infrastructure, Housing, Urban, Development & Public Works through the State Department of Infrastructure Material Testing and Research Division (MTRD) to record the current state of the surface of the pavement at intervals of 100m. This was done by taking photographs of the existing pavement and recording any data that was of importance along the Thika-Magumu Road. The survey aimed at assessing the various types of defects and analyzed the extent of damage on the pavement and the effect they had on the road users.

The Hawkeye-2000 Pavement Surface Profiler (PSP) which was used in this survey was an automatic equipment that performed Roughness and Rutting measurements using the Laser Profiler Beam (LPB) and Pavement Surface Distress Logging using Pavement Logging Video Cameras (PLVC). The Hawkeye 2000 had four (4) pavement and asset logging video cameras. Collection of the road surface condition and distress data was done using pavement

and centre cameras and complemented with windscreen survey. Identification, measurement of intensity and determination of severity of surface distress was done in accordance with (RDM V, 1988) and (ASTM D6433-07, 2015).

### **3.2 Roughness Measurement**

The standard way of measuring the roughness of a road was by conducting the International Roughness Index. This method was established by the World Bank in the 1980s. It measured the roughness in meters per kilometer m/km as derived from the suspension motion on the vehicle divided by the kilometers that the vehicle had traveled. Roughness data collected using the Hawkeye-2000 met the requirements for ASTM. (1997). Standard test method for measuring the longitudinal profile of traveled surfaces with an accelerometer established inertial profiling reference, for Determination of International Roughness Index (IRI) to Quantify Roughness of Pavements.

### **3.3 Determination of Pavement Condition Index (PCI)**

PCI is a calculated numerical value from surface distress for a particular pavement section and indicated the surface condition of the pavement in a range from 0 (Failed) to 100 (Good). It was determined based on the type and level of distress observed. (ASTM D6433-98) was used to determine the PCI values in this thesis with values rated as per Table 4.4 in the Results and Discussion chapter below. The aim of Pavement Condition Index was to estimate the road condition by observing the condition of the road using a rating system so as to declare the actual pavement condition with reliable and objective data.

### **3.4 Surface Regularity Test (Rut Depth Measurement)**

A rut is a surface depression in the wheel paths. Rutting stemmed from a permanent deformation in any of the pavement layers or subgrades, usually caused by consolidated or lateral movement of the materials due to traffic load. Rut depth test was conducted with the Pavement Surface Profiler (PSP) in compliance with (ASTM E1703 / E1703M – 10, 2015).

## **3.5 Traffic Survey Analysis**

### **3.5.1 Purpose of Traffic Surveys**

The design traffic loading formed a crucial input parameter in the back analysis of deflection data for the structural evaluation of the pavement. Classified traffic counts and axle load surveys were carried out from 23<sup>rd</sup> to 30<sup>th</sup> June, 2022 and from 21<sup>st</sup> to 24<sup>th</sup> July,

2022 respectively. The classified traffic counts were conducted to determine the nature of traffic on the road in terms of volumes and traffic composition while axle load survey of commercial vehicles was conducted to determine vehicle equivalence factors for derivation of design traffic loading.

### **3.5.2 Classified Traffic Counts**

#### **3.5.2.1 Traffic Count Survey Stations and Procedure**

Standard classified traffic counts were undertaken along the project road at Kirasha (Km 6+800), Kamwangi (Km 45+200) and Ngoingwa (Km 64+900). Day counts were carried out between 0600 hours to 1800 hours (12 hours) for five of the seven count days. The remaining 2 days had counts lasting 24hours, distributed to cover one trial weekday and one typical day over the weekend. The enumerators recorded traffic information regarding vehicle category, direction of travel and the time which the vehicle passed the particular census stations.

### **3.6 Axle Load survey**

#### **3.6.1 Axle Load Survey Stations and Procedure**

Axle Load Survey (ALS) was conducted to determine the Vehicle Equivalence Factor (VEF) for each vehicle and Vehicle Class. The survey was conducted along the project road at approximately 2km from Thika Road at the junction with Nairobi – Thika (A2) road, for four 12-hour days from 0600 hours to 1800 hours. The survey involved recording vehicle origin and destination, axle weights, wheel configuration and cargo or service description.

### **3.6 Structural Condition Survey**

#### **3.6.1 Introduction to structural evaluation**

A survey of the structural condition was conducted to ascertain the remaining strength of the current pavement, thereby determining the necessary overlay and identify the most effective maintenance strategies. The tasks under structural evaluation included:

- Coring, Trenching, Logging, Material Sampling and Testing; and,
- Deflection measurement and analysis

### **3.6.2 Coring, Trenching, Logging, Material Sampling and Testing**

Coring was done to obtain AC samples which were taken to Materials Testing and Research Division's (MTRD) laboratory for testing and analysis as per (ASTM D6236-11). Trenching was done to profile and log pavement layers' materials and subgrade. The pavement materials were logged and identified using description as specified in Standard Practice for Description and Identification of Soils (ASTM D2488, 2009). The nature of each pavement layer was established, and thicknesses measured.

### **3.7 Falling Weight Deflectometer**

Falling Weight Deflectometer is defined as a non-destructive testing and non-intrusive device which is commonly used in pavement evaluation exercise. It measured the deflection response of a pavement under a dynamic load. The defects included the load bearing capacity and elastic modulus which provided information about the stiffness of the pavement layers. The machine was enclosed inside a trailer and for ease of mobility it was connected to another car to make it mobile. The test was carried out by one person sitting in the front seat of the tow vehicle and it took approximately 45 seconds to complete a sequence of test. Heavy duty batteries were mounted on the trailer to supply power to operate the trailer hydraulics while the computer was powered by a separate battery. Deflection measurements were conducted from 9<sup>th</sup> to 15<sup>th</sup> June 2022 with FWD (Falling Weight Deflectometer) equipment.

#### **3.7.1 Pavement Analysis Parameters and Criteria**

The deflection data was analyzed using RoSy Design Software. The necessary input parameters and the criteria for analysis of the outputs were as follows.

The following design parameters were considered during data input for RoSy Design analysis:

- Existing road Lane width of 3.5m with a carriageway width of 7.0m.
- Pavement Design Temperature of 25<sup>0</sup>C;
- Existing pavement as established from logging;
- Fatigue laws as presented in RDM Part III;
- Rehabilitation design period of 15 years with a 20-year sensitivity analysis; and,
- Daily ESA of 1770 established from the traffic survey.

The pavement analysis was carried out under conditions in (RDM Part III, 1987) and (RDM

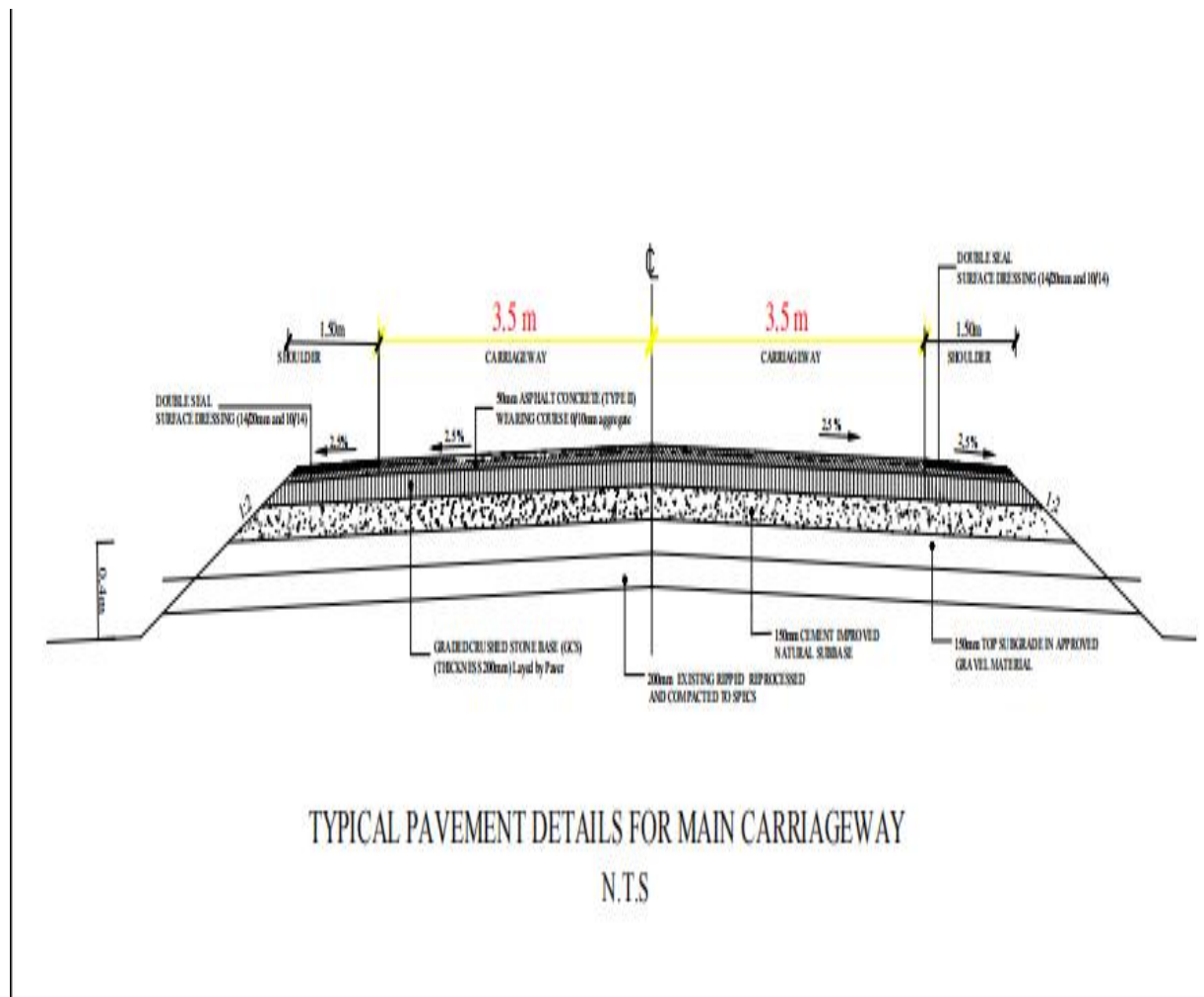
Part V, 1988) and therefore compared to elastic moduli in section 8.2.3 of Road Design Manual Part III for Material and Pavement Design for New Roads as follows:

- Asphalt concrete type I - 4000 MPa;
- Graded crushed stone of base quality - 400 MPa;
- Cement improved material of base quality - 1000 MPa;
- Cement improved gravel of subbase quality - 300 MPa;
- Natural Gravel Subbase - 200 MPa. and,
- Subgrade Strength - 90 MPa

Additionally, the pavement was checked for residual life and hence strength, critical layer and overlay requirements for each homogeneous section as the basis for rehabilitation / strengthening intervention recommendation.



The cross section of the road was similar to that in the RDM Part 1 as shown in figure 3.1.



**Figure 3.1 A typical Cross-section of a Single Carriage Road similar to Thika- Magumu Road: Road Design Manual Part 1: Geometric Design of Rural Roads Page 1.4**

## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSIONS

#### 4.1 Visual Condition Survey

The observations made during the detailed surface condition surveys through the Hawkeye-2000 Pavement Surface Profiler, and windscreen survey, were harmonized and summarized into uniform sections as indicated in Table 4.1 and in **Appendix 4.A**.

**Table 4.1: Surface Condition Survey Observations**

<b>Chainage (Km)</b>	<b>Section Length (Km)</b>	<b>Surface Condition Description</b>	<b>Remark/Probable Intervention</b>
0+000 – 0+500	0.5	Alligator cracks Edge failure Native black cotton subgrade	Section under reconstruction
0+500 – 3+200	2.7	Alligator cracks & Joint failure Black cotton native subgrade	Reconstruction section
3+200 – 5+700	2.5	No visible surface defects	Shoulders to be improved and section overlaid.
5+700 – 7+300	1.6	Isolated potholes and alligator cracks	Section for spot, drainage and shoulders improvement.
7+300 – 14+600	7.3	Alligator cracks Gravel patchworks Worn out shoulders Poor/no drainage Base failure/Deformation	Reconstruction section
14+600 - 18+000	3.4	Isolated Potholes	Spot repairs and section overlay

14+600 – 18+000	3.4	Isolated potholes	Spot repairs and section overlay
18+000 – 21+600	3.6	Crazing, alligator cracks, Pavement deformation and Extensive patchwork	Reconstruction section
21+600 – 24+000	2.4	Deformation on LHS lane Potholes	Partial reconstruction and overlay
24+000 – 24+500	0.5	No visible surface defect	Overlay
24+500 – 24+900	0.4	Pavement deformation	Reconstruction
24+900 – 28+000	3.1	Isolated Potholes Patchwork	Localized repairs and overlay
28+000 - 30+600	2.6	Alligator cracks on RHS Stripping Isolated potholes at the centre line Patchwork	Localized repairs, pothole patching and overlays
30+600 – 32+000	1.4	Intact pavement	Section for overlay
32+000 – 34+900	2.9	Alligator cracks Potholes Isolated Pavement Deformation	Spot/Localized base repairs, Pothole patching and Overlay
34+900 – 37+500	2.6	Longitudinal cracks on LHS Potholes on LHS Pavement Deformation on RHS	Reconstruction Section
37+500 – 41+600	4.1	Longitudinal cracks Potholes Depression/deformation on LHS	Spot repairs and overlay
41+600 – 44+200	2.6	Deformation on LHS Potholes 25 Longitudinal Cracking	Reconstruction section

44+200 – 46+900	2.7	Longitudinal cracks Isolated potholes Pavement Deformation	Spot Repairs and overlay
46+900 – 47+500	0.6	Interconnected potholes Deformation on the RHS	Reconstruction
47+500 – 50+200	2.7	Intact pavement section	Overlay
50+200 – 55+000	4.8	Isolated potholes	Pothole patching and overlay
55+000 – 56+100	1.1	Alligator cracks/Crazing Pavement deformation Potholes	Reconstruction
56+100 – 61+200	5.1	Potholes Longitudinal cracks Raveling	Pothole patching and crack sealing and overlay.
61+200 – 66+900	5.7	Alligator cracks/Crazing Pavement deformation Potholes	Reconstruction section
66+900 – 68+300	1.4	Isolated potholes and edge failures	Isolated pothole patching and overlay
68+300 – 69+200	0.9	Interconnected potholes Deformation on the RHS	Partial reconstruction

From the surface condition survey, it was noted that there were different defects all through the road. The road was delineated in different homogenous section for ease of analysis as shown in Table 4.1 above. The Homogenous sections were 26 in number. Majority of this sections exhibited potholes, alligator cracks, edge failure , worn out shoulders and edge failure, the probable interventions were pothole patching, crack sealing , overlay and reconstruction respectively.

## 4.1 Roughness Measurement

The roughness data was processed using Hawkeye-2000 processing software with Roughness in terms of International Roughness Index IRI in m/Km. The roughness data was assessed using the rating scale provided by the Australia Road Research Board (ARRB) in Table 4.2, and this scale was employed to calculate the average IRI for every distinct homogeneous section, as outlined in table 4.3.

**Table 4. 2: ARRB IRI Rating Scale**

IRI Range scale	Rating Colour	Pavement Condition
Below 2		Excellent
2.0 to 4.0		Good
4.0 to 6.0		Fair
6.0 to 10.0		Poor
Above 10.0		Bad

**Table 4. 3: Average IRI for Homogeneous Sections**

Road Name	HS	Points	Min IRI Lane, m/Km	Average IRI Lane, m/Km	Max IRI Lane, m/Km
MAGUMU - THIKA LHS	Km 0 - 5.2	50	2.3	5.5	14.7
	Km 5.2 - 7.0	16	1.7	2.8	4.6
	Km 7.0 - 9.1	18	2.0	5.1	12.2
	Km 9.1 - 19.8	103	1.5	4.4	11.5
	Km 19.8 - 25.2	54	1.9	3.7	9.5
	Km 25.2 - 34.0	87	1.8	3.0	6.3
	Km 34.0 - 61.2	267	1.2	3.0	10.8
	Km 61.2 - 67.7	54	1.1	4.0	10.2
	<b>Overall Mean</b>	<b>649</b>	<b>1.1</b>	<b>3.6</b>	<b>14.7</b>
MAGUMU - THIKA RHS	Km 0 - 5.2	48	1.9	5.5	14.4
	Km 5.2 - 7.0	14	2.1	2.9	4.9
	Km 7.0 - 9.1	21	1.8	5.4	12.7
	Km 9.1 - 19.8	102	1.8	4.4	11.2
	Km 19.8 - 25.2	52	1.9	3.5	7.8
	Km 25.2 - 34.0	85	2.1	3.0	6.1
	Km 34.0 - 61.2	268	1.1	3.0	7.9

	Km 61.2 - 67.7	64	1.0	3.8	10.0
	<b>Overall Mean</b>	<b>654</b>	<b>1.0</b>	<b>3.6</b>	<b>14.4</b>
<b>Mean (both lanes)</b>		<b>652</b>	<b>1.1</b>	<b>3.6</b>	<b>14.6</b>

From the roughness measurements it was noted that the average International Roughness Index (IRI) for the entire road was 3.6 m/km rated as Good with values ranging from 1.1 m/km to 14.6 m/Km. Measuring road roughness held a significant importance as it contributed to ensuring a smooth road for drivers. Furthermore, addressing defects not only lowered vehicle maintenance costs but also reduced fuel consumption and minimized the occurrence of accidents.

#### 4.2 Pavement Condition Index

ASTM D6433-98 was used to determine the Pavement Condition Index (PCI) values in this report with values rated as per Table 4.4.

**Table 4. 4: Pavement Condition Index (PCI) Scale (ASTM D 6433-98)**

PCI Range scale	Rating Colour	Pavement Condition
85-100		Good
70-85		Satisfactory
55-70		Fair
40-55		Poor
25-40		Very Poor
10-25		Serious
0-10		Failed

The summary of PCI values and rating for the road sections were presented in Table 4.5.

**Table 4. 5: PCI Values & rating for Homogeneous Sections**

Road Section	HS	Points	Min of PCI	Average of PCI	Max of PCI
MAGUMU - THIKA LHS	Km 0 - 5.2	50	31	51	69
	Km 5.2 - 7.0	16	51	66	80
	Km 7.0 - 9.1	18	34	53	74
	Km 9.1 - 19.8	103	35	56	83
	Km 19.8 - 25.2	54	38	58	75
	Km 25.2 - 34.0	87	45	64	78
	Km 34.0 - 61.2	267	35	65	92
	Km 61.2 - 67.7	54	36	61	96
	<b>Overall Mean</b>	<b>649</b>	<b>31</b>	<b>61</b>	<b>96</b>
MAGUMU - THIKA RHS	Km 0 - 5.2	48	31	50	75
	Km 5.2 - 7.0	14	50	64	73
	Km 7.0 - 9.1	21	33	54	78
	Km 9.1 - 19.8	102	35	55	77
	Km 19.8 - 25.2	52	41	60	75
	Km 25.2 - 34.0	85	45	63	73
	Km 34.0 - 61.2	268	41	65	96
	Km 61.2 -	64	37	61	88

	67.7				
	<b>Overall Mean</b>	<b>654</b>	<b>31</b>	<b>61</b>	<b>96</b>
<b>Mean (both lanes)</b>		<b>652</b>	<b>31</b>	<b>61</b>	<b>96</b>

From the PCI Values, it was noted that the average PCI Value was 61 rated as **Fair** with values ranging from 31 (rated as **Very Poor**) to 96 (rated as **good**).

### 4.3 Surface Regularity Results

The ASTM D6433- 99 rate rutting value were shown in Table 4.6.

**Table 4. 6: Rate rutting value ASTM D6433-39**

<b>Condition</b>	<b>Depth Range (mm)</b>
No rutting	<u>0-6</u>
Low Severity	<u>6-13</u>
Medium Severity	13 mm to 25 mm
High Severity	Above 25 mm

The measured average rut depth in mm for each Homogeneous section of the road was summarized in Table 4.7.

**Table 4. 7: Average Rut depths for Homogeneous Sections**

<b>Road Name</b>	<b>HS</b>	<b>Points</b>	<b>Min Rut (mm)</b>	<b>Average Rut (mm)</b>	<b>Max Rut (mm)</b>
MAGUMU - THIKA LHS	Km 0 - 5.2	50	0.6	4	10.3
	Km 5.2 - 7.0	16	0.4	1.4	2.3
	Km 7.0 - 9.1	18	0.8	2.8	9.7
	Km 9.1 - 19.8	103	0.4	3.2	13.6
	Km 19.8 -	54	0.4	3.4	6.7



	25.2				
	Km 25.2 - 34.0	87	1.2	3.5	8.8
	Km 34.0 - 61.2	267	0.2	2.8	10.1
	Km 61.2 - 67.7	54	0.1	4.3	17.9
	<b>Overall Mean</b>	<b>649</b>	<b>0.1</b>	<b>3.2</b>	<b>17.9</b>
MAGUMU - THIKA RHS	Km 0 - 5.2	48	0.8	3.7	10.9
	Km 5.2 - 7.0	14	0.6	1.6	3.1
	Km 7.0 - 9.1	21	0.6	2.7	9.9
	Km 9.1 - 19.8	102	0.1	2.7	13.3
	Km 19.8 - 25.2	52	0.6	2.3	7.5
	Km 25.2 - 34.0	85	0.5	2.7	5.9
	Km 34.0 - 61.2	268	0.1	2.1	8
	Km 7.0 - 9.1	21	1.8	5.4	12.7
	Km 9.1 - 19.8	102	1.8	4.4	11.2
	Km 19.8 - 25.2	52	1.9	3.5	7.8
	Km 25.2 - 34.0	85	2.1	3.0	6.1
	Km 34.0 - 61.2	268	1.1	3.0	7.9
	Km 61.2 - 67.7	64	1.0	3.8	10.0
	<b>Overall Mean</b>	<b>654</b>	<b>1.0</b>	<b>3.6</b>	<b>14.4</b>
<b>Mean (both lanes)</b>	<b>652</b>	<b>1.1</b>	<b>3.6</b>	<b>14.6</b>	

From the Rut depth measurements, it was noted that the average Rut depth for the entire road was 3.6 mm rated as being of No Rutting with values ranging from 1.1mm (no rutting) to

14.6 mm (medium severity).

#### 4.5 Summary of the results of surface condition survey

The results of the pavement evaluation indicated the need to reconstruct the forest area due to poor gravel used and the high moisture content, Other parts of the road indicate a “fair” state of the road infrastructure. The International Roughness Index (IRI) rating was good signifying a smooth road surface, which led to a more comfortable driving experience and reduced wear and tear on vehicles. The Pavement Condition Index rated as “fair” suggested that the overall condition of the pavement was acceptable and required some maintenance and repairs. Furthermore, the absence of rutting was a promising sign, as it indicated that the road surface had not experienced the formation of depressions or channels caused by traffic wear and tear.

In summary, these results suggest that the pavement was in a fair condition and required rehabilitation, however, there was need for reconstruction in the forest area due to the poor structural strength and high moisture contents experienced.

#### 4.6 Traffic Analysis

##### 4.6.1 Average Daily Traffic (ADT)

The partial-day count was converted to full-day count using the 24-hour traffic count as follows:

$$c_f = (c_p \times c_{24}) / c_{12} \dots \dots \dots \text{Equation 4.1}$$

Where:

$c_f$  was the 24- hour count for each day  $c_p$  is the partial day count

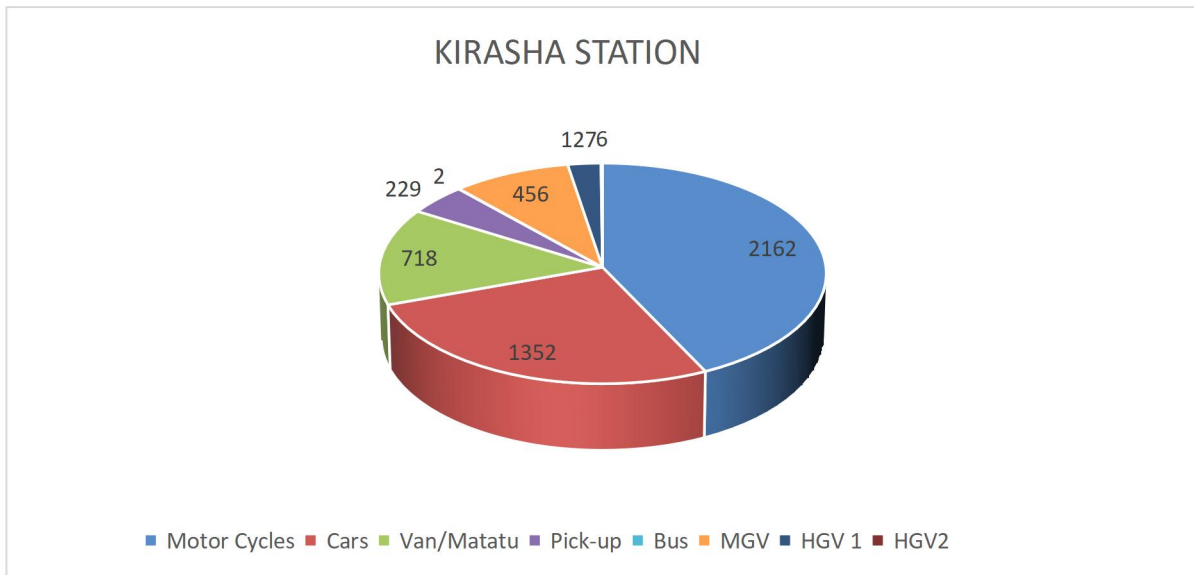
$c_{24}$  was the full day count for the selected day and  $c_{12}$  was the 12-hour count

The average daily count based on the vehicle volumes was computed by getting the weighted average for all the days in the week. The summaries of the average daily traffic (ADT) flows that were determined during the recording period were presented in Table 4.8 while the actual daily-recorded traffic flows are presented as **Appendix 4-B**.

**Table 4. 8: Average Daily Traffic on Magumu - Thika (B20/D1315) Road**

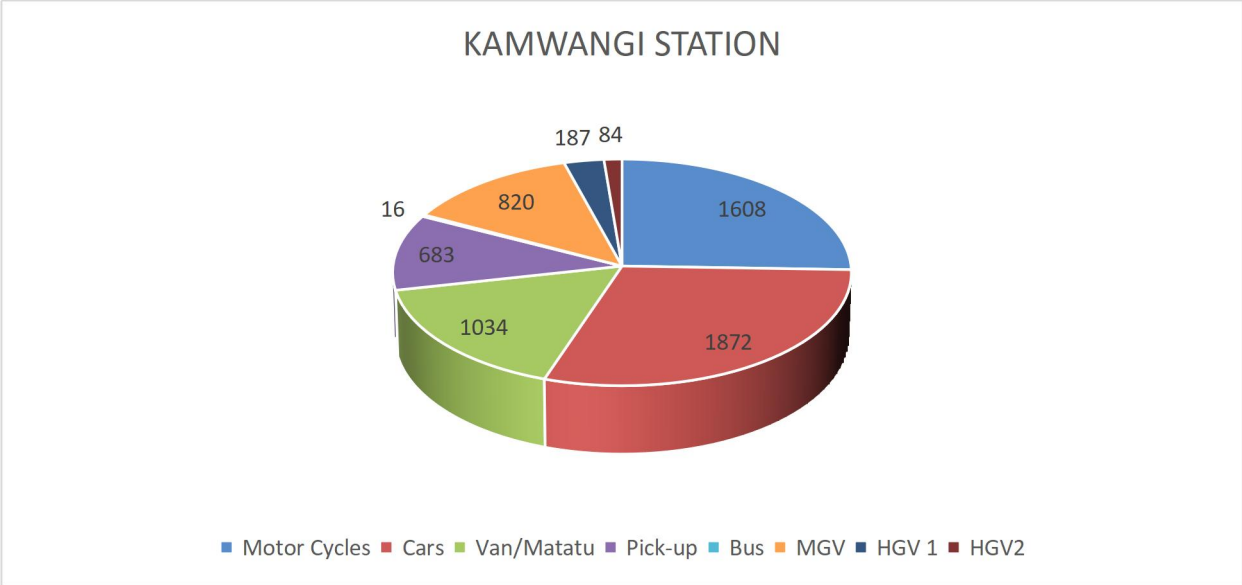
Station	Motor Cycles	Cars	Van/ Matatu	Pick-up	Bus	MGV	HGV 1	HGV 2
Kirasha	2162	1352	718	229	2	456	127	6
Kamwangi	1608	1872	1034	683	16	820	187	84
Ngoingwa	875	3298	1803	473	10	528	119	72

The traffic composition in Kirasha station was represented in a pie chart as shown below in Pie Chart 4.1.



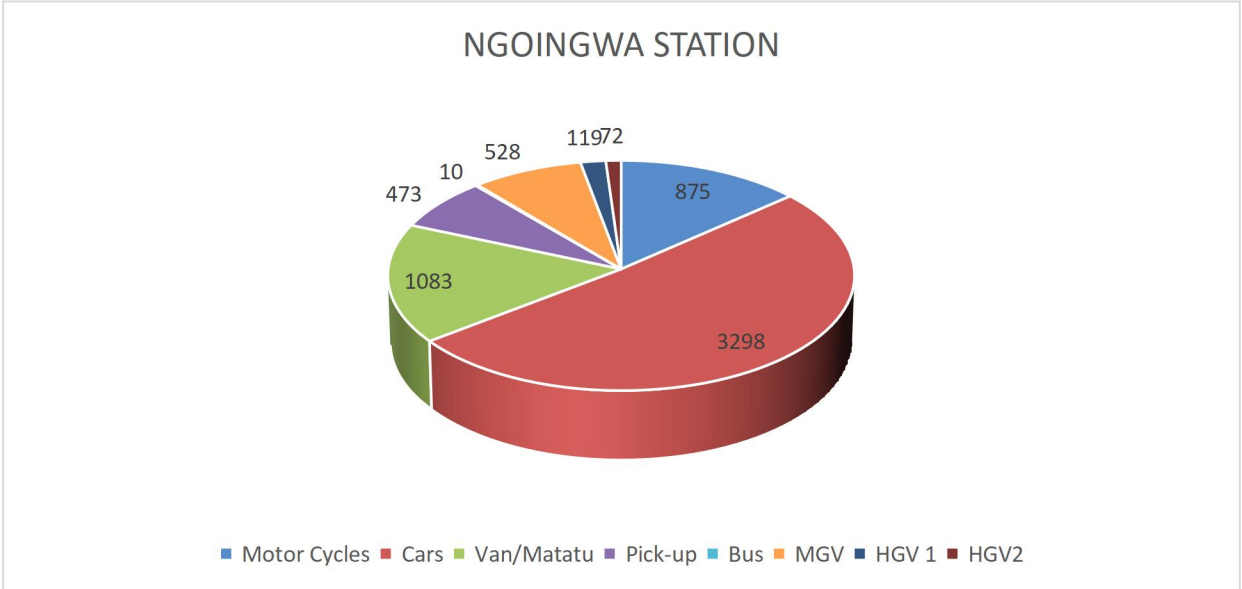
**Chart 4.1: Traffic composition in Kirasha Station**

The Traffic composition in Kamwangi station was represented in a pie chart as shown below in Pie chart 4.2



**Chart 4.2: Traffic composition in Kamwangi Station**

The Traffic composition in Ngoingwa station was represented in a pie chart as shown below in pie chart 4.3



**Chart 4.3: Traffic composition in Ngoingwa Station**

The classification of motorized traffic adopted was shown in table 4.9 as per the

**Table 4.9: Classification of Motorized traffic.**

S/no	Traffic Class	Description
1	Motorcycle (M/C)	All mopeds and other motor cycle
2	Cars (C)	4 wheel passenger vehicles with less than nine seats
3	Pick-ups, Jeeps, 4WDs, Vans	All pick-ups, 4 WD cars and private vans
4	Matatus and Minibuses	All public service mini-buses with seating capacity less than 45
5	Buses (B)	large buses with seating capacity exceeding 25 passengers
6	Light goods vehicles (LGV)	3-6 ton, and includes pick-ups, utility vans and other goods vehicles of up-to 1.5 tonnes carrying capacity.
7	Medium goods vehicles(MGV)	7-10 ton, 2 axle vehicles. Includes light tankers categorised as others
8	Heavy goods vehicles (HGV)	3 axles heavy trucks of 12 – 15-ton capacity
9	Articulates Trucks	5-6 Axles truck
10	Other Vehicles	Tractors, construction equipment, etc

The ADT was used to determine whether the road had capacity to carry the prevailing and projected traffic volumes and also for projections of the traffic loading. The traffic regime on the road indicated that the road exhibited a high percentage of cars and Heavy Goods Vehicles – Rigid (HGV 2) contributed a lower percentage of the commercial vehicles.

**4.6.2 Vehicle Equivalence Factors (VEF)**

The Vehicle Equivalent Axle Load Factor (EALF) for each axle load in Kg was calculated using the Liddle’s formula presented below.

$$EALF = \left( \frac{L_s}{8200} \right)^{4.5} \dots\dots\dots \text{Equation 4.2}$$

The Vehicle EALF for each vehicle weighed during the survey was calculated by summing up the EALF for all axles. The average EALF for each vehicle class was then determined as summarized in Tables 4.10 and the axle load data in **Appendix 4-C**.

**Table 4. 10: Average EALF for the road**

Vehicle type	Average E.F (BothDirections)
Bus	0.96
MGV	1.89
HGV-R	4.18
HGV-A	13.37

#### 4.7 Traffic Loading Projections

##### 4.7.1 Daily Equivalent Standard Axles

The daily equivalence standard axles (Daily ESA) was calculated by summing up the product of vehicle EF and the average daily traffic (ADT) for both directions for each vehicle type.

$$DESA = \sum(EF \times ADT) \quad \dots\dots\dots\text{Equation 4.3}$$

The Daily ESA was subjected to Lane Width Adjustment as per Clause 2.4 and table 4-2 of Pavement Design Guideline for Low Volume Seal Road (2017) (PDG-1). As stipulated in the Guideline the 80% of the total Daily ESAs in both directions for each vehicle class was adopted for the design traffic loading. Consequently, from the computations the road carried the following Daily Equivalent Standard Axles as presented in Table 4.11.

**Table 4.11: Computed EF and DESA for various road sections and vehicle category**

Road section	BUS	MGV	HGV -R	HGV -A
Kirasha	2	689	424	62
Kamwangi	12	1238	627	897
Ngoingwa	8	797	398	766

Where by:

MGV- Medium goods vehicle

HGV- R -Heavy Goods Vehicle - Rigid

HGV -A - Heavy Good Vehicle -Articulated

#### **4.7.2 Traffic Growth Rates**

The determination of annual traffic growth rates is obtained through analysis of historical traffic data, national socio - economic indicators and trends in national development. In this case, the project road had no historical traffic data and thus the following were evaluated to derive realistic future traffic growth rates:

- National Economic Growth (Gross Domestic Product growth rate)
- Fuel consumption trends
- New vehicle registration trends

##### **4.7.2.1 National Economic Growth**

National economic performance had a substantial bearing on transport demand and availability. Over the last ten years, the Kenyan economy had witnessed an increasing trend in economic growth. This was indicated by the rate of growth of the Gross Domestic Product, which is one of the economic indicators. Table 4.12 shows Kenya's economic performance from 2008 to 2019.

**Table 4.12: GDP growth rates from 2008 - 2019**

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Economic Growth Rate (%)	1.5	2.7	5.8	4.4	4.5	5.9	5.4	5.7	5.9	4.8	6.3	5.4

Source: *Kenya Economic Survey Abstracts, Kenya National Bureau of Statistic*

Using a linear regression analysis, it was then possible to project average GDP growth rates, the mean GDP growth rate of 7.2% was obtained for the lead time (2021-2024) (Assumption of 3 years' construction), 9.2% for the next ten years (2024-2034) and 12.0% for the next ten years (2034-2044).

#### 4.7.2.2 Fuel Consumption Trend

Table 4.13 below of fuel consumption data for the last ten years was evaluated to assess its relationship to future traffic growth.

**Table 4.13 Fuel Consumption trend in Kenya ('000 tonnes)**

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Fuel Consumption ('000 tonnes)	1,609	2,055	2,363	2,160	2,235	2,574	2,791	3,415	3,718	3,541	3,743	3,752

Source: Kenya Statistics, 2013 Kenya National Bureau of Statistics.

The growth rate in fuel consumption for the years 2008-2019 was calculated. Then, using a linear regression analysis, the average fuel consumption growth rates for the future years were obtained. The mean fuel growth rate of 5.9% was obtained for the lead time (2021-2024) (Assumption of 3 years construction), 3.6% for the next ten years (2024-2034) and 2.6% for the next ten years (2034-2044).



### 4.7.2.3 New Vehicle Registration Trend.

New vehicle registration data are summarized in table 4.14 below for the period 2008 to 2019.

**Table 4.14 New Registration of Road Motor Vehicle, 2008-2019**

	Vehicle Category										
	Saloon Cars	Station Wagons	Buses	Mini Buses	Panel Vans, Pick-ups, etc	Lorries/ Trucks	Trailers	Wheeled Tractors	Motor/ Auto Cycles	TUK TUK	TOTAL
2008	18,686	24,747	1,243	5,206	8,983	6,691	2,100	1,262	51,412	704	121,034
2009	16,930	27,599	1,057	4,483	7,120	6,037	2,883	1,115	91,151	863	159,238
2010	16,165	37,553	1,264	3,600	6,975	4,924	2,379	1,161	117,266	1,521	192,808
2011	11,026	31,199	1,662	451	7,442	5,247	2,556	1,179	140,215	2,140	203,117
2012	12,985	39,862	1,638	78	7,945	7,821	3,761	1,386	93,970	1,845	171,291
2013	16,343	48,662	2,062	235	9,819	9,570	3,973	1,902	125,058	3,103	220,727
2014	15,902	53,542	2,210	213	12,568	10,681	2,925	2,032	111,124	4,327	215,524
2015	14,369	54,120	2,342	581	13,878	13,785	3,905	2,259	134,645	4,775	244,659
2016	12,490	46,123	1,765	519	12,722	9,632	2,829	2,478	119,724	3,815	212,097
2017	11,376	55,322	1,072	459	9,866	7,460	1,953	2,703	186,434	5,167	281,812
2018	10,504	64,179	1,065	812	11,220	6,514	2,083	4,040	188,994	6,259	295,670
2019	9,971	72,512	1,339	1,932	10,189	6,518	1,639	1,815	210,103	7,322	323,340

SOURCE: Kenya National Bureau of Statistics

The growth rate for private transport (private cars, station wagons), public transport (buses, minibuses), goods vehicles (Vans, pick-ups, trucks, trailers, tractors) motorcycles and three wheelers for the years 2008-2019 was calculated. Then, using power functions, the average vehicle categories growth rates for the future years were forecasted using linear regression for the years (2021-2024) (Assumption of 3 years' construction), for the next ten years (2024-2034) and for the next ten years (2034-2044). The obtained growth rates are as indicated in the table 4.15 below.

**Table 4.15 Traffic Growth rates for different vehicle categories**

COMPUTED GROWTH RATES NATIONAL LICENCED VEHICLES				
No.	VEHICLE TYPE	2020-2024	2024-2034	2034-2044
1	M/C	8.8	5.8	3.9
2	CARS	9.1	6.4	4.6
3	PICK-UPS, JEEPS, VANS	8.5	5.9	4.3
4	MATATU AND MINIBUSES	4.1	2.7	1.8
5	L_BUSES AND LGV	4.1	2.7	1.8
6	MGV	8.5	5.9	4.3
7	<HGV-3 & 4 Axles> <AHGV-5 & 6 Axles>	8.5	5.9	4.3

#### 4.7.2.4 Adopted Growth rate

In order to arrive at the expected traffic growth rates for the project roads, growth rates obtained from all sources above were analysed further, in totality. The growth factors in GDP Growth rates, fuel demand, and Vehicle Registration growth rate gave indications on the level of usage of various categories of vehicles in Kenya. The obtained growth rates for each were obtained from extrapolation using best fit statistical functions were then averaged with the GDP growth rate and fuel consumption growth rates then assigned as medium growth rates for each period. The low growth rate was obtained by subtracting 3 standard deviations of the mean (median) growth rate while the high growth rate was obtained by adding 3 standard deviations to the mean (median) growth rate. The adopted future traffic growth rates taking into consideration the above socio-economic, national development data and traffic growth rates for different vehicle categories are summarized in table 4.16 below:

**Table 4.16 Adopted traffic growth rates from the Economic Indicators.**

Low Growth Rate										
PERIOD	MOTOR CYCLE	CARS	4WD	MINIBUS	BUSES	LIGHT TRUCKS	MEDIUM TRUCKS	HEAVY TRUCKS	ARTICULATED	OTHER
2020-	4.3	5.2	5.3	2.7	2.7	6.1	6.1	6.1	4.3	4.3

2024										
2024-2034	3.6	4.3	3.8	1.6	1.6	3.8	3.8	3.8	3.6	3.6
2034-2044	3.6	3.4	3.2	1.3	1.3	2.9	2.9	2.9	3.3	3.3
<b>Medium Growth Rate</b>										
PERIOD	MOTOR CYCLES	CARS	4WD	MINIBUS	BUSES	LIGHT TRUCKS	MEDIUM TRUCKS	HEAVY TRUCKS	ARTICULATED	OTHERS
2020-2024	7.6	7.4	7.2	4.1	4.1	8.5	8.5	8.5	7.6	4.3
2024-2034	5.8	6.1	5.9	2.7	2.7	5.9	5.9	5.9	4.9	3.6
2034-2044	4.9	4.6	4.3	1.8	1.8	4.1	4.1	4.1	4.4	3.3
<b>High Growth Rate</b>										
PERIOD	MOTOR CYCLES	CARS	4WD	MINIBUS	BUSES	LIGHT TRUCKS	MEDIUM TRUCKS	HEAVY TRUCKS	ARTICULATED	OTHERS
2020-2024	11	9.6	9.1	5.4	5.4	10.9	10.9	10.9	11	4.3
2024-2034	7.9	8	8.1	3.8	3.8	8.1	8.1	8.1	6.6	3.6
2034-2044	6.1	5.7	5.3	2.4	2.4	6.1	6.1	6.1	5.5	3.3

### 4.7.3 Traffic Loading Projection in Design Periods

The design daily equivalent standard axles were converted to cumulative ESA using the formula below;

$$\text{CUMULATIVE ESA} = 365 \times T_2 \times \frac{\{(1+r)^n - 1\}}{r}$$

.....Equation 4.3

Where:

Cumulative ESA – Cumulative Equivalent of Standard Axles

T2 –Daily number of standard axles for base year

r – Annual traffic growth rate in percent.

n –Design period in years.

A 15-year design period was considered for estimation of the Cumulative Number of Standard Axles (CNSAs) with year 2024 being the base year. Table 4.17 below shows the projected annual Equivalent Standard Axles (ESA) over the pavement design period.

**Table 4. 17: Cumulative ESA on the road based on various growth rates (millions)**

		M/ C	CAR S	4W D	MIN I BUS	BUSE S	MGV	HGV R	HGV A	TOTAL
<b>Kirasha</b>	<b>LOW</b>	0	0	0	0	12266	4225520	2600320	380235	<b>7218341</b>
	<b>MEDIU M</b>	0	0	0	0	13283	4575828	2815894	411758	<b>7816763</b>
	<b>HIGH</b>	0	0	0	0	14402	4961447	3053198	446458	<b>8475505</b>
<b>Kamwangi</b>	<b>LOW</b>	0	0	0	0	73594	7592443	3845284	5501148	<b>17012469</b>
	<b>MEDIU M</b>	0	0	0	0	79695	8221880	4164070	5957210	<b>18422855</b>
	<b>HIGH</b>	0	0	0	0	86411	8914762	4514988	6459242	<b>19975403</b>
<b>Ngoingwa</b>	<b>LOW</b>	0	0	0	0	49063	4887865	2440866	4697748	<b>12075542</b>
	<b>MEDIU M</b>	0	0	0	0	53130	5293084	2643221	5087205	<b>13076640</b>
	<b>HIGH</b>	0	0	0	0	57608	5734148	2865974	5515919	<b>14173649</b>

Traffic Class T1 was therefore adopted for pavement design. The main objective of the road project is to link Kiambu County with Nyandarua County by offering a means of movement within the two counties. Other objectives included: to reduce travel time by increasing the speed as the road would be in good condition, minimization of accidents due to tarmacking of the road, increased economic and financial status of its environs as this would lead to new businesses coming up along the project road and increase in traffic volume and capacity.

## **4.8 Structural Condition Survey Analysis**

The tasks under structural evaluation included:

- Coring, Trenching, Logging, Material Sampling and Testing; and,
- Deflection measurement and analysis.

### **4.8.1 Coring, Trenching and Logging of pavement and subgrade layers**

The thickness and description of each layer was entered in a standard logging sheet as presented in **Appendix 4-D** and summarized in Table 4.18 below. The pavement layer materials sampled were subjected to laboratory testing and analysis. Reinstatement of pavement on the trial pit excavation areas was done after sampling.

**Table 4. 19: Summary of Pavement and Subgrade Logging**

Logging Points	Surfacing Material and Thickness, mm	Base Material Thickness, mm	Sub base Material Thickness, mm	Top 300mm Subgrade Material
KM 0+100 LHS	40 mm AC	200 mm GCS	130 mm Gravel	Brownish Gravel
Km 5+000 RHS	40 mm AC	120 mm GCS	100 mm Gravel	Reddish Gravel
Km 10+030 LHS	30 mm AC	130 mm GCS	100 mm Gravel	Reddish Gravel
Km 14+800 RHS	40 mm AC	120 mm GCS	80 mm Gravel	Reddish Gravel
Km 20+430 LHS	50 mm AC	120 mm GCS	100 mm Gravel	Reddish Gravel
Km 25+400 RHS	40 mm AC	100 mm GCS	150 mm Gravel	Reddish Gravel
Km 30+000 LHS	35 mm AC	120 mm GCS	100 mm Gravel	Reddish Gravel
Km 35+180 RHS	45 mm AC	130 mm GCS	100 mm Gravel	Reddish Gravel
Km 40+200 LHS	50 mm AC	100 mm GCS	100 mm Gravel	Reddish Gravel
Km 45+120 RHS	25 mm AC	150 mm CIG	100 mm Gravel	Reddish Gravel
Km 50+140 LHS	50 mm AC	100 mm CIG	150 mm Gravel	Reddish Gravel
Km 55+250 RHS	55 mm AC	150 mm CIG	150 mm Gravel	Brownish Gravel

Km 59+900 LHS	45 mm AC	160 mm CIG	110 mm Gravel	Reddish Gravel
Km 64+800 RHS	50 mm AC	100 mm CIG	150 mm Gravel	Reddish Gravel
Km 67+800 LHS	50 mm AC	100 mm CIG	120 mm Gravel	Reddish Gravel

From the summary of logging in table 4-94 the following was noted:

- Surfacing: The AC surfacing had an average thickness of 43 mm with values ranging from 25 mm to 50 mm; this showed that the surfacing had worn off.
- Base: The GCS base had an average thickness of 127 mm with values ranging from 100 mm to 200 mm. Only 30% of the tested points had thicknesses complying with the design pavement thickness. The CIG base had an average thickness of 127 mm with values ranging from 100 mm to 160 mm with 50% of the tested points complying with the design pavement thickness; this illustrated that the base had failed and there was need for rehabilitation.
- Subbase: The Natural material gravel had an average thickness of 116 mm with values ranging from 80 mm to 150 mm with only 30% of the tested points complying with the design pavement thickness; this indicated settlement had occurred either due to continuous trafficking and exhaustion of design life of the pavement.
- Subgrade: Majority of the subgrade is composed of Reddish gravel. This indicated poor quality of soil had been used for construction of the road which could not give the road the desired strength.

#### **4.8.2 Subgrade and Pavement Materials Testing**

Pavement materials were sampled from the trench pits and subjected to laboratory testing. The pavement material test results were presented in Appendix 4-E and summarized in Tables 4.20, 4.21, 4.22, 4.23 and 4.24.

**Table 4. 20: Subgrade & Native Soils test results**

Chainage	Layer and description	PI (%)	PM	MDD T99 (Kg/mt)	Relative compaction (%)	Relative moisture content (%)	CB R (%)	Remarks
							4 days Soak	
KM 0+100LHS	BSG, Brownish gravel	21	1155	1230	96.0	104.1	9	Presence of poor soils for subgrade High moisture content indicating likelihood of poor drainage
	Native, Black clay soil	26	2288	1189	94.0	104.7	2	
Km 5+000	TSG, Red soil	29	2552	1200	92.8	79.4	7	
	BSG, Red soil	28	2408	1165	96.0	85.9	5	
RHS	Native, Black clay soil	28	2408	1160	94.8	101.6	5	
Km 10+030	Subgrade, Red soil	26	2158	1269	92.4	84.3	8	
LHS	Native, Red soil	27	2322	1277	85.0	86.5	5	
Km 14+800	Subgrade, Red soil	29	2320	1280	83.5	111.0	8	



RHS	Native, Red soil	30	264 0	1245	80.2	98.6	7
Km 20+430 LHS	NSG, Red soil	21	184 8	1085	96.2	89.5	8
Km 25+400 RHS	NSG, Red soil	22	187 0	1200	86.5	97.1	8
Km 30+000 LHS	NSG, Reddish lateritic gravel	21	798	1720	102.6	96.8	25
Km 35+180RHS	NSG, Reddish lateritic gravel	20	900	1450	88.6	109.8	15

Chainage	Layer and description			MD D T99 (Kg/ mt)	Relative compaction (%)	Relative moisture content (%)	CBR (%)	Remarks
		PI (%)	PM				4 days Soak	
Km 40+200 LHS	NSG, Reddish lateritic gravel	22	1210	1320	90.7	109.1	12	
Km 45+120RHS	TSG, Reddish lateritic gravel	20	880	1750	99.1	109.1	28	
	BSG, Reddish lateritic gravel	18	774	1500	106.2	84.6	28	
Km 50+140LHS	SG, Reddish lateritic gravel	16	640	1580	104.7	95.1	30	
	In-situ, Blackish soil	25	2125	1390	105.0	96.9	4	
Km 55+250RHS	NSG, Brownish gravel	20	1100	1467	105.9	96.4	25	
Km 59+900LHS	SG, Reddish lateritic gravel	18	810	1500	106.5	97.4	30	
	NSG, Reddish lateritic gravel	21	1155	1385	95.5	103.4	12	
Km 64+800RHS	SG, Reddish lateritic gravel	24	960	1689	89.7	100.0	20	
	Native, Black lateritic gravel	17	272	1835	85.8	102.8	30	
Km 67+800LHS	NSG, Whitish clay soil	28	2464	1160	89.8	106.5	2	

*\*BSG: Bottom Subgrade, NSG: Native Subgrade, SG: Subgrade TSG: TopSubgrade.*

From the subgrade and native soils test results in table 4-2, the following was deduced:

- Native subgrade material had CBR range of between 2-30% and PI range of between 17- 30%; the material was not suitable for use.
- Improved Subgrade material on sections had CBR range of between 2-30% and PI range of between 17-30%; PI was too high and its strength was also not conducive for use.
- 91% of the subgrade and native soils had CBR of less than 10% between Km 0– Km 25.4; poor soils were used to construct the road.
- Plasticity index values ranged from 16-30%; the plasticity was high hence presence of a lot of fines.
- MDD values range between 1085 – 1835 Kg/m<sup>3</sup>; all MDD values between Km 0 – Km 25.4 are below 1400 Kg/m<sup>3</sup> with values ranging between 1085 – 1280 Kg/m<sup>3</sup>; and,
- Relative moisture content values range between 79.4 – 111.0% while Relative compaction values range between 85.6 – 106.5%.

**Table 4.21: Subbase Layer and Materials test results**

Chainage	Description			Compaction T180	Relative compaction (%)	Relative moisture content (%)	CBR (%)	Remarks
		PI (%)	PM	MDD (Kg/m <sup>3</sup> )			4 days Soak	
KM 0+100 LHS	Greyish softstone	8	360	1750	98.3	106.0	30	High PM and RMC
Km 5+000 RHS	Greyish weathered rock	11	484	1410	85.8	109.2	25	
Km 10+030 LHS	Greyish softstone	15	750	1400	85.7	106.3	40	
Km 14+800 RHS	Greyish softstone	16	768	1400	104.4	93.0	35	
Km 20+430 LHS	Greyish soft stone	16	768	1410	90.6	106.8	23	
Km 25+400 RHS	Yellowish soft stone	15	660	1430	95.5	109.6	35	
Km 30+000 LHS	Reddish lateritic gravel	18	504	1920	105.9	89.6	30	
Km 35+180 RHS	Reddish lateritic gravel	17	459	1920	98.4	102.5	40	
Km 40+200 LHS	Reddish lateritic gravel	18	810	1722	90.3	106.2	40	
Km 45+120 RHS	Reddish lateritic gravel	18	720	1700	96.1	101.1	25	
	Reddish lateritic							

Km 50+140 LHS	gravel	17	646	174 2	102.8	96.3	20
Km 55+250 RHS	Reddish lateritic gravel	19	988	181 5	92.9	111.4	30
Km 59+900 LHS	Reddish lateritic gravel	19	1007	174 0	105.7	87.5	40
Km 64+800 RHS	Reddish lateritic gravel	15	495	175 0	104.5	87.9	30
Km 67+800 LHS	Reddish lateritic gravel	18	540	170 0	91.7	80.3	30

From the Subbase material test results in table 4-4, the following was deduced:

- The CBR values had a range between 23 – 40%;
- Plasticity index values had a range for Natural Gravel Subbase range between 8 – 19%;
- MDD values for Natural Gravel Base ranged between 1400 – 1920Kg/m<sup>3</sup>; and,
- Relative moisture content values ranged between 80.3 – 111.4% while Relative compaction values had a range between 85.7 – 105.9%.

**Table 4.22: Base Layer and Material Test Results**

Chainage	Description			Compaction		Relative moisture content (%)	CBR (%)		Remarks
		PI	PM	MD	OM		4	Swe	
		(%)		(Kg/ m <sup>3</sup> )	(%)		days	11	
KM 0+100 LHS	GCS	Non plastic		1960	10.5	94.2	88.6		GCS is plastic
Km 5+000 RHS	GCS	5	50	1900	10.1	91.9	107.9		High PI &PM for CIG
Km 10+030 LHS	GCS	Non plastic		1880	9.5	95.4	104.2		
Km 14+800 RHS	GCS	6	144	1850	9.8	93.9	103.1		High RMC
Km 20+430 LHS	GCS	7	245	1910	8.8	88.1	108.0		
Km 25+400 RHS	GCS	8	184	1870	10.5	81.8	106.7		
Km 30+000 LHS	GCS	7	210	1880	10.3	94.7	104.9		
Km 35+180 RHS	GCS	6	144	1875	10.1	102.5	81.2		
Km 40+200 LHS	GCS	Non plastic		1875	11.5	91.5	102.6		
Km 45+120 RHS	CIG	18	810	1650	19.5	87.4	102.6	35	0.2
Km 50+140 LHS	CIG	18	468	1890	13.6	90.5	103.7	35	0.2
Km 55+250 RHS	CIG	17	425	1840	13.9	101.3	97.1	35	0.2
Km 59+900	CIG	16	640	1790	14.2	96.3	109.2	45	0.2

LHS									
Km 64+800 RHS	CIG	14	462	1799	15.2	94.6	103.9	35	0.2
Km 67+800 LHS	CIG	18	342	1650	16.8	97.2	94.6	35	0.3

*Note; Compaction for Graded Crushed Stone (GCS) base was done using Vibrating Hammer while compaction for Cement Improved Gravel (CIG) base was done using T180.*

From the base material test results in table 4-3, the following was deduced:

- The CBR values for CIG base ranged between 35 – 45%;
- Plasticity index values for GCS base ranged between 5 – 8% indicating contamination;
- Plasticity index values ranged for CIG base range between 14 – 18% which did not comply with the requirements;
- MDD values for GCS base had a range between 1850 – 1960 Kg/m<sup>3</sup>;
- MDD values for CIG base had a range between 1650 – 1890 Kg/m<sup>3</sup>; and,
- Relative moisture content values had a range between 81.2 – 109.2% while Relative compaction values ranged between 81.8 – 102.5%.

**Table 4. 23: AC Core Test Results**

Sampling point	Core Thickness, mm	Binder Content, %	Core Density, Kg/m <sup>3</sup>	Max. Sp. Gr. Kg/m <sup>3</sup>	Core Voids, %	Remarks
0+100 LHS		5.4	Core crumbled			High values for core voids beyond the upper limit specs for AC Type II wearing course
5+000 RHS	32	5.4	2.1	2.3	7.9	
10+030 LHS		4.7	Core crumbled			
12+560 CL	62	5.5	2.1	2.3	6.2	
14+800 RHS	20	6	2.0	2.3	10.3	
17+200 CL	31	5.7	2.1	2.3	8.5	
20+430 LHS	26	4.9	2.1	2.3	9.4	
22+500 CL	47	5	2.1	2.3	8.2	
25+400 RHS	28	4.9	2.1	2.3	10.3	
27+300 LHS	47	5.2	2.0	2.3	10.6	
30+000 LHS	27	5.3	2.1	2.3	6.5	
32+500 CL	31	5.5	2.1	2.3	9.4	
35+180 RHS	33	5.3	2.1	2.3	6.0	
40+200 LHS	54	5.6	2.1	2.3	9.7	
42+600 CL	28	5.6	2.1	2.3	8.0	
45+120 RHS	19	5.6	2.1	2.3	5.8	
47+200 CL	22	5.7	2.1	2.3	8.8	
50+140 LHS	29	5.5	2.1	2.3	8.2	
52+180 CL	31	4.7	2.0	2.3	11.1	
55+250 RHS	29	5.7	2.2	2.3	4.3	
57+200 CL	26	5.2	2.1	2.3	6.8	
59+900 LHS	29	5.4	2.1	2.3	7.6	
61+730 LHS	28	5.5	2.1	2.3	6.8	
64+800 RHS	37	5.2	2.1	2.3	7.7	



67+800 LHS	33	5.3	2.1	2.3	8.9	
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The following was noted from the AC test results:

- **Binder content:** Out of 25 cores, five cores (20%) were found to have binder content beyond the permissive range from the design binder content of 5.5+ - 0.3%.
- 13 out of 25 cores had void in mix (VIM) values greater than 8%, above the specifications for AC type II wearing course indicating a water ingress susceptible pavement.

#### 4.8.3 Conclusion on the structural Condition

In conclusion, the assessment of Thika- Magumu road’s structural condition revealed several concerning issues. The subgrade material was of poor quality, with presence of red soil and low strength as seen in the California bearing ratio above, the subbase and base layer had high moisture content and plastic index indicating likely hood of poor drainage and poor quality gravel material used respectively. The Graded Crushed Stone (GCS) indicated that the material is plastic and the Plastic Index was notably high. The Asphalt concrete (AC) exhibited high Voids In Mix (VIM) and high bitumen content. These findings collectively suggested a high likelihood of contamination in the gravel material used, poor drainage, low compaction, high bitumen contents in AC and poor design mix of all materials used. In conclusion the structural state of the road posed a significant risk to the road’s long-term stability and performance. Addressing these issues was imperative to ensure the road’s structural integrity and safety for users.

#### 4.5 Falling Weight Deflectometer Results and Analysis

The target load during testing was 50 KN, which result to standard pressure of 707 KPa. In the field, attempts were made at testing at this pressure as much as possible. Due to gradient and nature of road surface, the resultant pressure was in most cases slightly lower or above this pressure. To standardize, the FWD deflection data were normalized to a standard pressure of 707 KPa using the linear equation 4.1.

$$d_n = \{d_i \times L_t\} / \{L_i\} \dots\dots\dots \text{Equation 4.1}$$

Where:

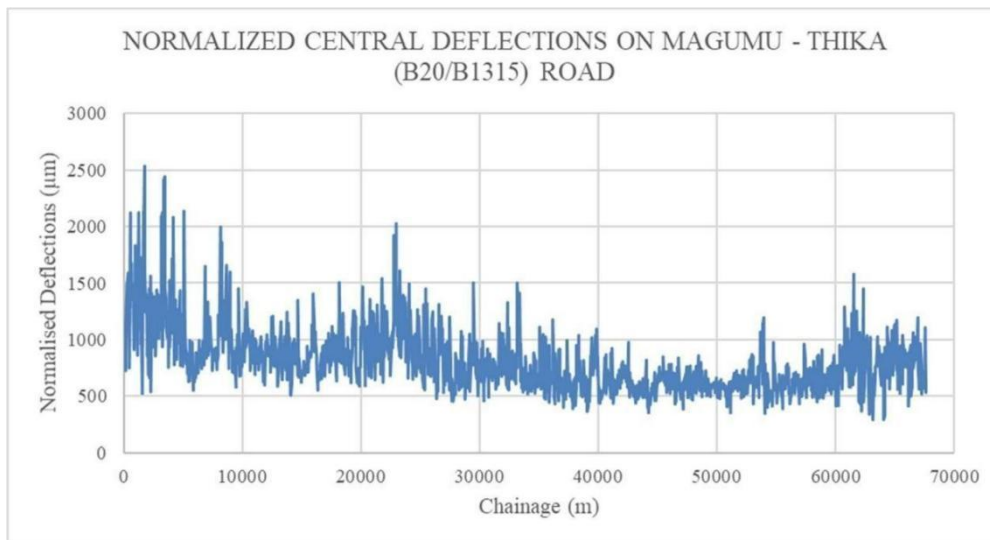
$d_i$  is the deflection reading for the sensor located  $i$  mm from the centre.

$nd_i$  is the normalized deflection reading for the sensor located  $i$  mm from the centre.

$L_i$  is the load level applied during the test

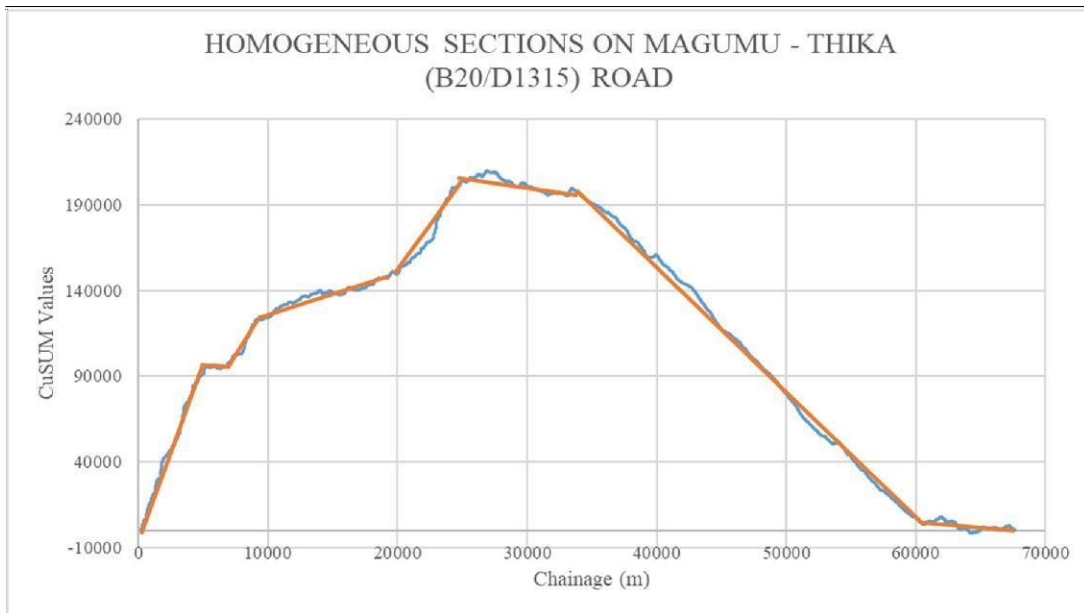
$L_t$  is the target load level of 566KPa based on the standard axle of 8-tone.

The normalized deflections were plotted against chainage as shown in Figure 4-1. The full data is presented in **Appendix 4-F& G**



**Figure 4.4: Normalized central deflections on Magumu – Thika (B20/D1315) Road**

Further, the normalized central deflections were used to establish Homogeneous sections using the Cumulative Sum of Difference from Mean (CuSUM) method of the central deflections. The CuSUM values are presented in graph in figure 4.5.



**Figure 4.5: Graphs of Homogeneous Sections on Magumu – Thika (B20/D1315) Road**

From the CuSUM computation and graphs in Figure 4.5, the road is divided into eight (8) Homogeneous sections as indicated in table 4.24:

**Table 4. 24: Homogeneous Sections**

Road Name	Homogeneous Section (HS)	Length of HS (Km)
Magumu - Thika (B20/D1315) Road	Km 0 - 5.2	5.2
	Km 5.2 - 7.0	1.8
	Km 7.0 - 9.1	2.1
	Km 9.1 - 19.8	10.7
	Km 19.8 - 25.2	5.4
	Km 25.2 - 34.0	8.8
	Km 34.0 - 61.2	27.2
	Km 61.2 - 67.7	6.5

#### 4.5.1 Statistical Analysis of Normalized FWD Data

Statistical analysis of the mean normalized FWD data (nd) for nine 9 geophones was carried out and summarized in Tables 4.25 and Table 4.26.

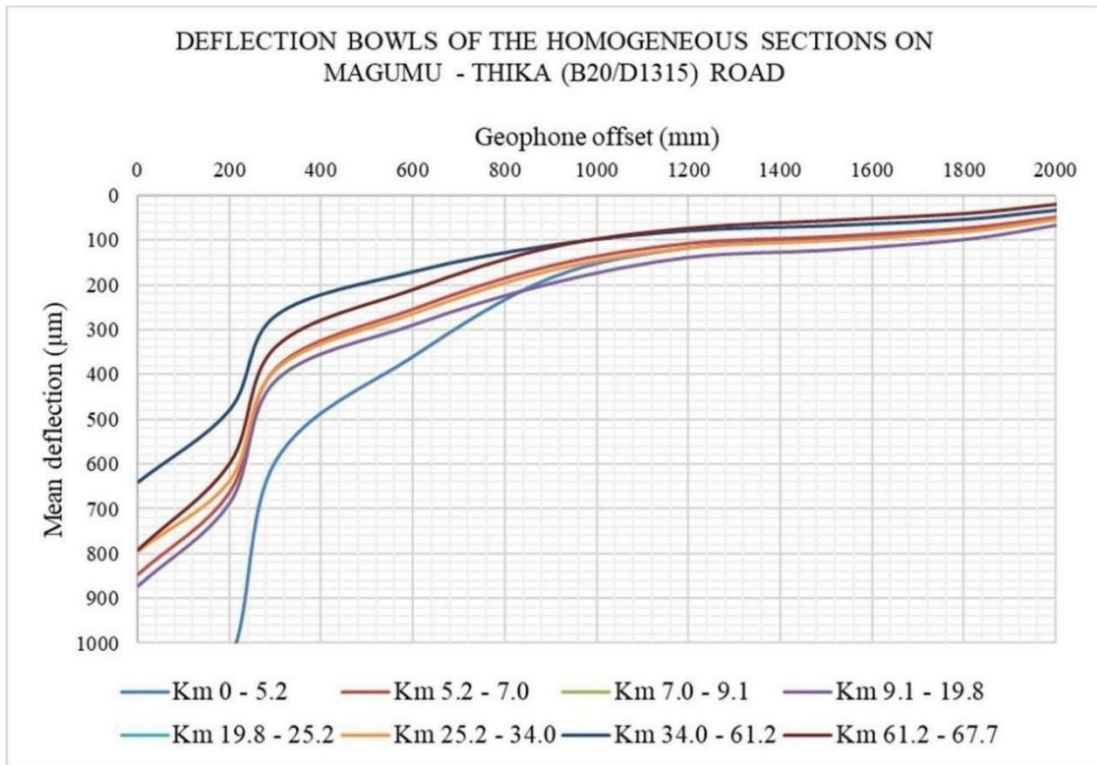
**Table 4.25: Mean deflections on Homogeneous Sections**

Road Name	Homogenous Section (HS)	Geophone offset (mm)								
		0	200	300	600	900	1200	1500	1800	2000
		Mean Normalized deflections in $\mu\text{m}$								
Magumu - Thika (B20/D1315) Road	Km 0 - 5.2	1278	1041	593	359	184	116	97	76	51
	Km 5.2 - 7.0	846	662	386	254	157	107	92	73	48
	Km 7.0 - 9.1	1090	833	469	316	202	136	118	94	64
	Km 9.1 - 19.8	872	686	414	290	197	139	123	99	68
	Km 19.8 - 25.2	1045	856	541	377	231	153	132	105	72
	Km 25.2 - 34.0	793	636	388	263	167	116	101	81	53
	Km 34.0 - 61.2	640	478	269	171	112	79	69	54	34
	Km 61.2 - 67.7	792	599	338	210	115	73	56	40	20
	<b>Overall Mean</b>	<b>811</b>	<b>632</b>	<b>369</b>	<b>243</b>	<b>152</b>	<b>104</b>	<b>90</b>	<b>71</b>	<b>46</b>

**Table 4.26: Statistical analysis of normalized central deflection data (nd1)**

Road Section	Homogeneous Section	Min nd1, $\mu\text{m}$	Mean nd1, $\mu\text{m}$	Max nd1, $\mu\text{m}$	Std. Dev.	D90, $\mu\text{m}$
Magumu - Thika (B20/D1315)  Road	Km 0 - 5.2	536	1278	2532	420	1824
	Km 5.2 - 7.0	555	846	1648	176	1076
	Km 7.0 - 9.1	731	1090	1995	289	1466
	Km 9.1 - 19.8	513	872	1509	170	1094
	Km 19.8 - 25.2	594	1045	2024	279	1408
	Km 25.2 - 34.0	459	793	1503	214	1071
	Km 34.0 - 61.2	352	640	1291	138	819
	Km 61.2 - 67.7	297	792	1576	220	1079
	<b>Overall Mean</b>	<b>297</b>	<b>811</b>	<b>2532</b>	<b>285</b>	<b>1181</b>

The mean deflections are presented in the form of deflection bowls in Figure 4.6.



**Figure 4.6: Deflection bowls of Homogeneous sections on Magumu – Thika (B20/D1315)**

**Road**

From the above data and graph, it is deduced that:

- The section between Km 34.0 – 61.2 the least flexible with a mean deflection value of 640µm while Km 0.0 – 5.2 is the most flexible with a mean deflection value of 1278 µm; and,
- The high flexibility of the pavement between Km 0 –5.2, Km 5.2 – 7.0, Km 7.0 –9.1, Km 9.1 – 19.8 and Km 19.8 –25.2 are due to low bearing capacity of both subgrade and native soils. This may be influenced by high moisture regime due to proximity to the forest cover and contamination of the gravel hence having lower strength as seen with the CBR values above.

**4.9 Back Calculation and Overlay Design**

**4.9.2 Pavement analysis parameters**

The deflection data was analyzed using RoSy Design Software. The necessary input parameters and the criteria for analysis of the outputs are as follows;

- Existing road Lane width of 3.5m with a carriageway width of 7.0m;

- Pavement Design Temperature of 250C;
- Existing pavement as established from logging;
- Fatigue laws as presented in RDM Part 3;
- Rehabilitation design period of 15 years with a 20-year sensitivity analysis; and,
- Daily ESA of 1770 established from the traffic survey.
- Based on the hydraulic design and the built-up conditions in the Study Area, drainage coefficient of 0.45 was applied.

#### 4.7.1 Back-Calculation for Pavement and Subgrade Moduli

Back calculation to establish pavement and subgrade layers’ moduli and thereby the condition of pavement and subgrade material was conducted using Rosy design software. The software complies with ASTM D5858 - 96(2015). The Rosy design software simulates the performance of the pavement based on the design parameters especially design traffic loading and pavement layers’ moduli from back calculation to determine pavement residual structural life and critical layers. The Pavement Layers Moduli (PLM) per Homogeneous Sections (HS) is summarized in Table 4.27.

**Table 4. 27: Average Pavement Layers Moduli on Homogeneous Sections**

Road Name	Homogeneous section	Mean Moduli, MPa				Critical Layer
		Surfacing	Base	Subbase	Subgrade	
Magumu - Thika (B20/D1 315) Road	Km 0 - 5.2	1874	264	724	61	Base
	Km 5.2 - 7.0	1662	345	642	88	Base
	Km 7.0 - 9.1	1233	255	699	76	Base
	Km 9.1 - 19.8	1848	378	621	84	Subbase
	Km 19.8 - 25.2	1432	360	911	64	Subbase

Km 25.2 - 34.0	1607	445	675	100	Subbase
Km 34.0 - 61.2	4041	406	755	146	Base
Km 61.2 - 67.7	5710	242	1269	103	Base
<b>Overall Mean</b>	<b>3025</b>	<b>369</b>	<b>780</b>	<b>109</b>	

The following was noted from the tabulated pavement moduli based on the criteria in section 4.9.2:

Surfacing: Only the Homogeneous sections on km 34.0 –67.7 had mean moduli values above 4000 MPa for AC Type I. The rest of the sections had mean moduli values below 4000 MPa and hence structurally deficient. GCS base: All except homogeneous sections between Km 25.2 – 45 have moduli values below 400 MPa for base quality GCS. CIG base: All the Homogeneous sections have moduli values below 1000 MPa CIG base. Subbase: All the homogeneous sections have moduli values above 300 MPa for cement/lime treated gravel subbase provided in RDM III, 1987. The RDM part III, 1987 notes that underlying foundational layers should have strength not less than 10% of the subsequent layers. This requirement is not met for the pavement on the sections between Km 0 – 5.2, Km 19.8 – 25.2 and Km 61.2 -67.7. All the other sections have subbase strength greater than ten (10) times the subgrade strength. The critical layer on the Homogeneous sections were either base or subbase indicating that the failures and/or the failures observed on the sections were resulting from the deficiency in either of the two layers.

The road underwent its last rehabilitated in 2010, designed to last for 15 years. Considering the study year was 2021, the remaining life of the pavement was estimated to be 4 years. According to the comprehensive analysis, focusing on homogenous sections, the projected remaining life, with a 15-year design life, averages at zero years. This suggests that the road was in a deteriorated condition and required rehabilitation.

#### 4.7.2 Overlay Requirements

The strengthening thicknesses for the homogeneous sections for selected design periods are as presented in Table 4.28.

**Table 4. 28: Required Mean Overlay Design (mm) and Residual life on Homogeneous Sections**



Road Name	Homogeneous section	Reinforcement, mm	
		15 -YR	20-YR
Magumu - Thika (B20/D1315) Road	Km 0 - 5.2	225	250
	Km 5.2 - 7.0	185	205
	Km 7.0 - 9.1	205	230
	Km 9.1 - 19.8	190	210
	Km 19.8 - 25.2	200	225
	Km 25.2 - 34.0	170	190
	Km 34.0 - 61.2	175	195
	Km 61.2 - 67.7	210	230
	<b>Overall Mean</b>	<b>185</b>	<b>205</b>

Note; Thicknesses  $\geq 60$ mm the overlay material was DBM and for thicknesses less than 60mm, the Overlay is Asphalt Concrete. This is because DBM has course aggregates of a bigger size than AC, this makes it stable at a thickness of greater than 60mm as compared to AC which has smaller aggregates size. The road was structurally deficient and requires average overlay of 185mm DBM for a 15-year design period. The thickness was big and this was revised to have Dense Bituminous mix of 125mm which was protected by a layer of Asphalt concrete of 50mm. Sectional interventions as per the homogenous section were required based on the failures encountered which included, carrying out repairs including potholes patching, reinstatement of failed base sections, and crack sealing where necessary. Further, it is expected that 50mm AC overlay will be laid on the entire road within 7 years in order for the road to carry the projected Traffic for 15-years.

# CHAPTER FIVE

## 5.0 CONCLUSION AND RECOMMENDATIONS

### 5.1 CONCLUSION

#### 5.1.1 The Pavement Surface defects on the pavement of Thika Magumu Road

The main defects observed were alligator and longitudinal cracking, deformation, and potholes. The surface condition of the road had a mean IRI value of 3.6 m/Km which indicates a **Fair** riding quality, rut depths ranging from 0.1 mm rated as of **No Rutting** to 17.9 mm rated as of **Medium Severity** and mean PCI of 61 rated as **Fair** in a range of 0 (**Failed**) to 100 (**Good**).

The structural condition of the road indicates that:

- **Surfacing:** The surfacing is deteriorated on most sections of the road.
- **Base:** The GCS and CIG base did not meet the elastic modulus requirements of 400 MPa and 1000 MPa respectively, provided in RDM III, 1987. The GCS was also contaminated with plastic materials and the suitability for re-use can only be assessed on the criteria for gravel.
- **Subbase:** The subbase gravel indicated suitability for re-use. The mean modulus for the subbase met the requirements of 200 MPa provided in RDM III, 1987; and, **Subgrade:** Presence of poor subgrade materials susceptible to moisture variations. It was of S4 quality.

The high deflections recorded for most sections of the road indicate that the pavement has low bearing capacity.

#### 5.1.2 The recommended appropriate pavement rehabilitation and overlay design

The pavement failures were treated differently: for example, for potholes they were rectified by hot asphalt mix pothole patching, rutting was treated by leveling and laying an overlay, longitudinal cracking by crack sealing and edge failure were treated by edge seal where a thread of asphaltic tack material was placed.

The road was structurally deficient and required an average overlay of 185mm DBM for a 15-year design period. This was divided into 2 with DBM of 125mm and AC of 50 mm to protect the DBM. Sectional interventions had to be carried out to reinstate the road such as pothole patching, crack sealing and cleaning of drains to avoid ponding of water. Further, it was

expected that 50mm AC overlay would be laid on the entire road within 7 years in order for the road to carry the projected Traffic for 15-years.

### **5.1.3 The remaining design life of the pavement**

The remaining life of the pavement is approximately four years, in regards to its last Rehabilitated in 2010/2012 to the pavement structure corresponding to RDM III Standard Pavement Structure type 3 for design traffic class T4 and design subgrade class S4. The design life was 15 years. However, according to the comprehensive analysis by the Rosy Software, focusing on homogenous sections, the projected remaining life, with a 15-year design life, averages at zero years. This suggests that the road was in a deteriorated condition and required rehabilitation.

## **5.2 Recommendations**

This section was organized into 2 sections that is recommendations and recommended area for further study.

### **5.2.1 Recommendations**

From surface and structural condition surveys the road was deficient for the projected Traffic Class T2. The appropriate intervention under the prevailing road condition was reconstruction of the entire road to Standard Pavement Structure Type 12 for traffic class T2 and subgrade class S5 as follows:

- Surfacing: 50 mm AC Type I (0/20);
- Base: 125 mm DBM (0/30) in two layers;
- Subbase: 125 mm base quality GCS (0/30) Class A; and,
- Subgrade: S5 subgrade.

Considering the different homogenous sections, sectional interventions below were recommended. Further, it is expected that 50mm AC overlay will be laid on the entire road within 7 years in order for the road to carry the projected Traffic for 15-years. Section 1 ( Km 0+000- Km 27+000) it was recommended reconstruction of the entire stretch by benching the shoulders to cater for the traffic class and reconstruction of the pavement layers that is GCS base and 2% cement improved gravel subbase with 50mm AC Type I (0/20). For Section 2 (km 27+000 to 67+654 ) it was recommended to carry out rehabilitation by widening the shoulders , pothole patching and overlaying with 75mm dense bituminous macadam (DBM) to strengthen the pavement and 50mm AC to protect the surface from water ingress due to the nature of DBM.

### **5.2.2 Recommended area for further study.**

An area that warrants further investigation in the pavement evaluation of Thika Magumu road included; the investigation on how extreme weather impacts pavement performance and develop strategies for designing resilient pavements that can withstand extreme weather condition. Additionally, there is need for further research on evaluation of the preventive maintenance strategies to extend the life of the existing pavements and development of advanced pavement performance prediction models based on real time data.

In conclusion, further study in the field of pavement evaluation should prioritize investigating the long term environmental impact of rehabilitation methods. This area of research is critical for developing sustainable, cost effective and Eco friendly solutions for road maintenance and construction. Exploring innovative materials and construction techniques will be essential for improving the longevity and sustainability of the road networks.

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## Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotecture Right	MPD Macrotecture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	1	0.2	6.3	6.6	5.5	3	1.6	4.6	5.7	0	1.4	1.0	1.2	3	48	Poor	32.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	0.4	4.3	3.3	3.1	1	2.7	0.8	3.2	0	1.1	0.9	1.0	3	61	Satisfactory	22.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	0.5	7.9	9.0	6.6	4	4.1	6.0	9.2	1	1.2	0.9	1.0	3	44	Poor	22.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	0.6	5.0	3.0	3.2	1	3.4	0.1	3.4	0	1.0	0.6	0.8	3	60	Satisfactory	34.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	0.7	4.2	4.2	3.5	1	1.9	1.1	2.8	0	0.7	0.8	0.8	1	58	Satisfactory	48.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	0.8	7.3	6.8	5.3	3	0.7	3.6	3.9	0	1.1	1.0	1.0	3	48	Poor	37.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	0.9	9.7	11.8	8.2	4	4.9	4.1	7.7	1	1.1	0.8	1.0	3	40	Poor	40.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.0	4.4	4.5	3.6	1	1.1	0.5	1.4	0	1.2	0.8	1.0	3	58	Satisfactory	50.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.1	15.8	18.1	14.7	4	4.0	0.9	4.7	0	0.9	0.7	0.8	1	31	Very Poor	32.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.2	10.6	9.3	7.9	4	4.4	1.7	5.8	0	1.2	1.0	1.1	3	41	Poor	29.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.3	5.5	3.8	4.1	3	2.8	0.8	3.2	0	1.0	0.8	0.9	3	54	Poor	42.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.4	3.3	2.8	2.6	1	0.1	1.5	1.5	0	0.9	0.7	0.8	3	66	Satisfactory	49.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.5	6.9	7.0	5.7	3	2.4	2.9	4.7	0	1.1	0.8	1.0	3	47	Poor	47.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.6	6.3	8.0	5.9	3	4.3	1.9	5.2	0	1.4	0.9	1.1	3	46	Poor	38.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.7	5.8	3.6	4.3	3	1.4	0.3	1.6	0	1.0	0.7	0.8	3	53	Poor	26	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.8	5.1	2.9	3.3	1	2.5	0.3	2.8	0	0.9	0.8	0.8	3	59	Satisfactory	41.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	1.9	7.3	2.9	4.4	3	4.5	0.6	4.9	0	1.1	0.7	0.9	3	53	Poor	27.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.0	5.5	4.0	3.5	1	1.8	0.0	1.8	0	1.1	0.5	0.8	3	58	Satisfactory	45.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.1	5.0	2.9	3.2	1	3.5	0.1	3.6	0	1.3	0.7	1.0	3	60	Satisfactory	48.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.2	3.7	2.3	2.3	1	0.6	0.6	1.1	0	1.2	0.9	1.1	3	69	Satisfactory	50.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.3	7.8	5.7	5.5	3	2.3	1.1	3.1	0	1.1	0.8	1.0	3	48	Poor	48.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.4	6.8	4.9	4.3	3	3.1	1.1	3.9	0	1.0	0.8	0.9	3	53	Poor	51.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.5	4.2	3.3	2.6	1	0.5	0.6	1.0	0	0.9	0.9	0.9	3	66	Satisfactory	53.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.6	6.6	9.8	6.2	4	8.6	2.3	10.3	1	0.7	0.6	0.6	1	45	Poor	49.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.7	4.6	2.7	3.1	1	0.6	5.4	5.7	0	0.8	0.5	0.6	1	61	Satisfactory	56.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.8	2.5	2.9	2.3	1	0.1	1.4	1.4	0	0.6	0.7	0.7	1	69	Satisfactory	54.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	2.9	4.6	2.7	3.1	1	1.2	0.3	1.4	0	0.9	0.6	0.7	1	61	Satisfactory	60	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.0	5.9	6.4	4.4	3	2.6	2.4	4.6	0	0.8	0.7	0.7	1	52	Poor	30.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.1	5.6	5.0	4.4	3	1.4	1.2	2.2	0	0.7	0.6	0.6	1	53	Poor	28.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.2	4.5	5.1	4.1	3	5.5	5.2	8.9	1	0.7	0.5	0.6	1	54	Poor	30.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.3	6.0	7.6	5.7	3	2.2	3.3	5.1	0	0.9	0.5	0.7	1	47	Poor	41.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.4	8.2	8.8	6.9	4	3.0	1.3	3.9	0	0.8	0.7	0.7	1	43	Poor	39.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.5	4.1	5.5	3.7	1	0.1	0.7	0.8	0	0.7	0.6	0.6	1	57	Satisfactory	42.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.6	6.4	5.2	4.8	3	0.4	0.9	1.3	0	0.7	0.6	0.7	1	50	Poor	50	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.7	5.3	4.7	3.9	1	0.8	1.0	1.8	0	1.0	0.7	0.8	3	56	Satisfactory	51.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.8	4.0	5.7	3.9	1	1.6	2.1	3.1	0	0.9	0.8	0.9	3	55	Satisfactory	50.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	3.9	4.2	4.5	3.4	1	0.5	1.1	1.5	0	1.0	0.7	0.9	3	59	Satisfactory	53.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.0	9.6	6.1	6.2	4	4.1	1.3	5.2	0	1.1	1.0	1.1	3	45	Poor	37.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.1	6.0	6.7	5.7	3	0.5	3.1	3.4	0	0.9	0.9	0.9	3	47	Poor	23.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.2	9.8	7.1	7.2	4	3.3	2.0	4.8	0	0.9	0.7	0.8	3	42	Poor	26.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.3	11.6	10.4	8.5	4	5.1	2.1	6.6	1	0.9	0.8	0.9	3	39	Very Poor	36.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.4	13.3	12.7	9.9	4	1.3	2.6	3.8	0	0.8	0.7	0.7	1	37	Very Poor	37.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.5	16.5	9.8	9.9	4	4.3	1.0	4.8	0	0.4	0.3	0.4	0	37	Very Poor	35.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.6	18.4	8.2	10.6	4	4.9	1.5	6.0	0	0.4	0.4	0.4	0	36	Very Poor	38.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.7	11.7	6.3	7.2	4	2.3	1.9	3.7	0	0.8	0.8	0.8	1	42	Poor	39.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	4.8	15.0	16.9	12.7	4	3.3	7.3	9.5	1	0.5	0.5	0.5	1	33	Very Poor	34.8	15 Jul 2021	14:45:31



Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotexture Right	MPD Macrotexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	1	4.9	13.2	12.1	8.8	4	4.2	2.8	6.1	1	0.7	0.8	0.7	1	39	Very Poor	29.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	5.0	11.0	9.1	8.0	4	2.8	3.4	5.5	0	0.7	0.7	0.7	1	40	Poor	39.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	5.1	8.1	7.0	5.8	3	1.5	2.0	3.2	0	1.0	0.9	1.0	3	47	Poor	50.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	1	5.2	3.8	3.3	2.9	1	0.3	0.3	0.6	0	1.1	1.1	1.1	3	63	Satisfactory	60.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	5.3	3.0	3.8	2.9	1	0.3	0.5	0.7	0	0.5	0.8	0.6	1	63	Satisfactory	52.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	5.4	4.5	3.6	3.5	1	0.3	0.2	0.4	0	0.6	0.5	0.6	1	58	Satisfactory	34.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	5.5	6.9	5.2	4.6	3	1.6	0.5	2.0	0	0.6	0.6	0.6	1	51	Poor	50.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	5.6	2.7	2.2	1.9	0	2.0	0.6	2.3	0	0.5	0.4	0.4	1	76	Good	67	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	5.7	3.4	4.2	3.2	1	1.6	0.9	2.2	0	0.6	0.4	0.5	1	60	Satisfactory	73.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	5.8	2.7	2.4	2.1	1	0.1	0.8	0.9	0	0.5	0.4	0.4	1	73	Good	75.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	5.9	4.1	4.8	3.8	1	0.3	0.4	0.6	0	0.5	0.4	0.5	1	56	Satisfactory	74.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.0	3.0	2.8	2.4	1	0.5	1.0	1.3	0	0.4	0.4	0.4	1	69	Satisfactory	78.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.1	3.0	2.1	2.0	0	0.2	0.6	0.7	0	0.4	0.4	0.4	0	75	Good	76.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.2	2.7	2.4	2.0	0	0.3	1.2	1.3	0	0.4	0.3	0.4	0	74	Good	82.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.3	2.6	2.6	2.2	1	0.5	1.8	2.0	0	0.5	0.3	0.4	1	71	Good	76.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.4	2.1	2.4	1.7	0	0.2	0.8	1.0	0	0.5	0.4	0.4	1	80	Good	70.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.5	4.9	4.9	4.4	3	0.0	1.3	1.3	0	0.6	0.5	0.5	1	52	Poor	31.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.6	4.1	3.4	3.1	1	0.4	1.5	1.9	0	0.6	0.6	0.6	1	61	Satisfactory	45.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	6.7	3.8	3.8	3.4	1	0.7	1.2	1.8	0	0.5	0.6	0.6	1	59	Satisfactory	28.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	2	7.1	3.2	2.3	2.2	1	1.1	1.3	2.0	0	0.8	0.7	0.7	1	71	Good	39.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.2	3.1	2.0	2.0	1	0.5	1.4	1.8	0	0.7	0.5	0.6	1	74	Good	42.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.3	4.3	4.5	3.9	1	0.9	2.0	2.3	0	0.5	0.4	0.4	1	55	Satisfactory	27.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.4	4.0	3.4	3.0	1	0.3	1.3	1.5	0	0.3	0.4	0.4	0	62	Satisfactory	44.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.5	4.1	3.7	3.3	1	1.5	0.7	2.0	0	0.3	0.3	0.3	0	60	Satisfactory	50.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.6	7.9	8.2	6.5	4	1.8	1.6	3.1	0	0.7	0.6	0.6	1	44	Poor	46.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.7	7.8	5.7	5.9	3	1.1	0.8	1.8	0	0.6	0.6	0.6	1	46	Poor	40.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.8	4.0	3.6	3.2	1	0.4	0.5	0.8	0	0.7	0.6	0.7	1	60	Satisfactory	48.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	7.9	8.2	8.8	7.2	4	2.3	2.4	4.0	0	0.6	0.6	0.6	1	42	Poor	26	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.0	15.2	13.6	12.2	4	4.2	3.0	6.4	1	0.8	0.7	0.8	1	34	Very Poor	28.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.1	5.2	5.2	4.3	3	1.7	0.8	2.3	0	0.7	0.5	0.6	1	53	Poor	39.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.2	5.4	5.3	5.0	3	0.3	0.7	0.9	0	0.4	0.5	0.5	1	50	Poor	41.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.4	9.6	11.3	9.8	4	2.2	0.7	2.6	0	0.6	0.5	0.6	1	37	Very Poor	28.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.5	2.9	5.0	3.3	1	0.3	0.9	1.2	0	0.5	0.5	0.5	1	60	Satisfactory	42.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.6	6.2	7.3	5.9	3	3.5	2.5	5.3	0	0.4	0.3	0.4	0	46	Poor	28.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.7	9.1	10.2	7.1	4	7.0	5.6	9.7	1	0.6	0.4	0.5	1	43	Poor	28.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.8	5.4	3.9	3.7	1	0.9	0.9	1.7	0	0.8	0.7	0.7	1	57	Satisfactory	48.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	8.9	3.9	3.1	2.7	1	1.2	0.5	1.6	0	0.6	0.5	0.6	1	65	Satisfactory	58.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	3	9.0	4.3	3.3	3.0	1	1.2	0.8	1.8	0	0.6	0.5	0.6	1	62	Satisfactory	49.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	9.3	3.4	4.3	3.2	1	0.3	0.4	0.6	0	0.5	0.5	0.5	1	60	Satisfactory	48.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	9.4	3.4	4.1	2.9	1	0.4	0.6	0.9	0	0.7	0.6	0.6	1	63	Satisfactory	56.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	9.5	6.0	5.4	4.6	3	0.3	1.7	1.9	0	0.7	0.6	0.6	1	51	Poor	52.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	9.6	3.5	3.9	2.8	1	0.5	0.7	1.1	0	0.6	0.5	0.5	1	64	Satisfactory	52.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	9.7	5.3	6.6	4.9	3	1.8	3.3	4.5	0	0.5	0.5	0.5	1	50	Poor	32.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	9.8	5.2	6.2	4.2	3	9.5	6.1	13.6	3	0.6	0.7	0.6	1	54	Poor	37.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	9.9	9.5	13.2	9.6	4	4.7	9.4	12.9	1	0.7	0.9	0.8	3	37	Very Poor	30.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.0	3.6	2.3	2.5	1	0.3	0.4	0.6	0	0.8	0.7	0.7	1	67	Satisfactory	45.3	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	4	10.1	3.7	2.3	2.4	1	0.1	0.7	0.7	0	0.8	0.8	0.8	1	69	Satisfactory	56.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.2	3.9	4.7	3.6	1	0.8	1.1	1.8	0	0.7	0.9	0.8	3	57	Satisfactory	51.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.3	5.0	4.4	3.8	1	1.8	3.4	4.8	0	0.8	0.7	0.8	1	56	Satisfactory	55	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.4	4.7	4.3	3.5	1	2.6	1.3	3.5	0	0.8	0.6	0.7	1	58	Satisfactory	60.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.5	2.7	4.1	2.6	1	1.1	1.3	2.2	0	0.5	0.5	0.5	1	66	Satisfactory	66.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.6	3.8	5.2	3.6	1	0.8	0.4	1.1	0	0.6	0.6	0.6	1	57	Satisfactory	57.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.7	6.0	5.2	4.7	3	1.6	1.1	2.3	0	0.6	0.6	0.6	1	51	Poor	53.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.8	4.0	5.8	3.9	1	1.1	0.2	1.2	0	0.7	0.5	0.6	1	55	Satisfactory	57.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	10.9	6.1	5.9	4.5	3	4.0	0.9	4.6	0	0.7	0.6	0.6	1	52	Poor	53	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.0	2.8	2.9	2.1	1	0.7	3.2	3.5	0	0.8	0.6	0.7	1	73	Good	52.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.1	2.0	1.7	1.5	0	0.1	1.3	1.4	0	0.6	0.4	0.5	1	83	Good	64.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.2	4.3	4.3	3.1	1	0.8	1.9	2.5	0	0.7	0.4	0.6	1	61	Satisfactory	62.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.4	3.8	3.9	3.0	1	0.1	0.8	0.9	0	0.7	0.7	0.7	1	62	Satisfactory	47.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.5	6.3	5.0	4.5	3	1.4	1.9	2.8	0	0.7	0.7	0.7	1	52	Poor	58.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.6	5.7	3.8	3.7	1	2.4	1.0	3.3	0	0.8	0.8	0.8	1	57	Satisfactory	58.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.7	3.8	3.6	2.9	1	1.4	2.9	4.1	0	0.6	0.7	0.7	1	63	Satisfactory	64	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.8	3.8	3.2	2.5	1	2.0	3.1	4.7	0	0.6	0.6	0.6	1	67	Satisfactory	65.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	11.9	3.0	2.4	2.1	1	0.1	2.6	2.6	0	0.5	0.5	0.5	1	72	Good	73.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.0	3.6	2.6	2.5	1	0.2	1.8	1.9	0	0.5	0.6	0.6	1	67	Satisfactory	74.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.1	3.6	3.6	2.9	1	0.7	0.5	1.1	0	0.5	0.5	0.5	1	63	Satisfactory	76.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.2	4.5	4.9	3.7	1	0.3	0.8	1.0	0	0.8	0.8	0.8	3	57	Satisfactory	73.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.3	4.0	5.6	3.7	1	0.7	0.5	1.1	0	0.9	0.8	0.9	3	56	Satisfactory	65.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.4	3.3	3.0	2.4	1	0.6	0.6	1.1	0	0.8	0.7	0.7	1	69	Satisfactory	68.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.5	4.5	3.6	3.1	1	0.8	0.8	1.5	0	0.9	0.7	0.8	3	61	Satisfactory	71.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.6	3.9	3.4	3.0	1	0.4	0.0	0.4	0	0.8	0.6	0.7	1	62	Satisfactory	73.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.7	5.8	9.2	5.9	3	5.2	2.8	7.2	1	0.8	0.7	0.7	1	46	Poor	72.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.8	5.3	7.2	4.5	3	2.2	2.0	3.9	0	0.7	0.6	0.6	1	52	Poor	67	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	12.9	3.6	3.3	2.9	1	0.6	0.5	1.0	0	0.8	0.5	0.6	1	63	Satisfactory	66.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.0	10.6	10.2	8.2	4	4.5	1.9	5.8	0	1.3	1.0	1.2	3	40	Very Poor	61.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.1	5.1	3.2	3.2	1	1.6	0.5	2.1	0	1.0	0.7	0.8	3	60	Satisfactory	63.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.2	15.3	14.0	11.5	4	4.9	2.8	7.1	1	1.0	0.7	0.9	3	35	Very Poor	60.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.3	9.7	8.5	6.5	4	3.6	4.1	6.9	1	1.0	0.7	0.8	3	44	Poor	54.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.4	12.8	9.3	8.5	4	6.7	1.7	7.7	1	1.2	0.8	1.0	3	39	Very Poor	50.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.5	3.9	5.0	3.5	1	0.9	1.1	1.8	0	0.7	0.6	0.7	1	58	Satisfactory	48.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.8	6.3	8.3	5.9	3	1.5	1.1	2.3	0	0.8	0.6	0.7	1	46	Poor	37	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	13.9	3.3	3.5	2.9	1	1.0	0.8	1.4	0	0.7	0.6	0.7	1	63	Satisfactory	45.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.0	3.7	3.5	2.9	1	0.4	0.2	0.5	0	0.8	0.6	0.7	1	62	Satisfactory	52.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.1	3.2	3.0	2.5	1	1.2	1.1	2.0	0	0.8	0.7	0.7	1	67	Satisfactory	54.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.2	4.5	3.3	3.3	1	0.2	0.5	0.6	0	0.7	0.6	0.7	1	59	Satisfactory	60.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.3	6.3	5.1	4.1	3	2.5	2.1	3.8	0	0.8	0.6	0.7	1	54	Poor	44	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.4	2.8	3.0	2.5	1	1.1	0.6	1.5	0	0.8	0.6	0.7	1	68	Satisfactory	56.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.5	4.3	6.1	4.3	3	3.2	1.2	4.1	0	1.0	0.7	0.8	3	53	Poor	47.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.6	4.4	5.3	4.0	1	1.4	1.0	2.3	0	0.8	0.8	0.8	1	55	Poor	52.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.7	2.6	2.3	2.0	0	0.4	0.9	1.2	0	0.8	0.6	0.7	1	74	Good	58.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.8	3.1	2.5	2.4	1	0.5	0.2	0.7	0	0.7	0.4	0.6	1	69	Satisfactory	63.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	14.9	3.5	4.1	3.3	1	0.2	0.8	1.0	0	0.6	0.6	0.6	1	60	Satisfactory	68.7	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	4	15.0	4.7	3.3	2.9	1	0.9	0.2	1.1	0	0.8	0.8	0.8	3	63	Satisfactory	67.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.1	7.0	8.6	6.5	4	2.6	1.4	3.5	0	0.8	0.8	0.8	1	44	Poor	54.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.2	3.1	3.7	2.7	1	1.2	0.8	1.8	0	0.7	0.6	0.7	1	65	Satisfactory	59.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.3	5.3	5.7	4.7	3	0.3	0.4	0.7	0	0.8	0.8	0.8	1	51	Poor	57	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.4	13.8	11.0	8.8	4	4.7	1.4	5.6	0	1.0	0.7	0.9	3	39	Very Poor	44.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.5	4.3	3.5	3.2	1	0.3	0.4	0.7	0	0.8	0.6	0.7	1	60	Satisfactory	44.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.6	3.0	3.5	2.4	1	0.1	0.5	0.6	0	1.1	0.7	0.9	3	68	Satisfactory	53.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.7	6.7	6.6	5.5	3	1.9	1.4	3.1	0	0.9	0.8	0.9	3	48	Poor	51.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.8	4.2	4.4	3.5	1	1.2	1.6	2.4	0	0.8	0.7	0.8	1	58	Satisfactory	52.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	15.9	3.3	2.3	2.3	1	0.2	1.0	1.2	0	1.0	0.6	0.8	1	69	Satisfactory	63.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.0	2.5	2.4	2.0	1	0.0	2.7	2.7	0	0.6	0.6	0.6	1	74	Good	64.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.1	4.5	4.3	3.4	1	0.9	3.3	4.0	0	0.8	0.8	0.8	1	59	Satisfactory	60.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.2	2.4	2.3	1.8	0	0.4	1.3	1.7	0	0.8	0.6	0.7	1	77	Good	64.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.3	3.4	3.2	2.5	1	0.8	1.7	2.4	0	0.8	0.8	0.8	1	67	Satisfactory	64.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.4	4.1	3.5	3.1	1	0.7	1.3	1.8	0	0.8	0.6	0.7	1	61	Satisfactory	64.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.5	6.3	8.5	5.5	3	1.3	2.3	3.3	0	0.8	0.8	0.8	3	48	Poor	56.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.6	4.0	5.2	3.9	1	1.4	0.9	2.1	0	0.9	0.9	0.9	3	55	Satisfactory	57.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.7	8.8	8.7	7.3	4	2.1	1.1	3.1	0	0.8	0.7	0.8	1	42	Poor	50.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.8	3.3	4.1	3.1	1	1.3	0.6	1.8	0	0.8	0.8	0.8	3	61	Satisfactory	55.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	16.9	4.5	5.6	4.1	3	2.6	0.4	2.9	0	1.0	0.7	0.8	3	54	Poor	55.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.0	4.5	3.5	3.4	1	0.8	0.5	1.3	0	0.7	0.5	0.6	1	59	Satisfactory	60.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.1	9.5	7.8	5.7	3	2.8	2.2	4.4	0	0.8	0.6	0.7	1	47	Poor	56.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.2	6.0	4.8	4.0	3	1.6	2.4	3.5	0	0.9	0.7	0.8	1	54	Poor	55.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.3	5.7	3.8	4.3	3	4.2	1.1	4.8	0	0.7	0.5	0.6	1	53	Poor	60.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.4	5.5	7.9	4.8	3	2.9	4.0	5.8	0	0.9	0.6	0.8	1	50	Poor	58.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.5	8.4	11.2	8.2	4	3.0	3.2	5.6	0	0.9	0.8	0.9	3	40	Very Poor	55.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.6	4.6	8.4	5.2	3	2.1	1.5	3.3	0	0.8	0.8	0.8	1	49	Poor	58.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.7	7.2	9.8	6.4	4	3.8	1.3	4.7	0	1.0	0.6	0.8	1	45	Poor	59.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.8	6.0	6.0	4.4	3	3.3	1.1	4.0	0	1.1	0.7	0.9	3	52	Poor	60.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	17.9	7.5	5.8	5.1	3	1.7	4.3	4.9	0	0.8	0.8	0.8	3	49	Poor	58.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.0	5.4	3.1	3.6	1	2.5	1.2	3.1	0	1.2	0.8	1.0	3	57	Satisfactory	61.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.1	7.5	4.5	5.0	3	3.2	1.0	3.9	0	1.1	0.7	0.9	3	50	Poor	60.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.2	7.1	5.2	4.3	3	2.1	1.5	3.2	0	0.9	0.7	0.8	1	53	Poor	58.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.3	8.9	10.4	8.2	4	6.1	1.3	7.0	1	0.8	0.5	0.7	1	40	Poor	55.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.4	10.7	7.5	7.0	4	6.5	1.0	7.1	1	0.9	0.6	0.8	1	43	Poor	57.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.5	4.6	7.0	4.3	3	1.4	1.6	2.7	0	0.7	0.6	0.6	1	53	Poor	60	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.6	9.4	9.2	7.0	4	1.8	2.0	3.1	0	0.8	0.5	0.7	1	43	Poor	53.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.7	4.9	5.0	4.1	3	1.0	1.6	2.4	0	0.5	0.7	0.6	1	54	Poor	55.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.8	11.4	10.7	8.7	4	2.6	3.2	5.2	0	0.6	0.7	0.7	1	39	Very Poor	52.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	18.9	8.9	6.0	5.7	3	3.6	2.4	4.8	0	0.9	0.7	0.8	1	47	Poor	49	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.0	4.9	4.3	4.0	1	0.9	0.8	1.5	0	0.9	0.6	0.7	1	55	Poor	51.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.1	5.2	5.8	3.8	1	2.0	0.9	2.6	0	0.9	0.8	0.9	3	56	Satisfactory	49.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.2	11.5	10.5	8.0	4	5.3	3.3	7.3	1	0.8	0.8	0.8	3	40	Poor	44.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.3	6.7	9.4	6.3	4	2.6	2.6	4.4	0	0.9	0.9	0.9	3	45	Poor	51.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.4	4.2	7.2	4.7	3	1.3	3.2	4.1	0	0.8	0.9	0.8	3	51	Poor	56.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.5	10.5	9.7	8.4	4	3.9	1.9	4.9	0	0.8	0.8	0.8	1	40	Very Poor	51.4	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotecture Right	MPD Macrotecture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	4	19.6	4.5	5.4	3.9	1	1.5	2.4	3.3	0	0.8	0.7	0.7	1	55	Satisfactory	56.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.7	9.0	12.1	8.4	4	7.3	3.8	9.5	1	0.8	0.6	0.7	1	40	Very Poor	50.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	4	19.8	5.0	8.7	5.1	3	4.6	3.5	6.9	1	0.8	0.5	0.6	1	49	Poor	48.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	19.9	11.0	12.7	9.5	4	4.0	3.5	6.7	1	0.7	0.6	0.7	1	38	Very Poor	43.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.0	10.3	12.5	9.2	4	4.0	2.7	5.9	0	0.7	0.7	0.7	1	38	Very Poor	47.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.1	3.7	5.3	3.7	1	4.3	1.4	5.2	0	0.8	0.5	0.6	1	56	Satisfactory	59.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.2	4.0	6.0	4.3	3	2.9	1.0	3.6	0	0.9	0.6	0.7	1	53	Poor	66.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.3	4.5	6.5	4.3	3	3.8	1.4	4.6	0	0.8	0.6	0.7	1	53	Poor	62.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.4	5.5	6.6	4.3	3	4.2	2.3	5.7	0	0.8	0.6	0.7	1	53	Poor	58.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.5	3.5	4.5	3.5	1	2.0	2.6	4.1	0	0.8	0.6	0.7	1	58	Satisfactory	68.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.6	2.8	4.2	2.8	1	1.9	1.3	2.8	0	1.0	0.8	0.9	3	64	Satisfactory	73.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.7	2.7	5.0	3.2	1	1.4	1.5	2.5	0	1.0	0.8	0.9	3	60	Satisfactory	75.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.8	3.6	5.4	3.7	1	2.0	1.7	3.3	0	1.0	1.0	1.0	3	57	Satisfactory	74	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	20.9	3.2	4.0	3.0	1	0.1	0.3	0.4	0	0.5	0.6	0.5	1	62	Satisfactory	72	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.0	4.8	3.7	3.3	1	1.5	1.8	2.9	0	0.6	0.6	0.6	1	59	Satisfactory	70.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.1	4.7	2.5	3.0	1	1.6	0.5	2.0	0	0.7	0.6	0.6	1	62	Satisfactory	64.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.2	4.1	4.8	3.6	1	1.7	1.7	3.1	0	0.9	0.8	0.8	3	57	Satisfactory	62.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.3	3.0	3.7	2.7	1	1.6	0.6	2.1	0	0.8	0.5	0.6	1	65	Satisfactory	64.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.4	3.3	4.1	3.1	1	1.8	1.2	2.8	0	0.8	0.6	0.7	1	61	Satisfactory	75.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.5	2.4	3.9	2.4	1	2.8	1.6	3.7	0	0.7	0.6	0.7	1	68	Satisfactory	79.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.6	4.2	3.9	3.3	1	3.7	0.4	3.9	0	0.9	0.6	0.8	1	59	Satisfactory	73.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.7	4.3	2.6	2.8	1	0.7	1.5	1.9	0	0.5	0.5	0.5	1	64	Satisfactory	74.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.8	4.1	4.3	3.5	1	0.9	3.5	4.1	0	0.5	0.6	0.5	1	58	Satisfactory	71.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	21.9	4.7	5.3	3.7	1	1.0	1.8	2.6	0	0.7	0.8	0.8	1	57	Satisfactory	68.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.0	3.0	3.8	2.8	1	1.6	1.6	2.7	0	0.8	0.5	0.7	1	64	Satisfactory	71.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.1	4.2	3.9	3.4	1	1.6	1.2	2.4	0	0.7	0.4	0.6	1	59	Satisfactory	74.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.2	4.1	2.8	2.7	1	1.9	1.9	2.9	0	0.6	0.6	0.6	1	64	Satisfactory	75	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.3	3.1	3.5	2.6	1	1.6	1.9	3.3	0	0.7	0.7	0.7	1	66	Satisfactory	81.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.4	3.6	5.7	3.5	1	3.9	0.5	4.1	0	1.1	0.6	0.9	3	58	Satisfactory	78.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.5	3.4	3.5	2.7	1	0.3	1.0	1.2	0	0.9	0.7	0.8	3	65	Satisfactory	75.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.6	4.2	4.8	3.6	1	1.0	1.5	2.1	0	0.9	0.7	0.8	1	57	Satisfactory	65.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.7	4.0	6.1	3.8	1	1.7	1.1	2.5	0	0.9	0.6	0.7	1	56	Satisfactory	60	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.8	4.0	3.9	3.2	1	0.6	0.9	1.4	0	0.8	0.5	0.7	1	60	Satisfactory	66.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	22.9	5.5	4.6	4.1	3	1.2	0.4	1.5	0	0.7	0.6	0.7	1	54	Poor	73	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.0	4.5	7.1	4.7	3	2.1	1.4	3.3	0	0.7	0.5	0.6	1	51	Poor	75.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.1	3.2	3.1	2.5	1	1.0	1.2	2.0	0	0.7	0.6	0.6	1	67	Satisfactory	63.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.2	3.3	2.6	2.2	1	0.4	0.8	1.2	0	0.5	0.6	0.5	1	71	Good	57.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.3	3.3	2.7	2.4	1	1.4	2.4	3.0	0	0.6	0.5	0.5	1	68	Satisfactory	63.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.4	3.0	2.2	1.9	0	0.9	1.0	1.6	0	0.5	0.5	0.5	1	75	Good	67.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.5	6.9	6.8	5.8	3	3.2	1.7	4.2	0	0.8	0.7	0.8	1	47	Poor	72.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.6	9.6	7.9	6.7	4	3.3	4.1	6.6	1	0.7	0.7	0.7	1	44	Poor	69.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.7	4.2	8.4	5.4	3	5.0	1.4	5.7	0	0.8	0.6	0.7	1	48	Poor	64.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.8	5.1	5.0	3.8	1	2.5	0.3	2.6	0	1.0	0.8	0.9	3	56	Satisfactory	67	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	23.9	5.9	3.8	3.7	1	2.2	2.0	3.8	0	1.1	0.9	1.0	3	57	Satisfactory	68.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.0	3.7	4.5	3.4	1	2.7	0.1	2.8	0	0.7	0.5	0.6	1	59	Satisfactory	64.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.1	4.0	3.6	3.2	1	3.0	2.1	4.6	0	0.8	0.8	0.8	1	61	Satisfactory	59.6	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotexture Right	MPD Macrotexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	5	24.2	3.2	2.2	2.2	1	4.2	0.2	4.2	0	0.8	0.6	0.7	1	71	Good	63.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.3	4.6	5.5	4.0	1	2.6	1.8	4.0	0	1.1	0.8	1.0	3	55	Poor	73.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.4	5.6	6.8	5.4	3	4.2	0.6	4.5	0	1.0	0.6	0.8	3	48	Poor	68.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.5	3.7	2.9	2.5	1	4.5	0.6	4.9	0	1.1	0.7	0.9	3	67	Satisfactory	68.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.6	4.6	6.1	4.0	1	3.6	2.3	5.3	0	1.3	1.0	1.1	3	55	Poor	68	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.7	4.1	6.2	4.0	3	3.2	0.8	3.7	0	1.0	0.7	0.9	3	55	Poor	65.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.8	3.3	3.8	2.9	1	2.3	1.3	3.6	0	0.8	0.7	0.8	1	63	Satisfactory	63	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	24.9	2.9	4.8	3.1	1	2.1	1.2	2.9	0	0.7	0.9	0.8	3	61	Satisfactory	55.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	25.0	4.5	3.6	3.4	1	4.6	0.7	5.2	0	0.8	0.7	0.8	1	59	Satisfactory	30.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	25.1	3.3	4.7	3.2	1	2.3	0.7	2.9	0	0.9	1.1	1.0	3	61	Satisfactory	38.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	5	25.2	4.6	4.9	4.3	3	2.1	0.0	2.1	0	0.8	0.9	0.9	3	53	Poor	31.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	25.3	3.7	3.2	2.8	1	2.1	0.8	2.9	0	1.3	1.0	1.1	3	64	Satisfactory	51.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	25.4	4.3	2.7	2.9	1	0.2	2.4	2.5	0	0.9	0.7	0.8	3	62	Satisfactory	66.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	25.5	6.9	6.5	5.3	3	1.2	1.0	2.1	0	0.9	0.8	0.8	3	48	Poor	66.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	25.6	5.1	5.2	4.0	3	4.2	1.4	5.1	0	1.4	1.3	1.3	4	55	Poor	66.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	25.7	6.7	6.5	5.1	3	4.7	1.4	5.6	0	1.3	1.1	1.2	3	49	Poor	70.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	25.8	6.0	9.0	5.8	3	7.7	2.0	8.8	1	1.2	1.0	1.1	3	47	Poor	68.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	25.9	6.3	7.7	5.2	3	2.4	2.8	4.7	0	1.2	1.1	1.1	3	49	Poor	68.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.0	5.2	4.6	4.0	1	3.6	0.5	3.9	0	1.2	1.1	1.2	3	55	Poor	67.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.1	4.5	4.4	3.2	1	3.2	0.8	3.8	0	1.3	1.3	1.3	4	60	Satisfactory	70.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.2	4.6	5.9	4.1	3	4.2	0.6	4.6	0	1.3	1.0	1.1	3	54	Poor	71.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.3	7.2	5.6	5.1	3	2.6	1.4	3.6	0	1.3	1.1	1.2	3	49	Poor	69.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.4	6.8	8.9	6.2	4	2.5	3.3	5.7	0	1.4	1.1	1.3	4	45	Poor	72.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.5	6.9	5.7	5.0	3	2.2	1.0	2.9	0	1.5	1.1	1.3	4	49	Poor	69.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.6	3.5	3.2	2.3	1	2.7	0.7	3.2	0	0.7	0.7	0.7	1	69	Satisfactory	73	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.7	3.3	2.9	2.7	1	2.7	2.3	4.1	0	0.7	0.5	0.6	1	65	Satisfactory	71	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.8	3.2	2.3	2.3	1	0.9	4.2	4.2	0	0.7	0.8	0.8	1	70	Good	68.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	26.9	3.4	2.3	2.4	1	1.0	0.9	1.7	0	0.9	0.8	0.8	3	68	Satisfactory	62.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.0	3.1	2.4	2.4	1	1.3	1.4	2.5	0	0.9	0.7	0.8	3	68	Satisfactory	63.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.1	3.0	3.0	2.6	1	1.0	1.1	1.7	0	1.1	0.9	1.0	3	66	Satisfactory	70.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.2	3.0	2.6	2.5	1	1.2	0.7	1.7	0	0.7	0.7	0.7	1	67	Satisfactory	71.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.3	3.5	2.3	2.5	1	1.9	3.1	4.9	0	0.7	0.7	0.7	1	67	Satisfactory	62.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.4	3.2	3.1	2.6	1	2.6	0.2	2.7	0	0.9	0.6	0.8	1	66	Satisfactory	65.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.5	3.3	2.6	2.5	1	1.1	2.8	3.4	0	0.9	0.7	0.8	3	68	Satisfactory	73.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.6	3.2	2.1	2.1	1	1.5	2.9	3.6	0	0.8	0.7	0.8	1	72	Good	67.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.7	2.7	2.3	2.1	1	1.3	1.8	2.7	0	0.7	0.6	0.7	1	73	Good	59	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.8	3.4	2.7	2.6	1	4.9	0.8	5.3	0	0.8	1.0	0.9	3	66	Satisfactory	53.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	27.9	3.5	3.2	2.8	1	2.6	0.1	2.7	0	0.7	0.6	0.7	1	64	Satisfactory	55	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.0	2.3	2.3	2.0	0	3.5	0.4	3.6	0	0.8	0.7	0.7	1	74	Good	46.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.1	3.1	2.2	2.1	1	1.5	3.3	4.4	0	0.7	0.7	0.7	1	73	Good	50	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.2	3.4	3.1	2.8	1	1.5	2.9	4.1	0	0.6	0.7	0.7	1	64	Satisfactory	37.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.3	3.8	3.8	3.0	1	3.2	1.1	4.2	0	0.6	0.6	0.6	1	62	Satisfactory	52	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.4	2.9	2.6	2.3	1	3.7	1.0	4.4	0	0.5	0.5	0.5	1	70	Satisfactory	60.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.5	3.6	3.7	3.0	1	3.6	1.6	4.5	0	1.0	0.9	1.0	3	62	Satisfactory	59.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.6	2.8	2.5	2.0	1	1.8	1.3	2.7	0	1.3	1.3	1.3	4	74	Good	59	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.7	3.0	2.1	2.1	1	1.5	0.8	2.0	0	1.3	1.1	1.2	4	73	Good	59.9	15 Jul 2021	14:45:31



Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	6	28.8	2.8	2.4	2.2	1	1.7	1.9	3.2	0	0.8	0.7	0.7	1	71	Good	56.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	28.9	3.3	2.5	2.3	1	1.3	2.4	3.3	0	1.2	1.1	1.1	3	69	Satisfactory	59.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.0	3.6	2.8	2.4	1	2.3	1.6	3.7	0	1.1	0.9	1.0	3	68	Satisfactory	62.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.1	3.3	2.4	2.3	1	0.8	1.9	2.6	0	1.2	1.1	1.2	3	69	Satisfactory	61.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.2	3.0	3.4	2.5	1	1.4	1.3	2.4	0	1.1	1.1	1.1	3	67	Satisfactory	64.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.3	3.0	2.8	2.5	1	2.3	0.5	2.5	0	1.2	1.1	1.1	3	67	Satisfactory	60.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.4	3.8	2.6	2.5	1	2.9	0.8	3.4	0	1.5	1.0	1.2	4	67	Satisfactory	60.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.5	4.3	3.3	3.0	1	1.8	2.5	3.6	0	1.5	1.3	1.4	4	62	Satisfactory	62.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.6	5.1	6.0	4.4	3	4.2	2.8	6.2	1	1.3	1.1	1.2	4	52	Poor	57.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.7	4.5	5.7	4.1	3	3.3	1.5	4.3	0	1.6	1.1	1.4	4	54	Poor	62.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.8	4.4	3.3	3.2	1	1.5	1.7	2.7	0	1.4	1.2	1.3	4	60	Satisfactory	50.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	29.9	4.6	3.9	3.7	1	1.0	2.2	3.1	0	0.9	1.2	1.1	3	56	Satisfactory	31.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.0	4.0	2.7	2.8	1	1.0	0.6	1.5	0	1.0	0.9	1.0	3	64	Satisfactory	28.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.1	4.5	4.4	3.9	1	0.9	0.4	1.2	0	0.9	1.0	1.0	3	55	Satisfactory	22.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.3	3.2	2.3	2.3	1	0.2	2.9	3.0	0	1.1	1.3	1.2	4	70	Satisfactory	41.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.4	2.6	3.4	2.5	1	2.1	0.9	2.7	0	1.4	1.2	1.3	4	68	Satisfactory	54.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.5	3.4	3.8	2.8	1	2.7	2.6	4.8	0	0.8	0.6	0.7	1	64	Satisfactory	63.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.6	2.8	2.7	2.3	1	1.9	0.4	2.3	0	1.0	0.6	0.8	1	70	Satisfactory	58.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.7	2.6	4.0	2.8	1	1.5	0.9	2.1	0	1.1	0.9	1.0	3	64	Satisfactory	57.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.8	4.1	3.3	3.1	1	2.9	0.7	3.4	0	0.8	0.7	0.8	1	61	Satisfactory	50.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	30.9	4.6	3.4	3.2	1	2.7	1.7	3.7	0	0.8	0.8	0.8	1	60	Satisfactory	56.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.0	3.3	2.9	2.6	1	0.9	0.6	1.2	0	0.7	0.8	0.7	1	66	Satisfactory	62.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.1	3.7	2.1	2.2	1	1.8	0.8	2.2	0	0.7	1.0	0.8	3	71	Good	54.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.2	3.5	3.5	3.0	1	4.9	1.7	6.1	1	1.2	1.2	1.2	4	62	Satisfactory	55.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.3	3.7	2.3	2.5	1	1.3	0.3	1.4	0	1.2	0.9	1.1	3	67	Satisfactory	54.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.4	3.8	3.0	2.8	1	1.5	0.7	2.1	0	1.0	0.9	1.0	3	64	Satisfactory	48	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.5	2.6	2.7	2.3	1	4.5	0.2	4.6	0	0.7	0.6	0.6	1	69	Satisfactory	52.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.6	2.5	3.3	2.6	1	3.8	0.1	3.9	0	0.6	0.5	0.6	1	66	Satisfactory	61.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.7	3.1	2.3	2.2	1	5.4	0.5	5.5	0	0.6	0.5	0.5	1	71	Good	69.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.8	3.0	2.4	2.2	1	7.7	0.5	7.8	1	0.6	0.6	0.6	1	71	Good	70.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	31.9	3.1	2.6	2.4	1	2.9	0.3	3.0	0	0.5	0.6	0.5	1	68	Satisfactory	68.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.0	3.0	2.8	2.3	1	2.8	2.0	4.1	0	0.5	0.6	0.6	1	69	Satisfactory	68.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.1	2.9	2.6	2.3	1	2.2	0.4	2.4	0	0.7	0.6	0.7	1	70	Good	63.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.2	3.3	2.7	2.5	1	3.1	0.2	3.1	0	0.6	0.6	0.6	1	67	Satisfactory	68.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.3	2.4	2.2	1.8	0	1.3	0.9	2.0	0	0.7	0.6	0.7	1	78	Good	72.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.4	3.1	3.0	2.6	1	4.6	0.4	4.8	0	0.9	0.7	0.8	3	66	Satisfactory	66	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.5	3.1	3.4	2.6	1	4.2	0.8	4.5	0	1.0	0.7	0.8	3	66	Satisfactory	61	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.6	4.0	3.6	2.9	1	2.3	2.8	4.9	0	0.9	1.0	1.0	3	62	Satisfactory	52.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.7	3.5	2.9	2.6	1	2.7	0.5	3.0	0	0.8	0.7	0.7	1	66	Satisfactory	55.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.8	3.3	3.4	2.7	1	2.4	2.1	4.1	0	0.8	0.9	0.9	3	65	Satisfactory	64.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	32.9	3.2	3.2	2.5	1	1.7	3.1	3.9	0	0.8	0.8	0.8	3	67	Satisfactory	66.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.0	3.3	3.9	3.0	1	1.6	2.6	3.7	0	0.9	0.9	0.9	3	62	Satisfactory	61.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.1	5.6	4.9	4.5	3	2.4	0.4	2.7	0	1.3	1.3	1.3	4	52	Poor	30.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.2	3.8	4.1	3.5	1	1.3	1.1	2.1	0	1.1	1.1	1.1	3	58	Satisfactory	36.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.3	8.2	7.4	6.3	4	2.0	1.7	3.0	0	1.1	1.1	1.1	3	45	Poor	28.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.4	3.1	2.6	2.3	1	3.0	0.6	3.1	0	0.8	0.7	0.8	1	69	Satisfactory	39.6	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	6	33.5	3.7	3.1	2.7	1	1.2	0.9	1.9	0	0.8	0.7	0.8	1	65	Satisfactory	62.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.6	4.2	3.5	3.3	1	1.2	0.6	1.7	0	1.2	1.0	1.1	3	59	Satisfactory	28.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.7	3.2	3.3	2.5	1	1.3	1.4	2.3	0	1.1	1.0	1.0	3	68	Satisfactory	31	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.8	6.8	5.8	5.6	3	3.4	1.6	4.0	0	1.1	1.1	1.1	3	47	Poor	33.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	33.9	3.7	3.7	2.9	1	3.0	3.8	5.5	0	1.0	1.1	1.1	3	63	Satisfactory	52.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	6	34.0	2.8	3.5	2.6	1	2.2	3.0	4.5	0	1.4	1.1	1.2	4	66	Satisfactory	55.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.1	4.3	3.5	2.9	1	3.7	1.0	4.2	0	1.2	1.2	1.2	4	63	Satisfactory	54.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.2	3.1	4.6	3.0	1	2.6	5.1	6.6	1	1.1	1.0	1.1	3	62	Satisfactory	64.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.3	3.1	3.4	2.6	1	2.5	1.9	3.5	0	0.9	1.0	0.9	3	66	Satisfactory	67.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.4	3.1	3.0	2.5	1	1.3	1.9	2.9	0	0.8	1.2	1.0	3	67	Satisfactory	61.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.5	4.3	3.0	3.0	1	6.8	1.2	7.2	1	0.9	1.3	1.1	3	62	Satisfactory	56.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.6	3.0	2.8	2.3	1	1.7	1.3	2.5	0	1.0	1.3	1.1	3	70	Satisfactory	55.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.7	3.5	4.0	3.3	1	0.9	2.1	2.7	0	1.3	1.3	1.3	4	59	Satisfactory	55	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	34.9	4.9	4.0	3.4	1	2.9	1.3	3.6	0	1.2	0.9	1.1	3	59	Satisfactory	32	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.0	3.5	5.0	3.6	1	2.0	5.1	6.6	1	1.0	1.2	1.1	3	57	Satisfactory	44.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.1	2.6	2.1	1.9	0	2.1	0.2	2.2	0	1.0	0.7	0.9	3	76	Good	53.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.2	2.8	3.2	2.4	1	0.2	2.5	2.6	0	0.9	1.0	1.0	3	68	Satisfactory	59.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.3	5.0	4.1	3.7	1	1.4	1.6	2.6	0	0.9	0.9	0.9	3	57	Satisfactory	69.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.4	4.7	2.8	3.1	1	2.0	1.7	3.2	0	1.5	1.2	1.4	4	61	Satisfactory	62.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.5	3.9	3.0	2.5	1	2.9	0.9	3.7	0	1.4	1.2	1.3	4	68	Satisfactory	47.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.6	5.5	5.3	4.6	3	2.8	1.5	3.9	0	1.4	1.4	1.4	4	51	Poor	30.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.7	3.0	4.2	2.9	1	2.7	6.8	8.7	1	1.7	1.7	1.7	4	63	Satisfactory	45.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.8	2.3	2.9	2.1	1	2.2	2.1	4.2	0	1.1	1.5	1.3	4	73	Good	51.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	35.9	4.1	3.9	3.1	1	4.6	0.6	4.9	0	1.3	1.3	1.3	4	61	Satisfactory	61.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.0	5.5	3.9	3.5	1	2.6	1.3	3.4	0	1.6	1.3	1.4	4	58	Satisfactory	60.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.1	6.0	5.6	5.3	3	2.4	0.1	2.4	0	1.5	1.3	1.4	4	48	Poor	33.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.2	5.6	3.1	3.7	1	5.0	0.7	5.4	0	1.1	1.2	1.1	3	57	Satisfactory	41.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.3	2.9	2.1	2.0	0	3.8	1.7	4.7	0	1.1	1.0	1.1	3	74	Good	52.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.4	3.1	3.1	2.5	1	4.4	2.8	6.5	1	1.3	1.3	1.3	4	67	Satisfactory	63.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.5	3.1	3.6	2.9	1	3.3	0.9	3.7	0	1.1	1.1	1.1	3	63	Satisfactory	66.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.6	3.6	4.7	3.3	1	2.7	2.6	4.4	0	1.2	1.5	1.4	4	60	Satisfactory	61.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.7	5.1	4.0	3.8	1	2.8	1.6	3.9	0	1.6	1.6	1.6	4	56	Satisfactory	50.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	36.8	3.7	5.0	3.6	1	3.5	4.2	6.0	1	1.5	1.5	1.5	4	57	Satisfactory	31.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.0	5.7	5.4	5.0	3	2.1	1.5	3.0	0	1.4	1.3	1.4	4	50	Poor	25.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.1	5.4	4.2	4.3	3	3.0	1.4	3.8	0	1.9	1.4	1.7	4	53	Poor	39.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.2	2.9	3.3	2.5	1	1.5	4.3	5.1	0	1.1	1.3	1.2	4	67	Satisfactory	52.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.3	4.3	3.3	3.3	1	2.6	1.6	3.5	0	1.2	1.2	1.2	3	60	Satisfactory	59.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.4	4.8	3.2	3.0	1	1.9	2.4	3.7	0	1.2	1.0	1.1	3	62	Satisfactory	62.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.5	2.9	2.3	2.0	1	2.5	0.5	2.8	0	0.9	0.6	0.8	1	73	Good	58.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.6	6.3	5.6	5.6	3	2.7	0.5	2.9	0	0.7	0.6	0.7	1	47	Poor	28.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.7	5.0	4.8	4.5	3	1.6	1.0	2.4	0	0.8	0.8	0.8	1	52	Poor	26.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.8	2.6	2.8	2.1	1	0.3	1.2	1.4	0	0.7	0.6	0.7	1	72	Good	49.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	37.9	4.3	2.4	2.8	1	3.1	0.5	3.3	0	0.9	0.7	0.8	3	64	Satisfactory	60.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.0	2.7	2.7	2.0	0	1.3	4.2	5.1	0	0.7	0.9	0.8	1	74	Good	60.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.1	3.0	3.2	2.8	1	2.1	2.3	3.5	0	0.7	0.9	0.8	1	64	Satisfactory	51	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.2	2.4	3.3	2.4	1	1.0	0.9	1.6	0	0.7	0.9	0.8	1	69	Satisfactory	53.5	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotecture Right	MPD Macrotecture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	7	38.3	3.4	2.8	2.5	1	2.8	1.7	3.7	0	1.1	1.0	1.0	3	67	Satisfactory	64.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.4	2.7	2.2	2.0	1	2.0	0.7	2.2	0	0.9	0.7	0.8	3	74	Good	71.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.5	2.6	1.8	1.8	0	2.2	0.6	2.5	0	0.8	0.6	0.7	1	77	Good	72.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.6	3.3	3.9	3.0	1	3.4	1.3	3.9	0	0.8	0.8	0.8	1	62	Satisfactory	65.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.7	2.7	2.4	2.0	1	1.3	0.5	1.7	0	0.8	0.7	0.8	1	73	Good	63.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.8	2.9	3.7	2.7	1	1.4	2.9	3.7	0	0.9	1.2	1.1	3	65	Satisfactory	66.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	38.9	3.4	3.1	2.6	1	1.8	2.3	3.4	0	0.8	0.9	0.9	3	66	Satisfactory	64.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.0	3.9	2.2	2.4	1	4.5	1.0	4.6	0	1.1	1.0	1.1	3	68	Satisfactory	61.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.1	3.2	2.8	2.3	1	2.0	1.1	2.8	0	1.1	1.2	1.1	3	70	Satisfactory	61.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.2	3.8	4.7	3.5	1	1.0	0.8	1.7	0	0.9	0.9	0.9	3	58	Satisfactory	60.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.3	3.2	2.7	2.4	1	0.6	1.9	2.3	0	0.8	0.9	0.9	3	68	Satisfactory	58.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.4	2.9	3.1	2.5	1	0.1	2.0	2.0	0	1.0	1.1	1.0	3	67	Satisfactory	55.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.5	3.4	2.7	2.6	1	1.6	1.1	2.4	0	1.3	1.2	1.2	4	66	Satisfactory	57.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.6	4.6	2.7	3.2	1	1.3	1.6	2.3	0	1.1	1.1	1.1	3	61	Satisfactory	63.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.7	4.0	3.6	3.1	1	3.2	1.3	3.7	0	1.4	1.1	1.2	4	61	Satisfactory	66.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.8	3.3	2.8	2.4	1	2.2	1.3	2.9	0	1.4	1.0	1.2	4	68	Satisfactory	67.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	39.9	2.9	3.1	2.4	1	2.9	1.1	3.4	0	1.3	1.2	1.2	4	69	Satisfactory	69.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.0	3.7	3.6	3.1	1	2.6	1.0	2.9	0	1.1	0.9	1.0	3	61	Satisfactory	74.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.1	2.7	3.3	2.2	1	3.0	2.1	4.1	0	0.9	1.1	1.0	3	70	Good	76	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.2	3.1	2.8	2.4	1	1.9	1.5	3.1	0	0.8	0.9	0.9	3	69	Satisfactory	67.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.3	3.1	3.6	2.7	1	0.6	6.2	6.3	1	0.7	0.8	0.8	1	65	Satisfactory	61.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.4	3.8	2.6	2.6	1	0.7	0.8	1.2	0	0.9	0.7	0.8	1	66	Satisfactory	64.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.5	3.2	3.4	2.6	1	0.2	2.1	2.2	0	0.7	0.6	0.6	1	65	Satisfactory	69.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.6	3.3	3.1	2.5	1	0.7	1.2	1.6	0	0.6	0.5	0.6	1	67	Satisfactory	71.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.7	3.0	2.6	2.2	1	1.0	0.8	1.6	0	1.0	0.7	0.8	3	70	Good	72.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.8	2.3	1.8	1.6	0	1.0	0.3	1.3	0	1.0	0.7	0.9	3	83	Good	70.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	40.9	3.1	4.0	2.8	1	1.1	1.4	2.4	0	1.2	1.2	1.2	4	64	Satisfactory	62.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.0	3.2	3.7	2.7	1	0.9	1.0	1.7	0	1.1	1.1	1.1	3	65	Satisfactory	56.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.1	3.6	2.6	2.4	1	2.3	0.7	2.7	0	1.0	1.0	1.0	3	69	Satisfactory	54	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.2	3.0	3.2	2.5	1	1.9	0.9	2.6	0	1.2	1.2	1.2	3	68	Satisfactory	60.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.3	3.2	2.4	2.3	1	1.1	0.9	1.9	0	1.1	1.0	1.1	3	70	Good	64.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.4	2.7	1.4	1.6	0	2.1	0.5	2.5	0	0.8	0.8	0.8	3	82	Good	67.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.5	3.3	3.1	2.5	1	0.8	0.8	1.5	0	1.2	1.3	1.2	4	67	Satisfactory	62.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.6	3.7	3.1	2.6	1	1.4	0.4	1.7	0	1.3	1.5	1.4	4	66	Satisfactory	55.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.7	4.6	4.7	3.6	1	2.6	0.5	2.9	0	1.5	1.6	1.6	4	57	Satisfactory	52.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.8	6.0	6.9	4.9	3	1.8	0.9	2.5	0	1.3	1.3	1.3	4	50	Poor	56.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	41.9	5.3	3.2	3.4	1	2.9	1.0	3.6	0	1.8	1.6	1.7	4	59	Satisfactory	54.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.0	3.1	3.7	2.8	1	3.3	1.6	4.5	0	1.5	1.5	1.5	4	64	Satisfactory	55.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.1	4.3	2.8	2.9	1	2.7	0.1	2.8	0	1.5	1.3	1.4	4	63	Satisfactory	60.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.2	7.4	5.5	5.9	3	2.5	1.8	3.5	0	1.7	1.4	1.5	4	46	Poor	24	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.3	7.4	5.7	6.0	3	2.3	0.5	2.6	0	1.7	1.4	1.5	4	46	Poor	22.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.4	5.9	4.5	4.2	3	2.8	0.4	3.0	0	1.8	1.4	1.6	4	54	Poor	44.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.5	5.4	5.0	4.3	3	4.2	0.8	4.8	0	1.7	1.4	1.5	4	53	Poor	51.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.6	2.5	2.9	2.2	1	3.5	0.7	4.0	0	0.9	1.2	1.0	3	71	Good	56	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.7	3.6	3.2	2.7	1	3.4	0.6	3.8	0	1.2	1.0	1.1	3	65	Satisfactory	57.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	42.8	6.1	5.7	5.2	3	5.0	0.3	5.2	0	1.4	1.2	1.3	4	49	Poor	31	15 Jul 2021	14:45:31



Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotexture Right	MPD Macrotexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	7	42.9	4.1	3.2	3.2	1	5.2	0.2	5.2	0	1.3	1.0	1.2	3	60	Satisfactory	42	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.0	3.9	3.2	2.7	1	4.0	0.2	4.1	0	1.3	1.3	1.3	4	65	Satisfactory	49.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.1	2.8	3.1	2.1	1	4.3	0.2	4.3	0	1.3	1.1	1.2	3	73	Good	58.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.2	3.1	3.5	2.6	1	3.4	0.3	3.6	0	1.4	1.2	1.3	4	66	Satisfactory	57.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.3	2.2	4.2	2.6	1	3.0	0.8	3.7	0	1.4	1.4	1.4	4	66	Satisfactory	61.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.4	4.4	3.1	3.2	1	3.3	0.2	3.4	0	1.6	1.6	1.6	4	60	Satisfactory	51.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.5	6.9	5.6	5.8	3	4.7	0.2	4.8	0	1.1	0.9	1.0	3	47	Poor	33	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.6	4.3	3.0	3.1	1	4.9	1.2	5.9	0	1.6	1.2	1.4	4	61	Satisfactory	42.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.7	6.1	6.5	5.7	3	2.1	0.3	2.2	0	1.1	1.2	1.2	3	47	Poor	33	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.8	3.0	3.1	2.4	1	5.1	0.7	5.2	0	1.5	1.3	1.4	4	69	Satisfactory	55	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	43.9	4.0	3.0	2.8	1	1.5	2.2	3.3	0	1.3	1.3	1.3	4	64	Satisfactory	55.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.0	8.2	3.3	4.6	3	5.2	0.8	5.6	0	1.5	1.4	1.4	4	51	Poor	48.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.1	3.4	3.1	2.6	1	3.8	0.7	4.2	0	1.6	1.3	1.4	4	66	Satisfactory	54.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.2	7.2	7.9	6.8	4	1.2	1.2	2.1	0	1.6	1.7	1.6	4	43	Poor	30.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.3	3.6	3.9	3.0	1	1.7	1.1	2.5	0	1.6	1.6	1.6	4	62	Satisfactory	42.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.4	4.1	4.4	3.7	1	1.3	0.9	2.0	0	1.4	1.4	1.4	4	57	Satisfactory	30.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.5	3.1	4.2	3.2	1	2.8	0.1	2.8	0	1.5	1.4	1.4	4	60	Satisfactory	32	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.6	3.2	3.6	2.8	1	2.6	0.1	2.6	0	1.6	1.4	1.5	4	64	Satisfactory	40.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.7	4.5	4.4	3.7	1	2.6	0.7	3.0	0	1.4	1.0	1.2	4	56	Satisfactory	43.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.8	2.0	2.4	1.8	0	1.6	0.2	1.7	0	1.3	0.9	1.1	3	78	Good	48.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	44.9	4.8	5.2	4.6	3	1.3	1.0	2.2	0	1.1	1.0	1.1	3	51	Poor	32.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.0	3.6	2.4	2.4	1	1.8	0.2	1.9	0	1.2	1.1	1.2	3	68	Satisfactory	31.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.1	3.0	2.9	2.1	1	3.0	1.4	3.8	0	1.2	1.2	1.2	4	72	Good	37.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.2	5.2	4.7	4.4	3	3.4	1.1	4.2	0	1.2	1.0	1.1	3	52	Poor	25.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.3	3.1	3.4	2.5	1	2.6	1.2	3.2	0	1.1	1.1	1.1	3	67	Satisfactory	22.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.4	4.4	4.3	3.9	1	1.8	0.9	2.5	0	1.0	1.0	1.0	3	56	Satisfactory	24.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.5	3.3	2.4	2.3	1	0.1	1.0	1.1	0	1.0	1.1	1.0	3	69	Satisfactory	28.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.6	5.8	7.2	5.4	3	3.3	2.2	5.1	0	1.4	1.5	1.4	4	48	Poor	25	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.7	5.1	4.8	4.1	3	3.2	1.8	4.5	0	1.6	1.5	1.6	4	54	Poor	46.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.8	2.5	3.4	2.3	1	0.6	0.8	1.4	0	1.3	1.7	1.5	4	70	Satisfactory	58.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	45.9	4.5	4.3	3.6	1	4.6	0.3	4.7	0	1.1	1.2	1.1	3	57	Satisfactory	46.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.0	3.4	3.7	3.0	1	2.3	2.2	3.6	0	1.1	1.2	1.2	3	62	Satisfactory	67.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.1	2.1	2.2	1.7	0	2.3	0.8	2.8	0	1.3	1.2	1.2	4	79	Good	64.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.2	1.9	2.5	1.8	0	0.8	0.5	1.2	0	0.9	1.0	0.9	3	78	Good	63	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.3	2.6	2.2	1.8	0	0.7	0.6	1.3	0	1.1	1.0	1.1	3	77	Good	62	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.4	2.4	2.8	2.2	1	0.7	1.2	1.9	0	1.1	1.1	1.1	3	71	Good	61.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.5	2.3	2.0	1.7	0	0.9	0.5	1.3	0	1.2	1.1	1.1	3	80	Good	59.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.6	1.7	1.8	1.4	0	1.0	0.5	1.5	0	1.0	0.9	0.9	3	87	Good	62.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.7	2.2	2.5	1.9	0	0.0	6.5	6.5	1	0.9	0.8	0.9	3	76	Good	57.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.8	1.3	2.2	1.4	0	0.7	2.0	2.7	0	0.6	0.6	0.6	1	86	Good	50.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	46.9	2.2	2.4	1.8	0	0.7	0.6	1.3	0	1.2	1.2	1.2	3	77	Good	51.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.0	2.2	2.1	1.7	0	0.3	0.4	0.7	0	1.0	0.8	0.9	3	80	Good	58.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.1	1.8	1.9	1.3	0	1.5	0.3	1.8	0	1.1	1.1	1.1	3	89	Good	60.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.2	2.2	2.8	1.9	0	0.1	1.1	1.2	0	0.9	0.9	0.9	3	76	Good	59.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.3	5.9	5.8	5.2	3	0.3	1.2	1.4	0	1.0	0.9	0.9	3	49	Poor	37.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.4	2.1	2.4	1.7	0	0.3	1.1	1.4	0	0.9	0.9	0.9	3	79	Good	45.6	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	7	47.5	6.3	6.5	5.8	3	0.3	1.1	1.4	0	0.9	0.8	0.8	3	46	Poor	43.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.6	3.1	2.9	2.5	1	0.4	0.9	1.2	0	0.8	0.7	0.8	1	67	Satisfactory	38.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.7	2.5	2.1	1.9	0	1.0	0.5	1.3	0	0.6	0.5	0.6	1	76	Good	54	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.8	2.3	2.5	1.9	0	0.1	1.8	1.9	0	0.5	0.5	0.5	1	76	Good	56	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	47.9	2.8	2.2	1.9	0	1.0	0.6	1.5	0	0.6	0.5	0.5	1	75	Good	66.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.0	2.0	2.3	1.8	0	0.1	4.0	4.0	0	0.5	0.5	0.5	1	78	Good	70.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.1	2.8	2.5	2.2	1	0.3	5.1	5.2	0	0.6	0.5	0.5	1	71	Good	64.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.2	2.0	2.4	1.6	0	0.2	0.8	1.0	0	0.6	0.5	0.5	1	82	Good	70.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.3	2.6	2.0	1.7	0	0.1	0.8	0.9	0	0.8	0.7	0.8	1	79	Good	66.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.4	2.0	2.0	1.6	0	0.2	1.4	1.6	0	0.7	0.6	0.6	1	82	Good	68.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.5	2.4	2.0	1.7	0	0.6	0.0	0.6	0	0.7	0.6	0.6	1	80	Good	66.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.6	3.3	2.8	2.3	1	0.2	0.8	0.9	0	0.8	0.9	0.8	3	69	Satisfactory	55.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.7	2.7	2.4	2.1	1	1.0	0.1	1.0	0	0.9	0.8	0.8	3	73	Good	54.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.8	12.7	9.8	10.8	4	0.5	0.7	1.1	0	1.3	1.1	1.2	3	35	Very Poor	33.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	48.9	2.3	2.6	2.0	0	0.1	0.2	0.3	0	1.3	1.2	1.3	4	74	Good	50.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.0	2.0	1.8	1.5	0	0.2	0.0	0.2	0	1.2	0.9	1.1	3	83	Good	60.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.1	3.8	3.9	3.6	1	0.5	0.5	0.8	0	1.2	1.0	1.1	3	57	Satisfactory	30.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.2	1.9	2.0	1.4	0	1.2	0.6	1.4	0	1.2	0.8	1.0	3	87	Good	52.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.3	2.2	2.2	1.7	0	1.0	0.5	1.3	0	1.0	0.8	0.9	3	79	Good	60.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.4	5.0	4.3	4.2	3	0.9	0.5	1.2	0	1.1	0.9	1.0	3	53	Poor	32.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.5	2.8	3.0	2.5	1	2.1	0.8	2.6	0	1.3	1.2	1.2	4	67	Satisfactory	36.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.6	4.2	4.6	4.2	3	0.5	0.5	1.0	0	1.0	1.1	1.1	3	54	Poor	30.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.7	2.1	2.0	1.8	0	1.8	0.0	1.8	0	1.2	1.0	1.1	3	77	Good	41.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.8	1.6	2.1	1.6	0	2.5	0.5	2.6	0	0.9	0.9	0.9	3	81	Good	56.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	49.9	2.0	1.7	1.5	0	2.3	0.7	2.5	0	0.7	0.8	0.7	1	85	Good	64.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.0	1.6	1.9	1.5	0	2.0	0.7	2.3	0	0.7	0.8	0.7	1	85	Good	67.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.1	1.5	1.6	1.2	0	1.1	0.1	1.2	0	0.6	0.5	0.6	1	92	Good	65.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.2	2.6	1.9	1.8	0	0.2	0.4	0.5	0	0.6	0.8	0.7	1	78	Good	65.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.3	1.3	2.0	1.3	0	1.4	0.8	2.0	0	0.7	0.7	0.7	1	88	Good	65.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.4	1.7	2.0	1.5	0	1.2	0.9	2.0	0	0.7	0.7	0.7	1	83	Good	69	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.5	2.2	2.5	2.0	1	2.8	0.1	2.9	0	0.6	0.7	0.6	1	74	Good	66.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.6	1.8	2.0	1.4	0	0.6	0.1	0.7	0	0.9	0.9	0.9	3	87	Good	67.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.7	1.8	2.1	1.5	0	1.1	0.2	1.2	0	0.7	0.8	0.8	1	83	Good	69.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.8	2.0	2.5	1.8	0	0.4	0.0	0.4	0	0.8	0.6	0.7	1	78	Good	68.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	50.9	3.4	1.8	2.2	1	2.0	0.1	2.0	0	0.8	0.7	0.7	1	71	Good	66.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.0	2.4	1.8	1.4	0	1.7	0.4	1.9	0	0.8	1.0	0.9	3	85	Good	61.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.1	2.6	4.4	2.8	1	1.6	1.0	2.5	0	1.1	1.0	1.0	3	64	Satisfactory	55.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.2	2.3	2.1	1.7	0	0.4	1.5	1.8	0	1.0	0.9	1.0	3	79	Good	49.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.3	2.0	2.2	1.6	0	0.3	0.3	0.6	0	0.9	0.8	0.8	3	82	Good	57.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.4	2.3	2.4	1.8	0	0.7	0.3	0.9	0	1.0	0.8	0.9	3	77	Good	59.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.5	1.5	2.4	1.6	0	1.0	2.7	3.1	0	1.1	1.1	1.1	3	81	Good	62.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.6	1.9	1.9	1.6	0	1.3	0.4	1.6	0	0.9	0.9	0.9	3	82	Good	67.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.7	1.9	1.7	1.5	0	2.7	0.6	3.0	0	1.0	0.7	0.9	3	83	Good	65.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.8	1.5	1.8	1.4	0	2.2	0.1	2.3	0	0.9	0.8	0.8	3	88	Good	64.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	51.9	3.9	2.7	2.9	1	1.4	0.5	1.7	0	1.0	0.9	1.0	3	62	Satisfactory	57.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.0	2.3	2.1	1.8	0	0.1	0.3	0.4	0	1.0	0.9	1.0	3	78	Good	62.4	15 Jul 2021	14:45:31

## Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotecture Right	MPD Macrotecture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	7	52.1	1.9	4.1	2.4	1	0.1	0.4	0.5	0	1.4	1.2	1.3	4	68	Satisfactory	56.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.2	2.0	1.7	1.5	0	0.3	0.2	0.5	0	1.4	1.1	1.3	4	84	Good	60.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.3	4.6	2.4	3.1	1	1.0	0.1	1.1	0	1.5	1.4	1.5	4	61	Satisfactory	50.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.4	4.9	5.7	5.0	3	0.3	1.0	1.3	0	1.5	1.5	1.5	4	50	Poor	31.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.5	3.1	2.3	2.1	1	0.5	0.6	1.1	0	1.0	0.9	1.0	3	73	Good	46.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.6	5.0	3.5	3.8	1	0.5	0.6	1.1	0	1.0	1.0	1.0	3	56	Satisfactory	31.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.7	5.1	5.0	4.2	3	0.3	0.5	0.7	0	1.0	1.0	1.0	3	54	Poor	29.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	52.9	4.8	4.2	4.1	3	2.0	0.3	2.2	0	1.2	1.1	1.1	3	54	Poor	29.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.0	7.1	5.6	5.6	3	0.9	0.8	1.7	0	1.3	1.1	1.2	4	47	Poor	25.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.1	4.5	3.4	3.3	1	0.2	1.5	1.6	0	1.3	1.3	1.3	4	60	Satisfactory	38.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.2	4.9	5.1	4.5	3	0.9	0.6	1.4	0	1.1	1.0	1.0	3	52	Poor	39.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.3	4.2	3.9	3.6	1	0.9	0.4	1.2	0	1.2	0.9	1.0	3	57	Satisfactory	35	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.4	5.7	1.8	3.0	1	0.1	0.1	0.2	0	1.0	1.0	1.0	3	62	Satisfactory	51.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.5	3.9	4.8	3.3	1	1.2	0.5	1.7	0	1.1	1.0	1.1	3	59	Satisfactory	56.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.6	4.1	3.6	3.1	1	0.9	2.6	3.5	0	1.1	1.0	1.1	3	61	Satisfactory	59.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.7	2.0	2.8	1.8	0	2.6	1.2	3.4	0	0.8	1.0	0.9	3	78	Good	56.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.8	2.7	4.8	2.7	1	0.5	1.8	2.2	0	1.1	1.0	1.1	3	65	Satisfactory	59.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	53.9	4.9	4.0	3.3	1	0.4	1.2	1.5	0	1.4	1.3	1.4	4	59	Satisfactory	52	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.0	3.9	2.7	2.7	1	0.1	0.1	0.3	0	1.0	1.1	1.1	3	65	Satisfactory	47.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.1	5.3	3.5	3.5	1	1.4	0.2	1.5	0	1.4	1.3	1.3	4	58	Satisfactory	62.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.2	8.6	4.1	5.2	3	1.6	0.5	2.0	0	1.5	1.5	1.5	4	49	Poor	60.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.3	11.4	3.6	6.0	4	4.6	1.1	5.3	0	1.8	1.8	1.8	4	46	Poor	51.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.6	7.1	6.3	6.2	4	1.6	1.9	3.2	0	1.6	1.5	1.6	4	45	Poor	30	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.7	4.1	4.6	3.4	1	1.3	3.6	4.5	0	1.8	1.8	1.8	4	59	Satisfactory	40.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.8	5.8	6.2	4.7	3	1.4	3.3	4.5	0	1.5	1.6	1.6	4	51	Poor	40.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	54.9	2.8	2.6	2.3	1	0.5	1.4	1.7	0	1.0	1.1	1.1	3	70	Good	45.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.0	6.6	6.1	5.9	3	0.3	1.8	2.1	0	0.9	0.9	0.9	3	46	Poor	29.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.1	6.8	6.7	6.2	4	1.0	0.2	1.2	0	1.0	0.9	1.0	3	45	Poor	29.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.2	3.5	4.0	3.1	1	0.7	0.2	0.9	0	1.1	1.0	1.0	3	61	Satisfactory	43.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.3	3.5	3.0	2.6	1	2.0	0.6	2.4	0	1.4	1.2	1.3	4	66	Satisfactory	49.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.4	4.2	2.8	2.9	1	1.3	0.7	1.9	0	1.4	1.2	1.3	4	63	Satisfactory	57.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.5	3.9	3.1	2.7	1	0.5	1.6	2.0	0	1.1	1.1	1.1	3	65	Satisfactory	55.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.6	5.4	3.9	3.6	1	0.4	2.2	2.6	0	1.1	1.3	1.2	3	57	Satisfactory	52.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.7	3.5	5.9	3.8	1	2.8	5.4	7.3	1	1.4	1.3	1.4	4	56	Satisfactory	50.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.8	3.5	4.2	2.8	1	0.7	1.2	1.8	0	1.2	1.1	1.1	3	64	Satisfactory	57.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	55.9	4.0	5.5	3.5	1	0.6	2.1	2.6	0	1.3	1.2	1.2	4	58	Satisfactory	43.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.0	6.9	3.2	4.1	3	1.6	0.2	1.7	0	1.2	1.2	1.2	4	54	Poor	52.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.1	4.6	4.5	3.7	1	1.6	0.6	2.1	0	1.3	1.0	1.1	3	57	Satisfactory	59.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.2	3.9	3.1	2.9	1	0.5	0.8	1.2	0	1.1	1.0	1.0	3	63	Satisfactory	65.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.3	1.9	5.1	2.9	1	1.5	3.7	4.8	0	1.1	1.3	1.2	3	63	Satisfactory	58.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.4	3.6	4.5	2.9	1	1.4	1.0	2.3	0	1.3	1.2	1.2	4	62	Satisfactory	58.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.5	5.6	3.3	3.4	1	0.6	0.5	1.0	0	1.1	1.2	1.1	3	59	Satisfactory	51.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.6	2.6	3.5	2.3	1	0.2	0.4	0.6	0	1.0	1.1	1.1	3	69	Satisfactory	42.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.7	2.6	5.3	3.2	1	1.0	1.6	2.5	0	1.1	1.3	1.2	3	60	Satisfactory	44.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.8	4.7	4.0	3.5	1	0.8	1.3	2.0	0	1.1	1.2	1.2	3	58	Satisfactory	47.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	56.9	4.8	4.3	3.4	1	0.6	2.5	2.8	0	1.1	1.3	1.2	3	59	Satisfactory	40.3	15 Jul 2021	14:45:31

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	7	57.0	2.5	5.6	3.2	1	0.7	6.7	7.2	1	1.1	1.3	1.2	3	60	Satisfactory	31.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.1	5.5	4.9	4.3	3	0.8	2.3	2.9	0	1.0	1.0	1.0	3	53	Poor	53	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.2	6.7	3.5	4.2	3	0.6	0.5	1.1	0	1.1	1.1	1.1	3	54	Poor	43.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.3	4.7	4.2	3.6	1	0.5	1.1	1.6	0	1.3	1.1	1.2	4	57	Satisfactory	49.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.4	2.7	3.5	2.4	1	0.4	0.8	1.2	0	1.1	1.1	1.1	3	68	Satisfactory	51.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.5	4.9	4.3	3.8	1	1.8	1.5	3.1	0	0.9	1.0	0.9	3	56	Satisfactory	56	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.6	2.0	5.2	2.7	1	0.5	6.5	6.8	1	0.8	1.2	1.0	3	65	Satisfactory	58.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.7	3.9	4.7	3.1	1	1.1	4.1	4.8	0	1.1	1.2	1.2	3	61	Satisfactory	58.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.8	4.1	2.7	2.7	1	4.9	0.3	5.2	0	0.6	0.7	0.7	1	65	Satisfactory	67.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	57.9	2.9	3.5	2.6	1	4.1	0.1	4.2	0	0.7	0.7	0.7	1	66	Satisfactory	65.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.0	2.4	2.4	1.9	0	0.4	0.7	1.1	0	0.6	0.7	0.7	1	76	Good	65.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.1	4.4	3.1	2.8	1	0.1	2.4	2.4	0	0.7	1.0	0.9	3	63	Satisfactory	67.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.2	3.3	3.4	2.6	1	0.7	1.9	2.5	0	0.7	0.6	0.6	1	66	Satisfactory	71.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.3	2.4	1.9	1.6	0	0.3	0.3	0.6	0	0.8	0.5	0.7	1	82	Good	71.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.4	3.4	1.9	2.0	0	0.2	0.4	0.7	0	0.8	0.5	0.6	1	75	Good	74.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.5	2.4	2.1	1.8	0	0.6	1.0	1.5	0	0.6	0.5	0.6	1	78	Good	81.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.6	1.7	3.2	1.8	0	0.0	6.0	6.0	1	0.6	0.6	0.6	1	77	Good	80.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.7	1.5	2.6	1.6	0	0.0	4.9	4.9	0	0.5	0.6	0.6	1	81	Good	81.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.8	2.6	2.2	1.9	0	0.1	0.6	0.7	0	0.8	0.7	0.8	1	75	Good	84.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	58.9	2.4	3.3	2.3	1	0.2	0.6	0.8	0	0.7	0.7	0.7	1	70	Satisfactory	83.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.0	3.5	3.4	2.6	1	0.3	1.8	2.0	0	0.9	0.8	0.9	3	66	Satisfactory	81.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.1	2.3	1.7	1.5	0	0.0	1.0	1.0	0	0.8	0.5	0.7	1	85	Good	83.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.2	2.5	1.5	1.6	0	0.0	3.5	3.5	0	0.7	0.7	0.7	1	81	Good	80	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.3	2.8	2.5	2.1	1	0.0	1.2	1.3	0	0.9	0.7	0.8	3	73	Good	84.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.4	1.9	2.6	1.7	0	0.0	3.1	3.1	0	0.9	0.8	0.8	3	80	Good	81	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.5	3.8	4.9	3.0	1	0.1	7.4	7.5	1	1.1	1.4	1.3	4	62	Satisfactory	79.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.6	5.7	9.2	5.7	3	0.4	9.3	9.5	1	1.3	1.8	1.6	4	47	Poor	58.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.7	4.1	6.8	4.2	3	2.2	4.4	5.8	0	1.1	1.5	1.3	4	54	Poor	41.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.8	6.9	6.8	4.3	3	2.0	3.1	4.6	0	1.3	1.1	1.2	4	53	Poor	46.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	59.9	4.0	3.1	2.6	1	5.3	0.0	5.3	0	1.0	0.9	0.9	3	66	Satisfactory	55.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.0	4.3	2.5	2.6	1	10.1	0.0	10.1	1	1.0	0.7	0.9	3	66	Satisfactory	54.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.1	5.0	7.4	4.8	3	1.1	2.6	3.6	0	1.3	1.4	1.4	4	51	Poor	66.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.2	2.8	6.9	3.7	1	0.2	8.1	8.2	1	1.2	1.5	1.4	4	57	Satisfactory	69.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.3	2.6	7.7	4.2	3	0.1	8.0	8.1	1	1.3	1.4	1.3	4	53	Poor	71.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.4	5.2	5.3	4.1	3	0.4	4.7	4.9	0	1.3	1.7	1.5	4	54	Poor	72.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.5	3.6	4.0	2.9	1	0.1	4.4	4.4	0	1.3	1.6	1.5	4	63	Satisfactory	74.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.6	5.3	9.0	5.6	3	0.9	5.5	6.2	1	1.4	1.5	1.4	4	47	Poor	69.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.7	4.4	4.7	3.5	1	1.5	1.1	2.4	0	1.2	1.1	1.2	3	58	Satisfactory	67.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.8	4.6	4.5	3.4	1	1.2	0.3	1.5	0	1.0	1.2	1.1	3	59	Satisfactory	61.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	60.9	5.0	2.9	3.0	1	0.8	0.1	0.9	0	1.0	1.0	1.0	3	62	Satisfactory	77.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	61.0	3.7	4.0	2.9	1	0.8	2.4	3.1	0	1.1	1.2	1.2	3	63	Satisfactory	76.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	61.1	2.7	5.9	3.3	1	1.8	1.5	3.0	0	1.1	1.0	1.1	3	60	Satisfactory	64.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	7	61.2	4.4	4.8	3.4	1	0.7	1.2	1.8	0	1.2	1.0	1.1	3	59	Satisfactory	63.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	61.3	6.0	8.5	6.2	4	0.4	1.3	1.7	0	1.4	1.0	1.2	3	45	Poor	35.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	61.4	3.1	6.9	3.8	1	1.1	2.5	3.3	0	1.0	1.4	1.2	3	56	Satisfactory	34.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	61.5	12.4	12.8	10.2	4	3.5	5.4	7.9	1	1.0	1.2	1.1	3	36	Very Poor	34	15 Jul 2021	14:45:31

## Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	8	61.6	5.7	7.7	5.0	3	4.3	1.6	5.9	0	1.1	1.0	1.1	3	50	Poor	40.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	61.7	10.5	11.1	9.1	4	1.7	4.0	5.4	0	1.3	1.2	1.2	4	38	Very Poor	26.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	61.8	9.6	6.4	6.3	4	4.2	7.0	10.7	1	1.1	1.3	1.2	4	45	Poor	39.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	61.9	13.1	6.6	7.9	4	1.6	2.4	3.9	0	1.4	1.2	1.3	4	41	Poor	49.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.0	8.1	4.8	5.1	3	1.7	1.1	2.6	0	1.5	1.1	1.3	4	49	Poor	44	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.1	7.5	7.3	5.9	3	2.8	1.4	3.9	0	1.1	0.8	0.9	3	46	Poor	39.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.2	4.7	2.4	2.8	1	3.7	0.2	3.8	0	1.4	0.8	1.1	3	64	Satisfactory	59.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.3	4.0	5.3	3.8	1	0.4	2.2	2.6	0	1.2	1.2	1.2	3	56	Satisfactory	61.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.4	5.0	5.1	4.2	3	1.2	0.2	1.3	0	1.3	0.9	1.1	3	54	Poor	65.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.5	9.1	7.1	6.4	4	7.5	3.5	8.6	1	1.8	1.5	1.7	4	44	Poor	62.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.6	9.6	5.2	5.8	3	3.2	2.1	5.3	0	1.5	1.4	1.5	4	47	Poor	52.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.7	9.6	7.3	6.8	4	2.1	7.7	9.0	1	1.4	1.7	1.6	4	43	Poor	58.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.8	4.8	3.8	3.1	1	1.4	0.7	2.1	0	1.2	0.9	1.0	3	61	Satisfactory	62.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	62.9	9.0	4.5	5.5	3	3.5	2.3	5.0	0	1.7	1.1	1.4	4	48	Poor	60.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.0	3.2	2.6	2.2	1	3.3	0.8	4.1	0	1.0	0.8	0.9	3	70	Good	66.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.1	7.0	2.4	3.9	1	5.4	0.0	5.5	0	0.8	0.5	0.7	1	55	Satisfactory	78.9	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.2	3.4	3.1	2.4	1	1.8	0.3	2.1	0	0.9	0.9	0.9	3	68	Satisfactory	82	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.3	4.7	6.1	4.3	3	2.2	3.6	5.3	0	1.1	1.3	1.2	4	53	Poor	74.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.4	8.4	3.5	4.5	3	2.3	1.5	3.6	0	1.4	0.9	1.1	3	52	Poor	67.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.5	4.8	5.0	4.0	1	2.0	3.5	4.9	0	1.2	1.2	1.2	3	55	Poor	55.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.6	7.4	7.6	5.7	3	3.3	2.6	4.6	0	1.4	1.1	1.3	4	47	Poor	42	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.7	6.2	3.4	3.9	1	1.2	1.0	2.0	0	1.1	1.1	1.1	3	55	Satisfactory	49	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.8	5.5	3.0	3.3	1	8.6	0.0	8.6	1	0.9	0.7	0.8	3	60	Satisfactory	69.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	63.9	3.8	3.6	3.1	1	6.2	0.9	6.9	1	0.9	0.7	0.8	1	61	Satisfactory	67.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.0	4.6	3.5	3.5	1	2.4	0.0	2.5	0	1.1	0.7	0.9	3	58	Satisfactory	56.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.1	1.8	1.8	1.4	0	1.0	0.2	1.2	0	0.6	0.7	0.7	1	86	Good	47.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.2	2.1	1.3	1.4	0	0.0	0.0	0.1	0	0.6	0.6	0.6	1	87	Good	40.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.4	9.8	10.7	8.1	4	3.6	9.7	13.1	3	1.7	1.7	1.7	4	40	Poor	33.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.5	8.3	7.5	6.6	4	2.5	1.1	3.5	0	1.5	1.2	1.4	4	44	Poor	26.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.6	3.4	2.5	2.4	1	1.1	0.4	1.5	0	1.3	1.0	1.2	3	68	Satisfactory	29.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.7	5.5	4.0	4.1	3	0.9	0.6	1.5	0	1.5	1.3	1.4	4	54	Poor	34.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.8	2.8	8.4	4.5	3	0.4	8.8	9.0	1	1.5	1.7	1.6	4	52	Poor	43.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	64.9	3.5	3.9	3.1	1	1.4	0.7	2.0	0	1.4	1.3	1.4	4	61	Satisfactory	40.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.0	2.1	1.6	1.5	0	0.5	0.7	1.1	0	0.9	0.8	0.9	3	83	Good	46.1	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.1	1.7	1.4	1.2	0	0.3	0.1	0.4	0	0.9	0.8	0.8	3	91	Good	56.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.2	2.3	1.3	1.6	0	0.8	0.1	0.9	0	0.9	0.7	0.8	1	83	Good	47.3	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.4	2.4	1.8	1.8	0	0.6	1.7	1.9	0	1.2	1.1	1.1	3	77	Good	31.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.5	4.1	4.3	3.8	1	0.5	2.4	2.6	0	1.1	1.0	1.1	3	56	Satisfactory	30.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.6	2.4	2.5	1.9	0	0.2	3.0	3.0	0	0.9	0.8	0.9	3	76	Good	46.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.7	1.5	1.4	1.1	0	1.9	0.2	2.1	0	1.0	0.7	0.8	3	96	Good	54.4	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.8	1.2	1.7	1.1	0	0.0	0.5	0.5	0	0.7	0.7	0.7	1	96	Good	56.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	65.9	2.1	1.6	1.5	0	0.2	0.3	0.4	0	0.8	0.6	0.7	1	84	Good	41.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	66.0	2.5	1.7	1.7	0	1.6	0.3	1.7	0	1.1	0.8	0.9	3	80	Good	32.2	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	66.1	2.7	4.6	3.2	1	0.2	2.1	2.2	0	0.9	0.9	0.9	3	61	Satisfactory	29.5	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	66.2	5.3	6.0	5.2	3	0.1	5.3	5.3	0	1.0	0.9	0.9	3	49	Poor	32	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	66.3	2.0	1.8	1.6	0	1.4	1.8	3.0	0	1.1	0.8	1.0	3	82	Good	38.7	15 Jul 2021	14:45:31



Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotecture Right	MPD Macrotecture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA LHS	8	66.7	8.7	10.3	7.2	4	10.8	5.8	14.3	3	1.7	1.7	1.7	4	42	Poor	27.7	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	66.9	2.4	2.7	2.2	1	0.0	5.5	5.5	0	0.6	1.0	0.8	1	71	Good	26.6	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	67.0	1.5	5.1	2.8	1	0.0	17.9	17.9	3	1.1	1.6	1.3	4	64	Satisfactory	33.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	67.2	2.6	4.1	2.7	1	0.8	2.5	3.2	0	1.1	1.2	1.2	3	65	Satisfactory	31.8	15 Jul 2021	14:45:31
MAGUMU - THIKA LHS	8	67.3	2.7	3.4	2.4	1	0.5	1.0	1.4	0	0.8	0.8	0.8	1	69	Satisfactory	39.3	15 Jul 2021	14:45:31
MAGUMU - THIKA RHS	8	67.6	2.5	3.0	2.2	1	3.5	0.4	3.6	0	0.9	0.9	0.9	3	71	Good	33	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	67.5	2.8	4.3	2.8	1	5.8	2.2	8.0	1	1.0	1.1	1.0	3	64	Satisfactory	31.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	67.4	2.4	1.8	1.7	0	0.1	0.0	0.1	0	1.1	0.8	0.9	3	79	Good	33.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	67.3	3.2	2.8	2.4	1	1.6	1.0	1.9	0	1.1	0.8	1.0	3	68	Satisfactory	43.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	67.2	3.4	4.5	3.1	1	2.7	5.6	8.1	1	1.2	1.1	1.2	3	61	Satisfactory	25	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	67.1	5.3	6.0	4.6	3	7.7	4.4	10.7	1	1.3	1.3	1.3	4	51	Poor	29.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	67.0	4.9	5.9	4.5	3	4.7	6.6	9.6	1	1.6	1.2	1.4	4	52	Poor	23.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.9	9.0	4.7	5.5	3	1.6	2.8	3.9	0	1.5	1.1	1.3	4	48	Poor	25.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.8	2.3	2.7	2.2	1	1.8	1.4	3.1	0	0.9	1.0	1.0	3	72	Good	31.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.7	4.2	2.8	3.2	1	1.8	0.1	1.9	0	1.1	0.9	1.0	3	60	Satisfactory	28	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.6	2.1	1.8	1.5	0	1.0	2.0	2.6	0	0.8	0.7	0.8	1	83	Good	39.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.5	6.9	6.4	6.1	4	0.5	2.0	2.5	0	0.8	0.8	0.8	1	45	Poor	34	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.4	2.7	1.8	1.8	0	1.5	2.4	3.7	0	1.1	0.7	0.9	3	77	Good	33.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.3	1.7	1.0	1.1	0	2.1	0.1	2.1	0	0.8	0.5	0.6	1	96	Good	45.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.2	1.7	1.6	1.3	0	1.7	3.1	4.2	0	0.8	0.6	0.7	1	89	Good	54	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.1	1.7	1.9	1.5	0	0.2	0.9	1.0	0	0.7	0.5	0.6	1	85	Good	51.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	66.0	1.8	1.5	1.2	0	0.0	3.5	3.5	0	0.7	0.6	0.7	1	92	Good	52.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.9	4.3	4.0	3.8	1	0.6	1.9	2.2	0	0.8	0.7	0.8	1	56	Satisfactory	30.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.8	1.9	3.3	2.0	1	0.5	1.1	1.5	0	0.9	0.8	0.8	3	74	Good	37.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.7	4.0	4.1	3.8	1	0.2	2.8	2.8	0	0.9	0.9	0.9	3	56	Satisfactory	29.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.6	1.2	1.2	1.0	0	0.2	1.8	1.9	0	0.8	0.8	0.8	3	102	Good	51.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.5	1.9	1.9	1.5	0	0.1	3.3	3.4	0	0.9	0.8	0.9	3	84	Good	56.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.4	3.8	4.9	3.4	1	0.7	9.6	9.6	1	1.3	1.4	1.3	4	59	Satisfactory	52	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.3	4.0	7.2	4.2	3	0.3	1.4	1.7	0	1.4	1.8	1.6	4	54	Poor	54.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.2	4.6	5.0	3.6	1	1.1	7.2	8.2	1	1.5	1.7	1.6	4	57	Satisfactory	44.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.1	6.2	7.4	6.0	3	1.7	3.3	4.8	0	1.3	1.2	1.3	4	46	Poor	26.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	65.0	4.7	2.9	3.3	1	0.7	0.8	1.4	0	1.4	1.2	1.3	4	60	Satisfactory	37.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.9	4.8	7.4	5.4	3	0.2	6.7	6.9	1	1.2	1.1	1.1	3	48	Poor	33.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.8	5.8	8.0	5.7	3	0.6	4.4	4.8	0	1.3	1.2	1.3	4	47	Poor	40.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.7	3.1	2.3	2.1	1	1.0	0.6	1.2	0	0.7	0.6	0.7	1	73	Good	37.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.6	1.8	2.1	1.6	0	1.5	2.3	3.4	0	0.7	0.7	0.7	1	81	Good	44.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.5	3.3	2.5	2.2	1	0.2	0.4	0.6	0	0.9	0.7	0.8	3	70	Good	47.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.4	4.2	1.7	2.5	1	0.7	0.0	0.7	0	1.0	0.7	0.8	3	67	Satisfactory	48.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.3	3.7	6.2	4.1	3	0.3	7.4	7.6	1	0.8	0.9	0.8	3	54	Poor	45	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.2	3.8	1.8	2.3	1	0.4	0.1	0.5	0	1.0	0.7	0.9	3	69	Satisfactory	53.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	64.0	9.1	5.8	6.2	4	1.7	1.5	2.7	0	1.3	0.9	1.1	3	45	Poor	44.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.9	7.7	3.1	4.4	3	0.9	0.7	1.6	0	1.2	1.0	1.1	3	53	Poor	44.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.8	6.1	4.2	4.1	3	0.6	0.3	0.9	0	1.3	1.0	1.1	3	54	Poor	53	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.7	7.0	2.6	3.4	1	1.4	0.1	1.5	0	1.3	0.9	1.1	3	59	Satisfactory	53.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.6	3.4	3.9	2.9	1	0.0	0.3	0.3	0	1.0	0.9	1.0	3	63	Satisfactory	55.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.5	3.5	2.4	2.4	1	0.4	1.1	1.4	0	0.9	0.7	0.8	1	68	Satisfactory	58.9	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotecture Right	MPD Macrotecture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	8	63.4	6.3	3.0	3.6	1	2.4	0.4	2.7	0	1.2	0.7	1.0	3	57	Satisfactory	58.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.3	6.8	5.1	4.7	3	3.2	0.8	3.9	0	1.6	1.1	1.3	4	51	Poor	54.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.2	5.9	8.4	5.7	3	4.8	3.0	7.6	1	1.5	1.2	1.3	4	47	Poor	51.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.1	7.7	4.0	4.5	3	7.5	0.4	7.6	1	1.4	1.2	1.3	4	52	Poor	48	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	63.0	12.5	10.6	8.0	4	10.5	2.0	11.9	1	1.5	1.2	1.3	4	40	Poor	29.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.9	8.3	7.5	6.1	4	9.6	2.1	10.7	1	1.6	1.2	1.4	4	45	Poor	35.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.8	8.5	9.8	7.2	4	2.5	1.7	4.0	0	1.5	1.2	1.3	4	42	Poor	48	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.7	7.7	6.5	6.0	4	3.5	2.2	5.6	0	1.4	1.1	1.3	4	46	Poor	30.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.6	10.3	5.9	6.3	4	3.6	0.9	4.3	0	1.6	0.9	1.3	4	45	Poor	35	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.5	10.1	9.3	7.3	4	2.7	3.5	5.5	0	1.4	1.0	1.2	3	42	Poor	32.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.4	8.6	9.6	6.8	4	5.9	0.5	6.3	1	1.5	1.2	1.3	4	43	Poor	30.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.3	10.8	14.3	10.0	4	4.9	2.3	6.7	1	1.2	1.1	1.1	3	37	Very Poor	26	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.2	3.3	6.9	4.0	3	1.4	7.0	8.3	1	0.8	1.4	1.1	3	54	Poor	34	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.1	5.7	5.8	5.2	3	0.6	0.9	1.4	0	1.1	0.8	0.9	3	49	Poor	25.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	62.0	4.4	2.6	2.9	1	0.2	0.4	0.6	0	1.0	0.9	1.0	3	63	Satisfactory	38.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.9	3.9	3.1	2.7	1	1.8	0.4	2.0	0	1.0	1.0	1.0	3	65	Satisfactory	55.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.8	4.3	3.5	2.8	1	1.2	0.4	1.5	0	1.1	1.0	1.1	3	64	Satisfactory	60.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.7	4.6	5.2	3.9	1	2.9	0.1	3.0	0	1.2	1.1	1.1	3	55	Satisfactory	63.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.6	4.4	2.6	2.9	1	0.6	0.9	1.4	0	1.1	1.0	1.1	3	63	Satisfactory	53.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.5	4.8	4.1	3.6	1	1.7	0.5	2.0	0	1.3	1.1	1.2	3	57	Satisfactory	62.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.4	5.9	4.5	4.0	1	0.2	4.8	4.9	0	1.0	1.0	1.0	3	55	Poor	64.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.3	3.4	5.2	3.2	1	0.0	4.7	4.7	0	0.9	1.0	0.9	3	60	Satisfactory	58.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	8	61.2	4.3	3.6	2.9	1	0.4	1.4	1.8	0	1.1	1.1	1.1	3	63	Satisfactory	56.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	61.1	6.4	3.9	4.0	3	0.8	0.8	1.5	0	1.3	1.4	1.4	4	54	Poor	58.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	61.0	5.7	2.8	3.4	1	0.7	0.7	1.3	0	1.1	1.0	1.1	3	59	Satisfactory	57.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.7	4.0	2.5	2.6	1	0.5	0.3	0.7	0	0.9	0.9	0.9	3	66	Satisfactory	59	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.6	3.6	3.5	2.7	1	0.3	0.2	0.5	0	0.9	1.0	1.0	3	65	Satisfactory	61.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.5	4.1	2.3	2.5	1	0.1	0.8	1.0	0	1.0	1.0	1.0	3	67	Satisfactory	64	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.4	6.1	4.1	3.8	1	0.9	0.9	1.7	0	1.1	1.0	1.1	3	56	Satisfactory	60.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.3	4.7	6.7	4.1	3	0.3	3.0	3.2	0	1.3	1.5	1.4	4	54	Poor	59.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.2	7.7	4.1	4.3	3	0.9	0.6	1.4	0	1.5	1.5	1.5	4	53	Poor	60	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.1	3.4	2.2	2.2	1	0.0	0.5	0.6	0	1.0	0.9	0.9	3	71	Good	62.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	60.0	3.6	1.8	2.2	1	0.0	0.6	0.6	0	0.7	0.8	0.8	1	71	Good	62.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.9	2.9	1.5	1.8	0	0.0	0.2	0.2	0	0.7	0.7	0.7	1	77	Good	66.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.8	2.8	1.8	1.8	0	0.0	0.7	0.7	0	0.7	0.7	0.7	1	78	Good	63.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.7	2.5	1.9	1.6	0	0.2	0.1	0.3	0	0.7	0.6	0.7	1	82	Good	62.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.6	3.5	3.1	2.7	1	0.2	0.6	0.8	0	1.1	0.9	1.0	3	65	Satisfactory	67.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.5	3.6	2.3	2.4	1	0.1	1.1	1.1	0	0.9	0.9	0.9	3	69	Satisfactory	68.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.4	2.6	3.4	2.4	1	0.0	0.3	0.4	0	0.9	0.7	0.8	3	69	Satisfactory	67.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.3	2.6	2.9	2.0	1	0.1	0.9	1.0	0	0.9	0.9	0.9	3	74	Good	68.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.2	2.7	1.7	1.8	0	0.2	0.1	0.2	0	0.8	0.5	0.7	1	78	Good	68.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.1	2.8	1.3	1.5	0	0.1	0.1	0.1	0	0.7	0.5	0.6	1	83	Good	67.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	59.0	2.2	1.8	1.5	0	0.0	0.1	0.1	0	0.6	0.5	0.6	1	85	Good	65.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.9	2.1	2.0	1.5	0	0.0	0.2	0.2	0	0.6	0.6	0.6	1	84	Good	65.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.8	2.9	3.1	2.3	1	0.1	1.0	1.2	0	0.8	0.8	0.8	3	70	Satisfactory	58.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.7	2.0	2.2	1.6	0	0.1	0.5	0.5	0	0.7	0.6	0.7	1	83	Good	56.1	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotexture Right	MPD Macrotexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	7	58.5	3.5	2.3	2.1	1	0.2	1.2	1.3	0	0.7	0.7	0.7	1	73	Good	58.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.4	2.4	1.9	1.6	0	0.1	1.0	1.0	0	0.7	0.6	0.6	1	81	Good	61.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.3	4.0	2.3	2.4	1	0.1	0.0	0.2	0	0.6	0.5	0.6	1	68	Satisfactory	62.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.2	4.6	2.6	2.9	1	0.4	0.6	0.9	0	0.7	0.7	0.7	1	63	Satisfactory	56	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.1	3.3	3.8	2.6	1	0.2	1.8	1.9	0	0.7	0.8	0.8	1	66	Satisfactory	51.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	58.0	5.8	4.0	4.0	1	0.6	0.6	1.2	0	1.3	1.0	1.2	3	55	Poor	54.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.9	3.1	5.5	3.2	1	0.9	1.1	1.8	0	1.4	1.4	1.4	4	60	Satisfactory	52.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.8	4.8	5.4	4.1	3	1.1	0.4	1.4	0	1.4	1.1	1.3	4	54	Poor	47.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.7	7.7	4.4	4.9	3	1.7	0.8	2.4	0	1.4	1.1	1.3	4	50	Poor	36.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.6	4.0	4.1	3.2	1	0.2	0.6	0.8	0	1.1	0.9	1.0	3	60	Satisfactory	38.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.5	8.8	6.3	5.6	3	1.1	4.4	5.1	0	1.2	1.1	1.2	3	47	Poor	40	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.4	8.7	7.2	5.8	3	0.7	6.0	6.4	1	1.1	1.0	1.1	3	46	Poor	43.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.3	3.2	3.4	2.5	1	0.3	0.2	0.4	0	1.2	1.0	1.1	3	67	Satisfactory	41.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.2	9.2	2.8	5.3	3	1.0	0.0	1.1	0	1.4	0.9	1.1	3	48	Poor	34.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.1	6.0	2.6	3.6	1	0.3	1.1	1.4	0	1.0	1.0	1.0	3	57	Satisfactory	33.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	57.0	4.3	3.6	3.0	1	0.3	0.5	0.8	0	1.2	1.0	1.1	3	62	Satisfactory	40.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.9	5.0	8.1	4.9	3	0.9	1.4	2.3	0	1.2	1.1	1.1	3	50	Poor	38.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.8	6.7	6.4	5.2	3	1.5	0.6	2.1	0	1.2	1.2	1.2	4	49	Poor	40	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.7	4.5	5.0	3.3	1	0.2	0.6	0.7	0	1.0	1.0	1.0	3	59	Satisfactory	40.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.6	5.8	7.0	5.0	3	0.4	0.9	1.4	0	1.0	1.1	1.1	3	50	Poor	38.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.5	6.0	6.4	5.3	3	0.7	0.2	1.0	0	1.4	1.3	1.4	4	48	Poor	33.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.4	4.6	4.4	3.5	1	0.2	0.3	0.6	0	1.1	1.0	1.1	3	58	Satisfactory	33.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.3	4.6	4.7	3.8	1	0.1	0.3	0.4	0	1.2	1.0	1.1	3	56	Satisfactory	40.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.2	4.4	5.0	3.5	1	0.2	0.8	1.0	0	1.1	1.1	1.1	3	58	Satisfactory	43.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.1	5.1	4.7	4.1	3	3.0	1.2	3.8	0	1.4	1.3	1.3	4	54	Poor	56.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	56.0	4.1	2.7	2.4	1	0.6	0.6	1.2	0	1.2	1.0	1.1	3	68	Satisfactory	57.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.9	5.3	4.3	4.1	3	0.5	1.0	1.5	0	1.2	1.3	1.3	4	54	Poor	45.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.8	3.3	2.8	2.3	1	1.2	0.8	1.8	0	1.1	1.2	1.2	3	69	Satisfactory	55.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.7	8.2	9.8	7.9	4	0.7	1.1	1.7	0	0.9	1.2	1.0	3	41	Poor	30.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.6	4.8	6.7	4.4	3	1.1	1.1	1.9	0	0.8	1.0	0.9	3	52	Poor	34.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.5	8.1	8.1	7.4	4	1.1	1.4	2.0	0	1.0	1.0	1.0	3	42	Poor	28.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.4	7.7	5.7	5.6	3	0.8	0.6	1.3	0	1.0	1.2	1.1	3	47	Poor	35.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.3	5.5	2.4	3.1	1	0.8	0.4	1.2	0	1.3	1.2	1.2	4	61	Satisfactory	33.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.2	3.8	4.8	3.2	1	0.2	1.8	1.9	0	1.4	1.4	1.4	4	60	Satisfactory	35.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.1	6.3	6.0	5.5	3	0.6	2.1	2.4	0	1.5	1.5	1.5	4	48	Poor	24.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	55.0	9.7	8.1	7.9	4	3.1	3.6	6.0	1	1.4	1.4	1.4	4	41	Poor	27.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.9	9.0	5.5	6.1	4	2.6	4.1	6.4	1	1.6	1.5	1.5	4	46	Poor	47.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.8	5.0	3.4	3.5	1	1.2	0.7	1.7	0	1.1	1.0	1.0	3	58	Satisfactory	56.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.7	3.6	3.0	2.5	1	0.1	0.9	0.9	0	1.0	0.9	0.9	3	67	Satisfactory	58.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.6	5.6	3.0	3.6	1	1.1	1.0	1.9	0	1.1	1.2	1.1	3	57	Satisfactory	57	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.5	4.1	2.6	2.7	1	0.1	0.4	0.5	0	0.9	1.2	1.1	3	65	Satisfactory	56.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.4	4.2	4.8	3.3	1	0.2	3.0	3.2	0	1.1	1.5	1.3	4	59	Satisfactory	54.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.3	6.2	6.6	5.1	3	0.3	1.4	1.6	0	1.1	0.9	1.0	3	49	Poor	49.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.2	5.2	6.0	4.3	3	0.5	3.7	4.1	0	1.2	1.3	1.2	4	53	Poor	49.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	54.0	6.4	3.5	3.8	1	0.7	1.4	2.1	0	1.1	1.1	1.1	3	56	Satisfactory	64.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.9	5.2	1.9	3.0	1	0.0	0.9	0.9	0	0.9	0.9	0.9	3	62	Satisfactory	71.7	15 Jul 2021	16:19:10



## Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	7	53.8	8.6	7.4	7.4	4	1.2	0.5	1.6	0	1.0	0.9	1.0	3	42	Poor	29.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.7	5.1	3.3	3.4	1	0.7	1.3	1.9	0	1.1	1.0	1.1	3	58	Satisfactory	38.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.6	6.6	4.5	4.6	3	1.4	1.7	2.8	0	1.4	1.3	1.3	4	51	Poor	23.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.5	4.7	5.4	4.2	3	3.9	1.9	5.3	0	1.1	1.5	1.3	4	53	Poor	27.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.4	4.5	4.1	3.5	1	1.3	0.5	1.8	0	1.2	1.3	1.3	4	58	Satisfactory	33.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.3	5.1	4.4	4.3	3	1.1	0.6	1.6	0	1.3	1.3	1.3	4	53	Poor	28.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.2	3.9	2.1	2.4	1	0.6	0.7	1.1	0	1.4	1.4	1.4	4	68	Satisfactory	42	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.1	5.3	4.1	4.2	3	1.4	2.6	3.3	0	1.4	1.3	1.4	4	54	Poor	29.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	53.0	2.8	2.0	1.8	0	0.4	2.0	2.1	0	1.3	1.3	1.3	4	77	Good	49.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.9	2.7	1.5	1.8	0	1.9	0.4	2.1	0	1.1	1.1	1.1	3	77	Good	56.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.8	3.2	2.7	2.5	1	6.8	0.6	6.9	1	1.1	1.1	1.1	3	68	Satisfactory	47.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.7	1.4	1.6	1.1	0	4.3	0.9	4.4	0	0.9	0.8	0.8	3	96	Good	57	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.6	4.0	1.1	2.3	1	2.7	1.5	3.6	0	0.9	0.8	0.9	3	70	Satisfactory	58.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.5	1.7	1.2	1.2	0	4.4	0.8	4.5	0	0.7	0.8	0.8	1	91	Good	54.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.4	1.8	2.3	1.8	0	1.9	1.1	2.6	0	0.5	0.6	0.5	1	78	Good	60.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.3	2.3	1.2	1.4	0	0.4	0.6	0.9	0	0.8	0.7	0.8	1	87	Good	64	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.2	2.9	1.9	2.0	0	0.5	0.3	0.9	0	0.7	0.7	0.7	1	75	Good	66	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.1	3.3	2.0	2.3	1	1.5	1.1	2.2	0	1.1	1.0	1.1	3	70	Good	65.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	52.0	2.0	2.5	1.8	0	0.8	1.0	1.6	0	0.8	0.9	0.8	3	77	Good	68.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.9	2.5	1.6	1.7	0	0.3	0.3	0.6	0	1.1	1.0	1.0	3	79	Good	64.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.8	2.8	2.5	2.1	1	0.7	0.5	1.1	0	1.0	0.9	0.9	3	72	Good	64.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.7	2.4	2.3	1.8	0	1.3	2.0	3.2	0	0.5	0.4	0.5	1	78	Good	66.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.6	1.8	2.3	1.5	0	0.1	2.4	2.4	0	0.5	0.5	0.5	1	83	Good	63.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.5	2.2	1.5	1.4	0	0.8	1.3	1.9	0	0.6	0.6	0.6	1	86	Good	56.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.4	1.8	2.1	1.6	0	0.7	0.1	0.8	0	0.9	0.8	0.9	3	83	Good	48	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.3	2.3	2.9	2.1	1	0.4	0.8	1.2	0	0.7	0.7	0.7	1	72	Good	51.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.2	2.8	1.8	1.7	0	0.0	1.3	1.3	0	0.5	0.6	0.5	1	79	Good	60	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.1	2.1	1.6	1.5	0	0.1	0.8	0.9	0	0.6	0.5	0.6	1	84	Good	69.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	51.0	2.1	2.1	1.7	0	0.2	1.7	1.9	0	0.6	0.6	0.6	1	80	Good	72.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.9	2.7	2.1	1.9	0	0.1	2.4	2.5	0	0.5	0.5	0.5	1	75	Good	74.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.8	1.9	1.7	1.5	0	0.0	0.4	0.4	0	0.5	0.4	0.5	1	83	Good	72.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.7	2.5	1.9	1.8	0	0.3	0.1	0.5	0	0.7	0.6	0.6	1	78	Good	68.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.6	2.4	1.5	1.6	0	0.4	0.2	0.6	0	0.8	0.6	0.7	1	81	Good	68.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.5	2.1	1.5	1.4	0	0.2	1.0	1.1	0	0.8	0.8	0.8	3	86	Good	64.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.4	2.9	3.3	2.7	1	0.2	1.3	1.4	0	1.0	0.8	0.9	3	64	Satisfactory	37.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.3	3.5	3.4	2.9	1	0.2	1.5	1.6	0	1.0	0.9	1.0	3	62	Satisfactory	37.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.2	2.9	2.5	2.3	1	1.4	0.3	1.6	0	1.2	1.0	1.1	3	70	Satisfactory	35.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.1	3.9	3.9	3.6	1	0.1	0.7	0.8	0	0.9	0.8	0.9	3	58	Satisfactory	31.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	50.0	1.7	1.9	1.5	0	0.0	2.1	2.1	0	0.9	0.8	0.9	3	85	Good	59	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.9	1.8	1.7	1.4	0	0.4	2.3	2.6	0	1.1	1.0	1.0	3	87	Good	61.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.8	4.0	4.3	3.8	1	0.5	0.4	0.9	0	1.4	1.2	1.3	4	56	Satisfactory	30.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.7	2.4	2.2	1.8	0	0.5	0.3	0.7	0	1.2	1.2	1.2	3	77	Good	45.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.6	3.0	2.1	2.0	1	0.7	0.8	1.4	0	1.2	1.1	1.1	3	74	Good	51.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.5	5.9	4.2	4.7	3	0.5	0.6	1.0	0	1.2	1.0	1.1	3	51	Poor	30.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.4	2.3	1.9	1.7	0	0.5	1.4	1.7	0	0.7	0.8	0.7	1	80	Good	48.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.3	3.4	3.0	2.6	1	0.2	0.7	0.8	0	0.8	0.7	0.7	1	66	Satisfactory	47.3	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotexture Right	MPD Macrotexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	7	49.2	2.6	2.1	1.8	0	0.1	1.7	1.8	0	0.6	0.6	0.6	1	77	Good	54.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.1	2.6	1.7	1.6	0	0.1	0.0	0.1	0	0.7	0.6	0.6	1	83	Good	64.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	49.0	2.4	3.1	2.2	1	0.0	0.6	0.6	0	0.6	0.5	0.5	1	70	Good	70.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.9	1.5	2.0	1.5	0	0.0	0.9	0.9	0	0.5	0.4	0.5	1	85	Good	67.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.8	2.5	3.5	2.6	1	0.0	1.0	1.0	0	0.5	0.5	0.5	1	66	Satisfactory	63.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.7	2.8	2.9	2.4	1	0.3	0.1	0.4	0	0.4	0.4	0.4	1	69	Satisfactory	62.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.6	3.1	2.2	2.1	1	2.5	0.6	3.0	0	0.6	0.6	0.6	1	73	Good	59.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.5	1.6	2.0	1.4	0	0.0	0.4	0.4	0	0.5	0.5	0.5	1	87	Good	59	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.4	2.9	2.8	2.3	1	0.5	0.4	0.8	0	0.4	0.4	0.4	1	70	Satisfactory	67.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.3	3.3	2.9	2.6	1	0.6	0.1	0.7	0	0.5	0.5	0.5	1	66	Satisfactory	42.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.2	3.1	3.4	2.7	1	1.3	0.4	1.6	0	0.6	0.6	0.6	1	65	Satisfactory	36.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.1	2.5	2.5	1.9	0	1.2	0.3	1.4	0	0.9	0.8	0.8	3	75	Good	47.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	48.0	5.4	5.0	4.7	3	0.1	0.3	0.3	0	0.7	0.6	0.6	1	51	Poor	31.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.9	2.5	2.7	1.9	0	0.2	0.6	0.8	0	0.7	0.6	0.6	1	75	Good	48	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.8	2.8	2.3	2.0	1	0.1	1.2	1.3	0	0.9	0.8	0.8	3	74	Good	55.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.7	3.0	2.3	2.0	1	1.2	1.3	2.0	0	0.7	0.7	0.7	1	73	Good	58.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.6	2.2	2.5	1.9	0	0.1	1.6	1.7	0	0.6	0.6	0.6	1	76	Good	57	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.5	1.7	3.2	1.9	0	0.6	0.5	1.1	0	0.6	0.6	0.6	1	75	Good	71.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.4	1.9	1.9	1.5	0	3.1	0.2	3.2	0	0.9	0.9	0.9	3	83	Good	87.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.3	1.6	1.8	1.3	0	0.7	0.2	0.9	0	0.9	0.9	0.9	3	88	Good	89.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.2	2.8	3.0	2.2	1	1.3	0.4	1.6	0	1.3	1.3	1.3	4	72	Good	69	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.1	2.5	2.8	2.0	0	0.3	1.8	2.1	0	0.9	1.1	1.0	3	74	Good	66.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	47.0	2.4	3.5	2.4	1	0.1	1.0	1.1	0	0.8	0.7	0.7	1	68	Satisfactory	66.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.9	3.0	3.3	2.3	1	0.2	1.5	1.6	0	0.9	0.8	0.8	3	70	Satisfactory	61.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.8	3.0	2.2	2.1	1	0.3	0.2	0.5	0	1.2	1.2	1.2	4	73	Good	55.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.7	2.6	1.8	1.9	0	0.1	0.2	0.3	0	1.0	1.0	1.0	3	76	Good	54.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.6	3.2	2.7	2.2	1	0.3	0.5	0.7	0	1.4	1.2	1.3	4	71	Good	50.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.5	4.0	2.5	2.7	1	1.2	1.0	2.0	0	1.2	1.2	1.2	4	65	Satisfactory	53.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.4	4.6	3.4	3.4	1	0.6	0.7	1.3	0	1.3	1.4	1.4	4	59	Satisfactory	52.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.3	5.6	4.5	4.4	3	0.6	0.5	1.1	0	1.3	1.3	1.3	4	53	Poor	26	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.2	2.8	2.3	2.1	1	0.1	1.0	1.0	0	0.9	0.9	0.9	3	72	Good	27.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.1	3.6	2.6	2.5	1	1.3	3.0	3.6	0	1.1	1.2	1.2	3	67	Satisfactory	21.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	46.0	4.0	2.6	2.6	1	2.0	2.2	3.1	0	1.5	1.1	1.3	4	66	Satisfactory	34.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.9	2.7	3.1	2.3	1	2.0	4.4	5.5	0	1.1	1.1	1.1	3	70	Good	36.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.8	4.2	3.6	3.5	1	1.2	1.8	2.6	0	1.2	1.1	1.2	3	58	Satisfactory	29.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.7	2.3	1.8	1.6	0	1.5	1.7	2.8	0	1.4	1.1	1.2	4	82	Good	53.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.6	7.1	4.2	4.7	3	2.4	1.8	3.8	0	1.4	1.4	1.4	4	51	Poor	48.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.5	5.7	4.1	3.6	1	3.7	0.7	4.1	0	1.7	1.6	1.7	4	57	Satisfactory	52.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.4	3.0	2.8	2.3	1	4.5	1.1	5.1	0	1.3	1.5	1.4	4	69	Satisfactory	46.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.3	4.2	4.0	3.6	1	3.8	0.5	4.1	0	1.2	1.3	1.3	4	57	Satisfactory	33.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.2	4.0	2.8	2.6	1	2.3	0.9	2.8	0	1.7	1.5	1.6	4	66	Satisfactory	50.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.1	7.8	6.5	6.5	4	2.5	0.6	3.0	0	1.6	1.5	1.5	4	44	Poor	35.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	45.0	2.9	2.8	2.0	1	1.9	0.5	2.3	0	1.2	1.1	1.2	3	73	Good	52.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.9	4.4	3.3	3.1	1	4.9	0.1	4.9	0	1.4	1.0	1.2	4	61	Satisfactory	62.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.8	3.7	3.3	2.9	1	3.4	0.6	3.8	0	1.2	1.1	1.2	3	63	Satisfactory	69.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.7	3.1	2.3	2.2	1	2.2	0.7	2.6	0	1.1	1.1	1.1	3	71	Good	70.3	15 Jul 2021	16:19:10

## Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	7	44.6	5.7	8.8	6.6	4	2.5	1.3	3.6	0	1.2	1.2	1.2	4	44	Poor	38.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.5	3.0	2.9	2.3	1	1.3	0.3	1.5	0	1.4	1.3	1.4	4	69	Satisfactory	49.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.4	4.6	3.3	3.5	1	0.6	0.9	1.5	0	1.3	1.0	1.2	3	58	Satisfactory	35.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.3	3.2	2.6	2.3	1	1.8	0.5	2.2	0	1.1	0.9	1.0	3	70	Good	39.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.2	1.9	1.9	1.5	0	2.9	0.5	3.3	0	1.3	1.2	1.2	4	85	Good	53.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.1	3.6	3.0	2.7	1	3.0	0.0	3.0	0	1.1	1.1	1.1	3	65	Satisfactory	58.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	44.0	4.6	3.1	3.2	1	3.8	0.2	3.8	0	1.0	0.9	0.9	3	60	Satisfactory	58	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.9	4.5	2.8	3.0	1	4.6	0.1	4.7	0	1.3	1.3	1.3	4	62	Satisfactory	53	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.8	3.8	3.4	2.9	1	4.9	0.1	4.9	0	1.2	1.3	1.3	4	63	Satisfactory	42.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.7	5.8	4.9	5.0	3	2.9	0.3	3.0	0	1.4	1.4	1.4	4	50	Poor	23.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.6	2.7	3.2	2.4	1	4.2	0.6	4.4	0	0.9	0.9	0.9	3	69	Satisfactory	42.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.5	4.0	2.4	2.6	1	2.1	1.0	2.5	0	1.2	0.9	1.0	3	66	Satisfactory	46.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.4	4.6	3.1	3.1	1	3.2	0.9	3.6	0	1.3	1.1	1.2	3	61	Satisfactory	49.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.3	3.8	4.8	3.3	1	5.0	1.5	5.8	0	1.3	1.7	1.5	4	59	Satisfactory	47	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.2	6.3	6.1	5.6	3	3.4	1.9	4.6	0	1.6	1.7	1.6	4	47	Poor	25.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.1	7.7	5.3	5.9	3	5.3	0.5	5.5	0	1.7	1.5	1.6	4	46	Poor	22.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	43.0	5.7	3.0	3.6	1	1.7	2.3	3.7	0	1.3	1.4	1.4	4	57	Satisfactory	33.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.9	4.2	3.9	3.3	1	1.4	2.0	3.2	0	1.4	1.6	1.5	4	59	Satisfactory	42.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.8	7.2	3.5	4.2	3	5.1	0.6	5.6	0	1.8	1.7	1.7	4	53	Poor	42.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.7	5.4	3.7	3.7	1	3.7	1.0	4.3	0	1.4	1.3	1.4	4	57	Satisfactory	44.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.6	5.1	3.5	3.5	1	3.4	0.0	3.4	0	1.6	1.5	1.6	4	58	Satisfactory	50.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.5	3.7	3.4	3.0	1	1.1	0.9	1.9	0	1.0	0.9	1.0	3	62	Satisfactory	50.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.4	2.8	2.6	2.2	1	1.5	0.5	2.0	0	0.8	0.9	0.8	3	70	Good	57.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.3	3.9	2.6	2.6	1	1.7	0.6	2.1	0	1.1	1.0	1.1	3	66	Satisfactory	57.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.2	3.4	2.8	2.7	1	0.6	0.6	1.0	0	1.3	1.0	1.2	3	65	Satisfactory	58	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.1	3.7	3.2	2.9	1	1.4	1.9	3.0	0	1.3	1.1	1.2	4	63	Satisfactory	51.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	42.0	4.8	3.1	3.1	1	1.7	1.2	2.6	0	1.5	1.3	1.4	4	61	Satisfactory	50.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.9	4.3	3.7	3.4	1	0.8	1.2	1.9	0	1.4	1.2	1.3	4	59	Satisfactory	54.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.8	3.8	4.4	3.3	1	1.2	0.8	1.8	0	1.1	1.0	1.0	3	59	Satisfactory	59.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.7	2.5	2.2	1.9	0	2.2	0.1	2.2	0	0.5	0.5	0.5	1	76	Good	65.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.6	4.1	2.6	2.6	1	2.7	0.0	2.7	0	0.5	0.5	0.5	1	66	Satisfactory	65.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.5	4.0	2.9	2.8	1	0.2	0.0	0.2	0	0.6	0.5	0.5	1	64	Satisfactory	62.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.4	3.2	3.4	2.6	1	0.4	0.1	0.5	0	0.8	0.6	0.7	1	66	Satisfactory	61	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.3	3.2	5.6	3.7	1	0.2	2.2	2.4	0	0.9	0.9	0.9	3	57	Satisfactory	54.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.2	4.1	3.1	2.9	1	0.1	1.7	1.7	0	0.7	0.6	0.7	1	63	Satisfactory	57.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.1	3.5	3.5	3.1	1	0.6	0.5	1.1	0	0.9	0.8	0.9	3	61	Satisfactory	62.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	41.0	4.0	3.1	2.9	1	0.6	0.3	0.9	0	0.7	0.8	0.7	1	63	Satisfactory	64.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.9	3.2	3.0	2.5	1	0.6	0.2	0.7	0	0.6	0.8	0.7	1	67	Satisfactory	61.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.8	5.3	3.1	3.6	1	2.4	0.2	2.5	0	1.0	0.9	1.0	3	57	Satisfactory	53	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.7	2.8	2.8	2.2	1	0.3	0.8	1.0	0	0.7	0.7	0.7	1	70	Good	59.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.6	3.5	3.1	2.7	1	0.7	0.6	1.3	0	0.8	0.8	0.8	3	65	Satisfactory	59.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.5	5.0	3.4	3.5	1	2.2	0.7	2.8	0	0.9	1.0	1.0	3	58	Satisfactory	57.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.4	3.7	2.6	2.5	1	1.3	0.1	1.4	0	1.1	1.0	1.0	3	67	Satisfactory	59.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.3	3.5	2.3	2.4	1	2.2	0.2	2.2	0	1.0	0.9	0.9	3	68	Satisfactory	51	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.2	4.1	4.7	3.8	1	1.5	0.7	2.0	0	0.8	0.8	0.8	3	56	Satisfactory	58.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	40.1	3.7	2.2	2.3	1	1.0	0.1	1.1	0	0.9	0.9	0.9	3	70	Good	62	15 Jul 2021	16:19:10

## Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotecture Right	MPD Macrotecture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	7	40.0	4.0	2.5	2.7	1	1.0	0.1	1.0	0	0.9	0.8	0.8	3	65	Satisfactory	64	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.9	4.0	2.3	2.6	1	1.4	0.0	1.5	0	0.8	0.8	0.8	1	66	Satisfactory	51.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.8	3.8	2.0	2.4	1	1.3	0.0	1.3	0	0.8	0.7	0.7	1	68	Satisfactory	54.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.7	3.4	2.4	2.5	1	0.1	0.2	0.4	0	0.7	0.6	0.7	1	67	Satisfactory	51.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.6	3.8	2.2	2.3	1	1.9	0.1	1.9	0	0.7	0.6	0.6	1	69	Satisfactory	56.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.5	2.8	2.2	1.8	0	1.2	0.0	1.2	0	0.6	0.5	0.6	1	78	Good	67.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.4	3.0	2.7	2.3	1	3.3	0.1	3.3	0	0.8	0.8	0.8	1	69	Satisfactory	69.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.3	2.5	2.4	1.9	0	0.6	1.6	2.2	0	0.6	0.7	0.6	1	76	Good	68.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.2	3.0	2.6	2.2	1	1.3	0.4	1.5	0	0.9	0.8	0.9	3	71	Good	64.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.1	3.8	2.5	2.5	1	2.1	0.1	2.1	0	0.9	0.7	0.8	1	67	Satisfactory	60	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	39.0	3.2	2.6	2.3	1	3.6	0.4	3.7	0	0.7	0.5	0.6	1	69	Satisfactory	55.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.9	3.1	2.3	2.1	1	1.1	0.7	1.6	0	0.7	0.5	0.6	1	73	Good	53.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.8	4.2	3.0	3.0	1	2.7	0.6	3.0	0	0.7	0.7	0.7	1	62	Satisfactory	50.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.7	4.0	2.3	2.7	1	2.4	0.7	2.8	0	0.8	0.6	0.7	1	65	Satisfactory	41.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.6	2.6	2.4	1.9	0	0.3	0.7	1.1	0	0.5	0.7	0.6	1	76	Good	42.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.5	4.3	2.9	3.0	1	1.1	0.4	1.4	0	1.0	0.9	0.9	3	62	Satisfactory	51.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.4	4.7	2.1	2.9	1	2.1	0.2	2.2	0	1.0	0.7	0.9	3	63	Satisfactory	47.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.3	3.5	2.4	2.4	1	0.4	0.5	0.9	0	1.0	0.9	1.0	3	68	Satisfactory	41.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.2	3.4	2.4	2.4	1	1.9	0.0	2.0	0	1.3	1.0	1.1	3	68	Satisfactory	38.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.1	6.6	4.8	5.2	3	3.1	2.0	3.9	0	1.1	1.2	1.1	3	49	Poor	31	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	38.0	4.4	3.7	3.4	1	2.1	1.7	3.3	0	1.4	1.3	1.3	4	59	Satisfactory	27.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.9	5.1	2.9	3.4	1	1.8	0.3	1.9	0	1.3	1.3	1.3	4	58	Satisfactory	42.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.8	3.4	2.4	2.4	1	1.9	0.8	2.3	0	1.2	1.1	1.1	3	69	Satisfactory	50.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.7	3.6	2.6	2.5	1	2.6	1.5	3.1	0	1.2	1.2	1.2	3	67	Satisfactory	65.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.6	4.1	2.0	2.6	1	1.0	0.3	1.3	0	1.0	1.1	1.0	3	66	Satisfactory	74.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.5	2.9	2.0	2.0	0	1.1	0.1	1.2	0	1.1	0.9	1.0	3	75	Good	68.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.4	5.2	2.5	3.0	1	4.0	0.1	4.0	0	1.6	1.4	1.5	4	62	Satisfactory	56.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.3	5.4	6.4	5.4	3	2.5	0.9	3.3	0	1.6	1.5	1.6	4	48	Poor	31.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.2	5.1	3.1	3.3	1	3.3	1.2	3.6	0	1.5	1.4	1.4	4	59	Satisfactory	57.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.1	4.8	2.6	3.0	1	0.9	0.5	1.3	0	0.9	0.9	0.9	3	62	Satisfactory	53.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	37.0	2.5	2.4	2.0	1	1.6	0.3	1.9	0	1.2	1.2	1.2	3	74	Good	36.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.9	2.8	3.1	2.4	1	1.1	1.7	2.6	0	1.2	1.2	1.2	4	68	Satisfactory	37	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.8	4.5	4.7	3.8	1	2.1	0.9	2.9	0	1.6	1.6	1.6	4	56	Satisfactory	28.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.7	6.1	3.5	3.8	1	4.4	1.0	5.3	0	1.6	1.7	1.7	4	56	Satisfactory	43.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.6	5.2	3.3	3.5	1	4.1	0.5	4.5	0	1.3	1.4	1.4	4	58	Satisfactory	55.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.5	4.2	3.3	3.1	1	0.8	0.4	1.2	0	0.7	0.7	0.7	1	61	Satisfactory	70.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.4	4.0	2.4	2.6	1	1.2	0.4	1.5	0	1.0	0.9	1.0	3	65	Satisfactory	76.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.3	6.2	3.8	4.1	3	3.5	1.2	4.4	0	1.4	1.2	1.3	4	54	Poor	69.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.2	4.0	3.8	3.4	1	0.7	2.1	2.8	0	1.1	1.1	1.1	3	59	Satisfactory	66.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.1	6.5	3.8	4.2	3	2.6	1.3	3.6	0	1.4	1.4	1.4	4	53	Poor	56	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	36.0	3.1	2.6	2.2	1	1.5	0.3	1.7	0	1.1	0.9	1.0	3	71	Good	48.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.9	3.9	2.5	2.6	1	3.1	0.6	3.4	0	1.5	1.1	1.3	4	66	Satisfactory	57.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.8	3.9	3.3	3.1	1	1.2	0.3	1.4	0	1.2	1.0	1.1	3	61	Satisfactory	50.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.7	4.2	3.2	3.0	1	0.6	0.2	0.7	0	0.9	0.8	0.8	3	62	Satisfactory	57.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.6	3.7	2.3	2.6	1	1.3	0.2	1.4	0	0.8	0.7	0.7	1	66	Satisfactory	56.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.5	3.3	2.4	2.4	1	1.9	0.8	2.3	0	0.8	0.8	0.8	1	69	Satisfactory	39.6	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	7	35.4	3.0	4.8	3.1	1	0.6	7.4	8.0	1	0.7	1.1	0.9	3	61	Satisfactory	40.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.3	3.5	3.0	2.5	1	1.9	0.5	2.4	0	1.0	0.9	1.0	3	67	Satisfactory	51.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.2	2.8	3.2	2.5	1	1.3	1.2	2.1	0	1.1	0.9	1.0	3	68	Satisfactory	57.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.1	4.5	3.6	3.5	1	0.8	0.5	1.2	0	0.6	0.6	0.6	1	58	Satisfactory	55.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	35.0	7.2	5.1	5.5	3	0.9	0.6	1.2	0	0.7	0.7	0.7	1	47	Poor	43.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.9	4.6	3.5	3.6	1	0.6	0.3	0.8	0	1.0	0.8	0.9	3	57	Satisfactory	35.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.8	5.3	4.5	4.3	3	0.8	0.4	1.2	0	1.1	1.0	1.0	3	53	Poor	28.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.7	3.3	3.1	2.6	1	1.0	0.6	1.5	0	1.1	0.9	1.0	3	66	Satisfactory	52.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.6	2.7	2.9	2.4	1	1.9	0.9	2.5	0	0.9	0.9	0.9	3	68	Satisfactory	52.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.5	4.7	3.6	3.6	1	2.4	1.2	3.3	0	1.2	1.0	1.1	3	57	Satisfactory	24.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.4	4.6	4.5	3.8	1	0.6	1.6	2.1	0	1.1	1.0	1.1	3	56	Satisfactory	41	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.3	6.7	6.8	6.1	4	1.1	4.0	4.9	0	1.3	1.2	1.3	4	45	Poor	30.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.2	2.9	3.1	2.7	1	2.9	0.2	3.0	0	0.9	0.8	0.8	3	65	Satisfactory	56.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.1	2.9	2.6	2.2	1	1.4	0.3	1.6	0	0.6	0.8	0.7	1	71	Good	64.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	7	34.0	3.2	2.8	2.3	1	0.6	1.0	1.5	0	0.5	0.8	0.7	1	70	Satisfactory	63.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.9	3.0	3.1	2.2	1	1.9	0.5	2.3	0	0.8	0.8	0.8	1	71	Good	52.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.8	3.5	2.7	2.6	1	1.9	0.3	2.0	0	0.9	1.0	0.9	3	66	Satisfactory	53.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.7	3.9	2.0	2.6	1	1.3	0.0	1.3	0	0.8	0.6	0.7	1	66	Satisfactory	62.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.6	4.2	2.5	2.6	1	2.9	0.2	3.0	0	0.9	0.7	0.8	1	66	Satisfactory	65.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.5	3.4	2.5	2.5	1	1.6	0.3	1.7	0	0.7	0.7	0.7	1	67	Satisfactory	64.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.4	3.4	3.7	2.8	1	2.1	2.3	4.1	0	0.5	0.6	0.6	1	64	Satisfactory	59.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.3	3.7	3.2	2.6	1	1.6	0.4	2.0	0	0.6	0.6	0.6	1	65	Satisfactory	49.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.2	3.9	2.9	2.8	1	1.8	0.1	1.9	0	0.8	0.6	0.7	1	64	Satisfactory	56.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.1	2.8	2.6	2.3	1	2.7	0.1	2.7	0	0.5	0.4	0.4	1	70	Good	58.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	33.0	4.1	3.5	3.1	1	1.9	1.5	3.1	0	0.5	0.5	0.5	1	61	Satisfactory	66.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.9	3.7	2.7	2.7	1	4.0	1.0	4.4	0	0.5	0.5	0.5	1	65	Satisfactory	67.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.8	4.3	2.5	2.7	1	4.9	0.1	4.9	0	0.8	0.6	0.7	1	64	Satisfactory	65.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.7	4.7	2.9	3.3	1	4.9	0.8	5.3	0	0.8	0.7	0.7	1	59	Satisfactory	65.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.6	4.2	3.9	3.4	1	1.3	0.7	1.7	0	0.5	0.5	0.5	1	59	Satisfactory	65.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.5	3.2	2.7	2.5	1	2.0	0.1	2.1	0	0.6	0.5	0.5	1	67	Satisfactory	71.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.4	2.7	2.3	2.1	1	0.5	0.0	0.5	0	0.6	0.6	0.6	1	72	Good	72.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.3	3.0	2.4	2.3	1	1.6	0.1	1.7	0	0.6	0.6	0.6	1	70	Good	73.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.2	3.6	2.0	2.5	1	2.4	0.1	2.5	0	0.8	0.6	0.7	1	67	Satisfactory	77	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.1	4.8	2.9	3.1	1	3.9	0.7	4.2	0	0.7	0.7	0.7	1	61	Satisfactory	67.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	32.0	3.7	2.3	2.5	1	1.4	1.7	2.5	0	0.9	0.7	0.8	3	67	Satisfactory	59.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.9	3.2	2.4	2.4	1	2.0	1.8	3.6	0	0.6	0.7	0.6	1	68	Satisfactory	63.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.8	2.8	3.0	2.3	1	0.2	0.5	0.6	0	0.7	0.8	0.8	1	69	Satisfactory	73.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.7	4.0	2.7	2.9	1	0.7	0.3	0.9	0	0.6	0.6	0.6	1	63	Satisfactory	72.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.6	2.5	2.4	2.1	1	0.2	1.4	1.6	0	0.8	0.9	0.9	3	73	Good	64.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.5	2.9	2.5	2.2	1	2.0	2.1	3.4	0	1.3	1.3	1.3	4	70	Good	56.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.4	5.5	5.2	5.1	3	0.6	0.9	1.4	0	1.1	1.2	1.2	3	49	Poor	25.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.3	5.3	4.3	4.2	3	0.2	1.1	1.2	0	1.0	1.1	1.1	3	53	Poor	24.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.2	4.1	3.0	3.1	1	1.2	1.6	2.5	0	1.0	1.1	1.1	3	61	Satisfactory	32.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.1	3.5	2.5	2.6	1	2.6	1.1	3.2	0	1.1	0.9	1.0	3	66	Satisfactory	38.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	31.0	6.5	4.7	5.0	3	2.9	2.7	4.3	0	1.3	1.0	1.1	3	50	Poor	36.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	30.9	4.1	3.0	3.0	1	1.7	1.7	2.9	0	1.4	1.1	1.3	4	62	Satisfactory	56.9	15 Jul 2021	16:19:10



Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	6	30.7	6.4	3.8	4.1	3	5.4	0.4	5.6	0	1.4	1.1	1.3	4	54	Poor	56.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	30.6	4.0	3.0	3.1	1	3.1	0.2	3.2	0	1.2	1.0	1.1	3	61	Satisfactory	59.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	30.5	4.0	3.1	3.0	1	2.4	1.1	3.1	0	1.3	1.3	1.3	4	62	Satisfactory	54.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	30.4	3.8	2.5	2.8	1	1.9	1.4	3.1	0	1.3	1.1	1.2	3	64	Satisfactory	54.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	30.3	3.8	2.6	2.7	1	0.6	2.6	3.0	0	0.9	1.3	1.1	3	65	Satisfactory	63.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	30.2	4.3	2.5	2.8	1	3.3	1.0	3.9	0	1.1	1.3	1.2	4	64	Satisfactory	61.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.9	5.2	2.9	3.4	1	3.6	1.4	4.6	0	0.6	0.8	0.7	1	59	Satisfactory	58	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.8	2.9	2.4	2.3	1	4.0	0.3	4.2	0	0.6	0.6	0.6	1	69	Satisfactory	58.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.7	3.4	2.1	2.3	1	2.8	0.1	2.9	0	0.7	0.7	0.7	1	70	Satisfactory	52.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.6	3.5	2.7	2.6	1	1.0	1.0	1.9	0	0.8	0.6	0.7	1	66	Satisfactory	56.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.5	2.9	2.9	2.4	1	1.1	2.0	3.0	0	0.7	0.6	0.7	1	69	Satisfactory	59.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.4	3.7	3.6	3.0	1	2.6	1.2	3.7	0	0.7	0.6	0.7	1	62	Satisfactory	67.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.3	3.0	2.5	2.4	1	0.3	0.9	1.2	0	0.4	0.5	0.4	1	69	Satisfactory	68.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.2	4.0	3.2	2.7	1	0.5	1.9	2.3	0	0.6	0.6	0.6	1	64	Satisfactory	68	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.1	3.6	2.7	2.7	1	0.3	2.7	2.7	0	0.5	0.5	0.5	1	65	Satisfactory	63.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	29.0	3.3	3.0	2.8	1	0.3	0.8	1.1	0	0.4	0.5	0.4	1	64	Satisfactory	64.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.9	3.4	3.2	3.0	1	1.3	0.3	1.5	0	0.5	0.4	0.4	1	62	Satisfactory	62	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.8	4.1	2.5	2.7	1	1.2	0.7	1.7	0	0.6	0.8	0.7	1	64	Satisfactory	59.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.7	4.4	2.7	2.9	1	1.6	0.9	2.3	0	1.2	0.9	1.1	3	63	Satisfactory	61.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.6	3.3	2.2	2.3	1	3.3	0.2	3.4	0	0.8	0.6	0.7	1	70	Good	64.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.5	3.4	2.6	2.4	1	1.2	2.6	2.9	0	0.6	0.9	0.8	1	68	Satisfactory	68.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.4	3.5	2.3	2.5	1	1.3	0.4	1.6	0	0.7	0.7	0.7	1	67	Satisfactory	65.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.3	3.1	2.4	2.2	1	0.6	1.1	1.5	0	0.8	0.6	0.7	1	71	Good	56.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.2	3.9	2.9	3.0	1	2.7	0.7	3.0	0	0.8	0.8	0.8	3	62	Satisfactory	60.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.1	3.9	2.7	3.0	1	0.3	1.0	1.2	0	0.6	0.7	0.6	1	62	Satisfactory	67	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	28.0	2.9	3.3	2.6	1	1.4	0.5	1.8	0	0.9	0.8	0.9	3	66	Satisfactory	46	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.9	3.0	2.8	2.5	1	0.3	0.3	0.6	0	0.5	0.5	0.5	1	67	Satisfactory	48.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.8	3.6	2.8	2.8	1	0.7	0.5	1.1	0	0.7	0.5	0.6	1	64	Satisfactory	57.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.7	3.3	2.2	2.2	1	3.2	2.1	4.3	0	0.6	0.6	0.6	1	70	Good	62	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.6	3.5	2.3	2.4	1	2.8	0.9	3.1	0	0.7	0.8	0.7	1	68	Satisfactory	65.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.5	3.5	2.1	2.4	1	0.1	1.2	1.2	0	0.5	0.5	0.5	1	68	Satisfactory	69.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.4	10.5	3.8	6.1	4	5.5	0.6	5.9	0	1.2	1.1	1.1	3	45	Poor	65.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.3	5.7	3.2	3.7	1	2.7	0.0	2.7	0	1.2	1.3	1.2	4	57	Satisfactory	64	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.2	7.0	4.3	4.4	3	4.6	0.5	4.9	0	1.2	1.0	1.1	3	52	Poor	67.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.1	5.7	3.0	3.5	1	3.0	0.4	3.3	0	1.3	0.9	1.1	3	58	Satisfactory	69.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	27.0	4.3	2.5	2.9	1	2.9	0.1	2.9	0	0.9	0.8	0.8	3	63	Satisfactory	61.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.9	5.5	4.1	4.0	1	3.3	0.3	3.5	0	1.2	1.2	1.2	4	55	Poor	58.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.8	5.9	4.3	4.0	3	3.8	0.4	4.0	0	1.4	1.1	1.3	4	54	Poor	59.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.7	8.0	3.2	4.4	3	5.9	0.1	5.9	0	1.4	1.0	1.2	3	52	Poor	58.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.6	7.8	5.7	5.3	3	2.6	1.0	3.4	0	1.3	1.4	1.3	4	48	Poor	59.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.5	4.1	4.0	3.4	1	0.9	2.1	2.9	0	1.0	1.2	1.1	3	59	Satisfactory	63.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.4	6.5	5.4	4.9	3	2.1	3.0	4.9	0	0.8	1.0	0.9	3	50	Poor	67.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.3	4.5	3.0	3.3	1	1.6	1.9	3.2	0	0.7	0.6	0.7	1	59	Satisfactory	64.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.2	4.2	2.5	2.9	1	2.6	1.3	3.4	0	0.9	0.6	0.8	1	63	Satisfactory	59.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.1	5.1	4.5	4.4	3	0.7	0.3	0.9	0	0.7	0.6	0.6	1	53	Poor	30.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	26.0	3.8	2.8	2.7	1	0.3	0.7	1.0	0	0.8	0.8	0.8	1	65	Satisfactory	34.2	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	6	25.9	6.7	4.2	5.0	3	2.1	1.3	2.8	0	0.9	0.8	0.8	3	50	Poor	25.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	25.8	3.4	2.6	2.6	1	3.5	0.6	3.8	0	0.9	0.7	0.8	3	66	Satisfactory	40.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	25.7	4.0	2.6	2.8	1	2.7	0.0	2.7	0	1.1	0.7	0.9	3	64	Satisfactory	47.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	25.6	3.8	3.0	2.7	1	1.4	0.9	2.0	0	0.8	0.7	0.8	1	65	Satisfactory	53.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	25.5	4.5	3.5	3.4	1	1.0	0.5	1.4	0	1.0	0.7	0.9	3	59	Satisfactory	52	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	25.4	4.1	2.5	2.7	1	1.5	1.0	2.1	0	1.0	0.8	0.9	3	65	Satisfactory	57.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	25.3	4.2	3.3	3.1	1	0.8	1.4	1.7	0	0.8	0.6	0.7	1	61	Satisfactory	61	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	6	25.2	4.5	2.7	3.1	1	1.9	0.6	2.4	0	0.9	0.6	0.8	1	61	Satisfactory	60.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	25.1	3.7	2.9	2.7	1	1.0	0.6	1.4	0	0.6	0.5	0.5	1	65	Satisfactory	59.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	25.0	3.1	2.8	2.5	1	1.1	0.5	1.4	0	0.6	0.4	0.5	1	67	Satisfactory	58.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.9	3.8	3.1	2.7	1	1.8	0.5	2.1	0	0.7	0.7	0.7	1	64	Satisfactory	62.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.8	5.5	4.4	4.2	3	1.0	1.0	1.8	0	1.0	0.8	0.9	3	54	Poor	58.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.7	5.1	2.8	3.3	1	1.5	0.7	2.1	0	1.0	0.7	0.8	3	60	Satisfactory	60.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.6	3.6	2.7	2.6	1	0.8	1.0	1.7	0	0.9	0.7	0.8	1	66	Satisfactory	53.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.5	9.7	8.8	7.8	4	3.3	1.3	4.3	0	0.7	0.7	0.7	1	41	Poor	49.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.4	4.4	3.9	3.5	1	0.5	1.1	1.4	0	0.9	0.9	0.9	3	58	Satisfactory	51.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.3	4.4	3.6	3.4	1	0.9	0.7	1.3	0	0.6	0.4	0.5	1	58	Satisfactory	56.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.2	3.4	2.7	2.3	1	0.1	0.5	0.7	0	0.5	0.4	0.4	1	69	Satisfactory	57.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.1	2.9	3.5	2.5	1	0.1	1.1	1.2	0	0.5	0.5	0.5	1	67	Satisfactory	61.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	24.0	3.4	3.4	2.7	1	0.5	0.6	1.0	0	0.6	0.5	0.6	1	64	Satisfactory	63.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.9	3.4	3.5	2.8	1	0.9	1.2	1.8	0	0.7	0.6	0.6	1	64	Satisfactory	70.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.8	4.3	2.9	2.8	1	1.8	1.3	2.6	0	0.7	0.5	0.6	1	64	Satisfactory	64.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.7	3.8	3.5	3.2	1	1.4	0.3	1.5	0	0.6	0.5	0.6	1	60	Satisfactory	60.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.6	2.9	2.6	2.3	1	0.5	0.2	0.7	0	0.4	0.4	0.4	1	70	Good	61.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.5	2.4	2.5	1.9	0	0.5	0.8	1.2	0	0.5	0.4	0.5	1	75	Good	65.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.4	3.5	3.3	2.7	1	2.5	2.4	3.9	0	0.7	0.6	0.7	1	65	Satisfactory	67.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.3	3.6	2.7	2.4	1	1.3	3.4	4.2	0	0.6	0.7	0.7	1	68	Satisfactory	70.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.2	3.5	2.5	2.3	1	0.8	1.1	1.7	0	0.5	0.5	0.5	1	70	Satisfactory	68.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.1	3.3	3.7	2.8	1	0.9	1.1	1.8	0	0.4	0.4	0.4	0	64	Satisfactory	63.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	23.0	3.6	2.7	2.6	1	0.4	0.4	0.7	0	0.5	0.4	0.4	1	66	Satisfactory	65.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.9	3.5	3.0	2.7	1	0.5	0.4	0.8	0	0.5	0.4	0.4	1	65	Satisfactory	70.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.8	3.1	2.6	2.3	1	1.2	1.7	2.6	0	0.5	0.4	0.5	1	69	Satisfactory	72.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.7	3.2	3.1	2.5	1	0.6	2.0	2.4	0	0.5	0.5	0.5	1	67	Satisfactory	71.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.6	3.5	3.0	2.7	1	0.3	1.6	1.8	0	0.5	0.5	0.5	1	65	Satisfactory	76.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.4	4.2	3.4	2.9	1	0.6	1.2	1.7	0	0.5	0.6	0.5	1	63	Satisfactory	77.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.2	3.0	2.7	2.4	1	0.0	1.3	1.3	0	0.6	0.6	0.6	1	68	Satisfactory	73.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.1	3.5	2.7	2.5	1	0.4	0.3	0.6	0	0.6	0.6	0.6	1	67	Satisfactory	64.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	22.0	3.8	2.9	2.8	1	1.1	0.5	1.5	0	0.7	0.7	0.7	1	64	Satisfactory	56.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.9	4.9	2.9	3.2	1	1.5	0.4	1.6	0	0.8	0.6	0.7	1	60	Satisfactory	59	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.8	4.9	3.5	3.5	1	2.4	1.6	3.1	0	0.6	0.7	0.7	1	58	Satisfactory	57.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.7	4.6	4.3	3.7	1	1.1	1.3	2.1	0	0.7	0.7	0.7	1	57	Satisfactory	70.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.6	2.8	3.3	2.5	1	1.2	0.4	1.5	0	0.7	0.5	0.6	1	67	Satisfactory	73.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.5	4.2	4.8	3.7	1	1.1	1.0	1.9	0	0.7	0.7	0.7	1	57	Satisfactory	68	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.4	2.9	2.9	2.5	1	0.6	0.6	1.0	0	0.6	0.7	0.7	1	67	Satisfactory	63.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.3	3.5	2.5	2.4	1	1.1	0.9	1.8	0	0.9	0.9	0.9	3	68	Satisfactory	66.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.2	3.1	3.2	2.7	1	0.6	1.9	2.4	0	0.7	0.9	0.8	1	65	Satisfactory	74.1	15 Jul 2021	16:19:10

## Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	5	21.1	6.3	4.8	4.6	3	1.6	0.8	2.3	0	0.7	0.8	0.8	1	51	Poor	70.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	21.0	5.9	3.9	4.3	3	1.6	1.2	2.5	0	0.8	0.9	0.8	3	53	Poor	66.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.9	5.9	6.0	4.6	3	2.4	1.5	3.4	0	0.7	0.6	0.6	1	51	Poor	72.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.8	4.0	3.1	2.9	1	1.3	0.8	1.8	0	0.8	0.7	0.7	1	63	Satisfactory	79	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.7	7.6	7.6	6.0	4	2.1	0.8	2.6	0	0.8	0.7	0.7	1	46	Poor	70	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.6	10.8	6.9	7.3	4	3.3	1.9	4.4	0	0.7	0.7	0.7	1	42	Poor	61.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.5	6.8	12.2	7.3	4	3.4	2.9	5.4	0	0.7	0.7	0.7	1	42	Poor	56.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.4	6.6	5.6	4.5	3	3.8	1.3	4.8	0	0.8	0.8	0.8	1	52	Poor	61.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.3	7.4	4.7	4.9	3	3.9	6.1	7.5	1	0.7	0.6	0.7	1	50	Poor	56.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.2	7.7	7.5	5.7	3	2.4	2.1	3.9	0	0.7	0.6	0.7	1	47	Poor	45.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.1	7.9	8.1	6.1	4	2.1	2.4	4.1	0	0.7	0.6	0.7	1	45	Poor	35.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	20.0	4.9	3.4	3.3	1	1.5	1.6	2.6	0	0.8	0.8	0.8	1	59	Satisfactory	50.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	19.9	7.8	6.2	5.5	3	2.6	1.8	4.1	0	0.7	0.7	0.7	1	47	Poor	50.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	5	19.8	5.8	6.8	5.3	3	3.0	1.3	3.8	0	0.6	0.7	0.7	1	48	Poor	48.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.7	6.3	6.7	5.1	3	2.2	1.9	3.4	0	0.8	0.7	0.7	1	49	Poor	45.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.6	9.9	7.1	7.2	4	3.9	1.1	4.7	0	0.8	0.6	0.7	1	42	Poor	51.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.5	11.7	10.5	8.6	4	2.9	3.0	4.8	0	0.7	0.6	0.7	1	39	Very Poor	56.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.4	3.4	3.5	2.5	1	0.3	1.5	1.7	0	0.7	0.6	0.6	1	67	Satisfactory	61.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.3	5.5	4.9	4.4	3	0.7	0.1	0.7	0	0.6	0.6	0.6	1	52	Poor	61	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.2	8.8	5.3	5.8	3	1.7	0.9	2.5	0	0.7	0.6	0.7	1	47	Poor	61.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.1	7.2	6.7	5.5	3	2.2	0.8	2.9	0	0.8	0.7	0.7	1	48	Poor	53.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	19.0	14.6	15.6	11.2	4	8.1	2.4	9.4	1	0.9	0.8	0.8	3	35	Very Poor	48.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.9	9.0	7.1	6.8	4	4.5	0.7	4.9	0	0.7	0.6	0.7	1	43	Poor	49.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.8	5.5	6.0	4.8	3	1.1	1.5	2.4	0	0.9	0.8	0.8	3	50	Poor	53.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.7	2.6	2.3	1.9	0	1.7	2.4	4.0	0	0.8	0.6	0.7	1	75	Good	60.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.6	6.6	5.8	5.1	3	4.6	2.8	6.0	0	0.9	0.9	0.9	3	49	Poor	59.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.5	9.8	8.7	7.1	4	5.4	2.9	7.1	1	0.8	0.7	0.8	1	43	Poor	56.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.4	5.2	5.2	4.5	3	1.0	1.1	2.0	0	0.6	0.5	0.6	1	52	Poor	55.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.3	4.9	7.8	4.8	3	2.6	1.8	3.8	0	0.7	0.6	0.6	1	51	Poor	53.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.2	3.8	4.5	3.3	1	0.6	1.1	1.5	0	0.8	0.8	0.8	3	59	Satisfactory	55.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.1	12.5	9.1	8.4	4	2.2	0.8	2.8	0	0.9	0.6	0.8	1	39	Very Poor	53.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	18.0	9.7	5.3	6.5	4	2.6	0.5	2.8	0	0.9	0.6	0.8	1	44	Poor	56.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.9	4.1	2.5	2.5	1	1.3	0.8	1.9	0	1.1	0.7	0.9	3	68	Satisfactory	57	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.8	8.3	6.2	5.5	3	2.7	3.0	5.0	0	0.8	0.7	0.7	1	47	Poor	59.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.7	4.4	6.6	4.2	3	3.5	2.7	5.3	0	0.8	0.8	0.8	1	54	Poor	62.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.6	3.7	5.4	3.9	1	1.5	2.7	3.5	0	0.6	0.6	0.6	1	56	Satisfactory	63.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.5	2.9	2.8	2.3	1	0.3	0.2	0.5	0	0.8	0.6	0.7	1	70	Satisfactory	67.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.4	6.9	6.7	5.5	3	2.1	1.9	3.8	0	0.8	0.8	0.8	1	48	Poor	66.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.3	4.0	2.8	2.8	1	0.1	0.2	0.3	0	0.9	0.7	0.8	3	64	Satisfactory	71.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.2	4.8	5.7	4.2	3	0.7	1.3	1.8	0	0.8	0.7	0.8	1	53	Poor	65.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.1	4.2	3.4	3.2	1	1.4	0.4	1.7	0	0.7	0.5	0.6	1	60	Satisfactory	60.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	17.0	3.0	4.4	3.2	1	0.8	0.6	1.3	0	0.7	0.8	0.7	1	60	Satisfactory	63.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.9	6.4	3.9	4.2	3	3.2	0.6	3.5	0	1.1	0.7	0.9	3	53	Poor	67.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.8	5.8	5.0	3.8	1	1.9	0.7	2.5	0	0.9	0.6	0.7	1	56	Satisfactory	64.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.7	5.2	4.2	3.5	1	2.4	2.3	4.5	0	0.9	0.6	0.7	1	58	Satisfactory	60.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.6	2.9	2.8	2.3	1	1.1	1.2	2.1	0	0.6	0.4	0.5	1	70	Satisfactory	67.2	15 Jul 2021	16:19:10



Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	4	16.5	4.2	2.6	2.7	1	1.2	0.0	1.2	0	0.8	0.5	0.6	1	65	Satisfactory	69.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.4	6.5	7.1	5.4	3	0.9	1.1	2.0	0	0.9	0.7	0.8	3	48	Poor	62.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.3	4.3	5.0	3.9	1	0.9	1.0	1.7	0	0.9	0.7	0.8	3	55	Satisfactory	62.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.2	3.4	2.8	2.6	1	0.2	0.3	0.4	0	0.7	0.5	0.6	1	65	Satisfactory	66.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.1	9.8	9.8	7.4	4	3.4	3.0	5.7	0	0.7	0.7	0.7	1	42	Poor	58.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	16.0	9.1	10.7	7.2	4	4.5	1.7	5.7	0	0.9	0.7	0.8	1	42	Poor	54.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.9	3.1	2.9	2.4	1	0.2	1.5	1.7	0	0.6	0.5	0.5	1	68	Satisfactory	58.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.8	8.2	6.7	5.7	3	1.7	2.3	3.3	0	0.7	0.7	0.7	1	47	Poor	62.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.7	3.5	2.7	2.6	1	0.2	0.6	0.8	0	1.0	0.7	0.8	3	66	Satisfactory	65.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.6	3.8	4.0	2.9	1	0.5	0.5	1.0	0	0.7	0.6	0.7	1	63	Satisfactory	68	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.5	2.5	2.1	1.8	0	0.2	0.3	0.4	0	0.7	0.5	0.6	1	77	Good	75.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.4	2.9	2.6	2.2	1	0.1	0.3	0.4	0	0.6	0.5	0.6	1	70	Good	76.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.3	4.6	3.9	3.6	1	1.7	0.3	1.8	0	0.8	0.6	0.7	1	57	Satisfactory	75.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.2	3.7	3.8	3.2	1	0.3	1.1	1.4	0	0.9	0.6	0.8	1	60	Satisfactory	75.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.1	2.7	3.0	2.5	1	1.3	0.0	1.3	0	0.6	0.5	0.6	1	67	Satisfactory	73.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	15.0	5.8	4.1	4.3	3	1.8	1.4	2.8	0	0.8	0.8	0.8	1	53	Poor	72	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	14.8	4.1	2.9	2.9	1	0.3	0.7	0.9	0	0.7	0.6	0.7	1	63	Satisfactory	73.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	14.7	3.3	3.4	2.7	1	0.4	0.5	0.8	0	0.7	0.7	0.7	1	65	Satisfactory	72.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	14.4	3.1	3.7	3.0	1	0.8	0.3	1.0	0	0.8	0.7	0.8	1	62	Satisfactory	73.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	14.3	4.4	3.2	3.3	1	0.3	0.1	0.4	0	0.6	0.5	0.5	1	59	Satisfactory	71.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	14.2	6.2	5.9	5.0	3	2.6	1.3	3.6	0	0.7	0.5	0.6	1	50	Poor	60.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	14.1	3.1	3.5	2.8	1	0.3	0.8	1.0	0	0.6	0.5	0.6	1	64	Satisfactory	33.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	14.0	5.2	6.6	5.5	3	0.5	0.9	1.3	0	0.6	0.5	0.6	1	48	Poor	21.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.9	8.3	8.3	6.4	4	1.6	4.0	5.2	0	0.9	0.5	0.7	1	44	Poor	34.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.8	12.4	12.6	9.3	4	3.9	5.7	8.8	1	0.9	0.5	0.7	1	38	Very Poor	31.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.7	15.2	8.1	9.7	4	5.7	1.3	6.7	1	1.1	0.8	0.9	3	37	Very Poor	32.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.6	8.2	6.6	6.0	3	4.2	1.0	4.9	0	1.2	0.7	1.0	3	46	Poor	39.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.5	10.8	8.5	7.5	4	3.5	1.4	4.5	0	1.1	0.9	1.0	3	42	Poor	46.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.4	8.4	7.8	6.2	4	2.7	1.6	3.8	0	1.0	0.7	0.8	3	45	Poor	45.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.3	4.1	3.9	3.1	1	0.4	0.4	0.7	0	0.8	0.6	0.7	1	61	Satisfactory	51.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.2	5.8	7.6	5.5	3	3.2	2.1	5.0	0	0.8	0.7	0.8	1	48	Poor	53.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	13.0	6.9	6.4	5.3	3	2.7	0.3	2.9	0	0.7	0.6	0.6	1	48	Poor	57.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.9	3.9	2.6	2.7	1	0.1	0.1	0.2	0	0.7	0.5	0.6	1	65	Satisfactory	66.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.8	4.9	2.7	3.2	1	0.4	0.2	0.5	0	1.0	0.6	0.8	1	61	Satisfactory	71.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.7	3.8	3.0	2.6	1	0.5	0.8	1.1	0	1.0	0.6	0.8	3	66	Satisfactory	68.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.6	5.0	3.4	3.3	1	0.5	0.1	0.6	0	0.9	0.7	0.8	1	59	Satisfactory	63.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.5	5.4	4.2	3.8	1	0.6	0.1	0.7	0	0.7	0.6	0.7	1	56	Satisfactory	62.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.4	5.4	4.2	3.8	1	1.4	0.1	1.5	0	0.5	0.5	0.5	1	56	Satisfactory	63.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.3	4.8	3.3	3.1	1	3.0	0.0	3.0	0	0.7	0.6	0.7	1	61	Satisfactory	70.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.2	4.7	1.4	2.5	1	0.1	0.0	0.1	0	0.4	0.5	0.5	1	67	Satisfactory	75.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.1	5.5	4.0	3.9	1	1.4	0.7	2.0	0	0.6	0.6	0.6	1	55	Satisfactory	72.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	12.0	4.9	11.2	6.4	4	4.7	2.1	6.5	1	0.7	0.7	0.7	1	45	Poor	57.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.9	6.9	9.5	7.0	4	3.7	1.8	5.3	0	0.6	0.6	0.6	1	43	Poor	43.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.8	4.6	3.7	3.2	1	0.5	0.2	0.7	0	0.7	0.6	0.7	1	60	Satisfactory	36	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.7	3.7	3.2	2.8	1	0.5	0.7	1.1	0	1.0	0.8	0.9	3	64	Satisfactory	56.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.6	5.2	5.1	3.7	1	0.8	0.8	1.5	0	1.1	1.0	1.1	3	57	Satisfactory	59.8	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrottexture Right	MPD Macrottexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	4	11.4	5.6	3.9	3.9	1	0.5	0.5	1.0	0	0.8	1.0	0.9	3	55	Satisfactory	59.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.3	4.7	3.6	3.1	1	0.2	1.1	1.3	0	0.8	0.8	0.8	1	61	Satisfactory	61.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.2	7.4	5.9	5.4	3	1.3	1.1	2.2	0	0.8	0.6	0.7	1	48	Poor	66.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.1	5.3	9.8	6.0	3	3.0	1.4	4.0	0	0.7	0.6	0.7	1	46	Poor	71.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	11.0	4.6	4.4	3.4	1	1.0	0.6	1.5	0	0.7	0.5	0.6	1	59	Satisfactory	74.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.9	6.2	5.1	4.8	3	0.7	0.9	1.5	0	0.6	0.6	0.6	1	50	Poor	69.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.8	3.4	2.4	2.3	1	0.1	0.0	0.1	0	0.5	0.5	0.5	1	69	Satisfactory	74	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.7	3.8	4.2	2.8	1	0.4	2.6	2.7	0	0.6	0.5	0.6	1	64	Satisfactory	70.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.6	5.2	3.9	3.8	1	0.6	0.3	1.0	0	0.8	0.6	0.7	1	56	Satisfactory	68	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.5	6.1	5.6	4.7	3	1.9	1.0	2.7	0	0.7	0.7	0.7	1	51	Poor	68.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.4	4.3	2.8	2.9	1	0.5	0.8	1.2	0	0.8	0.7	0.7	1	63	Satisfactory	75.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.3	5.1	2.1	3.1	1	1.6	0.0	1.6	0	0.8	0.5	0.7	1	61	Satisfactory	72.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.2	6.9	6.2	5.2	3	3.4	0.5	3.8	0	1.1	0.7	0.9	3	49	Poor	65.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.1	10.1	7.7	7.4	4	12.9	1.1	13.3	3	0.6	0.7	0.6	1	42	Poor	27.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	10.0	6.2	6.0	4.8	3	3.8	1.6	4.6	0	0.6	0.6	0.6	1	51	Poor	36.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.9	4.7	4.7	3.8	1	0.8	0.6	1.3	0	0.8	0.5	0.7	1	56	Satisfactory	44	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.8	5.7	5.5	4.0	3	7.4	5.9	10.5	1	0.7	0.6	0.6	1	54	Poor	44.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.7	4.6	2.9	3.1	1	0.7	0.2	0.9	0	0.7	0.5	0.6	1	61	Satisfactory	53.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.6	4.8	3.2	3.2	1	0.3	0.5	0.7	0	0.7	0.5	0.6	1	60	Satisfactory	60.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.5	4.7	3.8	3.3	1	2.8	0.9	3.5	0	0.7	0.5	0.6	1	59	Satisfactory	28.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.4	6.9	8.2	6.8	4	0.9	0.5	1.3	0	0.7	0.5	0.6	1	43	Poor	27.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.3	4.1	2.6	2.7	1	0.8	0.9	1.6	0	0.6	0.5	0.5	1	65	Satisfactory	42.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.2	4.8	4.4	4.0	1	0.5	0.1	0.6	0	0.5	0.5	0.5	1	55	Poor	39.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	4	9.1	6.3	5.7	5.0	3	2.2	0.4	2.6	0	0.5	0.6	0.6	1	50	Poor	38.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	9.0	14.0	16.5	12.7	4	7.5	4.6	9.9	1	0.5	0.5	0.5	1	33	Very Poor	27.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.9	3.8	3.2	2.8	1	0.2	0.6	0.8	0	0.8	0.4	0.6	1	64	Satisfactory	42.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.8	8.0	9.1	7.7	4	0.6	1.4	1.9	0	0.6	0.5	0.5	1	41	Poor	32.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.7	13.7	12.6	11.8	4	2.0	2.1	3.9	0	0.6	0.5	0.6	1	34	Very Poor	28.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.6	2.5	2.5	1.8	0	0.1	1.0	1.0	0	0.5	0.4	0.5	1	78	Good	44.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.5	6.2	7.7	6.5	4	2.3	0.8	3.0	0	0.6	0.5	0.5	1	44	Poor	27.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.4	3.7	2.9	2.6	1	0.5	0.2	0.6	0	0.8	0.6	0.7	1	66	Satisfactory	42.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.3	14.2	10.0	10.6	4	3.6	1.0	4.3	0	0.6	0.7	0.6	1	36	Very Poor	31.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.2	9.9	11.1	9.7	4	3.9	1.0	4.6	0	0.7	0.4	0.6	1	37	Very Poor	37.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.1	3.5	3.8	3.0	1	0.6	0.4	0.9	0	0.6	0.4	0.5	1	62	Satisfactory	49.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	8.0	10.8	11.2	9.8	4	3.2	0.7	3.6	0	0.7	0.6	0.6	1	37	Very Poor	34.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.9	4.6	2.8	3.2	1	0.4	0.9	1.2	0	0.5	0.4	0.4	1	60	Satisfactory	51.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.8	4.3	2.5	2.8	1	0.6	0.6	1.1	0	0.4	0.4	0.4	0	64	Satisfactory	55.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.7	3.6	3.4	3.1	1	0.1	0.8	0.9	0	0.4	0.4	0.4	1	61	Satisfactory	59.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.6	4.1	3.7	3.5	1	0.4	1.3	1.6	0	0.5	0.5	0.5	1	58	Satisfactory	28.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.5	2.4	2.2	1.8	0	0.5	0.7	1.1	0	0.6	0.5	0.6	1	77	Good	52.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.4	4.7	4.0	3.2	1	0.9	0.7	1.5	0	0.9	0.7	0.8	1	60	Satisfactory	40.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.3	8.6	8.4	7.3	4	3.5	0.9	4.3	0	0.7	0.7	0.7	1	42	Poor	22.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.2	4.3	3.4	3.3	1	1.6	0.4	1.9	0	0.5	0.5	0.5	1	60	Satisfactory	36.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.1	4.2	3.6	3.1	1	3.4	5.2	6.9	1	0.5	0.4	0.4	1	61	Satisfactory	36.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	3	7.0	4.1	3.3	3.4	1	2.3	0.4	2.4	0	0.6	0.4	0.5	1	59	Satisfactory	34	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.9	3.3	2.5	2.3	1	0.1	1.1	1.1	0	0.5	0.5	0.5	1	69	Satisfactory	50.3	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotexture Right	MPD Macrotexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	2	6.8	3.3	2.5	2.2	1	0.2	0.4	0.6	0	0.4	0.4	0.4	1	71	Good	52.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.7	3.2	3.1	2.7	1	0.1	0.7	0.8	0	0.4	0.3	0.3	0	65	Satisfactory	49.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.6	3.2	2.3	2.2	1	0.1	0.7	0.8	0	0.4	0.4	0.4	0	71	Good	53.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.5	4.3	3.2	2.8	1	0.8	0.7	1.4	0	0.4	0.4	0.4	1	64	Satisfactory	51.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.4	3.7	3.3	2.9	1	0.9	1.3	1.9	0	0.5	0.4	0.4	1	63	Satisfactory	51.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.3	2.9	2.7	2.3	1	0.5	1.6	2.0	0	0.4	0.4	0.4	1	69	Satisfactory	54.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.2	2.6	2.6	2.1	1	1.0	0.9	1.9	0	0.4	0.5	0.4	1	73	Good	51.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.1	3.5	2.8	2.7	1	0.5	0.5	0.9	0	0.6	0.6	0.6	1	65	Satisfactory	45.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	6.0	5.4	6.7	4.6	3	0.5	2.2	2.5	0	0.7	0.7	0.7	1	51	Poor	38.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	5.9	3.6	2.8	2.5	1	0.3	1.0	1.1	0	0.5	0.5	0.5	1	68	Satisfactory	48.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	5.8	2.8	3.5	2.6	1	0.1	1.5	1.6	0	0.6	0.6	0.6	1	66	Satisfactory	49.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	5.7	8.1	4.9	4.9	3	1.0	1.5	2.4	0	1.0	0.7	0.9	3	50	Poor	44.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	2	5.6	5.7	5.2	4.2	3	0.7	2.6	3.1	0	0.8	0.7	0.8	1	53	Poor	39.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	5.1	9.1	7.0	6.3	4	3.3	4.9	6.9	1	0.8	0.8	0.8	1	45	Poor	36.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	5.0	13.2	11.8	9.9	4	2.7	1.8	4.0	0	0.7	0.7	0.7	1	37	Very Poor	42.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.9	7.0	8.0	6.6	4	1.2	1.2	2.3	0	0.8	0.8	0.8	1	44	Poor	45.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.8	19.7	7.9	11.1	4	3.2	2.6	5.3	0	0.4	0.6	0.5	1	35	Very Poor	43.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.7	11.4	7.7	7.7	4	1.8	3.5	4.6	0	0.3	0.4	0.4	0	41	Poor	41.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.6	17.3	10.5	10.6	4	6.3	1.7	7.6	1	0.6	0.5	0.6	1	36	Very Poor	36.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.5	14.4	6.4	8.2	4	5.5	1.7	6.9	1	1.0	0.8	0.9	3	40	Poor	37.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.4	12.7	6.6	8.1	4	5.2	4.1	8.0	1	1.0	0.8	0.9	3	40	Poor	42	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.3	5.2	5.2	4.0	3	1.5	2.5	3.6	0	1.2	0.8	1.0	3	55	Poor	36	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.2	5.8	6.9	5.6	3	0.4	2.0	2.4	0	0.9	0.8	0.9	3	47	Poor	29.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.1	6.2	4.7	4.4	3	0.9	0.6	1.4	0	0.9	0.7	0.8	1	52	Poor	51.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	4.0	5.7	4.3	3.9	1	1.0	0.3	1.3	0	0.9	0.6	0.8	1	55	Satisfactory	60	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.9	6.0	4.4	3.7	1	1.1	0.7	1.6	0	1.0	0.8	0.9	3	56	Satisfactory	30.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.8	4.3	4.9	3.8	1	0.7	0.9	1.4	0	0.7	0.7	0.7	1	56	Satisfactory	40.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.7	4.8	4.1	3.7	1	0.4	0.5	0.8	0	0.7	0.6	0.6	1	57	Satisfactory	45.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.6	6.8	8.7	6.4	4	0.7	3.4	3.9	0	0.8	0.6	0.7	1	44	Poor	43.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.5	5.4	7.1	5.5	3	4.3	7.1	10.3	1	0.8	0.5	0.7	1	48	Poor	47.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.4	6.5	7.4	5.7	3	5.4	2.8	7.0	1	0.7	0.7	0.7	1	47	Poor	50.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.3	2.6	3.2	2.3	1	0.3	1.0	1.2	0	0.6	0.5	0.6	1	70	Satisfactory	52.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.2	4.2	6.1	4.4	3	0.8	0.4	1.3	0	0.8	0.7	0.7	1	52	Poor	54.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.1	2.3	2.6	1.9	0	0.2	0.7	0.8	0	0.6	0.6	0.6	1	75	Good	62.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	3.0	4.4	2.4	2.8	1	0.2	0.6	0.8	0	0.9	0.6	0.7	1	64	Satisfactory	66.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.9	4.6	5.1	4.2	3	0.6	0.9	1.4	0	0.8	0.6	0.7	1	54	Poor	62.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.8	6.8	6.4	5.5	3	1.4	1.8	2.8	0	0.9	0.5	0.7	1	48	Poor	54	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.7	5.3	4.8	3.6	1	0.8	1.6	2.2	0	0.9	0.8	0.9	3	58	Satisfactory	61.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.6	3.8	3.8	2.8	1	0.9	0.2	1.1	0	0.9	0.8	0.9	3	64	Satisfactory	65.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.5	6.1	7.0	5.3	3	0.9	2.1	2.8	0	1.1	0.9	1.0	3	48	Poor	60.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.4	5.7	5.0	4.2	3	1.3	1.1	2.2	0	1.3	1.1	1.2	3	53	Poor	65.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.3	5.0	3.9	3.5	1	0.6	0.9	1.5	0	1.1	0.9	1.0	3	58	Satisfactory	60.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.2	6.8	6.7	5.1	3	1.1	2.9	3.6	0	1.1	1.2	1.1	3	49	Poor	52.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.1	9.7	8.2	7.3	4	1.4	0.8	2.0	0	1.0	0.8	0.9	3	42	Poor	41.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	2.0	4.3	3.1	2.9	1	0.6	0.9	1.4	0	0.9	0.9	0.9	3	63	Satisfactory	45.4	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.9	7.1	7.2	6.1	4	1.6	1.0	2.4	0	0.8	0.9	0.9	3	46	Poor	29.3	15 Jul 2021	16:19:10

Appendix 4A: Surface Condition Survey Data

Survey Name	HS	Chainage (km)	IRI Right	IRI Left	IRI Lane	IRI Rating	Rut Right	Rut Left	Rut Lane	Rut Rating	MPD Macrotexture Right	MPD Macrotexture Left	Mean MPD	VCS Rating	PCI value	PCI Rating	Speed (km/h)	Survey Day	Survey Time
MAGUMU - THIKA RHS	1	1.8	9.4	7.3	7.2	4	1.8	2.2	3.8	0	1.0	1.0	1.0	3	42	Poor	42.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.7	6.3	3.1	4.0	1	0.5	0.4	0.9	0	0.9	0.7	0.8	1	55	Poor	43.1	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.5	4.1	2.5	2.9	1	3.2	0.0	3.2	0	1.0	0.6	0.8	1	63	Satisfactory	50.9	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.4	9.4	11.8	8.0	4	3.2	2.8	5.4	0	1.1	0.7	0.9	3	40	Poor	36.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.3	19.0	15.4	14.4	4	7.3	3.6	9.8	1	1.0	0.9	1.0	3	31	Very Poor	31	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.2	7.7	8.3	6.5	4	2.0	3.2	4.3	0	1.2	0.9	1.0	3	44	Poor	38.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.1	6.9	5.5	4.9	3	5.7	7.1	10.9	1	1.0	0.7	0.9	3	50	Poor	38.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	1.0	7.4	6.8	5.5	3	7.3	1.3	7.8	1	1.2	0.9	1.1	3	48	Poor	39.5	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	0.9	6.0	6.0	5.1	3	2.7	6.5	7.9	1	0.9	0.7	0.8	1	49	Poor	46.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	0.8	3.6	1.9	2.3	1	2.1	0.0	2.2	0	0.9	0.5	0.7	1	70	Satisfactory	51.6	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	0.7	10.3	8.5	8.4	4	1.9	1.1	2.8	0	1.0	0.8	0.9	3	40	Very Poor	32.3	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	0.6	4.8	3.4	3.4	1	0.9	3.0	3.8	0	1.0	0.9	0.9	3	59	Satisfactory	32.2	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	0.5	4.4	3.3	3.3	1	1.4	0.5	1.8	0	1.0	0.9	0.9	3	60	Satisfactory	23.7	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	0.3	8.0	7.2	6.4	4	2.6	0.9	3.3	0	1.2	0.7	1.0	3	45	Poor	22.8	15 Jul 2021	16:19:10
MAGUMU - THIKA RHS	1	0.2	8.2	8.3	6.4	4	2.6	1.9	4.1	0	1.1	0.6	0.9	3	44	Poor	21.7	15 Jul 2021	16:19:10

**MATERIALS TESTING AND RESEARCH DEPARTMENT  
TRAFFIC ANALYSIS**

**ROAD:** MAGUMU - THIKA (B20/D1315) ROAD      **TRAFFIC CENSUS STATION:** NGOINGWA (KM 64+900)

Day	Lane	Bicycles	Motor Cycles	Cars	Vans/Matatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor	TOTAL
SAT NIGHT	RHS	27	133	682	273	61	36	10	1	120	24	9	0	1376
	LHS	11	150	633	246	67	6	4	0	100	6	5	0	1228
	<b>TOTAL</b>	<b>38</b>	<b>283</b>	<b>1315</b>	<b>519</b>	<b>128</b>	<b>42</b>	<b>14</b>	<b>1</b>	<b>220</b>	<b>30</b>	<b>14</b>	<b>0</b>	<b>2604</b>
SUN	RHS	50	311	1371	690	96	5	33	0	85	34	10	0	2685
	LHS	17	251	1087	499	66	11	22	0	85	10	17	2	2067
	<b>TOTAL</b>	<b>67</b>	<b>562</b>	<b>2458</b>	<b>1189</b>	<b>162</b>	<b>16</b>	<b>55</b>	<b>0</b>	<b>170</b>	<b>44</b>	<b>27</b>	<b>2</b>	<b>4752</b>
MON	RHS	22	620	1274	992	272	32	21	1	209	89	33	3	3568
	LHS	18	121	1165	651	58	7	11	0	82	13	20	5	2151
	<b>TOTAL</b>	<b>40</b>	<b>741</b>	<b>2439</b>	<b>1643</b>	<b>330</b>	<b>39</b>	<b>32</b>	<b>1</b>	<b>291</b>	<b>102</b>	<b>53</b>	<b>8</b>	<b>5719</b>
TUE	RHS	65	342	1079	773	289	31	23	2	196	113	63	0	2976
	LHS	22	120	1161	710	65	17	6	0	89	6	22	1	2219
	<b>TOTAL</b>	<b>87</b>	<b>462</b>	<b>2240</b>	<b>1483</b>	<b>354</b>	<b>48</b>	<b>29</b>	<b>2</b>	<b>285</b>	<b>119</b>	<b>85</b>	<b>1</b>	<b>5195</b>
WED	RHS	33	250	976	750	259	37	22	3	130	72	32	1	2565
	LHS	15	205	1128	567	107	19	5	4	102	37	27	0	2216
	<b>TOTAL</b>	<b>48</b>	<b>455</b>	<b>2104</b>	<b>1317</b>	<b>366</b>	<b>56</b>	<b>27</b>	<b>7</b>	<b>232</b>	<b>109</b>	<b>59</b>	<b>1</b>	<b>4781</b>
THUR	RHS	66	474	854	784	279	34	15	12	174	55	31	0	2778
	LHS	18	100	1186	550	76	11	3	1	81	11	21	2	2060
	<b>TOTAL</b>	<b>84</b>	<b>574</b>	<b>2040</b>	<b>1334</b>	<b>355</b>	<b>45</b>	<b>18</b>	<b>13</b>	<b>255</b>	<b>66</b>	<b>52</b>	<b>2</b>	<b>4838</b>
THUR NIGHT	RHS	6	126	459	241	65	21	8	4	82	17	12	0	1041
	LHS	24	251	441	218	146	17	8	4	231	16	11	0	1367
	<b>TOTAL</b>	<b>30</b>	<b>377</b>	<b>900</b>	<b>459</b>	<b>211</b>	<b>38</b>	<b>16</b>	<b>8</b>	<b>313</b>	<b>33</b>	<b>23</b>	<b>0</b>	<b>2408</b>
FRI	RHS	23	334	671	553	182	57	18	14	123	33	29	1	2038
	LHS	11	138	1401	537	98	7	3	4	110	27	14	1	2351
	<b>TOTAL</b>	<b>34</b>	<b>472</b>	<b>2072</b>	<b>1090</b>	<b>280</b>	<b>64</b>	<b>21</b>	<b>18</b>	<b>233</b>	<b>60</b>	<b>43</b>	<b>2</b>	<b>4389</b>
SAT	RHS	27	295	772	639	201	24	67	6	221	34	11	2	2299
	LHS	9	90	1218	508	53	2	2	1	65	1	12	0	1960
	<b>TOTAL</b>	<b>36</b>	<b>385</b>	<b>1990</b>	<b>1147</b>	<b>254</b>	<b>26</b>	<b>69</b>	<b>6</b>	<b>286</b>	<b>35</b>	<b>23</b>	<b>2</b>	<b>4259</b>

12 TO 24HR RATIO	Bicycles	Motor Cycles	Cars	Vans/Matatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor
Weekday	1.4	1.7	1.4	1.3	1.6	1.8	1.9	1.6	2.2	1.5	1.4	1.0
Weekend	2.1	1.7	1.7	1.5	1.5	2.6	1.2	1.2	1.8	1.9	1.6	1.0

DAY	Bicycles	Motor Cycles	Cars	Vans/Matatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor	TOTAL
SUNDAY	138	975	4082	1727	244	42	66	0	301	82	43	2	7702
MONDAY	54	1228	3515	2208	526	72	60	2	648	153	76	8	8551
TUESDAY	118	765	3228	1993	564	89	55	3	635	179	123	1	7753
WEDNESDAY	65	754	3032	1770	584	103	51	11	517	164	85	1	7137
THURSDAY	114	951	2940	1793	566	83	34	21	568	99	75	2	7246
FRIDAY	46	782	2986	1465	446	118	40	29	519	90	62	2	6586
SATURDAY	74	668	3305	1666	382	68	83	7	506	65	37	2	6863
<b>TOTALS</b>	<b>609</b>	<b>6123</b>	<b>23089</b>	<b>12623</b>	<b>3312</b>	<b>575</b>	<b>389</b>	<b>73</b>	<b>3694</b>	<b>831</b>	<b>502</b>	<b>18</b>	<b>51837</b>
<b>ADT</b>	<b>87</b>	<b>875</b>	<b>3298</b>	<b>1803</b>	<b>473</b>	<b>82</b>	<b>56</b>	<b>10</b>	<b>528</b>	<b>119</b>	<b>72</b>	<b>3</b>	<b>7405</b>
<b>%</b>	<b>1.2</b>	<b>11.8</b>	<b>44.5</b>	<b>24.4</b>	<b>6.4</b>	<b>1.1</b>	<b>0.8</b>	<b>0.1</b>	<b>7.1</b>	<b>1.6</b>	<b>1.0</b>	<b>0.0</b>	<b>100</b>

TYPE	ADT	AVERAGE E.F (Both Directions)	Daily ESA
BUS	10	0.96	10
MGV	528	1.89	996
HGV 1	119	4.18	497
HGV 2	72	13.37	958


**MATERIALS TESTING AND RESEARCH DEPARTMENT  
TRAFFIC ANALYSIS**

ROAD: **MAGUMU - THIKA (B20/D1315) ROAD**

TRAFFIC CENSUS STATION:

**KAMWANGI (KM 45+200)**

Day	Lane	Bicycles	Motor Cycles	Cars	Vans/M atatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor	TOTAL
SAT NIGHT	RHS	6	260	351	187	131	5	6	2	311	60	11	0	1330
	LHS	5	371	262	202	112	23	10	7	78	77	54	0	1201
	<b>TOTAL</b>	<b>11</b>	<b>631</b>	<b>613</b>	<b>389</b>	<b>243</b>	<b>28</b>	<b>16</b>	<b>9</b>	<b>389</b>	<b>137</b>	<b>65</b>	<b>0</b>	<b>2531</b>
SUN	RHS	24	556	645	327	216	64	0	4	239	85	35	1	2196
	LHS	17	430	566	349	132	12	8	2	144	59	27	1	1747
	<b>TOTAL</b>	<b>41</b>	<b>986</b>	<b>1211</b>	<b>676</b>	<b>348</b>	<b>76</b>	<b>8</b>	<b>6</b>	<b>383</b>	<b>144</b>	<b>62</b>	<b>2</b>	<b>3943</b>
MON	RHS	8	520	655	343	240	54	3	5	267	63	27	1	2186
	LHS	10	364	513	335	124	3	0	7	130	53	22	1	1562
	<b>TOTAL</b>	<b>18</b>	<b>884</b>	<b>1168</b>	<b>678</b>	<b>364</b>	<b>57</b>	<b>3</b>	<b>12</b>	<b>397</b>	<b>116</b>	<b>49</b>	<b>2</b>	<b>3748</b>
TUE	RHS	15	763	730	477	265	86	14	2	297	69	34	0	2752
	LHS	11	412	647	356	151	11	7	7	165	42	24	2	1835
	<b>TOTAL</b>	<b>26</b>	<b>1175</b>	<b>1377</b>	<b>833</b>	<b>416</b>	<b>97</b>	<b>21</b>	<b>9</b>	<b>462</b>	<b>111</b>	<b>58</b>	<b>2</b>	<b>4587</b>
WED	RHS	8	664	681	509	325	148	11	2	304	63	27	1	2743
	LHS	4	453	579	330	152	10	6	3	135	68	21	0	1761
	<b>TOTAL</b>	<b>12</b>	<b>1117</b>	<b>1260</b>	<b>839</b>	<b>477</b>	<b>158</b>	<b>17</b>	<b>5</b>	<b>439</b>	<b>131</b>	<b>48</b>	<b>1</b>	<b>4504</b>
THUR	RHS	12	810	735	486	371	186	15	1	330	67	23	1	3037
	LHS	9	505	693	346	140	7	6	1	171	64	30	1	1973
	<b>TOTAL</b>	<b>21</b>	<b>1315</b>	<b>1428</b>	<b>832</b>	<b>511</b>	<b>193</b>	<b>21</b>	<b>2</b>	<b>501</b>	<b>131</b>	<b>53</b>	<b>2</b>	<b>5010</b>
THUR NIGHT	RHS	20	216	374	138	217	68	3	0	323	18	11	0	1388
	LHS	0	224	163	73	44	42	1	2	108	20	4	0	681
	<b>TOTAL</b>	<b>20</b>	<b>440</b>	<b>537</b>	<b>211</b>	<b>261</b>	<b>110</b>	<b>4</b>	<b>2</b>	<b>431</b>	<b>38</b>	<b>15</b>	<b>0</b>	<b>2069</b>
FRI	RHS	7	960	904	419	390	114	8	5	326	37	25	3	3198
	LHS	6	424	566	335	116	7	4	7	123	40	16	0	1644
	<b>TOTAL</b>	<b>13</b>	<b>1384</b>	<b>1470</b>	<b>754</b>	<b>506</b>	<b>121</b>	<b>12</b>	<b>12</b>	<b>449</b>	<b>77</b>	<b>41</b>	<b>3</b>	<b>4842</b>
SAT	RHS	9	894	977	638	496	190	5	2	342	59	22	1	3635
	LHS	23	440	617	330	118	7	2	4	124	38	18	1	1722
	<b>TOTAL</b>	<b>32</b>	<b>1334</b>	<b>1594</b>	<b>968</b>	<b>614</b>	<b>197</b>	<b>7</b>	<b>6</b>	<b>466</b>	<b>97</b>	<b>40</b>	<b>2</b>	<b>5357</b>

12 TO 24HR RATIO	Bicycles	Motor Cycles	Cars	Vans/M atatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor
Weekday	2.0	1.3	1.4	1.3	1.5	1.6	1.2	2.0	1.9	1.3	1.3	1.0
Weekend	1.3	1.5	1.4	1.4	1.4	1.1	3.3	2.5	1.8	2.4	2.6	1.0

DAY	Bicycles	Motor Cycles	Cars	Vans/M atatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor	TOTAL
SUNDAY	55	1452	1677	948	486	87	26	15	703	347	163	2	5961
MONDAY	35	1180	1607	850	550	89	4	24	739	150	63	2	5292
TUESDAY	51	1568	1895	1044	628	152	25	18	859	143	74	2	6461
WEDNESDAY	23	1491	1734	1052	721	248	20	10	817	169	62	1	6347
THURSDAY	41	1755	1965	1043	772	303	25	4	932	169	68	2	7079
FRIDAY	25	1847	2023	945	764	190	14	24	835	99	53	3	6823
SATURDAY	43	1965	2207	1357	857	225	23	15	855	234	105	2	7888
<b>TOTALS</b>	<b>274</b>	<b>11258</b>	<b>13107</b>	<b>7239</b>	<b>4778</b>	<b>1295</b>	<b>137</b>	<b>110</b>	<b>5740</b>	<b>1312</b>	<b>587</b>	<b>14</b>	<b>45851</b>
<b>ADT</b>	<b>39</b>	<b>1608</b>	<b>1872</b>	<b>1034</b>	<b>683</b>	<b>185</b>	<b>20</b>	<b>16</b>	<b>820</b>	<b>187</b>	<b>84</b>	<b>2</b>	<b>6550</b>
<b>%</b>	<b>0.6</b>	<b>24.6</b>	<b>28.6</b>	<b>15.8</b>	<b>10.4</b>	<b>2.8</b>	<b>0.3</b>	<b>0.2</b>	<b>12.5</b>	<b>2.9</b>	<b>1.3</b>	<b>0.0</b>	<b>100</b>

TYPE	ADT	AVERAGE E.F (Both Directions)	Daily ESA
BUS	16	0.96	15
MGV	820	1.89	1547
HGV 1	187	4.18	784
HGV 2	84	13.37	1121


**MATERIALS TESTING AND RESEARCH DEPARTMENT  
TRAFFIC ANALYSIS**

ROAD: **MAGUMU - THIKA (B20/D1315) ROAD**

TRAFFIC CENSUS STATION:

**KIRASHA (KM 6+800)**

Day	Lane	Bicycles	Motor Cycles	Cars	Vans/M atatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor	TOTAL
SAT NIGHT	RHS	3	135	92	51	26	2	0	1	80	10	0	0	400
	LHS	3	97	95	70	22	1	3	2	77	6	0	0	376
	<b>TOTAL</b>	<b>6</b>	<b>232</b>	<b>187</b>	<b>121</b>	<b>48</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>157</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>776</b>
SUN	RHS	53	1026	590	326	94	21	4	0	87	64	11	4	2280
	LHS	60	839	584	241	70	7	2	0	80	66	2	4	1955
	<b>TOTAL</b>	<b>113</b>	<b>1865</b>	<b>1174</b>	<b>567</b>	<b>164</b>	<b>28</b>	<b>6</b>	<b>0</b>	<b>167</b>	<b>130</b>	<b>13</b>	<b>8</b>	<b>4235</b>
MON	RHS	48	1215	806	515	151	21	4	0	141	66	7	5	2979
	LHS	41	830	372	205	63	5	6	0	136	18	3	6	1685
	<b>TOTAL</b>	<b>89</b>	<b>2045</b>	<b>1178</b>	<b>720</b>	<b>214</b>	<b>26</b>	<b>10</b>	<b>0</b>	<b>277</b>	<b>84</b>	<b>10</b>	<b>11</b>	<b>4664</b>
TUE	RHS	45	1184	799	386	90	13	7	0	158	55	2	3	2742
	LHS	38	808	404	279	85	6	8	3	187	22	1	4	1845
	<b>TOTAL</b>	<b>83</b>	<b>1992</b>	<b>1203</b>	<b>665</b>	<b>175</b>	<b>19</b>	<b>15</b>	<b>3</b>	<b>345</b>	<b>77</b>	<b>3</b>	<b>7</b>	<b>4587</b>
WED	RHS	30	977	695	409	174	13	5	0	224	52	3	4	2586
	LHS	31	738	344	228	94	11	6	0	156	48	1	7	1664
	<b>TOTAL</b>	<b>61</b>	<b>1715</b>	<b>1039</b>	<b>637</b>	<b>268</b>	<b>24</b>	<b>11</b>	<b>0</b>	<b>380</b>	<b>100</b>	<b>4</b>	<b>11</b>	<b>4250</b>
THUR	RHS	51	733	728	334	75	8	7	0	146	19	1	6	2108
	LHS	29	703	385	250	65	5	6	0	162	14	1	3	1623
	<b>TOTAL</b>	<b>80</b>	<b>1436</b>	<b>1113</b>	<b>584</b>	<b>140</b>	<b>13</b>	<b>13</b>	<b>0</b>	<b>308</b>	<b>33</b>	<b>2</b>	<b>9</b>	<b>3731</b>
THUR NIGHT	RHS	3	191	77	31	12	15	1	0	92	7	0	0	429
	LHS	5	168	105	21	17	11	0	0	85	7	0	0	419
	<b>TOTAL</b>	<b>8</b>	<b>359</b>	<b>182</b>	<b>52</b>	<b>29</b>	<b>26</b>	<b>1</b>	<b>0</b>	<b>177</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>848</b>
FRI	RHS	47	831	689	358	89	7	8	0	144	88	4	4	2269
	LHS	44	839	470	253	80	4	8	3	144	67	2	4	1918
	<b>TOTAL</b>	<b>91</b>	<b>1670</b>	<b>1159</b>	<b>611</b>	<b>169</b>	<b>11</b>	<b>16</b>	<b>3</b>	<b>288</b>	<b>155</b>	<b>6</b>	<b>8</b>	<b>4187</b>
SAT	RHS	23	910	862	438	118	9	3	0	116	13	3	3	2498
	LHS	22	799	451	304	63	7	4	3	134	16	0	1	1804
	<b>TOTAL</b>	<b>45</b>	<b>1709</b>	<b>1313</b>	<b>742</b>	<b>181</b>	<b>16</b>	<b>7</b>	<b>3</b>	<b>250</b>	<b>29</b>	<b>3</b>	<b>4</b>	<b>4302</b>

12 TO 24HR RATIO	Bicycles	Motor Cycles	Cars	Vans/M atatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor
Weekday	1.1	1.3	1.2	1.1	1.2	3.0	1.1	1.0	1.6	1.4	1.0	1.0
Weekend	1.1	1.1	1.1	1.2	1.3	1.2	1.4	2.0	1.6	1.6	1.0	1.0

DAY	Bicycles	Motor Cycles	Cars	Vans/M atatu	Pick-up	Small Truck	Mini Bus	Bus	MGV	HGV 1	HGV 2	Tractor	TOTAL
SUN	128	2118	1341	659	207	33	9	0	272	202	13	8	4991
MON	98	2556	1371	784	258	78	11	0	436	120	10	11	5733
TUE	91	2490	1400	724	211	57	16	3	543	110	3	7	5656
WED	67	2144	1209	694	324	72	12	0	598	142	4	11	5277
THU	88	1795	1295	636	169	39	14	0	485	47	2	9	4579
FRI	100	2088	1349	665	204	33	17	3	454	221	6	8	5147
SAT	51	1941	1500	863	229	19	10	6	407	45	3	4	5078
<b>TOTALS</b>	<b>623</b>	<b>15132</b>	<b>9464</b>	<b>5026</b>	<b>1603</b>	<b>331</b>	<b>89</b>	<b>12</b>	<b>3195</b>	<b>886</b>	<b>41</b>	<b>58</b>	<b>36460</b>
<b>ADT</b>	<b>89</b>	<b>2162</b>	<b>1352</b>	<b>718</b>	<b>229</b>	<b>47</b>	<b>13</b>	<b>2</b>	<b>456</b>	<b>127</b>	<b>6</b>	<b>8</b>	<b>5209</b>
<b>%</b>	<b>1.7</b>	<b>41.5</b>	<b>26.0</b>	<b>13.8</b>	<b>4.4</b>	<b>0.9</b>	<b>0.2</b>	<b>0.0</b>	<b>8.8</b>	<b>2.4</b>	<b>0.1</b>	<b>0.2</b>	<b>100</b>

TYPE	ADT	AVERAGE E.F (Both Directions)	Daily ESA
BUS	2	0.96	2
MGV	456	1.89	861
HGV 1	127	4.18	530
HGV 2	6	13.37	78


Appendix 4-C: Axle Load Survey Data

Road Name: Magumu - Thika (B20/D1315) Road																Station: Ngoingwa (Km 65+900)				
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF	
Cold/Dry	LHS	24-Jul-21	10pm	HGV-R	KBK 456D	Tea	122	6,920	12,660	11,600				Karumenu	Thika	120	120	9,000	12.29	
Cold/Dry	LHS	24-Jul-21	10pm	MGV	KBZ 515E	Vege	12	4,480	12,000					Kamai	Thika	100	120	5,400	5.61	
Cold/Dry	LHS	24-Jul-21	10pm	HGV-A	KCZ 020E	Vege	122222	7,120	4,960	4,640	4,600	3,800	4,140	Karumenu	Thika	120	120	47,900	0.86	
Cold/Dry	LHS	24-Jul-21	10pm	HGV-R	KDA 157W	Empty	122	4,560	4,540	4,400				Karumenu	Thika	120	120	1,000	0.20	
Cold/Dry	LHS	24-Jul-21	10pm	HGV-R	KDC 494X	Empty	122	4,360	3,820	3,740				Karumenu	A.River	100	120	4,500	0.12	
Cold/Dry	LHS	24-Jul-21	11pm	MGV	KCV 832R	Dust	12	3,980	14,400					Olonguro	Kericho	120	120	9,500	12.64	
Cold/Dry	LHS	24-Jul-21	11pm	HGV-R	KBL 569D	Potatos	122	7,680	11,000	10,740				Longonot	Muranga	120	120	6,200	7.86	
Cold/Dry	LHS	24-Jul-21	11pm	MGV	KCR 053G	Potatos	12	7,080	10,640					Mau	Kitui	120	125	5,400	3.75	
Cold/Dry	LHS	24-Jul-21	11pm	HGV-R	KDC 360J	Empty	122	4,600	3,740	3,800				Flyover	Thika	90	100	10,000	0.13	
Cold/Dry	LHS	24-Jul-21	11pm	MGV	KBV 527H	H.Hold	12	3,900	2,980					Flyover	Kazi	110	120	4,620	0.05	
Cold/Dry	LHS	24-Jul-21	11pm	MGV	KCY 418N	Empty	12	1,940	3,220					Kisumu	Thika	80	80	3,900	0.02	
Cold/Dry	LHS	24-Jul-21	11pm	MGV	KCJ 061H	Empty	12	2,180	2,780					Kitale	Thika	75	75	3,900	0.01	
Cold/Dry	LHS	24-Jul-21	11pm	MGV	KDB 270H	H.Hold	12							Flyover	Thika	100	100	3,500	0.00	
Cold/Dry	LHS	24-Jul-21	12am	MGV	KCP 192N	Flour	12	7,080	10,500					Nakuru	Mwangi	125	130	4,500	3.56	
Cold/Dry	LHS	24-Jul-21	12am	MGV	KCG 468H	Potatos	12	4,900	9,600					Molo	Karumenu	100	100	3,160	2.13	
Cold/Dry	LHS	24-Jul-21	12am	MGV	KCH 758B	Potatos	12	4,120	9,300					Kinangop	Karumenu	120	120	4,800	1.81	
Cold/Dry	LHS	24-Jul-21	12am	MGV	KBK 488J	Onions	12	4,000	8,180					Kinangop	Embu	110	120	3,200	1.03	
Cold/Dry	LHS	24-Jul-21	12am	MGV	KDB 189L	Vege	12	4,540	7,240					Flyover	Gore	120	120	4,500	0.64	
Cold/Dry	LHS	24-Jul-21	12am	MGV	KBN 679N	Tents	12	2,840	3,800					Nakuru	Kenol	60	60	4,000	0.04	
Cold/Dry	LHS	24-Jul-21	1am	MGV	KCG 634H	Potatos	12	4,300	9,800					Naivasha	Meru	100	100	3,990	2.29	
Cold/Dry	LHS	24-Jul-21	1am	MGV	KCY 484T	Potatos	12	6,420	6,700					Pokot	Garisa	115	125	4,500	0.74	
Cold/Dry	LHS	24-Jul-21	1am	MGV	KCL 032A	Hay	12	3,660	5,980					Naivasha	Mwangi	120	120	4,900	0.27	
Cold/Dry	LHS	24-Jul-21	1am	MGV	KBW 956S	Sand	12	3,660	5,980					Kinangop	Mwangi	100	100	9,100	0.27	
Cold/Dry	LHS	24-Jul-21	1am	MGV	KCA 625T	Empty	12	2,440	2,700					Gakoye	A.River	120	120	-	0.01	
Cold/Dry	LHS	24-Jul-21	1am	MGV	KCY 331W	Hard ware	12	2,060	2,520					Nakuru	Thika	90	90	2,600	0.01	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KCV 136X	Potatoes	12	7,100	10,400					Nakuru	Thika	120	120	5,000	3.44	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KCZ 185K	Potatoes	12	7,000	10,380					Molo	Thika	120	120	4,000	3.38	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KBV 599F	Potatoes	12	5,380	10,400					Molo	Thika	120	120	3,500	3.06	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KCW 091W	Potatos	12	1,760	9,420					Nakuru	Thika	80	80	3,200	1.87	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KWF	Potatos	12	3,020	7,140					Nyandarua	Kabati	100	120	2,800	0.55	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KCN 512Y	Potatoes	12	2,700	5,400					Naivasha	Thika	110	110	-	0.16	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KBV 581H	Potatos	12	2,500	4,560					Nakuru	Thika	80	100	1,650	0.08	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KCZ 097N	Empty	12	2,380	2,830					Eldoret	Thika	110	110	3,430	0.01	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KAR 461B	Empty	12	2,700	2,560					Gatukuyu	Thika	110	110	5,600	0.01	
Cold/Dry	LHS	24-Jul-21	2am	MGV	KDB 016E	Empty	12	2,720	2,380					Eldoret	Mwea	120	125	5,000	0.01	
Cold/Dry	LHS	24-Jul-21	3am	MGV	KCD 781Y	Potatoes	12	3,700	9,360					Nyahururu	Thika	110	110	2,950	1.84	
Cold/Dry	LHS	24-Jul-21	3am	MGV	KCL 948K	Potatoes	12	2,920	8,500					Mau	Thika	100	100	3,100	1.19	
Cold/Dry	LHS	24-Jul-21	3am	MGV	KAE 847B	Potatoes	12	2,760	7,920					Narok	Muranga	100	100	3,500	0.86	
Cold/Dry	LHS	24-Jul-21	3am	MGV	KCJ 876X	Empty	12	3,280	3,760					Kitale	Mwea	100	100	2,950	0.05	
Cold/Dry	LHS	24-Jul-21	3am	MGV	KDB 136C	Empty	12	3,140	3,560					Kitale	Thika	110	110	4,500	0.04	
Cold/Dry	LHS	24-Jul-21	3am	MGV	KBW 086L	Empty	12	2,700	3,200					Nakuru	Thika	110	110	4,500	0.02	
Cold/Dry	LHS	24-Jul-21	3am	MGV	KCH 966Z	Empty	12	2,700	3,100					Kitale	Thika	100	100	4,500	0.02	
Cold/Dry	LHS	24-Jul-21	4am	MGV	KCE 520V	Potatoes	12	3,820	9,600					Molo	Embu	120	120	9,100	2.06	
Cold/Dry	LHS	24-Jul-21	4am	MGV	KDB 015E	Milk	12	2,780	5,880					Kamwangi	NBI	120	120	3,810	0.23	
Cold/Dry	LHS	24-Jul-21	4am	MGV	KBP 953S	Empty	122	5,140	3,360	3,500				Gil Gil	Kirinyanga	100	100	3,540	0.16	
Cold/Dry	LHS	24-Jul-21	4am	MGV	KCE 221B	Empty	12	2,500	2,860					Kakamega	Mwea	100	100	3,400	0.01	
Cold/Dry	LHS	24-Jul-21	5am	MGV	KCM 072Y	Potatoes	12	6,180	13,000					Pokot	Garissa			4,900	8.23	
Cold/Dry	LHS	24-Jul-21	5am	MGV	KDA 260L	Potatoes	12	4,080	8,700					Gil Gil	Thika	110	110	2,900	1.35	
Cold/Dry	LHS	24-Jul-21	5am	MGV	KAJ 297F	Ballast	12	5,040	6,260					Gatukuyu	Ruaraka	100	100	7,000	0.41	
Cold/Dry	LHS	24-Jul-21	5am	MGV	KAC 252L	Carrots	12	3,500	4,460					Nyandarua	Thika	100	100	4,500	0.09	
Cold/Dry	LHS	24-Jul-21	6pm	MGV	KCC 688H	Maize	12	4,460	9,120					Molo	Embu	120	120	3,310	1.68	
Cold/Dry	LHS	24-Jul-21	7pm	MGV	KCG 151N	Babcon	12	3,800	8,860					Karumenu	Mlolongo	120	120	4,500	1.45	
Cold/Dry	LHS	24-Jul-21	7pm	MGV	KCV 359R	Flowers	12	3,440	7,940					Naivasha	Mwea	110	120	4,500	0.89	
Cold/Dry	LHS	24-Jul-21	7pm	HGV-A	KCZ 011E	Empty	122222	4,180	4,360	3,460	4,060	3,800	4,260	Karumenu	Tala	110	120	47,900	0.25	
Cold/Dry	LHS	24-Jul-21	7pm	HGV-R	KDC 105J	Empty	122	2,360	4,000	3,480				Kitale	Thika	110	120	10,000	0.06	
Cold/Dry	LHS	24-Jul-21	7pm	MGV	KRA 192S	Empty	12	2,560	3,020					Naivasha	Mwea	120	120	4,500	0.02	



Road Name: Magumu - Thika (B20/D1315) Road															Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF	
Cold/Dry	LHS	24-Jul-21	7pm	MGV	KRA 192S	Empty	12	2,260	2,600					Mangu	Thika	130	130	3,500	0.01	
Cold/Dry	LHS	24-Jul-21	7pm	MGV	KCM 950Y	Empty	12	2,620	1,560					Naivasha	Mwea	110	110	4,500	0.01	
Cold/Dry	LHS	24-Jul-21	7pm	MGV	KAH 152H	H.Hold	12	1,140	2,420					Nairobi	Makuyu	65	65	3,080	0.00	
Cold/Dry	LHS	24-Jul-21	9am	HGV-R	KCX 242D	Empty	122	4,440	3,800	3,660				Vihiga	Thika	120	120	1,000	0.12	
Cold/Dry	LHS	24-Jul-21	9am	HGV-R	KDC 104S	Empty	122	4,500	2,120	3,840				Karumenu	Thika	120	120	1,000	0.10	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCA 980E	SAND	12	3,480	16,080					THIKA	GATUKUYA	100	100	5,400	20.73	
Cloudy/Sunny	RHS	21-Sep-21	10am	HGV-R	KBJ 209R	D/STONE	122	8,060	10,670	13,670				THIKA	MILL HILL	110	120	9,960	14.17	
Cloudy/Sunny	RHS	21-Sep-21	10am	HGV-R	KBJ 794J	D/STONE	122	6,720	9,620	12,810				THIKA	MILL HILL	120	120	12,500	9.90	
Cloudy/Sunny	RHS	21-Sep-21	10am	HGV-R	KBK 420D	SAND	122	7,020	10,920	11,100				KITUI	GOINGWA	120	120	9,100	8.03	
Cloudy/Sunny	RHS	21-Sep-21	10am	HGV-R	KCC 822E	BALLAST	122	6,060	10,080	11,240				MLOLONGO	KAHIA	110	110	10,000	6.92	
Cloudy/Sunny	RHS	21-Sep-21	10am	HGV-R	KCE 187X	SOIL	122	5,700	10,700	9,500				GOINGWA	KARIFARIRI	110	110	10,000	5.45	
Cloudy/Sunny	RHS	21-Sep-21	10am	HGV-R	KCG 678H	SOIL	122	6,700	9,500	10,000				GOINGWA	KARIFARIRI	120	120	10,000	4.78	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCT 147A	TOMATOES	12	5,680	10,980					THIKA	BUNGOMA	115	125	4,900	3.91	
sunny/dry	RHS	21-Sep-21	10am	MGV	KCW172A	A/FEED	12	5,240	10,400					GATUKUYO	THIKA	120	120	4,500	3.05	
sunny/dry	RHS	21-Sep-21	10am	HGV-A	KCJ608A	EMPTY	122222	5,660	5,230	4,500	6,320	5,600	6,620	CHAI	EMBU	120	120	9,000	1.26	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCF 371E	TOMATOES	12	5,000	8,100					MIDEN	BUNGOMA	120	120	4,500	1.05	
Cloudy/Sunny	RHS	21-Sep-21	10am	HGV-R	KBH 954D	MURRAM	122	5,600	7,000	6,480				THIKA	KARIVIRIVI	120	120	11,300	1.02	
sunny/dry	RHS	21-Sep-21	10am	HGV-R	KAV470L	BOTTLES	122	4,800	3,880	6,400				GATUKUYO	NAIROBI	110	110		0.45	
sunny/dry	RHS	21-Sep-21	10am	HGV-A	KAN694N	EMPTY	122222	5,470	2,400	5,230	4,320	4,030	4,200	CHAI	EMBU	120	120	6,920	0.44	
sunny/dry	RHS	21-Sep-21	10am	HGV-A	KBG867A	EMPTY	122222	5,500	3,820	3,320	4,260	2,740	3,080	GATUNDU	NAIROBI	120	120	9,000	0.29	
sunny/dry	RHS	21-Sep-21	10am	MGV	KBZ552E	MACHINE	12	3,800	5,180					GATUKUYO	MERU	100	100	6,600	0.16	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KDD 062Z	BREAD	12	2,400	5,000					THIKA	NKK	75	75	3,400	0.11	
sunny/dry	RHS	21-Sep-21	10am	HGV-R	KCJ430N	EMPTY	122	4,120	3,600	3,260				NGOIGWA	THIKA	120	120	9,600	0.09	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCF 777G	EMPTY	12	3,120	3,900					THIKA	FLYOVER	130	130	4,500	0.05	
sunny/dry	RHS	21-Sep-21	10am	MGV	KAT255N	EMPTY	12	3,200	3,820					MANGU	THIKA	120	120	6,340	0.05	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KDA 019W	GOODS	12	2,680	3,800					THIKA	NAIVASHA	90	90	2,000	0.04	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCB 564S	EMPTY	12	3,020	3,660					THIKA	KARIFARIRI	120	120	4,900	0.04	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCQ 797A	EMPTY	12	2,600	3,400					THIKA	KINANGOP	130	130	4,500	0.02	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KAR 943M	SALT	12	2,080	3,280					KIAMBU	KANYU	65	65	2,960	0.02	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCP 178M	A/FEEDS	12	2,220	3,240					THIKA	MAGUMU	110	120	4,500	0.02	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCL 992J	STEER	12	2,040	2,360					MATUU	NAIROBI	100	100	2,000	0.01	
Cloudy/Sunny	RHS	21-Sep-21	10am	MGV	KCG 803V	EMPTY	12	2,040	1,600					THIKA	KINANGOP	60	70	2,900	0.00	
sunny/dry	RHS	21-Sep-21	10am	MGV	KBG595K	EMPTY	12	1,680	1,620					NAKURU	THIKA	80	80	3,500	0.00	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-A	KCZ 014E	SAND	122222	6,440	11,760	11,140	17,600	14,340	11,600	EMBU	KARUMENU	120	120	47,900	57.60	
sunny/dry	RHS	21-Sep-21	11am	HGV-A	KCZ017E	SAND	122222	2,870	10,100	11,230	14,080	12,670	10,660	MAI MAHIU	KANYONYO	120	120	47,900	28.41	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-A	KDA 416H	BALLAST	1.2.2.2.2.2	6,380	5,600	12,000	13,700	10,320	10,160	NGURUME	KARUMENU	120	130	7,500	21.56	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-A	KBR 009L	FERTILIZER	1.2.2.2.2.2	6,480	11,670	7,120	11,370	9,480	9,400	NAIROBI	GAKOE	110	120	7,000	13.89	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-A	KBR 525P	BALLAST	1.2.2.2.2.2	5,600	5,920	11,140	11,360	9,100	8,600	NGURUNI	KARUMENU	120	120	10,500	11.55	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-R	KCV 053Z	STONE	1.2.2	3,720	9,370	8,730	12,780			THIKA	NGOIGWA	100	100	6,500	10.54	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCP 293Z	SAND	1.2	5,000	13,500					MASINGA	KARIFARIRI	110	110	7,000	9.53	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-R	KDB 127Z	SAND	1.2.2	5,600	9,560	9,480	11,940			NGOINWA	KAMWANGI	115	115	1,000	9.52	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCY 059L	CEMENT	1.2	5,820	12,500					A/RIVER	GITUGUMBA	120	130	4,000	6.88	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-R	KBL 254C	SOIL	1.2	4,480	10,600	10,220				GOINGWA	KARIFARIRI	110	110		5.93	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KAY 631L	SAND	1.2	5,000	11,960					ITHANGE	MANGU	100	100	5,200	5.57	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KBN 067A	A/FEEDS	1.2	5,340	11,800					THIKA	KAMWANGI	110	110	4,500	5.29	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-R	KBZ 557T	H/CORE	1.12.2	5,400	7,100	9,160	9,340			THIKA	KARUMENU	120	120	13,000	4.12	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KDC 309Z	STEEL	12	5,920	10,680					THIKA	NAIVASHA	110	110		3.51	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-R	KCE 181X	SAND	122	5,670	8,240	8,070				NGOIGWA	KAMWANGI	110	120	10,000	2.14	
sunny/dry	RHS	21-Sep-21	11am	HGV-A	KCJ608A	EMPTY	122222	4,080	5,270	4,670	5,070	4,170	5,520	KAMWANGI	NAIROBI	120	120	9,000	0.59	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KZU 204	SAND	1.2	3,100	7,100					THIKA	GATUKUYU	90	100	5,000	0.54	
Cloudy/Sunny	RHS	21-Sep-21	11am	HGV-A	KDB 191M	EMPTY	1.2.2.2.2.2	5,940	2,700	4,500	4,820	3,600	3,600	NAIROBI	MATARA	120	120		0.45	
sunny/dry	RHS	21-Sep-21	11am	HGV-A	KCR902A	EMPTY	122222	4,730	2,820	4,160	3,600	3,200	3,440	GATUKUYO	NAIROBI	120	120	7,000	0.20	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KAK 939Y	GUNNY BAG	1.2	4,200	5,000					THIKA	KITALE	120	120	6,770	0.16	
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KBW 182V	EMPTY	1.2	3,840	4,500					THIKA	KITALE	120	120	7,210	0.10	
sunny/dry	RHS	21-Sep-21	11am	HGV-R	KBY932L	EMPTY	122	4,000	3,000	3,600				MAGUMU	THIKA	100	120	10,000	0.07	
sunny/dry	RHS	21-Sep-21	11am	HGV-R	KCA852Z	EMPTY	122	2,100	4,200	3,040				KARIFARIRI	NGOIGWA	110	120	9,000	0.06	

Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCT 587T	A/FEEDS	12	3,840	3,640					THIKA	GATUNDU	100	100	3,200	0.06
sunny/dry	RHS	21-Sep-21	11am	MGV	KBS312W	EMPTY	12	3,620	3,640					NGOIGWA	THIKA	100	100	4,700	0.05
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KBP 432B	T. PAPERS	1,2	2,400	3,680					NRB	MANGU	100	100	3,980	0.03
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCK 016V	EMPTY	1,2	3,000	3,360					MOMBASA	NAKURU	120	130	4,500	0.03
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCP 600W	EMPTY	1,2	2,600	3,220					THIKA	NAIVASHA	120	130	5,200	0.02
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCR 035N	EMPTY	1,2	2,720	3,020					THIKA	FLYOVER	120	130	5,400	0.02
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCW 978D	EMPTY	1,2	2,760	2,600					THIKA	NAKURU	120	120	3,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCP 8580	EMPTY	12	2,030	2,820					JUJA	NAIVASHA	120	120	3,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCA 847N	BREAD	12	2,160	2,180					THIKA	KAMWANGI	70	70	3,480	0.01
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KCC 634W	EMPTY	1,2	1,900	2,200					THIKA	GOINGWA	70	70	3,310	0.00
Cloudy/Sunny	RHS	21-Sep-21	11am	MGV	KWU 315	EMPTY	12	1,660	1,860					MURANGA	NYANDARAU	80	100	2,870	0.00
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-A	KBH 400J	SAND	122222	6,220	10,200	10,240	8,760	11,800	14,640	KAGUNDO	KARUMENU	120	120	7,000	25.74
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-A	KBA 626M	BALLAST	122222	6,860	11,600	12,100	11,040	11,810	10,800	KAGUNDO	KARUMENU	120	120	7,500	23.40
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-A	KCR 901A	SAND	122222	5,680	7,140	12,300	11,200	9,640	12,280	KITUI	KARUMENU	120	120	7,500	19.22
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-A	KCF 828A	CEMPOR	122222	3,920	12,320	11,360	11,140	11,040	1,280	A/RIVER	KARUMENU	120	120	9,200	18.40
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KWO 157	SAND	12	3,840	14,600					EWAYO	GATUKUYU	120	120	5,700	13.44
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-A	KAU 363D	BALKN	122222	6,080	11,470	10,660	9,620	9,200	1,200	UKAMBANI	KARUMENU	110	110	7,500	11.77
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-R	KDB 058H	BALLAST	1.2.2	7,040	11,200	10,880				MLOLONGO	MILL HILL	110	110		8.14
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-R	KCA 852Z	SPOIL	122	4,740	10,900	8,600				GOINGWA	KARIFARIRI	110	120	9,000	4.92
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-A	KBZ 254C	SPOIL	122	4,720	9,200	10,560				GOINGWA	KAFIRINI	110	110		4.88
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KAJ 297F	D/STONES	12	4,400	10,500					THIKA	GATUKUYU	110	110	4,900	3.10
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KCD 571E	CEMENT	12	5,800	10,140					NAIROBI	MANGU	120	120	430	2.81
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KBP 699V	CHEMICALS	12	5,900	9,240					NAIROBI	NG'ETHU	100	100	5,000	1.94
Cloudy/Sunny	RHS	21-Sep-21	12pm	HGV-R	KBW 023L	SAND	122	5,600	6,400	7,200	7,200			UKAMBANI	KAMWANGI	120	120	9,000	1.62
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KAU 144Y	A/FEED	12	4,040	8,900					THIKA	MANGU	120	120	4,500	1.49
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KWQ 058	BALLAST	12	3,400	8,100					KILIMAMBOGO	MILL HILL	100	100	5,400	0.97
sunny/dry	RHS	21-Sep-21	12pm	HGV-R	KZS689	MINEACHINE	122	5,220	4,600	5,230				MANGU	NAIROBI	100	100	8,500	0.34
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KCR 712Z	GOODS	12	2,900	4,000					GARISA	NAIVASHA	120	120	3,640	0.05
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KAC 126B	EMPTY	12	2,700	3,620					NDARNGO	GATUKUYU	100	100	5,780	0.03
sunny/dry	RHS	21-Sep-21	12pm	MGV	KCG351F	A/GOODS	12	3,320	2,520					KAMWANGI	THIKA	70	70		0.02
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KCX 074X	EMPTY	12	2,240	3,120					NAIROBI	KAMWANGI	90	90	3,200	0.02
sunny/dry	RHS	21-Sep-21	12pm	MGV	KCW172A	EMPTY	12	2,840	2,620					GATUKUYO	THIKA	120	120	4,500	0.01
sunny/dry	RHS	21-Sep-21	12pm	MGV	KCH363N	MILK	12	2,400	2,780					MANGU	KITUI	80	80	3,430	0.01
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KDA 655R	EMPTY	12	2,340	2,480					THIKA	KAMWANGI	120	120	3,500	0.01
sunny/dry	RHS	21-Sep-21	12pm	MGV	KCV831H	A/GOODS	12	2,470	2,280					MOLO	JUJA	80	80	4,800	0.01
sunny/dry	RHS	21-Sep-21	12pm	MGV	KBH380N	EMPTY	12	2,170	1,820					MAI MAHIU	THIKA	80	70	2,900	0.00
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KCZ 376L	EMPTY	12	1,700	2,200					THIKA	GOINGWA	100	100	3,200	0.00
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KAL 430W	EMPTY	12	1,130	2,240					KAGUNDO	KARUMENU	75	80	3,800	0.00
Cloudy/Sunny	RHS	21-Sep-21	12pm	MGV	KCH 262Y	EMPTY	12	1,880	1,900					MLOLONGO	GATUKUYU	90	90	3,000	0.00
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-R	KBG 845M	SAND	122222	4,160	9,460	9,600	14,140	9,120	10,100	EMBU	KARUMENU	120	130	9,000	19.76
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-A	KCH 803V	ROCK SAND	1.2.2.2.2.2	6,140	12,080	10,200	10,100	7,800	8,000	UKAMBANI	KARUMENU	110	110	18,000	12.91
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-R	KCG 678H	SPOIL	122	6,880	11,400	11,100				GOINGWA	KARIFIRIRI	120	120	10,000	8.77
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-R	KCF 261Y	BIDCO	122	5,940	12,500	9,300				THIKA	ELDORET	120	120	10,990	8.66
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-R	KAV 050K	CEMENT	122	8,020	10,900	10,280				A/RIVER	KAMWANGI	120	120	8,500	7.27
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-R	KCE 181X	SPOIL	12..2	5,500	11,700	8,500				GOINGWA	KARIBARIBI	120	120	10,000	6.29
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KCU 790H	Q/DUST	12	4,300	12,100					SAGANA	KAMWANGI	110	110	5,600	5.81
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-R	KBZ 239R	D/STONES	122	5,000	10,600	10,000				THIKA	KAMWANGI	110	120	10,900	5.73
sunny/dry	RHS	21-Sep-21	1pm	MGV	KCT291S	A/GOODS	12	6,260	11,240					UGANDA	NANYUKI	100	100	4,800	4.43
sunny/dry	RHS	21-Sep-21	1pm	HGV-R	KCD903Z	FIREWOOD	122	8,440	9,200	8,630				GATUKUYO	THIKA	120	120	9,100	4.08
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KDA 058R	CEMENT	12	5,460	10,120					NAIROBI	MILL HILL	110	110	4,000	2.74
sunny/dry	RHS	21-Sep-21	1pm	MGV	KBR402B	MAIZE	12	6,340	9,720					UGANDA	GARISSA	110	110	9,900	2.46
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KBB 747H	D/STONES	12	4,460	9,400					THIKA	MILL HILL	120	120	4,500	1.91
Cloudy/Sunny	RHS	21-Sep-21	1pm	HGV-R	KBH 954D	SPOIL	12	5,340	7,900					GSINGWA	KARIFARIRI	120	120	11,300	0.99
sunny/dry	RHS	21-Sep-21	1pm	HGV-A	KCG830R	EMPTY	122222	5,600	2,180	2,340	2,520	3,240	3,520	GATUKUYO	NAIROBI	120	120	9,000	0.23
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KCJ 235K	FERTILIZER	12	3,000	5,400					KAJIADO	GATUNDU	70	70	4,500	0.16
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KCP 795M	A/FEED	12	3,200	5,000					THIKA	ENGINEER	90	100	2,700	0.12

Road Name: Magumu - Thika (B20/D1315) Road													Station: Ngoingwa (Km 65+900)						
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	CAA 762Z	TUSKER	12	1,620	4,500					RUIRU	GOINGWA	100	110	3,200	0.07
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KAQ 038E	E NAY	12	2,600	3,720					THIKA	MAYARA	90	90	2,700	0.03
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KDB 182L	EMPTY	12	3,000	3,440					THIKA	NYAHURURU	120	120	4,500	0.03
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KCS 835L	MATTRESS	12	2,360	3,400					THIKA	KAMWANGI	100	100	5,400	0.02
Cloudy/Sunny	RHS	21-Sep-21	1pm	MGV	KCD 872N	GOODS	12	2,340	3,000					THIKA	KAMWANGI	100	110	3,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KDA 410M	D/STONES	12	4,760	12,600					THIKA	ELDORRET	130	130	4,000	7.00
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KCW 291H	D/STONES	12	4,560	12,400					THIKA	ELDORRET	120	120	4,800	6.50
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KCB 637E	SPOIL	122	4,800	10,540	10,600				NGOIGWA	MILLHILL	120	120	10,000	6.36
Cloudy/Sunny	RHS	21-Sep-21	2pm	HGV-R	KCE 181X	SPOIL	12	5,200	11,160	9,600				GOINGWA	KAFIRIRI	110	120	10,000	6.16
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KCV 449Z	D/STONES	12	4,660	12,060					THIKA	ELDORRET	120	120	4,500	5.75
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KBV 723T	STONE	12	5,320	10,400					THIKA	GILGIL	100	100	4,500	3.06
Cloudy/Sunny	RHS	21-Sep-21	2pm	HGV-R	KCC 436H	STEEL	12	6,820	10,000					THIKA	NYANDARUA	130	130	7,000	2.88
Cloudy/Sunny	RHS	21-Sep-21	2pm	HGV-R	KDB 129Z	SM. WHOLE	122	2,340	9,380	8,260				NGOIGWA	MILLHILL	120	120	10,000	2.87
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KCR 640R	FERTILIZER	12	4,240	9,400					KAJIADO	GATUNDU	120	120	4,400	1.90
Cloudy/Sunny	RHS	21-Sep-21	2pm	HGV-R	KCY 088Y	A/GOOD	12	5,220	8,080					THIKA	ELDORRET	90	90	5,000	1.07
Cloudy/Sunny	RHS	21-Sep-21	2pm	HGV-R	KCA 852Z	SPOIL	12	4,740	7,340	6,220				GOINGWA	RATIWA	110	120	9,000	0.98
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KZX 195	H/CORE	12	3,300	7,820					THIKA	GITUAMBA	100	110	4,500	0.82
Cloudy/Sunny	RHS	21-Sep-21	2pm	HGV-A	KAV 029A	EMPTY	12	5,820	-	5,980	4,480	3,900	4,300	NAIROBI	KAMWANGI	120	120	28,640	0.61
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KCE 574H	EMPTY	12	2,840	3,880					THIKA	NYANDARUA	100	120	3,500	0.04
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KCE 808Z	EMPTY	12	2,500	3,200					THIKA	FLYOVER	100	120	5,800	0.02
Cloudy/Sunny	RHS	21-Sep-21	2pm	MGV	KBZ 515L	EMPTY	12	2,900	2,270					THIKA	FLYOVER	120	120	5,400	0.01
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-A	KCH 265G	A/GOOD	122 22	2,620	9,060	11,600	12,000	9,820	10,820	WEBUYE	NAKURU	120	120	7,000	17.62
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-A	KCZ 010C	SAND	11222	5,000	9,200	8,680	11,400	9,640	12,600	MWINGI	KARUMENU	100	120	47,900	16.46
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KBC 533Y	DOOR	122	3,260	10,020	11,830				KIHMAH	MAYHU	120	120	96,000	7.68
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KBE 848P	BALLAST	122	6,240	10,640	10,800				MLOLONGO	NGOIGWA	120	120	10,000	6.97
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KCA 852Z	SOIL	122	2,340	7,830	12,080				NGOJWA	NGOIGWA	100	110	9,000	6.53
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KAT 418Z	STONE	12	6,330	11,700					THIKA	NGOIGWA	110	110	4,600	5.26
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KDC 361S	SOIL	122	4,960	10,130	9,880				NGOIGWA	MILLHILL	120	120	10,000	5.01
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KCG 258S	SOIL	122	5,680	9,480	10,310				NGOIGWA	MILLHILL	120	120	9,100	4.91
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KBY 827G	SOIL	122	4,880	8,890	10,300				NGNJW	MILLHILL	120	120	10,000	4.33
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KCC 657H	SAND	12	4,630	10,500					THIKA	KIPINZE	120	120	4,600	3.12
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KBA 954P	SOIL	122	4,280	8,080	9,640				NGOIGWA	MILLHILL	120	120	11,300	3.06
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KAP 212A	STONE	12	4,900	10,400					THIKA	FLYOVER	120	120	4,620	3.01
Cloudy/Sunny	RHS	21-Sep-21	3pm	HGV-R	KCE 181T		122	5,220	9,400	7,830				NGOIGWA	MILLHILL	120	120	10,000	2.79
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KCW 142Y	A/FEED	12	5,600	9,200					RUIRU	NKAJU	110	110	5,110	1.86
sunny/dry	RHS	21-Sep-21	3pm	MGV	KCN078Q	GAS	12	3,420	8,840					KAMWANGI	THIKA	110	110	5,700	1.42
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KCV 613V	A/FEEDS	12	2,640	6,880					THIKA	NGOIGWA	110	120	4,500	0.46
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KCF 273L	EMPTY	12	4,620	2,660					THIKA	KITALE	100	100	3,310	0.08
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KBT 741L	A/FEED	12	3,220	4,480					THIKA	KAMWANGI	100	100	2,500	0.08
sunny/dry	RHS	21-Sep-21	3pm	HGV-R	KAV050K	EMPTY	122	2,080	2,680	3,400				NJORO	A/RIVER	120	120	8,500	0.03
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KCJ 481N	EMPTY	12	2,560	2,840					THIKA	MOLO	130	130	4,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KCW 878E	EMPTY	12	2,160	2,520					NGOIGWA	MILLHILL	130	130	3,540	0.01
Cloudy/Sunny	RHS	21-Sep-21	3pm	MGV	KCD 854A	EMPTY	12	2,200	2,260					EMBU	OLKARIA	80	80	3,400	0.01
Cloudy/Sunny	RHS	21-Sep-21	4pm	HGV-A	KCZ 020E	SAND	122222	6,100	9,600	8,600	14,900	13,900	12,800	KITUI	KARUMENU	120	120	47,900	36.40
Cloudy/Sunny	RHS	21-Sep-21	4pm	HGV-A	KCZ 038E	SAND	122222	6,400	10,500	10,340	14,140	11,020	11,700	MASINGA	KARUMENU	120	120	47,900	26.55
sunny/dry	RHS	21-Sep-21	4pm	MGV	KAZ959B	PUMICE	12	5,120	14,240					NAIVASHA	THIKA	110	110	4,500	12.10
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCT 226F	STONE	12	5,220	14,080					THIKA	ELDORRET	120	120	6,500	11.52
sunny/dry	RHS	21-Sep-21	4pm	MGV	KBP944Q	PUMICE	12	5,580	12,900					NAIVASHA	NANYUKI	120	120	4,900	7.86
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCW 037Y	RICE	12	6,280	12,200					THIKA	KISUMU	120	120	4,000	6.28
sunny/dry	RHS	21-Sep-21	4pm	MGV	KBQ885X	STONES	12	4,660	12,100					ENGINEER	THIKA	120	120	4,620	5.84
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KAC 986E	SAND	12	3,800	11,200					THIKA	GATUKUYU	100	100	5,400	4.10
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KWT 750	STONE	12	3,560	11,000					THIKA	KAMWANGI	110	110	4,600	3.77
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCB 604E	MAZE *	12	5,450	10,800					THIKA	NAKURU	130	130	6,800	3.61
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KBZ 254C	SPOIL	122	5,040	8,400	9,600				NGOIGWA	MILLHILL	120	120	10,000	3.26
sunny/dry	RHS	21-Sep-21	4pm	MGV	KCV083R	BEANS	12	5,840	10,420					BUSIA	THIKA	120	120	4,810	3.16
Cloudy/Sunny	RHS	21-Sep-21	4pm	BUS	KBP 403J	PASS	12	6,860	10,200					THIKA	NAKURU	120	120		3.12

Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
sunny/dry	RHS	21-Sep-21	4pm	MGV	KCW097N	TIMBER	12	5,740	10,140					MATARA	RUIRU	120	120	6,500	2.80
Cloudy/Sunny	RHS	21-Sep-21	4pm	BUS	KCC 749J	PASS	12	5,000	10,200					THIKA	NAKURU	120	120	11,000	2.78
sunny/dry	RHS	21-Sep-21	4pm	HGV-A	KCZ014E	EMPTY	122222	5,060	4,680	4,570	4,720	3,900	4,200	KARUMENU	THIKA	120	120	47,800	0.43
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCM 050S	STONE	12	1,640	6,660					THIKA	ELDORET	120	120	4,880	0.39
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCA 633E	GREEN	12	2,080	4,680					THIKA	FLYOVER	80	80	3,220	0.08
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCJ 691A	IRON SHEETS	12	2,800	4,300					THIKA	KINANGOP	120	120	5,120	0.06
sunny/dry	RHS	21-Sep-21	4pm	MGV	KCK938W	EMPTY	12	2,500	2,840					ELDORET	THIKA	120	120	4,600	0.01
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCZ 019T	FURNITURES	12	1,720	3,020					RUIRU	MILLHILL	60	60	3,350	0.01
sunny/dry	RHS	21-Sep-21	4pm	MGV	KAU144Y	EMPTY	12	2,140	2,900					MANG'U	THIKA	120	120	4,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCT 147Z	EMPTY	12	2,300	2,620					THIKA	NYANDARUA	100	100	3,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	4pm	MGV	KCG 351W	EMPTY	12	2,320	2,500					THIKA	NAIVASHA	110	120	3,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	5pm	HGV-A	KBG 867A	SAND	122222	5,600	10,140	9,000	14,100	9,500	9,620	EMBU	KARUMERU	120	120	9,000	19.75
Cloudy/Sunny	RHS	21-Sep-21	5pm	HGV-A	KBR 368Y	SAND	122222	6,500	9,200	6,220	13,200	9,000	8,800	KEYOYO	GATUNDU	100	120	9,000	13.73
Cloudy/Sunny	RHS	21-Sep-21	5pm	HGV-R	KAK 359H	BALLAST	122	6,240	11,700	11,400				THIKA	KARIFARIRI	120	120	8,500	9.65
Cloudy/Sunny	RHS	21-Sep-21	5pm	HGV-R	KDA 232T	BIDCO	122	7,600	10,320	9,740				THIKA	HOMABAY	100	100	11,000	5.69
Cloudy/Sunny	RHS	21-Sep-21	5pm	HGV-R	KCE 146X	SPOIL	12	5,820	10,300	8,400				GOINGWA	KAFARINI	120	120	10,000	4.12
Cloudy/Sunny	RHS	21-Sep-21	5pm	MGV	KBP 613K	D/STONES	12	5,480	10,400					THIKA	KARIFARIFI	110	110	4,100	3.08
Cloudy/Sunny	RHS	21-Sep-21	5pm	BUS	KCQ 129Y	PASS	12	5,000	10,200					THIKA	MPESA	100	100	11,000	2.78
sunny/dry	RHS	21-Sep-21	5pm	MGV	KCU799U	MILK	12	6,300	9,000					MANG'U	NAIROBI	120	120	4,500	1.83
Cloudy/Sunny	RHS	21-Sep-21	5pm	MGV	KDD 083P	H2O	12	4,300	8,900					GOINGWA	KARIFARIFI	110	100		1.50
Cloudy/Sunny	RHS	21-Sep-21	5pm	MGV	KBA 705A	A/FEEDS	12	4,600	8,400					THIKA	GATUKUYU	120	120	4,000	1.19
Cloudy/Sunny	RHS	21-Sep-21	5pm	BUS	KAZ 885B	PASS	12	3,400	5,420					THIKA	MILL HILL	110	120	6,700	0.17
Cloudy/Sunny	RHS	21-Sep-21	5pm	HGV-R	22CG 371A	EMPTY	122	3,320	4,320	4,200				THIKA	MANGU				0.12
Cloudy/Sunny	RHS	21-Sep-21	5pm	MGV	KCU 150A	MEDICINE	12	3,040	3,700					A/RIVER	KAMWANGI	90	90	3,200	0.04
sunny/dry	RHS	21-Sep-21	5pm	MGV	KCU359P	EMPTY	12	3,020	3,320					ENGINEER	THIKA	120	120	4,500	0.03
sunny/dry	RHS	21-Sep-21	5pm	MGV	KBK439V	EMPTY	12	2,700	3,000					MILLHILL	THIKA	110	120	2,600	0.02
sunny/dry	RHS	21-Sep-21	5pm	MGV	KWT750	EMPTY	12	2,680	2,940					MILLHILL	THIKA	110	110	4,600	0.02
Cloudy/Sunny	RHS	21-Sep-21	5pm	MGV	KBX 463Y	EMPTY	12	2,020	3,100					THIKA	GAKUYU	110	115	4,800	0.01
Cloudy/Sunny	RHS	21-Sep-21	5pm	MGV	KBP 549X	EMPTY	12	1,900	2,400					THIKA	MANGU	100	100	2,800	0.01
Cloudy/Sunny	RHS	21-Sep-21	5pm	MGV	KDD 275C	EMPTY	12	2,000	2,300					NAIROBI	GATUKUYU	80	80	2,850	0.01
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KCU538A	EMPTY	1.2.2	4,500	11,460	9,100				ATHI RIVER	MAGUMU	110	120	10,000	6.17
sunny/dry	RHS	21-Sep-21	6am	MGV	KCP360U	BEANS	12	6,500	9,760					BUSIA	MWINGI	110	110	5,110	2.54
Cloudy/Sunny	RHS	21-Sep-21	6am	HGV-R	KBB 215P	SAND	12	5,500	9,200					MWEA	KITALE	120	120	5,400	1.84
Cloudy/Sunny	RHS	21-Sep-21	6am	HGV-R	KCA 822	CEMENT	1.2.2	5,880	7,560	7,860				THIKA	MAJU	120	120	8,251	1.74
sunny/dry	RHS	21-Sep-21	6am	HGV-R	KCP204L	EMPTY	122	4,400	3,020	3,100				MPESA	MLOLONGO	110	110	9,000	0.08
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KCP 724Z	GAS	12	2,620	3,900					THIKA	KAMWANGI	70	70	3,200	0.04
sunny/dry	RHS	21-Sep-21	6am	MGV	KDB031D	EMPTY	12	2,680	2,760					MANG'U	THIKA	120	120	4,500	0.01
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KAP 402P	TOMATOES	12	2,020	2,760					THIKA	MAGUMU	70	70	2,000	0.01
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KCG 241S	EMPTY	12	2,320	2,360					MWINGI	NYAHURURU	100	100	3,210	0.01
Cloudy/Sunny	RHS	21-Sep-21	6am	HGV-R	KAA 093D	SODA	12	2,020	2,000					THIKA	NYOVER	70	70	2,700	0.00
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KCR 044T	CRATE	12	2,130	1,780					THIKA	KINANGOP	100	100	3,310	0.00
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KCZ 425W	OIL	12	1,960	1,600					GITUAMBA	THIKA	90	90	2,800	0.00
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KBM 908V	EMPTY	12	1,960	1,480					MURANGA	KINANGOP	90	100	3,140	0.00
Cloudy/Sunny	RHS	21-Sep-21	6am	MGV	KBM 315B	EMPTY	12	1,290	1,200					THIKA	KAMWANGI	90	90	3,000	0.00
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KBU 475Q	EMPTY	1.2.2	6,400	10,600	10,400				MLOLONGO	M/PELA	120	120	9,000	6.42
Cloudy/Sunny	RHS	21-Sep-21	7am	HGV-R	KAU 470G	Q/DUST	1.2.2	6,320	9,300	9,200				NRB	GATUKUYU	110	110		3.75
sunny/dry	RHS	21-Sep-21	7am	HGV-R	KBW703J	TEA LEAVES	122	7,440	8,640	7,220				MATARA	MOMBASA	100	100	8,710	2.47
sunny/dry	RHS	21-Sep-21	7am	MGV	KCK928T	FEEDS	12	7,000	8,200					NAKURU	THIKA	120	120	4,500	1.49
sunny/dry	RHS	21-Sep-21	7am	MGV	KBQ046Z	EMPTY	122222	5,640	2,740	5,240	6,200	4,800	6,560	SAI	NAIROBI	120	120	8,000	1.07
sunny/dry	RHS	21-Sep-21	7am	MGV	KAZ391C	FLOUR	12	5,080	7,240					NAKURU	THIKA	110	110	4,500	0.69
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KBW 195E	BREAD	12	3,600	7,000					THIKA	ELDORET	110	110	4,500	0.52
sunny/dry	RHS	21-Sep-21	7am	HGV-A	KCA181S	EMPTY	122222	5,600	2,540	3,600	4,320	2,840	3,560	KIZIWA	MAKUYU	110	110	7,800	0.30
sunny/dry	RHS	21-Sep-21	7am	HGV-R	KBZ239R	EMPTY	122	5,900	3,280	3,400				KAMWANGI	THIKA	110	120	10,900	0.26
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KDC 467Z	FLOUR	12	3,700	4,600					THIKA	MILL HILL			3,720	0.10
sunny/dry	RHS	21-Sep-21	7am	MGV	KCC634W	EMPTY	12	4,120	4,000					KOINGWA	THIKA	100	110	3,310	0.08
sunny/dry	RHS	21-Sep-21	7am	HGV-R	KBZ941V	EMPTY	122	3,840	3,260	2,900				GATUKUYU	THIKA	100	100	9,500	0.06



Appendix 4-C: Axle Load Survey Data

Road Name: Magumu - Thika (B20/D1315) Road													Station: Ngoingwa (Km 65+900)							
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF	
sunny/dry	RHS	21-Sep-21	7am	MGV	KAU892D	EMPTY	12	3,320	3,420					GATUNDU	THIKA	120	120	5,800	0.04	
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KCW 614P	EMPTY	12	2,800	3,400					THIKA	KOINGWA	130	130	5,000	0.03	
sunny/dry	RHS	21-Sep-21	7am	MGV	KDB171U	EMPTY	12	3,040	3,200					KITALE	THIKA	110	110	3,446	0.03	
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KCU 612V	EMPTY	12	2,660	3,240					THIKA	KIZIWA	120	120	4,000	0.02	
sunny/dry	RHS	21-Sep-21	7am	MGV	KBE912E	EMPTY	12	2,820	2,900					MILL HILL	NAIROBI	110	120	4,770	0.02	
sunny/dry	RHS	21-Sep-21	7am	MGV	KBU473F	EMPTY	12	2,640	2,860					BUNGOMA	THIKA	130	130	4,500	0.01	
sunny/dry	RHS	21-Sep-21	7am	MGV	KBJ862W	EMPTY	12	2,800	2,440					FLY OVER	THIKA	120	120	4,000	0.01	
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KCU 613V	EMPTY	12	2,260	2,840					THIKA	KIZIWA	110	120	4,500	0.01	
sunny/dry	RHS	21-Sep-21	7am	MGV	KCR220A	EMPTY	12	2,020	2,100					GATUKUYU	THIKA	100	100	3,310	0.00	
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KBY 302V	EMPTY	12	2,000	1,980					MURANG'A	KINANGOP	100	100	3,310	0.00	
sunny/dry	RHS	21-Sep-21	7am	MGV	KCM961Y	EMPTY	12	1,920	1,980					KAMWANGI	THIKA	90	100	3,800	0.00	
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KCK 248V	EMPTY	12	1,660	2,100					THIKA	KOINGWA	100	100	4,100	0.00	
Cloudy/Sunny	RHS	21-Sep-21	7am	MGV	KBR 356F	EMPTY	12	1,540	1,120					THIKA	NYUMBAMBILI	60	60	2,740	0.00	
Cloudy/Sunny	RHS	21-Sep-21	8am	MGV	UBH 915K	FEEDS	1	6,600	11,340	8,180	15,040	9,200	9,600	UGANDA	KONGUSA	120	120	9,000	24.70	
Cloudy/Sunny	RHS	21-Sep-21	8am	HGV-A	KAX 855S	D/STONES	1.2.2	7,300	9,600	11,000				THIKA	KOINGWA	100	100	9,500	6.38	
Cloudy/Sunny	RHS	21-Sep-21	8am	MGV	KWM 902	SAND	12	3,500	11,800					MACHAKOS	MILL HILL	120	120	5,100	5.17	
Cloudy/Sunny	RHS	21-Sep-21	8am	HGV-R	KCZ 430N	D/STONES	1.2.2	6,400	9,680	9,540				A/RIVER	KOINGWA	120	120	9,600	4.41	
Cloudy/Sunny	RHS	21-Sep-21	8am	HGV-R	KCQ 226P	Q/DUST	1.2.2	5,700	1,100	10,600				NAIROBI	MILL HILL	100	100	10,000	3.37	
sunny/dry	RHS	21-Sep-21	8am	MGV	KCF827Q	POTATOES	12	5,460	10,000					NAKURU	KITUI	115	120	4,765	2.60	
Cloudy/Sunny	RHS	21-Sep-21	8am	HGV-R	KCG 351F	GOODS	12	5,300	9,500					NAIROBI	KAMWANGI			5,000	2.08	
Cloudy/Sunny	RHS	21-Sep-21	8am	MGV	KBY 827G	BALAST	1.2.2	4,400	8,400	7,400				THIKA	KARAIWI	110	110	10,000	1.81	
Cloudy/Sunny	RHS	21-Sep-21	8am	MGV	KDB 129Z	SAND	1.2.2	6,020	8,200	6,940				THIKA	MAGUMU	115	115	10,000	1.72	
Cloudy/Sunny	RHS	21-Sep-21	8am	HGV-R	KCQ 223E	BALAST	1.2.2	5,560	8,300	1,098				A/RIVER	MPESA	100	100	10,000	1.23	
Cloudy/Sunny	RHS	21-Sep-21	8am	HGV-R	KBC 368S	FEEDS	12	4,300	7,860					KABETE	GATUKUYU	110	120	4,460	0.88	
sunny/dry	RHS	21-Sep-21	8am	MGV	KCA692M	HAY	12	3,180	7,400					FLY OVER	THIKA	100	110	3,900	0.64	
sunny/dry	RHS	21-Sep-21	8am	HGV-A	KCD937U	EMPTY	122222	6,140	3,620	3,640	3,780	2,820	3,100	MATARA	MOMBASA	120	120	9,000	0.37	
sunny/dry	RHS	21-Sep-21	8am	HGV-A	KCD948U	EMPTY	122222	5,920	4,000	3,600	3,160	2,200	3,660	MATARA	MOMBASA	120	120	9,000	0.34	
sunny/dry	RHS	21-Sep-21	8am	MGV	KCP192N	MAIZE GEM	12	4,060	6,140					NAKURU	THIKA	130	130	4,500	0.31	
sunny/dry	RHS	21-Sep-21	8am	HGV-A	KCD932U	EMPTY	122222	5,660	3,600	3,340	3,200	3,220	3,300	MATARA	MOMBASA	120	120	9,000	0.28	
Cloudy/Sunny	RHS	21-Sep-21	8am	MGV	KCC 036P	EMPTY	12	3,200	5,000					THIKA	KAMWANGI	110	110	6,800	0.12	
Cloudy/Sunny	RHS	21-Sep-21	8am	MGV	KAZ 095V	EMPTY	1.2.2	3,600	3,200	3,000				THIKA	MATARA	110	110	8,300	0.05	
sunny/dry	RHS	21-Sep-21	8am	HGV-R	KCB637E	EMPTY	122	3,800	3,060	2,600				KARIFARIRI	THIKA	120	120	9,000	0.05	
sunny/dry	RHS	21-Sep-21	8am	HGV-R	KCA879Z	EMPTY	122	3,600	2,860	2,900				NGOIGWA	NAIROBI	120	120	8,250	0.04	
sunny/dry	RHS	21-Sep-21	8am	MGV	KCH914Y	EMPTY	12	2,840	3,600					NAIROBI	THIKA			4,500	0.03	
Cloudy/Sunny	RHS	21-Sep-21	8am	MGV	KCW 097N	EMPTY	12	2,900	3,300					THIKA	KAKOE	130	130	6,500	0.03	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-A	KCZ 044E	SAND	1.2.2.2.2.2	6,200	8,800	6,700	12,700	10,000	16,160	KITUI	KARUMENU	120	120	47,900	32.84	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-A	KCH 074W	CEMENT	1.2.2.2.2.2	6,020	9,020	8,300	14,440	8,020	9,140	A/RIVER	MPESA	110	110	9,000	18.14	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-A	KCZ 012E	SAND	1.2.2.2.2	6,440	10,400	8,540	12,400	12,100	8,600	MTO VALLEY	KARUMENO	140	140	47,900	17.88	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-A	KCR 902A	SAND	1.2.2.2.2.2	5,000	7,200	10,380	10,080	10,000	13,400	EMBU	KARIMENU	130	130	7,500	17.64	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-A	KBP 489P	SAND	1.2.2.2.2.2	6,600	9,000	9,060	10,100	9,400	9,600	EMBU	KARIMENU	130	130	9,000	9.90	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KCS 305A	ALCOHOL	12	5,000	11,460					JUJA	KAMWANGI	100	120	4,500	4.62	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KCL 086A	D/STONES	12	5,100	11,020					THIKA	WEBUYE	120	120	5,800	3.90	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KAT 255N	D/STONES	1,2	5,000	10,700					THIKA	MANGU	120	120	6,340	3.42	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KBM 320B	ALCOHOL	12	5,400	10,180					JUJA	GATUKU	120	120	4,920	2.80	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-R	KDD 167G	SOIL	12	6,000	8,300	8,400				NAIVASHA	MERU	120	120		2.42	
sunny/dry	RHS	21-Sep-21	9am	HGV-R	KCR902A	SOIL	122	6,000	8,300	8,400				NAIVASHA	MERU	120	120		2.42	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KCW 063Z	PETROL	12	5,600	9,340					NAIROBI	KAMWANGI	110	120	5,400	1.98	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-R	KAV 821A	GOODS	1.2.2.2.2.2	5,300	1,820	5,500		8,840	5,000	2,700	SAI	NAIROBI	120	120	28,640	1.82
sunny/dry	RHS	21-Sep-21	9am	MGV	KCL872M	TIMBER	12	5,840	7,200					NAIROBI	THIKA	120	1,230	4,500	0.77	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-A	KCD 947U	EMPTY	1.2.2.2.2	5,820	2,620	3,700	3,300	3,100	3,060	GACHEKE	NAIROBI	120	120	9,000	0.29	
sunny/dry	RHS	21-Sep-21	9am	HGV-A	KCD947U	EMPTY	122222	5,820	2,620	3,700	3,300	3,100	3,060	GACHEKE	NAIROBI	110	120	5,900	0.29	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KCH 970W	DUST	12	3,820	5,970					NAIROBI	MPESA FDN	80	80	3,800	0.27	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KBS 312W	MILK	12	3,600	5,080					MURANG'A	GATUKUYU	100	100	4,700	0.14	
Cloudy/Sunny	RHS	21-Sep-21	9am	HGV-R	KDB 035A	EMPTY	1.2.2	4,100	3,840	3,300				KAKOYO	THIKA	120	120		0.09	
sunny/dry	RHS	21-Sep-21	9am	HGV-R	KDB035A	EMPTY	122	4,100	3,840	3,300				GAKOYE	THIKA	120	120		0.09	
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KAL 684G	FLOOR	12	2,940	4,700					THIKA	KAMWANGI	120	120	3,570	0.09	

Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KBY 827G	EMPTY	12	4,200	3,400	2,040				KARIFARIRI	THIKA	110	110	10,000	0.07
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KCG 027Y	A/FEEDS	12	2,680	4,240					KENOL	KAMWANGI	110	110		0.06
sunny/dry	RHS	21-Sep-21	9am	MGV	KBA211N	EMPTY	12	2,600	3,000					KENOL	KINANGOP	110	120	5,900	0.02
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KCA 672M	EMPTY	12	2,700	2,900					THIKA	AYORER	100	100	3,900	0.02
sunny/dry	RHS	21-Sep-21	9am	MGV	KCM920Y	EMPTY	12	2,440	2,800					THIKA	KARIFARIRI	100	110	4,700	0.01
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KCW 023P	EMPTY	12	1,600	1,900					THIKA	FLYOVER	90	90	2,100	0.00
Cloudy/Sunny	RHS	21-Sep-21	9am	MGV	KBY 792X	EMPTY	12	1,700	1,700					KIAMBUBU	GATUKUYU	80	80	2,700	0.00
Sunny/Dry	LHS	22-Sep-21	0600	MGV	KCC 695N	Maize	1:2	5,640	10,520	-	-	-	-	Kitale	Thika	115	125	5,200	3.25
Sunny/Dry	LHS	22-Sep-21	0600	MGV	KAT 056Y	Milk	1:2	5,800	10,400	-	-	-	-	Karumenu	Mwangi	100	120	4,500	3.12
Sunny/Dry	LHS	22-Sep-21	0600	HGV-A	KAV 821A	Cotton	1:2:2:2:2:2	6,000	2,200	7,600	8,060	4,500	4,400	Mlolongo	Mwingi	120	120	28,640	2.01
Sunny/Dry	LHS	22-Sep-21	0600	HGV-A	KCZ 010C	Maize	1:2:2:2:2:2	6,000	4,800	4,460	4,560	4,400	4,640	Karumenu	Thika	120	120	47,900	0.61
Sunny/Dry	LHS	22-Sep-21	0600	MGV	KBP 613K	A.Feeds	1:2	4,740	5,020	-	-	-	-	Karifari	Ruiru	110	110	4,100	0.19
Sunny/Dry	LHS	22-Sep-21	0600	HGV-R	CAA 773N	Empty	1:2:2	3,920	3,340	3,200	-	-	-	Kamwangi	Kitale	110	110	9,600	0.07
Sunny/Dry	LHS	22-Sep-21	0600	MGV	KAD 087M	Empty	1:2	3,460	3,400	-	-	-	-	Gatukuyu	Muranga	100	100	4,500	0.04
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KDB 278N	Empty	1:2	5,860	10,600	-	-	-	-	Kitale	Matuu	110	120	4,500	3.40
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KBZ 635E	Maize	1:2	6,540	10,100	-	-	-	-	Bungoma	Thika	110	110	4,500	2.92
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KBY 744G	Bean	1:2	6,820	860	-	-	-	-	Busia	Thika	130	130	4,500	0.44
Sunny/Dry	LHS	22-Sep-21	0700	HGV-R	KCU 059Y	Empty	1:2:2	5,440	4,460	4,000	-	-	-	Gatukuyu	Thika	120	120	10,000	0.26
Sunny/Dry	LHS	22-Sep-21	0700	HGV-R	22GG371A	Empty	1:2:2	4,480	4,200	4,000	-	-	-	Mangu	Thika	-	-	-	0.15
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KCD 057	Milk	1:2	4,740	1,130	-	-	-	-	Kamwangi	Nairobi	120	120	5,200	0.09
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KCV 022K	Empty	1:2	3,500	4,020	-	-	-	-	Mpesa	Kiambu	120	120	6,120	0.06
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KBM 442B	Empty	1:2	3,240	3,600	-	-	-	-	Gatukuyu	Ukubi	120	120	5,000	0.04
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KBV 809T	Empty	1:2	2,760	3,200	-	-	-	-	Kiasmu	Thika	120	120	4,500	0.02
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KZU 204	Empty	1:2	2,740	3,000	-	-	-	-	Gatukuyu	Thika	90	100	5,000	0.02
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KBJ 862W	Empty	1:2	2,740	2,900	-	-	-	-	Flyover	Matuu	120	120	4,000	0.02
Sunny/Dry	LHS	22-Sep-21	0700	MGV	KAV 121B	Empty	1:2	2,600	2,860	-	-	-	-	Geingwa	Thika	120	130	4,080	0.01
Sunny/Dry	LHS	22-Sep-21	0800	MGV	KBS 068T	Beans	1:2	5300	12160	-	-	-	-	Busia	Thika	120	130	4,800	6.03
Sunny/Dry	LHS	22-Sep-21	0800	MGV	KDD 162W	Potatoes	1:2	4,420	10500	-	-	-	-	Narok	Thika	110	120	2,000	3.10
Sunny/Dry	LHS	22-Sep-21	0800	HGV-A	KCR 901A	Empty	1:2:2:2:2:2	6520	2060	4,420	5,000	2,560	2,540	Karumenu	Kitui	120	120	7,500	0.54
Sunny/Dry	LHS	22-Sep-21	0800	MGV	KCH 054B	Empty	1:2	3020	4100	-	-	-	-	Mangu	Thika	110	110	3,500	0.06
Sunny/Dry	LHS	22-Sep-21	0800	MGV	KCE 428M	Empty	1:2	2600	2660	-	-	-	-	Mangu	Thika	100	100	3,500	0.01
Sunny/Dry	LHS	22-Sep-21	0800	MGV	KBC 413S	Empty	1:2	1820	2,100	-	-	-	-	Thika	M.Hill	80	90	-	0.00
Sunny/Dry	LHS	22-Sep-21	0800	MGV	KCN 076X	Empty	1:2	2040	1640	-	-	-	-	Mangu	Thika	80	100	4,900	0.00
Sunny/Dry	LHS	22-Sep-21	0900	HGV-R	KBC 541D	Empty	1:2:2	4500	3,260	3,540	-	-	-	Gatukuyu	Thika	120	120	-	0.11
Sunny/Dry	LHS	22-Sep-21	0900	HGV-R	KBJ 209R	Empty	1:2:2	4260	3600	3,600	-	-	-	Karifari	Thika	110	120	2,200	0.10
Sunny/Dry	LHS	22-Sep-21	0900	HGV-R	KBP 294B	Empty	1:2:2	4340	3600	3,400	-	-	-	Mwangi	Thika	120	120	4,600	0.10
Sunny/Dry	LHS	22-Sep-21	0900	MGV	KBK 227Q	Pads	1:2	2960	3340	-	-	-	-	Albisi	Nairobi	-	-	3,310	0.03
Sunny/Dry	LHS	22-Sep-21	0900	MGV	KCK 830T	Empty	1:2	2180	2320	-	-	-	-	Kanyoni	Thika	110	110	9,960	0.01
Sunny/Dry	LHS	22-Sep-21	1000	MGV	CW 142H	Greens	1:2	6760	10400	-	-	-	-	Boia	Kitui	100	100	5,200	3.33
Sunny/Dry	LHS	22-Sep-21	1000	MGV	CV 612V	A.Feeds	1:2	4520	7340	-	-	-	-	Siwage	Kasarani	120	120	4,500	0.68
Sunny/Dry	LHS	22-Sep-21	1000	MGV	KBC 413S	A.Feeds	1:2	3740	7020	-	-	-	-	Karifarifa	Thika	80	90	-	0.53
Sunny/Dry	LHS	22-Sep-21	1000	MGV	KCM 317Z	Empty	1:2	4560	3840	-	-	-	-	Gatukuyu	Juja	120	120	4,400	0.10
Sunny/Dry	LHS	22-Sep-21	1000	HGV-R	BT829L	Empty	1:2:2	4440	3820	2,500	-	-	-	M.Hill	Ngoingwa	120	120	10,000	0.10
Sunny/Dry	LHS	22-Sep-21	1000	HGV-R	BL 354C	Empty	1:2:2	4400	3760	2,220	-	-	-	M.Hill	Ngoingwa	120	120	10,000	0.09
Sunny/Dry	LHS	22-Sep-21	1000	MGV	BP 366B	Paper	1:2	2500	3400	-	-	-	-	Ngoingwa	Nairobi	70	70	2,300	0.02
Sunny/Dry	LHS	22-Sep-21	1000	MGV	KCD 204J	Empty	1:2	2000	1840	-	-	-	-	Nairobi	Thika	75	75	3,000	0.00
Cloudy/Sunny	RHS	22-Sep-21	10am	HGV-A	KBH 400J	BALLAST	122222	6,320	8,200	10,200	12,860	16,080		KARANI	MILL HILL	120	120	7,000	32.26
Cloudy/Sunny	RHS	22-Sep-21	10am	HGV-A	KBP 232M	BALLAST	122222	4,800	8,720	15,140	8,600	10,120	9,500	TALA	KARUMENU	120	120	7,500	22.95
Cloudy/Sunny	RHS	22-Sep-21	10am	HGV-A	KBA 626M	BALLAST	122222	6,620	10,380	11,220	10,300	9,840	11,900	KARANI	MILL HILL	120	120	7,500	17.78
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KDC 276L	D/STONES	12	6,360	13,340					THIKA	KITALE	110	120	5,400	9.25
Cloudy/Sunny	RHS	22-Sep-21	10am	HGV-R	KBL 254C	SPOIL	122	5,460	10,540	10,800				GOINGWA	MILL HILL	120	120	10,000	6.71
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KZU 204	SAND	12	3,520	12,200					THIKA	GATUKUYU	90	100	5,000	6.00
Cloudy/Sunny	RHS	22-Sep-21	10am	HGV-R	K'BE 848P	BLUKOR	122	8,440	10,300	9,500				KATHINI	MILL HILL	120	120	10,000	5.87
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KCU789H	D/STONES	12	5,080	11,800					THIKA	MILL HILL	120	120	6,400	5.26
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KCE 181X	SOIL	122	5,440	9,600	10,300				THIKA	NGOINGWA	120	120	10,000	4.98
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KCE 146X	SPOIL	12	5,800	10,080	8,800				GOINGWA	MILL HILL	120	120	10,000	4.12

Road Name: Magumu - Thika (B20/D1315) Road																Station: Ngoingwa (Km 65+900)				
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KBZ 553Y	FOOD	12	5,500	10,400					KIAMBU	MANGU	110	110	5,400	3.08	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KAQ 221U	BEADS	12	4,560	8,880					THIKA	KAMWANGI	110	110	4,500	1.50	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KDA 144W	OIL	12	5,800	7,600					NAIROBI	KAMWANGI	110	110	7,980	0.92	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KCY 381F	GOODS	12	3,400	6,600					NAIROBI	MILL HILL	130	130	3,400	0.40	
Cloudy/Sunny	RHS	22-Sep-21	10am	HGV-R	KCZ 247R	BREAD	12	4,600	6,080	3,160	4,080			THIKA	NAKURU	100	100	4,500	0.39	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KBM 309P	BALLAST	12	3,260	6,400					THIKA	KINANGOP	110	120	3,810	0.34	
Cloudy/Sunny	RHS	22-Sep-21	10am	HGV-R	KBS 950T	EMPTY	12	4,880	2,840	3,200				THIKA	NAIVASHA	100	100	5,000	0.12	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KCM 654Q	BOARDS	12	3,040	4,480					RUIRU	MILL HILL	120	120	3,800	0.08	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KCC 836S	EMPTY	12	2,900	3,640					THIKA	FLY OVER	120	130	4,600	0.04	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KBY 625F	EMPTY	12	2,820	3,100					THIKA	NAIVASHA	120	120	4,800	0.02	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	K'BC 979Z	EMPTY	12	2,400	2,600					THIKA	NGOIGWA	110	110	4,600	0.01	
Cloudy/Sunny	RHS	22-Sep-21	10am	MGV	KBR 454M	EMPTY	12	2,100	1,900					THIKA	MILL HILL			2,910	0.00	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KBG 867A	BALLAST	12	6,160	9,880	10,120	11,540	8,900	10,200	UKAMBANI	MILL HILL	120	120	9,000	13.94	
Cloudy/Sunny	RHS	22-Sep-21	11am	HGV-R	KCP 293Z	BALLAST	12	5,220	14,400					KILIMAMBOGO	MILL HILL	120	120	7,000	12.73	
Cloudy/Sunny	RHS	22-Sep-21	11am	HGV-A	KGN 988E	STONE	122	5,240	14,100					THIKA	ELDOROT	110	130	4,600	11.60	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KBF 586H	SAND	12	5,120	5,120	14,040				MACHAKOS	MANGU	110	110		11.49	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KCA 852Z		12	5,220	11,240	8,840				NGOIGWA	MILL HILL	120	120	9,000	5.35	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KCE 146Y	SPOIL	12	10,900	9,180					NGOIGWA	MILL HILL	120	120	1,000	5.26	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KBY 827C	SPOIL	12	5,400	10,840	8,940				NGOIGWA	MILL HILL	120	120	10,000	5.14	
Cloudy/Sunny	RHS	22-Sep-21	11am	HGV-A	KBK 673J	FERTILIZER	122222	5,620	11,500					NAIROBI	KARATU	120	120		4.76	
Cloudy/Sunny	RHS	22-Sep-21	11am	HGV-R	KCB 637E	SPOIL	12	5,080	9,040	10,140				NGOIGWA	MILL HILL	120	120	9,000	4.27	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KBC 261K	SPOIL	122	5,000	8,940	10,200				NGOIGWA	MILL HILL	120	120	10,000	4.25	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KCL 974J	A/GOOD	122	4,460	9,740					SAGANA	MILLHILL	120	120	3,000	2.23	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KCA 655U	DRINKS	12	6,480	9,220					THIKA	KISUMU	110	115	4,760	2.04	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KAZ 602E	A/FEED	12	5,680	7,940					THIKA	MANGU	110	110	4,500	1.06	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KZY 651	H/CORE	122222	3,280	8,080					NAIROBI	MILL HILL	100	100	5,110	0.95	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KDB 368U	STONE	12	3,880	1,400					THIKA	KAMWANGI	120	125	4,000	0.03	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KCL 815M	EMPTY	12	2,540	3,600					THIKA	NAKURU	90	110	4,500	0.03	
Cloudy/Sunny	RHS	22-Sep-21	11am	HGV-R	KCX 272S	H/TINS	122	2,300	3,580					THIKA	ENGINEER	90	100	3,000	0.03	
Cloudy/Sunny	RHS	22-Sep-21	11am	MGV	KG 053B	A/GOOD	12	2,120	3,360					NAIROBI	MILL HILL	80	80	3,200	0.02	
Cloudy/Sunny	RHS	22-Sep-21	11am	HGV-R	KCV 413R	EMPTY	12	2,060	2,600					THIKA	MOLO	115	115	4,850	0.01	
Cloudy/Sunny	RHS	22-Sep-21	12pm	HGV-A	KCZ 020H	SAND	122222	3,600	10,040	9,280	13,860	12,240	13,000	EMBU	KARUMENU	120	120	47,000	28.89	
Cloudy/Sunny	RHS	22-Sep-21	12pm	HGV-A	KCZ 184Z	SAND	122222	6,320	10,040	8,740	13,700	13,700	11,240	MACHAKOS	KARUMENU	120	120	47,900	28.40	
Cloudy/Sunny	RHS	22-Sep-21	12pm	HGV-A	KCZ 033E	SAND	122222	6,460	11,700	10,040	12,520	9,660	11,500	EMBU	KARUMENU	120	120	47,500	21.17	
Cloudy/Sunny	RHS	22-Sep-21	12pm	HGV-A	KCR 902A	SAND	122222	4,880	6,660	10,320	10,040	8,660	11,400	EMBU	KARUMENU	120	120	27,000	11.47	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCW 068Y	FLOUR	12	5,000	13,040					KIRINYAGA	NAIVASHA	120	120	4,000	8.17	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCG 153L	D/STONES	12	4,820	12,800					THIKA	KITALE	120	130	4,500	7.51	
Cloudy/Sunny	RHS	22-Sep-21	12pm	HGV-R	KCB 637E	SPOIL	122	5,600	9,920	10,300				GOINGWA	MILL HILL	120	120	9,000	5.33	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCU 158X	SAND	12	5,160	11,560					MWINGI	MILL HILL	110	110	7,000	4.81	
Cloudy/Sunny	RHS	22-Sep-21	12pm	HGV-R	KBS 023U	SAND	122	7,040	9,560	9,480				MACHAKOS	MILL HILL	110	110	10,400	4.42	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCF 364E	A/GOOD	12	5,820	10,040					MWINGI	MILLHILL	120	120	2,370	2.70	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCD 624E	A/FEED	12	5,400	10,020					THIKA	NGETHO	120	120	4,500	2.62	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KAZ 808W	STONE	12	1,940	9,880					THIKA	KAMWANGI	100	100	2,700	2.31	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KBL 604A	BALLAST	12	4,100	9,200					KILIMAMBOGO	MILL HILL	120	120	5,000	1.72	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KBF 818H	A/FEED	12	5,840	7,340					THIKA	GATUKUYU	120	120	4,500	0.82	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCU 613E	A/FEED	12	5,760	6,500					THIKA	NGOIGWA	110	120	4,500	0.56	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCY 198Y	A/FEED	12	2,980	7,140					THIKA	GATUKUYU	100	100	3,200	0.55	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCY 455Y	CABLES	12	4,080	5,940					THIKA	GAKOYE			6,400	0.28	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KCQ 119V	A/GOOD	12	3,640	2,680					THIKA	OL KALAU	70	70	3,400	0.03	
Cloudy/Sunny	RHS	22-Sep-21	12pm	MGV	KBY 741X	EMPTY	12	3,280	3,000					THIKA	FLYOVER	125	125	4,500	0.03	
Sunny/Dry	LHS	22-Sep-21	1300	HGV-A	AY 413Z	sand	1:2:2:2:2:2	3,320	11,140	9,160	10,920	10,600	10,720	Embu	M.Hill	120	120	9,000	15.78	
Sunny/Dry	LHS	22-Sep-21	1300	HGV-R	BL 706T	sand	1:2:2	6,040	10,680	12,140				Njoro	M.Hill	110	110	11,000	9.38	
Sunny/Dry	LHS	22-Sep-21	1300	HGV-R	BZ 557T	A.Goods	1:2:2:2	6,000	6,540	8,800	9,020			Thika	Dam	120	120	1,300	3.52	
Sunny/Dry	LHS	22-Sep-21	1300	MGV	AX 553V	A.Goods	1:2	5,840	7,880					Thika	Egaton	100	100	4,500	1.05	
Sunny/Dry	LHS	22-Sep-21	1300	MGV	AV 563Y	Flyover	1:2	3,600	6,080					Mwega	M.Hill	110	110	4,300	0.28	
Sunny/Dry	LHS	22-Sep-21	1300	MGV	BU 939Z	Metal	1:2	2,720	6,140					Thika	Mangu	110	110	3,900	0.28	

Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Sunny/Dry	LHS	22-Sep-21	1300	MGV	BV 087P	A.Feeds	1:2	2,620	3,800					Rongai	Gaturi	100	100	2,900	0.04
Sunny/Dry	LHS	22-Sep-21	1300	MGV	CS 955S	Empty	1:2	3440	3040	-	-	-	-	Matarara	Juja	110	120	6,500	0.03
Sunny/Dry	LHS	22-Sep-21	1300	MGV	AS 968T	Empty	1:2	2,720	3,260					Flyover	Thika	125	125	3,400	0.02
Sunny/Dry	LHS	22-Sep-21	1300	MGV	AA 174P	Empty	1:2	2,060	2,320					Thika	Nyandarua	100	100	2,800	0.01
Sunny/Dry	LHS	22-Sep-21	1400	HGV-A	KCZ 038E	Empty	1:2.2:2:2:2	5,640	4,500	4,120	3,500	4,220	3,880	Karumenu	Mwera	120	120	47,900	0.40
Sunny/Dry	LHS	22-Sep-21	1400	BUS	BD 811W	Pass	1:2	3,880	5,600					Gigani	Thika	90	90	6,500	0.21
Sunny/Dry	LHS	22-Sep-21	1400	HGV-R	KBH 954D	Empty	1:2:2	5,300	3,240	3,500				M.Hill	Gakoye	120	120	11,300	0.18
Sunny/Dry	LHS	22-Sep-21	1400	HGV-R	KBL 786Y	Empty	1:2:2	4,100	4,400	3,800				M.Hill	Gakoye	110	110	11,000	0.14
Sunny/Dry	LHS	22-Sep-21	1400	MGV	KCU 053Z	Empty	1:2	2,880	4,220					Kamwangi	Mwea	120	130	6,500	0.06
Sunny/Dry	LHS	22-Sep-21	1400	MGV	CE 651F	Sugar	1:2	3,820	3,360					Thika	Gatikuyu	80	80	3,600	0.05
Sunny/Dry	LHS	22-Sep-21	1400	MGV	CD 057H	Empty	1:2	2,940	2,900					Meru	Kinangop	120	120	5,200	0.02
Sunny/Dry	LHS	22-Sep-21	1400	MGV	KAU 563X	Empty	1:2	2,860	2,540					M.Hill	Thika	110	110	4,300	0.01
Sunny/Dry	LHS	22-Sep-21	1400	MGV	AC 020S	Empty	1:2	2,600	2,760					Kitale	Mwera	120	120	4,500	0.01
Sunny/Dry	LHS	22-Sep-21	1400	MGV	CA 476T	Empty	1:2	2,360	2,220					Nairobi	Thika	110	110	3,100	0.01
Sunny/Dry	LHS	22-Sep-21	1400	MGV	KCW 040W	Soap	1:2	1,860	2,100					M.Hill	Thika	80	80	3,100	0.00
Sunny/Dry	LHS	22-Sep-21	1400	MGV	KBV 087P	Empty	1:2	1,820	1,780					Gatukuyu	Thika	75	75	2,900	0.00
Sunny/Dry	LHS	22-Sep-21	1400	MGV	KAJ 756M	Empty	1:2	1,980	1,360					M.Hill	Thika	65	65	3,000	0.00
Sunny/Dry	LHS	22-Sep-21	1400	MGV	KCR 790L	Books	1:2	1,280	1,060					Mpesa	Nairobi	70	70	1,900	0.00
Sunny/Dry	LHS	22-Sep-21	1500	MGV	CB 460D	Beans	1:2	7,060	10,140					Busia	Thika	-	-	5,100	3.11
Sunny/Dry	LHS	22-Sep-21	1500	HGV-R	KDC 104J	Empty	1:2:2	4,280	4,000	3,640				Karumenu	Tala	130	130	10,000	0.12
Sunny/Dry	LHS	22-Sep-21	1500	HGV-R	KCA 852Z	Empty	1:2:2	3,880	3,820	3,000				M.Hill	Gakoye	120	120	9,000	0.08
Sunny/Dry	LHS	22-Sep-21	1500	MGV	KBL 771M	Drinks	1:2	2,700	3,540					Albizan	Nairobi	90	90	3,820	0.03
Sunny/Dry	LHS	22-Sep-21	1500	MGV	KDD 107S	Empty	1:2	2,260	2,240					Gatukuyu	Thika	90	90	3,500	0.01
Sunny/Dry	LHS	22-Sep-21	1600	MGV	KCX 138V	sand	1:2	5,000	13,800					GilGil	Thika	90	110	4,500	10.51
Sunny/Dry	LHS	22-Sep-21	1600	MGV	KBJ 111W	Silage	1:2	4,780	7,920					Nakuru	Muranga	110	110	4,400	0.94
Sunny/Dry	LHS	22-Sep-21	1600	MGV	KCW 080H	Pass	1:2	4,800	7,240					Mpesa	Thika	100	110	-	0.66
Sunny/Dry	LHS	22-Sep-21	1600	MGV	KCE 651F	Empty	1:2	2,020	1,840					Gatukuyu	Thika	80	80	3,600	0.00
Cloudy/Sunny	RHS	22-Sep-21	1pm	HGV-A	KCZ 017E	SAND	122222	6,700	10,420	11,080	12,000	10,440	11,460	UKAMBANI	KENOL	120	120	47,900	20.24
Cloudy/Sunny	RHS	22-Sep-21	1pm	HGV-A	KBR 368Y	SAND	122222	6,400	10,600	10,100	12,280	9,400	10,140	THIKA	GATUNDU	120	120	9,000	16.66
Cloudy/Sunny	RHS	22-Sep-21	1pm	HGV-A	KCH 803V	BALLAST	122222	5,800	10,360	11,140	11,600	9,660	10,260	KILIMAMBOGO	MPESA	110	110	18,000	16.64
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KZY 693	SAND	12	4,080	13,820					A/RIVER	GATUKUYU	120	120	5,400	10.52
Cloudy/Sunny	RHS	22-Sep-21	1pm	HGV-R	KBL 254	SPOIL	122	5,400	11,160	10,640				NGOIGWA	MILL HILL	120	120	1,000	7.38
Cloudy/Sunny	RHS	22-Sep-21	1pm	HGV-R	KBC 553Y	Q/DUST	122	5,880	10,900	9,800				KILIMAMBOGO	MILL HILL	120	120	9,600	6.05
Cloudy/Sunny	RHS	22-Sep-21	1pm	HGV-R	KBY 827G	SPOIL	122	5,720	10,240	9,640				NGOIGWA	MILL HILL	120	120	10,000	4.99
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KCV 492R	D/STONES	12	5,760	11,500					THIKA	KITALE	120	130	-	4.79
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KDD 139R	STEEL	12	6,600	11,160					THIKA	KISIWA	100	100	5,400	4.38
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KCD 273Q		12	5,020	9,240					KASARANI	KAMWANGI	120	120	-	1.82
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KBP 699V	CHEMICAL	12	5,660	8,960					NAIROBI	NG'ETHO	100	100	5,000	1.68
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KBM 556P	FERTILIZER	12	4,300	8,960					ISINYA	KAMWANGI	100	120	5,800	1.54
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KCY 097Z	MATTRESS	12	4,260	2,700					MATUU	NAKURU	100	100	3,200	0.06
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KBZ 515E	EMPTY	12	2,940	3,700					THIKA	FLYOVER	120	120	5,400	0.04
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KBY 014Z	EMPTY	12	2,760	3,260					KENOL	FLYOVER	130	130	4,500	0.02
Cloudy/Sunny	RHS	22-Sep-21	1pm	MGV	KCE 365Y	EMPTY	12	2,440	2,860	502				THIKA	NAIVASHA	100	100	5,440	0.01
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KCM 439Y	STONE	12	6,020	13,160					THIKA	KITALE	120	120	4,600	8.65
Cloudy/Sunny	RHS	22-Sep-21	2pm	HGV-A	KCF 316W	FERTILIZER	112222	5,860	6,580	9,000	10,200	9,360	9,520	THIKA	GAKOYE	120	120	27,500	8.55
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KDA 163X	STONE	12	5,360	12,900					THIKA	BUSIA	120	120	4,000	7.83
Cloudy/Sunny	RHS	22-Sep-21	2pm	HGV-R	KCE 181X	SPOIL	122	6,140	12,100	9,000				NGOIGWA	MILL HILL	120	120	10,000	7.55
Cloudy/Sunny	RHS	22-Sep-21	2pm	HGV-R	KCV 871H	SPOIL	122	7,240	10,000	11,240				NGOIGWA	MILL HILL	120	120	9,800	7.15
Cloudy/Sunny	RHS	22-Sep-21	2pm	HGV-R	KDB 058H	SPOIL	122	7,400	10,900	10,400				NGOIGWA	MILL HILL	120	120	10,000	7.14
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KCG 281V	D/STONES	12	6,400	11,780					THIKA	WEBUYE	120	120	4,700	5.43
Cloudy/Sunny	RHS	22-Sep-21	2pm	HGV-R	KCA 852Z	SPOIL	122	5,040	11,100	8,020				NGOIGWA	MILL HILL	120	120	10,000	4.92
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KCN 920Y	COTTON	12	4,400	10,960					THIKA	KARIFARIRI	100	110	4,700	3.75
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KCV 043R	STONE	12	4,220	10,760					THIKA	NAKURU	120	120	4,500	3.45
Cloudy/Sunny	RHS	22-Sep-21	2pm	HGV-R	KBY 492X	SAND	1122	5,100	6,500	8,760	8,880			THIKA	NGOIGWA	120	120	9,500	3.25
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KAD 087M	STONE	12	5,800	10,340					THIKA	BUSIA	100	100	4,500	3.05
Cloudy/Sunny	RHS	22-Sep-21	2pm	HGV-R	KAB 644M	PVC	122	5,400	8,300	6,340				NAIROBI	ALBIS	90	90	-	1.52



Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)						
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF	
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KCX 198M	TOMATO/SAUCE	12	4,680	6,900					THIKA	NAIVASHA	110	110	2,500	0.54	
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KBP 613K	COTTON	12	1,940	6,900					THIKA	KARIFARIRI	110	110	4,100	0.46	
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KDA 280Z	FUEL	12	3,000	6,180					NAIROBI	GAKOYE	100	100	2,000	0.29	
Cloudy/Sunny	RHS	22-Sep-21	2pm	MGV	KBP 366B	EMPTY	12	1,700	3,300					NAIROBI	NGOIGWA	70	70	2,300	0.02	
Cloudy/Sunny	RHS	22-Sep-21	3pm	HGV-A	BG 845M	SAND	122222	2,800	9,200	10,060	11,480	9,640	11,120	EMBU	MILL HILL	120	120	9,000	14.75	
Cloudy/Sunny	RHS	22-Sep-21	3pm	HGV-A	KCY 593E	A/FEED	12	5,160	6,800	10,240	11,520	9,720	10,920	THIKA	MILL HILL	120	120	9,000	13.67	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KBZ 657M	D/STONES	12	4,780	14,160					THIKA	KITALE	120	130	4,500	11.77	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCV 936R	D/STONES	12	4,260	13,080					THIKA	BUSIA	120	120	4,500	8.23	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCZ 233N	D/STONES	12	6,020	12,300					THIKA	LODWAR	120	130	8,400	6.45	
Cloudy/Sunny	RHS	22-Sep-21	3pm	HGV-R	KBL 706Y	SPOIL	12	3,820	9,500	10,780				GOINGWA	MILL HILL	110	110	11,000	5.40	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCH 388T	D/STONES	12	6,040	11,700					THIKA	KITALE	110	120	4,800	5.20	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KAB 846Z	SAND	12	3,740	11,620					MALAA	GATUKUYU	120	120	5,900	4.83	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCW 172A	A/FEED	12	4,460	10,460					THIKA	KARIFARIRI	120	120	4,500	3.05	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KDA 330	FURNITURE	12	3,340	10,430					JUJA	LKAMWANGI	120	120	5,400	2.97	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCE 560H	ANIMALS	12	5,200	10,000					MWINGI	GATUKUYU	110	120	4,900	2.57	
Cloudy/Sunny	RHS	22-Sep-21	3pm	HGV-R	KBH 954D	SPOIL	122	4,520	7,680	8,660				GOINGWA	MILL HILL	120	120	11,300	2.09	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KBZ 211B	GAS	12	5,080	9,120					NAIROBI	GATUKUYU	100	100	5,400	1.73	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCK 597Y	POLES	12	3,640	9,220					THIKA	NAKURU	100	100	4,500	1.72	
Cloudy/Sunny	RHS	22-Sep-21	3pm	HGV-R	KDB 199L	CHEMICAL	122	7,320	7,500	3,460				NAIROBI	NG'ETHO	110	110	7,500	1.29	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KDB 293Z	A/GOOD	12	4,820	2,580					THIKA	KAMWANGI	100	100	2,000	0.10	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KBQ 104Z	PASS	12	3,340	4,100					MSA	NYAHURURU	110	110		0.06	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCU 265X	POLES	12	4,320	900					THIKA	NAKURU	110	110	4,500	0.06	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCF 158N	EMPTY	12	2,840	3,100					THIKA	NAROK	120	110	4,500	0.02	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KDD 613P	T/PAPERS	12	2,240	2,900					NAIROBI	MPESA	90	90	3,300	0.01	
Cloudy/Sunny	RHS	22-Sep-21	3pm	MGV	KCK 196Q	EMPTY	12	2,200	2,200					MWINGI	NAROK	120	120	2,850	0.01	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KDC 104T	B/STONES	12	5,300	13,900					THIKA	KITALE	120	130	4,500	10.89	
Cloudy/Sunny	RHS	22-Sep-21	4pm	HGV-R	KCG 678H	SPOIL	122	6,140	11,340	11,180				NGOIGWA	MILLHILL	120	120	10,000	8.61	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KBB 847O	D/STONES	12	3,760	12,000					THIKA	KAKAMEGA	120	130	4,500	5.58	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KBF 940N	BALLAST	12	3,280	11,760					KILIMAMBOGO	GAKOE	120	120	4,500	5.08	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KDC 220A	CEMENT	12	6,480	11,500					A/RIVER	KANG'O	100	110	5,400	4.93	
Cloudy/Sunny	RHS	22-Sep-21	4pm	HGV-R	KBL 919D	BIDCO	122	6,140	9,220	9,060				THIKA	NAKURU	120	120	9,550	3.53	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KDB 257Q	BIDCO	12	4,600	10,700					THIKA	BUNGOMA	120	120	4,800	3.39	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KVE 001	H/CORE	12	3,500	10,620					THIKA	TAIRI	100	100	4,800	3.22	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KBA 705A	FEEDS	12	4,400	10,180					THIKA	GATUKUYO	120	120	4,000	2.71	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KBQ 279Z	MEDICINE	12	5,600	9,860					THIKA	KISUMU	120	120	5,400	2.47	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KCS 955Z	Q/DUST	12	5,700	9,840					JUJA	MATARA	110	120	6,500	2.47	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KZU 204	STONE	12	5,420	8,900					THIKA	GATUKUYU	90	100	5,000	1.60	
Cloudy/Sunny	RHS	22-Sep-21	4pm	HGV-A	KCE 948X	EMPTY	122222	4,080	3,680	3,660	7,720	6,140	4,020	SAGANA	ENGINEER	120	120	9,280	1.17	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KBL 935M	A/FEED	12	4,700	5,020					THIKA	KAMWANGI	120	120	4,900	0.19	
Cloudy/Sunny	RHS	22-Sep-21	4pm	BUS	KAZ 885B	PASS	12	3,360	5,300					THIKA	MILL HILL	110	110	6,700	0.16	
Cloudy/Sunny	RHS	22-Sep-21	4pm	BUS	KCT 186T	PASS	12	3,620	5,120					JUJA	MPESA	120	120	6,600	0.15	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KCZ 058V	PLASTIC WASTE	12	3,100	4,300					EMBU	NAIVASHA	120	120	4,500	0.07	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KCK 074K	FERTILIZER	12	2,280	4,300					NAIROBI	KAMWANGI	90	90	3,200	0.06	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KCY 418N	PLASTIC	12	2,380	4,260					THIKA	KISUMU	70	70	3,900	0.06	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KCQ 797A	EMPTY	12	2,500	3,060					THIKA	NAIVASHA	130	130	4,500	0.02	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KAY 121B	EMPTY	12	2,540	2,880					THIKA	MILL HILL	120	130	4,080	0.01	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KCS 218A	EMPTY	12	1,700	2,000					KITENGELA	MILL HILL	90	100	2,600	0.00	
Cloudy/Sunny	RHS	22-Sep-21	4pm	MGV	KAZ 299V	EMPTY	12	1,800	1,900						MOLO		90	100	2,800	0.00
Cloudy/Sunny	RHS	22-Sep-21	5pm	HGV-A	KCZ 044E	SAND	122222	6,700	10,000	9,820	10,860	11,120	16,440	MWINGI	KARUMENU	120	120	47,900	35.45	
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCY 184H	SAND	12	4,900	14,200					MANANJA	MILL HILL	100	100	5,400	11.93	
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCZ 207N	FERTILIZER	12	5,520	12,900					THIKA	ELDOROT	120	120	5,600	7.85	
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCF 183R	B/STONES	12	5,340	12,900					THIKA	KITALE	120	125	4,900	7.83	
Cloudy/Sunny	RHS	22-Sep-21	5pm	HGV-R	CAA 773N	SAND	122	6,460	10,320	9,740				KILIMAMBOGO	KAMWANGI	110	110	9,600	5.33	
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KDD 314F	D/STONES	12	5,120	11,800					THIKA	ELDOROT	120	120	4,000	5.26	
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCZ 142V	D/STONES	12	6,400	11,200					THIKA	KAPENGURIA	120	120	4,000	4.40	
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCN 537S	D/STONES	12	6,440	10,340					THIKA	KITALE	120	120	4,800	3.18	

Road Name: Magumu - Thika (B20/D1315) Road													Station: Ngoingwa (Km 65+900)						
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCT 469T	MEDICINE	12	6,080	10,300					THIKA	KISUMU	120	120	5,400	3.05
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCS 611V	A/FEED	12	4,140	7,340					THIKA	MANG'U	130	130	4,500	0.65
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KBN 790J	FLOOR	12	4,160	6,300					MSA	KAMWANGI	100	100	4,500	0.35
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCZ 188L	GINJES	12	3,420	5,680					NAIOBI	MOLO	85	100	4,500	0.21
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KBK 232J	CARRIER BAGS	12	3,860	5,320					THIKA	NAKURU	120	120	4,500	0.18
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KAJ 297F	EMPTY	12	2,640	3,100					THIKA	GATUKUYU	110	110	4,900	0.02
Cloudy/Sunny	RHS	22-Sep-21	5pm	BUS	KCM 364X	EMPTY	12	2,100	2,960					THIKA	MADARAKA	70	70		0.01
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCA 584V	EMPTY	12	2,200	2,180					JUJA	NAKURU	120	125	3,500	0.01
Cloudy/Sunny	RHS	22-Sep-21	5pm	MGV	KCX 220D	EMPTY	12	2,000	2,200					MWINGI	NAKURU	100	100	3,900	0.00
Cloudy/Sunny	RHS	22-Sep-21	6am	MGV	KCC 975L	CEMENT	12	7,240	11,200					A/RIVER	ALBISA	120	120	3,900	4.64
Cloudy/Sunny	RHS	22-Sep-21	6am	HGV-R	KVK 546Y	H/CORE	1122	5,440	5,820	8,560	7,640			THIKA	KAMWANGI	120	120	9,200	2.31
Cloudy/Sunny	RHS	22-Sep-21	6am	MGV	KCE 428M	A/FEEDS	12	5,080	7,400					THIKA	MANGU	100	100		0.75
Cloudy/Sunny	RHS	22-Sep-21	6am	BUS	KAE 745S	PASSENGER	12	4,200	7,500					MURANG'A	GATUKUYU	100	100	7,710	0.72
Cloudy/Sunny	RHS	22-Sep-21	6am	MGV	KCP 230E	HAY	12	3,020	4,620					MWEA	KINANGOP	110	110	2,800	0.09
Cloudy/Sunny	RHS	22-Sep-21	6am	MGV	KCV 136X	EMPTY	12	2,780	2,400					THIKA	NAKURU	120	120	3,500	0.01
Cloudy/Sunny	RHS	22-Sep-21	6am	MGV	KAR 179M	EMPTY	12	2,000	2,300					NAIROBI	MANGU	80	80	3,510	0.01
Cloudy/Sunny	RHS	22-Sep-21	7am	HGV-R	KDB 058H	BALLAST	12	6,500	10,860	10,500				MLOLONGO	KARUMENU	110	110		6.93
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCS 045M	CEMENT	12	5,000	11,400					A/RIVER	KARIFARIRI	120	120	5,400	4.51
Cloudy/Sunny	RHS	22-Sep-21	7am	HGV-R	KBK 407Q	SAND	122	6,480	9,000	9,300				MATUN	KAIGI	120	120	9,500	3.63
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCC 085P	FRUITS	12	5,680	10,600					LAMU	KAMWANGI	125	130	5,400	3.37
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCG 027Y	A/FEEDS	12	4,600	10,600					KENOL	MANGU	100	110		3.25
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCY 090Y	CEMENT	12	5,260	10,500					A/RIVER	KARUMENU	100	100	4,000	3.18
Cloudy/Sunny	RHS	22-Sep-21	7am	HGV-R	KCE 181X	SPOIL	122	5,640	8,700	8,600				GOINGWA	KARAFIRI	120	120	10,000	2.73
Cloudy/Sunny	RHS	22-Sep-21	7am	HGV-R	KBS 041X	SODA	12	6,740	9,720					NAIROBI	GATUKUYU	110	110	10,500	2.56
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KAX 418C	CEMENT	122	4,400	9,260					ELEWER	MPESA	120	120	4,500	1.79
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KZX 195	H/CORE	12	3,460	8,200					THIKA	GITUAMBA	100	120	4,500	1.02
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KGW 383G	BREAD	12	3,660	6,840					THIKA	ELDORET	90	90	4,500	0.47
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCU 613V	A/FEEDS	12	4,500	6,400					THIKA	GOINGWA	110	120	4,500	0.40
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCL 090A	EMPTY	12	3,700	4,020					THIKA	KAMWANGI	120	120	8,000	0.07
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCW 614P	GOODS	12	3,000	3,840					THIKA	GOINGWA	130	130	5,000	0.04
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCZ 146Y	EMPTY	12	2,820	3,320					THIKA	MPESA	120	120	9,600	0.03
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCY 200F	GAS	12	2,500	3,300					THIKA	GOINGWA	60	60	2,600	0.02
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCU 612V	A/FEEDS	12	2,500	2,940					THIKA	GOINGWA	110	120	4,500	0.01
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCF 386F	EMPTY	12	2,160	2,340					WAITETHIE	MAU NAROK	100	130	3,500	0.01
Cloudy/Sunny	RHS	22-Sep-21	7am	MGV	KCA 622E	EMPTY	122	1,760	1,740					JUJA	FLYOVER	100	100	2,500	0.00
Cloudy/Sunny	RHS	22-Sep-21	8am	HGV-R	KAA 773N	SAND	122	6,400	10,700	9,200				KILIMAMBOGO	KAMWANGI	110	110	9,600	5.32
Cloudy/Sunny	RHS	22-Sep-21	8am	HGV-R	KBP 294B	SAND	122	6,760	10,180	9,800				MWINGI	GOINGWA	120	120		5.30
Cloudy/Sunny	RHS	22-Sep-21	8am	HGV-R	KCE 146X	SPOIL	122	6,040	10,700	9,120				GOINGWA	MILL HILL	120	120	10,000	5.18
Cloudy/Sunny	RHS	22-Sep-21	8am	HGV-R	KBY 827G	SPOIL	122	5,700	10,000	9,200				GOINGWA	MILL HILL	110	110	10,000	4.32
Cloudy/Sunny	RHS	22-Sep-21	8am	HGV-R	KBH 954D	SPOIL	122	5,020	7,800	8,800				GOINGWA	MILL HILL	120	120	11,300	2.28
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCG 369F	FOOF	12	5,000	9,240					NAIROBI	GATUKUYU	120	120	5,600	1.82
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCJ 935X	STEEL	12	4,400	9,000					THIKA	MANGU	100	100	4,900	1.58
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCK 014V	ALCOHOL	12	5,700	8,800					THIKA	GAKOYE	120	120	5,400	1.57
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KBM 320B	ALCOHOL	12	6,280	8,600					THIKA	KAMWANGI	110	110	4,920	1.54
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KAR 240Y	F/WOOD	12	1,900	8,700					THIKA	NAIVASHA	120	120	4,300	1.31
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCS 478A	SOAP	12	4,020	7,500					NAIROBI	MILL HILL	100	110	4,500	0.71
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCL 990S	ACID	12	2,460	7,000					THIKA	NAIVASHA	100	100	3,000	0.50
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KBH 134Q	FLOOR	12	2,600	6,500					THIKA	MANGU	100	100	2,160	0.36
Cloudy/Sunny	RHS	22-Sep-21	8am	HGV-R	KBP 718E	EMPTY	122	4,300	4,600	4,300				ROY SAMBU	KARUMENU	110	110	9,000	0.18
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCY 369W	GAS	12	2,620	4,220					THIKA	GATUKUYU	80	100		0.06
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KAN 330Y	POSTERS	12	2,500	3,220					MURANG'A	NAKURU	110	110	4,100	0.02
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KBV 539C	EMPTY	12	2,300	2,700					THIKA	NAKURU	125	125	3,500	0.01
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCG	EMPTY	12	1,960	2,600					THIKA	GOINGWA	65	65		0.01
Cloudy/Sunny	RHS	22-Sep-21	8am	MGV	KCV 044J	EMPTY	12	2,200	2,400					THIKA	NAKURU	110	110	3,500	0.01
Cloudy/Sunny	RHS	22-Sep-21	9am	HGV-R	KCW 043A	SOIL	122	7,120	10,800	11,000				GOINGWA	MILL HILL	120	120	10,000	7.73
Cloudy/Sunny	RHS	22-Sep-21	9am	HGV-R	KDB 129Z	SPOIL	122	6,760	10,920	10,200				GOINGWA	MILL HILL	120	120	10,000	6.72

Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Cloudy/Sunny	RHS	22-Sep-21	9am	HGV-R	KCB 637E	SPOIL	122	4,900	10,260	10,600				GOINGWA	MILL HILL	120	120	9,000	6.01
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KCL 358G	SPOIL	122	9,420	9,600					GOINGWA	MILL HILL	120	120	10,000	3.90
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KBX 924X	CEMENT	12	5,710	10,500					A/RIVER	KARUMENU	120	125	4,500	3.24
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KCS 955Z	Q/WASTE	12	4,900	9,720					JUJA	MATARA	110	120	6,500	2.25
Cloudy/Sunny	RHS	22-Sep-21	9am	HGV-R	KBN 954D	SPOIL	122	5,080	7,000	8,300						120	120	11,300	1.66
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KBS 934K	E/POLES	12	4,540	7,080					THIKA	GATUNDU	90	90		0.59
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KAN 563X	F/WOOD	12	3,800	6,780					KENOL	MILL HILL	110	110	4,300	0.46
Cloudy/Sunny	RHS	22-Sep-21	9am	BUS	KBR 623B	PASS	12	3,840	6,460					THIKA	GAKOYE	100	100	6,400	0.37
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KBH 380N	VEGETABLE	12	2,760	5,720					KARATINA	MILL HILL	70	80	2,900	0.21
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KCX 112S	EMPTY	12	2,900	3,500					THIKA	MILL HILL	110	110	5,110	0.03
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KBM 501Y	EMPTY	12	3,000	3,340					MURANG'A	FLY OVER	120	120	4,200	0.03
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KCE 680P	EMPTY	12	2,800	3,120					THIKA	FLY OVER	120	130	4,500	0.02
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KDD 048T	EMPTY	12	2,000	2,320					THIKA	NAKURU	120	120	2,000	0.01
Cloudy/Sunny	RHS	22-Sep-21	9am	MGV	KBD 511W	EMPTY	12	2,000	2,000					THIKA	GATUKUYU	100	100	3,100	0.00
Sunny/Dry	RHS	23-Sep-21	600	HGV-A	KAD 618R	Cement	1:2:2:2:2.2	6,100	9,700	9,620	9,800	8,800	9,400	Bamburi	Kamuru	120	120	-	9.90
Sunny/Dry	RHS	23-Sep-21	600	HGV-R	KCL 294T	Sand	122	7,880	10,080	9,180				Masinya	Gatundu	100	100	-	5.03
Sunny/Dry	RHS	23-Sep-21	600	HGV-R	KBT 002G	stones	122	5,120	9,720	9,620				Thika	Car wash	100	100	3,000	4.32
Sunny/Dry	RHS	23-Sep-21	600	MGV	KAC157Z	stones	12	5,000	9,780					Thika	Mangu	100	110	4,300	2.32
Sunny/Dry	RHS	23-Sep-21	600	MGV	KBP 677K	H/Holds	12	4,120	9,000					Thika	Naivasha	110	110	4,800	1.57
Sunny/Dry	RHS	23-Sep-21	600	MGV	KAE 745S	pass	12	4,260	7,220					Mwangi	Gatundu	100	100	7,710	0.62
Sunny/Dry	RHS	23-Sep-21	600	MGV	KAL 685U	pass	12	2,240	2,960					Goingwa	M.Hill	80	80	4,180	0.01
Sunny/Dry	RHS	23-Sep-21	600	MGV	KCE 032J	Empty	12	1,860	2,200					Nairobi	Mangu	80	80	3,400	0.00
Sunny/Dry	RHS	23-Sep-21	700	HGV-R	KCG 678H	Spoil	122	6,800	12,120	11,680				Goingwa	M.Hill	120	120	10,000	11.15
Sunny/Dry	RHS	23-Sep-21	700	HGV-R	KBR 308P	Sand	122	7,160	9,400	11,380				Masinga	Goingwa	120	120	9,200	6.76
Sunny/Dry	RHS	23-Sep-21	700	MGV	KYN 795	Sand	12	3,660	12,360					Machakos	Gatundu	100	120	4,750	6.36
Sunny/Dry	RHS	23-Sep-21	700	HGV-R	KBE 848P	Ballast	122	7,400	10,320	10,300				Thika	M.Hill	100	100	10,000	6.23
Sunny/Dry	RHS	23-Sep-21	700	HGV-R	KCC 181X	Spoil	122	5,100	10,260	9,500				Ngoingwa	M.Hill	120	120	10,000	4.80
Sunny/Dry	RHS	23-Sep-21	700	HGV-R	KCA 051W	Ballast	122	5,440	9,300	9,200				Nairobi	M.Hill	110	110	10,000	3.60
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCU 613V	A.Feeds	12	4,800	10,720					Thika	Kisiwa	100	120	4,500	3.43
Sunny/Dry	RHS	23-Sep-21	700	HGV-R	KBV 475Q	Road kelb	122	6,020	7,500	9,000				Mlolongo	Mpesa	120	120	9,000	2.44
Sunny/Dry	RHS	23-Sep-21	700	MGV	KDA 906M	Cement	12	5,880	9,600					Muranga	Kinangop	120	120	4,500	2.26
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCX 112S	Drams	12	5,460	5,800					Thika	M.Hill	110	110	5,110	0.37
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCX 151M	Biscuit	12	4,000	6,180					Thika	Nakuru	110	110	3,200	0.32
Sunny/Dry	RHS	23-Sep-21	700	MGV	KBW 159E	Bread	12	4,000	5,900					Thika	Eldoret	110	110	4,500	0.27
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCW 614P	Maize	12	3,400	4,800					Thika	Ngoingwa	130	130	5,000	0.11
Sunny/Dry	RHS	23-Sep-21	700	MGV	22G090A	Empty	12	3,660	4,200					Thika	Gatundu	120	120	8,000	0.08
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCPN724Z	Gas	12	2,600	3,680					Thika	Kamwangi	70	70	3,200	0.03
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCY 377F	pass	12	2,520	3,600					Thika	Thika	70	70	5,180	0.03
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCN 612V	A.Feeds	12	2,840	3,400					Thika	Kisiwa	120	120	4,500	0.03
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCZ 514T	Empty	12	2,800	3,140					Thika	Nyandarua	120	120	5,400	0.02
Sunny/Dry	RHS	23-Sep-21	700	MGV	KCG 263L	Empty	12	2,240	3,040					Thika	Nakuru	95	95	3,700	0.01
Sunny/Dry	RHS	23-Sep-21	700	MGV	KDD 192W	Empty	12	2,000	2,400					Thika	Molo	110	120	2,000	0.01
Sunny/Dry	RHS	23-Sep-21	800	HGV-A	KCR 902A	Sand	1:2:2:2:2:2	4,880	7,400	12,060	10,480	8,700	12,080	Embu	Avis	120	120	7,500	16.44
Sunny/Dry	RHS	23-Sep-21	800	HGV-R	KDD 152X	Spoil	122	6,240	10,600	11,460				Ngiro	M.Hill	120	120	10,300	7.98
Sunny/Dry	RHS	23-Sep-21	800	HGV-R	KDD 264L	Dust	122	4,520	10,880	10,120				Mlolongo	M.Hill	120	120	10,000	6.22
Sunny/Dry	RHS	23-Sep-21	800	HGV-R	KCU 010F	Sand	122	4,940	11,120	9,400				Kiwi	Mitii	110	120	-	5.89
Sunny/Dry	RHS	23-Sep-21	800	MGV	KAJ 297F	stones	02:00	2,860	12,040					Thika	Gatundu	110	110	4,900	5.64
Sunny/Dry	RHS	23-Sep-21	800	HGV-R	KCH 324K	Muran	1122	4,820	6,060	11,100	8,480			Thika	Ngoingwa	120	120	9,500	5.42
Sunny/Dry	RHS	23-Sep-21	800	HGV-R	KCM 690T	Muram	122	3,340	8,060	10,880				Thika	Kisiwa	120	120	10,000	4.51
Sunny/Dry	RHS	23-Sep-21	800	MGV	KCE 258B	A.Feeds	12	5,380	10,720					Mwangi	Kairi	120	120	5,400	3.49
Sunny/Dry	RHS	23-Sep-21	800	MGV	KCU 087W	A.Feeds	12	5,740	10,630					Thika	Mpesa	100	100	4,500	3.42
Sunny/Dry	RHS	23-Sep-21	800	HGV-R	KBH 954H	Spoil	122	4,080	8,220	9,680				Thika	Ngoingwa	100	100	1,130	3.16
Sunny/Dry	RHS	23-Sep-21	800	MGV	KBM 320B	Drinks	12	4,840	8,000					Juja	Goingwa	110	110	4,920	0.99
Sunny/Dry	RHS	23-Sep-21	800	MGV	KBC 413S	A.Feeds	00:00	3,040	5,860					Thika	Mangu	80	90	-	0.23
Sunny/Dry	RHS	23-Sep-21	800	MGV	KBC 908Y	Fence	12	2,020	5,200					Kasarani	Naivasha	100	100	4,300	0.13
Sunny/Dry	RHS	23-Sep-21	800	MGV	KDC 013V	Empty	12	3,380	3,860					Thika	Flyover	125	125	4,000	0.05

## Appendix 4-C: Axle Load Survey Data

Road Name: Magumu - Thika (B20/D1315) Road															Station: Ngoingwa (Km 65+900)				
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Sunny/Dry	RHS	23-Sep-21	800	MGV	KCY 369W	Gas	00:00	2,620	4,100					Thika	Gatundu	80	100	-	0.05
Sunny/Dry	RHS	23-Sep-21	800	MGV	KDD 985P	Empty	12	2,420	2,480					Kiwi	Nakuru	100	100	4,100	0.01
Sunny/Dry	RHS	23-Sep-21	900	MGV	KDD 284K	A.Feeds	12	6,000	14,860					Thika	Kasarani	120	120	5,400	14.76
Sunny/Dry	RHS	23-Sep-21	900	MGV	KCU 033Z	Sand	12	5,000	13,400					Thika	Kenol	120	130	6,500	9.22
Sunny/Dry	RHS	23-Sep-21	900	HGV-R	KBY 827Y	Spoil	12	5,520	11,100	9,500				Goingwa	Kinangop	120	120	10,000	6.01
Sunny/Dry	RHS	23-Sep-21	900	MGV	KA 677N	Sand	12	3,500	12,000					Githimani	Gatundu	100	100	5,100	5.57
Sunny/Dry	RHS	23-Sep-21	900	HGV-R	KCB 627	Spoil	122	4,080	9,640	10,570				Njoro	Mitii	120	120	9,000	5.25
Sunny/Dry	RHS	23-Sep-21	900	HGV-R	KCG 678H	Spoil	122	5,900	1,270	11,050				Ngoingwa	M.Hill	120	120	10,000	4.06
Sunny/Dry	RHS	23-Sep-21	900	MGV	KAD 087R	stones	12	5,420	10,020					Thika	Mangu	100	100	4,500	2.62
Sunny/Dry	RHS	23-Sep-21	900	MGV	KCG 569Z	Tomatoes	12	5,500	9,800					Yatta	Bungoma	100	100	4,900	2.40
Sunny/Dry	RHS	23-Sep-21	900	MGV	KCA 657W	A.Feeds	12	5,600	8,900					Thika	Gakoe	120	120	5,900	1.63
Sunny/Dry	RHS	23-Sep-21	900	MGV	KAN 441B	Fertiliza	12	3,780	8,740					Mlolongo	Flyover	120	120	-	1.36
Sunny/Dry	RHS	23-Sep-21	900	MGV	KCA 335Y	Pass	12	3,040	5,060					Thika	Flyover	90	90	4,500	0.13
Sunny/Dry	RHS	23-Sep-21	900	MGV	KBL 742D	A.Feeds	12	3,800	4,560					Thika	Gatundu	90	90	3,100	0.10
Sunny/Dry	RHS	23-Sep-21	900	MGV	KBA 211N	Empty	12	2,700	3,340					Kenol	Kinangop	110	120	5,900	0.02
Sunny/Dry	RHS	23-Sep-21	900	MGV	KAU 367A	Empty	12	2,340	2,500					Thika	Ngoingwa	100	100	4,700	0.01
Sunny/Dry	RHS	23-Sep-21	1000	HGV-R	KBL 706Y	Spoil	122	6,230	11,040	14,020				Flyover	Methu	120	120	11,000	15.28
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KDC 743Y	stones	12	3,100	13,480					Thika	Kenol	120	120	5,400	9.38
Sunny/Dry	RHS	23-Sep-21	1000	HGV-R	KDB 058A	Spoil	122	6,880	11,460	11,100				Njoro	M.Hill	120	120	10,000	8.87
Sunny/Dry	RHS	23-Sep-21	1000	HGV-R	KCY 226R	Vegetable	12	4,620	10,500	12,040				Mlolongo	Methu	120	120	9,000	8.75
Sunny/Dry	RHS	23-Sep-21	1000	HGV-A	KBP 232M	Books	1:2:2:2:2:2	3,840	4,840	9,860	8,800	1,090	10,880	Kajiado	Kamwangi	120	120	7,500	7.36
Sunny/Dry	RHS	23-Sep-21	1000	HGV-R	KA 773N	Ballon	1:2:2	5,200	10,200	9,880				Karumenu	Kamwangi	120	120	9,600	5.11
Sunny/Dry	RHS	23-Sep-21	1000	HGV-R	KAR 891Y	stones	1:2:2	4,980	9,320	9,660				Thika	A.River	120	120	6,900	3.98
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KCJ 418X	stones	1:2	5,600	10,880					Thika	Nakuru	120	120	4,500	3.75
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KDC 167C	A.Goods	1:2	4,240	10,900					Thika	Kijabe	120	120	7,500	3.65
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KBT 330V	A.Goods	1:2	4,660	10,640					Thika	Naivasha	110	110	4,800	3.31
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KDB 474T	Empty	1:2	3,460	4,000					Meru	Naivasha	110	110	6,400	0.06
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KBA 380N	Vegetable	1:2	2,820	3,800					Kenol	M.Hill	70	80	2,900	0.04
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KAG 497V	Empty	1:2	3,140	2,820					Ngiro	Kijiwe	110	110	9,500	0.02
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KCU 739C	A.Goods	1:2	2,140	2,500					Nairobi	Njoro	100	100	3,300	0.01
Sunny/Dry	RHS	23-Sep-21	1000	MGV	KAZ 271R	Empty	1:2	2,140	2,380					Nairobi	Gawe	100	100	4,700	0.01
Sunny/Dry	RHS	23-Sep-21	1100	HGV-A	KBH 400J	Balkor	1:2:2:2:2:2	5,740	8,240	8,840	8,600	12,040	14,050	Katundu	Dam	120	120	7,000	20.78
Sunny/Dry	RHS	23-Sep-21	1100	HGV-R	KBL 706Y	Spoil	1:2:2	3,060	12,100	12,400				Ngoingwa	M.Hill	120	120	-	12.20
Sunny/Dry	RHS	23-Sep-21	1100	HGV-A	KBA 626M	Balkor	1:2:2:2:2:2	4,920	9,680	9,760	10,260	10,130	9,840	Katundu	Dam	120	120	7,500	12.00
Sunny/Dry	RHS	23-Sep-21	1100	HGV-R	KDC 350J	Spoil	1:2:2	3,720	10,600	12,740				Ngoingwa	M.Hill	120	120	-	10.47
Sunny/Dry	RHS	23-Sep-21	1100	HGV-R	KCG 678H	Spoil	1:2:2	6,100	11,960	10,980				Njoro	M.Hill	120	120	1,000	9.45
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KNH 752	stones	1:2	5,560	10,460					Thika	Kiambu	110	110	5,550	3.16
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KCR 067C	A.Feeds	1:2	5,440	10,400					Thika	Kamwangi	100	100	4,700	3.07
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KBM 102V	Sand	1:2	5,200	9,600					Karumenu	Methu	120	120	4,500	2.16
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KBN 067A	A.Feeds	1:2	5,700	7,860					Njoro	Kamwangi	100	100	4,500	1.02
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KCT 425W	A.Feeds	1:2	3,160	6,000					Thika	Gatundu	100	100	2,600	0.26
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KAV 192Z	Tiles	1:2	3,700	4,500					Nairobi	Kamwangi	110	110	2,550	0.10
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KCC 795N	Empty	1:2	2,060	3,800					Thika	Gatundu	110	110	-	0.03
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KBQ 430C	Empty	1:2	2,620	3,340					Thika	Njoro	100	100	-	0.02
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KAQ 038E	Sand	1:2	2,660	2,520					Thika	M.Hill	100	100	2,700	0.01
Sunny/Dry	RHS	23-Sep-21	1100	MGV	KCN 021B	Empty	1:2	2,040	1,220					Thika	Kiambu	120	120	3,310	0.00
Sunny/Dry	RHS	23-Sep-21	1200	HGV-A	KBH 400J	Ballast	1:2:2:2:2:2	5,740	8,240	8,840	8,600	12,040	14,080	Kajiado	Dams site	120	120	7,000	20.89
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KBL 706Y	Spoil	1:2:2	3,060	12,100	12,400				Ngoingwa	M.Hill	120	120	-	12.20
Sunny/Dry	RHS	23-Sep-21	1200	HGV-A	KBA 626M	Ballast	1:2:2:2:2:2	4,920	9,680	9,760	10,260	10,130	9,840	Kajiado	Dams site	120	120	7,500	12.00
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KDC 356J	Spoil	1:2:2	3,720	10,600	12,740				Ngoingwa	M.Hill	120	120	-	10.47
Sunny/Dry	RHS	23-Sep-21	1200	HGV-A	KBR 525P	Balkor	1:2:2:2:2:2	4,480	2,080	12,260	9,780	8,540	7,600	Nyandarua	Karumenu	120	120	10,500	10.30
Sunny/Dry	RHS	23-Sep-21	1200	HGV-A	KBR 525P	Ballast	1:2:2:2:2:2	4,480	2,080	12,260	9,780	8,540	7,600	Thika	Dams site	120	120	10,500	10.30
Sunny/Dry	RHS	23-Sep-21	1200	HGV-R	KBK 420D	Sand	1:2:2	7,720	10,120	12,080				Kiambere	Kamwangi	120	120	9,100	9.06
Sunny/Dry	RHS	23-Sep-21	1200	HGV-R	KBK 420D	Sand	1:2:2	7,720	10,120	12,080				Kiambere	Kamwangi	120	120	9,100	9.06
Sunny/Dry	RHS	23-Sep-21	1200	HGV-R	KCB 637E	A/feeds	1:2:2	4,200	9,640	10,160				Goingwa	M.Hill	110	110	9,000	4.74
Sunny/Dry	RHS	23-Sep-21	1200	HGV-R	KCB 637E	A/feeds	1:2:2	4,200	9,640	10,160				Ngoingwa	M.Hill	110	110	9,000	4.74

Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Sunny/Dry	RHS	23-Sep-21	1200	HGV-R	KCE 146X	Spoil	1:2:2	5,400	10,540	8,200				Ngoingwa	M.Hill	120	120	10,000	4.25
Sunny/Dry	RHS	23-Sep-21	1200	HGV-R	KCE 146X	Spoil	1:2:2	5,400	10,540	8,200				Ngoingwa	M.Hill	120	120	10,000	4.25
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCB 340B	stones	1:2	3,400	11,240					Thika	Busia	120	120	4,800	4.15
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCB 340B	stones	1:2	3,400	11,240					Thika	Busia	120	120	4,860	4.15
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCL 971S	Balkor	1:2	2,940	10,700					A.River	Gakoe	110	110	6,500	3.32
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCL 971S	Ballast	1:2	2,940	10,700					A.River	Gakoe	110	110	6,500	3.32
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KNH 752	stones	1:2	5,560	10,460					Thika	Kamwangi	110	110	5,550	3.16
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCR 067C	A/feeds	1:2	5,440	10,400					Thika	Kamwangi	100	100	4,700	3.07
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCX 378	H/Core	1:2	3,560	7,940					Thika	Kamwangi	90	90	5,100	0.89
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KYX 378	H/Core	1:2	3,560	7,940					Thika	Kamwangi	90	90	5,700	0.89
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KBN 798A	A.Goods	1:2	5,340	7,500					Thika	Gakoe	120	120	5,400	0.81
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KBN 798A	A/goods	1:2	5,340	7,500					Thika	Gakoe	120	120	5,400	0.81
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KAQ 038E	Sand	1:2	2,660	6,520					Thika	Maragwa	100	100	2,700	0.36
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KDA 256L	Petrol oil	1:2	3,000	5,940					A.River	Kamwangi	100	100	2,000	0.25
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KDA 256L	Petrol oil	1:2	3,000	5,940					Thika	Kamwangi	100	100	2,000	0.25
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCX 282N	Empty	1:2	2,340	5,560					Kiru	Karumenu	120	120	4,000	0.18
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCX 282N	Empty	1:2	2,340	5,560					Kitui	Nakuru	120	120	4,000	0.18
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCM 340Q	A/feeds	1:2	2,240	5,360					Thika	Kamwangi	100	100	3,200	0.15
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCM 665Q	A/feeds	1:2	2,240	5,360					Thika	Kamwangi	100	100	3,200	0.15
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KDB 031D	A.Goods	1:2	3,400	5,040					Thika	Magumu	110	110	4,500	0.13
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KDB 031D	A/goods	1:2	3,400	5,040					Thika	Mangu	110	110	4,500	0.13
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCE 795N	Empty	1:2	2,060	3,000					Thika	Gatundu	110	110	-	0.01
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCT 260T	A.Goods	1:2	2,120	2,860					Ruiru	Gakoe	80	80	2,600	0.01
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCT 260T	A/goods	1:2	2,120	2,860					Ruiru	Gakoe	80	80	2,600	0.01
Sunny/Dry	RHS	23-Sep-21	1200	MGV	KCN 021B	Empty	1:2	2,040	2,220					Thika	Kamwangi	120	120	3,310	0.00
Sunny/Dry	RHS	23-Sep-21	1300	HGV-A	KDD 282Y	Cement	1:2:2:2:2:2	6,460	10,500	10,000	17,800	13,160	10,400	A.River	Karumenu	110	110	9,200	49.86
Sunny/Dry	RHS	23-Sep-21	1300	HGV-A	KCM 575A	A/feeds	1:2:2:2:2:2	6,600	12,700	5,800	13,960	7,760	12,300	Kampala	M.Hill	120	120	7,500	25.69
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KDC 482U	D/Stones	1:2	5,860	13,000					Thika	Mangu	120	120	9,110	8.17
Sunny/Dry	RHS	23-Sep-21	1300	HGV-A	KBV 651C	Poles	1:2:2:2:2:2	7,000	4,460	9,200	9,400	9,200	7,500	Makuyu	Flyover	110	110	8,000	6.43
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KDB 106E	D/Stones	1:2	6,860	11,600					Thika	Eldoret	120	120	4,500	5.21
Sunny/Dry	RHS	23-Sep-21	1300	HGV-R	KBZ 557T	H/Core	1:2:2:2	5,600	6,700	8,740	8,800			Thika	Marumenu	120	120	13,000	3.29
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KYQ 517	Ballast	1:2	3,100	10,360					Thika	Mangu	90	100	5,400	2.88
Sunny/Dry	RHS	23-Sep-21	1300	HGV-A	KCK 151Q	Fertiliza	1:2:2:2:2:2	5,760	6,740	6,500	5,560	3,920	3,720	Nairobi	Mataru	-	-	8,000	1.21
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KCS 067Y	A/goods	12	5,800	1,500					Makuyu	Gacheke	110	110	7,080	0.21
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KBH 122C	Maize	12	2,440	4,640					Thika	M.Hill	80	80	3,370	0.08
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KBU 856T	Empty	12	3,080	3,700					Thika	M.Hill	80	80	-	0.04
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KCD 412Z	Empty	12	2,840	3,780					Thika	Naiivasha	110	110	4,800	0.04
Sunny/Dry	RHS	23-Sep-21	1300	MGV	KCQ 006L	Empty	12	2,700	3,400					Thika	Kamay	120	120	4,500	0.03
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KCZ 014E	Sand	1:2:2:2:2:2	4,620	8,940	10,240	14,080	14,060	12,120	Karumenu	Karumenu	120	120	47,900	32.78
Sunny/Dry	RHS	23-Sep-21	1400	HGV-A	KCR 010L	Sand	1:2:2:2:2:2	5,640	8,640	7,280	12,200	11,460	14,060	Kitui	Kanyoni	120	120	49,000	23.84
Sunny/Dry	RHS	23-Sep-21	1400	HGV-A	KCR 901A	Sand	1:1:2:2:2:2	5,240	6,240	10,640	9,640	8,980	9,460	Kitui	Kanyoni	120	120	7,500	9.13
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KCZ 176W	Sand	12	4,840	13,000					Thika	Kanyoni	100	100	4,000	8.05
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KCN 037Y	Fertiliza	12	6,600	11,440					Thika	Kanyoni	100	100	4,000	4.85
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KBM 556P	Fertiliza	12	4,220	8,900					Isinya	Kanyoni	100	110	5,800	1.50
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KBS 954T	A/feeds	12	4,460	7,480					Thika	Flyover	100	100	6,900	0.73
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KBF 878H	A.Feeds	2	2,880	7,020					Thika	Karumenu	100	100	4,500	0.51
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KAS 792D	pipe	12	3,240	6,280					A.River	M.Hill	100	100	4,060	0.32
Sunny/Dry	RHS	23-Sep-21	1400	MGV	KBU 317Y	Drinks	12	3,900	3,620					Thika	Kanyoni	125	125	4,500	0.06
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCZ 020E	Sand	1:2:2:2:2:2	6,060	9,240	10,420	14,080	14,440	14,080	Karumenu	Karumenu	120	120	47,900	40.45
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCZ 012E	Sand	1:2:2:2:2:2	6,180	10,480	8,900	11,460	16,480	9,860	Kitui	Dam	120	120	4,790	34.67
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCL 851S	D/Stones	12	2,700	15,200					Thika	Flyover	130	130	5,400	16.08
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KDD 277U	Empty	122	4,900	12,900	12,360				Tala	Karumenu	120	120	-	14.12
Sunny/Dry	RHS	23-Sep-21	1500	HGV-R	KBS 093K	stones	122	8,040	12,280	12,060				Thika	Eldoret	100	100	10,000	12.74
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KBF 586H	Empty	12	5,060	14,200					Makueni	Gatanga	120	120	-	11.95
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCZ 185A	stones	12	5,000	14,200					Thika	Eldoret	120	120	4,500	11.94
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KAX 346L	Sand	12	3,940	13,080					Makueni	Mangu	100	100	5,400	8.21



Road Name: Magumu - Thika (B20/D1315) Road													Station: Ngoingwa (Km 65+900)						
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KBY 801X	stones	12	5,220	12,800					Thika	Kitale	100	100	4,740	7.55
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCM 317Z	Ballast	12	6,620	12,340					Thika	Gatukuyu	120	120	4,400	6.67
Sunny/Dry	RHS	23-Sep-21	1500	HGV-R	KCE 146X	Spoil	122	6,620	10,420	10,140						120	120	10,000	5.92
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCL 849X	stones	122	7,320	9,020	8,880				Thika	Flyover	110	110	3,500	3.57
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KDC 208T	stones	12	6,020	10,360					Thika	Nakuru	100	100		3.11
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KBN 957C	stones	12	5,200	10,000					Thika	Mangu	100	100	4,500	2.57
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KAC 157Z	stones	12	5,020	9,640					Thika	Eldoret	110	110	4,300	2.18
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCJ 935X	steal	12	4,500	8,200					Thika	Mangu	100	100	4,900	1.07
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KAG 878F	H/Core	12	3,500	8,000					Thika	Karumenu	100	100	4,500	0.92
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KAX 330P	Empty	12	3,080	7,020					Thika	Busia	90	90	2,750	0.51
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KBV 525Q	Ballast	12	2,400	3,700					Magumu	Nyahururu	130	130	4,500	0.03
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCQ 178A	A.Feeds	12	2,880	3,200					Thika	Gatanga	130	130	4,700	0.02
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCL 455G	Empty	12	2,420	2,800					Thika	Nakuru	110	120	4,700	0.01
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KAT 424S	Empty	12	2,200	2,340					Thika	Gatundu	110	110	4,500	0.01
Sunny/Dry	RHS	23-Sep-21	1500	MGV	KCX 950T	stones	12	1,800	2,300					Thika	A.River	100	100	3,000	0.00
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KDD 264N	Rice	122	5,600	12,200	12,140				Tala	Nakuru	120	120	10,000	12.00
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KBE 848P	Ballast	122	7,500	11,230	12,160				Katani	A.River	100	100	10,000	10.67
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KCB 637E	Spoil	12	4,940	11,000	10,600				Ngoingwa	M.Hill	110	110	9,000	7.03
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KCZ 383L	Ballast	12	6,540	11,700					Thika	A.River	130	140	6,000	5.31
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KCX 271Q	sand	122	6,900	11,000	1,140				Kiambere	Mangu	110	110	-	4.21
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KBW 273M	soap	12	3,400	10,840					Thika	Kitale	110	120	4,500	3.53
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KDA 397N	Ballast	12	6,000	10,500					Thika	Kitale	110	120	4,500	3.29
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KBU 473F	Ballast	12	4,760	9,800					Thika	M.Hill	130	130	4,500	2.32
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KYL 882	Ballast	12	3,200	8,840					Thika	Matara	100	100	4,750	1.42
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KZN 204	Ballast	12	2,940	8,300					Thika	Gatukuyu	90	100	5,000	1.07
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KCP 985M	Cement	12	3,500	6,800					A.River	Mangu	100	100	3,800	0.45
Sunny/Dry	RHS	23-Sep-21	1600	MGV	<b>KBX 545N</b>	<b>Tiles</b>	12	<b>4,040</b>	<b>5,500</b>					<b>Thika</b>	<b>Gatukuyu</b>	<b>90</b>	<b>90</b>	<b>3,800</b>	0.21
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KCX 143X	Tiles	12	3,540	5,600					Thika	Gatundu	120	120	4,000	0.20
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KDC 375L	A.Feeds	12	2,400	5,400					Thika	Mangu	100	100	3,840	0.16
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KAU 812Y	Gas	12	2,880	5,000					Thika	M.Hill	75	75	2,800	0.12
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KAU 413S	Empty	12	3,260	3,400					Nairobi	Kamwangi	70	70	3,000	0.03
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KBY 296D	A.Feeds	12	2,140	3,800					Thika	Gatukuyu	70	70	2,350	0.03
Sunny/Dry	RHS	23-Sep-21	1600	MGV	KCD 893V	Empty	12	1,780	3,500					Thika	Kamwangi	100	100	3,200	0.02
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KCD 307D	Ballast	122	5,200	10,840	10,100				Mlolongo	Albisa	-	-	-	6.19
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KBM 102V	Ballast	12	4,680	12,200					Kilimambogo	Mangu	110	120	4,500	6.06
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KAZ 138T	Spoil	122	4,500	10,900	8,200				Ngoingwa	M.Hill	120	120	9,000	4.67
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KAZ 865U	Biscuit	12	3,740	7,100					Thika	Kampala	110	110	5,500	0.55
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KCY 186Y	pass	12	3,600	5,140					Juja	Mpesa	120	120	6,600	0.15
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KDC 719X	Empty	12	2,900	3,800					Thika	Flyover	100	100	5,400	0.04
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KCY 411W	Empty	12	2,900	3,140					Thika	Flyover	120	120	5,400	0.02
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KBX 510E	Empty	12	2,840	3,100					Ruiru	Ngoingwa	100	100	5,400	0.02
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KCD 057H	Empty	12	2,860	2,940					Thika	Kinangop	120	120	5,200	0.02
Sunny/Dry	RHS	23-Sep-21	1700	MGV	KAV 121B	Empty	12	2,860	2,780					Thika	M.Hill	120	130	4,080	0.02
Sunny/Dry	LHS	23-Sep-21	0600	MGV	KBV 774E	Frount	1:2	6,880	12,440	-	-	-	-	Nakuru	Thika	100	100	4,500	6.98
Sunny/Dry	LHS	23-Sep-21	0600	MGV	KCD 199C	Beans	1:2	5,860	10,840	-	-	-	-	Busia	Thika	120	120	7,000	3.73
Sunny/Dry	LHS	23-Sep-21	0600	MGV	KAP 849W	Maize	1:2	2,860	3,960	-	-	-	-	Eldoret	Garisa	95	100	3,000	0.05
Sunny/Dry	LHS	23-Sep-21	0600	MGV	KCT 425W	Empty	1:2	2,000	1,800	-	-	-	-	Gatundu	Thika	90	90	2,600	0.00
Sunny/Dry	LHS	23-Sep-21	0700	MGV	KAZ 685U	Pass	1:2	2,240	9,100	-	-	-	-	Mill Hill	Ngoingwa	80	80	4,180	1.60
Sunny/Dry	LHS	23-Sep-21	0700	HGV-R	KCB 129Z	Soil	1:2:2	6,400	9,400	9,500	-	-	-	Ngoingwa	Mill Hill	120	120	10,000	4.12
Sunny/Dry	LHS	23-Sep-21	0700	BUS	KCW 080H	Pass	1:2	4,200	6,180	-	-	-	-	Thika	Mpesa	100	110	-	0.33
Sunny/Dry	LHS	23-Sep-21	0700	MGV	KBN 352W	Empty	1:2:2	4,780	3,040	3,000	-	-	-	Kamwangi	Thika	110	110	9,800	0.11
Sunny/Dry	LHS	23-Sep-21	0700	MGV	KBU 473F	Empty	1:2	2,640	3,000	-	-	-	-	Kericho	Thika	130	130	4,500	0.02
Sunny/Dry	LHS	23-Sep-21	0800	MGV	KCP 283U	Maize	1:2	5,280	12,920	-	-	-	-	Busia	Misiugi	130	130	5,800	7.87
Sunny/Dry	LHS	23-Sep-21	0800	MGV	KCS 040T	Pollan	1:2	3,320	12,020	-	-	-	-	Uganda	Thika	120	130	5,400	5.61
Sunny/Dry	LHS	23-Sep-21	0800	MGV	KAT 762J	Timber	1:2	7,320	10,260	-	-	-	-	Nakuru	Thika	100	100	4,620	3.34
Sunny/Dry	LHS	23-Sep-21	0800	MGV	KCU 021B	Timber	1:2	3,460	6,280	-	-	-	-	Gatundu	Thika	120	120	3,310	0.32

Road Name: Magumu - Thika (B20/D1315) Road														Station: Ngoingwa (Km 65+900)					
Weather	Lane	Date	Hour	Vehicle Type	Vehicle No.	Goods carried	Axle Config.	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5	Axle 6	Origin	Destination	Front Tyre Pressure	Rear Tyre Pressure	(Tare Wt) (Kgs)	EALF
Sunny/Dry	LHS	23-Sep-21	0800	MGV	KBQ 430C	Empty	1:2	2,480	3,060	-	-	-	-	Mangu	Thika	100	100	4,500	0.02
Sunny/Dry	LHS	23-Sep-21	0800	MGV	KDD 588A	Empty	1:2	2,500	2,600	-	-	-	-	Ngoingwa	Thika	110	110	4,000	0.01
Sunny/Dry	LHS	23-Sep-21	0800	MGV	KAN 827Y	Empty	1:2	2,100	2,720	-	-	-	-	Nakuru	Thika	110	125	4,500	0.01
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KBU 525Q	Timber	1:2	5,500	11,880	-	-	-	-	Nakuru	Mwiki	130	130	4,500	5.47
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KAN 802V	Timber	1:2	3,900	6,740	-	-	-	-	Mill Hill	Thika	120	120	4,500	0.45
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KCY 060Q	Hay	1:2	3,240	6,000	-	-	-	-	Nakuru	Mwiki	120	120	3,200	0.26
Sunny/Dry	LHS	23-Sep-21	0900	HGV-R	KBB 129Z	Empty	1:2:2	3,440	3,960	4,020	-	-	-	Mill Hill	Thika	120	120	10,000	0.10
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KCA 051W	Empty	1:2:2	2,300	2,880	3,620	-	-	-	Mill Hill	Thika	120	120	10,000	0.04
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KDA 330T	Empty	1:2	2,060	3,540	-	-	-	-	Ngoingwa	Thika	120	120	5,400	0.02
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KCU 790H	Empty	1:2	2,800	3,100	-	-	-	-	Kamwangi	Thika	110	110	5,600	0.02
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KYQ 517	Empty	1:2	3,040	2,800	-	-	-	-	Gatukuyu	Kilimambogo	90	100	5,400	0.02
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KCU 613V	Empty	1:2	2,660	2,680	-	-	-	-	Ngoingwa	Thika	110	120	4,500	0.01
Sunny/Dry	LHS	23-Sep-21	0900	MGV	KAY 330P	Empty	1:2	2,200	1,900	-	-	-	-	Gatukuyu	Thika	90	100	2,750	0.00
Sunny/Dry	LHS	23-Sep-21	1000	HGV-R	KCK 990L	Soil	1:2:2	4,740	7,840	8,500	-	-	-	Keini	JKUAT	120	120	-	2.08
Sunny/Dry	LHS	23-Sep-21	1000	MGV	KAV 121B	Empty	1:2	2,620	3,000	-	-	-	-	Mitii	Thika	100	100	4,080	0.02
Sunny/Dry	LHS	23-Sep-21	1000	MGV	KCZ 076W	Empty	1:2	2,000	1,880	-	-	-	-	Mangu	Thika	80	80	3,150	0.00
Sunny/Dry	LHS	23-Sep-21	1100	MGV	KBM 953V	Empty	1:2	3,820	3,880	-	-	-	-	Makuyu	Thika	110	110	-	0.07
Sunny/Dry	LHS	23-Sep-21	1100	MGV	KCY 287I	Maize	1:2	2,640	3,740	-	-	-	-	Nakuru	Makri	90	90	3,200	0.04
Sunny/Dry	LHS	23-Sep-21	1100	MGV	KAR 891Y	Empty	1:2	3,280	2,600	-	-	-	-	A.River	Thika	120	120	6,900	0.02
Sunny/Dry	LHS	23-Sep-21	1100	MGV	KAT 424J	Empty	1:2	2,580	2,900	-	-	-	-	A.River	Thika	100	100	5,000	0.01
Sunny/Dry	LHS	23-Sep-21	1100	MGV	KCV 739C	Empty	1:2	2,360	2,400	-	-	-	-	Ngoingwa	Nairobi	100	100	3,300	0.01
Sunny/Dry	LHS	23-Sep-21	1100	MGV	KBH 122C	Empty	1:2	1,930	2,340	-	-	-	-	M.Hill	Thika	80	80	3,370	0.01
Sunny/Dry	LHS	23-Sep-21	1300	MGV	KBP 613K	A.Feeds	1:2	5,640	10,000	-	-	-	-	Kamwangi	Thika	110	110	4,100	2.63
Sunny/Dry	LHS	23-Sep-21	1300	MGV	KAN 432Y	Soil	1:2	4,500	9,500	-	-	-	-	Kamwangi	Thika	100	100	4,500	2.01
Sunny/Dry	LHS	23-Sep-21	1300	MGV	KBU 856T	Empty	1:2	3,500	3,900	-	-	-	-	M.Hill	Thika	80	80	-	0.06
Sunny/Dry	LHS	23-Sep-21	1400	MGV	KBZ 033N	Timber	1:2	5,480	14,000	-	-	-	-	Nakuru	Thika	120	120	4,500	11.27
Sunny/Dry	LHS	23-Sep-21	1400	MGV	KBW 835Y	Hay	1:2	5,180	10,500	-	-	-	-	Kikuyu	Nairobi	120	140	4,500	3.17
Sunny/Dry	LHS	23-Sep-21	1400	MGV	KCK 523T	Timber	1:2	3,220	7,000	-	-	-	-	Nakuru	Thika	80	80	1,900	0.51
Sunny/Dry	LHS	23-Sep-21	1400	HGV-R	KCD 906E	Empty	1:2:2	3,800	4,140	4,120	-	-	-	Kamwangi	Nairobi	120	120	9,500	0.12
Sunny/Dry	LHS	23-Sep-21	1400	MGV	KBP 699V	Empty	1:2	3,260	3,400	-	-	-	-	Ng'ethu	Thika	100	100	5,000	0.03

### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 0+100 LHS TP1 Coordinates: Latitude S -0.878635°, Longitude: E 36.566619°

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>40mm</b></p> <p>Base: Graded crushed stone, <b>200mm</b> thick</p> <p>Sub base: Greyish soft stone, <b>130mm</b> thick</p> <p>Top Subgrade : Brownish gravel, <b>150mm</b> thick</p> <p>Bottom subgrade: Brownish gravel , <b>150mm</b> thick</p> <p>Native soil: Black clay soil, <b>500mm+</b></p> <p><b>Pavement layer thickness =370mm</b>  <b>Total Thickness =1170mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Graded crushed stones Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Greyish soft stone Subbase</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Brownish gravel Subgrade.</p> <p>Sampled and Tested</p> <p>Layer 5: Blackish soil Native.</p> <p>Sampled and Tested</p> <p><b>NB: Same material used for both top and bottom subgrade.</b></p>	<p>(J) Jar Sample</p> <p>(B) Bulk Sample</p> <p>(N) Not Sampled</p>	



**Appendix 4-D: Trenching Logs**

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Weather: cloudy**

**Logged By: MTRD Staff**

**Date: 10/07/2021**

Chainage: KM 5+000 RHS TP2 Coordinates: Latitude S -0.857774<sup>0</sup>, Longitude: E 36.595051<sup>0</sup>

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>40mm</b></p> <p>Base: Graded crushed stone, <b>120mm</b> thick</p> <p>Sub base: Greyish weathered rock, <b>100mm</b> thick</p> <p>Top Subgrade : Reddish soil, <b>150mm</b> thick</p> <p>Bottom subgrade: Reddish soil , <b>150mm</b> thick</p> <p>Native soil: Clay soil, <b>300mm+</b></p> <p><b>Pavement layer thickness = 260mm</b></p> <p><b>Total thickness = 860mm</b></p>
<p>Notes</p> <p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Graded crushed stones Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Greyish weathered rock Subbase</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Reddish soil Subgrade.</p> <p>Sampled and Tested</p> <p>Layer 5: Clay soil Native soil.</p> <p>Sampled and Tested</p> <p><b>NB:</b> Same material used for both top and bottom subgrade.</p>	<p>Sampling</p> <ul style="list-style-type: none"> <li>ⓐ Jar Sample</li> <li>ⓑ Bulk Sample</li> <li>ⓓ Not Sampled</li> </ul>	<p>Plan or photo of the pit</p>

### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 10+030 LHS TP3 Coordinates: Latitude S -0.845999, Longitude: E 36.642042<sup>0</sup>

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>30mm thick</b></p> <p>Base: Graded crushed stone, <b>130mm thick</b></p> <p>Sub base: Greyish soft stone, <b>100mm thick</b></p> <p>Subgrade : Reddish soil, <b>200 mm thick</b></p> <p>Native soil: Black clay soil, <b>200 mm+</b></p> <p><b>Pavement layer thickness = 260 mm</b></p> <p><b>Total thickness = 660 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Graded crushed stones Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Greyish soft rock Subbase</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Reddish soil Subgrade.</p> <p style="padding-left: 20px;">Sampled and Tested</p> <p>Layer 5: Blackish soil Native.</p> <p style="padding-left: 20px;">Sampled and Tested</p> <p><b>NB: Same material used for both top and bottom subgrade.</b></p>	<p>(J) Jar Sample</p> <p>(B) Bulk Sample</p> <p>(N) Not Sampled</p>	

**Appendix 4-D: Trenching Logs**

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Weather: cloudy**

**Logged By: MTRD Staff**

**Date: 10/07/2021**

Chainage: KM 14+800 RHS TP4 Coordinates: Latitude S -0.854813<sup>0</sup>, Longitude: E 36.681309<sup>0</sup>

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>40mm</b></p> <p>Base: Graded crushed stone mixed with crushed stone (crusher run), <b>120mm</b> thick</p> <p>Sub base: Greyish soft stone, <b>80mm</b> thick</p> <p>Subgrade: Reddish soil, <b>190mm</b> thick</p> <p>Native: Reddish soil, <b>150mm+</b> thick</p> <p><b>Pavement layer thickness = 240 mm</b></p> <p><b>Total thickness = 580 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Graded crushed stones Blended with soft rock Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3: Greyish soft rock Subbase</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Reddish soil Subgrade.</p> <ul style="list-style-type: none"> <li>○ Sampled and Tested</li> </ul> <p>Layer 5: Reddish soil Native.</p> <ul style="list-style-type: none"> <li>○ Sampled and Tested</li> </ul> <p><b>NB:</b> The Insitu material is Redsoil which was used as subgrade material</p>	<ul style="list-style-type: none"> <li>○ <b>J</b> Jar Sample</li> <li>○ <b>B</b> Bulk Sample</li> <li>○ <b>N</b> Not Sampled</li> </ul>	

### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 20+430 LHS TP5 Coordinates: Latitude S -0.867623°, Longitude: E 36.727747°

	<p>Depth, cm</p>	<p><u>Description of face and material</u>          Surfacing: Asphalt wearing course, <b>50mm</b>          Base: Graded crushed stone mixed with crushed stone (crusher run), <b>120mm</b> thick          Sub base: Greyish soft stone, <b>100mm</b> thick          Native Subgrade : Reddish soil, <b>150mm+</b> thick</p> <p><b>Pavement layer thickness = 270 mm</b>  <b>Total thickness = 420 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material          ○ Sampled &amp; tested          Layer 2: Graded crushed stones Blended with soft rock Base          ○ Likely to be improved/treated          ○ Sampled &amp; tested          Layer 3 : Greyish soft rock Sub base          ○ Sampled &amp; tested          Layer 4: Reddish soil insitu Subgrade.          Sampled and Tested</p> <p><b>NB:</b> The Insitu material is Red soil which was used as subgrade material</p>	<p> <input checked="" type="radio"/> J              Jar Sample  <input checked="" type="radio"/> B              Bulk Sample  <input checked="" type="radio"/> N              Not Sampled         </p>	

**Appendix 4-D: Trenching Logs**

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Weather: cloudy**

**Logged By: MTRD Staff**

**Date: 10/07/2021**

Chainage: KM 25+400 RHS TP6 Coordinates: Latitude S -0.875822° Longitude: E 36.762754°

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>40mm</b></p> <p>Base: Graded crushed stone mixed with crushed stone (crusher run), <b>100mm</b> thick</p> <p>Sub base: Yellowish soft stone, <b>150mm</b> thick</p> <p>Insitu Subgrade : Reddish soil, <b>150mm+</b> thick</p> <p><b>Pavement layer thickness = 290mm</b>  <b>Total thickness = 440 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Graded crushed stones Blended with soft rock Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Yellowish soft rock Sub base</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Reddish soil insitu Subgrade.</p> <p>Sampled and Tested</p> <p><b>NB: The Insitu material is Red soil which was used as subgrade material</b></p>	<p>(J) Jar Sample</p> <p>(B) Bulk Sample</p> <p>(N) Not Sampled</p>	



### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

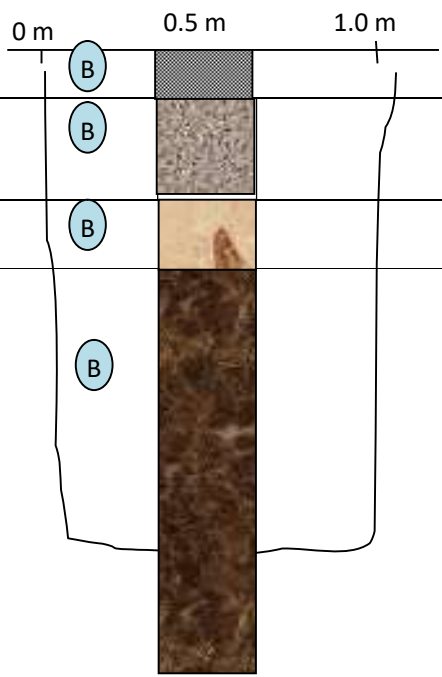


**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 30+000 LHS TP7 Coordinates: Latitude S -0.885827<sup>o</sup>, Longitude: E 36.799499<sup>o</sup>

	<p>Depth, cm</p> 	<p><u>Description of face and material</u></p> <p>Surfacing: Asphalt wearing course, <b>35mm</b></p> <p>Base: Graded crushed stone mixed with crushed stone (crusher run), <b>120mm</b> thick</p> <p>Sub base: Reddish lateritic gravel, <b>100 mm</b> thick</p> <p>Subgrade: Reddish lateritic gravel, <b>295mm+</b> thick</p> <p><b>Pavement layer thickness = 255mm</b> <b>Total thickness = 550 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Graded crushed stones Blended with soft rock Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3: Reddish lateritic gravel Sub base</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Reddish lateritic gravel insitu Subgrade.</p> <p style="padding-left: 40px;">Sampled and Tested</p> <p><b>NB:</b> The Insitu material is reddish lateritic gravel which was used as subgrade material</p>	<p>(J) Jar Sample</p> <p>(B) Bulk Sample</p> <p>(N) Not Sampled</p>	

**Appendix 4-D: Trenching Logs**

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Weather: cloudy**

**Logged By: MTRD Staff**

**Date: 10/07/2021**

Chainage: KM 35+180 RHS TP8 Coordinates: Latitude S -0.909036<sup>0</sup>, Longitude: E 36.833049<sup>0</sup>

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>45mm</b></p> <p>Base: Graded crushed stone mixed with crushed stone (crusher run), <b>130mm</b> thick</p> <p>Sub base: Reddish lateritic gravel, <b>100 mm</b> thick</p> <p>Subgrade: Reddish lateritic gravel, <b>150mm</b> thick</p> <p><b>Pavement layer thickness = 275mm</b> <b>Total thickness = 425 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Graded crushed stones Blended with soft rock Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3: Reddish lateritic gravel Sub base</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Reddish lateritic gravel insitu Subgrade.</p> <p align="center">Sampled and Tested</p> <p><b>NB: The Insitu material is reddish lateritic gravel which was used as subgrade material</b></p>	<p><b>J</b> Jar Sample</p> <p><b>B</b> Bulk Sample</p> <p><b>N</b> Not Sampled</p>	

### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

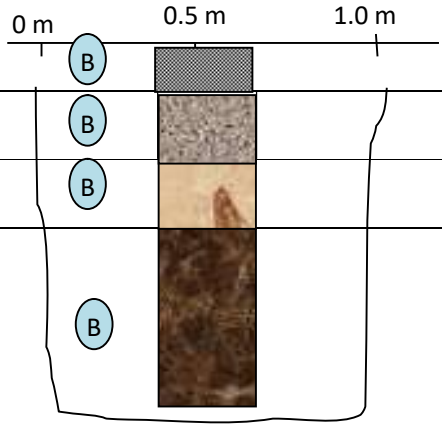


**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 40+200 LHS TP9 Coordinates: Latitude S -0.934316°, Longitude: E 36.864537°

	<p>Depth, cm</p> 	<p><u>Description of face and material</u>          Surfacing: Asphalt wearing course, <b>50mm</b>          Base: Graded crushed stone, <b>100mm</b> thick          Sub base: Reddish lateritic gravel, <b>100 mm</b> thick          Native Subgrade : Reddish soil, <b>250mm+</b> thick</p> <p><b>Pavement layer thickness =250mm</b>  <b>Total thickness = 500mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material          ○ Sampled &amp; tested</p> <p>Layer 2: Graded crushed stones Base          ○ Likely to be improved/treated          ○ Sampled &amp; tested</p> <p>Layer 3 : Reddish lateritic gravel Sub base          ○ Sampled &amp; tested</p> <p>Layer 4: Reddish soil insitu Subgrade.          Sampled and Tested</p> <p><b>NB:</b> The Insitu material is reddish lateritic gravel which was used as subgrade material</p>	<p> <input checked="" type="radio"/> J          Jar Sample  <input checked="" type="radio"/> B          Bulk Sample  <input checked="" type="radio"/> N          Not Sampled       </p>	



**Appendix 4-D: Trenching Logs**

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Weather: cloudy**

**Logged By: MTRD Staff**

**Date: 10/07/2021**

Chainage: KM 45+120 RHS TP10 Coordinates: Latitude S -955906, Longitude: E 36.896497<sup>0</sup>

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>25mm</b></p> <p>Base: Reddish lateritic gravel, <b>150mm</b> thick</p> <p>Sub base: Reddish lateritic gravel, <b>100mm</b> thick</p> <p>Top Subgrade : Reddish lateritic gravel, <b>150mm</b> thick          Bottom subgrade Reddish lateritic gravel, <b>120mm</b> thick          Native soil: Reddish soil, <b>180mm+</b></p> <p><b>Pavement layer thickness = 275 mm</b>  <b>Total thickness = 725 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material          ○ Sampled &amp; tested</p> <p>Layer 2: Reddish lateritic gravel Base          ○ Likely to be improved/treated          ○ Sampled &amp; tested</p> <p>Layer 3 : Reddish lateritic gravel Sub base          ○ Sampled &amp; tested</p> <p>Layer 4: Reddish lateritic gravel Top Subgrade.          Sampled and Tested</p> <p>Layer 5: Reddish lateritic gravel Bottom Subgrade.          Sampled and Tested</p> <p>Layer 6: Reddish soil native.          Sampled and Tested</p>	<p>○ J          Jar Sample</p> <p>○ B          Bulk Sample</p> <p>○ N          Not Sampled</p>	

### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

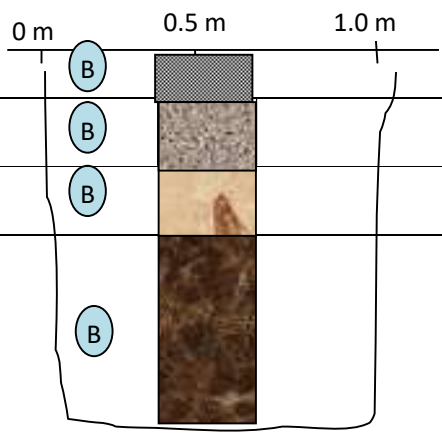


**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 50+140 LHS TP11 Coordinates: Latitude S -0.974066°, Longitude: E 36.932294°

	<p>Depth, cm</p> 	<p><u>Description of face and material</u></p> <p>Surfacing: Asphalt wearing course, 50mm</p> <p>Base: Dark Reddish lateritic gravel, <b>100mm</b> thick</p> <p>Sub base: Reddish lateritic gravel, <b>150 mm</b> thick</p> <p>Subgrade :Dark Reddish lateritic gravel, <b>140mm</b> thick Insitu :Blackish soil <b>150mm+</b> thick</p> <p><b>Pavement layer thickness =300mm</b> <b>Total thickness = 590 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Dark reddish lateritic gravel Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Reddish lateritic gravel Sub base</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Dark Reddish lateritic gravel Subgrade.</p> <ul style="list-style-type: none"> <li>○ Sampled and Tested</li> </ul> <p>Layer 5: Blackish soil native.</p> <ul style="list-style-type: none"> <li>○ Sampled and Tested</li> </ul>	<p>(J) Jar Sample</p> <p>(B) Bulk Sample</p> <p>(N) Not Sampled</p>	

**Appendix 4-D: Trenching Logs**

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 55+250 RHS TP12 Coordinates: Latitude S -0.987016°, Longitude: E 36.968394°

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>55mm</b></p> <p>Base: Dark reddish lateritic gravel, <b>150mm</b></p> <p>Sub base: Dark reddish lateritic gravel, <b>150mm</b></p> <p>Native Subgrade : Brownish gravel, <b>285mm+</b> thick</p> <p><b>Pavement layer thickness =355mm</b> <b>Total thickness = 640 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Dark reddish lateritic gravel Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Dark reddish lateritic gravel Sub base</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4: Reddish soil</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul>	<p><b>(J)</b> Jar Sample</p> <p><b>(B)</b> Bulk Sample</p> <p><b>(N)</b> Not Sampled</p>	

### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

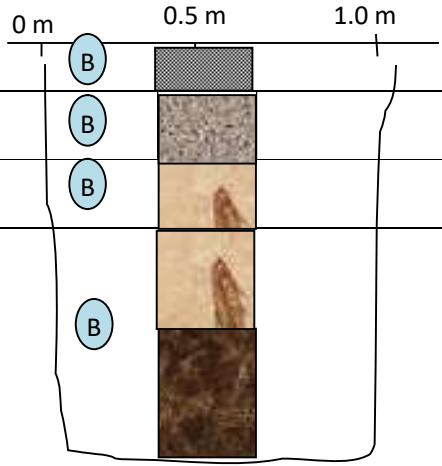


**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 59+900 LHS TP13 Coordinates: Latitude S -1.011798°, Longitude: E 37.001197°

	<p>Depth, cm</p> 	<p><u>Description of face and material</u></p> <p>Surfacing: Asphalt wearing course, <b>45mm</b> thick</p> <p>Base: Reddish lateritic gravel, <b>160mm thick</b></p> <p>Sub base: Reddish lateritic gravel, <b>110 mm thick</b></p> <p>Subgrade: Reddish lateritic gravel, <b>100 mm thick</b></p> <p>Native soil: Reddish soil, <b>185mm+ thick</b></p> <p><b>Pavement layer thickness = 315mm</b> <b>Total thickness = 600 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Reddish lateritic gravel Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Reddish lateritic gravel Sub base</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4 : Reddish lateritic gravel Sub grade</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 5 : Reddish soil Native</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul>	<p>(J) Jar Sample</p> <p>(B) Bulk Sample</p> <p>(N) Not Sampled</p>	

**Appendix 4-D: Trenching Logs**

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 64+800 RHS TP14 Coordinates: Latitude S -1.0383455°, Longitude: E 37.035157°

	<p>Depth, cm</p>	<p>Description of face and material</p> <p>Surfacing: Asphalt wearing course, <b>50mm</b> thick</p> <p>Base: Reddish lateritic gravel, <b>100 mm thick</b></p> <p>Sub base: Reddish lateritic gravel, <b>150 mm thick</b></p> <p>Subgrade: Reddish lateritic gravel, <b>200 mm thick</b></p> <p>Native : Blackish lateritic gravel, <b>200mm+ thick</b></p> <p><b>Pavement layer thickness =300mm</b> <b>Total thickness = 700 mm</b></p>
<p>Notes</p>	<p>Sampling</p>	<p>Plan or photo of the pit</p>
<p>Layer 1: Bituminous Material</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 2: Reddish lateritic gravel Base</p> <ul style="list-style-type: none"> <li>○ Likely to be improved/treated</li> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 3 : Reddish lateritic gravel Sub base</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 4 : Reddish lateritic gravel Sub grade</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul> <p>Layer 5 : Darkish lateritic gravel Native</p> <ul style="list-style-type: none"> <li>○ Sampled &amp; tested</li> </ul>	<p> <input checked="" type="radio"/> J Jar Sample  <input checked="" type="radio"/> B Bulk Sample  <input checked="" type="radio"/> N Not Sampled         </p>	



### Appendix 4-D: Trenching Logs

**Project Road: Thika –Magumu road B20/D1315**

**Client: KeNHA**

**Logged By: MTRD Staff**

**Weather: cloudy**

**Date: 10/07/2021**

Chainage: KM 67+800 LHS TP15 Coordinates: Latitude S -1.043386°, Longitude: E 37.058869°

	<p>Depth, cm</p>	<p><u>Description of face and material</u>          Surfacing: Asphalt wearing course, <b>50 mm</b>          Base: Reddish lateritic gravel, <b>100 mm thick</b>          Sub base: Reddish lateritic gravel, <b>120 mm thick</b>          Native Subgrade: Whitish clay soil gravel, <b>150 mm+ thick</b></p> <p><b>Pavement layer thickness = 270mm</b>  <b>Total thickness = 420 mm</b></p>
<p><b>Notes</b></p>	<p><b>Sampling</b></p>	<p><b>Plan or photo of the pit</b></p>
<p>Layer 1: Bituminous Material          ○ Sampled &amp; tested</p> <p>Layer 2: Reddish lateritic gravel Base          ○ Likely to be improved/treated          ○ Sampled &amp; tested</p> <p>Layer 3 : Reddish lateritic gravel Sub base          ○ Sampled &amp; tested</p> <p>Layer 4: Whitish clay soil, Insitu Sub grade          ○ Sampled &amp; tested</p> <p><b>NB:</b> This section has developed alligator cracks due to subgrade material being clay soil.</p>	<p>(J) Jar Sample</p> <p>(B) Bulk Sample</p> <p>(N) Not Sampled</p>	



Appendix 4-E: Pavement Materials Test Results

Chainage/ Test No.	Layer Description	Thickness (mm)	Field Dry Density Kg/M <sup>3</sup>	Field moisture content (%)	MaX. Dry Density Kg/M <sup>3</sup>	Optimum moisture content (%)	Relative compaction (%)	Relative moisture content (%)
KM 0+100 LHS TP1	Base, Graded crushed stone.	160	1847	9.3	1960	10.5	94	89
	Subbase, Greyish soft stone	130	1721	12.3	1750	11.6	98	106
	Top subgrade, Brownish gravel	150	1296	27.9	1350	26.8	96	104
	Bottom subgrade, Brownish gravel	150	1156	31.4	1230	30.0	94	105
Km 5+000 RHS TP2	Base, Graded crushed stone.	120	1746	10.9	1900	10.1	92	108
	Subbase, Greyish weathered rock	100	1210	22.5	1410	20.6	86	109
	Top subgrade, Red soil	150	1114	30.5	1200	38.4	93	79
	Bottom sugrade, Red soil	150	1118	33.5	1165	39.0	96	86
Km 10+030 LHS TP3	Native, Black clay soil	150	1100	38.2	1160	37.6	95	102
	Base, Graded crushed stone.	130	1793	9.9	1880	9.5	95	104
	Subbase, Greyish soft stone	100	1200	20.4	1400	19.2	86	106
	Sugrade, Red soil	150	1173	30.0	1269	35.6	92	84
Km 14+800 RHS TP4	Native, Red soil	150	1086	30.2	1277	34.9	85	87
	Base, Graded crushed stone mixed with crushed stone(crusher run)	1738	1738	10.1	1850	9.8	94	103
	Subbase, Greyish soft stone	130	1461	18.6	1400	20.0	104	93
	Sugrade, Red soil	100	1069	40.5	1280	36.5	84	111
Km 20+430 LHS TP5	Native, Red soil	150	998	36.3	1245	36.8	80	99
	Base, Graded crushed stone mixed with crushed stone(crusher run)	120	1682	9.5	1910	8.8	88	108
	Subbase, Greyish soft stone	100	1277	20.3	1410	19.0	91	107
	Native subgrade, Red soil	150	1044	34.0	1085	38.0	96	89
Km 25+400 RHS TP6	Base, Graded crushed stone mixed with crushed stone(crusher run)	100	1530	11.2	1870	10.5	82	107
	Subbase, Yellowish soft stone	100	1365	20.5	1430	18.7	95	110
	Native subgrade, Red soil	150	1038	34.0	1200	35.0	87	97
Km 30+000 LHS TP7	Base, Graded crushed stone mixed with crushed stone(crusher run)	120	1780	10.8	1880	10.3	95	105
	Subbase, Reddish lateritic gravel	150	2033	9.5	1920	10.6	106	90
	Native subgrade, Reddish lateritic gravel	100	1765	15.0	1720	15.5	103	97
Km 35+180 RHS TP8	Base, Graded crushed stone mixed with crushed stone(crusher run)	130	1921	8.2	1875	10.1	102	81
	Subbase, Reddish lateritic gravel	100	1889	12.3	1920	12.0	98	103
	Native subgrade, Reddish lateritic gravel	150	1284	22.5	1450	20.5	89	110
Km 40+200 LHS	Base, Graded crushed stone.	100	1715	11.8	1875	11.5	91	103
	Subbase, Reddish lateritic gravel	100	1555	15.5	1722	14.6	90	106
	Native subgrade, Reddish lateritic gravel	150	1197	33.6	1320	30.8	91	109



Appendix 4-E: Pavement Materials Test Results

Chainage/ Test No.	Layer Description	Thickness (mm)	Field Dry Density Kg/M <sup>3</sup>	Field moisture content (%)	MaX. Dry Density Kg/M <sup>3</sup>	Optimum moisture content (%)	Relative compaction (%)	Relative moisture content (%)
Km 45+120 RHS TP10	Base, Reddish lateritic gravel	110	1442	20.0	1650	19.5	87	103
	Sub base, Reddish lateritic gravel	120	1633	19.2	1700	19.0	96	101
	Top Subgrade , Reddish lateritic gravel	150	1735	18.0	1750	16.5	99	109
	Bottom subgrade, Reddish lateritic gravel	150	1593	16.5	1500	19.5	106	85
Km 50+140 LHS TP11	Base, Dark Reddish lateritic gravel	100	1710	14.1	1890	13.6	90	104
	Sub base, Reddish lateritic gravel	150	1790	12.9	1742	13.4	103	96
	Subgrade, Dark Reddish lateritic gravel	140	1655	13.6	1580	14.3	105	95
	Insitu ,Blackish soil	150	1460	25.2	1390	26.0	105	97
Km 55+250 RHS	Base, Dark reddish lateritic gravel	150	1863	13.5	1840	13.9	101	97
	Sub base, Dark reddish lateritic gravel	150	1687	15.6	1815	14.0	93	111
	Native Subgrade , Brownish gravel	150	1554	24.1	1467	25.0	106	96
Km 59+900 LHS TP13	Base, Reddish lateritic gravel	130	1724	15.5	1790	14.2	96	109
	Sub base, Reddish lateritic gravel	150	1840	13.3	1740	15.2	106	88
	Subgrade, Reddish lateritic gravel	150	1597	19.0	1500	19.5	106	97
	Native subgrade, Reddish lateritic gravel	150	1322	21.2	1385	20.5	95	103
Km 64+800 RHS TP14	Base, Reddish lateritic gravel	100	1702	15.8	1799	15.2	95	104
	Sub base, Reddish lateritic gravel	120	1829	14.5	1750	16.5	105	88
	Subgrade, Reddish lateritic gravel	150	1515	19.0	1689	19.0	90	100
	Native , Blackish lateritic gravel	150	1574	14.5	1835	14.1	86	103
Km 67+800 LHS	Base, Reddish lateritic gravel	130	1604	15.9	1650	16.8	97	95
	Sub base, Reddish lateritic gravel	120	1559	12.6	1700	15.7	92	80
	Native subgrade, Whitish clay soil	150	1042	32.6	1160	30.6	90	107

Appendix 4-E: Pavement Material Test Results

Reference	Layer and description	Grading										Atterberg Limits					Compaction T		Compaction T		Compaction		CBR (%)	
		(% ) Passing BS Test Sieve (mm)										LL (%)	PL (%)	PI (%)	LS (%)	PM	MDD (Kg/m <sup>3</sup> )	OMC (%)	MDD (Kg/m <sup>3</sup> )	OMC (%)	MDD (Kg/m <sup>3</sup> )	OMC (%)	4 days soak	Swell
		50	40	28	20	10	5	2	0.0425	0.0075														
KM 0+100 LHS TP1	Base, Graded crushed stone.	100	95	89	72	51	32	19	3	1	NON-PLASTIC									1960	10.5			
	Subbase, Greyish soft stone	100	100	100	100	95	80	65	45	35	30	22	8	4	360			1750	11.6			30	0.2	
	Top subgrade, Brownish gravel	100	100	100	100	88	75	58	49	30	43	31	12	6	588	1350	26.8					10	0.3	
	Bottom subgrade, Brownish gravel	100	100	100	100	85	77	60	55	43	49	28	21	11	1155	1230	30					9	0.3	
	Native, Black clay soil	100	100	100	100	100	100	95	88	79	55	29	26	13	2288	1189	33.8					2	0.35	
Km 5+000 RHS TP2	Base, Graded crushed stone.	100	98	90	75	50	28	20	10	4	35	30	5	3	50					1900	10.1			
	Subbase, Greyish weathered rock	100	100	100	100	90	79	53	44	38	39	28	11	6	484			1410	20.6			25	0.2	
	Top subgrade, Red soil	100	100	100	100	100	100	98	88	83	72	43	29	14	2552	1200	38.4					7	0.35	
	Bottom sugrade, Red soil	100	100	100	100	100	100	95	86	77	66	38	28	14	2408	1165	39					5	0.35	
	Native, Black clay soil	100	100	100	100	100	100	93	86	76	67	39	28	13	2408	1160	37.6					5	0.35	
Km 10+030 LHS TP3	Base, Graded crushed stone.	100	100	96	75	60	35	24	8	3	NON- PLASTIC									1880	9.5			
	Subbase, Greyish soft stone	100	100	100	100	88	77	57	50	45	40	25	15	7	750			1400	19.2			40	0.2	
	Sugrade, Red soil	100	100	100	100	100	100	85	83	75	53	27	26	13	2158	1269	35.6					8	0.35	
	Native, Red soil	100	100	100	100	100	100	95	86	77	55	28	27	13	2322	1277	34.9					25	0.3	
Km 14+800 RHS TP4	Base, Graded crushed stone mixed with crushed stone(crusher run)	100	100	99	85	75	60	35	24	14	36	30	6	3	144					1850	9.8			
	Subbase, Greyish soft stone	100	100	100	100	85	74	54	48	40	49	33	16	8	768			1400	20			35	0.2	
	Sugrade, Red soil	100	100	100	100	100	100	88	80	75	59	30	29	14	2320	1280	36.5					8	0.3	
	Native, Red soil	100	100	100	100	100	100	95	88	80	60	30	30	15	2640	1245	36.8					7	0.3	
Km 20+430 LHS TP5	Base, Graded crushed stone mixed with crushed stone(crusher run)	100	100	95	75	63	54	40	35	14	36	29	7	3	245					1910	8.8			
	Subbase, Greyish soft stone	100	100	100	100	91	79	69	48	41	53	37	16	8	768			1410	19			23	0.3	
	Native subgrade, Red soil	100	100	100	100	100	100	95	88	82	69	48	21	11	1848	1085	38.0					8	0.35	
Km 25+400 RHS TP6	Base, Graded crushed stone mixed with crushed stone(crusher run)	100	100	100	95	82	59	42	23	18	30	22	8	4	184					1870	10.5			
	Subbase, Yellowish soft stone	100	100	100	100	93	82	67	44	35	40	25	15	7	660			1430	18.7			35	0.2	
	Native subgrade, Red soil	100	100	100	100	100	100	90	85	75	64	42	22	11	1870	1200	35.0					8	0.35	
Km 30+000 LHS TP7	Base, Graded crushed stone mixed with crushed stone(crusher run)	100	100	96	880	75	60	46	30	15	30	23	7	4	210					1880	10.3			
	Subbase, Reddish lateritic gravel	100	100	100	100	88	65	40	28	25	45	27	18	9	504			1920	10.6			30	0.2	
	Native subgrade, Reddish lateritic gravel	100	100	100	100	89	64	45	38	27	52	31	21	11	798	1720	15.5					25	0.2	
Km 35+180 RHS TP8	Base, Graded crushed stone mixed with crushed stone(crusher run)	100	100	96	80	75	56	40	24	15	30	24	6	3	144					1875	10.1			
	Subbase, Reddish lateritic gravel	100	100	100	100	89	62	42	27	24	40	23	17	9	459			1920	12			40	0.2	
	Native subgrade, Reddish lateritic gravel	100	100	100	100	88	70	55	45	38	50	30	20	10	900	1450	20.5					15	0.3	
Km 40+200 LHS TP9	Base, Graded crushed stone.	100	98	85	70	43	30	21	12	6	NON-PLSTIC					0					1875	11.5		
	Subbase, Reddish lateritic gravel	100	100	100	100	80	65	55	45	33	41	23	18	9	810			1722	14.6			40	0.3	
	Native subgrade, Reddish lateritic gravel	100	100	100	100	95	80	70	55	49	49	27	22	11	1210	1320	30.8					12	0.35	
Km 45+120 RHS TP10	Base, Reddish lateritic gravel	100	100	100	100	90	85	53	45	35	46	28	18	9	810			1650	19.5			35	0.2	
	Sub base, Reddish lateritic gravel	100	100	100	100	88	77	54	40	33	47	39	18	9	720			1700	19			25	0.3	
	Top Subgrade , Reddish lateritic gravel	100	100	100	100	85	74	53	44	36	45	25	20	10	880			1750	16.5			28	0.2	
	Bottom subgrade, Reddish lateritic gravel	100	100	100	100	87	76	54	43	35	46	28	18	9	774	1500	19.5					28	0.2	
	Native soil, Reddish soil	100	100	100	100	100	100	95	85	76	54	30	24	12	2040	1310	26.9					7	0.35	
Km 50+140 LHS TP11	Base, Dark Reddish lateritic gravel	100	100	100	100	96	73	47	26	22	40	22	18	9	468			1890	13.6			35	0.2	
	Sub base, Reddish lateritic gravel	100	100	100	100	97	77	56	38	35	38	21	17	8	646			1742	13.4			20	0.3	
	Subgrade, Dark Reddish lateritic gravel	100	100	100	100	90	70	48	40	30	40	24	16	8	640	1580	14.3					30	0.2	
	Insitu ,Blackish soil	100	100	100	100	100	96	90	85	73	55	30	25	13	2125	1390	26.0					4	0.35	
Km 55+250 RHS TP12	Base, Dark reddish lateritic gravel	100	100	100	100	90	69	46	25	21	38	21	17	8	425			1840	13.9			35	0.2	
	Sub base, Dark reddish lateritic gravel	100	100	100	100	95	82	68	52	40	40	21	19	9	988			1815	14			30	0.3	
	Native Subgrade , Brownish gravel	100	100	100	100	90	85	70	55	43	43	23	20	10	1100	1467	25					25	0.2	
	Base, Reddish lateritic gravel	100	100	100	100	85	76	50	40	34	39	23	16	8	640			1790	14.2			45	0.2	

Appendix 4-E: Pavement Material Test Results

Reference	Layer and description	Grading									Atterberg Limits					Compaction T		Compaction T		Compaction		CBR ( % )	
		( % ) Passing BS Test Sieve (mm)									LL	PL	PI	LS	PM	MDD	OMC	MDD	OMC	MDD	OMC	4 days	Swell
		50	40	28	20	10	5	2	0.0425	0.0075	(%)	(%)	(%)	(%)		( Kg/m <sup>3</sup> )	( % )	( Kg/m <sup>3</sup> )	( % )	( Kg/m <sup>3</sup> )	( % )	soak	
Km 59+900 LHS TP13	Sub base, Reddish lateritic gravel	100	100	100	100	90	86	68	53	47	43	24	19	12	1007			1740	15.2			40	0.2
	Subgrade, Reddish lateritic gravel	100	100	100	100	95	85	63	45	38	44	26	18	9	810	1500	19.5					30	0.3
	Native subgrade, Reddish lateritic gravel	100	100	100	100	90	80	60	55	46	50	29	21	10	1155	1385	20.5					12	0.35
Km 64+800 RHS TP14	Base, Reddish lateritic gravel	100	100	100	100	92	67	50	33	27	41	27	14	7	462			1799	15.2			35	0.2
	Sub base, Reddish lateritic gravel	100	100	100	100	94	78	54	33	29	31	16	15	8	495			1750	16.5			30	0.2
	Subgrade, Reddish lateritic gravel	100	100	100	100	95	80	55	40	30	48	24	24	12	960	1689	19.0					20	0.2
	Native , Blackish lateritic gravel	100	100	100	100	92	70	34	16	15	45	28	17	8	272	1835	14.1					30	0.2
Km 67+800 LHS TP15	Base, Reddish lateritic gravel	100	100	100	100	79	52	36	19	15	44	26	18	9	342			1650	16.8			35	0.3
	Sub base, Reddish lateritic gravel	100	100	100	100	83	61	46	30	27	38	20	18	9	540			1700	15.7			30	0.2
	Native subgrade, Whitish clay soil	100	100	100	100	100	100	95	88	79	68	40	28	14	2464	1160	30.6					2	0.35

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			1	199	OL	14:42	1	20.5	18.3	28.1	26.9	721	744	607	426	292	152	89	71	57	37
Magumu - Thika	B20/D1315	22-Apr-21	1	199	OL	14:42	2	20.5	18.6	28.1	27.1	715	741	605	425	292	150	89	70	57	37	733	598	420	289	148	88	69	56	37	3.5
Magumu - Thika	B20/D1315	22-Apr-21	1	199	OR	13:41	1	21.2	19.3	28.5	28.0	742	1233	1013	563	317	155	101	85	69	44	1175	965	536	302	148	96	81	66	42	2.6
Magumu - Thika	B20/D1315	22-Apr-21	1	199	OR	13:41	2	21.3	19.6	28.5	28.4	751	1212	1001	561	317	155	102	87	69	45	1141	942	528	298	146	96	82	65	42	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	301	OL	14:44	1	19.2	19.2	28.1	28.3	718	1481	1218	761	459	191	118	101	81	53	1458	1199	749	452	188	116	99	80	52	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	301	OL	14:44	2	19.2	19.4	28.1	28.2	720	1463	1214	762	461	192	117	100	81	52	1437	1192	748	453	189	115	98	80	51	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	303	OR	13:37	1	21.6	19.7	28.5	28.9	722	1525	1219	729	429	209	133	116	89	66	1493	1194	714	420	205	130	114	87	65	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	303	OR	13:37	2	21.7	19.8	28.5	28.9	719	1502	1208	727	429	211	133	116	94	69	1477	1188	715	422	207	131	114	92	68	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	402	OL	14:45	1	19.7	19.8	28.1	28.6	707	1593	1353	846	489	202	126	108	86	56	1593	1353	846	489	202	126	108	86	56	2.2
Magumu - Thika	B20/D1315	22-Apr-21	1	402	OL	14:45	2	19.8	20.0	28.1	28.4	705	1568	1340	843	492	203	126	108	86	57	1572	1344	845	493	204	126	108	86	57	2.2
Magumu - Thika	B20/D1315	22-Apr-21	1	402	OR	13:36	1	22.4	18.8	28.5	28.3	729	1355	1158	709	423	180	106	89	72	45	1314	1123	688	410	175	103	86	70	44	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	402	OR	13:36	2	22.4	19.0	28.5	28.3	729	1343	1153	708	425	182	107	89	72	46	1302	1118	687	412	177	104	86	70	45	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	496	OR	13:35	1	22.2	19.0	28.5	27.3	750	1029	848	435	201	40	28	25	27	17	970	799	410	189	38	26	24	25	16	2.9
Magumu - Thika	B20/D1315	22-Apr-21	1	496	OR	13:35	2	22.2	19.1	28.5	27.7	757	1008	832	433	201	41	28	27	27	16	941	777	404	188	38	26	25	25	15	3.0
Magumu - Thika	B20/D1315	22-Apr-21	1	500	OL	14:46	1	19.4	20.0	28.1	26.7	713	767	640	422	278	147	91	74	59	38	761	635	418	276	146	90	73	59	38	3.4
Magumu - Thika	B20/D1315	22-Apr-21	1	500	OL	14:46	2	19.4	20.1	28.1	26.7	713	761	640	423	280	148	91	75	58	39	755	635	419	278	147	90	74	58	39	3.4
Magumu - Thika	B20/D1315	22-Apr-21	1	602	OL	14:47	1	19.8	20.1	28.1	1.8	685	2052	1673	871	472	217	143	117	92	56	2118	1727	899	487	224	148	121	95	58	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	602	OL	14:47	2	19.9	20.3	28.1	29.0	689	2023	1662	874	477	221	142	116	90	58	2076	1705	897	489	227	146	119	92	60	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	623	OR	13:34	1	21.3	19.5	28.5	28.4	725	1408	1180	741	477	221	127	104	83	57	1373	1151	723	465	216	124	101	81	56	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	623	OR	13:34	2	21.4	19.7	28.5	28.3	716	1392	1175	742	480	220	128	105	84	58	1375	1160	733	474	217	126	104	83	57	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	696	OL	14:48	1	20.1	20.4	28.1	28.6	708	1675	1394	769	433	181	109	96	82	55	1673	1392	768	432	181	109	96	82	55	2.1
Magumu - Thika	B20/D1315	22-Apr-21	1	696	OL	14:48	2	20.1	20.6	28.1	28.6	715	1650	1378	767	434	181	109	95	79	57	1632	1363	758	429	179	108	94	78	56	2.2
Magumu - Thika	B20/D1315	22-Apr-21	1	705	OR	13:33	1	21.5	18.8	28.5	28.4	717	1423	1218	790	558	291	170	136	106	72	1403	1201	779	550	287	168	134	105	71	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	705	OR	13:33	2	21.5	19.0	28.5	2.5	708	1407	1207	785	556	288	170	135	106	72	1405	1205	784	555	288	170	135	106	72	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	799	OR	13:32	1	21.0	19.0	28.5	28.7	748	1445	1167	693	454	263	160	131	100	69	1366	1103	655	429	249	151	124	95	65	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	799	OR	13:32	2	21.0	19.2	28.5	28.4	745	1422	1158	691	453	262	160	130	100	67	1349	1099	656	430	249	152	123	95	64	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	806	OL	14:49	1	19.6	20.1	28.1	28.1	701	1480	1257	776	527	268	155	122	94	63	1493	1268	783	532	270	156	123	95	64	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	806	OL	14:49	2	19.7	20.2	28.1	28.0	700	1460	1249	776	528	272	155	126	93	63	1475	1261	784	533	275	157	127	94	64	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	899	OR	13:31	1	20.4	19.6	28.5	27.8	732	951	844	572	423	238	137	109	82	57	919	815	552	409	230	132	105	79	55	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	899	OR	13:31	2	20.5	19.7	28.5	27.8	730	945	841	571	422	237	137	108	83	58	915	815	553	409	230	133	105	80	56	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	904	OL	14:50	1	19.8	21.2	28.1	28.1	718	1379	1177	751	502	233	130	97	73	48	1358	1159	739	494	229	128	96	72	47	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	904	OL	14:50	2	19.9	21.4	28.1	28.0	713	1370	1169	747	501	233	130	97	73	48	1358	1159	741	497	231	129	96	72	48	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1000	OR	13:30	1	19.6	20.6	28.5	28.0	743	1118	908	524	327	171	114	97	77	51	1064	864	499	311	163	108	92	73	49	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	1000	OR	13:30	2	19.7	20.7	28.5	27.9	750	1109	908	526	329	168	113	97	77	51	1045	856	496	310	158	107	91	73	48	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	1002	OL	14:51	1	19.9	20.9	28.1	29.0	698	1807	1536	887	545	254	147	120	97	61	1830	1556	898	552	257	149	122	98	62	2.0
Magumu - Thika	B20/D1315	22-Apr-21	1	1002	OL	14:51	2	20.0	21.0	28.1	28.6	702	1776	1516	880	542	250	145	117	93	59	1789	1527	886	546	252	146	118	94	59	2.1
Magumu - Thika	B20/D1315	22-Apr-21	1	1094	OR	13:29	1	20.8	19.9	28.5	28.6	740	1400	1154	657	406	211	137	116	91	62	1338	1103	628	388	202	131	111	87	59	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1094	OR	13:29	2	20.9	20.1	28.5	28.6	743	1389	1150	657	407	213	137	115	91	60	1322	1094	625	387	203	130	109	87	57	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1104	OL	14:52	1	20.8	21.0	28.1	4.8	724	1347	1151	705	437	209	125	102	75	50	1315	1124	688	427	204	122	100	73	49	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1104	OL	14:52	2	20.8	21.2	28.1	27.8	724	1333	1140	701	437	209	124</													

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			1	1497	OR	13:25	2	19.7	19.6	28.5	27.4	746	1028	825	469	267	126	78	67	57	38
Magumu - Thika	B20/D1315	22-Apr-21	1	1502	OL	14:57	1	22.3	22.7	28.1	27.8	730	1367	1098	643	374	165	106	92	74	50	1324	1063	623	362	160	103	89	72	48	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1502	OL	14:57	2	22.3	22.9	28.1	27.9	744	1358	1097	645	378	168	109	93	74	50	1290	1042	613	359	160	104	88	70	48	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1600	OR	13:24	1	22.0	19.3	28.5	26.7	715	549	459	278	177	99	64	53	39	22	543	454	275	175	98	63	52	39	22	4.1
Magumu - Thika	B20/D1315	22-Apr-21	1	1600	OR	13:24	2	21.9	19.5	28.5	26.6	726	550	459	279	178	99	65	53	38	22	536	447	272	173	96	63	52	37	21	4.1
Magumu - Thika	B20/D1315	22-Apr-21	1	1601	OL	14:58	1	21.3	22.4	28.1	27.2	745	953	776	436	268	146	95	78	58	35	904	736	414	254	139	90	74	55	33	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	1601	OL	14:58	2	21.4	22.6	28.1	27.2	747	948	775	437	269	147	95	76	58	35	897	734	414	255	139	90	72	55	33	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	1709	OR	13:23	1	22.6	19.8	28.5	29.7	679	2052	1830	1122	660	320	192	157	123	79	2137	1905	1168	687	333	200	163	128	82	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	1709	OR	13:23	2	22.6	19.9	28.5	30.2	680	2046	1826	1121	660	321	193	158	122	82	2127	1899	1166	686	334	201	164	127	85	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	1713	OL	14:59	1	21.4	21.8	28.1	29.6	681	1972	1668	1001	642	321	187	152	120	88	2047	1732	1039	667	333	194	158	125	91	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	1713	OL	14:59	2	21.5	22.0	28.1	29.5	681	1930	1646	1001	645	326	189	153	123	88	2004	1709	1039	670	338	196	159	128	91	2.0
Magumu - Thika	B20/D1315	22-Apr-21	1	1795	OR	13:22	1	23.2	19.6	28.5	30.1	681	2439	1955	936	383	171	119	100	74	39	2532	2030	972	398	178	124	104	77	40	1.7
Magumu - Thika	B20/D1315	22-Apr-21	1	1795	OR	13:22	2	23.3	19.7	28.5	30.2	680	2373	1931	940	392	170	120	100	74	41	2467	2008	977	408	177	125	104	77	43	1.7
Magumu - Thika	B20/D1315	22-Apr-21	1	1801	OL	15:00	1	21.9	21.4	28.1	28.5	717	1618	1272	754	466	220	130	101	76	46	1595	1254	743	460	217	128	100	75	45	2.2
Magumu - Thika	B20/D1315	22-Apr-21	1	1801	OL	15:00	2	21.9	21.6	28.1	28.3	714	1612	1253	750	464	219	130	100	76	46	1596	1241	743	459	217	129	99	75	46	2.2
Magumu - Thika	B20/D1315	22-Apr-21	1	1893	OR	13:20	1	22.7	20.7	28.5	28.2	753	1356	1074	594	340	148	92	79	63	38	1273	1008	558	319	139	86	74	59	36	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1893	OR	13:20	2	22.7	20.8	28.5	27.8	757	1343	1064	592	340	149	92	79	64	39	1254	994	553	318	139	86	74	60	36	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	1905	OL	15:01	1	22.4	21.7	28.1	28.7	751	1497	1284	752	422	187	109	89	67	41	1409	1209	708	397	176	103	84	63	39	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	1905	OL	15:01	2	22.4	21.8	28.1	28.5	750	1487	1278	754	425	188	110	89	67	41	1402	1205	711	401	177	104	84	63	39	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	1993	OR	13:20	1	23.6	20.7	28.5	28.0	743	1234	980	538	314	179	124	108	81	51	1174	933	512	299	170	118	103	77	49	2.6
Magumu - Thika	B20/D1315	22-Apr-21	1	1993	OR	13:20	2	23.5	20.7	28.5	28.1	748	1230	982	542	317	182	125	108	83	52	1163	928	512	300	172	118	102	78	49	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	2012	OL	15:02	1	22.3	21.3	28.1	27.3	749	909	735	442	277	146	95	79	61	41	858	694	417	261	138	90	75	58	39	3.2
Magumu - Thika	B20/D1315	22-Apr-21	1	2012	OL	15:02	2	22.4	21.5	28.1	27.2	739	897	727	440	276	142	96	78	62	41	858	696	421	264	136	92	75	59	39	3.2
Magumu - Thika	B20/D1315	22-Apr-21	1	2090	OR	13:18	1	23.0	20.0	28.5	28.1	740	1170	960	561	353	191	122	97	73	46	1118	917	536	337	182	117	93	70	44	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	2090	OR	13:18	2	22.9	20.1	28.5	28.1	742	1167	962	563	355	192	123	98	75	47	1112	917	536	338	183	117	93	71	45	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	2104	OL	15:03	1	21.6	21.2	28.1	27.0	736	733	600	373	251	136	88	72	56	34	704	576	358	241	131	85	69	54	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	1	2104	OL	15:03	2	21.6	21.3	28.1	26.9	735	723	594	371	249	137	88	73	56	34	695	571	357	240	132	85	70	54	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	1	2186	OR	13:17	1	23.3	20.2	28.5	28.6	717	1473	1252	762	498	261	164	138	108	74	1452	1235	751	491	257	162	136	106	73	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2186	OR	13:17	2	23.4	20.3	28.5	28.3	711	1452	1246	761	500	269	166	139	109	75	1444	1239	757	497	267	165	138	108	75	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2201	OL	15:03	1	20.7	21.3	28.1	27.0	731	698	579	359	236	130	87	73	56	34	675	560	347	228	126	84	71	54	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	1	2201	OL	15:03	2	20.8	21.4	28.1	26.7	730	689	575	357	234	132	87	73	57	35	667	557	346	227	128	84	71	55	34	3.7
Magumu - Thika	B20/D1315	22-Apr-21	1	2295	OR	13:16	1	23.2	20.2	28.5	29.5	752	1660	1145	317	177	137	115	104	83	59	1561	1076	298	166	129	108	98	78	55	2.2
Magumu - Thika	B20/D1315	22-Apr-21	1	2295	OR	13:16	2	23.1	20.3	28.5	29.4	751	1621	1138	321	179	141	115	106	82	60	1526	1071	302	169	133	108	100	77	56	2.2
Magumu - Thika	B20/D1315	22-Apr-21	1	2305	OL	15:04	1	19.9	20.8	28.1	27.0	747	581	534	353	230	114	68	55	44	23	550	505	334	218	108	64	52	42	22	4.1
Magumu - Thika	B20/D1315	22-Apr-21	1	2305	OL	15:04	2	19.9	21.0	28.1	26.8	740	569	524	348	227	114	68	56	44	23	544	501	332	217	109	65	54	42	22	4.1
Magumu - Thika	B20/D1315	22-Apr-21	1	2398	OL	15:05	1	19.2	20.2	28.1	28.5	735	1467	1198	686	415	212	136	108	81	53	1411	1152	660	399	204	131	104	78	51	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2398	OL	15:05	2	19.3	20.3	28.1	28.5	738	1452	1191	687	418	214	136	107	81	52	1391	1141	658	400	205	130	103	78	50	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2404	OR	13:15	1	23.0	20.7	28.5	28.0	740	1148	949	558	353	183	120	95	73	48	1097	907	533	337	175	115	91	70	46	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	2404	OR	13:15	2	23.0	20.8	28.5	2.5	739	1134	942	556	352	186	121	96	73	48	1085	901	532	337	178	116	92	70	46	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	2497	OR	13:14	1	21.4	20.9	28.5	28.0	737	1164	945	576	378	207	132													

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	1	2813	OL	15:09	1	18.2	20.3	28.1	28.4	738	1505	1150	609	370	196	122	99	79	52	1442	1102	583	354	188	117	95	76	50	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2813	OL	15:09	2	18.2	20.4	28.1	28.2	738	1491	1145	610	372	196	122	99	80	53	1428	1097	584	356	188	117	95	77	51	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2885	OR	13:11	1	22.7	20.4	28.5	27.8	737	1116	923	524	340	200	132	113	96	72	1071	885	503	326	192	127	108	92	69	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	2885	OR	13:11	2	22.7	20.5	28.5	27.3	736	1109	919	523	339	198	129	108	94	68	1065	883	502	326	190	124	104	90	65	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	2905	OL	15:10	1	17.3	19.1	28.1	29.0	731	1453	1083	612	381	220	150	129	105	74	1405	1047	592	368	213	145	125	102	72	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2905	OL	15:10	2	17.4	19.3	28.1	1.2	730	1435	1076	611	381	217	150	129	104	74	1390	1042	592	369	210	145	125	101	72	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	2996	OR	13:09	1	22.4	18.8	28.5	27.4	730	1062	881	505	325	179	117	100	79	53	1029	853	489	315	173	113	97	77	51	2.9
Magumu - Thika	B20/D1315	22-Apr-21	1	2996	OR	13:09	2	22.4	19.1	28.5	27.7	736	1057	879	507	327	182	118	100	79	52	1015	844	487	314	175	113	96	76	50	2.9
Magumu - Thika	B20/D1315	22-Apr-21	1	3002	OL	15:11	1	17.7	19.5	28.1	28.1	740	1354	1092	589	351	183	116	102	77	50	1294	1043	563	335	175	111	97	74	48	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	3002	OL	15:11	2	17.8	19.7	28.1	27.9	737	1332	1083	589	352	181	117	97	77	50	1278	1039	565	338	174	112	93	74	48	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	3097	OR	13:08	1	22.2	18.3	28.5	28.5	728	1429	1163	627	402	236	152	129	99	69	1388	1129	609	390	229	148	125	96	67	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	3097	OR	13:08	2	22.2	18.5	28.5	28.3	736	1416	1162	634	408	238	154	130	101	63	1360	1116	609	392	229	148	125	97	61	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	3107	OL	15:12	1	19.0	20.4	28.1	27.8	741	1174	899	482	301	185	125	106	82	53	1120	858	460	287	177	119	101	78	51	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3107	OL	15:12	2	19.0	20.5	28.1	27.8	740	1162	897	484	304	185	122	106	82	54	1110	857	462	290	177	117	101	78	52	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3196	OR	13:07	1	21.8	18.6	28.5	27.9	754	1180	927	466	269	159	109	93	72	46	1106	869	437	252	149	107	87	68	43	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3196	OR	13:07	2	21.8	18.8	28.5	27.8	759	1168	925	469	271	162	109	93	75	47	1088	862	437	252	151	102	87	70	44	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	3206	OL	15:13	1	18.2	20.0	28.1	29.8	688	2034	1656	912	522	243	145	114	88	55	2090	1702	937	536	250	149	117	90	57	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	3206	OL	15:13	2	18.2	20.1	28.1	29.8	691	2007	1646	913	525	243	146	114	84	55	2053	1684	934	537	249	149	117	86	56	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	3290	OR	13:06	1	21.8	17.9	28.5	29.7	689	2072	1707	945	583	287	168	136	102	69	2126	1752	970	598	294	172	140	105	71	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	3290	OR	13:06	2	21.8	18.1	28.5	29.9	693	2052	1703	955	594	292	170	136	104	71	2093	1737	974	606	298	173	139	106	72	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	3294	OL	15:14	1	18.0	19.8	28.1	27.3	725	972	789	462	316	180	114	94	72	48	948	769	451	308	176	111	92	70	47	3.0
Magumu - Thika	B20/D1315	22-Apr-21	1	3294	OL	15:14	2	18.0	19.9	28.1	27.4	724	963	783	458	313	179	112	90	73	48	940	765	447	306	175	109	88	71	47	3.0
Magumu - Thika	B20/D1315	22-Apr-21	1	3398	OR	13:06	1	21.6	18.1	28.5	29.1	705	1723	1428	868	582	312	187	153	120	89	1728	1432	870	584	313	188	153	120	89	2.1
Magumu - Thika	B20/D1315	22-Apr-21	1	3398	OR	13:06	2	21.6	18.3	28.5	28.8	705	1705	1425	872	587	316	189	154	122	91	1710	1429	874	589	317	190	154	122	91	2.1
Magumu - Thika	B20/D1315	22-Apr-21	1	3404	OL	15:15	1	17.4	19.0	28.1	31.3	653	2218	2036	1114	657	321	197	160	131	108	2401	2204	1206	711	348	213	173	142	117	1.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3404	OL	15:15	2	17.4	19.2	28.1	31.2	656	2241	2008	1113	665	324	197	164	136	115	2415	2164	1200	717	349	212	177	147	124	1.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3501	OL	15:16	1	15.9	18.0	28.1	30.9	675	2332	1875	1049	563	277	172	142	111	72	2443	1964	1099	590	290	180	149	116	75	1.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3501	OL	15:16	2	15.9	18.0	28.1	30.8	679	2318	1856	1052	569	279	172	143	113	75	2414	1933	1095	592	291	179	149	118	78	1.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3505	OR	13:04	1	21.4	18.4	28.5	28.7	721	1510	1236	755	494	262	163	138	107	74	1481	1212	740	484	257	160	135	105	73	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	3505	OR	13:04	2	21.4	18.6	28.5	29.1	731	1499	1231	753	494	262	163	137	107	75	1450	1191	728	478	253	158	133	103	73	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	3596	OR	13:04	1	21.1	18.1	28.5	27.9	730	1399	1121	680	455	248	151	126	102	74	1355	1086	659	441	240	146	122	99	72	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	3596	OR	13:04	2	21.1	18.3	28.5	28.3	727	1377	1111	679	456	247	152	128	103	74	1339	1080	660	443	240	148	124	100	72	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	3602	OL	15:17	1	15.4	16.6	28.1	28.1	714	1140	953	589	385	210	136	117	93	65	1129	944	583	381	208	135	116	92	64	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3602	OL	15:17	2	15.4	16.7	28.1	27.7	713	1126	945	589	385	209	136	117	94	65	1117	937	584	382	207	135	116	93	64	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3695	OR	13:03	1	20.8	18.5	28.5	27.5	731	1066	864	521	324	171	115	98	83	59	1031	836	504	313	165	111	95	80	57	2.9
Magumu - Thika	B20/D1315	22-Apr-21	1	3695	OR	13:03	2	20.8	18.7	28.5	27.7	736	1063	865	524	326	172	114	103	83	60	1021	831	503	313	165	110	99	80	58	2.9
Magumu - Thika	B20/D1315	22-Apr-21	1	3701	OL	15:18	1	15.6	16.5	28.1	27.5	724	1096	900	555	356	189	124	112	89	63	1070	879	542	348	185	121	109	87	62	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	3701	OL	15:18	2	15.6	16.6	28.1	27.4	721	1079	892	553	356	191	124	112	94	66	1058	875	542	349	187	122	110	92	65	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	3802	OR	13:02	1	20.3	18.7	28.5	28.2	756	1228	961	520	304	158	106	93	75	50	1148	899	486	284	148	99	87	70	47	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3802	OR	13:02	2	20.3	18.8	28.5	27.8	753	1204	953	522	305	155	105	93	74	51	1130	895	490	286	146	99	87	69	48	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	3804	OL	15:19	1	15.6	16.5	28.1	27.2	725	786	650	397	256	137	93	80	61	39	766	634	387	250	134	91	78	59	38	3.4
Magumu - Thika	B20/D1315	22-Apr-21	1	3804	OL	15:19	2	15.6	16.6	28.1	2.4	721	774	641	395	255	139	93	79	62	38	759	629	387	250	136	91	77	61	37	3.4
Magumu - Thika	B20/D1315	22-Apr-21	1	3898	OR	13:01	1	20.5	18.1	28.5	28.4	746	1607	1249	520	220	116	89	73	56	34	1523	1184	493	208	110	84	69	53	32	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	3898	OR	13:01	2	20.6	18.3	28.5	28.3	753	1583	1242	525	225	118	91	74	57	35	1486	1166	493	211	111	85	69	54	33	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	3901	OL	15:20	1	15.3																							



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			1	4103	0L	15:23	2	15.8	16.1	28.1	2.4	718	1702	1394	741	366	145	94	74	58	34
Magumu - Thika	B20/D1315	22-Apr-21	1	4197	0R	12:58	1	19.7	18.0	28.5	28.2	739	1575	1248	698	402	184	119	106	87	67	1507	1194	668	385	176	114	101	83	64	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	4197	0R	12:58	2	19.8	18.1	28.5	28.1	741	1546	1235	699	405	187	121	108	90	67	1475	1178	667	386	178	115	103	86	64	2.3
Magumu - Thika	B20/D1315	22-Apr-21	1	4205	0L	15:24	1	15.7	16.2	28.1	30.0	698	2054	1712	927	455	167	119	109	88	55	2080	1734	939	461	169	121	110	89	56	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	4205	0L	15:24	2	15.8	16.2	28.1	29.1	703	2008	1696	926	458	171	120	109	89	57	2019	1706	931	461	172	121	110	90	57	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	4294	0R	12:56	1	18.9	17.6	28.5	27.1	723	805	678	449	308	170	105	87	68	48	787	663	439	301	166	103	85	66	47	3.4
Magumu - Thika	B20/D1315	22-Apr-21	1	4294	0R	12:56	2	18.9	17.7	28.5	26.9	721	796	676	450	312	172	105	86	69	49	781	663	441	306	169	103	84	68	48	3.4
Magumu - Thika	B20/D1315	22-Apr-21	1	4308	0L	15:24	1	15.8	16.3	28.1	3.1	717	921	763	477	310	166	103	86	68	46	908	752	470	306	164	102	85	67	45	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	4308	0L	15:24	2	15.8	16.4	28.1	27.1	718	908	754	475	310	167	102	85	68	46	894	742	468	305	164	100	84	67	45	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	4396	0R	12:55	1	19.9	17.5	28.5	27.3	751	952	790	451	260	131	86	77	62	40	896	744	425	245	123	81	72	58	38	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	4396	0R	12:55	2	19.9	17.6	28.5	27.2	753	941	782	450	261	130	86	76	61	40	884	734	423	245	122	81	71	57	38	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	4404	0L	15:25	1	15.6	16.2	28.1	28.1	721	1380	1062	555	321	161	98	85	66	43	1353	1041	544	315	158	96	83	65	42	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	4404	0L	15:25	2	15.4	16.2	28.1	28.0	721	1364	1059	557	323	164	98	83	66	43	1338	1038	546	317	161	96	81	65	42	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	4500	0R	12:54	1	19.8	17.2	28.5	27.1	743	885	677	378	225	128	88	77	62	41	842	644	360	214	122	84	73	59	39	3.2
Magumu - Thika	B20/D1315	22-Apr-21	1	4500	0R	12:54	2	19.8	17.3	28.5	27.0	743	871	671	377	225	127	87	75	61	40	829	638	359	214	121	83	71	58	38	3.2
Magumu - Thika	B20/D1315	22-Apr-21	1	4505	0L	15:26	1	15.0	15.3	28.1	28.1	734	1192	925	499	287	151	101	88	71	48	1148	891	481	276	145	97	85	68	46	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	4505	0L	15:26	2	15.1	15.4	28.1	27.7	731	1171	913	496	285	153	100	88	71	47	1133	883	480	276	148	97	85	69	45	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	4597	0R	12:53	1	19.7	17.8	28.5	27.6	756	1216	828	428	270	153	100	84	67	45	1137	774	400	253	143	94	79	63	42	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	4597	0R	12:53	2	19.7	17.9	28.5	27.5	747	1193	819	426	269	153	100	84	67	45	1129	775	403	255	145	95	80	63	43	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	4607	0L	15:27	1	14.8	15.2	28.1	28.2	719	1291	989	502	292	153	100	83	68	45	1269	972	494	287	150	98	82	67	44	2.5
Magumu - Thika	B20/D1315	22-Apr-21	1	4607	0L	15:27	2	14.8	15.3	28.1	27.8	717	1264	976	499	291	152	100	83	68	45	1246	962	492	287	150	99	82	67	44	2.6
Magumu - Thika	B20/D1315	22-Apr-21	1	4696	0R	12:52	1	19.1	18.0	28.5	27.3	751	1079	837	462	263	140	93	80	63	41	1016	788	435	248	132	88	75	59	39	2.9
Magumu - Thika	B20/D1315	22-Apr-21	1	4696	0R	12:52	2	19.2	18.1	28.5	27.4	764	1056	828	460	264	140	94	80	63	41	977	766	426	244	130	87	74	58	38	2.9
Magumu - Thika	B20/D1315	22-Apr-21	1	4705	0L	15:29	1	14.7	14.8	28.1	28.1	740	1290	997	442	238	140	99	87	69	45	1232	953	422	227	134	95	83	66	43	2.6
Magumu - Thika	B20/D1315	22-Apr-21	1	4705	0L	15:29	2	14.7	15.0	28.1	28.1	740	1263	987	443	239	140	98	86	68	44	1207	943	423	228	134	94	82	65	42	2.6
Magumu - Thika	B20/D1315	22-Apr-21	1	4783	0R	12:51	1	19.3	18.2	28.5	28.0	708	1439	1179	668	436	258	168	143	110	68	1437	1177	667	435	258	168	143	110	68	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	4783	0R	12:51	2	19.2	18.3	28.5	28.1	713	1412	1165	665	436	258	168	143	111	69	1400	1155	659	432	256	167	142	110	68	2.4
Magumu - Thika	B20/D1315	22-Apr-21	1	4805	0L	15:30	1	14.9	15.0	28.1	27.0	729	807	548	250	143	95	69	57	44	25	783	531	242	139	92	67	55	43	24	3.3
Magumu - Thika	B20/D1315	22-Apr-21	1	4805	0L	15:30	2	14.9	15.1	28.1	27.2	729	798	539	246	142	94	68	56	44	24	774	523	239	138	91	66	54	43	23	3.3
Magumu - Thika	B20/D1315	22-Apr-21	1	4895	0R	12:50	1	20.0	17.4	28.5	27.2	731	941	760	477	327	200	132	116	85	60	910	735	461	316	193	128	112	82	58	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	4895	0R	12:50	2	20.0	17.4	28.5	27.2	732	930	755	476	327	200	132	114	90	60	898	729	460	316	193	127	110	87	58	3.1
Magumu - Thika	B20/D1315	22-Apr-21	1	4901	0L	15:40	1	14.5	13.5	28.1	27.2	719	815	658	409	267	166	114	99	81	56	801	647	402	263	163	112	97	80	55	3.3
Magumu - Thika	B20/D1315	22-Apr-21	1	4901	0L	15:40	2	14.5	13.6	28.1	27.0	714	797	649	405	265	167	114	101	81	57	789	643	401	262	165	113	100	80	56	3.3
Magumu - Thika	B20/D1315	22-Apr-21	1	4998	0L	15:42	1	14.7	13.8	28.1	28.7	758	1317	942	455	234	124	90	74	59	37	1228	879	424	218	116	84	69	55	35	2.6
Magumu - Thika	B20/D1315	22-Apr-21	1	4998	0L	15:42	2	14.7	13.9	28.1	28.4	752	1299	933	456	235	124	90	75	60	38	1221	877	429	221	117	85	71	56	36	2.6
Magumu - Thika	B20/D1315	22-Apr-21	1	5011	0R	12:49	1	19.9	17.4	28.5	27.0	752	837	596	284	156	96	69	60	47	28	787	560	267	147	90	65	56	44	26	3.3
Magumu - Thika	B20/D1315	22-Apr-21	1	5011	0R	12:49	2	19.9	17.4	28.5	27.0	748	812	588	283	156	94	69	60	46	27	767	556	267	147	89	65	57	43	26	3.3
Magumu - Thika	B20/D1315	22-Apr-21	1	5086	0R	12:48	1	19.8	18.1	28.5	27.9	761	1212	893	402	230	142	98	82	64	40	1126	830	373	214	132	91	76	59	37	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	5086	0R	12:48	2	19.8	18.1	28.5	27.6	755	1187	882	401	230	143	98	82	64	40	1112	826	376	215	134	92	77	60	37	2.7
Magumu - Thika	B20/D1315	22-Apr-21	1	5104	0L	15:43	1	15.1	14.6	28.1	30.0	689	2083	1667	820	379	221	146	121	97	67	2137	1711	841	389	227	150	124	100	69	1.8
Magumu - Thika	B20/D1315	22-Apr-21	1	5104	0L	15:43	2	15.0	14.7	28.1	29.8	687	2066	1662	820	381	222	148	121	97	67	2126	1710	844	392	228	152	125	100	69	1.9
Magumu - Thika	B20/D1315	22-Apr-21	1	5196	0R	12:47	1	19.3	18.5	28.5	27.4	772	1029	813	468	283	140	89	77	64	44	942	745	429	259	128	82	71	59	40	3.0
Magumu - Thika	B20/D1315	22-Apr-21	1	5196	0R	12:47	2	19.3	18.6	28.5	27.3	763	1002	798	465	284	140	88	78	64	45	928	739	431	263	130	82	72	59	42	3.0
Magumu - Thika	B20/D1315	22-Apr-21	1	5197	0L	15:44	1	15.1	14.5	28.1	27.5	742	1142	909	493	292	161	107	94	78	55	1088	866	470	278	153	102	90	74	52	2.8
Magumu - Thika	B20/D1315	22-Apr-21	1	5197	0L	15:44	2	15.1	14.6	28.1	27.4	744	1115	893	488	290	160	106	94	78	55	1060	849	464							

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			2	5490	OR	12:45	1	20.1	17.8	28.5	27.1	743	825	657	382	228	120	79	75	63	40
Magumu - Thika	B20/D1315	22-Apr-21	2	5490	OR	12:45	2	20.1	17.9	28.5	27.1	740	807	649	381	229	121	80	74	61	40	771	620	364	219	116	76	71	58	38	3.4
Magumu - Thika	B20/D1315	22-Apr-21	2	5498	OL	15:46	1	14.8	14.1	28.1	26.8	711	647	514	319	207	113	75	69	62	42	643	511	317	206	112	75	69	62	42	3.7
Magumu - Thika	B20/D1315	22-Apr-21	2	5498	OL	15:46	2	14.8	14.2	28.1	26.6	703	629	504	316	206	113	75	69	61	42	633	507	318	207	114	75	69	61	42	3.8
Magumu - Thika	B20/D1315	22-Apr-21	2	5587	OR	12:44	1	20.1	18.0	28.5	26.6	715	664	521	305	194	120	85	72	58	37	657	515	302	192	119	84	71	57	37	3.7
Magumu - Thika	B20/D1315	22-Apr-21	2	5587	OR	12:44	2	20.1	18.1	28.5	26.7	719	661	519	305	194	121	85	71	58	36	650	510	300	191	119	84	70	57	35	3.7
Magumu - Thika	B20/D1315	22-Apr-21	2	5605	OL	15:47	1	14.4	13.9	28.1	27.5	701	986	770	451	293	172	113	90	74	49	994	777	455	296	173	114	91	75	49	2.9
Magumu - Thika	B20/D1315	22-Apr-21	2	5605	OL	15:47	2	14.5	14.0	28.1	27.6	703	963	761	451	295	172	113	91	75	50	968	765	454	297	173	114	92	75	50	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	5694	OR	12:43	1	20.2	17.5	28.5	27.1	739	961	762	452	282	151	97	83	69	48	919	729	432	270	144	93	79	66	46	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	5694	OR	12:43	2	20.2	17.6	28.5	27.2	729	932	745	447	280	150	97	84	69	48	904	723	434	272	145	94	81	67	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	2	5700	OL	15:48	1	15.1	14.5	28.1	27.3	715	966	755	425	260	142	98	88	71	49	955	747	420	257	140	97	87	70	48	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	5700	OL	15:48	2	15.1	14.6	28.1	27.2	719	948	752	428	264	144	100	89	75	50	932	739	421	260	142	98	88	74	49	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	5799	OR	12:42	1	20.2	17.4	28.5	27.4	736	1020	823	505	333	191	131	113	91	63	980	791	485	320	183	126	109	87	61	2.9
Magumu - Thika	B20/D1315	22-Apr-21	2	5799	OR	12:42	2	20.2	17.4	28.5	27.4	733	995	810	504	335	194	132	114	92	63	960	781	486	323	187	127	110	89	61	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	5800	OL	15:49	1	14.7	14.2	28.1	27.4	721	931	748	445	286	170	118	102	80	53	913	733	436	280	167	116	100	78	52	3.1
Magumu - Thika	B20/D1315	22-Apr-21	2	5800	OL	15:49	2	14.7	14.3	28.1	27.4	716	912	739	444	287	172	120	102	81	54	901	730	438	283	170	118	101	80	53	3.1
Magumu - Thika	B20/D1315	22-Apr-21	2	5901	OL	15:50	1	14.6	13.9	28.1	26.5	689	550	425	251	168	119	86	75	59	37	564	436	258	172	122	88	77	61	38	4.0
Magumu - Thika	B20/D1315	22-Apr-21	2	5901	OL	15:50	2	14.6	14.0	28.1	26.6	694	545	424	252	169	119	86	74	58	37	555	432	257	172	121	88	75	59	38	4.1
Magumu - Thika	B20/D1315	22-Apr-21	2	5902	OR	12:41	1	20.2	17.4	28.5	26.9	731	780	604	339	212	136	98	85	68	45	754	584	328	205	132	95	82	66	44	3.4
Magumu - Thika	B20/D1315	22-Apr-21	2	5902	OR	12:41	2	20.2	17.5	28.5	26.7	730	760	591	337	212	135	98	85	66	44	736	572	326	205	131	95	82	64	43	3.4
Magumu - Thika	B20/D1315	22-Apr-21	2	5999	OL	15:50	1	13.8	13.5	28.1	26.8	688	622	488	300	211	153	111	97	77	49	639	501	308	217	157	114	100	79	50	3.8
Magumu - Thika	B20/D1315	22-Apr-21	2	5999	OL	15:50	2	13.9	13.6	28.1	26.8	683	609	481	298	210	155	110	96	77	49	630	498	308	217	160	114	99	80	51	3.8
Magumu - Thika	B20/D1315	22-Apr-21	2	6000	OR	12:40	1	20.5	18.1	28.5	26.8	714	665	530	309	205	145	107	95	75	51	658	525	306	203	144	106	94	74	51	3.7
Magumu - Thika	B20/D1315	22-Apr-21	2	6000	OR	12:40	2	20.5	18.1	28.5	26.4	707	649	523	308	205	146	107	95	76	51	649	523	308	205	146	107	95	76	51	3.7
Magumu - Thika	B20/D1315	22-Apr-21	2	6101	OR	12:39	1	20.7	18.9	28.5	26.8	710	684	514	296	205	150	109	95	74	48	681	512	295	204	149	109	95	74	48	3.6
Magumu - Thika	B20/D1315	22-Apr-21	2	6101	OR	12:39	2	20.7	19.0	28.5	26.7	709	669	508	295	205	150	109	94	78	50	667	507	294	204	150	109	94	78	50	3.7
Magumu - Thika	B20/D1315	22-Apr-21	2	6118	OL	15:51	1	14.5	13.8	28.1	27.3	722	905	721	427	272	163	113	97	73	47	886	706	418	266	160	111	95	71	46	3.1
Magumu - Thika	B20/D1315	22-Apr-21	2	6118	OL	15:51	2	14.5	14.0	28.1	27.3	726	882	708	423	279	162	111	94	69	45	859	689	412	262	158	108	92	67	44	3.2
Magumu - Thika	B20/D1315	22-Apr-21	2	6202	OR	12:39	1	20.5	18.7	28.5	27.1	729	775	607	366	240	154	108	93	73	48	752	589	355	233	149	105	90	71	47	3.4
Magumu - Thika	B20/D1315	22-Apr-21	2	6202	OR	12:39	2	20.5	18.8	28.5	26.9	720	756	597	363	239	153	106	96	73	48	742	586	356	235	150	104	94	72	47	3.4
Magumu - Thika	B20/D1315	22-Apr-21	2	6206	OL	15:52	1	14.7	14.2	28.1	27.2	708	842	678	407	260	156	105	89	69	45	841	677	406	260	156	105	89	69	45	3.2
Magumu - Thika	B20/D1315	22-Apr-21	2	6206	OL	15:52	2	14.7	14.2	28.1	27.2	711	831	674	410	264	159	106	92	70	45	826	670	408	263	158	105	91	70	45	3.2
Magumu - Thika	B20/D1315	22-Apr-21	2	6294	OR	12:38	1	19.8	19.1	28.5	26.9	723	819	636	380	258	171	117	100	78	51	801	622	372	252	167	114	98	76	50	3.3
Magumu - Thika	B20/D1315	22-Apr-21	2	6294	OR	12:38	2	19.9	19.2	28.5	26.9	729	798	623	376	257	169	116	97	78	52	774	604	365	249	164	112	94	76	50	3.4
Magumu - Thika	B20/D1315	22-Apr-21	2	6303	OL	15:53	1	14.6	14.3	28.1	27.0	719	726	549	305	200	134	95	83	66	43	714	540	300	197	132	93	82	65	42	3.5
Magumu - Thika	B20/D1315	22-Apr-21	2	6303	OL	15:53	2	14.6	14.3	28.1	27.0	715	715	545	306	201	135	95	84	65	43	707	539	303	199	133	94	83	64	43	3.5
Magumu - Thika	B20/D1315	22-Apr-21	2	6398	OR	12:37	1	20.5	19.1	28.5	27.7	739	1038	844	510	346	209	141	122	96	67	993	807	488	331	200	135	117	92	64	2.9
Magumu - Thika	B20/D1315	22-Apr-21	2	6398	OR	12:37	2	20.5	19.2	28.5	-8.6	740	1013	831	509	348	211	143	124	99	70	968	794	486	332	202	137	118	95	67	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	6398	OR	12:37	1	20.6	19.3	28.5	27.5	737	1008	829	511	350	213	144	123	98	69	967	795	490	336	204	138	118	94	66	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	6398	OR	12:37	2	20.6	19.4	28.5	27.5	739	989	816	506	347	211	143	124	97	67	946	781	484	332	202	137	119	93	64	3.0



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	2	6699	OR	12:34	2	19.2	18.4	28.5	27.1	722	953	769	462	317	192	126	107	80	53	933	753	452	310	188	123	105	78	52	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	6702	OL	15:56	1	14.4	14.5	28.1	27.5	702	981	783	473	329	206	138	115	91	61	988	789	476	331	207	139	116	92	61	2.9
Magumu - Thika	B20/D1315	22-Apr-21	2	6702	OL	15:56	2	14.4	14.6	28.1	27.3	695	960	770	470	328	204	137	115	90	60	977	783	478	334	208	139	117	92	61	3.0
Magumu - Thika	B20/D1315	22-Apr-21	2	6800	OL	15:57	1	14.2	14.4	28.1	27.2	704	893	713	417	280	171	108	88	66	42	897	716	419	281	172	108	88	66	42	3.1
Magumu - Thika	B20/D1315	22-Apr-21	2	6800	OL	15:57	2	14.1	14.4	28.1	27.2	701	887	711	419	283	170	109	89	67	41	895	717	423	285	171	110	90	68	41	3.1
Magumu - Thika	B20/D1315	22-Apr-21	2	6801	OR	12:33	1	17.9	17.5	28.5	26.9	733	820	585	285	190	136	97	88	68	44	791	564	275	183	131	94	85	66	42	3.3
Magumu - Thika	B20/D1315	22-Apr-21	2	6801	OR	12:33	2	18.0	17.6	28.5	27.1	736	810	585	287	192	139	98	85	68	43	778	562	276	184	134	94	82	65	41	3.3
Magumu - Thika	B20/D1315	22-Apr-21	2	6901	OR	12:32	1	16.8	16.1	28.5	28.5	707	1648	1300	730	481	281	177	145	113	76	1648	1300	730	481	281	177	145	113	76	2.2
Magumu - Thika	B20/D1315	22-Apr-21	2	6901	OR	12:32	2	16.9	16.2	28.5	28.5	708	1624	1294	731	483	283	178	148	114	76	1622	1292	730	482	283	178	148	114	76	2.2
Magumu - Thika	B20/D1315	22-Apr-21	2	6902	OL	15:58	1	14.2	14.0	28.1	27.4	729	1062	768	418	253	148	101	88	71	47	1030	745	405	245	144	98	85	69	46	2.8
Magumu - Thika	B20/D1315	22-Apr-21	2	6902	OL	15:58	2	14.3	14.0	28.1	27.5	734	1054	762	418	253	147	100	87	71	47	1015	734	403	244	142	96	84	68	45	2.9
Magumu - Thika	B20/D1315	22-Apr-21	2	6996	OR	12:30	1	17.5	16.1	28.5	26.8	712	858	706	483	369	250	170	151	122	87	852	701	480	366	248	169	150	121	86	3.2
Magumu - Thika	B20/D1315	22-Apr-21	2	6996	OR	12:30	2	17.6	16.2	28.5	26.8	711	852	705	484	370	252	170	150	122	87	847	701	481	368	251	169	149	121	87	3.3
Magumu - Thika	B20/D1315	22-Apr-21	3	7002	OL	15:59	1	14.7	14.4	28.1	27.2	701	872	709	462	347	252	175	157	124	84	879	715	466	350	254	176	158	125	85	3.2
Magumu - Thika	B20/D1315	22-Apr-21	3	7002	OL	15:59	2	14.8	14.4	28.1	27.2	699	858	703	460	346	253	173	155	122	83	868	711	465	350	256	175	157	123	84	3.2
Magumu - Thika	B20/D1315	22-Apr-21	3	7116	OR	12:29	1	18.7	15.7	28.5	28.2	755	1424	1067	583	372	228	157	138	109	75	1333	999	546	348	214	147	129	102	70	2.5
Magumu - Thika	B20/D1315	22-Apr-21	3	7116	OR	12:29	2	18.7	15.8	28.5	28.2	756	1406	1054	581	371	229	158	138	111	77	1315	986	543	347	214	148	129	104	72	2.5
Magumu - Thika	B20/D1315	22-Apr-21	3	7140	OL	16:03	1	15.8	15.1	28.1	27.5	731	898	652	352	238	173	126	113	90	71	869	631	340	230	167	122	109	87	69	3.1
Magumu - Thika	B20/D1315	22-Apr-21	3	7140	OL	16:03	2	15.8	15.2	28.1	27.5	731	892	651	354	241	175	126	117	93	72	863	630	342	233	169	122	113	90	70	3.2
Magumu - Thika	B20/D1315	22-Apr-21	3	7199	OR	12:26	1	18.6	17.3	28.5	27.3	741	983	744	428	282	184	128	113	91	62	938	710	408	269	176	122	108	87	59	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	7199	OR	12:26	2	18.6	17.3	28.5	27.3	748	975	741	428	284	185	128	112	91	62	922	700	405	268	175	121	106	86	59	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	7207	OL	16:04	1	14.9	14.7	28.1	27.8	849	1237	944	495	310	196	143	129	107	77	1030	786	412	258	163	119	107	89	64	2.8
Magumu - Thika	B20/D1315	22-Apr-21	3	7207	OL	16:04	2	14.9	14.8	28.1	27.8	848	1223	936	494	312	196	144	130	107	78	1020	780	412	260	163	120	108	89	65	2.9
Magumu - Thika	B20/D1315	22-Apr-21	3	7294	OR	12:25	1	18.7	17.9	28.5	27.7	726	1110	918	563	379	218	136	115	94	65	1081	894	548	369	212	132	112	92	63	2.8
Magumu - Thika	B20/D1315	22-Apr-21	3	7294	OR	12:25	2	18.7	17.9	28.5	29.0	728	1106	916	562	378	217	135	116	93	64	1074	890	546	367	211	131	113	90	62	2.8
Magumu - Thika	B20/D1315	22-Apr-21	3	7294	OR	12:25	1	18.7	17.8	28.5	27.6	721	1120	917	562	377	214	135	114	92	64	1098	899	551	370	210	132	112	90	63	2.8
Magumu - Thika	B20/D1315	22-Apr-21	3	7294	OR	12:25	2	18.7	17.8	28.5	2.3	725	1117	918	564	381	216	137	116	93	64	1089	895	550	372	211	134	113	91	62	2.8
Magumu - Thika	B20/D1315	22-Apr-21	3	7299	OL	16:09	1	16.5	14.5	28.1	27.9	733	1247	982	557	364	213	133	114	87	60	1203	947	537	351	205	128	110	84	58	2.6
Magumu - Thika	B20/D1315	22-Apr-21	3	7299	OL	16:09	2	16.5	14.6	28.1	28.1	721	1215	956	547	356	204	132	106	85	57	1191	937	536	349	200	129	104	83	56	2.6
Magumu - Thika	B20/D1315	22-Apr-21	3	7399	OR	12:24	1	18.4	17.6	28.5	27.5	733	974	755	449	299	180	118	111	88	61	939	728	433	288	174	114	107	85	59	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	7399	OR	12:24	2	18.4	17.6	28.5	27.5	732	954	746	444	296	177	121	106	88	60	921	721	429	286	171	117	102	85	58	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	7400	OL	16:10	1	15.6	14.8	28.1	27.6	719	1003	835	535	371	210	130	108	86	57	986	821	526	365	206	128	106	85	56	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	7400	OL	16:10	2	15.5	14.9	28.1	27.5	717	977	819	525	364	205	128	107	86	57	963	808	518	359	202	126	106	85	56	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	7488	OR	12:23	1	18.2	17.5	28.5	27.3	753	894	646	330	218	161	125	118	97	65	839	607	310	205	151	117	111	91	61	3.2
Magumu - Thika	B20/D1315	22-Apr-21	3	7488	OR	12:23	2	18.2	17.6	28.5	27.2	754	881	642	332	220	163	126	118	99	68	826	602	311	206	153	118	111	93	64	3.2
Magumu - Thika	B20/D1315	22-Apr-21	3	7500	OL	16:12	1	15.2	14.9	28.1	27.0	750	775	566	287	192	153	118	112	96	68	731	534	271	181	144	111	106	90	64	3.4
Magumu - Thika	B20/D1315	22-Apr-21	3	7500	OL	16:12	2	15.3	15.0	28.1	27.2	733	758	555	282	189	149	115	109	90	65	731	535	272	182	144	111	105	87	63	3.4
Magumu - Thika	B20/D1315	22-Apr-21	3	7500	OL	16:11	1	15.4	14.8	28.1	27.2	745	786	571	285	192	151	118	112	92	68	746	542	270	182	143	112	106	87	65	3.4
Magumu - Thika	B20/D1315	22-Apr-21	3	7500	OL	16:11	2	15.3	14.9	28.1	27.2	736	767	561	282	190	149	117	110	91	66	737	539	271	183	143	112	106	87	63	3.4
Magumu - Thika	B20/D1315	22-Apr-21	3	7599	OR	12:22	1	17.8	17.5	28.5	27.4	740	962	726	421	275	168	116	104	84	58	919	694	402	263	161	111	99	80	55	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	7599	OR	12:22	2	17.8	17.6	28.5	27.3	742	945	716	419	275	168	116	105	83	57	900	682	399	262	160	111	100	79	54	3.1
Magumu - Thika	B20/D1315	22-Apr-21	3	7608	OL	16:13	1	15.5	15.0	28.1	27.1	708	888	606	305	207	149	108	96	77	51	887	605	305	207	149	108	96	77	51	3.1
Magumu - Thika	B20/D1315	22-Apr-21	3	7608	OL	16:13	2	15.6	15.1	28.1	27.2	723	869	603	307	210	151	108	97	78	52	850	590	300	205	148	106	95	76	51	3.2
Magumu - Thika	B20/D1315	22-Apr-21	3	7696	OR	12:21	1	18.5	17.3	28.5	27.3	752	895	664	350	218	141	101	89	70	44	841	624	329	205	133	95	84	66	41	3.2
Magumu - Thika	B20/D1315	22-Apr-21	3	7696	OR	12:21	2	18.5	17.4	28.5	27.1	751	870	649	346	217	139	101	88	70	43										

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP	
Magumu - Thika	B20/D1315	22-Apr-21	3	7903	OL	16:16	1	14.6	14.7	28.1	27.5	743	858	578	265	159	116	87	76	62	38	816	550	252	151	110	83	72	59	36	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	3	7903	OL	16:16	2	14.6	14.8	28.1	27.3	736	839	571	264	159	115	87	77	62	39	806	549	254	153	110	84	74	60	37	3.3	
Magumu - Thika	B20/D1315	22-Apr-21	3	7998	OL	16:16	1	14.1	14.3	28.1	27.2	689	850	689	449	330	216	144	122	95	64	872	710	461	339	222	148	125	97	66	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	3	7998	OL	16:16	2	14.1	14.3	28.1	27.1	690	841	689	448	330	216	144	122	95	64	862	706	459	338	221	148	125	97	66	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	3	7999	OR	12:19	1	18.0	16.3	28.5	28.4	729	1258	1013	613	442	297	200	171	134	92	1220	982	595	429	288	194	166	130	89	2.6	
Magumu - Thika	B20/D1315	22-Apr-21	3	7999	OR	12:19	2	18.0	16.3	28.5	28.1	729	1236	998	609	442	297	200	172	136	95	1199	968	591	429	288	194	167	132	92	2.6	
Magumu - Thika	B20/D1315	22-Apr-21	3	8091	OR	12:18	1	17.5	16.7	28.5	28.1	728	1258	983	564	394	262	180	153	121	83	1222	955	548	383	254	175	149	118	81	2.6	
Magumu - Thika	B20/D1315	22-Apr-21	3	8091	OR	12:18	2	17.6	16.7	28.5	28.0	730	1243	977	565	397	266	182	156	124	85	1204	946	547	384	258	176	151	120	82	2.6	
Magumu - Thika	B20/D1315	22-Apr-21	3	8098	OL	16:17	1	14.0	13.8	28.1	27.8	712	1048	778	434	312	218	149	126	97	63	1041	773	431	310	216	148	125	96	63	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	3	8098	OL	16:17	2	14.0	13.9	28.1	27.6	708	1033	772	432	311	216	149	124	94	62	1032	771	431	311	216	149	124	94	62	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	3	8195	OR	12:17	1	17.2	16.9	28.5	29.5	708	1998	1590	845	475	225	136	115	91	68	1995	1588	844	474	225	136	115	91	68	1.9	
Magumu - Thika	B20/D1315	22-Apr-21	3	8195	OR	12:17	2	17.2	16.9	28.5	29.3	708	1971	1583	848	478	231	138	117	93	68	1968	1581	847	477	231	138	117	93	68	2.0	
Magumu - Thika	B20/D1315	22-Apr-21	3	8202	OL	16:18	1	14.2	13.9	28.1	28.9	727	1499	1139	506	305	178	111	90	70	48	1458	1108	492	297	173	108	88	68	47	2.3	
Magumu - Thika	B20/D1315	22-Apr-21	3	8202	OL	16:18	2	14.1	14.0	28.1	28.7	735	1484	1139	508	307	178	112	91	71	49	1427	1096	489	295	171	108	88	68	47	2.4	
Magumu - Thika	B20/D1315	22-Apr-21	3	8298	OL	16:19	1	13.9	14.0	28.1	28.8	693	1824	1385	739	459	236	140	114	94	70	1861	1413	754	468	241	143	116	96	71	2.0	
Magumu - Thika	B20/D1315	22-Apr-21	3	8298	OL	16:19	2	14.0	14.1	28.1	29.1	704	1814	1388	746	465	240	142	118	97	74	1822	1394	749	467	241	143	119	97	74	2.0	
Magumu - Thika	B20/D1315	22-Apr-21	3	8298	OR	12:16	1	17.6	16.8	28.5	28.3	715	1375	1064	642	451	273	173	147	111	74	1360	1052	635	446	270	171	145	110	73	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8298	OR	12:16	2	17.7	16.9	28.5	28.2	713	1361	1060	644	454	277	174	147	113	76	1350	1051	639	450	275	173	146	112	75	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8399	OR	12:15	1	17.2	16.8	28.5	27.1	718	922	726	448	319	223	162	147	118	80	908	715	441	314	220	160	145	116	79	3.1	
Magumu - Thika	B20/D1315	22-Apr-21	3	8399	OR	12:15	2	17.3	16.9	28.5	27.3	715	902	717	446	319	222	162	150	118	81	892	709	441	315	220	160	148	117	80	3.1	
Magumu - Thika	B20/D1315	22-Apr-21	3	8411	OL	16:20	1	14.1	13.8	28.1	27.7	735	943	731	390	266	197	144	133	108	75	907	703	375	256	189	139	128	104	72	3.1	
Magumu - Thika	B20/D1315	22-Apr-21	3	8411	OL	16:20	2	14.1	13.9	28.1	27.7	738	929	725	392	268	197	146	133	108	75	890	695	376	257	189	140	127	103	72	3.1	
Magumu - Thika	B20/D1315	22-Apr-21	3	8494	OR	12:14	1	16.9	16.4	28.5	28.3	720	1372	1080	617	412	245	153	128	103	71	1347	1061	606	405	241	150	126	101	70	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8494	OR	12:14	2	17.0	16.4	28.5	28.0	722	1353	1073	618	414	244	155	130	105	73	1325	1051	605	405	239	152	127	103	71	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8539	OL	16:21	1	14.6	14.2	28.1	28.1	709	1179	912	541	362	213	141	116	91	56	1176	909	539	361	212	141	116	91	56	2.7	
Magumu - Thika	B20/D1315	22-Apr-21	3	8539	OL	16:21	2	14.6	14.3	28.1	2.2	710	1164	908	541	363	219	146	124	91	56	1159	904	539	361	218	145	123	91	56	2.7	
Magumu - Thika	B20/D1315	22-Apr-21	3	8607	OR	12:13	1	16.9	16.8	28.5	27.3	717	1040	834	543	405	258	161	133	101	68	1025	822	535	399	254	159	131	100	67	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	3	8607	OR	12:13	2	16.9	16.8	28.5	27.2	716	1020	823	539	403	257	161	133	102	67	1007	813	532	398	254	159	131	101	66	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	3	8614	OL	16:22	1	14.6	14.2	28.1	28.9	711	1368	990	554	376	228	146	122	94	61	1360	984	551	374	227	145	121	93	61	2.4	
Magumu - Thika	B20/D1315	22-Apr-21	3	8614	OL	16:22	2	14.6	14.3	28.1	28.3	706	1354	989	558	380	229	146	122	97	61	1356	990	559	381	229	146	122	97	61	2.4	
Magumu - Thika	B20/D1315	22-Apr-21	3	8697	OR	12:12	1	17.0	16.7	28.5	28.8	707	1657	1361	802	551	323	201	167	125	82	1657	1361	802	551	323	201	167	125	82	2.2	
Magumu - Thika	B20/D1315	22-Apr-21	3	8697	OR	12:12	2	17.0	16.8	28.5	28.8	711	1633	1345	799	551	323	202	168	127	84	1624	1337	795	548	321	201	167	126	84	2.2	
Magumu - Thika	B20/D1315	22-Apr-21	3	8699	OL	16:23	1	15.1	14.4	28.1	28.5	709	1364	1064	603	418	257	163	134	102	65	1360	1061	601	417	256	163	134	102	65	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8699	OL	16:23	2	15.0	14.5	28.1	28.2	705	1344	1054	603	419	260	165	136	102	65	1348	1057	605	420	261	165	136	102	65	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8782	OL	16:24	1	14.7	14.6	28.1	28.3	719	1285	967	520	353	232	154	128	97	61	1264	951	511	347	228	151	126	95	60	2.6	
Magumu - Thika	B20/D1315	22-Apr-21	3	8782	OL	16:24	2	14.6	14.6	28.1	28.1	714	1262	952	517	354	231	157	130	99	62	1250	943	512	351	229	155	129	98	61	2.6	
Magumu - Thika	B20/D1315	22-Apr-21	3	8806	OR	12:11	1	16.5	16.2	28.5	28.3	721	1363	1119	683	503	336	227	196	152	105	1337	1097	670	493	329	223	192	149	103	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8806	OR	12:11	2	16.6	16.3	28.5	28.6	720	1357	1117	686	507	339	232	201	159	113	1332	1097	674	498	333	228	197	156	111	2.5	
Magumu - Thika	B20/D1315	22-Apr-21	3	8898	OR	12:10	1	15.9	15.8	28.5	27.0	747	812	564	298	200	164	130	125	104	73	769	534	282	189	155	123	118	98	69	3.3	
Magumu - Thika	B20/D1315	22-Apr-21	3	8898	OR	12:10	2	15.9	15.8	28.5	27.4	752	803	565	299	202	164	131	127	104	74	755	531	281	190	154	123	119	98	70	3.4	
Magumu - Thika	B20/D1315	22-Apr-21	3	8903	OL	16:25	1	14.7	14.6	28.1	27.5	719	965	747	445	299	219	136	172	158	128	90	949	735	438	314	232	169	155	126	88	3.0
Magumu - Thika	B20/D1315	22-Apr-21	3	8903	OL	16:25	2	14.7	14.6	28.1	27.6	716	956	741	441	315	232	170	156	125	87	944	732	435	311	229	168	154	123	86	3.0	
Magumu - Thika	B20/D1315	22-Apr-21	3	9000	OL	16:26	1	14.5	14.5	28.1	28.6	718	1619	1125	558	365	210	132	109	88	63	1594	1108	549	359	207	130	107	87	62	2.2	
Magumu - Thika	B20/D1315	22-Apr-21	3	9000	OL	16:26	2	14.5	14.5	28.1	28.7	713	1547	1117	558	366	210	133	110	89	64	1534	1108	553	363	208	132	109	88	63	2.3	
Magumu - Thika	B20/D1315	22-Apr-21	3	9001	OR	12:09																										

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	4	9200	0L	16:28	2	14.1	14.1	28.1	26.8	700	709	577	370	271	206	151	140	115	82	716	583	374	274	208	153	141	116	83	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	9302	0R	12:06	1	17.4	16.4	28.5	27.4	734	934	678	355	244	169	121	104	82	52	900	653	342	235	163	117	100	79	50	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	9302	0R	12:06	2	17.4	16.4	28.5	27.0	730	921	674	356	246	172	121	104	83	53	892	653	345	238	167	117	101	80	51	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	9302	0L	16:29	1	14.7	13.8	28.1	27.3	732	809	588	338	224	154	108	93	72	43	781	568	326	216	149	104	90	70	42	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	9302	0L	16:29	2	14.6	13.9	28.1	2.4	719	788	579	334	222	151	109	91	70	41	775	569	328	218	148	107	89	69	40	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	9400	0R	12:04	1	17.3	16.3	28.5	26.7	728	726	565	345	237	168	125	117	97	69	705	549	335	230	163	121	114	94	67	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	9400	0R	12:04	2	17.3	16.3	28.5	26.6	732	722	566	346	239	168	125	115	96	67	697	547	334	231	162	121	111	93	65	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	9401	0L	16:30	1	14.5	14.0	28.1	27.2	731	915	646	356	231	160	122	111	90	62	885	625	344	223	155	118	107	87	60	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	9401	0L	16:30	2	14.4	14.0	28.1	27.2	725	897	639	356	233	162	123	113	91	63	875	623	347	227	158	120	110	89	61	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	9502	0R	12:03	1	17.4	16.0	28.5	26.4	712	599	495	316	229	159	112	98	78	51	595	492	314	227	158	111	97	77	51	3.9
Magumu - Thika	B20/D1315	22-Apr-21	4	9502	0R	12:03	2	17.4	16.1	28.5	26.4	714	597	496	318	230	160	113	100	79	52	591	491	315	228	158	112	99	78	51	3.9
Magumu - Thika	B20/D1315	22-Apr-21	4	9503	0L	16:31	1	14.2	14.2	28.1	27.5	717	946	657	380	267	181	127	110	87	57	933	648	375	263	178	125	108	86	56	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	9503	0L	16:31	2	14.2	14.3	28.1	27.5	719	934	657	384	271	186	129	112	90	58	918	646	378	266	183	127	110	88	57	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	9595	0R	12:03	1	16.9	15.3	28.5	27.0	718	841	669	419	305	209	144	125	100	69	828	659	413	300	206	142	123	98	68	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	9595	0R	12:03	2	17.0	15.4	28.5	27.2	719	828	664	418	304	208	144	124	100	69	814	653	411	299	205	142	122	98	68	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	9601	0L	16:32	1	14.1	14.2	28.1	27.7	722	1071	844	469	309	202	138	121	98	68	1049	826	459	303	198	135	118	96	67	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	9601	0L	16:32	2	14.0	14.2	28.1	27.7	718	1060	831	465	309	202	138	122	98	68	1044	818	458	304	199	136	120	96	67	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	9705	0R	12:02	1	17.0	15.0	28.5	26.8	718	811	678	449	329	218	146	126	99	66	799	668	442	324	215	144	124	97	65	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	9705	0R	12:02	2	17.0	15.0	28.5	26.7	712	801	674	448	329	218	146	125	101	66	795	669	445	327	216	145	124	100	66	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	9708	0L	16:33	1	14.3	14.1	28.1	28.5	713	1462	1019	570	377	239	159	138	106	74	1450	1010	565	374	237	158	137	105	73	2.3
Magumu - Thika	B20/D1315	22-Apr-21	4	9708	0L	16:33	2	14.3	14.1	28.1	28.9	720	1432	1012	568	377	238	160	137	107	75	1406	994	558	370	234	157	135	105	74	2.4
Magumu - Thika	B20/D1315	22-Apr-21	4	9790	0R	12:01	1	17.5	14.6	28.5	27.1	734	927	682	384	269	188	133	118	94	64	893	657	370	259	181	128	114	91	62	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	9790	0R	12:01	2	17.5	14.7	28.5	27.2	736	917	675	383	268	184	132	116	93	62	881	648	368	257	177	127	111	89	60	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	9803	0L	16:34	1	14.6	14.2	28.1	26.7	695	670	540	355	260	181	128	113	90	59	682	549	361	264	184	130	115	92	60	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	9803	0L	16:34	2	14.6	14.2	28.1	26.9	698	674	543	357	262	181	127	113	89	59	683	550	362	265	183	129	114	90	60	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	9886	0L	16:35	1	13.9	13.7	28.1	26.8	693	688	525	332	257	201	149	137	111	73	702	536	339	262	205	152	140	113	74	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	9886	0L	16:35	2	13.8	13.7	28.1	26.8	690	670	515	327	252	198	146	133	106	69	687	528	335	258	203	150	136	109	71	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	9896	0R	11:47	1	18.2	17.7	28.5	26.9	722	788	609	379	295	232	170	157	127	85	772	596	371	289	227	166	154	124	83	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	9896	0R	11:47	2	18.2	17.8	28.5	26.9	725	775	608	379	295	231	170	157	127	87	756	593	370	288	225	166	153	124	85	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	10000	0R	11:46	1	17.9	17.5	28.5	27.2	723	789	617	373	259	175	122	106	85	59	772	603	365	253	171	119	104	83	58	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	10000	0R	11:46	2	18.0	17.6	28.5	27.2	717	775	610	371	258	175	121	106	83	58	764	601	366	254	173	119	105	82	57	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	10003	0L	16:38	1	13.7	13.1	28.1	27.1	705	802	630	377	267	182	128	111	87	57	804	632	378	268	183	128	111	87	57	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	10003	0L	16:38	2	13.7	13.2	28.1	27.0	705	788	622	375	267	184	125	110	87	57	790	624	376	268	185	125	110	87	57	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	10094	0L	16:39	1	14.2	13.4	28.1	27.9	723	1077	791	441	311	209	141	120	95	65	1053	773	431	304	204	138	117	93	64	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10094	0L	16:39	2	14.2	13.4	28.1	27.8	728	1058	784	439	309	206	139	118	93	63	1027	761	426	300	200	135	115	90	61	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	10099	0R	11:45	1	18.2	17.8	28.5	27.8	723	1046	781	446	295	202	141	124	99	66	1023	764	436	288	198	138	121	97	65	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	10099	0R	11:45	2	18.2	17.9	28.5	27.5	726	1028	774	445	295	201	140	124	99	66	1001	754	433	287	196	136	121	96	64	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	10191	0R	11:44	1	18.5	18.1	28.5	27.8	738	933	737	419	297	214	148	133	105	67	894	706	401	285	205	142	127	101	64	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	10191	0R	11:44	2	18.5	18.0	28.5	27.6	739	927	741	421	299	216	149	131	107	70	887	709	403	286	207	143	125	102	67	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	10205	0L	16:40	1	13.5	13.6	28.1	27.0	707	809	602	365	256	172	122	109	87	57	809	602	365	256	172	122	109	87	57	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	10205	0L	16:40	2	13.5	13.6	28.1	27.2	705	804	599	363	255	171	121	108	86	56	806	601	364	256	171	121	108	86	56	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	10300	0R	11:43	1	17.9	18.1	28.5	27.9	733	1315	1033	512	348	240	164	141	114	83	1268	996	494	336	231	158	136	110	80	2.5
Magumu - Thika	B20/D1315	22-Apr-21	4	10300	0R	11:43	2	17.9	18.1	28.5	27.8	734	1288	1021	514	350	240	163	141	112	77	1241	983	495	337	231	157	136	108	74	2.6
Magumu - Thika	B20/D1315	22-Apr-21	4	10302	0L	16:41	1	14.1	13.8	28.1	27.1	697	927	766	495	349	216	144	124	97	65	940	777	502	354	219	146	126	98	66	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	10302	0L	16:41	2	14.2	13.9	28.1	27.5																				

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	4	10598	OR	11:40	1	18.2	18.1	28.5	27.6	720	1117	861	536	382	250	172	151	119	83	1097	845	526	375	245	169	148	117	82	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10598	OR	11:40	2	18.2	18.1	28.5	27.7	724	1093	851	535	382	249	172	150	121	83	1067	831	522	373	243	168	146	118	81	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10607	OL	16:44	1	14.6	14.0	28.1	27.8	714	1086	850	490	335	222	153	133	107	71	1075	842	485	332	220	152	132	106	70	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10607	OL	16:44	2	14.6	14.1	28.1	27.7	707	1064	838	489	337	222	154	135	106	72	1064	838	489	337	222	154	135	106	72	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10697	OR	11:39	1	18.1	18.4	28.5	27.2	730	879	675	409	291	197	139	120	97	63	851	654	396	282	191	135	116	94	61	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	10697	OR	11:39	2	18.2	18.4	28.5	27.1	731	861	668	410	293	199	140	122	97	64	833	646	397	283	192	135	118	94	62	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	10698	OL	16:45	1	14.6	14.1	28.1	26.9	714	755	639	411	291	194	136	119	95	63	748	633	407	288	192	135	118	94	62	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	10698	OL	16:45	2	14.6	14.1	28.1	27.0	711	736	629	407	290	194	135	119	95	64	732	625	405	288	193	134	118	94	64	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	10800	OR	11:39	1	18.2	18.3	28.5	27.2	719	962	776	503	377	247	162	139	110	73	946	763	495	371	243	159	137	108	72	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	10800	OR	11:39	2	18.2	18.3	28.5	27.2	722	943	769	501	376	244	162	140	108	73	923	753	491	368	239	159	137	106	71	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	10804	OL	16:46	1	14.9	14.3	28.1	27.1	701	801	661	452	340	223	148	125	100	66	808	667	456	343	225	149	126	101	67	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	10804	OL	16:46	2	14.9	14.3	28.1	26.8	701	789	653	450	341	224	149	124	102	66	796	659	454	344	226	150	125	103	67	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	10900	OL	16:47	1	14.5	14.2	28.1	27.6	744	1138	852	457	299	207	145	127	101	67	1081	810	434	284	197	138	121	96	64	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10900	OL	16:47	2	14.5	14.2	28.1	28.0	734	1113	841	453	298	207	144	127	101	68	1072	810	436	287	199	139	122	97	65	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10903	OR	11:38	1	18.2	18.2	28.5	27.8	748	1142	856	441	262	167	123	109	88	60	1079	809	417	248	158	116	103	83	57	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10903	OR	11:38	2	18.3	18.3	28.5	27.6	752	1121	849	441	264	170	123	113	89	61	1054	798	415	248	160	116	106	84	57	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	10998	OR	11:37	1	18.8	17.9	28.5	27.3	726	938	743	441	308	207	147	131	105	72	913	724	429	300	202	143	128	102	70	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	10998	OR	11:37	2	18.8	17.9	28.5	27.3	727	920	734	438	308	208	147	131	106	72	895	714	426	300	202	143	127	103	70	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	10999	OL	16:48	1	14.8	14.5	28.1	27.3	727	968	770	431	280	188	133	118	94	64	941	749	419	272	183	129	115	91	62	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	10999	OL	16:48	2	14.8	14.5	28.1	27.3	720	964	767	430	280	189	134	118	95	65	947	753	422	275	186	132	116	93	64	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	11103	OR	11:36	1	18.7	17.3	28.5	26.9	735	731	549	315	211	150	112	104	86	60	703	528	303	203	144	108	100	83	58	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	11103	OR	11:36	2	18.7	17.4	28.5	26.9	728	716	542	314	211	151	112	104	87	60	695	526	305	205	147	109	101	84	58	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	11108	OL	16:49	1	14.6	14.2	28.1	27.5	727	1039	689	351	219	157	114	101	80	51	1010	670	341	213	153	111	98	78	50	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	11108	OL	16:49	2	14.6	14.2	28.1	27.7	730	1028	688	353	215	157	114	102	80	51	996	666	342	214	152	110	99	77	49	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	11198	OR	11:35	1	18.5	17.2	28.5	27.5	725	1009	784	450	297	199	141	124	99	66	984	765	439	290	194	137	121	97	64	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	11198	OR	11:35	2	18.6	17.2	28.5	27.7	733	986	769	447	296	196	142	125	102	70	951	742	431	286	189	137	121	98	68	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	11204	OL	16:50	1	14.5	14.3	28.1	27.5	708	909	754	476	331	203	138	121	97	64	908	753	475	331	203	138	121	97	64	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	11204	OL	16:50	2	14.5	14.3	28.1	27.1	692	900	748	473	330	204	139	123	98	65	920	764	483	337	208	142	126	100	66	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	11297	OR	11:35	1	18.4	17.4	28.5	27.4	753	861	652	355	225	155	115	105	88	61	808	612	333	211	146	108	99	83	57	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	11297	OR	11:35	2	18.4	17.4	28.5	27.3	758	846	642	352	223	152	114	104	86	61	789	599	328	208	142	106	97	80	57	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	11298	OL	16:51	1	14.2	14.0	28.1	27.4	725	872	678	369	223	145	110	101	85	60	850	661	360	217	141	107	98	83	59	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	11298	OL	16:51	2	14.3	14.0	28.1	27.4	722	854	667	367	221	144	110	101	85	57	836	653	359	216	141	108	99	83	56	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	11399	OR	11:34	1	17.9	18.2	28.5	27.3	755	984	771	440	278	164	114	98	76	49	921	722	412	260	154	107	92	71	46	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	11399	OR	11:34	2	18.0	18.2	28.5	27.4	754	962	759	437	277	164	113	97	75	49	902	712	410	260	154	106	91	70	46	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	11404	OL	16:52	1	14.7	14.2	28.1	27.0	715	750	582	332	215	141	102	90	72	46	742	575	328	213	139	101	89	71	45	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	11404	OL	16:52	2	14.7	14.2	28.1	26.9	717	746	581	333	217	143	105	92	74	48	736	573	328	214	141	104	91	73	47	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	11497	OR	11:33	1	17.5	17.9	28.5	27.3	745	994	796	470	315	208	149	132	108	75	943	755	446	299	197	141	125	102	71	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	11497	OR	11:33	2	17.5	18.0	28.5	27.3	743	970	784	468	314	206	149	133	109	75	923	746	445	299	196	142	127	104	71	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	11503	OL	16:53	1	14.8	14.3	28.1	27.8	731	960	720	430	282	182	129	118	94	64	928	696	416	273	176	125	114	91	62	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	11503	OL	16:53	2	14.8	14.3	28.1	27.8	736	938	710	429	284	183	130	117	95	66	901	682	412	273	176	125	112	91	63	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	11597	OR	11:32	1	18.1	18.0	28.5	27.5	735	1067	873	551	391	252	171	148	122	88	1026	840	530	376	242	164	142	117	85	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	11597	OR	11:32	2	18.1	18.0	28.5	27.6	732	1038	859	548	391	252	172	152	124	90	1003	830	529	378	243	166	147	120	87	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	11606	OL	16:54	1	14.9	14.3	28.1	27.6	712	1038	865	526	355	236	164	146	119	87	1031	859	522	353	234	163	145	118	86	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	11606	OL	16:54	2	14.9	14.4	28.1	27.8	716	1020	856	525	355	235	164	145	116	88	1007	845	518	351	232	162	143	115	87	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	11702	OR	11:31	1	18.8	17.9	28.5	27.2	756																			



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	4	11805	OL	16:57	2	14.5	14.6	28.1	27.5	716	820	648	400	283	197	139	123	99	66	810	640	395	279	195	137	121	98	65	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	11898	OR	11:25	1	20.4	19.8	28.5	26.9	732	723	511	254	174	142	109	102	84	59	698	494	245	168	137	105	99	81	57	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	11898	OR	11:25	2	20.4	19.9	28.5	26.7	732	706	502	253	174	141	109	102	85	60	682	485	244	168	136	105	99	82	58	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	11912	OL	16:57	1	14.5	14.6	28.1	27.0	707	617	477	266	173	131	103	98	80	57	617	477	266	173	131	103	98	80	57	3.8
Magumu - Thika	B20/D1315	22-Apr-21	4	11912	OL	16:57	2	14.4	14.6	28.1	2.5	708	604	468	263	169	127	98	92	76	52	603	467	263	169	127	98	92	76	52	3.8
Magumu - Thika	B20/D1315	22-Apr-21	4	12001	OL	16:58	1	14.7	14.6	28.1	27.6	725	1006	764	439	299	205	149	135	107	74	981	745	428	292	200	145	132	104	72	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	12001	OL	16:58	2	14.7	14.6	28.1	27.7	725	985	748	433	295	206	148	135	109	74	961	729	422	288	201	144	132	106	72	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	12002	OR	11:24	1	20.1	19.7	28.5	27.3	721	974	753	443	312	224	161	143	115	79	955	738	434	306	220	158	140	113	77	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	12002	OR	11:24	2	20.1	19.7	28.5	27.3	722	960	747	443	312	225	161	141	114	80	940	731	434	306	220	158	138	112	78	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	12099	OR	11:23	1	20.6	19.8	28.5	27.3	722	912	690	372	264	202	144	131	103	71	893	676	364	259	198	141	128	101	70	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12099	OR	11:23	2	20.6	19.9	28.5	27.1	723	891	681	371	264	201	144	128	103	70	871	666	363	258	197	141	125	101	68	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	12104	OL	16:59	1	14.9	14.5	28.1	28.0	732	1083	890	399	251	182	135	126	103	69	1046	860	385	242	176	130	122	99	67	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	12104	OL	16:59	2	14.9	14.6	28.1	27.9	731	1065	883	402	256	187	137	125	106	72	1030	854	389	248	181	133	121	103	70	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	12197	OR	11:22	1	20.3	20.0	28.5	27.2	729	935	669	361	244	180	130	117	94	64	907	649	350	237	175	126	113	91	62	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12197	OR	11:22	2	20.3	20.0	28.5	27.4	728	913	661	358	241	178	129	117	94	61	887	642	348	234	173	125	114	91	59	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12216	OL	17:00	1	15.1	14.8	28.1	27.5	725	906	679	357	228	174	133	129	110	84	884	662	348	222	170	130	126	107	82	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12216	OL	17:00	2	15.1	14.8	28.1	26.9	739	899	675	360	231	175	134	129	110	83	860	646	344	221	167	128	123	105	79	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12296	OR	11:21	1	20.3	20.2	28.5	27.4	733	939	743	446	303	195	136	121	97	66	906	717	430	292	188	131	117	94	64	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12296	OR	11:21	2	20.3	20.2	28.5	27.4	733	930	739	447	304	195	136	121	97	65	897	713	431	293	188	131	117	94	63	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12298	OL	17:01	1	14.4	14.6	28.1	27.5	733	951	752	417	258	158	117	109	90	62	917	725	402	249	152	113	105	87	60	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	12298	OL	17:01	2	14.4	14.6	28.1	27.7	739	938	746	415	257	160	119	107	90	62	897	714	397	246	153	114	102	86	59	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12298	OL	17:01	1	14.8	14.5	28.1	8.4	739	979	765	420	259	160	119	110	91	63	937	732	402	248	153	114	105	87	60	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	12298	OL	17:01	2	14.8	14.6	28.1	27.8	739	959	754	416	257	157	117	109	90	63	917	721	398	246	150	112	104	86	60	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	12399	OL	17:02	1	14.5	14.3	28.1	27.3	714	845	694	448	309	195	132	116	93	62	837	687	444	306	193	131	115	92	61	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	12399	OL	17:02	2	14.5	14.3	28.1	27.2	714	832	685	445	309	191	134	117	94	63	824	678	441	306	189	133	116	93	62	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	12402	OR	11:20	1	20.4	20.3	28.5	26.9	723	742	601	380	268	181	130	117	96	65	726	588	372	262	177	127	114	94	64	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	12402	OR	11:20	2	20.4	20.4	28.5	26.9	717	726	591	377	266	180	129	117	95	65	716	583	372	262	177	127	115	94	64	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	12484	OR	11:20	1	19.5	19.6	28.5	27.3	728	1039	769	452	324	213	143	125	100	68	1009	747	439	315	207	139	121	97	66	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	12484	OR	11:20	2	19.6	19.7	28.5	27.6	728	1021	763	449	323	213	141	123	99	68	992	741	436	314	207	137	119	96	66	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	12493	OL	17:03	1	14.8	14.5	28.1	28.2	718	1219	954	550	298	196	139	127	101	69	1200	939	542	293	193	137	125	99	68	2.6
Magumu - Thika	B20/D1315	22-Apr-21	4	12493	OL	17:03	2	14.8	14.5	28.1	28.0	721	1191	939	549	303	199	140	127	102	69	1168	921	538	297	195	137	125	100	68	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	12585	OR	11:19	1	18.7	18.8	28.5	27.2	706	925	784	528	394	263	180	161	126	86	926	785	529	395	263	180	161	126	86	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12585	OR	11:19	2	18.7	18.9	28.5	27.2	707	909	774	525	392	264	180	161	127	86	909	774	525	392	264	180	161	127	86	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	12602	OL	17:04	1	14.8	14.6	28.1	28.1	721	1234	989	563	421	285	190	165	133	91	1210	970	552	413	279	186	162	130	89	2.6
Magumu - Thika	B20/D1315	22-Apr-21	4	12602	OL	17:04	2	14.8	14.6	28.1	28.1	718	1203	972	558	416	284	188	164	131	91	1185	957	549	410	280	185	161	129	90	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	12700	OL	17:05	1	14.3	14.5	28.1	27.4	701	776	644	420	299	199	133	114	89	59	783	650	424	302	201	134	115	90	60	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	12700	OL	17:05	2	14.2	14.5	28.1	27.4	706	766	638	418	298	197	132	108	88	57	767	639	419	298	197	132	108	88	57	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	12701	OR	11:18	1	18.7	18.7	28.5	26.8	721	856	700	437	301	192	131	118	95	65	839	686	429	295	188	128	116	93	64	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	12701	OR	11:18	2	18.8	18.8	28.5	27.0	716	836	687	432	298	189	130	115	94	64	825	678	427	294	187	128	114	93	63	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	12795	OR	11:17	1	19.0	18.9	28.5	27.0	713	857	703	460	331	214	147	128	104	72	850	697	456	328	212	146	127	103	71	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	12795	OR	11:17	2	19.1	19.0	28.5	27.2	713	850	699	458	330	213	146	125	103	72	843	693	454	327	211	145	124	102	71	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	12799	OL	17:06	1	14.3	14.3	28.1	28.0	716	1040	857	517	365	235	156	134	106	71	1027	846	511	360	232	154	132	105	70	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	12799	OL	17:06	2	14.3	14.3	28.1	27.6	712	1022	849	516	366	236	158	137	107	73	1015	843	512	363	234	157	136	106	72	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	12896	OR	11:16	1	20.1	19.2	28.5	27.1	718	839	680	437	329	230	164	145	116	79	826	670	430	324	226	161	143	114	78	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	12896	OR	11:16	2	20.0	19.2	28.5	27.4	717																			

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	4	13098	OR	11:13	1	20.6	18.7	28.5	2.5	705	733	611	402	293	198	136	114	87	54	735	613	403	294	199	136	114	87	54	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	13098	OR	11:13	2	20.6	18.9	28.5	26.9	703	721	605	401	293	198	135	115	87	53	725	608	403	295	199	136	116	87	53	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	13099	OL	17:08	1	14.2	14.2	28.1	27.8	710	898	716	446	311	196	127	106	80	49	894	713	444	310	195	126	106	80	49	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	13099	OL	17:08	2	14.2	14.2	28.1	27.4	705	879	705	443	310	198	127	106	80	50	881	707	444	311	199	127	106	80	50	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	13196	OR	11:12	1	19.5	18.2	28.5	27.6	746	1078	841	423	271	188	143	135	117	87	1022	797	401	257	178	136	128	111	82	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	13196	OR	11:12	2	19.6	18.2	28.5	27.6	748	1055	832	422	271	188	143	139	117	87	997	786	399	256	178	135	131	111	82	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	13216	OL	17:10	1	14.4	14.2	28.1	27.8	719	1000	810	500	360	259	186	173	142	103	983	796	492	354	255	183	170	140	101	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	13216	OL	17:10	2	14.4	14.2	28.1	27.5	716	984	803	501	363	262	188	175	142	103	972	793	495	358	259	186	173	140	102	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	13288	OR	11:11	1	18.8	17.5	28.5	27.9	706	1160	992	685	521	350	237	210	174	130	1162	993	686	522	350	237	210	174	130	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13288	OR	11:11	2	18.8	17.7	28.5	27.7	702	1146	989	687	525	355	240	212	175	131	1154	996	692	529	358	242	214	176	132	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13298	OL	17:10	1	14.3	14.3	28.1	27.6	689	970	856	595	466	322	228	203	161	114	995	878	611	478	330	234	208	165	117	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	13298	OL	17:10	2	14.4	14.3	28.1	27.6	700	958	851	594	466	322	227	205	162	115	968	860	600	471	325	229	207	164	116	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	13403	OR	11:10	1	22.3	18.5	28.5	26.9	711	666	533	313	210	156	116	110	92	59	662	530	311	209	155	115	109	91	59	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13403	OR	11:10	2	22.2	18.4	28.5	26.9	709	660	532	314	211	156	117	110	92	60	658	530	313	210	156	117	110	92	60	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13416	OL	17:11	1	14.1	14.2	28.1	27.6	708	963	764	454	317	222	153	135	105	69	962	763	453	317	222	153	135	105	69	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	13416	OL	17:11	2	14.0	14.2	28.1	27.5	704	941	753	451	316	220	153	134	105	69	945	756	453	317	221	154	135	105	69	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	13492	OR	11:09	1	23.3	19.5	28.5	27.3	716	900	737	453	323	217	153	134	109	78	889	728	447	319	214	151	132	108	77	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	13492	OR	11:09	2	23.3	19.5	28.5	27.1	713	888	731	454	325	220	155	138	114	81	881	725	450	322	218	154	137	113	80	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	13500	OL	17:12	1	14.6	14.4	28.8	2.5	705	797	613	381	266	187	135	122	96	62	799	615	382	267	188	135	122	96	62	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	13500	OL	17:12	2	14.6	14.4	28.8	27.2	703	789	606	377	263	186	134	119	93	59	793	609	379	264	187	135	120	94	59	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	13599	OR	11:08	1	23.4	19.5	28.5	28.2	724	1055	932	560	416	284	194	169	133	95	1030	910	547	406	277	189	165	130	93	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	13599	OR	11:08	2	23.4	19.5	28.5	27.8	730	1044	928	561	420	289	199	174	139	97	1011	899	543	407	280	193	169	135	94	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	13602	OL	17:15	1	14.8	14.6	28.8	27.5	718	802	649	410	288	196	143	130	108	73	790	639	404	284	193	141	128	106	72	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	13602	OL	17:15	2	14.8	14.6	28.8	27.2	716	794	646	412	291	198	145	135	110	76	784	638	407	287	196	143	133	109	75	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	13698	OR	11:07	1	23.5	19.0	28.5	27.2	732	775	613	382	254	160	112	97	78	49	749	592	369	245	155	108	94	75	47	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	13698	OR	11:07	2	23.5	19.1	28.5	26.9	731	760	606	381	254	160	111	98	77	51	735	586	368	246	155	107	95	74	49	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	13713	OL	17:16	1	14.9	15.0	28.8	27.4	727	867	638	356	227	153	114	103	81	53	843	620	346	221	149	111	100	79	52	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	13713	OL	17:16	2	14.9	15.1	28.8	27.6	730	854	632	356	227	153	113	102	81	53	827	612	345	220	148	109	99	78	51	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	13804	OL	17:18	1	14.7	15.0	28.8	28.1	742	1308	972	446	171	133	118	112	93	63	1246	926	425	163	127	112	107	89	60	2.5
Magumu - Thika	B20/D1315	22-Apr-21	4	13804	OL	17:18	2	14.8	15.0	28.8	28.3	749	1303	969	448	172	135	117	111	91	61	1230	915	423	162	127	110	105	86	58	2.5
Magumu - Thika	B20/D1315	22-Apr-21	4	13804	OR	11:05	1	23.0	19.5	28.5	26.8	731	676	535	333	242	187	145	139	119	86	654	517	322	234	181	140	134	115	83	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13804	OR	11:05	2	23.0	19.6	28.5	26.9	730	669	535	335	244	188	146	140	118	86	648	518	324	236	182	141	136	114	83	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13895	OR	11:04	1	22.8	20.4	28.5	27.3	710	947	781	507	383	259	172	150	119	81	943	778	505	381	258	171	149	118	81	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	13895	OR	11:04	2	22.7	20.4	28.5	27.1	710	933	776	508	384	262	174	150	120	82	929	773	506	382	261	173	149	119	82	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	13906	OL	17:19	1	14.3	14.4	28.8	28.0	702	1143	939	581	384	231	148	119	91	59	1151	946	585	387	233	149	120	92	59	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13906	OL	17:19	2	14.4	14.4	28.8	27.8	702	1130	933	583	388	235	150	123	93	59	1138	940	587	391	237	151	124	94	59	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	13983	OR	11:03	1	22.7	20.5	28.5	27.2	726	869	690	417	291	200	146	139	118	88	846	672	406	283	195	142	135	115	86	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	13983	OR	11:03	2	22.7	20.5	28.5	27.4	728	860	688	418	292	199	145	139	119	89	835	668	406	284	193	141	135	116	86	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	13998	OL	17:20	1	14.2	14.4	28.8	28.2	721	1045	889	570	422	296	207	188	154	109	1025	872	559	414	290	203	184	151	107	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	13998	OL	17:20	2	14.2	14.4	28.8	28.0	718	1030	878	566	419	294	207	188	155	110	1014	865	557	413	289	204	185	153	108	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	14095	OR	11:02	1	23.0	20.4	28.5	26.1	717	525	397	224	137	90	64	54	42	24	518	391	221	135	89	63	53	41	24	4.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14095	OR	11:02	2	23.1	20.5	28.5	26.4	721	526	397	225	138	90	64	53	42	24	516	389	221	135	88	63	52	41	24	4.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14115	OL	17:21	1	14.5	14.5	28.8	26.5	716	534	417	225	122	66	45	37	25	13	527	412	222	120	65	44	37	25	13	4.1
Magumu - Thika	B20/D1315	22-Apr-21	4	14115	OL	17:21	2	14.5	14.5	28.8	27.0	726	527	415	225	123	67	46	38	26	14	513	404	219	120	65	45	37	25	14	4.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14202	OR	11:00	1	22.4	19.9	28.5	3.4	72																			

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	4	14304	0L	17:23	2	14.5	14.5	28.8	27.5	703	852	706	456	321	213	145	130	101	72	857	710	459	323	214	146	131	102	72	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14398	0L	17:23	1	14.4	14.6	28.8	27.6	698	994	841	565	420	267	175	143	117	81	1007	852	572	425	270	177	145	119	82	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	14398	0L	17:23	2	14.5	14.6	28.8	27.5	691	970	826	558	417	267	175	143	120	82	992	845	571	427	273	179	150	123	84	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	14401	0R	10:58	1	22.2	19.7	28.5	27.4	703	877	720	488	380	266	180	155	123	85	882	724	491	382	268	181	156	124	85	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14401	0R	10:58	2	22.2	19.7	28.5	26.9	697	860	714	489	381	266	183	159	125	87	872	724	496	386	270	186	161	127	88	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14497	0R	10:57	1	21.9	20.0	28.5	27.0	719	819	675	443	322	215	151	132	106	72	805	664	436	317	211	148	130	104	71	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	14497	0R	10:57	2	22.0	20.0	28.5	27.0	720	803	666	439	321	214	150	133	107	72	789	654	431	315	210	147	131	105	71	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	14506	0L	17:24	1	14.3	14.5	28.8	27.6	722	861	686	419	285	181	124	107	85	55	843	672	410	279	177	121	105	83	54	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14506	0L	17:24	2	14.3	14.5	28.8	27.4	716	837	669	410	280	175	120	103	82	52	826	661	405	276	173	118	102	81	51	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	14595	0R	10:57	1	21.2	20.0	28.5	27.0	724	833	675	438	329	231	168	153	126	88	813	659	428	321	226	164	149	123	86	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	14595	0R	10:57	2	21.3	20.1	28.5	26.8	718	819	670	437	329	231	168	154	126	88	806	660	430	324	227	165	152	124	87	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	14606	0L	17:25	1	14.6	14.6	28.8	27.9	740	1017	766	394	238	173	131	120	99	68	972	732	376	227	165	125	115	95	65	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	14606	0L	17:25	2	14.6	14.6	28.8	27.7	740	998	761	393	238	174	132	119	99	71	953	727	375	227	166	126	114	95	68	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	14702	0R	10:56	1	21.3	19.2	28.5	26.8	721	713	566	355	258	192	140	129	105	72	699	555	348	253	188	137	126	103	71	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	14702	0R	10:56	2	21.3	19.3	28.5	26.9	721	702	562	356	259	193	141	129	105	72	688	551	349	254	189	138	126	103	71	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	14705	0L	17:27	1	14.7	14.6	28.8	28.6	719	1371	1135	564	358	269	187	164	134	94	1348	1116	555	352	265	184	161	132	92	2.5
Magumu - Thika	B20/D1315	22-Apr-21	4	14705	0L	17:27	2	14.7	14.6	28.8	28.4	720	1340	1113	560	358	265	186	164	134	96	1316	1093	550	352	260	183	161	132	94	2.5
Magumu - Thika	B20/D1315	22-Apr-21	4	14797	0R	10:55	1	20.3	19.2	28.5	26.6	702	684	573	401	310	230	168	153	128	90	689	577	404	312	232	169	154	129	91	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	14797	0R	10:55	2	20.4	19.2	28.5	26.8	699	670	565	399	309	230	166	162	129	91	678	571	404	313	233	168	164	130	92	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	14807	0L	17:28	1	14.4	14.5	28.8	27.2	711	846	674	402	283	203	147	134	110	75	841	670	400	281	202	146	133	109	75	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14807	0L	17:28	2	14.4	14.5	28.8	27.1	705	831	664	400	281	201	148	135	110	76	833	666	401	282	202	148	135	110	76	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	14898	0R	10:54	1	19.4	19.1	28.5	26.8	719	739	593	372	273	211	159	148	123	88	727	583	366	268	207	156	146	121	87	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	14898	0R	10:54	2	19.5	19.1	28.5	26.8	717	725	584	368	273	208	159	149	122	89	715	576	363	269	205	157	147	120	88	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	14905	0L	17:29	1	14.6	14.6	28.8	27.3	703	710	579	391	292	202	142	126	102	70	714	582	393	294	203	143	127	103	70	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	14905	0L	17:29	2	14.6	14.6	28.8	27.0	689	693	569	388	288	201	141	125	102	70	711	584	398	296	206	145	128	105	72	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	15001	0R	10:53	1	20.2	19.6	28.5	26.6	713	651	508	295	192	127	90	78	61	39	646	504	293	190	126	89	77	60	39	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	15001	0R	10:53	2	20.1	19.6	28.5	26.5	715	641	506	297	193	125	91	79	61	39	634	500	294	191	124	90	78	60	39	3.8
Magumu - Thika	B20/D1315	22-Apr-21	4	15010	0L	17:29	1	14.6	14.7	28.8	26.6	709	669	529	327	221	142	99	87	69	44	667	528	326	220	142	99	87	69	44	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	15010	0L	17:29	2	14.6	14.8	28.8	27.0	707	652	519	323	219	141	99	86	70	45	652	519	323	219	141	99	86	70	45	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	15097	0R	10:52	1	21.6	19.9	28.5	26.6	738	760	583	325	205	129	93	81	65	41	728	559	311	196	124	89	78	62	39	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	15097	0R	10:52	2	21.6	19.9	28.5	26.8	737	755	579	325	205	130	94	81	64	41	724	555	312	197	125	90	78	61	39	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	15113	0L	17:30	1	14.8	15.0	28.8	26.9	710	724	545	308	204	147	108	96	78	49	721	543	307	203	146	108	96	78	49	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	15113	0L	17:30	2	14.8	15.0	28.8	27.2	717	715	542	307	203	146	108	97	78	49	705	534	303	200	144	106	96	77	48	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	15198	0R	10:51	1	20.7	19.2	28.5	17.0	705	702	584	394	311	226	161	140	110	76	704	586	395	312	227	161	140	110	76	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	15198	0R	10:51	2	20.7	19.2	28.5	26.7	703	695	583	396	313	228	163	143	112	76	699	586	398	315	229	164	144	113	76	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	15204	0L	17:33	1	14.1	14.0	28.8	27.3	706	810	642	396	272	177	122	107	85	57	811	643	397	272	177	122	107	85	57	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	15204	0L	17:33	2	14.1	14.0	28.8	27.0	707	796	631	393	273	177	124	105	83	57	796	631	393	273	177	124	105	83	57	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	15303	0R	10:50	1	20.1	19.1	28.5	26.9	712	756	617	417	321	241	174	155	122	83	751	613	414	319	239	173	154	121	82	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	15303	0R	10:50	2	20.1	19.2	28.5	26.8	713	742	612	415	321	239	174	154	122	84	736	607	412	318	237	173	153	121	83	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	15316	0L	17:34	1	14.3	14.1	28.8	27.0	690	687	542	362	286	218	158	144	116	80	704	555	371	293	223	162	148	119	82	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	15316	0L	17:34	2	14.4	14.2	28.8	26.8	686	668	535	359	284	218	158	144	120	79	688	551	370	293	225	163	148	124	81	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	15392	0R	10:49	1	20.5	19.1	28.5	26.8	728	775	613	378	253	159	110	94	75	49	753	595	367	246	154	107	91	73	48	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	15392	0R	10:49	2	20.5	19.1	28.5	26.8	736	759	606	377	253	158	110	94	75	50	729	582	362	243	152	106	90	72	48	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	15403	0L	17:35	1	14.4	14.3	28.8	27.1	717	783	609	370	259	166	114	98	77	51	772	601	365	255	167	112	98	77	50	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	15495	0L	17:36	1	14.6	14.6	2																					

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	4	15697	OR	10:46	1	19.0	17.6	28.5	27.1	726	874	702	444	319	214	147	125	98	62	851	684	432	311	208	143	122	95	60	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	15697	OR	10:46	2	19.1	17.6	28.5	27.1	718	861	698	445	320	215	147	126	99	63	848	687	438	315	212	145	124	97	62	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	15701	OL	17:38	1	14.7	14.8	28.8	27.3	705	872	699	439	301	186	127	109	86	54	874	701	440	302	187	127	109	86	54	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	15701	OL	17:38	2	14.6	14.8	28.8	27.1	701	850	688	435	299	184	126	108	77	53	857	694	439	302	186	127	109	78	53	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	15795	OR	10:45	1	18.6	17.6	28.5	27.1	740	943	730	426	289	195	142	127	104	72	901	697	407	276	186	136	121	99	69	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	15795	OR	10:45	2	18.7	17.6	28.5	27.2	737	938	728	426	290	194	141	128	105	71	900	698	409	278	186	135	123	101	68	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	15803	OL	17:39	1	14.2	14.5	28.8	27.3	726	887	719	447	298	193	136	124	100	68	864	700	435	290	188	132	121	97	66	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	15803	OL	17:39	2	14.3	14.5	28.8	27.1	719	864	705	441	295	190	132	120	99	68	850	693	434	290	187	130	118	97	67	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	15900	OL	17:40	1	14.3	14.4	28.8	27.6	693	930	766	501	368	251	173	152	120	84	949	781	511	375	256	176	155	122	86	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	15900	OL	17:40	2	14.3	14.4	28.8	27.5	691	917	760	500	368	254	173	153	121	84	938	778	512	377	260	177	157	124	86	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	15900	OR	10:44	1	19.6	17.6	28.5	27.5	713	1144	922	576	415	263	176	151	119	80	1134	914	571	412	261	175	150	118	79	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	15900	OR	10:44	2	19.6	17.6	28.5	27.5	715	1128	918	580	421	267	179	153	120	83	1115	908	574	416	264	177	151	119	82	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	16000	OR	10:43	1	19.5	17.1	28.5	27.4	710	949	755	460	344	248	175	155	125	90	945	752	458	343	247	174	154	124	90	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	16000	OR	10:43	2	19.5	17.2	28.5	27.1	704	930	744	458	343	248	176	155	124	89	934	747	460	344	249	177	156	125	89	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	16002	OL	17:41	1	14.7	14.5	28.8	28.8	717	1425	1169	583	402	278	193	168	135	95	1405	1153	575	396	274	190	166	133	94	2.4
Magumu - Thika	B20/D1315	22-Apr-21	4	16002	OL	17:41	2	14.7	14.6	28.8	28.3	713	1387	1142	583	404	281	195	172	140	95	1375	1132	578	401	279	193	171	139	94	2.4
Magumu - Thika	B20/D1315	22-Apr-21	4	16097	OR	10:42	1	19.5	16.8	28.5	27.8	726	1169	898	503	357	255	180	157	126	88	1138	874	490	348	248	175	153	123	86	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	16097	OR	10:42	2	19.5	16.8	28.5	27.7	728	1151	895	507	360	257	181	164	126	88	1118	869	492	350	250	176	159	122	85	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	16101	OL	17:41	1	14.9	14.7	28.8	3.2	704	907	732	438	314	222	159	141	112	77	911	735	440	315	223	160	142	112	77	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	16101	OL	17:41	2	14.9	14.7	28.8	27.8	701	890	721	437	314	223	159	141	113	76	898	727	441	317	225	160	142	114	77	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	16201	OR	10:42	1	19.1	16.6	28.5	27.7	717	1085	866	497	358	248	171	147	116	75	1070	854	490	353	245	169	145	114	74	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	16201	OR	10:42	2	19.1	16.7	28.5	27.7	720	1063	856	498	359	250	171	148	114	73	1044	841	489	353	245	168	145	112	72	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	16203	OL	17:42	1	15.2	14.7	28.8	27.8	688	960	800	505	374	266	189	166	131	89	987	822	519	384	273	194	171	135	91	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	16203	OL	17:42	2	15.2	14.8	28.8	2.2	689	952	793	503	372	266	189	166	131	89	977	814	516	382	273	194	170	134	91	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	16299	OR	10:40	1	17.9	16.6	28.5	27.2	726	875	668	369	263	203	151	137	112	77	852	651	359	256	198	147	133	109	75	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	16299	OR	10:40	2	18.0	16.7	28.5	27.2	729	867	662	369	264	204	151	138	113	77	841	642	358	256	198	146	134	110	75	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	16299	OR	10:40	1	18.3	16.8	28.5	27.4	739	865	658	372	266	205	151	137	113	76	828	630	356	254	196	144	131	108	73	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	16299	OR	10:40	2	18.4	16.8	28.5	27.2	724	855	651	372	266	207	152	139	114	76	835	636	363	260	202	148	136	111	74	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	16306	OL	17:43	1	15.4	14.9	28.8	27.1	700	758	623	391	274	198	144	132	108	75	766	629	395	277	200	145	133	109	76	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	16306	OL	17:43	2	15.4	14.9	28.8	27.1	706	747	616	388	273	192	142	130	105	73	748	617	389	273	192	142	130	105	73	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	16399	OL	17:44	1	15.3	14.8	28.8	26.7	709	571	426	237	153	117	92	86	72	47	569	425	236	153	117	92	86	72	47	4.0
Magumu - Thika	B20/D1315	22-Apr-21	4	16399	OL	17:44	2	15.3	14.8	28.8	26.7	713	562	422	236	154	116	93	88	75	50	557	418	234	153	115	92	87	74	50	4.0
Magumu - Thika	B20/D1315	22-Apr-21	4	16399	OR	10:39	1	18.4	16.1	28.5	26.8	737	722	572	301	179	126	101	95	79	53	693	549	289	172	121	97	91	76	51	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	16399	OR	10:39	2	18.4	16.2	28.5	26.9	733	705	564	300	178	126	100	94	77	53	680	544	289	172	122	96	91	74	51	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	16495	OR	10:34	1	17.5	18.1	28.5	26.9	725	740	595	378	277	197	146	137	110	78	722	580	369	270	192	142	134	107	76	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	16495	OR	10:34	2	17.5	18.1	28.5	26.8	730	732	591	378	277	198	147	137	111	78	709	572	366	268	192	142	133	108	76	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	16509	OL	17:45	1	15.5	15.1	28.8	27.3	711	666	544	360	262	183	133	122	100	69	662	541	358	261	182	132	121	99	69	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	16509	OL	17:45	2	15.5	15.1	28.8	27.1	711	650	535	357	259	180	132	121	99	69	646	532	355	258	179	131	120	98	69	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	16600	OR	10:31	1	16.9	17.8	22.0	26.8	709	664	528	348	265	186	132	119	95	64	662	527	347	264	185	132	119	95	64	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	16600	OR	10:31	2	16.9	17.8	22.0	26.5	710	658	528	350	267	186	133	120	96	64	655	526	349	266	185	132	119	96	64	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	16604	OL	17:46	1	15.0	15.0	28.8	27.3	694	780	608	362	268	202	147	133	108	74	795	619	369	273	206	150	135	110	75	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	16604	OL	17:46	2	14.9	15.0	28.8	27.2	694	764	601	360	267	202	145	132	108	73	778	612	367	272	206	148	134	110	74	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	16694	OR	10:30	1	16.4	17.7	22.0	26.9	709	886	681	458	351	238	161	141	107	71	884	679	457	350	237	161	141	107	71	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	16694	OR	10:30	2	16.4	17.7	22.0	27.0	713	869	674	456	351	236	161	140	107	71	862	668	452	348	234	160	149	106	70	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	16707	OL	17:47	1	15.3	15.1	28																					



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			4	16901	0L	17:49	2	15.4	15.2	28.8	27.3	717	803	609	387	281	200	141	126	98	67
Magumu - Thika	B20/D1315	22-Apr-21	4	16983	0R	10:27	1	16.0	16.7	22.0	26.9	713	701	551	361	265	186	130	113	87	57	695	546	358	263	184	129	112	86	57	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	16983	0R	10:27	2	16.0	16.8	22.0	26.8	717	691	546	360	265	185	130	112	87	56	681	538	355	261	182	128	110	86	55	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	17006	0L	17:49	1	15.3	15.3	28.8	27.0	702	772	606	372	274	194	137	123	99	66	777	610	375	276	195	138	124	100	66	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	17006	0L	17:49	2	15.3	15.3	28.8	27.2	703	762	601	369	273	191	134	120	96	64	766	604	371	275	192	135	121	97	64	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	17097	0R	10:27	1	15.7	16.6	22.0	27.2	707	990	803	544	424	285	191	166	131	91	990	803	544	424	285	191	166	131	91	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	17097	0R	10:27	2	15.7	16.6	22.0	27.3	714	968	793	540	421	284	190	165	129	86	959	785	535	417	281	188	163	128	85	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	17105	0L	17:51	1	14.4	14.5	28.8	27.5	704	978	781	497	372	251	168	144	114	74	982	784	499	374	252	169	145	114	74	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	17105	0L	17:51	2	14.4	14.5	28.8	27.4	701	955	767	491	369	248	167	145	114	74	963	774	495	372	250	168	146	115	75	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	17199	0L	17:52	1	14.6	14.6	28.8	27.2	708	809	647	388	278	193	138	124	99	68	808	646	387	278	193	138	124	99	68	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	17199	0L	17:52	2	14.6	14.7	28.8	27.1	695	807	645	388	279	191	138	124	100	69	821	656	395	284	194	140	126	102	70	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	17201	0R	10:26	1	15.0	16.3	22.0	27.1	732	876	644	398	298	209	144	125	100	69	846	622	384	288	202	139	121	97	67	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	17201	0R	10:26	2	15.0	16.3	22.0	27.1	724	858	637	397	298	210	144	125	101	68	838	622	388	291	205	141	122	99	66	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	17297	0L	17:52	1	15.0	14.9	28.8	27.3	729	978	761	442	272	159	110	96	76	48	948	738	429	264	154	107	93	74	47	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	17297	0L	17:52	2	15.0	14.9	28.8	27.7	736	959	751	439	272	160	112	97	77	49	921	721	422	261	154	108	93	74	47	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	17299	0R	10:25	1	15.2	16.2	22.0	27.4	717	1075	824	493	347	215	143	119	93	62	1060	813	486	342	212	141	117	92	61	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	17299	0R	10:25	2	15.2	16.2	22.0	27.4	721	1060	820	494	349	216	143	118	92	63	1039	804	484	342	212	140	116	90	62	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	17399	0R	10:24	1	14.6	16.0	22.0	26.8	710	730	618	418	316	214	146	124	97	63	727	615	416	315	213	145	123	97	63	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	17399	0R	10:24	2	14.7	16.0	22.0	26.8	712	720	611	415	313	215	145	122	97	63	715	607	412	311	213	144	121	96	63	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	17406	0L	17:53	1	15.2	15.1	28.8	27.7	696	777	635	428	323	225	153	136	108	71	789	645	435	328	229	155	138	110	72	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	17406	0L	17:53	2	15.2	15.1	28.8	27.7	693	763	627	425	322	224	153	136	108	73	778	640	434	329	229	156	139	110	74	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	17497	0R	10:23	1	15.3	16.3	22.0	26.9	738	895	678	388	252	159	113	96	77	50	857	650	372	241	152	108	92	74	48	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	17497	0R	10:23	2	15.3	16.3	22.0	27.0	741	871	668	386	251	160	112	96	78	50	831	637	368	239	153	107	92	74	48	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	17503	0L	17:54	1	15.1	15.2	28.8	27.1	728	824	588	296	185	125	92	82	68	42	800	571	287	180	121	89	80	66	41	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	17503	0L	17:54	2	15.0	15.2	28.8	27.0	725	796	575	293	184	124	92	80	66	42	776	561	286	179	121	90	78	64	41	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	17596	0R	10:22	1	14.9	15.8	22.0	27.7	720	1072	950	629	467	306	204	180	152	110	1053	933	618	459	300	200	177	149	108	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	17596	0R	10:22	2	15.0	15.7	22.0	27.6	719	1057	945	628	469	308	205	183	150	110	1039	929	618	461	303	202	180	147	108	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	17602	0L	17:55	1	14.7	15.0	28.8	27.8	687	1088	879	544	382	261	179	157	126	88	1120	905	560	393	269	184	162	130	91	2.7
Magumu - Thika	B20/D1315	22-Apr-21	4	17602	0L	17:55	2	14.7	15.0	28.8	27.8	684	1066	866	541	380	255	175	156	123	84	1102	895	559	393	264	181	161	127	87	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	17690	0R	10:21	1	14.7	16.2	22.0	27.3	723	916	731	449	314	209	146	128	103	68	896	715	439	307	204	143	125	101	66	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	17690	0R	10:21	2	14.7	16.2	22.0	26.9	722	900	721	448	314	209	145	127	102	67	881	706	439	307	205	142	124	100	66	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	17701	0L	17:56	1	14.7	14.9	28.8	28.2	717	1073	821	500	360	232	159	138	110	73	1058	810	493	355	229	157	136	108	72	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	17701	0L	17:56	2	14.6	14.9	28.8	27.9	717	1045	803	492	356	231	157	137	110	76	1030	792	485	351	228	155	135	108	75	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	17796	0R	10:20	1	14.4	16.0	22.0	27.1	728	842	667	421	299	197	141	126	101	68	818	648	409	290	191	137	122	98	66	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	17796	0R	10:20	2	14.5	16.0	22.0	27.0	725	832	656	419	300	198	142	128	102	69	811	640	409	293	193	138	125	99	67	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	17819	0L	17:57	1	15.1	15.3	28.8	27.4	718	861	643	374	269	193	141	126	102	70	848	633	368	265	190	139	124	100	69	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	17819	0L	17:57	2	15.1	15.3	28.8	27.4	723	849	641	375	270	193	140	127	102	69	830	627	367	264	189	137	124	100	67	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	17897	0L	17:58	1	14.9	15.3	28.8	27.9	738	1083	792	450	299	188	128	112	90	59	1038	759	431	286	180	123	107	86	57	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	17897	0L	17:58	2	15.0	15.3	28.8	-8.6	733	1046	774	443	299	187	126	111	89	59	1009	747	427	288	180	122	107	86	57	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	17898	0R	10:20	1	15.2																							

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP	
Magumu - Thika	B20/D1315	22-Apr-21	4	18295	OR	10:16	1	14.4	15.9	22.0	27.1	750	881	677	381	247	150	110	97	76	50	830	638	359	233	141	104	91	72	47	47	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	18295	OR	10:16	2	14.4	15.8	22.0	27.0	746	860	668	379	245	149	109	96	75	48	815	633	359	232	141	103	91	71	45	45	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	18304	OL	18:01	1	15.4	15.4	28.8	28.4	755	1139	794	425	262	169	118	101	77	50	1067	744	398	245	158	110	95	72	47	47	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	18304	OL	18:01	2	15.4	15.5	28.8	28.5	752	1114	784	423	261	172	118	102	79	51	1047	737	398	245	162	111	96	74	48	48	2.8
Magumu - Thika	B20/D1315	22-Apr-21	4	18396	OR	10:15	1	15.3	16.6	22.0	27.0	738	849	608	340	232	164	120	104	84	56	813	582	326	222	157	115	100	80	54	54	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	18396	OR	10:15	2	15.3	16.5	22.0	26.9	736	827	595	336	229	160	119	104	85	56	794	572	323	220	154	114	100	82	54	54	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	18409	OL	18:02	1	15.4	15.5	28.8	27.2	717	914	690	389	262	182	130	114	91	60	901	680	384	258	179	128	112	90	59	59	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	18409	OL	18:02	2	15.4	15.5	28.8	27.5	722	893	681	388	263	184	130	114	91	59	874	667	380	258	180	127	112	89	58	58	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	18509	OR	10:14	1	14.8	16.2	22.0	27.2	735	955	707	419	288	179	119	99	75	49	919	680	403	277	172	114	95	72	47	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	18509	OR	10:14	2	14.8	16.2	22.0	27.0	729	929	690	411	283	175	117	98	75	48	901	669	399	274	170	113	95	73	47	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	18525	OL	18:03	1	15.0	15.0	28.8	27.6	719	1257	970	555	360	195	118	92	67	43	1236	954	546	354	192	116	90	66	42	42	2.6
Magumu - Thika	B20/D1315	22-Apr-21	4	18525	OL	18:03	2	15.0	15.0	28.8	1.1	717	1232	949	549	358	194	118	94	70	43	1215	936	541	353	191	116	93	69	42	42	2.6
Magumu - Thika	B20/D1315	22-Apr-21	4	18604	OL	18:03	1	15.0	15.0	28.8	27.0	717	790	642	420	271	166	114	99	78	51	779	633	414	267	164	112	98	77	50	50	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	18604	OL	18:03	2	15.0	15.0	28.8	27.1	719	776	633	415	270	164	113	99	78	51	763	622	408	265	161	111	97	77	50	50	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	18604	OR	10:13	1	14.5	15.8	22.0	26.8	721	790	612	365	255	173	125	112	92	64	775	600	358	250	170	123	110	90	63	63	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	18604	OR	10:13	2	14.5	15.8	22.0	26.7	714	769	600	363	254	174	125	113	91	63	761	594	359	252	172	124	110	90	62	62	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	18697	OR	10:12	1	14.7	16.1	22.0	26.4	715	721	545	324	234	180	133	121	98	69	713	539	320	231	178	132	120	97	68	68	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	18697	OR	10:12	2	14.7	16.1	22.0	26.4	719	707	539	324	235	179	133	121	99	69	695	530	319	231	176	131	119	97	68	68	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	18699	OL	18:04	1	14.8	14.9	28.8	27.6	741	964	654	345	238	181	138	127	105	71	920	624	329	227	173	132	121	100	68	68	3.0
Magumu - Thika	B20/D1315	22-Apr-21	4	18699	OL	18:04	2	14.8	14.9	28.8	27.8	732	937	643	343	238	183	137	126	105	72	905	621	331	230	177	132	122	101	70	70	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	18795	OR	10:11	1	14.9	16.0	22.0	27.1	738	828	603	353	248	189	143	131	108	75	793	578	338	238	181	137	125	103	72	72	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	18795	OR	10:11	2	14.9	16.0	22.0	26.9	737	809	590	349	247	188	142	132	108	75	776	566	335	237	180	136	127	104	72	72	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	18806	OL	18:05	1	14.8	14.8	28.8	27.8	735	883	680	380	260	195	146	135	111	74	849	654	366	250	188	140	130	107	71	71	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	18806	OL	18:05	2	14.8	14.8	28.8	27.7	730	860	663	374	252	192	144	132	106	70	833	642	362	249	186	139	128	103	68	68	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	18909	OL	18:06	1	14.9	15.0	28.8	27.3	710	853	639	379	282	219	163	153	124	88	849	636	377	281	218	162	152	123	88	88	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	18909	OL	18:06	2	14.9	15.0	28.8	27.2	705	836	632	377	280	215	161	151	123	86	838	634	378	281	216	161	151	123	86	86	3.2
Magumu - Thika	B20/D1315	22-Apr-21	4	18912	OR	10:10	1	14.7	16.3	22.0	27.4	740	1071	801	469	336	236	173	158	127	87	1023	765	448	321	225	165	151	121	83	83	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	18912	OR	10:10	2	14.7	16.2	22.0	27.3	735	1039	786	466	334	235	171	153	126	87	999	756	448	321	226	164	147	121	84	84	2.9
Magumu - Thika	B20/D1315	22-Apr-21	4	19018	OR	10:09	1	14.9	16.1	22.0	26.9	750	740	541	289	180	129	104	100	82	55	698	510	272	170	122	98	94	77	52	52	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	19018	OR	10:09	2	14.9	16.1	22.0	26.9	746	720	530	286	178	129	103	98	81	54	682	502	271	169	122	98	93	77	51	51	3.6
Magumu - Thika	B20/D1315	22-Apr-21	4	19040	OL	18:08	1	15.3	15.1	28.8	27.1	750	799	552	254	150	113	90	85	70	46	753	520	239	141	107	85	80	66	43	43	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	19040	OL	18:08	2	15.3	15.1	28.8	27.2	747	781	543	252	148	112	89	84	69	46	739	514	239	140	106	84	80	65	44	44	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	19100	OR	10:09	1	14.7	15.8	22.0	26.9	710	908	741	496	369	243	165	148	120	85	904	738	494	367	242	164	147	119	85	85	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	19100	OR	10:09	2	14.7	15.8	22.0	26.7	707	892	730	491	367	243	165	143	120	86	892	730	491	367	243	165	143	120	86	86	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	19198	OR	10:08	1	14.6	15.9	22.0	26.6	743	668	469	244	130	70	51	43	33	17	636	446	232	124	67	49	41	31	16	16	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	19198	OR	10:08	2	14.6	15.9	22.0	26.6	744	655	463	244	131	70	51	43	33	17	622	440	232	124	67	48	41	31	16	16	3.8
Magumu - Thika	B20/D1315	22-Apr-21	4	19202	OL	18:09	1	15.5	15.4	28.8	27.0	747	851	636	328	174	86	55	44	31	15	805	602	310	165	81	52	42	29	14	14	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	19202	OL	18:09	2	15.5	15.4	28.8	27.2	740	822	618	322	171	85	55	42	31	14	785	590	308	163	81	53	40	30	13	13	3.3
Magumu - Thika	B20/D1315	22-Apr-21	4	19301	OL	18:10	1	15.6	15.4	28.8	27.7	703	892	749	496	364	255	182	166	139	101	897	753	499	366	256	183	167	140	102	102	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	19301	OL	18:10	2	15.5	15.4	28.8	27.4	689	875	739	495	367	258	186	172	143	106	898	758	508	377	265	191	176	147	109	109	3.1
Magumu - Thika	B20/D1315	22-Apr-21	4	19301	OR	10:07	1	13.6	15.3	22.0	27.5	711	1109	883	562	425	306	221	206	168	123	1103	878	559	423	304	202	105	167	122	2.8	
Magumu - Thika	B20/D1315	22-Apr-21	4	19301	OR	10:07	2	13.7	15.3	22.0	27.6	711	1082	873	561	426	307	223	206	169	123	1076	868	558	424	305	222	205	168	122	2.8	
Magumu - Thika	B20/D1315	22-Apr-21	4	19397	OR	10:06	1	13.8	15.4	22.0	27.7	700	1246	1035	706	538	338	222	197	161	117	1258	1045	713	543	341	224	199	163	118	118	2.6
Magumu - Thika	B20/D1315	22-Apr-21	4	19397	OR	10:06	2	13.9	15.4	22.0	27.5	704	1225	1025	706																	

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	4	19605	OR	10:04	2	14.0	15.6	22.0	26.9	724	770	557	329	229	155	112	98	78	51	752	544	321	224	151	109	96	76	50	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	19699	OR	10:03	1	14.1	15.8	22.0	26.6	734	663	528	344	251	190	151	146	125	94	639	509	331	242	183	145	141	120	91	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	19699	OR	10:03	2	14.1	15.7	22.0	26.6	727	651	519	339	248	189	148	145	123	92	633	505	330	241	184	144	141	120	89	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	19700	OL	18:14	1	15.3	15.2	28.8	27.1	748	739	524	260	134	99	84	83	69	48	698	495	246	127	94	79	78	65	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	19700	OL	18:14	2	15.3	15.2	28.8	27.0	741	716	511	257	133	97	83	81	69	47	683	488	245	127	93	79	77	66	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	4	19799	OR	10:02	1	14.3	16.0	22.0	26.3	736	663	484	245	137	78	55	44	34	19	637	465	235	132	75	53	42	33	18	3.7
Magumu - Thika	B20/D1315	22-Apr-21	4	19799	OR	10:02	2	14.3	15.9	22.0	26.4	740	643	473	242	135	78	54	44	34	19	614	452	231	129	75	52	42	32	18	3.8
Magumu - Thika	B20/D1315	22-Apr-21	4	19811	OL	18:14	1	15.4	15.3	28.8	26.9	724	766	568	343	211	108	66	53	41	24	748	555	335	206	105	64	52	40	23	3.4
Magumu - Thika	B20/D1315	22-Apr-21	4	19811	OL	18:14	2	15.4	15.3	28.8	26.8	722	748	559	340	209	108	65	54	41	24	732	547	333	205	106	64	53	40	24	3.5
Magumu - Thika	B20/D1315	22-Apr-21	5	19898	OR	10:01	1	14.1	15.9	22.0	26.4	735	631	459	282	177	104	77	69	55	35	607	442	271	170	100	74	66	53	34	3.8
Magumu - Thika	B20/D1315	22-Apr-21	5	19898	OR	10:01	2	14.1	15.9	22.0	26.3	734	617	451	279	176	106	78	70	55	35	594	434	269	170	102	75	67	53	34	3.9
Magumu - Thika	B20/D1315	22-Apr-21	5	19902	OL	18:15	1	15.5	15.4	28.8	27.0	717	754	593	353	238	154	103	86	67	42	743	585	348	235	152	102	85	66	41	3.5
Magumu - Thika	B20/D1315	22-Apr-21	5	19902	OL	18:15	2	15.5	15.4	28.8	26.9	716	753	594	355	241	153	104	86	66	39	744	587	351	238	151	103	85	65	39	3.5
Magumu - Thika	B20/D1315	22-Apr-21	5	19991	OL	18:16	1	15.5	15.5	28.8	27.0	705	776	643	405	274	176	122	105	84	55	778	645	406	275	176	122	105	84	55	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	19991	OL	18:16	2	15.5	15.5	28.8	27.2	707	774	643	406	276	178	122	102	85	55	774	643	406	276	178	122	102	85	55	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	20010	OR	10:00	1	14.2	16.1	22.0	28.6	719	1134	895	569	398	234	146	121	92	61	1115	880	560	391	230	144	119	90	60	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20010	OR	10:00	2	14.2	16.1	22.0	27.7	714	1108	882	564	395	231	146	119	92	60	1097	873	558	391	229	145	118	91	59	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20095	OR	09:59	1	13.8	16.0	22.0	27.3	745	1158	907	523	330	172	99	75	57	36	1099	861	496	313	163	94	71	54	34	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20095	OR	09:59	2	13.8	16.0	22.0	27.5	744	1121	887	517	328	172	99	74	56	36	1065	843	491	312	163	94	70	53	34	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20111	OL	18:17	1	15.7	15.8	28.8	27.9	719	1126	885	525	344	200	123	95	71	54	1107	870	516	338	197	121	93	70	53	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20111	OL	18:17	2	15.7	15.7	28.8	27.7	712	1095	869	522	343	198	123	96	70	55	1087	863	518	341	197	122	95	70	55	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20179	OR	09:58	1	14.0	16.2	22.0	28.1	706	1466	1179	748	514	288	188	162	129	87	1468	1181	749	515	288	188	162	129	87	2.3
Magumu - Thika	B20/D1315	22-Apr-21	5	20179	OR	09:58	2	14.0	16.2	22.0	28.1	707	1441	1161	748	516	297	190	163	131	88	1441	1161	748	516	297	190	163	131	88	2.4
Magumu - Thika	B20/D1315	22-Apr-21	5	20196	OL	18:18	1	15.8	15.7	28.8	28.1	699	1331	1109	722	510	297	190	159	127	86	1346	1122	730	516	300	192	161	128	87	2.5
Magumu - Thika	B20/D1315	22-Apr-21	5	20196	OL	18:18	2	15.7	15.7	28.8	28.2	707	1331	1109	725	514	299	192	160	129	86	1331	1109	725	514	299	192	160	129	86	2.5
Magumu - Thika	B20/D1315	22-Apr-21	5	20296	OR	09:57	1	14.4	16.3	22.0	27.0	707	932	781	526	403	268	183	164	135	99	932	781	526	403	268	183	164	135	99	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	20296	OR	09:57	2	14.5	16.2	22.0	27.2	712	936	788	535	412	276	189	168	138	100	929	782	531	409	274	188	167	137	99	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	20313	OL	18:19	1	15.7	15.7	28.8	2.4	690	1141	928	594	430	276	182	157	123	82	1169	951	609	441	283	186	161	126	84	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	20313	OL	18:19	2	15.7	15.7	28.8	28.0	688	1122	920	595	434	279	184	159	125	84	1153	945	611	446	287	189	163	128	86	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	20395	OR	09:56	1	14.6	16.5	22.0	26.4	719	626	476	290	206	153	109	97	78	50	616	468	285	203	150	107	95	77	49	3.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20395	OR	09:56	2	14.6	16.5	22.0	26.4	712	608	465	286	203	152	108	96	78	50	604	462	284	202	151	107	95	77	50	3.9
Magumu - Thika	B20/D1315	22-Apr-21	5	20404	OL	18:20	1	15.5	15.6	28.8	27.3	724	871	648	347	231	154	107	94	75	48	851	633	339	226	150	104	92	73	47	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	20404	OL	18:20	2	15.5	15.6	28.8	27.1	721	851	639	346	232	156	109	96	77	50	834	627	339	227	153	107	94	76	49	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	20496	OR	09:56	1	14.6	16.4	22.0	26.7	714	881	731	507	390	258	171	143	112	73	872	724	502	386	255	169	142	111	72	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	20496	OR	09:56	2	14.6	16.4	22.0	26.9	708	863	721	502	388	257	171	147	112	74	862	720	501	387	257	171	147	112	74	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	20513	OL	18:21	1	15.5	15.4	28.8	27.3	700	889	747	475	331	217	146	126	97	61	898	754	480	334	219	147	127	98	62	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	20513	OL	18:21	2	15.5	15.4	28.8	27.1	701	878	741	473	331	217	147	126	98	62	886	747	477	334	219	148	127	99	63	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	20596	OR	09:55	1	14.4	16.5	22.0	27.1	718	1007	824	545	393	253	175	157	128	91	992	811	537	387	249	172	155	126	90	2.9
Magumu - Thika	B20/D1315	22-Apr-21	5	20596	OR	09:55	2	14.4	16.5	22.0	27.0	711	980	805	536	388	251	174	155	127	90	974	800	533	386	250	173	154	126	89	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	20599	OL	18:22	1	15.5	15.5	28.8	28.0	704	1116	911	616	452	282	176	148	116	78	1121	915	619	454	283	177	149	116	78	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20599	OL	18:22	2	15.5	15.4	28.8	27.9	708	1105	907	618	457	285	179	151	119	81	1103	906	617	456	285	179	151	119	81	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	20701	OR	09:54	1	14.3	16.4	22.0	26.5	710	702	581	384	289	204	143	126	101	68	699	579	382	288	203	142	125	101	68	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	20701	OR	09:54	2	14.3	16.3	22.0	26.3	711	693	575	384	290	206	143	126	101	67	689	572	382	288	205	142	125	100	67	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	20705	OL	18:23	1	15.7	15.3	28.8	27.3	698	842	666	425	308	213	148	132	105	71	853	675	430	312	216	150	134	106	72	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	20705	OL	18:23	2	15.7	15.3	28.8	27.4	710	827	660	425	309	217	1													

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	5	20997	OR	09:51	1	14.3	16.0	22.0	27.9	724	1189	973	592	386	209	131	104	77	50	1161	950	578	377	204	128	102	75	49	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	20997	OR	09:51	2	14.3	16.0	22.0	27.6	725	1175	964	592	388	211	131	104	78	50	1146	940	577	378	206	128	101	76	49	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	21004	OL	18:25	1	15.6	15.2	28.8	28.3	708	1252	1015	644	448	254	149	114	82	50	1250	1014	643	447	254	148	114	82	50	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	21004	OL	18:25	2	15.6	15.2	28.8	28.4	708	1224	996	637	444	253	151	114	83	50	1222	995	636	443	253	151	114	83	50	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	21098	OR	09:51	1	14.9	16.3	22.0	27.6	706	1232	996	643	470	284	191	174	145	107	1234	997	644	471	284	191	174	145	107	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	21098	OR	09:51	2	14.9	16.3	22.0	27.8	709	1210	982	640	469	285	192	176	147	109	1207	979	638	468	284	191	176	147	109	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	21126	OL	18:26	1	15.4	15.1	28.8	28.2	705	1118	921	593	428	282	202	177	146	107	1121	924	595	429	283	203	178	146	107	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	21126	OL	18:26	2	15.4	15.1	28.8	27.9	701	1092	909	590	427	284	194	177	146	107	1101	917	595	431	286	196	179	147	108	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	21199	OR	09:50	1	14.9	16.2	22.0	27.1	727	920	718	423	309	210	149	139	115	83	895	698	411	300	204	145	135	112	81	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	21199	OR	09:50	2	14.9	16.2	22.0	27.0	725	901	708	419	308	208	149	138	115	83	879	690	409	300	203	145	135	112	81	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	21222	OL	18:27	1	15.0	14.9	28.8	26.8	695	645	507	341	252	191	142	134	113	81	656	516	347	256	194	144	136	115	82	3.7
Magumu - Thika	B20/D1315	22-Apr-21	5	21222	OL	18:27	2	15.0	14.9	28.8	26.8	697	640	505	341	252	192	143	135	114	82	649	512	346	256	195	145	137	116	83	3.7
Magumu - Thika	B20/D1315	22-Apr-21	5	21293	OR	09:49	1	14.5	16.4	22.0	27.6	725	1105	900	567	398	233	146	118	89	57	1078	878	553	388	227	142	115	87	56	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	21293	OR	09:49	2	14.6	16.4	22.0	27.4	715	1081	886	564	397	234	146	119	89	57	1069	876	558	393	231	144	118	88	56	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	21300	OL	18:28	1	14.9	14.9	28.8	27.0	707	820	670	424	291	177	114	94	71	46	820	670	424	291	177	114	94	71	46	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21300	OL	18:28	2	15.0	14.9	28.8	27.3	713	808	664	423	291	176	114	94	70	45	801	658	419	289	175	113	93	69	45	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21395	OL	18:29	1	15.1	15.0	28.8	27.5	690	924	785	554	421	280	184	156	120	77	947	804	568	431	287	189	160	123	79	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	21395	OL	18:29	2	15.1	15.0	28.8	27.8	701	924	786	555	422	282	185	156	121	79	932	793	560	426	284	187	157	122	80	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	21400	OR	09:48	1	14.8	16.6	22.0	27.9	699	1294	1044	686	512	312	192	152	117	77	1309	1056	694	518	316	194	154	118	78	2.5
Magumu - Thika	B20/D1315	22-Apr-21	5	21400	OR	09:48	2	14.8	16.6	22.0	28.0	698	1269	1035	685	511	312	191	154	116	76	1285	1048	694	518	316	193	156	117	77	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	21492	OR	09:47	1	15.5	17.1	22.0	26.6	702	823	694	472	360	245	169	147	116	78	829	699	475	363	247	170	148	117	79	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21492	OR	09:47	2	15.5	17.1	22.0	26.7	704	809	685	468	357	243	167	144	115	77	812	688	470	359	244	168	145	115	77	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21522	OL	18:30	1	15.2	15.1	28.8	27.7	698	1037	800	531	402	285	200	178	142	99	1050	810	538	407	289	203	180	144	100	2.9
Magumu - Thika	B20/D1315	22-Apr-21	5	21522	OL	18:30	2	15.1	15.0	28.8	27.6	692	1019	791	528	401	285	201	177	141	99	1041	808	539	410	291	205	181	144	101	2.9
Magumu - Thika	B20/D1315	22-Apr-21	5	21594	OR	09:46	1	15.0	16.8	22.0	27.1	722	1004	819	498	330	190	124	102	79	52	983	802	488	323	186	121	100	77	51	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	21594	OR	09:46	2	15.0	16.8	22.0	27.1	720	985	807	496	329	193	124	103	80	52	967	792	487	323	190	122	101	79	51	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	21598	OL	18:31	1	14.8	14.8	28.8	27.7	709	976	796	512	374	246	162	135	105	67	973	794	511	373	245	162	135	105	67	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	21598	OL	18:31	2	14.8	14.8	28.8	27.5	696	951	779	505	371	248	160	136	104	67	966	791	513	377	252	163	138	106	68	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	21696	OR	09:45	1	14.9	16.7	22.0	26.8	703	785	656	439	333	230	161	146	118	84	789	660	441	335	231	162	147	119	84	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	21696	OR	09:45	2	14.9	16.7	22.0	26.8	695	766	642	432	329	228	160	144	118	83	779	653	439	335	232	163	146	120	84	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	21704	OL	18:32	1	14.6	14.7	28.8	27.0	698	694	570	363	269	203	152	143	117	85	703	577	368	272	206	154	145	119	86	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	21704	OL	18:32	2	14.6	14.7	28.8	27.0	695	685	565	362	269	203	153	146	117	84	697	575	368	274	207	156	149	119	85	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	21801	OL	18:32	1	14.7	14.9	28.8	29.1	688	1492	1253	860	642	378	227	182	139	95	1533	1288	884	660	388	233	187	143	98	2.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21801	OL	18:32	2	14.7	14.9	28.8	28.8	672	1467	1237	857	644	382	229	185	141	97	1543	1301	902	678	402	241	195	148	102	2.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21813	OR	09:44	1	15.1	16.6	22.0	29.1	702	1508	1309	872	621	360	223	182	146	108	1519	1318	878	625	363	225	183	147	109	2.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21813	OR	09:44	2	15.1	16.6	22.0	28.4	700	1493	1301	870	618	361	222	181	144	105	1508	1314	879	624	365	224	183	145	106	2.3
Magumu - Thika	B20/D1315	22-Apr-21	5	21898	OR	09:43	1	15.4	16.8	22.0	27.2	723	851	669	408	272	174	129	123	101	72	832	654	399	266	170	126	120	99	70	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	21898	OR	09:43	2	15.4	16.8	22.0	27.0	716	830	658	405	271	175	128	119	99	70	820	650	400	268	173	126	118	98	69	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	21899	OL	18:33	1	14.7	15.1	28.8	26.9	713	648	483	274	170	116	90	85	71	47	643	479	272	169	115	89	84	70	47	3.7
Magumu - Thika	B20/D1315	22-Apr-21	5	21899	OL	18:33	2	14.7	15.1	28.8	26.7	714	634	475	271	169	117	91	86	72	48	628	470	268	167	116	90	85	71	48	3.7
Magumu - Thika	B20/D1315	22-Apr-21	5	21995	OR	09:43	1	15.1	16.9	22.0	27.9	705	1297	1063	705	502	287	174	138	106	71	1301	1066	707	503	288	174	138	106	71	2.5
Magumu - Thika	B20/D1315	22-Apr-21	5	21995	OR	09:43	2	15.1	16.9	22.0	27.8	708	1288	1061	707	506	290	176	142	107	72	1286	1060	706	505	290	176	142	107	72	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	22006	OL	18:34	1	14.7	15.1	28.8	27.1	708	863	700	462	324	188	113	85	60	35	862	699	461	324	188	113	85	60	35	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	22006	OL	18:34	2	14.7	15.1	28.8	27.1	708	852	695	460	323	187	112	84	60	36	851	694	459	323	187	112	84	60	36	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	22099	OL																										



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP	
Magumu - Thika	B20/D1315	22-Apr-21	5	22298	OL	18:37	2	15.3	15.4	28.8	27.3	730	970	749	429	260	147	98	84	66	43	939	725	415	252	142	95	81	64	42	42	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	22298	OR	09:40	1	14.6	16.3	22.0	27.0	733	959	771	460	290	162	110	92	73	47	925	744	444	280	156	106	89	70	45	45	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	22298	OR	09:40	2	14.6	16.3	22.0	27.1	730	943	762	457	289	162	109	93	73	45	913	738	443	280	157	106	90	71	44	44	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	22403	OR	09:39	1	14.0	16.1	22.0	26.8	721	862	668	396	261	164	115	100	80	53	845	655	388	256	161	113	98	78	52	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	22403	OR	09:39	2	14.0	16.1	22.0	26.9	720	846	659	393	261	165	115	100	80	53	831	647	386	256	162	113	98	79	52	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	22413	OL	18:38	1	15.4	15.4	28.8	27.7	715	1020	828	451	289	195	132	116	96	64	1009	819	446	286	193	131	115	95	63	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	22413	OL	18:38	2	15.4	15.4	28.8	27.5	714	998	820	450	288	193	131	117	94	64	988	812	446	285	191	130	116	93	63	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	22497	OL	18:38	1	15.3	15.3	28.8	27.9	721	1018	843	419	248	163	114	97	81	52	998	827	411	243	160	112	95	79	51	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	22497	OL	18:38	2	15.3	15.3	28.8	27.7	718	982	821	416	248	165	115	99	80	52	967	808	410	244	162	113	97	79	51	3.0	
Magumu - Thika	B20/D1315	22-Apr-21	5	22502	OR	09:38	1	13.7	15.8	22.0	26.5	715	709	562	324	208	137	101	89	71	44	701	556	320	206	135	100	88	70	44	3.5	
Magumu - Thika	B20/D1315	22-Apr-21	5	22502	OR	09:38	2	13.7	15.8	22.0	26.7	713	692	549	320	206	136	100	88	71	45	686	544	317	204	135	99	87	70	45	3.6	
Magumu - Thika	B20/D1315	22-Apr-21	5	22598	OR	09:38	1	14.1	16.1	22.0	27.2	705	906	749	507	381	263	180	159	128	89	909	751	508	382	264	181	159	128	89	3.1	
Magumu - Thika	B20/D1315	22-Apr-21	5	22598	OR	09:38	2	14.0	16.1	22.0	27.1	704	892	740	505	379	263	180	157	127	88	896	743	507	381	264	181	158	128	88	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	22610	OL	18:39	1	15.3	15.3	28.8	27.9	709	1039	817	485	338	230	161	148	119	83	1036	815	484	337	229	161	148	119	83	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	22610	OL	18:39	2	15.3	15.3	28.8	27.9	704	1006	803	482	336	229	161	148	120	83	1010	806	484	337	230	162	149	121	83	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	22693	OR	09:37	1	14.0	15.9	22.0	27.3	710	1083	908	623	464	305	211	191	156	113	1078	904	620	467	304	210	190	155	113	2.8	
Magumu - Thika	B20/D1315	22-Apr-21	5	22693	OR	09:37	2	14.0	15.9	22.0	27.4	706	1061	894	617	460	302	208	189	155	112	1063	895	618	461	302	208	189	155	112	2.8	
Magumu - Thika	B20/D1315	22-Apr-21	5	22699	OL	18:40	1	15.4	15.3	28.8	27.5	691	925	765	562	453	320	220	198	161	115	946	783	575	463	327	225	203	165	118	3.1	
Magumu - Thika	B20/D1315	22-Apr-21	5	22699	OL	18:40	2	15.4	15.3	28.8	27.5	695	915	759	561	452	319	221	198	160	114	931	772	571	460	325	225	201	163	116	3.1	
Magumu - Thika	B20/D1315	22-Apr-21	5	22801	OR	09:36	1	14.0	16.1	22.0	27.8	721	1205	980	632	439	240	147	120	93	63	1182	961	620	430	235	144	118	91	62	2.7	
Magumu - Thika	B20/D1315	22-Apr-21	5	22801	OR	09:36	2	14.0	16.1	22.0	27.4	716	1183	967	628	438	239	147	121	95	64	1168	955	620	432	236	145	119	94	63	2.7	
Magumu - Thika	B20/D1315	22-Apr-21	5	22804	OL	18:41	1	15.6	15.5	28.8	29.4	677	1829	1460	942	656	345	209	159	120	79	1910	1525	984	685	360	218	166	125	83	2.0	
Magumu - Thika	B20/D1315	22-Apr-21	5	22804	OL	18:41	2	15.6	15.5	28.8	28.8	670	1823	1440	935	651	344	208	161	121	78	1924	1520	987	687	363	219	170	128	82	2.0	
Magumu - Thika	B20/D1315	22-Apr-21	5	22900	OR	09:35	1	14.6	16.5	22.0	28.7	703	1686	1399	869	589	314	190	155	121	83	1696	1407	874	592	316	191	156	122	83	2.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	22900	OR	09:35	2	14.6	16.5	22.0	28.5	701	1659	1380	867	589	316	190	156	120	85	1673	1392	874	594	319	192	157	121	86	2.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	22902	OL	18:42	1	15.7	15.6	28.8	27.9	708	1167	1004	643	459	272	172	144	113	80	1165	1003	642	458	272	172	144	113	80	2.7	
Magumu - Thika	B20/D1315	22-Apr-21	5	22902	OL	18:42	2	15.6	15.6	28.8	28.0	714	1149	994	641	458	272	171	144	113	81	1138	984	635	454	269	169	143	112	80	2.7	
Magumu - Thika	B20/D1315	22-Apr-21	5	23001	OL	18:43	1	15.7	15.5	28.8	28.7	689	1560	1328	867	642	398	262	229	186	138	1601	1363	890	659	408	269	235	191	142	2.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	23001	OL	18:43	2	15.7	15.5	28.8	1.5	685	1533	1311	862	640	395	256	227	179	131	1582	1353	890	661	408	264	234	185	135	2.3	
Magumu - Thika	B20/D1315	22-Apr-21	5	23001	OR	09:34	1	14.4	16.3	22.0	29.2	676	1935	1702	1039	667	338	222	203	167	123	2024	1780	1087	698	354	232	212	175	129	1.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	23001	OR	09:34	2	14.4	16.3	22.0	29.3	677	1902	1675	1037	669	337	225	196	167	123	1986	1749	1083	699	352	235	205	174	128	1.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	23001	OL	18:43	1	15.7	15.4	28.8	28.9	687	1525	1315	872	650	404	273	238	190	141	1569	1353	897	669	416	281	245	196	145	2.3	
Magumu - Thika	B20/D1315	22-Apr-21	5	23001	OL	18:43	2	15.7	15.4	28.8	28.7	688	1518	1310	872	651	404	270	234	187	139	1560	1346	896	669	415	277	240	192	143	2.3	
Magumu - Thika	B20/D1315	22-Apr-21	5	23099	OR	09:33	1	15.2	16.4	22.0	27.4	707	1089	918	619	457	287	195	169	137	97	1089	918	619	457	287	195	169	137	97	2.8	
Magumu - Thika	B20/D1315	22-Apr-21	5	23099	OR	09:33	2	15.2	16.4	22.0	27.3	700	1068	907	614	455	285	191	168	136	96	1079	916	620	460	288	193	170	137	97	2.8	
Magumu - Thika	B20/D1315	22-Apr-21	5	23105	OL	18:44	1	15.9	15.4	28.8	28.0	696	1015	858	573	411	264	183	164	135	98	1031	872	582	417	268	186	167	137	100	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	23105	OL	18:44	2	15.9	15.4	28.8	27.9	686	1002	850	573	414	268	184	166	136	97	1033	876	591	427	276	190	171	140	100	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	23193	OL	18:45	1	16.0	15.4	28.8	28.4	718	1419	1148	616	345	242	184	165	133	93	1397	1130	607	340	238	181	162	131	92	2.4	
Magumu - Thika	B20/D1315	22-Apr-21	5	23193	OL	18:45	2	15.9	15.4	28.8	28.2	720	1398	1137	619	350	248	189	170	147	102	1373	1116	608	344	244	186	167	144	100	2.4	
Magumu - Thika	B20/D1315	22-Apr-21	5	23201	OR	09:33	1	15.2	16.2	22.0	27.3	742	1019	802	446	300	196	142	130	110	81	971	764	425	286	187	135	124	105	77	2.9	
Magumu - Thika	B20/D1315	22-Apr-21	5	23201	OR	09:33	2	15.2	16.2	22.0	27.2	737	992	789	443	298	195	141	130	109	81	952	757	425	286	187	135	125	105	78	3.0	
Magumu - Thika	B20/D1315	22-Apr-21	5	23298	OR	09:32	1	15.1	16.4	22.0	26.9	724	896	718	438	298	186	128	108	88	60	875	701	428	291	182	125	105	86	59	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	23298	OR	09:32	2	15.1	16.4	22.0	27.0	721	876	705	433	297	184	127	108	88	60	859	691	425	291	180	125	106	86	59	3.2	
Magumu - Thika	B20/D1315	22-Apr-21	5	23304	OL	18:46	1	15.7	15.5	28.8	29.1	689	1569	1300	797	522	266	159	127	98	66	1610	1334	818	536	273	163	130	101	68	2.2	

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	5	23492	OR	09:30	1	14.4	16.4	22.0	27.8	719	1219	1029	661	461	270	182	162	133	92	1199	1012	650	453	265	179	159	131	90	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	23492	OR	09:30	2	14.4	16.4	22.0	27.8	717	1192	1014	656	459	270	186	162	131	89	1175	1000	647	453	266	183	160	129	88	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	23507	OL	18:48	1	15.8	15.8	28.8	27.7	720	1058	847	533	354	201	134	116	93	62	1039	832	523	348	197	132	114	91	61	2.9
Magumu - Thika	B20/D1315	22-Apr-21	5	23507	OL	18:48	2	15.8	15.7	28.8	27.8	719	1040	837	529	354	201	134	115	92	62	1023	823	520	348	198	132	113	90	61	2.9
Magumu - Thika	B20/D1315	22-Apr-21	5	23598	OR	09:29	1	14.4	16.2	22.0	28.2	714	1408	1151	706	484	282	184	158	122	81	1394	1140	699	479	279	182	156	121	80	2.4
Magumu - Thika	B20/D1315	22-Apr-21	5	23598	OR	09:29	2	14.4	16.2	22.0	28.2	712	1380	1142	706	486	282	184	158	122	83	1370	1134	701	483	280	183	157	121	82	2.4
Magumu - Thika	B20/D1315	22-Apr-21	5	23603	OL	18:49	1	15.9	15.8	28.8	27.5	724	1060	811	449	287	163	105	86	65	41	1035	792	438	280	159	103	84	63	40	2.9
Magumu - Thika	B20/D1315	22-Apr-21	5	23603	OL	18:49	2	15.9	15.8	28.8	27.5	720	1033	795	442	283	161	104	85	65	40	1014	781	434	278	158	102	83	64	39	2.9
Magumu - Thika	B20/D1315	22-Apr-21	5	23700	OR	09:28	1	14.2	15.8	22.0	27.5	711	1135	951	633	460	267	172	148	119	82	1129	946	629	457	265	171	147	118	82	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	23700	OR	09:28	2	14.2	15.8	22.0	27.3	709	1120	942	632	462	269	174	150	121	83	1117	939	630	461	268	174	150	121	83	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	23717	OL	18:50	1	15.8	15.8	28.8	28.4	695	1352	1137	743	522	301	194	163	115	74	1375	1157	756	531	306	197	166	117	75	2.4
Magumu - Thika	B20/D1315	22-Apr-21	5	23717	OL	18:50	2	15.8	15.8	28.8	28.3	698	1330	1121	738	522	302	191	163	119	80	1347	1135	748	529	306	193	165	121	81	2.5
Magumu - Thika	B20/D1315	22-Apr-21	5	23794	OL	18:51	1	15.7	15.6	28.8	28.2	689	1296	1046	674	502	335	227	205	172	124	1330	1073	692	515	344	233	210	176	127	2.5
Magumu - Thika	B20/D1315	22-Apr-21	5	23794	OL	18:51	2	15.7	15.6	28.8	28.0	692	1290	1046	676	504	334	226	204	169	125	1318	1069	691	515	341	231	208	173	128	2.5
Magumu - Thika	B20/D1315	22-Apr-21	5	23810	OR	09:27	1	13.8	15.7	22.0	26.7	716	822	655	418	303	202	136	115	89	59	812	647	413	299	199	134	114	88	58	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	23810	OR	09:27	2	13.8	15.6	22.0	26.8	711	810	648	415	301	200	134	112	87	59	805	644	413	299	199	133	111	87	55	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	23895	OR	09:26	1	13.9	15.8	22.0	27.0	715	956	797	516	368	215	143	122	98	66	945	788	510	364	213	141	121	97	65	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	23895	OR	09:26	2	13.9	15.8	22.0	27.0	714	942	790	513	367	216	142	123	98	66	933	782	508	363	214	141	122	97	65	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	23918	OL	18:53	1	15.7	15.5	28.8	27.6	698	971	783	495	334	210	138	115	90	59	984	793	501	338	213	140	116	91	60	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	23918	OL	18:53	2	15.7	15.5	28.8	27.7	701	958	780	496	336	209	135	114	89	58	966	787	500	339	211	136	115	90	58	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	24003	OL	18:54	1	15.7	15.4	28.8	28.0	692	1075	889	585	432	283	183	149	113	78	1098	908	598	441	289	187	152	115	80	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	24003	OL	18:54	2	15.7	15.4	28.8	27.8	685	1050	877	581	429	280	183	151	112	77	1084	905	600	443	289	189	156	116	79	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	24006	OR	09:25	1	13.9	15.4	22.0	26.6	713	676	561	375	280	193	136	116	90	58	670	556	372	278	191	135	115	89	58	3.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24006	OR	09:25	2	13.9	15.4	22.0	26.4	707	663	552	371	277	190	135	115	90	58	663	552	371	277	190	135	115	90	58	3.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24097	OR	09:24	1	14.0	15.5	22.0	28.0	704	1460	1277	826	583	341	221	191	151	105	1466	1282	830	585	342	222	192	152	105	2.4
Magumu - Thika	B20/D1315	22-Apr-21	5	24097	OR	09:24	2	14.0	15.5	22.0	28.0	701	1448	1265	822	580	340	220	189	149	104	1460	1276	829	585	343	222	191	150	105	2.4
Magumu - Thika	B20/D1315	22-Apr-21	5	24097	OR	09:24	1	13.7	15.7	22.0	28.0	700	1481	1283	821	587	333	217	187	148	104	1496	1296	829	593	336	219	189	149	105	2.3
Magumu - Thika	B20/D1315	22-Apr-21	5	24097	OR	09:24	2	13.8	15.7	22.0	28.0	701	1455	1264	816	582	338	217	188	150	104	1467	1275	823	587	341	219	190	151	105	2.4
Magumu - Thika	B20/D1315	22-Apr-21	5	24107	OL	18:55	1	15.7	15.4	28.8	27.8	691	1201	1012	663	471	275	180	154	122	82	1229	1035	678	482	281	184	158	125	84	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24107	OL	18:55	2	15.7	15.4	28.8	28.0	687	1178	996	658	469	270	179	155	123	83	1212	1025	677	483	278	184	160	127	85	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24198	OR	09:23	1	14.2	15.8	22.0	27.4	725	1152	953	606	419	246	166	143	115	80	1123	929	591	409	240	162	139	112	78	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24198	OR	09:23	2	14.2	15.8	22.0	27.3	721	1128	939	602	418	245	165	142	114	79	1106	921	590	410	240	162	139	112	77	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	24198	OR	09:23	1	13.9	15.6	22.0	27.3	722	1115	936	603	419	247	164	143	115	79	1092	917	590	410	242	161	140	113	77	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	24198	OR	09:23	2	13.9	15.6	22.0	27.6	720	1102	924	598	417	245	162	141	113	79	1082	907	587	409	241	159	138	111	78	2.8
Magumu - Thika	B20/D1315	22-Apr-21	5	24202	OL	18:56	1	15.9	15.6	28.8	28.3	693	1238	1052	701	508	308	199	176	146	110	1263	1073	715	518	314	203	180	149	112	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24202	OL	18:56	2	15.9	15.6	28.8	2.1	694	1221	1041	698	506	307	197	176	140	108	1244	1061	711	515	313	201	179	143	110	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24300	OR	09:22	1	14.1	15.5	22.0	27.2	746	955	757	443	283	159	104	89	71	47	905	717	420	268	151	99	84	67	45	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	24300	OR	09:22	2	14.1	15.5	22.0	26.9	746	934	746	440	281	159	104	89	71	46	885	707	417	266	151	99	84	67	44	3.1
Magumu - Thika	B20/D1315	22-Apr-21	5	24307	OL	18:57	1	16.0	15.7	28.8	27.3	708	834	681	443	299	169	106	93	77	53	833	680	442	299	169	106	93	77	53	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	24307	OL	18:57	2	16.0	15.7	28.8	27.2	709	822	674	441	298	167	107	92	77	52	820	672	440	297	167	107	92	77	52	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	24392	OR	09:21	1	14.2	15.6	22.0	26.7	764	831	624	314	159	74	50	43	33	18	769	577	291	147	68	46	40	31	17	3.3
Magumu - Thika	B20/D1315	22-Apr-21	5	24392	OR	09:21	2	14.2	15.6	22.0	26.6	761	812	614	312	159	74	50	43	33	18	754	570	290	148	69	46	40	31	17	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	24406	OL	18:57	1	16.1	15.6	28.8	27.2	741	697	540	297	164	82	62	52	42	26	665	515	283	156	78	59	50	40	25	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24406	OL	18:57	2	16.0	15.6	28.8	2.5	729	674	526	293	162	83	62	52	41	25	654	510	284	157	80	60	50	40	24	3.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24501	OL																										

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	5	24700	OR	09:18	2	14.6	15.2	22.0	26.6	749	722	555	296	162	77	53	44	34	20	682	524	279	153	73	50	42	32	19	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24701	OL	19:00	1	15.9	15.7	28.8	26.8	733	734	575	319	189	107	70	57	42	23	708	555	308	182	103	68	55	41	22	3.5
Magumu - Thika	B20/D1315	22-Apr-21	5	24701	OL	19:00	2	15.9	15.7	28.8	26.8	733	719	566	317	189	106	69	57	41	23	693	546	306	182	102	67	55	40	22	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24799	OL	19:01	1	15.9	15.7	28.8	27.8	699	1191	994	653	457	278	185	164	134	97	1205	1005	660	462	281	187	166	136	98	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24799	OL	19:01	2	15.9	15.7	28.8	28.0	702	1166	977	663	454	280	186	166	136	99	1174	984	668	457	282	187	167	137	100	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24800	OR	09:17	1	15.2	15.2	22.0	27.5	706	1265	1068	683	484	305	206	183	153	113	1267	1070	684	485	305	206	183	153	113	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24800	OR	09:17	2	15.2	15.2	22.0	27.5	706	1241	1053	679	483	305	206	183	154	113	1243	1054	680	484	305	206	183	154	113	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24801	OR	09:12	1	15.7	15.8	25.4	27.4	724	1227	1034	673	500	317	204	176	140	97	1198	1010	657	488	310	199	172	137	95	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24801	OR	09:12	2	15.7	15.8	25.4	27.6	723	1201	1019	667	496	314	202	175	140	97	1174	996	652	485	307	198	171	137	95	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24896	OR	09:11	1	15.6	15.3	25.4	26.5	742	806	659	407	269	152	98	78	58	35	768	628	388	256	145	93	74	55	33	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	24896	OR	09:11	2	15.6	15.3	25.4	26.5	739	793	650	404	267	149	97	78	57	35	759	622	387	255	143	93	75	55	33	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	24903	OL	19:02	1	16.0	15.6	28.8	28.0	684	1171	973	639	471	298	197	169	132	89	1210	1006	660	487	308	204	175	136	92	2.6
Magumu - Thika	B20/D1315	22-Apr-21	5	24903	OL	19:02	2	16.0	15.6	28.8	28.0	686	1160	970	641	474	302	198	169	130	90	1196	1000	661	489	311	204	174	134	93	2.7
Magumu - Thika	B20/D1315	22-Apr-21	5	24997	OL	19:04	1	16.1	15.3	28.8	27.5	735	998	786	435	254	131	79	61	45	26	960	756	418	244	126	76	59	43	25	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	24997	OL	19:04	2	16.1	15.3	28.8	27.4	731	975	774	432	253	130	79	61	44	26	943	749	418	245	126	76	59	43	25	3.0
Magumu - Thika	B20/D1315	22-Apr-21	5	24998	OR	09:07	1	15.6	16.8	19.9	26.8	702	753	591	400	300	212	154	140	113	79	758	595	403	302	214	155	141	114	80	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	24998	OR	09:07	2	15.6	16.8	19.9	26.7	697	740	583	398	300	212	155	141	114	80	751	591	404	304	215	157	143	116	81	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	25099	OR	09:06	1	15.6	16.5	19.9	26.6	690	699	578	383	275	164	103	81	64	42	716	592	392	282	168	106	83	66	43	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	25099	OR	09:06	2	15.6	16.5	19.9	26.6	685	689	573	381	275	164	103	81	64	41	711	591	393	284	169	106	84	66	42	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	25123	OL	19:05	1	16.1	15.3	28.8	27.2	701	762	600	358	260	201	149	139	115	82	769	605	361	262	203	150	140	116	83	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	25123	OL	19:05	2	16.1	15.3	28.8	27.1	699	739	593	356	259	196	145	138	114	82	747	600	360	262	198	147	140	115	83	3.4
Magumu - Thika	B20/D1315	22-Apr-21	5	25199	OR	09:05	1	15.4	16.4	19.9	27.0	685	842	675	407	281	196	143	132	110	76	869	697	420	290	202	148	136	114	78	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	25199	OR	09:05	2	15.4	16.3	19.9	26.9	684	826	666	405	279	195	143	131	109	75	854	688	419	288	202	148	135	113	78	3.2
Magumu - Thika	B20/D1315	22-Apr-21	5	25227	OL	19:06	1	16.0	15.3	28.8	26.8	715	681	521	278	158	94	65	56	45	27	673	515	275	156	93	64	55	44	27	3.6
Magumu - Thika	B20/D1315	22-Apr-21	5	25227	OL	19:06	2	16.0	15.2	28.8	26.9	722	664	511	276	158	97	65	56	45	27	650	500	270	155	95	64	55	44	26	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	25304	OR	09:04	1	15.4	16.8	19.9	26.2	721	608	440	201	94	56	47	42	33	17	596	431	197	92	55	46	41	32	17	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	25304	OR	09:04	2	15.3	16.7	19.9	26.4	721	591	434	201	94	55	47	41	33	16	580	426	197	92	54	46	40	32	16	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	25315	OL	19:07	1	16.1	15.5	28.8	28.6	710	1314	1060	616	418	266	183	164	133	94	1308	1056	613	416	265	182	163	132	94	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	25315	OL	19:07	2	16.1	15.5	28.8	28.2	704	1278	1040	610	414	264	183	164	135	96	1283	1044	613	416	265	184	165	136	96	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	25400	OR	09:03	1	15.4	16.6	19.9	27.3	696	732	594	351	247	185	142	133	112	77	744	603	357	251	188	144	135	114	78	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	25400	OR	09:03	2	15.4	16.6	19.9	27.0	691	721	587	351	247	183	140	129	109	78	738	601	359	253	187	143	132	112	80	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	25409	OL	08:23	1	10.9	13.9	16.6	25.7	755	611	434	194	85	47	42	37	29	14	572	406	182	80	44	39	35	27	13	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	25409	OL	08:23	2	10.9	14.0	16.6	25.8	755	599	430	193	85	47	42	37	29	14	561	403	181	80	44	39	35	27	13	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	25496	OR	09:03	1	15.3	16.4	19.9	28.2	675	1385	1174	790	578	338	212	174	139	99	1451	1230	827	605	354	222	182	146	104	2.4
Magumu - Thika	B20/D1315	22-Apr-21	6	25496	OR	09:03	2	15.3	16.4	19.9	28.0	669	1354	1155	782	572	338	210	173	137	96	1431	1221	826	604	357	222	183	145	101	2.4
Magumu - Thika	B20/D1315	22-Apr-21	6	25502	OL	08:24	1	10.8	14.0	16.6	26.5	718	851	641	352	225	156	128	120	98	68	838	631	347	222	154	126	118	96	67	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	25502	OL	08:24	2	10.8	14.0	16.6	26.3	717	828	628	349	224	156	127	120	98	67	816	619	344	221	154	125	118	97	66	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	25596	OR	09:02	1	15.0	16.1	19.9	27.2	693	883	704	475	345	209	143	126	99	67	901	718	485	352	213	146	129	101	68	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	25596	OR	09:02	2	15.1	16.1	19.9	27.1	689	864	692	469	341	205	141	124	98	65	887	710	481	350	210	145	127	101	67	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	25603	OL	08:25	1	10.8	14.1	16.6	27.4	690	1289	1053	643	429	234	151	129	102	69	1321	1079	659	440	240	155	132	105	71	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	25603	OL	08:25	2	10.8	14.1	16.6	27.3	694	1279	1044	643	429	237	153	130	103	70	1303	1064	655	440	241	156	132	105	71	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	25691	OR	09:01	1	15.1	15.8	19.9	27.2	695	837	693	431	296	181	114	90	67	41	851	705	438	301	184	116	92	68	42	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	25691	OR	09:01	2	15.1	15.8	19.9	27.1	692	825	685	429	297	180	115	90	68	42	843	700	438	303	184	117	92	69	43	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	25716	OL	08:26	1	10.9	14.2	16.6	26.1	708	707	552	384	284	181	128	113	90	59	706	551	383	284	181	128	113	90	59	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	25716	OL	08:26	2	10.9	14.2	16.6	26.0	706	695	548	382	284															

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	6	26004	OL	08:29	1	11.1	14.3	16.6	26.6	710	825	655	400	281	176	115	93	67	37	822	652	398	280	175	115	93	67	37	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	26004	OL	08:29	2	11.1	14.3	16.6	26.6	706	812	650	399	282	177	115	92	67	40	813	651	400	282	177	115	92	67	40	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	26004	OR	08:58	1	15.1	17.3	19.9	27.6	684	1152	984	627	448	262	166	140	113	74	1191	1017	648	463	271	172	145	117	76	2.7
Magumu - Thika	B20/D1315	22-Apr-21	6	26004	OR	08:58	2	15.1	17.2	19.9	27.6	682	1139	979	626	449	262	165	137	107	73	1181	1015	649	465	272	171	142	111	76	2.7
Magumu - Thika	B20/D1315	22-Apr-21	6	26098	OR	08:57	1	14.6	17.3	19.9	28.0	681	1205	988	641	473	301	197	165	130	89	1251	1026	665	491	312	205	171	135	92	2.6
Magumu - Thika	B20/D1315	22-Apr-21	6	26098	OR	08:57	2	14.6	17.3	19.9	28.0	681	1186	978	639	473	301	197	165	131	89	1231	1015	663	491	312	205	171	136	92	2.6
Magumu - Thika	B20/D1315	22-Apr-21	6	26108	OL	08:31	1	11.0	14.6	16.6	26.8	697	831	631	358	251	160	106	85	63	36	843	640	363	255	162	108	86	64	37	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	26108	OL	08:31	2	11.0	14.6	16.6	26.8	695	810	621	355	249	159	106	85	62	36	824	632	361	253	162	108	86	63	37	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	26206	OR	08:56	1	14.6	17.2	19.9	26.4	690	628	505	327	227	139	90	71	51	28	643	517	335	233	142	92	73	52	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	26206	OR	08:56	2	14.7	17.2	19.9	26.4	689	622	502	328	228	140	91	72	52	28	638	515	337	234	144	93	74	53	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	26217	OL	08:32	1	11.0	14.4	16.6	27.2	697	1060	858	546	399	235	151	120	91	57	1075	870	554	405	238	153	122	92	58	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	26217	OL	08:32	2	11.0	14.4	16.6	27.3	703	1059	861	550	402	235	152	120	91	57	1065	866	553	404	236	153	121	92	57	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	26217	OL	08:31	1	11.0	14.4	16.6	27.4	700	1091	862	546	398	235	152	120	89	56	1102	871	551	402	237	154	121	90	57	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	26217	OL	08:31	2	11.0	14.4	16.6	27.1	694	1065	852	542	397	235	152	120	91	57	1085	868	552	404	239	155	122	93	58	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	26301	OR	08:55	1	14.9	17.2	19.9	26.5	693	692	535	311	208	129	89	77	60	37	706	546	317	212	132	91	79	61	38	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	26301	OR	08:55	2	14.9	17.1	19.9	26.6	692	680	530	311	209	131	91	79	63	40	695	541	318	214	134	93	81	64	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	26399	OL	08:33	1	11.3	15.0	16.6	26.7	694	791	660	449	326	215	144	125	94	64	806	672	457	332	219	147	127	96	65	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	26399	OL	08:33	2	11.3	15.0	16.6	26.4	696	785	657	450	328	218	148	128	101	65	797	667	457	333	221	150	130	103	66	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	26403	OR	08:54	1	14.7	17.3	19.9	26.2	697	481	367	212	137	100	82	77	65	43	488	372	215	139	101	83	78	66	44	4.3
Magumu - Thika	B20/D1315	22-Apr-21	6	26403	OR	08:54	2	14.8	17.2	19.9	26.0	691	471	361	209	137	100	82	77	65	43	482	369	214	140	102	84	79	67	44	4.3
Magumu - Thika	B20/D1315	22-Apr-21	6	26497	OR	08:53	1	14.6	17.2	19.9	26.5	689	659	527	319	216	140	101	87	69	43	676	541	327	222	144	104	89	71	44	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	26497	OR	08:53	2	14.7	17.2	19.9	26.4	689	648	520	317	215	140	100	87	69	43	665	534	325	221	144	103	89	71	44	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	26514	OL	08:34	1	11.5	15.3	16.6	26.0	718	561	434	261	179	131	108	105	91	63	552	427	257	176	129	106	103	90	62	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	26514	OL	08:34	2	11.5	15.3	16.6	26.0	715	551	428	258	178	130	107	103	88	62	545	423	255	176	129	106	102	87	61	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	26605	OR	08:52	1	15.4	17.2	19.9	27.9	676	1255	1077	689	479	268	165	131	100	67	1313	1126	721	501	280	173	137	105	70	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	26605	OR	08:52	2	15.4	17.1	19.9	28.2	679	1245	1070	690	480	269	165	130	99	66	1296	1114	718	500	280	172	135	103	69	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	26612	OL	08:36	1	11.6	15.3	16.6	26.7	722	896	705	401	246	134	95	81	65	42	877	690	393	241	131	93	79	64	41	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	26612	OL	08:36	2	11.6	15.3	16.6	26.8	715	878	696	397	244	133	94	80	63	40	868	688	393	241	132	93	79	62	40	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	26698	OR	08:51	1	15.5	17.2	19.9	27.0	710	924	743	437	276	161	111	95	76	50	920	740	435	275	160	111	95	76	50	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	26698	OR	08:51	2	15.5	17.2	19.9	26.9	705	905	728	432	273	162	111	94	76	49	908	730	433	274	162	111	94	76	49	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	26699	OL	08:36	1	11.7	15.4	16.6	27.7	697	1185	1037	694	526	327	208	173	134	90	1202	1052	704	534	332	211	175	136	91	2.7
Magumu - Thika	B20/D1315	22-Apr-21	6	26699	OL	08:36	2	11.7	15.4	16.6	27.5	699	1172	1034	697	530	331	211	175	136	92	1185	1046	705	536	335	213	177	138	93	2.7
Magumu - Thika	B20/D1315	22-Apr-21	6	26801	OR	08:51	1	15.4	17.2	19.9	27.2	685	938	781	517	357	202	128	104	81	54	968	806	534	368	208	132	107	84	56	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	26801	OR	08:51	2	15.4	17.1	19.9	27.1	688	921	770	514	356	202	128	104	82	54	946	791	528	366	208	132	107	84	55	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	26811	OL	08:38	1	11.7	15.4	16.6	27.6	700	1199	989	617	429	256	169	143	114	81	1211	999	623	433	259	171	144	115	82	2.6
Magumu - Thika	B20/D1315	22-Apr-21	6	26811	OL	08:38	2	11.7	15.4	16.6	27.4	703	1190	989	622	433	257	171	145	116	82	1197	995	626	435	258	172	146	117	82	2.6
Magumu - Thika	B20/D1315	22-Apr-21	6	26896	OR	08:50	1	15.3	17.7	19.9	27.2	694	867	667	397	254	135	88	74	62	42	883	679	404	259	138	90	75	63	43	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	26896	OR	08:50	2	15.3	17.6	19.9	27.1	693	850	661	396	254	136	88	75	63	42	867	674	404	259	139	90	77	64	43	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	26908	OL	08:38	1	11.4	15.2	16.6	27.6	688	1070	855	533	354	212	133	111	89	62	1100	879	548	364	218	137	114	91	64	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	26908	OL	08:38	2	11.4	15.2	16.6	27.4	697	1051	850	534	357	213	134	112	90	62	1066	862	542	362	216	136	114	91	63	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	27000	OR	08:49	1	14.9	17.5	19.9	26.5	703	547	414	226	130	88	69	61	49	30	550	416	227	131	89	69	61	49	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27000	OR	08:49	2	14.9	17.4	19.9	26.2	697	534	409	224	129	85	69	61	49	29	542	415	227	131	86	70	62	50	29	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	27003	OL	08:39	1	11.2	14.8	16.6	26.6	736	882	673	364	222	117	78	69	56	36	847	646	350	213	112	75	66	54	35	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	27003	OL	08:39	2	11.2	14.8	16.6	26.8	739	867	669	365	223	117	78	68	56	36	829	640	349	213	112	75	65	54	34	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	27099	OR	08:48	1	15.2	17.6	19.9	26.3	694	611	484	272	169	109	82	70												



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	6	27300	OR	08:46	2	14.8	16.9	19.9	26.5	698	657	507	312	215	146	106	93	75	48	665	514	316	218	148	107	94	76	49	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	27302	OL	08:42	1	12.0	15.6	16.6	27.0	692	961	792	494	343	196	124	99	70	42	982	809	505	350	200	127	101	72	43	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27302	OL	08:42	2	12.0	15.6	16.6	26.5	696	944	783	490	342	196	124	97	71	43	959	795	498	347	199	126	99	72	44	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27399	OR	08:46	1	14.5	17.1	19.9	27.2	682	945	766	478	336	212	138	116	90	61	980	794	496	348	220	143	120	93	63	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27399	OR	08:46	2	14.5	17.1	19.9	27.0	674	923	752	474	335	210	136	116	90	61	968	789	497	351	220	143	122	94	64	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27400	OL	08:43	1	11.7	15.4	16.6	26.4	711	724	570	336	214	135	103	92	74	48	720	567	334	213	134	102	91	74	48	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	27400	OL	08:43	2	11.7	15.4	16.6	26.4	710	711	563	335	214	135	103	92	73	48	708	561	334	213	134	103	92	73	48	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	27499	OR	08:45	1	14.6	17.1	19.9	26.4	691	556	415	230	143	95	71	61	48	27	569	425	235	146	97	73	62	49	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27499	OR	08:45	2	14.6	17.0	19.9	26.2	687	543	409	228	142	95	71	61	47	27	559	421	235	146	98	73	63	48	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27502	OL	08:44	1	11.4	14.9	16.6	27.6	693	1179	989	606	405	236	153	128	102	68	1203	1009	618	413	241	156	131	104	69	2.6
Magumu - Thika	B20/D1315	22-Apr-21	6	27502	OL	08:44	2	11.4	14.9	16.6	27.6	680	1145	968	599	402	234	154	129	101	68	1190	1006	623	418	243	160	134	105	71	2.7
Magumu - Thika	B20/D1315	22-Apr-21	6	27599	OR	08:44	1	15.0	17.2	19.9	26.8	684	736	587	363	260	185	136	123	100	67	761	607	375	269	191	141	127	103	69	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	27599	OR	08:44	2	15.0	17.2	19.9	26.5	681	724	583	363	260	183	135	122	97	66	752	605	377	270	190	140	127	101	69	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	27613	OL	08:44	1	11.6	15.1	16.6	26.3	710	610	466	237	139	92	71	62	48	27	607	464	236	138	92	71	62	48	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	27613	OL	08:44	2	11.6	15.1	16.6	26.4	705	597	459	235	138	90	71	62	48	27	599	460	236	138	90	71	62	48	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	27700	OR	08:43	1	15.1	17.0	19.9	26.2	696	461	346	194	125	96	79	76	62	40	468	351	197	127	98	80	77	63	41	4.4
Magumu - Thika	B20/D1315	22-Apr-21	6	27700	OR	08:43	2	15.1	17.0	19.9	26.2	689	455	342	192	124	95	78	74	62	40	467	351	197	127	97	80	76	64	41	4.4
Magumu - Thika	B20/D1315	22-Apr-21	6	27702	OL	08:45	1	11.6	15.1	16.6	26.2	681	633	519	327	244	183	139	127	101	70	657	539	339	253	190	144	132	105	73	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	27702	OL	08:45	2	11.6	15.1	16.6	26.2	687	631	519	327	244	182	138	126	100	68	649	534	337	251	187	142	130	103	70	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	27800	OL	08:46	1	11.5	14.8	16.6	26.0	711	558	424	229	149	112	90	83	68	46	555	422	228	148	111	89	83	68	46	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27800	OL	08:46	2	11.5	14.8	16.6	26.0	713	551	421	228	149	111	90	83	68	46	546	417	226	148	110	89	82	67	46	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27801	OR	08:42	1	15.0	17.1	19.9	26.2	695	461	357	199	125	88	66	57	44	25	469	363	202	127	90	67	58	45	25	4.4
Magumu - Thika	B20/D1315	22-Apr-21	6	27801	OR	08:42	2	15.0	17.1	19.9	26.1	692	449	353	197	124	87	66	56	44	24	459	361	201	127	89	67	57	45	25	4.5
Magumu - Thika	B20/D1315	22-Apr-21	6	27898	OR	08:41	1	15.1	17.0	19.9	26.3	722	550	424	228	124	97	88	86	73	49	539	415	223	121	95	86	84	71	48	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	27898	OR	08:41	2	15.1	17.0	19.9	26.3	724	538	418	226	123	98	88	86	73	48	525	408	221	120	96	86	84	71	47	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	27901	OL	08:47	1	11.5	14.9	16.6	26.1	701	608	469	238	133	82	65	58	46	27	613	473	240	134	83	66	58	46	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	27901	OL	08:47	2	11.5	14.9	16.6	26.1	708	599	466	238	134	82	65	57	46	27	598	465	238	134	82	65	57	46	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	28001	OL	08:48	1	11.6	15.0	16.6	26.4	709	537	402	223	144	104	85	80	65	42	535	401	222	144	104	85	80	65	42	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	28001	OL	08:48	2	11.6	15.0	16.6	26.0	709	523	392	221	143	103	85	79	65	42	522	391	220	143	103	85	79	65	42	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	28001	OR	08:40	1	14.9	16.9	19.9	26.8	703	878	679	399	259	155	113	95	73	47	883	683	401	260	156	114	96	73	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	28001	OR	08:40	2	14.9	16.9	19.9	26.6	700	862	669	396	258	153	112	94	73	47	871	676	400	261	155	113	95	74	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	28099	OR	08:39	1	15.0	17.2	19.9	26.5	685	789	634	395	285	193	132	112	89	57	814	654	408	294	199	136	116	92	59	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28099	OR	08:39	2	15.0	17.1	19.9	26.7	684	773	624	392	284	191	131	111	89	56	799	645	405	294	197	135	115	92	58	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28106	OL	08:49	1	11.8	15.2	16.6	26.1	702	624	489	289	178	107	79	67	51	30	628	492	291	179	108	80	67	51	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	28106	OL	08:49	2	11.8	15.2	16.6	26.2	698	619	485	288	177	107	79	67	51	30	627	491	292	179	108	80	68	52	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	28106	OL	08:49	1	11.8	15.2	16.6	3.3	707	658	509	294	178	106	80	65	52	31	658	509	294	178	106	80	65	52	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	28106	OL	08:49	2	11.8	15.2	16.6	26.3	700	640	497	290	176	107	79	65	52	29	646	502	293	178	108	80	66	53	29	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	28198	OL	08:50	1	11.9	15.3	16.6	26.5	701	754	594	354	236	148	103	87	68	42	760	599	357	238	149	104	88	69	42	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	28198	OL	08:50	2	11.9	15.3	16.6	26.6	698	740	587	353	236	149	104	88	69	42	750	595	358	239	151	105	89	70	43	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	28199	OR	08:38	1	15.0	17.0	19.9	26.8	693	796	604	370	253	156	103	83	62	35	812	616	377	258	159	105	85	63	36	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28199	OR	08:38	2	15.0	17.0	19.9	2.1	690	778	594	367	251	154	102	82	62	36	797	609	376	257	158	105	84	64	37	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28199	OR	08:38	1	15.0	16.9	19.9	26.7	691	780	600	372	254	156	104	82	62	37	798	614	381	260	160	106	84	63	38	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28199	OR	08:38	2	15.0	16.9	19.9	26.8	695	770	596	371	253	158	102	82	62	36	783	606	377	257	161	104	83	63	37	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	28297	OR	08:37	1	15.0	17.2	19.9	26.5	692	691	549	355	246	154	108	93	74	49	706	561	363	251	157	110	95	76	50	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	28297	OR	08:37	2	15.0	17.1	19.9	26.5	695	681	543	354	245	155	108	95	74	49	693	552	360	249	158	110	97	75	50	3.6
Magumu - Thika</																															

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	6	28493	OR	08:35	1	14.9	17.0	19.9	27.5	696	1035	865	546	386	244	169	148	118	81	1051	879	555	392	248	172	150	120	82	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	28493	OR	08:35	2	14.9	16.9	19.9	27.2	689	1024	856	543	384	243	169	147	118	80	1051	878	557	394	249	173	151	121	82	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	28504	OL	08:53	1	11.9	15.1	16.6	26.5	718	604	426	240	146	98	75	65	51	31	595	419	236	144	96	74	64	50	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	28504	OL	08:53	2	11.9	15.1	16.6	26.3	715	591	421	238	146	98	75	65	51	31	584	416	235	144	97	74	64	50	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	28599	OL	08:54	1	11.8	15.0	16.6	27.2	694	1013	841	516	372	245	169	147	117	81	1032	857	526	379	250	172	150	119	83	2.9
Magumu - Thika	B20/D1315	22-Apr-21	6	28599	OL	08:54	2	11.8	15.0	16.6	27.4	694	999	834	517	374	242	171	147	118	81	1018	850	527	381	247	174	150	120	83	2.9
Magumu - Thika	B20/D1315	22-Apr-21	6	28602	OR	08:34	1	15.0	17.4	19.9	26.9	695	809	652	376	256	163	117	110	84	52	823	663	382	260	166	119	112	85	53	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	28602	OR	08:34	2	14.9	17.3	19.9	26.5	694	795	645	375	256	163	117	107	83	52	810	657	382	261	166	119	109	85	53	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28699	OR	08:33	1	14.9	17.4	19.9	26.6	697	705	574	380	268	164	112	97	78	53	715	582	385	272	166	114	98	79	54	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	28699	OR	08:33	2	14.9	17.4	19.9	26.3	698	696	569	379	269	165	112	96	77	53	705	576	384	272	167	113	97	78	54	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	28702	OL	08:55	1	11.9	15.1	16.6	26.4	707	605	488	305	211	137	101	87	69	44	605	488	305	211	137	101	87	69	44	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	28702	OL	08:55	2	11.9	15.1	16.6	26.4	702	594	481	302	209	136	99	86	68	43	598	484	304	210	137	100	87	68	43	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	28798	OR	08:32	1	14.9	17.2	19.9	26.9	710	801	608	332	216	150	112	97	77	50	798	605	331	215	149	112	97	77	50	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28798	OR	08:32	2	14.9	17.2	19.9	26.8	703	782	595	329	215	150	112	96	77	51	786	598	331	216	151	113	97	77	51	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28802	OL	08:56	1	12.2	15.3	16.6	26.3	699	488	362	204	130	93	72	62	47	26	494	366	206	131	94	73	63	48	26	4.3
Magumu - Thika	B20/D1315	22-Apr-21	6	28802	OL	08:56	2	12.2	15.3	16.6	26.2	708	479	358	204	130	92	72	62	48	27	478	357	204	131	92	72	62	48	27	4.4
Magumu - Thika	B20/D1315	22-Apr-21	6	28899	OR	08:31	1	14.7	17.3	19.9	26.5	690	698	545	326	222	141	101	87	69	44	715	558	334	227	144	103	89	71	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	28899	OR	08:31	2	14.7	17.3	19.9	26.2	691	691	541	325	222	141	100	86	68	44	707	554	333	227	144	102	88	70	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	28899	OR	08:31	1	14.7	17.1	19.9	26.2	696	691	547	329	223	142	101	87	69	45	702	556	334	227	144	103	88	70	46	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	28899	OR	08:31	2	14.8	17.0	19.9	26.0	697	685	543	327	223	142	101	87	69	44	695	551	332	226	144	102	88	70	45	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	28905	OL	08:56	1	12.4	15.6	16.6	26.6	700	600	464	271	179	121	89	78	62	40	606	469	274	181	122	90	79	63	40	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	28905	OL	08:56	2	12.4	15.6	16.6	26.8	693	589	458	270	178	121	89	77	61	39	601	467	275	182	123	91	79	62	40	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	28997	OR	08:30	1	14.7	17.2	19.9	26.4	688	679	532	334	235	163	121	106	86	56	698	547	343	241	168	124	109	88	58	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	28997	OR	08:30	2	14.7	17.2	19.9	26.3	689	669	526	332	234	163	121	106	84	56	686	540	341	240	167	124	109	86	57	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	29002	OL	08:57	1	12.4	15.7	16.6	26.4	698	582	457	262	171	113	84	72	55	33	590	463	265	173	114	85	73	56	33	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	29002	OL	08:57	2	12.4	15.7	16.6	26.3	696	568	447	259	169	113	83	71	55	33	577	454	263	172	115	84	72	56	34	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	29099	OR	08:29	1	14.8	17.5	19.9	26.3	689	569	447	283	198	141	106	93	75	50	584	459	290	203	145	109	95	77	51	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	29099	OR	08:29	2	14.7	17.4	19.9	26.3	681	563	443	282	197	140	106	94	75	49	584	460	293	205	145	110	98	78	51	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	29100	OL	08:58	1	12.2	15.5	16.6	26.8	692	783	649	424	297	182	127	107	85	54	800	663	433	303	186	130	109	87	55	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	29100	OL	08:58	2	12.2	15.5	16.6	26.8	689	773	644	423	296	182	127	106	84	53	793	661	434	304	187	130	109	86	54	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	29199	OR	08:28	1	14.6	17.6	19.9	27.1	697	1038	790	471	313	190	128	110	86	57	1053	801	478	317	193	130	112	87	58	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	29199	OR	08:28	2	14.6	17.6	19.9	26.8	695	1017	778	468	312	189	127	109	86	57	1035	791	476	317	192	129	111	87	58	2.9
Magumu - Thika	B20/D1315	22-Apr-21	6	29206	OL	08:59	1	12.2	15.2	16.6	26.2	703	543	412	246	169	130	102	92	74	49	546	414	247	170	131	103	93	74	49	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	29206	OL	08:59	2	12.2	15.2	16.6	26.2	697	538	411	247	170	130	102	92	75	49	546	417	251	172	132	103	93	76	50	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	29298	OR	08:27	1	14.6	17.6	19.9	26.7	677	739	571	338	235	166	122	109	87	56	772	596	353	245	173	127	114	91	58	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	29298	OR	08:27	2	14.6	17.6	19.9	26.3	683	726	568	339	236	166	124	110	87	57	752	588	351	244	172	128	114	90	59	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	29304	OL	09:00	1	12.2	15.3	16.6	27.0	701	953	759	461	309	188	122	103	80	52	961	765	465	312	190	123	104	81	52	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	29304	OL	09:00	2	12.2	15.3	16.6	27.0	703	931	749	459	310	187	122	103	80	52	936	753	462	312	188	123	104	80	52	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	29401	OL	09:01	1	12.4	15.4	16.6	27.1	706	974	784	443	287	182	133	118	94	62	975	785	444	287	182	133	118	94	62	2.9
Magumu - Thika	B20/D1315	22-Apr-21	6	29401	OL	09:01	2	12.4	15.4	16.6	27.1	713	955	769	439	286	180	132	117	94	62	947	763	435	284	178	131	116	93	61	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	29408	OR	08:26	1	14.5	17.4	19.9	26.6	689	767	600	357	247	167	117	98	77	49	787	616	366	253	171	120	101	79	50	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	29408	OR	08:26	2	14.5	17.4	19.9	26.3	687	758	595	358	248	168	117	99	77	50	780	612	368	255	173	120	102	79	51	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	29505	OL	09:01	1	12.7	15.6	16.6	26.7	704	791	644	378	253	163	116	97	75	47	794	647	380	254	164	116	97	75	47	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	29505	OL	09:01	2	12.6	15.7	16.6	26.9	709	781	638	378	254	164	114	97	75	48	779	636	377	253	164	116	97	75	48	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	29508	OR	08:25	1	14.6	17.3	19.9	28.2	667	1418	1149	723	492	272	178	154	125	90	1503	1218	766	522						

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	6	29713	0L	09:03	2	12.4	15.3	16.6	26.5	686	689	548	339	240	169	122	106	82	52	710	565	349	247	174	126	109	85	54	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	29785	0R	08:23	1	14.4	16.8	19.9	26.1	693	654	541	349	244	160	122	113	93	62	667	552	356	249	163	124	115	95	63	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	29785	0R	08:23	2	14.4	16.8	19.9	26.1	694	646	534	345	241	159	120	111	92	62	658	544	351	246	162	122	113	94	63	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	29785	0R	08:22	1	14.4	16.9	19.9	26.2	691	665	544	349	244	164	121	114	92	62	680	557	357	250	168	124	117	94	63	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	29785	0R	08:22	2	14.4	16.9	19.9	2.5	693	653	536	346	241	161	120	112	92	62	666	547	353	246	164	122	114	94	63	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	29799	0L	09:04	1	12.5	15.4	16.6	27.4	697	965	789	492	347	214	140	118	93	67	979	800	499	352	217	142	120	94	68	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	29799	0L	09:04	2	12.5	15.4	16.6	27.2	698	958	789	497	351	217	141	119	94	67	970	799	503	356	220	143	121	95	68	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	29895	0R	08:21	1	14.5	16.9	19.9	25.7	644	477	358	224	165	116	77	66	54	31	524	393	246	181	127	85	72	59	34	4.2
Magumu - Thika	B20/D1315	22-Apr-21	6	29895	0R	08:21	2	14.5	16.9	19.9	25.8	648	472	355	224	164	116	76	66	53	31	515	387	244	179	127	83	72	58	34	4.3
Magumu - Thika	B20/D1315	22-Apr-21	6	29899	0L	09:05	1	12.7	15.6	16.6	26.5	704	573	461	281	193	143	112	105	87	59	575	463	282	194	144	112	105	87	59	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	29899	0L	09:05	2	12.7	15.6	16.6	26.5	704	562	455	280	193	142	112	105	87	60	564	457	281	194	143	112	105	87	60	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	29998	0R	18:05	1	15.7	14.7	18.0	27.2	686	721	579	379	270	176	119	105	84	57	743	597	391	278	181	123	108	87	59	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	29998	0R	18:05	2	15.7	14.7	18.0	27.3	684	719	578	379	270	176	120	105	84	57	743	597	392	279	182	124	109	87	59	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	30007	0L	09:06	1	12.9	15.8	16.6	27.0	701	704	568	360	261	173	121	101	78	50	710	573	363	263	174	122	102	79	50	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30007	0L	09:06	2	12.8	15.8	16.6	26.3	706	691	561	358	261	173	120	100	78	49	692	562	359	261	173	120	100	78	49	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30098	0R	18:04	1	15.5	14.6	18.0	26.9	700	643	478	276	173	121	94	85	71	48	649	483	279	175	122	95	86	72	48	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	30098	0R	18:04	2	15.5	14.6	18.0	27.3	701	632	471	274	173	121	94	88	70	47	637	475	276	174	122	95	89	71	47	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	30102	0L	09:07	1	12.8	16.0	16.6	26.7	719	840	687	415	286	181	120	103	84	57	826	676	408	281	178	118	101	83	56	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	30102	0L	09:07	2	12.8	16.0	16.6	26.9	716	835	687	416	287	184	120	103	85	57	825	678	411	283	182	118	102	84	56	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	30199	0L	09:08	1	12.9	16.0	16.6	27.0	719	687	478	220	136	100	81	75	64	38	676	470	216	134	98	80	74	63	37	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30199	0L	09:08	2	12.9	15.9	16.6	26.8	717	671	471	220	136	101	81	75	63	39	662	464	217	134	100	80	74	62	38	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30201	0R	18:03	1	15.9	14.8	18.0	27.9	693	904	722	433	275	160	107	90	70	45	922	737	442	281	163	109	92	71	46	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	30201	0R	18:03	2	15.9	14.8	18.0	27.6	692	894	718	434	277	161	107	90	69	46	913	734	443	283	164	109	92	70	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	30299	0R	18:02	1	15.7	14.5	18.0	27.3	676	609	478	289	206	168	127	114	97	72	637	500	302	215	176	133	119	101	75	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	30299	0R	18:02	2	15.7	14.5	18.0	27.5	676	600	473	287	205	167	127	114	96	71	628	495	300	214	175	133	119	100	74	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	30302	0L	09:09	1	13.0	16.0	16.6	27.2	701	981	815	476	307	183	125	104	83	55	989	822	480	310	185	126	105	84	55	2.9
Magumu - Thika	B20/D1315	22-Apr-21	6	30302	0L	09:09	2	13.0	16.0	16.6	27.2	703	964	807	477	308	184	125	106	83	54	969	812	480	310	185	126	107	83	54	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	30399	0R	18:00	1	16.3	15.2	18.0	26.8	679	458	356	213	148	111	80	70	55	35	477	371	222	154	116	83	73	57	36	4.4
Magumu - Thika	B20/D1315	22-Apr-21	6	30399	0R	18:00	2	16.4	15.2	18.0	26.8	686	456	357	215	150	112	81	71	56	34	470	368	222	155	115	83	73	58	35	4.5
Magumu - Thika	B20/D1315	22-Apr-21	6	30402	0L	09:09	1	12.9	15.9	16.6	26.4	706	625	503	297	195	137	109	100	82	54	626	504	297	195	137	109	100	82	54	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	30402	0L	09:09	2	12.9	15.9	16.6	26.4	711	619	502	299	198	140	110	101	83	56	616	499	297	197	139	109	100	83	56	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	30496	0R	17:59	1	16.6	15.5	18.0	27.1	697	694	539	313	206	134	93	82	65	44	704	547	317	209	136	94	83	66	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	30496	0R	17:59	2	16.5	15.5	18.0	27.3	701	689	536	313	207	134	93	82	66	44	695	541	316	209	135	94	83	67	44	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30504	0L	09:10	1	13.2	16.1	16.6	26.5	697	685	553	329	218	142	106	90	72	47	695	561	334	221	144	108	91	73	48	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30504	0L	09:10	2	13.2	16.1	16.6	26.4	706	679	551	330	219	144	106	92	73	48	680	552	330	219	144	106	92	73	48	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30601	0R	17:58	1	16.0	15.1	18.0	27.6	681	809	693	466	320	180	120	107	91	66	840	719	484	332	187	125	111	94	69	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	30601	0R	17:58	2	16.0	15.1	18.0	27.7	690	804	690	466	321	180	120	107	91	65	824	707	477	329	184	123	110	93	67	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	30604	0L	09:11	1	13.4	16.2	16.6	26.8	699	703	506	268	169	114	88	76	62	39	711	512	271	171	115	89	77	63	39	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	30604	0L	09:11	2	13.4	16.2	16.6	26.8	698	686	501	269	170	119	90	77	63	40	695	507	272	172	121	91	78	64	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30707	0L	09:12	1	13.3	16.2	16.6	26.8	707	823	660	385	244	151	107	89	70	44	823	660	385	244	151	107	89	70	44	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	30707	0L	09:12	2	13.2	16.1	16.6	26.7	709	816	658	387	249	152	108	91	70	45	814	656	386	248	152	108	91	70	45	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	30708	0R	17:57	1	16.0	14.9	18.0	27.8	703	894	705	432	291	189	132	120	98	71	899	709	434	293	190	133	121	99	71	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	30708	0R	17:57	2	16.0	14.9	18.0	27.7	703	889	702	431	292	189	132	120	100	72	894	706	433	294	190	133	121	101	72	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	30708	0R	17:57	1	16.0	15.1	18.0	27.8	693	904	702	427	288	188	132	120	98	70	922	716	436	294	192	135	122	100	71	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	30708	0R	17:57	2	16.0	15.0	18.0	27.8	697	894	696	425	287	187	131	120												

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	6	30999	OR	17:54	1	16.6	15.4	18.0	27.4	702	671	551	325	211	138	99	90	77	57	676	555	327	213	139	100	91	78	57	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	30999	OR	17:54	2	16.6	15.3	18.0	27.1	697	664	546	324	212	139	99	91	78	57	674	554	329	215	141	100	92	79	58	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	31001	OL	09:14	1	13.4	16.3	16.6	26.8	710	728	599	355	223	150	115	101	84	56	725	596	354	222	149	115	101	84	56	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	31001	OL	09:14	2	13.4	16.3	16.6	26.5	706	725	594	356	224	152	116	102	82	57	726	595	357	224	152	116	102	82	57	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	31097	OR	17:53	1	16.7	15.2	18.0	27.4	683	755	624	407	283	180	127	114	95	68	782	646	421	293	186	131	118	98	70	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	31097	OR	17:53	2	16.7	15.2	18.0	27.5	684	748	621	407	284	182	127	116	95	67	773	642	421	294	188	131	120	98	69	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	31101	OL	09:15	1	13.5	16.3	16.6	26.5	693	632	502	300	193	119	87	79	66	43	645	512	306	197	121	89	81	67	44	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	31101	OL	09:15	2	13.5	16.3	16.6	26.6	691	627	498	300	194	119	84	77	65	43	642	510	307	198	122	86	79	67	44	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	31194	OR	17:52	1	16.6	15.3	18.0	27.4	704	785	629	375	239	147	98	84	67	44	788	632	377	240	148	98	84	67	44	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	31194	OR	17:52	2	16.6	15.3	18.0	27.4	702	773	624	374	240	143	98	85	68	44	779	628	377	242	144	99	86	68	44	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	31203	OL	09:16	1	13.7	16.2	16.6	26.9	687	809	656	397	276	192	140	122	98	66	833	675	409	284	198	144	126	101	68	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	31203	OL	09:16	2	13.7	16.2	16.6	26.9	687	796	652	398	277	193	141	123	98	66	819	671	410	285	199	145	127	101	68	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	31299	OR	17:51	1	16.5	15.3	18.0	27.6	682	715	577	371	263	180	126	112	91	62	741	598	385	273	187	131	116	94	64	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	31299	OR	17:51	2	16.5	15.3	18.0	27.6	679	702	571	369	263	178	126	112	90	62	731	595	384	274	185	131	117	94	65	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	31308	OL	09:17	1	13.6	16.1	16.6	26.9	720	824	645	369	232	140	101	87	68	43	809	633	362	228	137	99	85	67	42	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	31308	OL	09:17	2	13.6	16.1	16.6	27.1	713	809	636	367	232	144	101	86	68	43	802	631	364	230	143	100	85	67	43	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	31398	OL	09:17	1	13.7	16.2	16.6	26.5	695	686	485	288	215	164	119	108	89	61	698	493	293	219	167	121	110	91	62	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	31398	OL	09:17	2	13.7	16.2	16.6	26.4	702	675	484	288	215	163	118	107	88	60	680	487	290	217	164	119	108	89	60	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	31398	OR	17:50	1	16.4	15.2	18.0	27.2	697	557	471	314	213	146	100	86	69	45	565	478	319	216	148	101	87	70	46	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	31398	OR	17:50	2	16.4	15.2	18.0	27.4	687	553	468	313	212	147	96	87	69	46	569	482	322	218	151	99	90	71	47	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	31494	OR	17:49	1	15.7	14.9	18.0	27.0	679	592	469	310	222	149	108	98	80	54	616	488	323	231	155	112	102	83	56	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	31494	OR	17:49	2	15.8	14.9	18.0	27.2	680	586	466	309	221	150	106	98	80	55	609	485	321	230	156	110	102	83	57	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	31509	OL	09:18	1	13.4	16.0	16.6	26.7	713	688	551	315	192	122	91	80	64	41	682	546	312	190	121	90	79	63	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	31509	OL	09:18	2	13.4	16.1	16.6	27.0	714	674	545	313	192	121	91	79	63	40	667	540	310	190	120	90	78	62	40	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	31594	OR	17:48	1	15.6	14.7	18.0	27.5	699	748	618	389	256	152	102	84	71	50	757	625	393	259	154	103	85	72	51	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	31594	OR	17:48	2	15.6	14.7	18.0	27.3	693	745	617	391	259	155	104	90	74	52	760	629	399	264	158	106	92	75	53	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	31602	OL	09:19	1	13.3	16.1	16.6	26.6	724	634	422	222	149	115	89	78	63	46	619	412	217	146	112	87	76	62	45	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	31602	OL	09:19	2	13.3	16.1	16.6	26.6	725	625	419	222	149	115	88	78	63	46	609	409	216	145	112	86	76	61	45	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	31689	OR	17:47	1	15.6	14.8	18.0	28.5	693	1123	909	560	352	196	129	115	98	72	1146	927	571	359	200	132	117	100	73	2.7
Magumu - Thika	B20/D1315	22-Apr-21	6	31689	OR	17:47	2	15.6	14.8	18.0	2.5	685	1099	898	557	350	197	129	117	99	73	1134	927	575	361	203	133	121	102	75	2.7
Magumu - Thika	B20/D1315	22-Apr-21	6	31701	OL	09:20	1	13.6	16.2	16.6	26.3	713	709	554	305	195	124	91	79	64	42	703	549	302	193	123	90	78	63	42	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	31701	OL	09:20	2	13.6	16.2	16.6	26.8	710	699	548	304	193	124	90	79	63	42	696	546	303	192	123	90	79	63	42	3.6
Magumu - Thika	B20/D1315	22-Apr-21	6	31802	OR	17:46	1	15.4	14.7	18.0	27.8	693	888	689	421	275	166	119	108	86	57	906	703	430	281	169	121	110	88	58	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	31802	OR	17:46	2	15.4	14.6	18.0	27.9	692	871	680	419	274	167	118	107	85	56	890	695	428	280	171	121	109	87	57	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	31807	OL	09:21	1	13.8	16.4	16.6	27.2	699	1053	882	552	383	225	148	126	100	71	1065	892	558	387	228	150	127	101	72	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	31807	OL	09:21	2	13.8	16.4	16.6	27.3	695	1044	880	554	386	226	152	127	102	72	1062	895	564	393	230	155	129	104	73	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	31899	OR	17:45	1	15.7	14.9	18.0	27.0	680	660	544	370	273	192	130	115	94	64	686	566	385	284	200	135	120	98	67	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	31899	OR	17:45	2	15.7	14.9	18.0	27.3	687	660	545	373	275	194	130	116	93	64	679	561	384	283	200	134	119	96	66	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	31902	OR	17:44	1	15.9	15.2	18.0	27.4	690	744	630	433	323	212	142	125	100	69	762	646	444	331	217	145	128	102	71	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	31902	OR	17:44	2	15.9	15.2	18.0	27.6	691	728	619	427	318	210	142	124	99	68	745	633	437	325	215	145	127	101	70	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	31909	OL	09:21	1	13.8	16.4	16.6	27.1	718	915	731	406	235	143	103	89	73	51	901	720	400	231	141	101	88	72	50	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	31909	OL	09:21	2	13.8	16.4	16.6	26.8	713	898	721	404	235	141	103	89	73	51	890	715	401	233	140	102	88	72	51	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	32001	OR	17:43	1	16.3	15.5	18.0	27.3	691	775	640	417	283	167	110	95	78	53	793	655	427	290	171	113	97	80	54	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	32001	OR	17:43	2	16.2	15.5	18.0	27.6	689	768	634	414	281	166	108	94	77	52	788	651	425	288	170	111	96	79	53	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	32005	OL	09:22	1	13.9	16.5	16.6	27.5	702	1049	850	458	311	195	137	119	94	64	1056	856	461	313						



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	6	32201	0L	09:24	2	14.3	16.7	16.6	27.1	715	861	680	423	287	169	113	94	77	51	851	672	418	284	167	112	93	76	50	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	32301	0L	09:25	1	14.1	16.7	16.6	26.3	702	599	463	279	187	124	93	81	64	41	603	466	281	188	125	94	82	64	41	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	32301	0L	09:25	2	14.1	16.6	16.6	26.3	701	599	463	280	187	124	93	81	64	41	604	467	282	189	125	94	82	65	41	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	32310	0R	17:41	1	15.7	14.5	18.0	27.0	716	609	472	300	210	140	97	85	64	43	601	466	296	207	138	96	84	63	42	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	32310	0R	17:41	2	15.7	14.5	18.0	26.8	709	602	469	299	210	139	96	85	64	42	600	468	298	209	139	96	85	64	42	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	32402	0R	17:40	1	15.8	14.4	18.0	28.7	677	1274	1054	663	454	251	150	119	93	62	1330	1101	692	474	262	157	124	97	65	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	32402	0R	17:40	2	15.8	14.4	18.0	28.6	673	1258	1046	661	455	251	150	120	93	63	1322	1099	694	478	264	158	126	98	66	2.5
Magumu - Thika	B20/D1315	22-Apr-21	6	32402	0L	09:26	1	13.7	16.3	16.6	26.6	695	567	447	250	158	106	81	72	58	35	577	455	254	161	108	82	73	59	36	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	32402	0L	09:26	2	13.7	16.3	16.6	26.4	695	561	441	249	158	105	81	71	57	36	571	449	253	161	107	82	72	58	37	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	32497	0R	17:39	1	16.0	14.7	18.0	27.2	691	557	441	268	182	126	90	80	63	37	570	451	274	186	129	92	82	64	38	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	32497	0R	17:39	2	16.0	14.6	18.0	27.0	696	551	441	270	183	127	91	80	63	37	560	448	274	186	129	92	81	64	38	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	32500	0L	09:27	1	13.6	16.0	16.6	27.6	696	1093	923	612	433	252	169	146	119	84	1110	938	622	440	256	172	148	121	85	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	32500	0L	09:27	2	13.6	16.0	16.6	27.5	693	1084	918	610	430	252	170	146	120	84	1106	937	622	439	257	173	149	122	86	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	32500	0L	09:27	1	13.7	16.1	16.6	27.7	695	1091	932	619	436	251	171	147	118	82	1110	948	630	444	255	174	150	120	83	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	32500	0L	09:27	2	13.7	16.2	16.6	27.6	698	1087	929	619	437	252	172	149	119	83	1101	941	627	443	255	174	151	121	84	2.8
Magumu - Thika	B20/D1315	22-Apr-21	6	32597	0R	17:38	1	16.1	14.8	18.0	27.1	694	647	525	339	234	150	102	87	71	47	659	535	345	238	153	104	89	72	48	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32597	0R	17:38	2	16.1	14.8	18.0	27.1	691	640	521	337	232	151	101	88	71	47	655	533	345	237	154	103	90	73	48	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32597	0R	17:38	1	16.1	14.9	18.0	27.1	693	660	528	338	232	150	102	87	70	46	673	539	345	237	153	104	89	71	47	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32597	0R	17:38	2	16.1	14.9	18.0	27.2	695	648	523	336	231	149	101	87	71	46	659	532	342	235	152	103	89	72	47	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32600	0L	09:28	1	14.0	16.4	16.6	26.6	702	659	522	304	200	135	98	86	70	45	664	526	306	201	136	99	87	70	45	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32600	0L	09:28	2	14.0	16.4	16.6	26.6	702	646	515	302	200	135	98	88	71	46	651	519	304	201	136	99	89	72	46	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32698	0R	17:37	1	16.2	15.0	18.0	27.6	697	730	549	330	216	136	95	81	63	39	740	557	335	219	138	96	82	64	40	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	32698	0R	17:37	2	16.2	15.0	18.0	27.3	694	718	543	328	215	135	94	80	63	39	731	553	334	219	138	96	81	64	40	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	32702	0L	09:29	1	14.1	16.6	16.6	26.5	706	673	576	390	279	179	122	104	82	58	674	577	391	279	179	122	104	82	58	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32702	0L	09:29	2	14.2	16.6	16.6	26.7	703	660	565	383	274	175	121	103	81	56	664	568	385	276	176	122	104	81	56	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32799	0R	17:36	1	15.9	14.8	18.0	27.5	686	730	585	347	237	170	125	111	90	61	752	603	358	244	175	129	114	93	63	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	32799	0R	17:36	2	15.9	14.8	18.0	27.6	684	721	579	346	236	171	123	110	90	60	745	598	358	244	177	127	114	93	62	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	32815	0L	09:30	1	13.6	16.3	16.6	27.1	705	900	716	422	268	155	106	91	75	50	903	718	423	269	155	106	91	75	50	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	32815	0L	09:30	2	13.6	16.3	16.6	27.0	706	884	707	420	268	155	106	91	75	50	885	708	421	268	155	106	91	75	50	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	32898	0R	17:35	1	16.1	14.9	18.0	27.5	701	810	650	404	265	150	95	82	64	39	817	656	407	267	151	96	83	65	39	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	32898	0R	17:35	2	16.1	14.9	18.0	27.6	691	795	641	401	263	152	94	82	64	38	813	656	410	269	156	96	84	65	39	3.3
Magumu - Thika	B20/D1315	22-Apr-21	6	32905	0L	09:31	1	13.9	16.4	16.6	26.7	696	642	520	325	227	164	123	108	87	58	652	528	330	231	167	125	110	88	59	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32905	0L	09:31	2	13.9	16.5	16.6	26.8	689	639	517	324	227	163	122	107	86	58	656	531	332	233	167	125	110	88	60	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32995	0L	09:32	1	13.7	16.2	16.6	27.0	694	748	651	391	275	185	130	111	89	56	762	663	398	280	188	132	113	91	57	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	32995	0L	09:32	2	13.7	16.2	16.6	27.0	701	740	645	391	275	184	129	113	88	55	746	651	394	277	186	130	114	89	55	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	32996	0R	17:34	1	16.2	15.0	18.0	27.2	688	641	510	313	202	124	83	72	58	36	659	524	322	208	127	85	74	60	37	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	32996	0R	17:34	2	16.2	15.0	18.0	27.3	686	629	503	311	201	122	83	72	57	36	648	518	321	207	126	86	74	59	37	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	33089	0R	17:33	1	16.2	14.5	18.0	27.2	679	595	474	308	218	152	107	95	76	51	620	494	321	227	158	111	99	79	53	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	33089	0R	17:33	2	16.2	14.5	18.0	27.0	676	587	470	306	217	150	106	94	75	50	614	492	320	227	157	111	98	78	52	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	33099	0L	09:33	1	14.3	16.6	16.6	26.9	715	890	722	413	248	137	97	85	66	42	880	714	408	245	135	96	84	65	42	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	33099	0L	09:33	2	14.3	16.6	16.6	27.0	711	876	715	411	247	137	98	85	66	43	871	711	409	246	136	97	85	66	43	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	33099	0L	09:33	1	14.2	16.7	16.6	26.9	720	882	724	420	252	137	99	83	66	44	866	711	412	247	135	97	82	65	43	3.1
Magumu - Thika	B20/D1315	22-Apr-21	6	33099	0L	09:33	2	14.2	16.7	16.6	27.0	718	867	713	414	249	135	97	82	67	42	854	702	408	245	133	96	81	66	41	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	33203	0L	09:34	1	14.3	16.8	16.6	26.9	704	763	627	391	269	168	110	99	80	54	766	630	393	270	169	110	99	80	54	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	33203	0L	09:34	2	14.4	16.8	16.6	26.9	700	754	619	389	269	169	114	99	81	55	762									

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	6	33401	OL	09:36	1	14.5	16.7	16.6	28.3	683	1366	1135	673	442	255	162	132	104	70	1414	1175	697	458	264	168	137	108	72	2.4
Magumu - Thika	B20/D1315	22-Apr-21	6	33401	OL	09:36	2	14.5	16.7	16.6	28.1	683	1356	1129	676	446	256	166	142	108	70	1404	1169	700	462	265	172	147	112	72	2.4
Magumu - Thika	B20/D1315	22-Apr-21	6	33498	OR	17:19	1	16.8	15.4	22.0	27.5	692	636	441	214	130	96	71	63	49	30	650	451	219	133	98	73	64	50	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	33498	OR	17:19	2	16.8	15.4	22.0	27.3	690	619	434	215	130	97	71	63	50	30	634	445	220	133	99	73	65	51	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	6	33500	OL	09:37	1	14.6	16.9	16.6	27.2	704	962	791	509	348	205	139	120	96	67	966	794	511	349	206	140	121	96	67	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	33500	OL	09:37	2	14.6	16.9	16.6	26.8	699	944	780	504	345	204	138	120	95	66	955	789	510	349	206	140	121	96	67	3.0
Magumu - Thika	B20/D1315	22-Apr-21	6	33597	OR	17:18	1	16.8	15.5	22.0	27.4	700	571	437	266	173	122	87	79	64	45	577	441	269	175	123	88	80	65	45	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	33597	OR	17:18	2	16.8	15.5	22.0	27.1	687	559	431	264	172	121	87	78	64	44	575	444	272	177	125	90	80	66	45	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	33608	OL	09:38	1	15.0	17.2	16.6	26.6	700	733	587	356	230	137	98	84	68	45	740	593	360	232	138	99	85	69	45	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	33608	OL	09:38	2	15.0	17.2	16.6	26.6	702	723	581	354	229	138	98	84	67	44	728	585	357	231	139	99	85	67	44	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	33699	OR	17:17	1	17.1	15.9	22.0	27.4	684	530	408	207	131	101	80	72	58	37	548	422	214	135	104	83	74	60	38	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	33699	OR	17:17	2	17.1	15.9	22.0	27.1	684	523	403	207	132	103	80	72	58	37	541	417	214	136	106	83	74	60	38	4.1
Magumu - Thika	B20/D1315	22-Apr-21	6	33702	OL	09:39	1	14.6	17.0	16.6	26.8	702	747	606	392	268	164	112	98	80	53	752	610	395	270	165	113	99	81	53	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	33702	OL	09:39	2	14.7	17.0	16.6	26.6	693	732	595	387	266	163	113	99	84	53	747	607	395	271	166	115	101	86	54	3.4
Magumu - Thika	B20/D1315	22-Apr-21	6	33797	OR	17:15	1	17.4	16.2	22.0	27.1	685	604	487	297	190	120	83	73	60	39	623	503	307	196	124	86	75	62	40	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	33797	OR	17:15	2	17.4	16.2	22.0	27.1	689	594	482	297	189	117	84	75	60	39	610	495	305	194	120	86	77	62	40	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	33809	OL	09:40	1	14.9	17.1	16.6	26.7	696	568	445	257	165	117	90	82	66	44	577	452	261	168	119	91	83	67	45	3.9
Magumu - Thika	B20/D1315	22-Apr-21	6	33809	OL	09:40	2	14.9	17.1	16.6	26.8	698	554	436	253	163	114	88	81	64	44	561	442	256	165	115	89	82	65	45	4.0
Magumu - Thika	B20/D1315	22-Apr-21	6	33898	OR	17:14	1	17.2	16.0	22.0	27.2	700	714	575	350	225	135	97	82	66	44	721	581	354	227	136	98	83	67	44	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	33898	OR	17:14	2	17.2	16.0	22.0	27.3	701	706	569	348	224	135	93	82	66	43	712	574	351	226	136	94	83	67	43	3.5
Magumu - Thika	B20/D1315	22-Apr-21	6	33904	OL	09:41	1	15.0	17.3	16.6	26.8	713	864	701	403	251	150	111	98	80	55	857	695	400	249	149	110	97	79	55	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	33904	OL	09:41	2	15.0	17.3	16.6	27.2	713	859	696	403	251	151	111	98	80	54	852	690	400	249	150	110	97	79	54	3.2
Magumu - Thika	B20/D1315	22-Apr-21	6	33996	OR	17:13	1	17.4	16.4	22.0	27.2	687	603	453	260	165	114	82	73	58	36	621	466	268	170	117	84	75	60	37	3.8
Magumu - Thika	B20/D1315	22-Apr-21	6	33996	OR	17:13	2	17.4	16.4	22.0	27.1	682	588	444	257	163	114	82	72	57	35	610	460	266	169	118	85	75	59	36	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	34001	OL	09:42	1	14.9	17.2	16.6	26.5	701	638	538	350	236	145	100	88	71	47	643	543	353	238	146	101	89	72	47	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	34001	OL	09:42	2	14.9	17.1	16.6	26.5	703	628	532	347	233	143	98	88	70	46	632	535	349	234	144	99	89	70	46	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	34099	OR	17:12	1	17.9	16.9	22.0	26.9	698	528	409	240	153	109	81	73	59	38	535	414	243	155	110	82	74	60	38	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	34099	OR	17:12	2	17.9	16.9	22.0	27.1	697	523	407	240	154	110	81	73	59	38	531	413	243	156	112	82	74	60	39	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	34101	OL	09:43	1	14.8	17.1	16.6	2.3	701	601	454	269	182	128	95	83	66	42	606	458	271	184	129	96	84	67	42	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	34101	OL	09:43	2	14.9	17.2	16.6	26.5	699	586	444	266	180	126	95	83	67	43	593	449	269	182	127	96	84	68	43	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	34193	OR	17:11	1	18.0	16.9	22.0	27.4	707	707	525	272	162	108	75	66	52	32	707	525	272	162	108	75	66	52	32	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	34193	OR	17:11	2	18.0	16.9	22.0	27.3	699	692	514	269	160	105	74	66	52	32	700	520	272	162	106	75	67	53	32	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	34195	OL	09:43	1	14.8	17.0	16.6	26.6	702	553	441	263	176	130	99	90	72	47	557	444	265	177	131	100	91	73	47	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	34195	OL	09:43	2	14.8	17.0	16.6	26.2	695	540	431	260	175	128	98	90	72	47	549	438	264	178	130	100	92	73	48	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	34298	OR	17:11	1	17.7	16.7	22.0	27.2	694	587	461	266	167	109	80	71	58	38	598	470	271	170	111	81	72	59	39	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	34298	OR	17:11	2	17.8	16.6	22.0	27.2	694	582	457	266	167	114	80	71	58	38	593	466	271	170	116	81	72	59	39	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	34306	OL	09:44	1	14.5	16.8	16.6	27.1	717	789	605	345	217	136	100	88	71	47	778	597	340	214	134	99	87	70	46	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	34306	OL	09:44	2	14.5	16.8	16.6	27.1	713	775	598	344	217	136	99	88	70	47	768	593	341	215	135	98	87	69	47	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	34398	OR	17:09	1	18.3	17.0	22.0	27.0	687	537	431	269	178	118	82	72	56	36	553	444	277	183	121	84	74	58	37	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	34398	OR	17:09	2	18.3	17.0	22.0	27.2	688	532	428	268	178	115	82	70	55	35	547	440	275	183	118	84	72	57	36	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	34401	OL	09:45	1	14.9	17.0	16.6	26.4	705	670	542	345	240	155	109	94	76	51	672	544	346	241	155	109	94	76	51	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	34401	OL	09:45	2	14.9	17.0	16.6	26.6	700	660	533	341	237	153	108	93	75	50	667	538	344	239	155	109	94	76	51	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	34493	OR	17:08	1	18.3	16.6	22.0	27.0	686	584	458	261	160	108	79	69	55	34	602	472	269	165	111	81	71	57	35	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	34493	OR	17:08	2	18.3	16.6	22.0	26.9	690	577	456	261	161	109	80	71	57	35	591	467	267	165	112	82	73	58	36	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	34504	OL	09:46	1	15.0	17.1	16.6	26.6	717	739	576	311	188	117	88	78	62	40	729	568	307	185	115	87	77	61	39	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7																												

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	34703	OR	17:06	2	18.7	16.7	22.0	27.0	689	516	404	245	167	121	87	76	61	39	529	415	251	171	124	89	78	63	40	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	34798	OR	17:04	1	18.6	17.6	22.0	27.8	697	806	651	395	272	189	135	122	100	71	818	660	401	276	192	137	124	101	72	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	34798	OR	17:04	2	18.6	17.6	22.0	27.5	701	801	654	400	272	194	138	124	104	73	808	660	403	279	196	139	125	105	74	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	34801	OL	09:49	1	14.4	16.4	16.6	26.5	707	652	517	312	197	120	87	75	59	38	652	517	312	197	120	87	75	59	38	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	34801	OL	09:49	2	14.4	16.4	16.6	26.6	703	640	509	308	194	119	86	76	62	37	644	512	310	195	120	86	76	62	37	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	34900	OL	09:49	1	15.0	16.9	16.6	26.9	693	684	572	394	299	208	149	132	106	73	698	584	402	305	212	152	135	108	74	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	34900	OL	09:49	2	15.0	16.9	16.6	27.0	690	675	565	392	298	213	149	131	106	72	692	579	402	305	218	153	134	109	74	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	34900	OR	17:03	1	18.4	17.8	22.0	27.1	703	589	433	233	140	99	72	63	51	32	592	435	234	141	100	72	63	51	32	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	34900	OR	17:03	2	18.4	17.8	22.0	27.0	706	583	430	232	139	96	71	63	51	31	584	431	232	139	96	71	63	51	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	35007	OL	09:50	1	15.4	17.2	16.6	26.4	715	628	502	310	204	131	95	85	68	45	621	496	307	202	130	94	84	67	44	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35007	OL	09:50	2	15.4	17.2	16.6	26.5	717	618	495	308	203	128	94	84	67	44	609	488	304	200	126	93	83	66	43	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35008	OR	17:02	1	18.2	17.3	22.0	27.3	701	688	530	303	191	124	88	81	67	46	694	535	306	193	125	89	82	68	46	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	35008	OR	17:02	2	18.2	17.2	22.0	27.6	699	683	527	302	191	124	88	81	67	45	691	533	305	193	125	89	82	68	46	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	35095	OR	17:00	1	18.2	17.2	22.0	27.1	693	596	467	272	182	135	97	86	68	44	608	476	277	186	138	99	88	69	45	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	35095	OR	17:00	2	18.2	17.2	22.0	27.1	682	594	464	274	184	135	98	83	69	42	616	481	284	191	140	102	86	72	44	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35102	OL	09:51	1	15.2	17.1	16.6	27.9	698	1099	908	563	381	219	144	123	98	67	1113	920	570	386	222	146	125	99	68	2.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35102	OL	09:51	2	15.2	17.1	16.6	27.7	695	1078	893	557	377	216	143	122	96	66	1097	908	567	384	220	145	124	98	67	2.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35201	OR	16:59	1	18.1	17.2	22.0	27.9	689	776	596	354	224	136	92	81	67	44	796	612	363	230	140	94	83	69	45	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	35201	OR	16:59	2	18.1	17.2	22.0	27.6	692	771	594	355	225	137	93	82	67	44	788	607	363	230	140	95	84	68	45	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	35209	OL	09:52	1	15.2	17.1	16.6	26.4	701	566	462	288	204	144	104	93	75	49	571	466	290	206	145	105	94	76	49	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	35209	OL	09:52	2	15.2	17.1	16.6	26.4	701	562	460	286	203	143	103	92	74	48	567	464	288	205	144	104	93	75	48	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	35300	OR	16:58	1	17.9	16.7	22.0	27.3	695	631	482	273	165	111	77	67	55	35	642	490	278	168	113	78	68	56	36	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	35300	OR	16:58	2	17.9	16.7	22.0	27.3	701	627	480	273	166	110	78	67	55	35	632	484	275	167	111	79	68	55	35	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35303	OL	09:53	1	15.2	17.2	16.6	26.8	705	632	502	305	202	128	90	79	64	42	634	503	306	203	128	90	79	64	42	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35303	OL	09:53	2	15.2	17.2	16.6	26.7	703	627	501	305	202	129	91	79	64	42	631	504	307	203	130	92	79	64	42	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	35398	OR	16:57	1	17.8	16.7	22.0	27.4	689	716	597	419	315	217	148	129	104	72	735	613	430	323	223	152	132	107	74	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	35398	OR	16:57	2	17.8	16.7	22.0	27.4	680	710	593	416	313	216	147	131	97	72	738	617	433	325	225	153	136	101	75	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	35402	OL	09:54	1	14.8	16.8	25.3	27.5	715	1061	843	461	284	162	110	93	76	52	1049	834	456	281	160	109	92	75	51	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	35402	OL	09:54	2	14.8	16.8	25.3	27.3	714	1043	835	460	284	163	111	93	76	53	1033	827	455	281	161	110	92	75	52	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	35494	OR	16:56	1	18.1	16.8	22.0	26.9	687	478	388	240	157	106	77	66	53	33	492	399	247	162	109	79	68	55	34	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	35494	OR	16:56	2	18.1	16.8	22.0	2.4	692	477	388	241	158	108	76	66	53	33	487	396	246	161	110	78	67	54	34	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	35504	OL	09:54	1	15.0	16.6	25.3	26.8	699	704	553	354	256	168	115	99	79	53	712	559	358	259	170	116	100	80	54	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	35504	OL	09:54	2	15.0	16.6	25.3	26.7	698	694	545	351	254	167	114	98	78	52	703	552	356	257	169	115	99	79	53	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	35598	OL	09:55	1	15.1	16.8	25.3	26.3	709	491	382	226	145	96	73	63	51	33	490	381	225	145	96	73	63	51	33	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	35598	OL	09:55	2	15.1	16.8	25.3	26.4	704	483	379	225	145	96	72	63	51	33	485	381	226	146	96	72	63	51	33	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	35603	OR	16:55	1	18.1	17.0	22.0	27.9	692	1003	816	434	277	187	129	114	90	60	1025	834	443	283	191	132	116	92	61	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	35603	OR	16:55	2	18.0	17.0	22.0	28.2	693	989	811	435	278	187	129	116	88	61	1009	827	444	284	191	132	118	90	62	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	35688	OR	16:53	1	18.2	17.1	22.0	27.3	702	674	512	287	182	125	90	78	64	43	679	516	289	183	126	91	79	64	43	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	35688	OR	16:53	2	18.2	17.0	22.0	27.3	695	666	506	287	183	127	90	79	64	43	677	515	292	186	129	92	80	65	44	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	35710	OL	09:56	1	15.3	16.9	25.3	26.5	708	541	449	298	209	137	98	85	67	43	540	448	298	209	137	98	85	67	43	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	35710	OL	09:56	2	15.3	16.9	25.3	26.4	701	536	445	297	210	138	99	87	70	46	541	449	300	212	139	100	88	71	46	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	35802	OR	16:52	1	18.2	17.1	22.0	27.2	692	552	427	253	161	102	74	63	49	30	564	436	258	164	104	76	64	50	31	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	35802	OR	16:52	2	18.2	17.1	22.0	27.1	691	544	420	252	160	106	73	61	48	28	557	430	258	164	108	75	62	49	29	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	35808	OL	09:57	1	15.5	17.2	25.3	26.6	710	563	449	254	154	102	78	69	55	33	561	447	253	153	102	78	69	55	33	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	35808	OL	09:57	2	15.5	17.2	25.3	26.6	709	552	443	252	153	102	78	69	56	34	550	442	251	153	102	78	69	56	34	4.0



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	36081	OR	16:49	1	19.2	17.1	22.0	27.5	684	695	587	399	288	181	121	102	81	55	718	607	412	298	187	125	105	84	57	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36081	OR	16:49	2	19.1	17.1	22.0	27.3	695	699	593	406	294	185	124	105	84	57	711	603	413	299	188	126	107	85	58	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36110	OL	10:00	1	15.6	17.3	25.3	26.6	698	610	501	324	219	140	98	85	67	44	618	507	328	222	142	99	86	68	45	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	36110	OL	10:00	2	15.6	17.3	25.3	26.7	698	609	500	324	220	140	102	85	68	44	617	506	328	223	142	103	86	69	45	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	36196	OR	16:47	1	19.5	17.6	25.0	27.3	700	686	525	306	192	128	96	87	72	51	693	530	309	194	129	97	88	73	52	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36196	OR	16:47	2	19.5	17.6	25.0	27.4	693	671	516	302	190	126	95	88	72	51	685	526	308	194	129	97	90	73	52	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36202	OL	10:02	1	15.6	17.2	25.3	27.9	701	1168	923	549	354	204	133	111	87	64	1178	931	554	357	206	134	112	88	65	2.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36202	OL	10:02	2	15.6	17.2	25.3	27.9	699	1145	915	549	354	203	133	112	88	64	1158	925	555	358	205	135	113	89	65	2.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36293	OR	16:46	1	19.0	17.4	25.0	27.6	689	738	584	324	206	138	100	90	72	47	757	599	332	211	142	103	92	74	48	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	36293	OR	16:46	2	19.0	17.4	25.0	27.7	695	730	583	326	208	139	101	90	72	48	743	593	332	212	141	103	92	73	49	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	36302	OL	10:03	1	15.4	17.3	25.3	26.5	695	497	387	225	137	94	75	66	54	33	506	394	229	139	96	76	67	55	34	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	36302	OL	10:03	2	15.4	17.3	25.3	26.5	699	494	386	227	139	95	75	67	54	33	500	390	230	141	96	76	68	55	33	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	36398	OR	16:45	1	19.3	17.5	25.0	27.0	679	425	331	213	154	116	85	75	59	37	443	345	222	160	121	89	78	61	39	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36398	OR	16:45	2	19.3	17.5	25.0	27.2	684	422	330	213	153	118	85	75	59	37	436	341	220	158	122	88	78	61	38	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36401	OL	10:04	1	15.2	17.1	25.3	27.3	710	885	699	374	223	141	105	95	76	50	881	696	372	222	140	105	95	76	50	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	36401	OL	10:04	2	15.1	17.1	25.3	27.0	704	863	685	370	222	140	104	95	76	50	867	688	372	223	141	104	95	76	50	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	36504	OL	10:05	1	15.2	17.1	25.3	26.7	708	642	508	287	176	111	82	72	56	35	641	507	287	176	111	82	72	56	35	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36504	OL	10:05	2	15.3	17.1	25.3	26.8	702	630	499	284	176	112	83	73	57	35	634	503	286	177	113	84	74	57	35	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36504	OR	16:44	1	18.9	17.1	25.0	27.4	696	644	508	297	191	128	90	80	63	42	654	516	302	194	130	91	81	64	43	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36504	OR	16:44	2	18.9	17.1	25.0	27.5	700	639	508	297	192	130	90	79	63	41	645	513	300	194	131	91	80	64	41	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36598	OR	16:43	1	19.1	17.1	25.0	27.3	702	703	566	349	227	145	104	91	73	46	708	570	351	229	146	105	92	74	46	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	36598	OR	16:43	2	19.1	17.1	25.0	27.1	691	691	561	347	226	145	105	92	74	48	707	574	355	231	148	107	94	76	49	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	36603	OL	10:06	1	15.3	17.1	25.3	27.0	705	680	556	331	202	136	92	81	62	40	682	558	332	203	136	92	81	62	40	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36603	OL	10:06	2	15.3	17.1	25.3	2.4	703	667	548	329	201	132	91	81	64	41	671	551	331	202	133	92	81	64	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36701	OL	10:07	1	15.7	17.1	25.3	26.3	696	458	403	330	272	187	124	102	81	55	465	409	335	276	190	126	104	82	56	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36701	OL	10:07	2	15.7	17.1	25.3	26.5	692	452	399	327	269	185	123	101	81	55	462	408	334	275	189	126	103	83	56	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36706	OR	16:42	1	19.2	17.1	25.0	27.9	691	893	708	416	271	168	115	98	77	51	914	724	426	277	172	118	100	79	52	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	36706	OR	16:42	2	19.2	17.1	25.0	28.0	693	890	708	417	273	169	114	98	78	52	908	722	425	279	172	116	100	80	53	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	36803	OL	10:07	1	15.6	17.3	25.3	27.2	705	919	761	428	269	165	116	102	81	55	922	763	429	270	165	116	102	81	55	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	36803	OL	10:07	2	15.7	17.4	25.3	27.2	713	906	756	430	271	167	117	103	83	56	898	750	426	269	166	116	102	82	56	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	36803	OR	16:41	1	19.4	17.4	25.0	27.2	691	664	546	321	202	127	85	74	59	39	679	559	328	207	130	87	76	60	40	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36803	OR	16:41	2	19.4	17.4	25.0	27.2	695	657	542	321	203	126	85	75	60	39	668	551	327	207	128	86	76	61	40	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	36908	OR	16:40	1	19.4	17.6	25.0	27.3	692	541	430	249	153	107	80	75	58	38	553	439	254	156	109	82	77	59	39	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	36908	OR	16:40	2	19.4	17.6	25.0	27.1	691	529	425	246	152	107	80	72	58	38	541	435	252	156	109	82	74	59	39	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	36909	OL	10:08	1	15.8	17.5	25.3	26.7	705	666	540	325	209	126	89	77	60	38	668	542	326	210	126	89	77	60	38	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	36909	OL	10:08	2	15.8	17.5	25.3	26.6	707	658	539	326	211	127	89	77	61	39	658	539	326	211	127	89	77	61	39	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	37002	OR	16:39	1	19.4	17.5	25.0	27.3	697	525	434	280	192	134	97	86	69	44	533	440	284	195	136	98	87	70	45	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	37002	OR	16:39	2	19.4	17.5	25.0	26.9	700	519	431	279	190	133	96	84	67	42	524	435	282	192	134	97	85	68	42	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	37002	OR	16:38	1	19.4	17.6	25.0	26.9	690	532	434	278	191	133	97	86	66	44	545	445	285	196	136	99	88	68	45	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	37002	OR	16:38	2	19.4	17.6	25.0	27.2	697	531	435	280	193	135	98	88	69	44	539	441	284	196	137	99	89	70	45	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	37003	OL	10:09	1	16.0	17.6	25.3	26.4	719	637	483	257	153	107	81	72	58	40	626	475	253	150	105	80	71	57	39	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	37003	OL	10:09	2	16.0	17.6	25.3	26.7	715	633	480	256	153	107	81	72	58	39	626	475	253	151	106	80	71	57	39	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	37101	OL	10:10	1	16.0	17.6	25.3	26.6	697	587	463	291	200	134	98	85	68	44	595	470	295	203	136	99	86	69	45	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	37101	OL	10:10	2	16.1	17.6	25.3	26.7	694	580	460	291	200	134	97	85	68	44	591	469	296	204	137	99	87	69	45	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	37102	OR	16:37	1	19.3	17.3	25.0	27.2	684	401	311	178	115	92	70	62	48	29	414	321	184	119	95	72	64	50	30	4.7
Magumu - Thika	B20/D1315	22-Apr-21																													

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			7	37308	OL	10:12	2	15.9	17.3	25.3	26.6	695	545	440	288	198	135	97	82	65	40
Magumu - Thika	B20/D1315	22-Apr-21	7	37398	OR	16:34	1	18.8	16.9	25.0	27.3	704	622	501	297	183	117	82	71	57	37	625	503	298	184	117	82	71	57	37	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	37398	OR	16:34	2	18.8	16.9	25.0	26.9	691	613	497	296	184	117	82	72	57	37	627	509	303	188	120	84	74	58	38	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	37405	OL	10:13	1	16.1	17.2	25.3	27.5	715	1008	847	512	333	199	129	108	85	63	997	838	506	329	197	128	107	84	62	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	37405	OL	10:13	2	16.1	17.2	25.3	27.3	709	991	836	509	333	200	128	109	86	63	988	834	508	332	199	128	109	86	63	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	37498	OR	16:33	1	19.1	17.1	25.0	27.1	682	541	435	274	192	143	104	93	73	49	561	451	284	199	148	108	96	76	51	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	37498	OR	16:33	2	19.1	17.1	25.0	27.1	687	537	432	275	193	144	104	93	75	50	553	445	283	199	148	107	96	77	51	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	37501	OL	10:14	1	16.2	17.2	25.3	26.7	705	648	513	304	200	127	90	78	62	40	650	514	305	201	127	90	78	62	40	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	37501	OL	10:14	2	16.2	17.2	25.3	26.6	701	636	506	301	198	127	88	77	62	39	641	510	304	200	128	89	78	63	39	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	37605	OR	16:32	1	19.3	17.1	25.0	27.2	683	554	461	313	222	147	100	89	71	47	573	477	324	230	152	104	92	73	49	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	37605	OR	16:32	2	19.3	17.0	25.0	27.2	685	549	458	311	221	146	101	87	70	48	567	473	321	228	151	104	90	72	50	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	37613	OL	10:15	1	15.9	17.0	25.3	26.9	706	698	585	373	259	164	115	101	81	55	699	586	374	259	164	115	101	81	55	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	37613	OL	10:15	2	15.9	17.0	25.3	26.7	704	687	578	369	256	162	113	99	79	52	690	580	371	257	163	113	99	79	52	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	37703	OL	10:15	1	15.8	16.9	25.3	26.4	708	516	438	300	221	151	107	91	68	41	515	437	300	221	151	107	91	68	41	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	37703	OL	10:15	2	15.7	16.9	25.3	26.3	699	505	432	298	219	150	105	90	68	40	511	437	301	222	152	106	91	69	40	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	37703	OR	16:30	1	19.2	17.3	25.0	27.0	695	619	504	317	206	127	87	75	60	38	630	513	322	210	129	89	76	61	39	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	37703	OR	16:30	2	19.2	17.3	25.0	27.1	687	610	499	314	203	122	86	75	59	38	628	514	323	209	126	89	77	61	39	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	37800	OL	10:16	1	15.6	16.9	25.3	26.4	716	520	415	250	162	101	74	64	51	31	513	410	247	160	100	73	63	50	31	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	37800	OL	10:16	2	15.7	16.9	25.3	2.5	710	509	408	248	160	99	73	64	50	30	507	406	247	159	99	73	64	50	30	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	37800	OL	10:17	1	15.4	16.9	25.3	26.1	709	505	408	249	160	100	73	63	51	31	504	407	248	160	100	73	63	51	31	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	37800	OL	10:17	2	15.4	16.9	25.3	26.4	709	499	405	248	159	98	73	63	50	30	498	404	247	159	98	73	63	50	30	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	37806	OR	16:28	1	18.7	17.1	25.0	26.9	690	488	401	260	174	112	76	65	50	30	500	411	266	178	115	78	67	51	31	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	37806	OR	16:28	2	18.7	17.1	25.0	27.0	692	484	397	259	173	111	76	64	49	30	494	406	265	177	113	78	65	50	31	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	37897	OR	16:27	1	18.2	16.4	25.0	27.3	689	427	345	216	147	105	77	69	53	32	438	354	222	151	108	79	71	54	33	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	37897	OR	16:27	2	18.2	16.4	25.0	27.0	693	420	339	214	144	104	77	68	53	32	428	346	218	147	106	79	69	54	33	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	37899	OL	10:18	1	15.5	16.9	25.3	26.3	701	400	303	188	129	92	70	61	48	29	403	306	190	130	93	71	62	48	29	4.8
Magumu - Thika	B20/D1315	22-Apr-21	7	37899	OL	10:18	2	15.5	17.0	25.3	26.2	703	393	301	188	129	91	70	61	49	29	395	303	189	130	92	70	61	49	29	4.9
Magumu - Thika	B20/D1315	22-Apr-21	7	37993	OR	16:26	1	18.2	16.3	25.0	27.6	685	630	508	317	211	143	102	90	71	49	650	524	327	218	148	105	93	73	51	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	37993	OR	16:26	2	18.2	16.4	25.0	27.5	688	621	504	317	212	144	102	90	75	50	638	518	326	218	148	105	92	77	51	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	38007	OL	10:19	1	15.6	17.0	25.3	26.3	706	435	376	253	174	111	79	69	54	32	436	377	253	174	111	79	69	54	32	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	38007	OL	10:19	2	15.7	17.0	25.3	26.5	708	431	373	251	173	111	79	69	54	31	430	372	251	173	111	79	69	54	31	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	38102	OR	16:25	1	18.4	16.5	25.0	27.3	700	663	533	306	182	106	76	65	54	33	670	538	309	184	107	77	66	55	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	38102	OR	16:25	2	18.5	16.5	25.0	27.0	699	653	526	304	181	108	75	65	54	32	660	532	307	183	109	76	66	55	32	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	38103	OL	10:19	1	16.1	17.1	25.3	26.1	684	409	309	191	128	100	79	72	57	35	423	319	197	132	103	82	74	59	36	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	38103	OL	10:19	2	16.1	17.1	25.3	26.5	689	411	311	192	128	99	79	71	57	35	422	319	197	131	102	81	73	58	36	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	38197	OR	16:24	1	18.7	16.5	25.0	27.1	694	571	449	268	181	133	96	85	69	45	582	457	273	184	135	98	87	70	46	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	38197	OR	16:24	2	18.7	16.5	25.0	27.1	688	558	442	265	179	135	96	85	69	45	573	454	272	184	139	99	87	71	46	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	38206	OL	10:20	1	16.5	17.1	25.3	27.6	724	974	757	456	290	161	109	90	71	45	951	739	445	283	157	106	88	69	44	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	38206	OL	10:20	2	16.5	17.1	25.3	27.4	738	968	754	457	292	159	109	90	71	44	927	722	438	280	152	104	86	68	42	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	38281	OR	16:23	1	19.3	16.6	25.0	27.2	709	653	531	341	236	151	101	88	69	45	651	530	340	235	151	101	88	69	45	3.7
Magumu - Thika																															

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	38601	0L	10:23	1	16.2	17.7	25.3	26.6	696	514	396	208	125	94	73	65	52	32	522	402	211	127	95	74	66	53	33	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	38601	0L	10:23	2	16.2	17.7	25.3	26.5	695	511	395	210	127	95	74	65	52	32	520	402	214	129	97	75	66	53	33	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	38698	0R	16:14	1	20.3	17.8	25.0	27.1	688	590	471	297	194	121	84	72	57	34	606	484	305	199	124	86	74	59	35	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	38698	0R	16:14	2	20.3	17.8	25.0	27.1	694	592	471	298	195	122	85	72	57	35	603	480	304	199	124	87	73	58	36	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	38700	0L	10:24	1	16.4	17.7	25.3	26.4	693	504	417	254	170	119	90	80	64	41	514	425	259	173	121	92	82	65	42	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	38700	0L	10:24	2	16.4	17.7	25.3	26.5	706	498	414	253	169	120	90	80	64	41	499	415	253	169	120	90	80	64	41	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	38801	0R	16:12	1	20.4	17.8	25.0	27.1	695	551	432	268	170	107	75	63	49	28	561	439	273	173	109	76	64	50	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	38801	0R	16:12	2	20.3	17.8	25.0	5.8	698	551	433	269	172	106	75	63	48	27	558	439	272	174	107	76	64	49	27	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	38801	0R	16:13	1	20.3	17.6	25.0	27.0	687	546	430	268	171	104	76	64	49	28	562	443	276	176	107	78	66	50	29	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	38801	0R	16:13	2	20.3	17.6	25.0	26.9	696	544	429	269	171	108	76	63	49	27	553	436	273	174	110	77	64	50	27	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	38804	0L	10:25	1	16.7	18.0	25.3	27.3	706	818	667	415	271	150	99	83	67	43	819	668	416	271	150	99	83	67	43	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	38804	0L	10:25	2	16.7	18.1	25.3	27.0	709	810	663	415	272	151	99	84	68	44	808	661	414	271	151	99	84	68	44	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	38903	0R	16:11	1	20.6	17.9	25.0	27.1	684	528	413	236	149	103	74	66	52	32	546	427	244	154	106	76	68	54	33	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	38903	0R	16:11	2	20.5	17.9	25.0	27.0	683	520	410	236	148	104	75	66	53	32	538	424	244	153	108	78	68	55	33	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	38905	0L	10:26	1	16.8	18.1	25.3	1.4	709	612	494	299	188	118	86	77	61	38	610	493	298	187	118	86	77	61	38	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	38905	0L	10:26	2	16.8	18.2	25.3	26.6	710	607	491	298	187	117	86	76	62	38	604	489	297	186	117	86	76	62	38	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	38995	0R	16:10	1	20.2	17.8	25.0	27.1	694	461	352	197	109	76	60	54	44	25	470	359	201	111	77	61	55	45	25	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	38995	0R	16:10	2	20.2	17.7	25.0	26.7	686	452	350	197	109	76	60	55	44	25	466	361	203	112	78	62	57	45	26	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	39000	0L	10:26	1	16.9	18.2	25.3	27.1	704	675	520	273	165	111	83	72	57	33	678	522	274	166	111	83	72	57	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	39000	0L	10:26	2	16.9	18.2	25.3	26.9	703	661	513	272	165	113	83	73	57	34	665	516	274	166	114	83	73	57	34	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	39093	0R	16:08	1	19.8	17.6	25.0	27.1	697	578	465	288	183	108	74	63	52	34	586	472	292	186	110	75	64	53	34	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	39093	0R	16:08	2	19.8	17.6	25.0	2.0	694	569	461	286	183	109	74	63	52	34	580	470	291	186	111	75	64	53	35	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39093	0R	16:09	1	19.8	17.5	25.0	27.1	690	567	458	286	183	109	75	66	53	35	581	469	293	188	112	77	68	54	36	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	39093	0R	16:09	2	19.8	17.4	25.0	27.1	694	564	458	286	183	109	74	65	52	33	575	467	291	186	111	75	66	53	34	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39104	0L	10:27	1	16.6	18.1	25.3	26.4	694	367	288	179	113	78	61	54	43	24	374	293	182	115	79	62	55	44	24	5.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39104	0L	10:27	2	16.6	18.1	25.3	26.0	702	367	289	180	114	78	61	54	43	24	370	291	181	115	79	61	54	43	24	5.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39194	0R	16:07	1	19.5	17.6	25.0	26.8	686	404	322	201	135	99	73	65	52	31	416	332	207	139	102	75	67	54	32	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	39194	0R	16:07	2	19.6	17.6	25.0	26.8	675	404	322	202	136	100	73	64	52	31	423	337	212	142	105	76	67	54	32	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	39202	0L	10:28	1	16.2	17.8	25.3	26.7	716	659	521	292	172	106	76	67	54	35	651	514	288	170	105	75	66	53	35	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	39202	0L	10:28	2	16.3	17.8	25.3	26.5	717	653	518	292	172	104	76	68	55	35	644	511	288	170	103	75	67	54	35	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	39300	0R	16:06	1	20.1	17.7	25.0	27.0	694	548	411	224	136	102	76	68	55	35	558	419	228	139	104	77	69	56	36	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39300	0R	16:06	2	20.1	17.7	25.0	26.9	685	538	408	224	137	100	76	69	56	35	555	421	231	141	103	78	71	58	36	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39302	0L	10:29	1	16.7	18.1	25.3	26.3	701	454	361	197	117	85	68	61	49	30	458	364	199	118	86	69	62	49	30	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	39302	0L	10:29	2	16.8	18.1	25.3	26.4	697	453	360	198	117	86	68	61	49	30	459	365	201	119	87	69	62	50	30	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	39397	0R	16:05	1	19.8	17.8	25.0	27.6	681	828	664	403	273	175	117	100	78	51	860	689	418	283	182	121	104	81	53	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	39397	0R	16:05	2	19.8	17.8	25.0	27.6	692	816	658	402	274	177	117	100	79	52	834	672	411	280	181	120	102	81	53	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	39405	0L	10:30	1	17.0	18.3	25.3	27.1	716	727	577	344	220	137	98	86	69	46	718	570	340	217	135	97	85	68	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	39405	0L	10:30	2	17.0	18.3	25.3	26.9	718	716	571	344	221	138	98	86	69	46	705	562	339	218	136	96	85	68	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	39499	0R	16:05	1	20.1	17.7	25.0	28.0	694	1002	831	512	335	184	113	92	72	47	1021	847	522	341	187	115	94	73	48	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	39499	0R	16:05	2	20.1	17.8	25.0	27.8	692	986	819	508	334	184	113	92	72	47	1007	837	519	341	188	115	94	74	48	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	39503	0L	10:30	1	16.7	18.2	25.3	27.0	701	763	652	450	326	197	132	112	89	62	770	658	454	329	199	133	113	90	63	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	39503	0L	10:30	2	16.7	18.2	25.3	26.8	699	757	648	449	325	197	132	112	88	62	766	655	454	329	199	134	113	89	63	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	39595	0R	16:04	1	20.3	17.5	25.0	27.8	689	870	687	388	242	154	106	91	73	49	893	705	398	248	158	109	93	75	50	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	39595	0R	16:04	2	20.3	17.5	25.0	28.2	695	860	689	392	244	154	106	90	74	50	875	701	399	248	157	108	92	75	51	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	39605	0L	10:31	1	17.4	18.8	25.3	26.9	704	699	568	363	246	149	104	90	71	47	702	570	365	247	150	104	90	71	47	3.6
Magumu - Thika	B20/D1315	2																													

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	39803	0L	10:33	2	17.0	18.5	25.3	27.3	707	967	792	509	342	181	113	92	72	49	967	792	509	342	181	113	92	72	49	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39900	0R	16:01	1	19.6	17.6	25.0	28.0	704	982	798	480	289	154	101	84	66	43	986	801	482	290	155	101	84	66	43	2.9
Magumu - Thika	B20/D1315	22-Apr-21	7	39900	0R	16:01	2	19.6	17.6	25.0	28.0	703	969	794	481	290	152	101	84	66	43	975	799	484	292	153	102	84	66	43	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	39901	0L	10:33	1	17.1	18.7	25.3	27.8	707	1098	901	542	340	190	121	103	82	57	1098	901	542	340	190	121	103	82	57	2.8
Magumu - Thika	B20/D1315	22-Apr-21	7	39901	0L	10:33	2	17.1	18.7	25.3	27.7	708	1095	899	546	344	192	124	104	83	56	1093	898	545	344	192	124	104	83	56	2.8
Magumu - Thika	B20/D1315	22-Apr-21	7	39991	0R	16:00	1	19.0	17.4	25.0	27.5	714	718	566	324	190	109	74	64	50	30	711	560	321	188	108	73	63	50	30	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	39991	0R	16:00	2	19.1	17.4	25.0	27.4	717	710	561	323	190	106	74	64	50	30	700	553	318	187	105	73	63	49	30	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	39997	0L	10:34	1	17.0	18.4	25.3	27.2	714	859	685	417	267	155	104	87	68	43	851	678	413	264	153	103	86	67	43	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	39997	0L	10:34	2	17.0	18.4	25.3	27.1	718	848	681	416	267	154	103	86	66	43	835	671	410	263	152	101	85	65	42	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40094	0R	15:59	1	19.3	17.7	25.0	27.2	683	435	342	205	125	83	62	54	41	24	450	354	212	129	86	64	56	42	25	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	40094	0R	15:59	2	19.4	17.7	25.0	26.9	686	431	341	206	126	85	63	54	42	25	444	351	212	130	88	65	56	43	26	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	40107	0L	10:35	1	17.4	18.7	25.3	26.8	722	598	466	253	151	102	72	63	51	32	586	456	248	148	100	71	62	50	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	40107	0L	10:35	2	17.5	18.7	25.3	26.7	724	594	465	253	152	101	73	63	51	32	580	454	247	148	99	71	62	50	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	40194	0R	15:58	1	20.5	18.1	25.0	27.1	679	430	328	182	119	99	77	71	57	36	448	342	190	124	103	80	74	59	37	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	40194	0R	15:58	2	20.5	18.1	25.0	26.9	676	422	325	180	118	98	76	71	57	35	441	340	188	123	102	79	74	60	37	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	40204	0L	10:36	1	17.1	18.6	25.3	26.4	706	554	435	252	162	109	78	65	51	32	555	436	252	162	109	78	65	51	32	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	40204	0L	10:36	2	17.1	18.6	25.3	26.3	698	549	428	248	160	107	77	65	50	31	556	434	251	162	108	78	66	51	31	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	40298	0R	15:57	1	20.0	17.9	25.0	29.2	673	491	388	214	127	93	72	64	51	30	516	408	225	133	98	76	67	54	32	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40298	0R	15:57	2	20.0	17.9	25.0	27.1	672	481	380	211	126	93	73	64	52	31	506	400	222	133	98	77	67	55	33	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40301	0L	10:37	1	17.6	18.7	25.3	26.9	697	473	378	231	159	122	95	85	69	46	480	383	234	161	124	96	86	70	47	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	40301	0L	10:37	2	17.6	18.7	25.3	26.9	695	471	376	232	160	122	96	86	70	46	479	382	236	163	124	98	87	71	47	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	40403	0R	15:56	1	20.0	17.8	25.0	26.9	698	536	424	245	144	89	62	55	42	25	543	429	248	146	90	63	56	43	25	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	40403	0R	15:56	2	20.0	17.8	25.0	26.9	694	530	422	245	144	88	62	53	42	24	540	430	250	147	90	63	54	43	24	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	40406	0L	10:38	1	17.0	18.3	25.3	26.6	694	531	413	245	156	107	79	69	55	37	541	421	250	159	109	80	70	56	38	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	40406	0L	10:38	2	17.0	18.3	25.3	26.5	706	523	409	244	156	107	79	73	56	35	524	410	244	156	107	79	73	56	35	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40497	0R	15:55	1	19.2	17.4	25.0	27.0	693	565	435	253	154	98	69	58	45	26	576	444	258	157	100	70	59	46	27	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	40497	0R	15:55	2	19.3	17.4	25.0	27.0	697	558	430	252	155	96	69	58	45	26	566	436	256	157	97	70	59	46	26	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	40502	0L	10:38	1	17.7	18.6	25.3	26.5	706	572	477	309	206	127	88	76	60	40	573	478	309	206	127	88	76	60	40	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	40502	0L	10:38	2	17.7	18.6	25.3	26.6	717	572	476	309	206	126	88	76	60	40	564	469	305	203	124	87	75	59	39	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	40593	0R	15:54	1	19.3	17.6	25.0	27.3	689	822	675	430	290	179	116	96	75	51	843	693	441	298	184	119	99	77	52	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40593	0R	15:54	2	19.3	17.6	25.0	27.6	695	814	670	430	291	174	115	96	74	51	828	682	437	296	177	117	98	75	52	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	40602	0L	10:39	1	17.6	18.6	25.3	26.7	705	556	435	245	144	87	68	62	51	32	558	436	246	144	87	68	62	51	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	40602	0L	10:39	2	17.7	18.6	25.3	26.4	698	546	430	244	143	86	68	62	51	32	553	436	247	145	87	69	63	52	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	40699	0L	10:40	1	17.9	18.7	25.3	27.4	700	862	708	421	280	172	112	92	73	46	871	715	425	283	174	113	93	74	46	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40699	0L	10:40	2	17.8	18.7	25.3	27.4	698	850	698	419	280	172	114	93	73	47	861	707	424	284	174	115	94	74	48	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40706	0R	15:53	1	20.4	18.3	25.0	27.1	686	527	406	258	174	116	80	70	53	33	543	418	266	179	120	82	72	55	34	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	40706	0R	15:53	2	20.4	18.3	25.0	27.1	697	520	402	256	173	115	80	68	56	33	527	408	260	175	117	81	69	57	33	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	40801	0L	10:41	1	18.1	18.6	25.3	26.8	716	711	522	283	171	114	81	70	53	33	702	515	279	169	113	80	69	52	33	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	40801	0L	10:41	2	18.1	18.6	25.3	26.8	717	706	523	285	173	116	82	71	54	34	696	516	281	171	114	81	70	53	34	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	40809	0R	15:52	1	20.3	17.8	25.0	27.7	709	738	624	408	270	158	105	88	69	43	736	622	407	269	158	105	88	69	43	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	40809	0R	15:52	2	20.3	17.8	25.0	27.5	703	735	623	408	272	159	106	89	69	44	739	627	410	274	160	107	90	69	44	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	40892	0R	15:51	1	20.0	17.3	25.0	27.1	692	607	476	296	194	121	84	73	59	36	620	486	302	198	124	86	75	60	37	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	40892	0R	15:51	2	20.0	17.3	25.0	27.2	690	599	472	294	193	122	84	74	58	36	614	484	301	198	125	86	76	59	37	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	40903	0L	10:42	1	17.8	18.6	25.3	27.0	708	679	550	344	234	156	107	95	78	54	678	549	344	234	156	107	95	78	54	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	40903	0L	10:42	2	17.8	18.6	25.3	26.7	710	674	549	346	240	158	111	100	82	59	671	547	345	239	157	111	100	82	59	3.7
Magumu - Thika	B20/D1																														



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	41101	OR	15:48	1	20.2	18.1	25.0	27.6	704	880	723	439	279	155	95	80	65	43	884	726	441	280	156	95	80	65	43	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	41101	OR	15:48	2	20.2	18.1	25.0	27.7	712	877	722	440	280	156	95	80	64	43	871	717	437	278	155	94	79	64	43	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	41199	OR	15:47	1	21.0	18.4	25.0	26.9	681	495	368	203	121	90	70	62	49	30	514	382	211	126	93	73	64	51	31	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	41199	OR	15:47	2	21.0	18.5	25.0	26.8	677	491	367	204	121	89	69	62	49	30	513	383	213	126	93	72	65	51	31	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	41201	OL	10:44	1	18.4	19.6	25.3	27.3	706	924	747	460	298	161	102	83	65	43	925	748	461	298	161	102	83	65	43	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	41201	OL	10:44	2	18.4	19.6	25.3	27.5	719	924	750	465	303	165	103	85	66	44	909	737	457	298	162	101	84	65	43	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	41299	OR	15:46	1	20.6	18.0	25.0	27.0	694	440	320	178	104	70	53	46	36	20	448	326	181	106	71	54	47	37	20	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	41299	OR	15:46	2	20.6	18.0	25.0	26.8	691	436	319	179	105	71	53	46	36	21	446	326	183	107	73	54	47	37	21	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	41302	OL	10:45	1	18.4	19.5	25.3	26.5	698	443	334	206	136	97	71	63	49	30	449	338	209	138	98	72	64	50	30	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	41302	OL	10:45	2	18.3	19.6	25.3	26.4	698	435	331	205	136	98	72	63	48	30	441	335	208	138	99	73	64	49	30	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	41399	OR	15:45	1	20.7	17.7	25.0	27.3	691	582	444	243	144	96	69	60	46	27	595	454	249	147	98	71	61	47	28	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	41399	OR	15:45	2	20.7	17.7	25.0	27.3	689	576	440	241	144	96	68	59	46	27	591	451	247	148	99	70	61	47	28	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	41404	OL	10:46	1	18.4	19.5	25.3	26.8	716	660	512	286	169	94	68	57	45	26	652	506	282	167	93	67	56	44	26	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	41404	OL	10:46	2	18.4	19.5	25.3	26.7	713	650	503	282	168	93	67	57	45	26	645	499	280	167	92	66	57	45	26	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	41494	OR	15:44	1	20.6	17.6	25.0	27.1	689	518	378	195	110	88	71	67	56	37	532	388	200	113	90	73	69	57	38	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	41494	OR	15:44	2	20.6	17.6	25.0	27.2	689	513	376	195	111	88	71	63	56	37	526	386	200	114	90	73	65	57	38	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	41500	OL	10:47	1	18.4	19.5	25.3	26.6	710	611	491	292	174	106	75	65	51	30	608	489	291	173	106	75	65	51	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	41500	OL	10:47	2	18.5	19.6	25.3	26.8	708	602	485	290	173	103	74	65	51	30	601	484	290	173	103	74	65	51	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	41500	OR	15:43	1	20.6	17.9	25.0	27.4	704	591	440	227	121	89	70	70	58	39	594	442	228	122	89	70	70	58	39	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	41500	OR	15:43	2	20.6	17.9	25.0	27.4	699	581	433	224	120	87	73	69	58	36	588	438	227	121	88	74	70	59	36	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	41597	OR	15:42	1	20.3	17.9	25.0	27.3	688	552	443	248	144	97	75	67	54	33	567	455	255	148	100	77	69	55	34	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	41597	OR	15:42	2	20.3	18.0	25.0	27.0	684	538	435	245	143	95	75	66	58	34	556	450	253	148	98	78	68	60	35	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	41611	OL	10:47	1	18.0	19.4	25.3	26.6	721	546	415	233	138	96	77	72	59	38	535	407	228	135	94	76	71	58	37	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	41611	OL	10:47	2	18.1	19.4	25.3	26.7	718	535	409	231	137	94	77	72	58	37	527	403	227	135	93	76	71	57	36	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	41696	OL	10:48	1	18.3	19.3	25.3	26.7	718	695	523	281	169	114	85	74	59	38	684	515	277	166	112	84	73	58	37	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	41696	OL	10:48	2	18.3	19.3	25.3	26.9	713	675	517	280	169	113	85	74	59	38	669	513	278	168	112	84	73	59	38	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	41704	OR	15:41	1	20.6	17.8	25.0	27.5	700	687	537	313	192	107	72	60	47	28	694	542	316	194	108	73	61	47	28	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	41704	OR	15:41	2	20.6	17.8	25.0	27.2	696	676	533	313	193	108	72	61	47	30	687	541	318	196	110	73	62	48	30	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	41799	OR	15:40	1	20.5	17.8	25.0	27.3	697	656	495	262	162	115	84	76	62	40	665	502	266	164	117	85	77	63	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	41799	OR	15:40	2	20.5	17.8	25.0	27.6	706	648	493	262	164	115	84	76	62	40	649	494	262	164	115	84	76	62	40	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	41801	OL	10:49	1	18.6	19.6	25.3	26.8	723	753	594	331	189	101	73	63	49	30	736	581	324	185	99	71	62	48	29	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	41801	OL	10:49	2	18.7	19.7	25.3	26.9	726	744	589	330	189	99	73	63	49	30	725	574	321	184	96	71	61	48	29	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	41898	OL	10:50	1	18.1	19.3	25.3	26.8	707	584	449	245	167	122	92	83	67	44	584	449	245	167	122	92	83	67	44	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	41898	OL	10:50	2	18.1	19.3	25.3	26.9	703	571	443	244	165	121	91	82	66	43	574	446	245	166	122	92	82	66	43	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	41899	OR	15:39	1	20.3	17.4	25.0	27.4	701	654	478	274	169	115	84	75	60	39	660	482	276	170	116	85	76	61	39	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	41899	OR	15:39	2	20.3	17.4	25.0	27.4	711	644	478	277	173	114	85	76	61	40	640	475	275	172	113	85	76	61	40	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	42001	OL	10:51	1	18.5	19.3	25.3	26.9	718	647	505	274	164	111	85	79	63	40	637	497	270	161	109	84	78	62	39	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	42001	OL	10:51	2	18.5	19.3	25.3	27.0	722	636	495	271	163	109	85	77	62	40	623	485	265	160	107	83	75	61	39	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	42009	OR	15:33	1	20.6	18.8	25.0	27.7	681	754	614	394	266	159	107	93	74	48	783	637	409	276	165	111	97	77	50	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	42009	OR	15:33	2	20.6	18.8	25.0	27.6	689	750	612	395	268	159	107	93	74	49	770	628	405	275	163	110	95	76	50	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	42101	OL	10:52	1	19.2	19.9	25.3	27.4	703	805	618	391	274	175	118	98	76	50	810	622	393	276	176	119	99	76	50	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	42101	OL	10:52	2	19.2	20.0	25.3	27.2	703	792	615	391	276	177	119	98	75	50	797	618	393	278	178	120	99	75	50	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	42108	OR	15:33	1	20.2	18.6	25.0	27.9	696	711	577	343	221	144	105	91	74	49	722	586	348	224	146	107	92	75	50	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	42108	OR	15:33	2	20.3	18.6	25.0	27.7	692	700	570	341	221	149	105	92	73	48	715	582	348	226	152	107	94	75	49	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	42205	OR	15:31	1	20.2	18.7	25.0	27.7	687	661	470	264	170	121	87	76	61	38	680	484	272	175	125	90	78	63	39	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	42205	OR	15:31	2	20.2	18.8	25.0	2																				

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	42404	OL	10:54	2	18.7	19.8	25.3	26.6	705	629	498	307	200	123	85	73	58	36	631	499	308	201	123	85	73	58	36	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	42407	OR	15:29	1	20.1	18.5	25.0	27.7	686	710	551	320	205	134	94	82	66	44	732	568	330	211	138	97	85	68	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	42407	OR	15:29	2	20.1	18.6	25.0	27.8	688	700	548	320	205	132	93	82	66	44	719	563	329	211	136	96	84	68	45	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	42495	OR	15:28	1	19.7	18.2	25.0	27.5	675	699	563	348	247	173	122	105	84	56	732	590	364	259	181	128	110	88	59	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	42495	OR	15:28	2	19.7	18.2	25.0	27.7	682	692	562	349	247	173	119	103	82	55	717	583	362	256	179	123	107	85	57	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	42502	OL	10:55	1	18.3	19.5	25.3	26.7	697	582	459	295	204	133	94	82	65	42	590	466	299	207	135	95	83	66	43	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	42502	OL	10:55	2	18.3	19.5	25.3	26.6	701	578	458	296	205	134	95	83	63	44	583	462	299	207	135	96	84	64	44	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	42598	OL	10:56	1	18.4	19.5	25.3	27.5	710	983	779	498	337	191	123	101	81	53	979	776	496	336	190	122	101	81	53	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	42598	OL	10:56	2	18.5	19.5	25.3	27.5	713	971	770	495	335	190	122	101	81	53	963	764	491	332	188	121	100	80	53	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	42600	OR	15:27	1	19.0	17.6	25.0	27.2	672	623	474	273	167	120	90	80	65	42	655	499	287	176	126	95	84	68	44	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	42600	OR	15:27	2	19.1	17.7	25.0	27.3	680	614	469	273	167	118	90	81	67	42	638	488	284	174	123	94	84	70	44	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	42691	OR	15:26	1	19.4	18.0	25.0	27.6	691	494	363	196	110	80	66	60	47	29	505	371	201	113	82	68	61	48	30	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	42691	OR	15:26	2	19.4	18.0	25.0	27.0	695	488	356	195	110	82	66	59	47	29	496	362	198	112	83	67	60	48	30	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	42705	OL	10:57	1	18.7	19.5	25.3	27.2	710	714	584	329	197	137	102	92	76	50	711	582	328	196	136	102	92	76	50	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	42705	OL	10:57	2	18.7	19.6	25.3	26.9	711	699	572	327	197	137	102	92	77	50	695	569	325	196	136	101	91	77	50	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	42799	OR	15:25	1	19.8	18.1	25.0	27.3	701	569	425	230	129	83	61	53	42	26	574	429	232	130	84	62	53	42	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	42799	OR	15:25	2	19.8	18.1	25.0	27.1	698	558	419	228	128	80	61	52	42	25	565	424	231	130	81	62	53	43	25	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	42802	OL	10:58	1	19.4	19.6	25.3	26.6	716	553	409	217	119	75	62	56	46	28	546	404	214	118	74	61	55	45	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	42802	OL	10:58	2	19.4	19.6	25.3	26.7	715	543	401	214	118	75	61	56	45	27	537	397	212	117	74	60	55	44	27	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	42900	OR	15:24	1	20.0	18.5	25.0	27.2	693	628	489	312	210	129	87	74	60	39	641	499	318	214	132	89	75	61	40	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	42900	OR	15:24	2	20.0	18.4	25.0	27.1	686	620	483	310	210	129	85	73	57	36	639	498	319	216	133	88	75	59	37	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	42903	OL	10:59	1	19.7	19.8	25.3	26.9	712	632	502	277	163	99	71	66	53	32	628	498	275	162	98	71	66	53	32	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	42903	OL	10:59	2	19.7	19.9	25.3	26.8	710	621	494	275	162	98	71	66	53	32	618	492	274	161	98	71	66	53	32	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	43000	OR	15:23	1	20.0	18.6	25.0	27.1	695	592	451	253	148	89	62	54	42	25	602	459	257	151	91	63	55	43	25	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	43000	OR	15:23	2	20.1	18.6	25.0	27.1	698	583	447	253	148	90	63	54	42	25	591	453	256	150	91	64	55	43	25	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	43001	OL	11:00	1	19.1	19.8	25.3	26.5	690	497	412	256	166	109	81	73	58	36	509	422	262	170	112	83	75	59	37	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	43001	OL	11:00	2	19.0	19.8	25.3	26.5	693	494	409	257	168	109	82	71	58	36	504	417	262	171	111	84	72	59	37	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	43099	OR	15:22	1	20.1	18.8	25.0	27.6	707	588	411	211	112	86	68	63	51	31	588	411	211	112	86	68	63	51	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	43099	OR	15:22	2	20.2	18.8	25.0	27.2	705	575	406	210	114	87	68	63	51	32	577	407	211	114	87	68	63	51	32	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	43102	OL	11:01	1	19.0	19.4	25.3	26.5	708	524	398	221	132	86	65	56	44	28	523	397	221	132	86	65	56	44	28	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	43102	OL	11:01	2	19.0	19.5	25.3	26.5	707	517	395	220	133	89	66	55	44	27	517	395	220	133	89	66	55	44	27	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	43204	OR	15:21	1	20.5	19.0	25.0	27.0	672	428	333	201	128	91	71	65	52	32	450	350	211	135	96	75	68	55	34	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	43204	OR	15:21	2	20.5	19.0	25.0	27.1	676	423	329	200	127	91	70	64	51	31	442	344	209	133	95	73	67	53	32	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	43206	OL	11:01	1	18.8	19.4	25.3	26.7	698	472	372	226	146	107	85	78	63	41	478	377	229	148	108	86	79	64	42	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	43206	OL	11:01	2	18.9	19.4	25.3	26.9	696	463	366	225	145	106	85	79	64	41	470	372	229	147	108	86	80	65	42	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	43300	OR	15:20	1	21.1	19.2	25.0	27.4	695	589	468	274	169	106	73	62	49	30	599	476	279	172	108	74	63	50	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	43300	OR	15:20	2	21.1	19.2	25.0	27.1	689	571	457	271	168	104	73	66	50	30	586	469	278	172	107	75	68	51	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	43303	OL	11:02	1	19.5	19.7	25.3	29.3	684	470	369	221	145	111	85	77	62	40	486	381	228	150	115	88	80	64	41	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	43303	OL	11:02	2	19.5	19.8	25.3	26.7	684	459	363	219	143	108	83	74	60	38	474	375	226	148	112	86	76	62	39	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	43401	OR	15:19	1	20.6	19.3	25.0	27.0	695	529	392	222	132	83	60	51	39	22	538	399	226	134	84	61	52	40	22	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	43401	OR	15:19	2	20.6	19.3	25.0	26.9	692	518	387	221	132	84	60	52	41	23	529	395	226	135	86	61	53	42	23	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	43403	OL	11:03	1	19.9	20.1	25.3	26.6	694	492	391	239	155	106	77	68	53	32	501	398	243	158	108	78	69	54	33	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	43403	OL	11:03	2	19.9	20.1	25.3	26.7	709	484	387	238	156	104	77	66	53	32	483	386	237	156	104	77	66	53	32	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	43503	OL	11:04	1	20.1	20.5	25.3	26.6	720	644	517	292	169	98	74	66	54	34	632	508	287	166	96	73	65	53	33	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	43503	OL	11:04	2	20.1	20.5	25.3	26.6	716	634	511	291	169	96	74	66	55	33	626	505	287	167	95	73	65	54	33	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	43503	OR	15:18	1	20.6	19.3	25.0																					

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	43704	0L	11:06	1	19.4	20.5	25.3	26.7	705	545	424	235	138	102	82	75	60	39	547	425	236	138	102	82	75	60	39	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	43704	0L	11:06	2	19.4	20.5	25.3	26.9	702	532	414	233	137	101	81	75	61	39	536	417	235	138	102	82	76	61	39	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	43798	0R	15:15	1	20.5	18.8	25.0	27.2	683	488	380	229	152	120	85	74	57	36	505	393	237	157	124	88	77	59	37	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	43798	0R	15:15	2	20.5	18.9	25.0	27.1	690	481	377	229	152	120	85	73	58	36	493	386	235	156	123	87	75	59	37	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	43800	0L	11:06	1	19.3	20.2	25.3	26.8	698	651	523	329	219	133	95	83	67	44	659	530	333	222	135	96	84	68	45	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	43800	0L	11:06	2	19.4	20.3	25.3	26.8	700	637	517	327	217	132	93	82	66	43	643	522	330	219	133	94	83	67	43	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	43800	0L	11:07	1	19.7	20.4	25.3	27.0	698	633	519	329	218	131	95	83	66	43	641	526	333	221	133	96	84	67	44	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	43800	0L	11:07	2	19.7	20.5	25.3	26.8	701	624	514	327	217	132	94	82	65	42	629	518	330	219	133	95	83	66	42	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	43897	0R	15:14	1	20.4	18.4	25.0	27.1	687	524	386	214	128	85	60	50	39	22	539	397	220	132	87	62	51	40	23	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	43897	0R	15:14	2	20.4	18.4	25.0	27.0	689	516	381	213	128	84	60	51	39	22	529	391	219	131	86	62	52	40	23	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	43903	0L	11:08	1	19.4	20.0	25.3	27.1	711	652	521	305	188	105	73	61	48	28	648	518	303	187	104	73	61	48	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	43903	0L	11:08	2	19.4	20.0	25.3	27.0	706	639	514	303	188	108	73	61	47	28	640	515	303	188	108	73	61	47	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	43999	0R	15:14	1	20.2	18.2	25.0	27.2	709	507	355	183	95	68	57	53	42	24	506	354	182	95	68	57	53	42	24	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	43999	0R	15:14	2	20.2	18.2	25.0	2.4	703	492	346	180	95	68	56	53	42	24	495	348	181	96	68	56	53	42	24	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	44006	0L	11:09	1	19.5	20.2	25.3	26.8	704	625	488	283	174	106	72	60	47	28	628	490	284	175	106	72	60	47	28	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	44006	0L	11:09	2	19.5	20.2	25.3	26.6	702	610	480	279	173	103	71	62	47	30	614	483	281	174	104	72	62	47	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	44098	0R	15:13	1	20.3	18.4	25.0	27.8	699	813	648	392	259	154	99	82	64	40	822	655	396	262	156	100	83	65	40	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	44098	0R	15:13	2	20.3	18.4	25.0	27.6	694	797	633	386	256	153	99	82	64	40	812	645	393	261	156	101	84	65	41	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	44101	0L	11:09	1	19.8	20.4	25.3	26.9	738	647	451	210	105	76	66	61	52	32	620	432	201	101	73	63	58	50	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	44101	0L	11:09	2	19.9	20.4	25.3	26.7	732	623	441	208	105	74	65	61	50	31	602	426	201	101	71	63	59	48	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	44189	0L	11:10	1	20.2	20.4	25.3	27.0	700	643	499	292	200	139	99	85	66	41	649	504	295	202	140	100	86	67	41	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	44189	0L	11:10	2	20.2	20.4	25.3	26.7	695	627	491	289	198	139	98	84	66	41	638	499	294	201	141	100	85	67	42	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	44200	0R	15:12	1	20.4	18.2	25.0	26.9	686	408	301	162	99	76	56	49	39	21	420	310	167	102	78	58	51	40	22	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	44200	0R	15:12	2	20.4	18.2	25.0	26.7	688	403	298	163	99	77	57	50	39	21	414	306	168	102	79	59	51	40	22	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	44298	0R	15:11	1	20.8	18.2	25.0	26.6	675	352	265	157	99	85	66	60	48	30	369	278	164	104	89	69	63	50	31	5.0
Magumu - Thika	B20/D1315	22-Apr-21	7	44298	0R	15:11	2	20.8	18.2	25.0	27.0	673	348	263	156	99	83	66	59	49	29	366	276	164	104	87	69	62	51	30	5.1
Magumu - Thika	B20/D1315	22-Apr-21	7	44308	0L	11:11	1	20.5	20.8	25.3	26.8	701	523	377	193	114	89	69	65	48	30	527	380	195	115	90	70	66	48	30	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	44308	0L	11:11	2	20.5	20.8	25.3	26.8	702	511	371	191	113	88	68	64	48	30	515	374	192	114	89	68	64	48	30	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	44399	0R	15:10	1	21.3	18.2	25.0	27.0	681	430	321	183	107	78	62	57	46	29	446	333	190	111	81	64	59	48	30	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	44399	0R	15:10	2	21.2	18.2	25.0	26.8	686	427	321	184	108	79	63	59	46	29	440	331	190	111	81	65	61	47	30	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	44404	0L	11:12	1	20.1	20.5	25.3	26.6	692	425	298	151	84	70	61	56	45	27	434	304	154	86	72	62	57	46	28	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	44404	0L	11:12	2	20.1	20.6	25.3	26.6	694	418	297	152	85	73	61	57	46	27	426	303	155	87	74	62	58	47	28	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	44502	0L	11:13	1	20.1	20.6	25.3	26.6	697	504	375	204	127	94	75	67	54	34	511	380	207	129	95	76	68	55	34	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	44502	0L	11:13	2	20.1	20.6	25.3	26.6	692	496	371	204	127	94	75	67	55	35	507	379	208	130	96	77	68	56	36	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	44504	0R	15:09	1	21.1	17.8	25.0	27.4	698	568	426	218	124	87	64	56	44	27	575	431	221	126	88	65	57	45	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	44504	0R	15:09	2	21.1	17.9	25.0	27.1	695	556	421	218	125	86	63	54	43	26	566	428	222	127	87	64	55	44	26	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	44596	0R	15:04	1	21.1	19.0	25.0	26.9	695	526	390	189	103	73	53	44	37	21	535	397	192	105	74	54	45	38	21	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	44596	0R	15:04	2	21.1	19.0	25.0	26.9	691	517	386	188	102	72	53	46	37	21	529	395	192	104	74	54	47	38	21	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	44601	0L	11:14	1	20.3	20.8	25.3	26.9	714	621	476	254	150	97	70	59	45	26	615	471	252	149	96	69	58	45	26	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	44601	0L	11:14	2	20.3	20.8	25.3	26.9	713	604	468	252	149	95	68	57	44	25	599	464	250	148	94	67	57	44	25	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	44698	0L	11:15	1	19.9	20.5	25.3	26.7	707	552	440	255	157	100	77	68	54	35	552	440	255	157	100	77	68	54	35	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	44698	0L	11:15	2	19.9	20.5	25.3	26.8	708	548	439	255	157	103	76	68	54	35	547	438	255	157	103	76	68	54	35	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	44705	0R	15:03	1	20.7	18.6	25.0	27.1	688	503	380	237	162	119	86	73	56	35	517	390	244	166	122	88	75	58	36	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	44705	0R	15:03	2	20.7	18.6	25.0	2.5	682	502	380	238	163	120	86	72	56	35	520	394	247	169	124	89	75	58	36	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	44801	0L	11:16	1	20.1	20.6	25.3	27.0	701	708	565	329	219	148	107	91	71	47	714	570	332	221	149	108	92	72	47	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	44801	0L	11:16	2	20.0	20.6																						



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	45000	OR	15:00	2	20.9	18.6	25.0	27.3	705	621	414	191	123	100	77	70	58	37	623	415	192	123	100	77	70	58	37	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	45002	OL	11:17	1	20.0	20.2	25.3	26.9	704	599	470	286	202	138	97	81	66	41	602	472	287	203	139	97	81	66	41	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	45002	OL	11:17	2	19.9	20.2	25.3	27.0	693	588	462	282	200	136	96	79	66	41	600	471	288	204	139	98	81	67	42	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	45095	OR	14:59	1	20.7	18.9	25.0	27.4	718	706	457	198	114	79	55	47	36	20	695	450	195	112	78	54	46	35	20	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45095	OR	14:59	2	20.7	18.9	25.0	27.3	714	694	454	199	114	79	55	47	36	20	687	450	197	113	78	54	47	36	20	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45117	OL	11:18	1	20.5	20.5	25.3	27.0	734	668	433	179	103	83	66	60	47	28	643	417	172	99	80	64	58	45	27	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	45117	OL	11:18	2	20.5	20.6	25.3	26.9	733	652	423	177	103	83	66	61	48	29	629	408	171	99	80	64	59	46	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	45200	OR	14:58	1	20.9	19.0	25.0	27.5	721	779	524	279	195	143	102	87	69	45	764	514	274	191	140	100	85	68	44	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	45200	OR	14:58	2	20.9	19.0	25.0	27.7	712	767	519	279	196	143	101	87	69	45	762	515	277	195	142	100	86	69	45	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	45205	OL	11:19	1	20.5	20.5	25.3	27.0	720	727	508	237	141	92	66	57	44	27	714	499	233	138	90	65	56	43	27	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45205	OL	11:19	2	20.4	20.5	25.3	27.0	718	709	497	235	140	92	65	56	44	26	698	489	231	138	91	64	55	43	26	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45301	OL	11:20	1	19.8	20.3	25.3	27.0	698	673	478	258	185	133	99	87	69	45	682	484	261	187	135	100	88	70	46	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45301	OL	11:20	2	19.9	20.3	25.3	27.4	700	660	477	257	184	133	99	86	69	45	667	482	260	186	134	100	87	70	45	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45301	OR	14:57	1	20.8	19.1	25.0	27.6	715	661	468	215	128	93	68	57	45	25	654	463	213	127	92	67	56	44	25	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	45301	OR	14:57	2	20.8	19.1	25.0	27.3	710	645	459	213	128	89	68	58	45	27	642	457	212	127	89	68	58	45	27	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	45400	OL	11:21	1	20.2	20.4	25.3	27.0	728	732	491	234	141	98	71	61	48	30	711	477	227	137	95	69	59	47	29	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45400	OL	11:21	2	20.2	20.4	25.3	27.0	724	712	481	231	139	98	70	59	47	29	695	470	226	136	96	68	58	46	28	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45402	OR	14:56	1	20.9	18.9	25.0	27.8	744	754	467	216	124	82	60	51	41	24	717	444	205	118	78	57	48	39	23	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45402	OR	14:56	2	20.9	18.9	25.0	27.6	739	735	467	216	124	83	59	51	40	25	703	447	207	119	79	56	49	38	24	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45504	OR	14:54	1	20.9	18.9	25.0	27.6	746	734	410	184	90	70	54	47	38	22	696	389	174	94	66	51	45	36	21	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45504	OR	14:54	2	20.9	19.0	25.0	27.6	741	719	405	182	98	67	53	44	37	21	686	386	174	94	64	51	42	35	20	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45506	OL	11:27	1	21.6	19.9	25.3	27.4	741	892	565	251	136	85	64	55	44	27	851	539	239	130	81	61	52	42	26	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	45506	OL	11:27	2	21.6	20.0	25.3	27.1	748	883	567	253	138	86	63	54	43	27	835	536	239	130	81	60	51	41	26	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	45600	OR	14:53	1	20.6	18.8	25.0	27.1	700	642	405	180	107	80	59	51	40	22	648	409	182	108	81	60	52	40	22	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	45600	OR	14:53	2	20.7	18.8	25.0	27.2	698	619	395	177	106	79	58	51	39	22	627	400	179	107	80	59	52	40	22	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	45602	OL	11:28	1	21.5	20.4	25.3	26.9	739	705	491	238	136	82	61	53	42	25	674	470	228	130	78	58	51	40	24	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45602	OL	11:28	2	21.5	20.5	25.3	26.9	744	693	487	237	136	81	60	53	42	25	659	463	225	129	77	57	50	40	24	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45705	OL	11:29	1	21.6	20.5	25.3	26.8	709	615	385	186	115	81	62	53	41	24	613	384	185	115	81	62	53	41	24	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	45705	OL	11:29	2	21.6	20.6	25.3	2.5	713	605	382	186	116	83	62	54	42	25	600	379	184	115	82	61	54	42	25	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	45718	OR	14:52	1	21.7	19.7	25.0	27.5	723	735	514	255	152	93	65	52	41	25	719	503	249	149	91	64	51	40	24	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45718	OR	14:52	2	21.7	19.7	25.0	27.3	728	723	509	254	152	92	65	56	41	24	702	494	247	148	89	63	54	40	23	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45801	OL	11:30	1	22.1	20.7	25.3	26.9	714	581	374	168	98	74	57	50	39	22	575	370	166	97	73	56	50	39	22	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	45801	OL	11:30	2	21.8	20.8	25.3	26.5	706	568	371	167	97	74	57	50	39	22	569	372	167	97	74	57	50	39	22	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	45805	OR	14:51	1	21.5	19.6	25.0	27.6	701	538	345	174	108	76	54	46	36	20	543	348	175	109	77	54	46	36	20	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	45805	OR	14:51	2	21.5	19.6	25.0	27.2	693	525	339	172	107	76	53	46	36	20	536	346	175	109	78	54	47	37	20	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	45897	OR	14:50	1	20.8	19.4	25.0	27.4	708	722	478	220	136	90	62	53	40	22	721	477	220	136	90	62	53	40	22	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45897	OR	14:50	2	20.9	19.4	25.0	27.2	717	713	472	219	137	90	62	52	40	22	703	465	216	135	89	61	51	39	22	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45900	OL	11:31	1	21.5	20.7	25.3	26.8	732	722	469	198	122	85	63	54	42	24	697	453	191	118	82	61	52	41	23	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	45900	OL	11:31	2	21.5	20.7	25.3	26.7	729	706	464	196	122	86	63	54	42	24	685	450	190	118	83	61	52	41	23	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45990	OR	14:49	1	22.3	20.7	25.0	27.3	742	709	441	193	105	69	50	42	34	19	676	420	184	100	66	48	40	32	18	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45990	OR	14:49	2	22.3	20.7	25.0	1.0	738	690	433	191	105	69	50	44	34	20	661	415	183	101	66	48	42	33	19	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	45999	OL	11:32	1	21.5	20.9	25.3	27.0	733	813	553	226	148	104	72	60	46	28	784	533	218	143	100	69	58	44	27	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	45999	OL	11:32	2	21.5	20.9	25.3	26.9	731	794	549	225	147	103	71	60	46	27	768	531	218	142	100	69	58	44	26	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	46105	OR	14:47	1	22.1	20.3	25.0	27.0	725	541	351	186	113	71	49	42	32	18	528	342	181	110	69	48	41	31	18	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	46105	OR	14:47	2	22.1	20.2	25.0	27.2	709	530	346	184	112	71	49	41	32	17	529	345	183	112	71	49	41	32	17	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	46121	OL	11:33	1	20.6	20.4	25.3	26.9	716	586	382	175	111	76	5													

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	46308	0L	11:35	1	20.7	20.8	25.3	26.6	697	571	393	209	140	98	75	65	52	31	579	399	212	142	99	76	66	53	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	46308	0L	11:35	2	20.8	20.9	25.3	26.8	700	564	394	210	140	100	75	65	51	31	570	398	212	141	101	76	66	52	31	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	46397	0R	14:45	1	22.2	19.4	25.0	27.3	726	729	478	214	131	90	65	55	43	26	710	465	208	128	88	63	54	42	25	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	46397	0R	14:45	2	22.2	19.4	25.0	27.2	727	709	470	212	130	90	64	55	43	25	689	457	206	126	88	62	53	42	24	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	46403	0L	11:36	1	19.9	20.8	25.3	26.8	709	710	501	247	171	119	86	73	57	34	708	500	246	171	119	86	73	57	34	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	46403	0L	11:36	2	19.9	20.8	25.3	26.9	712	699	496	246	170	121	85	71	56	33	694	493	244	169	120	84	71	56	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	46491	0R	14:44	1	22.2	19.0	25.0	27.5	709	703	435	214	133	93	64	54	41	24	701	434	213	133	93	64	54	41	24	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	46491	0R	14:44	2	22.2	19.0	25.0	27.4	708	685	433	214	131	93	64	54	42	25	684	432	214	131	93	64	54	42	25	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	46508	0L	11:37	1	19.5	20.2	25.3	26.7	736	670	406	186	115	79	58	49	38	21	644	390	179	110	76	56	47	37	20	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	46508	0L	11:37	2	19.5	20.3	25.3	26.8	734	658	402	186	115	78	58	49	38	21	634	387	179	111	75	56	47	37	20	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	46514	0R	14:43	1	22.3	18.9	25.0	26.8	686	427	294	163	96	69	53	46	36	19	440	303	168	99	71	55	47	37	20	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	46514	0R	14:43	2	22.3	18.9	25.0	26.8	687	422	291	162	95	70	52	45	35	18	434	299	167	98	72	54	46	36	19	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	46601	0L	11:37	1	20.3	20.4	25.3	26.5	700	461	336	204	139	96	68	57	43	24	466	339	206	140	97	69	58	43	24	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	46601	0L	11:37	2	20.4	20.5	25.3	26.6	698	461	338	206	141	95	69	58	44	25	467	342	209	143	96	70	59	45	25	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	46602	0R	14:43	1	22.2	19.0	25.0	26.8	683	505	336	180	125	103	78	69	55	35	523	348	186	129	107	81	71	57	36	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	46602	0R	14:43	2	22.2	19.0	25.0	27.0	681	500	334	179	125	102	76	68	54	34	519	347	186	130	106	79	71	56	35	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	46696	0R	14:42	1	22.4	19.3	25.0	27.3	683	587	433	248	174	122	84	72	57	35	608	448	257	180	126	87	75	59	36	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	46696	0R	14:42	2	22.4	19.3	25.0	27.1	681	586	430	247	174	121	84	72	57	36	608	446	256	181	126	87	75	59	37	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	46706	0L	11:38	1	20.8	20.8	25.3	27.2	692	744	538	328	239	167	117	102	78	50	760	550	335	244	171	120	104	80	51	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	46706	0L	11:38	2	20.8	20.9	25.3	27.2	696	728	535	327	239	167	117	102	79	51	740	543	332	243	170	119	104	80	52	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	46800	0R	14:41	1	21.8	19.4	25.0	27.1	694	594	392	206	138	98	71	60	47	29	605	399	210	141	100	72	61	48	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	46800	0R	14:41	2	21.8	19.4	25.0	27.4	695	586	386	206	138	99	71	60	47	29	596	393	210	140	101	72	61	48	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	46801	0L	11:39	1	20.5	20.5	25.3	27.4	709	843	640	374	262	170	116	100	78	52	841	638	373	261	170	116	100	78	52	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	46801	0L	11:39	2	20.5	20.6	25.3	27.3	713	830	632	372	262	170	117	100	79	52	823	627	369	260	169	116	99	78	52	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	46902	0L	11:40	1	20.9	21.0	25.3	26.8	719	601	378	163	103	78	60	52	39	22	591	372	160	101	77	59	51	38	22	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	46902	0L	11:40	2	20.9	21.1	25.3	27.1	718	586	372	162	103	78	60	51	39	22	577	366	160	101	77	59	50	38	22	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	46903	0R	14:40	1	21.8	19.6	25.0	27.2	704	568	385	176	104	73	54	46	35	20	570	387	177	104	73	54	46	35	20	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	46903	0R	14:40	2	21.8	19.6	25.0	27.3	701	558	380	175	104	72	55	46	36	20	563	383	176	105	73	55	46	36	20	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	46998	0R	14:39	1	23.0	20.0	25.0	26.8	686	472	293	127	78	66	51	45	35	19	486	302	131	80	68	53	46	36	20	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	46998	0R	14:39	2	23.0	20.0	25.0	27.3	681	461	289	126	78	66	52	45	35	18	479	300	131	81	69	54	47	36	19	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	47001	0L	11:41	1	20.1	20.7	25.3	26.6	701	489	296	126	79	64	50	44	33	17	493	299	127	80	65	50	44	33	17	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	47001	0L	11:41	2	20.1	20.7	25.3	26.7	703	483	296	126	79	64	50	44	34	17	486	298	127	79	64	50	44	34	17	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	47102	0L	11:42	1	20.8	21.0	25.3	27.1	744	647	401	178	103	71	54	48	37	23	615	381	169	98	67	51	46	35	22	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47102	0L	11:42	2	20.8	21.0	25.3	27.1	741	634	393	177	102	70	54	47	36	21	605	375	169	97	67	52	45	34	20	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47104	0R	14:38	1	22.8	20.3	25.0	27.3	722	618	363	170	109	87	68	62	50	32	605	355	166	107	85	67	61	49	31	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47104	0R	14:38	2	22.8	20.3	25.0	26.9	711	600	355	168	107	89	67	62	50	32	597	353	167	106	88	67	62	50	32	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47200	0L	11:42	1	21.0	21.1	25.3	26.4	684	389	265	159	103	80	63	55	43	26	402	274	164	106	83	65	57	44	27	4.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47200	0L	11:42	2	21.0	21.1	25.3	26.5	690	388	265	159	104	81	63	55	43	26	398	272	163	107	83	65	56	44	27	4.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47200	0R	14:37	1	22.7	20.1	25.0	27.0	696	625	432	220	138	97	70	60	47	29	635	439	223	140	99	71	61	48	29	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	47200	0R	14:37	2	22.7	20.1	25.0	26.9	691	615	426	219	138	95	70	61	47	29	629	436	224	141	97	72	62	48	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47304	0R	14:36	1	22.5	20.1	25.0	27.3	691	548	380	220	160	121	88	77	62	39	561	389	225	164	124	90	79	63	40	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	47304	0R	14:36	2	22.5	20.2	25.0	27.0	682	538	378	220	160	121	87	77	61	39	558	392	228	166	125	90	80	63	40	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	47318	0L	11:43	1	20.3	21.0	25.3	27.2	710	669	460	227	145	99	72	62	47	28	666	458	226	144	99	72	62	47	28	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	47318	0L	11:43	2	20.2	21.1	25.3	27.1	710	653	452	227	145	98	72	61	47	29	650	450	226	144	98	72	61	47	29	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	47401	0L	11:44	1	20.0	21.0	25.3	27.1	699	690	503	274	186	126	90	76	61	39	698	509	277	188	127	91	77	62	39	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	47401	0L	11:44	2	20.1	21.1	2																					

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	47602	OR	14:33	2	22.1	19.9	25.0	26.8	689	485	349	207	137	94	67	59	45	28	498	358	212	141	96	69	61	46	29	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	47603	OL	11:46	1	20.6	21.3	25.3	26.8	703	634	436	220	147	104	74	62	48	28	638	438	221	148	105	74	62	48	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	47603	OL	11:46	2	20.6	21.4	25.3	26.7	703	633	436	221	148	105	74	63	48	28	637	438	222	149	106	74	63	48	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	47705	OL	11:47	1	20.7	21.1	25.3	27.2	728	736	483	241	154	104	72	62	49	30	715	469	234	150	101	70	60	48	29	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	47705	OL	11:47	2	20.7	21.2	25.3	26.9	724	719	474	238	152	102	72	61	48	30	702	463	232	148	100	70	60	47	29	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	47705	OL	11:47	1	21.0	21.2	25.3	27.0	730	721	484	243	155	102	73	62	49	30	698	469	235	150	99	71	60	47	29	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	47705	OL	11:47	2	21.0	21.3	25.3	27.0	727	714	478	242	155	102	74	63	50	31	694	465	235	151	99	72	61	49	30	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	47705	OR	14:32	1	22.2	19.9	25.0	27.6	709	765	534	278	181	120	80	66	51	31	763	532	277	180	120	80	66	51	31	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	47705	OR	14:32	2	22.2	19.9	25.0	27.0	701	747	525	275	179	120	79	64	50	30	753	529	277	181	121	80	65	50	30	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	47801	OL	11:53	1	22.1	20.4	25.3	27.2	728	795	534	263	165	109	74	62	47	28	772	519	255	160	106	72	60	46	27	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	47801	OL	11:53	2	22.1	20.4	25.3	27.1	728	780	527	262	165	107	74	63	47	28	758	512	254	160	104	72	61	46	27	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	47804	OR	14:31	1	21.9	20.7	25.0	26.9	696	542	369	183	109	76	55	46	35	19	551	375	186	111	77	56	47	36	19	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	47804	OR	14:31	2	21.9	20.7	25.0	26.8	698	533	368	183	108	76	55	47	36	20	540	373	185	109	77	56	48	36	20	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	47910	OR	14:30	1	21.3	20.1	25.0	26.9	705	494	301	142	81	61	46	39	31	16	495	302	142	81	61	46	39	31	16	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	47910	OR	14:30	2	21.3	20.1	25.0	27.0	705	489	295	140	81	61	46	40	31	16	490	296	140	81	61	46	40	31	16	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	47911	OL	11:54	1	22.2	20.6	25.3	26.8	715	627	412	184	108	80	59	52	40	22	620	407	182	107	79	58	51	40	22	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47911	OL	11:54	2	22.2	20.7	25.3	26.7	715	614	407	183	109	79	59	52	40	24	607	402	181	108	78	58	51	40	24	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	47999	OR	14:30	1	21.2	20.0	25.0	27.0	693	472	326	180	110	73	52	44	34	18	482	333	184	112	74	53	45	35	18	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	47999	OR	14:30	2	21.2	20.0	25.0	26.8	687	464	322	178	109	73	52	44	33	18	478	331	183	112	75	54	45	34	19	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	48005	OL	11:55	1	22.2	21.0	25.3	26.8	730	712	445	204	119	82	59	48	36	20	690	431	198	115	79	57	46	35	19	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	48005	OL	11:55	2	22.1	21.1	25.3	26.8	728	695	438	202	118	79	58	48	36	20	675	425	196	115	77	56	47	35	19	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	48097	OR	14:29	1	21.1	19.6	25.0	27.1	704	547	334	173	109	78	55	47	36	20	549	335	174	109	78	55	47	36	20	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	48097	OR	14:29	2	21.1	19.6	25.0	27.1	711	544	337	174	111	77	55	47	37	21	541	335	173	110	77	55	47	37	21	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	48102	OL	11:56	1	21.3	21.0	25.3	27.0	729	743	500	221	131	86	63	52	41	23	721	485	214	127	83	61	50	40	22	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	48102	OL	11:56	2	21.3	21.1	25.3	27.0	725	717	484	217	129	86	62	52	40	23	699	472	212	126	84	60	51	39	22	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	48200	OL	11:56	1	21.3	20.8	25.3	26.9	723	660	450	213	130	88	64	54	40	23	645	440	208	127	86	63	53	39	22	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	48200	OL	11:56	2	21.3	20.9	25.3	2.3	721	646	445	212	130	89	64	54	41	23	633	436	208	127	87	63	53	40	23	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	48200	OL	11:57	1	21.4	21.1	25.3	26.8	717	638	446	212	129	88	64	54	41	23	629	440	209	127	87	63	53	40	23	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	48200	OL	11:57	2	21.4	21.1	25.3	26.8	719	633	444	212	130	90	63	54	41	24	622	437	208	128	88	62	53	40	24	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	48202	OR	14:28	1	21.1	19.3	25.0	27.2	713	672	432	189	117	82	58	49	38	20	666	428	187	116	81	58	49	38	20	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	48202	OR	14:28	2	21.1	19.4	25.0	27.1	704	655	424	188	116	82	58	50	38	21	658	426	189	116	82	58	50	38	21	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	48298	OR	14:27	1	22.5	20.6	25.0	27.0	703	535	346	179	114	86	63	55	43	24	538	348	180	115	86	63	55	43	24	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	48298	OR	14:27	2	22.5	20.6	25.0	26.7	694	527	343	178	114	85	63	55	43	24	537	349	181	116	87	64	56	44	24	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	48300	OL	11:58	1	21.6	21.0	25.3	27.1	728	791	538	247	152	101	71	60	46	28	768	522	240	148	98	69	58	45	27	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	48300	OL	11:58	2	21.6	21.1	25.3	27.0	725	774	527	244	152	102	71	60	47	28	755	514	238	148	99	69	59	46	27	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	48395	OR	14:26	1	22.4	20.6	25.0	27.2	718	651	407	186	113	78	55	47	36	20	641	401	183	111	77	54	46	35	20	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	48395	OR	14:26	2	22.4	20.6	25.0	27.1	719	640	402	185	113	79	56	47	36	20	629	395	182	111	78	55	46	35	20	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	48401	OL	11:59	1	21.8	21.5	25.3	26.9	718	596	416	195	119	84	62	53	41	24	587	410	192	117	83	61	52	40	24	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	48401	OL	11:59	2	21.9	21.6	25.3	26.7	718	590	414	194	119	84	61	52	41	24	581	408	191	117	83	60	51	40	24	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	48500	OL	12:00	1	21.7	21.3	25.3	27.3	721	878	640	314	196	121	81	65	50	29	861	628	308	192	119	79	64	49	28	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	48500	OL	12:00	2	21.8	21.3	25.3	27.1	716	858	629	311	194	122	79	66	49	30	847	621	307	192	120	78	65	48	30	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	48501	OR	14:25	1	22.6	20.2	25.0	27.2	724	730	466	211	121	78	55	46	35	20	713	455	206	118	76	54	45	34	20	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	48501	OR	14:25	2	22.6	20.2	25.0	27.3	723	713	458	209	120	78	55	46	37	19	697	448	204	117	76	54	45	36	19	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	48591	OR	14:24	1	23.0	20.3	25.0	27.2	689	549	375	192	129	99	73	66	52	31	563	385	197	132	102	75	68	53	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	48591	OR	14:24	2	23.0	20.3	25.0	26.7	686	536	370	191	128	99	74	67	52	31	552	381	197	132	102	76	69	54	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	48599	OL	12:00	1	22.2	21.1	25.3	26.6	715	634	451	232	144															

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm								Normalized Deflections, µm										
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	48801	0L	12:02	1	21.7	21.2	25.3	27.4	730	748	513	236	137	90	63	53	41	24	724	497	229	133	87	61	51	40	23	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	48801	0L	12:02	2	21.7	21.2	25.3	27.1	727	720	500	233	135	88	62	52	40	24	700	486	227	131	86	60	51	39	23	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	48896	0R	14:21	1	21.8	20.0	25.0	27.2	673	558	395	207	139	103	74	63	48	28	586	415	217	146	108	78	66	50	29	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	48896	0R	14:21	2	21.8	20.0	25.0	27.3	665	550	392	208	139	102	74	63	48	28	585	417	221	148	108	79	67	51	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	48906	0L	12:03	1	22.1	21.3	25.3	26.8	715	575	411	196	116	85	63	54	42	25	569	406	194	115	84	62	53	42	25	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	48906	0L	12:03	2	22.2	21.3	25.3	26.6	715	567	409	196	117	84	63	54	42	25	561	404	194	116	83	62	53	42	25	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49002	0L	12:04	1	22.3	21.4	25.3	27.0	712	600	413	209	137	99	73	62	49	29	596	410	208	136	98	72	62	49	29	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49002	0L	12:04	2	22.3	21.4	25.3	26.8	704	590	408	208	136	102	73	58	49	29	593	410	209	137	102	73	58	49	29	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49006	0R	14:20	1	23.1	20.7	25.0	27.0	662	526	374	198	129	95	71	62	47	29	562	399	211	138	101	76	66	50	31	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49006	0R	14:20	2	23.1	20.7	25.0	27.1	664	518	370	198	130	97	71	62	49	29	552	394	211	138	103	76	66	52	31	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49104	0R	14:19	1	23.0	20.4	25.0	27.0	676	615	431	212	134	95	67	58	44	25	643	451	222	140	99	70	61	46	26	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	49104	0R	14:19	2	23.0	20.4	25.0	27.0	679	605	427	212	133	94	67	56	43	25	630	445	221	138	98	70	58	45	26	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	49107	0L	12:05	1	22.2	21.6	25.3	27.3	745	769	570	295	169	101	76	65	52	34	730	541	280	160	96	72	62	49	32	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	49107	0L	12:05	2	22.6	21.7	25.3	27.1	735	749	564	293	168	98	75	64	52	34	720	543	282	162	94	72	62	50	33	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	49197	0R	14:17	1	23.3	20.9	25.0	27.0	675	495	330	176	115	90	66	57	45	26	518	346	184	120	94	69	60	47	27	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	49197	0R	14:17	2	23.3	20.9	25.0	27.0	661	482	327	175	114	88	65	58	44	26	516	350	187	122	94	70	62	47	28	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	49201	0L	12:05	1	22.3	21.8	25.3	26.8	713	582	409	210	132	96	76	67	52	31	577	406	208	131	95	75	66	52	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49201	0L	12:05	2	22.3	21.8	25.3	27.0	715	575	406	210	133	98	76	67	53	32	569	401	208	132	97	75	66	52	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49301	0L	12:06	1	21.5	21.7	25.3	26.9	714	594	416	228	150	104	77	66	51	31	588	412	226	149	103	76	65	51	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49301	0L	12:06	2	21.5	21.7	25.3	26.8	716	582	410	227	149	104	77	66	52	32	575	405	224	147	103	76	65	51	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49302	0R	14:16	1	23.1	20.8	25.0	27.3	687	637	412	204	126	93	69	61	47	27	656	424	210	130	96	71	63	48	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	49302	0R	14:16	2	23.1	20.8	25.0	27.1	691	623	404	203	126	93	68	60	47	28	637	413	208	129	95	70	61	48	29	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	49400	0R	14:15	1	23.2	21.1	25.0	27.0	675	569	368	181	109	84	63	55	43	26	596	385	190	114	88	66	58	45	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49400	0R	14:15	2	23.2	21.1	25.0	27.3	676	558	366	181	110	83	63	56	42	26	584	383	189	115	87	66	59	44	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49402	0L	12:07	1	21.7	21.9	25.3	26.8	715	567	413	230	146	99	72	62	49	29	561	408	227	144	98	71	61	48	29	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49402	0L	12:07	2	21.8	22.0	25.3	26.7	702	559	408	228	146	97	71	61	49	30	563	411	230	147	98	72	61	49	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49402	0L	12:07	1	21.4	21.5	25.3	26.8	710	581	416	230	146	98	72	61	48	30	579	414	229	145	98	72	61	48	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49402	0L	12:07	2	21.5	21.5	25.3	2.5	718	569	408	227	145	96	71	61	49	29	560	402	224	143	95	70	60	48	29	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49497	0R	14:14	1	23.4	20.9	25.0	27.0	667	477	334	179	109	73	55	48	37	20	506	354	190	116	77	58	51	39	21	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	49497	0R	14:14	2	23.4	21.0	25.0	26.9	660	467	330	177	108	73	54	47	36	20	500	354	190	116	78	58	50	39	21	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	49502	0L	12:08	1	22.1	22.0	25.3	29.3	702	559	390	204	139	103	76	66	52	32	563	393	205	140	104	77	66	52	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49502	0L	12:08	2	22.1	22.0	25.3	26.7	694	544	384	202	137	101	75	65	51	32	554	391	206	140	103	76	66	52	33	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49601	0L	12:09	1	22.3	22.0	25.3	26.8	709	606	419	220	148	105	75	63	50	30	604	418	219	148	105	75	63	50	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49601	0L	12:09	2	22.4	22.1	25.3	26.7	706	596	413	218	147	105	74	63	49	30	597	414	218	147	105	74	63	49	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49609	0R	14:13	1	23.1	20.7	25.0	27.3	688	595	397	195	125	98	71	62	47	29	611	408	200	128	101	73	64	48	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	49609	0R	14:13	2	23.1	20.7	25.0	27.2	679	582	393	194	125	99	72	62	49	28	606	409	202	130	103	75	65	51	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	49700	0R	14:12	1	23.6	21.0	25.0	27.0	678	565	412	196	127	94	67	58	44	25	589	430	204	132	98	70	60	46	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49700	0R	14:12	2	23.6	21.0	25.0	27.1	675	557	408	196	127	94	67	58	43	25	583	427	205	133	98	70	61	45	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49701	0L	12:10	1	22.7	22.2	25.3	26.8	713	604	391	192	116	86	64	55	43	25	599	388	190	115	85	63	55	43	25	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49701	0L	12:10	2	22.7	22.2	25.3	26.9	713	591	386	191	116	85	64	55	43	25	586	383	189	115	84	63	55	43	25	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49794	0R	14:11	1	23.2	20.8	25.0	27.1	684	607	404	197	119	86	62	53	42	24	627	418	204	123	89	64	55	43	25	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	49794	0R	14:11	2	23.2	20.8	25.0	27.0	674	595	399	197	120	88	63	54	42	24	624	419	207	126	92	66	57	44	25	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	49801	0L	12:11	1	22.1	21.9	25.3	26.6	702	592	434	231	151	105	77	66	51	31	596	437	233	152	106	78	66	51	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49801	0L	12:11	2	22.1	22.0	25.3	27.1	702	588	432	230	150	105	76	65	50	31	592	435	232	151	106	77	65	50	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	49901	0L	12:12	1	21.7	21.3	25.3	27.2	714	553	368	175	111	85	63	56	40	24	548	364	173	110	84	62	55	40	24	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	49901	0L	12:12	2	21.6	21.4	25.3																					



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	50093	OR	14:09	2	24.0	21.1	28.8	27.0	667	463	320	173	115	83	59	50	37	20	491	339	183	122	88	63	53	39	21	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	50106	OL	12:13	1	21.7	21.4	25.3	26.8	710	605	417	212	136	96	70	60	46	27	602	415	211	135	96	70	60	46	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	50106	OL	12:13	2	21.8	21.5	25.3	26.7	709	598	414	212	136	97	71	60	46	26	596	413	211	136	97	71	60	46	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50200	OL	12:14	1	21.6	21.7	25.3	26.7	717	548	380	186	110	75	56	47	36	20	540	375	183	108	74	55	46	35	20	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	50200	OL	12:14	2	21.7	21.8	25.3	26.6	710	547	380	186	110	77	56	46	36	20	545	378	185	110	77	56	46	36	20	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	50201	OR	14:08	1	24.0	21.1	28.8	26.9	667	536	394	220	137	93	64	54	42	24	568	418	233	145	99	68	57	45	25	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50201	OR	14:08	2	24.0	21.1	28.8	26.9	666	525	388	218	137	91	64	55	42	24	557	412	231	145	97	68	58	45	25	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50299	OL	12:15	1	21.5	21.7	25.3	26.7	713	642	462	248	166	113	79	67	52	31	637	458	246	165	112	78	66	52	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	50299	OL	12:15	2	21.3	21.8	25.3	27.0	719	640	460	248	165	114	80	68	51	32	629	452	244	162	112	79	67	50	31	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	50300	OR	14:07	1	23.9	21.0	28.8	26.6	650	452	318	191	138	105	76	67	51	30	492	346	208	150	114	83	73	55	33	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	50300	OR	14:07	2	24.0	21.0	28.8	26.8	655	448	317	192	138	105	77	66	52	31	484	342	207	149	113	83	71	56	33	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	50392	OR	14:06	1	23.9	20.9	28.8	27.1	677	624	425	227	149	103	72	60	46	27	652	444	237	156	108	75	63	48	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	50392	OR	14:06	2	23.9	20.9	28.8	26.9	672	612	421	226	149	105	71	58	47	27	644	443	238	157	110	75	61	49	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	50409	OL	12:16	1	21.2	21.8	25.3	26.8	698	571	386	220	164	123	87	75	58	36	578	391	223	166	125	88	76	59	36	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50409	OL	12:16	2	21.2	21.9	25.3	26.8	710	573	384	221	164	123	88	75	58	36	571	382	220	163	122	88	75	58	36	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50501	OR	14:05	1	23.4	20.3	28.8	26.9	669	550	388	214	140	97	67	62	43	25	581	410	226	148	103	71	66	45	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50501	OR	14:05	2	23.4	20.4	28.8	26.9	670	542	385	213	140	99	67	56	43	23	572	406	225	148	104	71	59	45	24	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50503	OL	12:18	1	21.9	21.7	25.3	26.9	713	582	390	186	113	83	61	51	39	23	577	387	184	112	82	60	51	39	23	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50503	OL	12:18	2	21.9	21.8	25.3	26.8	716	579	388	185	112	82	60	50	39	23	572	383	183	111	81	59	49	39	23	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50606	OR	14:04	1	23.3	19.6	28.8	26.9	674	586	406	210	142	96	66	53	41	23	615	426	220	149	101	69	56	43	24	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	50606	OR	14:04	2	23.3	19.6	28.8	27.1	667	573	399	208	141	97	65	53	41	23	607	423	220	149	103	69	56	43	24	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50608	OL	12:21	1	22.3	21.6	25.3	26.8	710	600	395	188	124	93	68	58	45	27	597	393	187	123	93	68	58	45	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50608	OL	12:21	2	22.3	21.7	25.3	26.9	712	591	391	188	124	93	68	59	44	27	587	388	187	123	92	68	59	44	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50705	OR	13:56	1	23.3	21.4	28.8	26.9	674	540	387	210	134	89	62	51	40	23	566	406	220	141	93	65	53	42	24	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50705	OR	13:56	2	23.4	21.4	28.8	26.9	673	530	380	207	133	89	61	51	39	22	557	399	217	140	93	64	54	41	23	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50715	OL	12:22	1	21.4	21.5	25.3	26.9	709	602	421	203	123	86	61	51	38	21	600	420	202	123	86	61	51	38	21	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50715	OL	12:22	2	21.4	21.5	25.3	26.8	711	589	415	200	122	85	60	50	38	20	586	413	199	121	85	60	50	38	20	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50799	OL	12:22	1	21.5	21.5	25.3	26.9	711	502	380	212	135	83	60	50	38	21	499	378	211	134	83	60	50	38	21	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	50799	OL	12:22	2	21.5	21.5	25.3	26.7	705	494	374	210	134	80	60	49	38	21	495	375	211	134	80	60	49	38	21	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	50806	OR	13:55	1	22.5	21.4	28.8	26.8	682	559	374	179	109	75	54	44	34	18	579	388	186	113	78	56	46	35	19	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	50806	OR	13:55	2	22.6	21.4	28.8	27.1	686	547	371	179	109	77	54	45	35	17	564	382	184	112	79	56	46	36	18	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50900	OR	13:54	1	23.5	21.8	28.8	27.1	664	393	282	153	99	73	54	45	35	19	418	300	163	105	78	57	48	37	20	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	50900	OR	13:54	2	23.5	21.8	28.8	27.1	666	387	277	152	99	73	54	45	36	19	411	294	161	105	77	57	48	38	20	4.8
Magumu - Thika	B20/D1315	22-Apr-21	7	50908	OL	12:23	1	22.0	21.7	25.3	26.7	718	570	388	180	106	74	53	48	35	20	561	382	177	104	73	52	47	34	20	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50908	OL	12:23	2	22.1	21.8	25.3	26.6	713	559	382	179	106	73	53	44	35	19	554	379	177	105	72	53	44	35	19	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	50997	OR	13:53	1	23.8	21.4	28.8	27.2	673	487	316	155	94	69	51	44	33	17	512	332	163	99	72	54	46	35	18	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	50997	OR	13:53	2	23.8	21.4	28.8	27.2	667	477	312	155	94	69	51	44	34	18	506	331	164	100	73	54	47	36	19	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	51000	OL	12:24	1	22.7	22.2	25.3	26.7	708	590	429	224	138	93	63	53	40	22	589	428	224	138	93	63	53	40	22	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51000	OL	12:24	2	22.8	22.3	25.3	26.8	725	588	429	225	139	94	64	51	40	22	573	418	219	136	92	62	50	39	21	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	51000	OL	12:24	1	22.4	21.9	25.3	26.8	707	599	431	224	137	91	63	53	40	22	599	431	224	137	91	63	53	40	22	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51000	OL	12:24	2	22.5	21.9	25.3	1.8	722	592	428	225	138	91	64	53	40	22	580	419	220	135	89	63	52	39	22	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51085	OR	13:53	1	23.1	20.9	28.8	27.2	675	601	427	220	140	95	64	53	42	23	629	447	230	147	100	67	56	44	24	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	51085	OR	13:53	2	23.2	20.9	28.8	27.1	671	585	420	218	139	94	64	53	40	22	616	443	230	146	99	67	56	42	23	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	51100	OL	12:25	1	23.1	22.4	25.3	26.8	713	501	355	174	104	69	52	44	34	18	497	352	173	103	68	52	44	34	18	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	51100	OL	12:25	2	23.0	22.5	25.3	26.8	706	493	351	173	104	69	51	44	34	18	494	351	173	104	69	51	44	34	18	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	51202	OR	13:52	1	22.1	20.3	28.8	26.6	659	343	239	135	85															

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	51404	0L	12:28	1	22.2	21.9	25.3	26.8	720	570	362	154	87	74	60	55	44	27	560	355	151	85	73	59	54	43	27	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	51404	0L	12:28	2	22.3	22.0	25.3	26.6	715	558	358	153	88	75	60	55	45	28	552	354	151	87	74	59	54	44	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	51404	OR	13:50	1	23.7	20.8	28.8	27.4	684	621	448	241	158	107	75	63	51	31	642	463	249	163	111	78	65	53	32	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	51404	OR	13:50	2	23.8	20.8	28.8	27.3	683	615	446	242	158	108	75	66	51	33	637	462	251	164	112	78	68	53	34	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	51498	OR	13:49	1	22.8	20.5	28.8	27.1	673	674	485	259	169	115	80	67	52	31	708	510	272	178	121	84	70	55	33	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	51498	OR	13:49	2	22.8	20.5	28.8	27.2	673	665	479	258	169	115	81	68	52	31	699	503	271	178	121	85	71	55	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	51500	0L	12:29	1	23.0	22.1	25.3	26.9	693	573	417	237	157	103	74	67	49	31	585	425	242	160	105	75	68	50	32	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51500	0L	12:29	2	23.0	22.2	25.3	27.0	698	570	416	237	156	106	74	65	49	30	577	421	240	158	107	75	66	50	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	51602	0L	12:30	1	22.0	22.1	25.3	27.3	714	705	505	261	171	119	82	70	55	35	698	500	258	169	118	81	69	54	35	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	51602	0L	12:30	2	22.0	22.1	25.3	27.2	716	698	503	261	171	116	82	69	55	35	689	497	258	169	115	81	68	54	35	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	51606	OR	13:48	1	23.2	21.0	28.8	27.3	696	564	370	179	112	85	63	55	42	24	573	376	182	114	86	64	56	43	24	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51606	OR	13:48	2	23.2	21.1	28.8	27.2	690	560	365	178	113	85	63	55	43	25	574	374	182	116	87	65	56	44	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51702	0L	12:30	1	21.7	21.5	25.3	27.3	706	727	517	268	184	136	96	83	67	44	728	518	268	184	136	96	83	67	44	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	51702	0L	12:30	2	21.8	21.6	25.3	27.0	712	715	511	266	183	134	93	76	64	42	710	507	264	182	133	92	75	64	42	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	51704	OR	13:48	1	23.6	21.2	28.8	27.1	672	564	383	196	124	98	74	65	52	32	593	403	206	130	103	78	68	55	34	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51704	OR	13:48	2	23.6	21.2	28.8	27.2	669	547	375	194	123	94	73	65	51	31	578	396	205	130	99	77	69	54	33	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51794	OR	13:47	1	23.6	21.1	28.8	29.2	675	596	443	223	142	99	70	61	48	28	624	464	234	149	104	73	64	50	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	51794	OR	13:47	2	23.6	21.1	28.8	27.3	675	588	437	223	142	100	71	62	48	28	616	458	234	149	105	74	65	50	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	51803	0L	12:31	1	22.4	21.5	25.3	26.9	709	555	386	207	139	104	76	67	53	33	553	385	206	139	104	76	67	53	33	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	51803	0L	12:31	2	22.4	21.5	25.3	26.7	701	546	381	205	139	103	76	66	52	32	551	384	207	140	104	77	67	52	32	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	51890	OR	13:46	1	24.0	20.8	28.8	27.1	671	547	374	203	136	98	70	61	48	32	576	394	214	143	103	74	64	51	34	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	51890	OR	13:46	2	24.0	20.9	28.8	27.1	664	544	373	202	135	96	71	60	47	30	579	397	215	144	102	76	64	50	32	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	51898	0L	12:32	1	22.6	21.5	25.3	27.2	714	696	486	259	164	98	71	62	49	31	689	481	256	162	97	70	61	49	31	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	51898	0L	12:32	2	22.6	21.6	25.3	27.3	715	687	484	258	164	100	70	61	49	31	679	479	255	162	99	69	60	48	31	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	51999	OR	13:45	1	24.3	21.1	28.8	27.1	667	620	439	235	165	122	87	75	57	35	657	465	249	175	129	92	79	60	37	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	51999	OR	13:45	2	24.3	21.0	28.8	27.4	672	614	438	236	166	122	87	75	58	36	646	461	248	175	128	92	79	61	38	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	52008	0L	12:33	1	22.7	21.8	25.3	27.4	714	631	448	245	166	119	84	73	57	35	625	444	243	164	118	83	72	56	35	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	52008	0L	12:33	2	22.7	21.9	25.3	27.3	709	621	442	244	165	118	84	71	57	35	619	441	243	165	118	84	71	57	35	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	52098	OR	13:44	1	23.8	21.2	28.8	26.9	666	600	430	241	161	113	81	69	54	32	637	456	256	171	120	86	73	57	34	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	52098	OR	13:44	2	23.8	21.2	28.8	27.1	669	598	430	243	163	115	82	71	54	33	632	454	257	172	122	87	75	57	35	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	52102	0L	12:34	1	21.8	21.8	25.3	26.8	687	475	348	210	143	101	74	66	52	31	489	358	216	147	104	76	68	54	32	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	52102	0L	12:34	2	21.7	21.9	25.3	26.6	684	470	345	209	142	101	74	65	51	32	486	357	216	147	104	76	67	53	33	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	52199	OR	13:43	1	24.1	21.0	28.8	27.5	680	700	525	277	184	124	88	74	59	38	728	546	288	191	129	91	77	61	40	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	52199	OR	13:43	2	24.1	21.0	28.8	27.5	679	689	521	276	183	123	88	73	58	38	717	542	287	191	128	92	76	60	40	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	52204	0L	12:35	1	21.3	21.3	25.3	27.1	710	668	467	250	162	110	79	67	53	33	665	465	249	161	110	79	67	53	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	52204	0L	12:35	2	21.3	21.3	25.3	27.0	717	656	462	248	161	109	79	68	54	33	647	456	245	159	107	78	67	53	33	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	52296	OR	13:42	1	23.7	21.1	28.8	27.2	695	728	496	257	168	110	77	65	52	33	741	505	261	171	112	78	66	53	34	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	52296	OR	13:42	2	23.7	21.1	28.8	27.7	691	721	494	257	168	110	77	65	53	34	738	505	263	172	113	79	67	54	35	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	52299	0L	12:35	1	21.4	21.5	25.3	26.7	696	493	361	218	149	106	75	64	50	30	501	367	221	151	108	76	65	51	30	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	52299	0L	12:35	2	21.5	21.5	25.3	26.8	694	490	358	216	148	106	74	63	49	30	499	365	220	151	108	75	64	50	31	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	52403	0L	12:36	1	22.3	21.7	25.3	27.1	721	675	461	255	171	115	80	70	55	35	662	452	250	168	113	78	69	54	34	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	52403	0L	12:36	2	22.3	21.8	25.3	27.0	714	671	461	255	173	117	80	70	55	35	664	456	253	171	116	79	69	54	35	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	52403	OR	13:41	1	23.8	20.8	28.8	27.4	680	653	442	236	160	117	84	74	59	39	679	460	245	166	122	87	77	61	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	52403	OR	13:41	2	23.8	20.8	28.8	27.5	676	640	436	234	157	115	83	72	57	37	669	456	245	164	120	87	75	60	39	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	52500	OR	13:41	1	23.7	20.6	28.8	29.2	666	555	389	224	150	103	76	67	53	34	589	413	238	159	109	81	71	56	36	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	52500	OR	13:41	2	23.8</																							

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	52702	0L	12:39	2	21.8	21.6	25.3	27.1	712	729	510	268	172	117	83	73	58	37	724	506	266	171	116	82	72	58	37	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	52724	0R	13:38	1	23.8	20.9	28.8	27.6	695	690	505	264	175	131	96	87	65	42	702	514	269	178	133	98	89	66	43	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	52724	0R	13:38	2	23.8	20.9	28.8	27.7	698	676	497	263	174	130	95	88	65	42	685	503	266	176	132	96	89	66	43	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	52796	0L	12:40	1	21.4	21.0	25.3	27.3	708	763	562	300	190	121	84	71	56	36	762	561	300	190	121	84	71	56	36	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	52796	0L	12:40	2	21.5	21.1	25.3	27.2	705	747	551	297	189	119	83	70	55	35	749	553	298	190	119	83	70	55	35	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	52809	0R	13:37	1	23.7	21.1	28.8	27.7	705	821	577	277	165	109	78	68	55	35	823	579	278	165	109	78	68	55	35	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	52809	0R	13:37	2	23.7	21.1	28.8	27.6	702	803	568	276	165	109	78	69	56	35	809	572	278	166	110	79	69	56	35	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	52895	0R	13:36	1	23.8	21.2	28.8	27.0	684	612	414	231	148	97	68	59	47	29	633	428	239	153	100	70	61	49	30	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	52895	0R	13:36	2	23.8	21.2	28.8	27.0	682	600	409	229	146	96	67	58	46	28	622	424	237	151	100	69	60	48	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	52902	0L	12:41	1	21.2	21.0	25.3	27.6	718	850	632	345	215	135	93	81	64	43	837	622	340	212	133	92	80	63	42	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	52902	0L	12:41	2	21.3	21.0	25.3	27.5	719	834	625	344	215	135	93	80	65	43	820	615	338	211	133	91	79	64	42	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	53003	0L	12:42	1	21.4	20.9	25.3	27.8	725	896	652	381	233	125	87	78	67	48	874	636	372	227	122	85	76	65	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	53003	0L	12:42	2	21.4	21.0	25.3	27.5	720	881	647	380	233	122	88	78	66	48	865	635	373	229	120	86	77	65	47	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	53008	0R	13:34	1	23.4	21.1	28.8	27.5	686	630	456	289	199	127	86	73	57	35	649	470	298	205	131	89	75	59	36	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	53008	0R	13:34	2	23.5	21.1	28.8	27.4	688	624	454	288	199	128	86	74	58	35	641	467	296	204	132	88	76	60	36	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	53009	0R	13:35	1	23.7	21.5	28.8	27.4	682	623	451	286	197	127	85	73	57	35	646	468	296	204	132	88	76	59	36	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	53009	0R	13:35	2	23.8	21.5	28.8	27.1	682	615	450	286	198	128	86	74	58	36	638	466	296	205	133	89	77	60	37	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	53104	0L	12:43	1	22.2	21.4	25.3	27.3	719	872	663	355	226	136	92	77	59	36	857	652	349	222	134	90	76	58	35	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	53104	0L	12:43	2	22.3	21.5	25.3	27.4	716	853	655	353	225	138	92	77	59	36	842	647	349	222	136	91	76	58	36	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	53108	0R	13:33	1	24.0	21.0	28.8	26.8	669	413	324	224	154	99	69	58	47	28	436	342	237	163	105	73	61	50	30	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	53108	0R	13:33	2	24.0	21.0	28.8	26.5	665	410	321	223	153	100	69	58	46	28	436	341	237	163	106	73	62	49	30	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	53200	0L	12:44	1	22.7	22.0	25.3	26.8	707	600	470	289	195	125	88	75	62	40	600	470	289	195	125	88	75	62	40	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	53200	0L	12:44	2	22.7	22.1	25.3	27.0	703	593	465	287	194	126	88	75	61	40	596	468	289	195	127	89	75	61	40	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	53214	0R	13:32	1	23.8	21.3	28.8	27.3	689	615	437	224	132	92	71	62	50	31	631	448	230	135	94	73	64	51	32	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	53214	0R	13:32	2	23.8	21.3	28.8	27.2	688	599	431	222	132	93	71	62	49	32	616	443	228	136	96	73	64	50	33	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	53308	0R	13:31	1	23.4	21.4	28.8	27.2	680	639	489	292	180	109	78	66	55	38	664	508	304	187	113	81	69	57	40	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	53308	0R	13:31	2	23.5	21.4	28.8	27.0	675	624	482	290	178	108	77	66	56	37	654	505	304	186	113	81	69	59	39	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	53315	0L	12:45	1	23.1	21.9	25.3	27.2	720	684	503	264	152	94	68	62	56	37	672	494	259	149	92	67	61	55	36	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	53315	0L	12:45	2	23.1	21.9	25.3	27.0	709	665	494	260	150	93	66	61	53	36	663	493	259	150	93	66	61	53	36	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	53404	0R	13:30	1	23.5	21.9	28.8	27.2	674	566	417	234	145	101	73	63	49	30	594	437	245	152	106	77	66	51	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	53404	0R	13:30	2	23.5	21.9	28.8	27.0	673	555	410	232	145	101	73	64	50	30	583	431	244	152	106	77	67	53	32	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	53406	0L	12:46	1	22.9	21.8	25.3	27.2	722	695	536	308	193	120	82	71	56	35	681	525	302	189	118	80	70	55	34	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	53406	0L	12:46	2	22.9	21.9	25.3	27.1	719	686	529	305	191	117	81	70	55	35	675	520	300	188	115	80	69	54	34	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	53498	0R	13:29	1	23.3	21.6	28.8	26.5	681	594	427	227	139	98	72	63	49	29	617	443	236	144	102	75	65	51	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	53498	0R	13:29	2	23.3	21.6	28.8	27.1	678	581	421	225	138	97	71	63	48	28	606	439	235	144	101	74	66	50	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	53510	0L	12:47	1	23.4	22.2	25.3	27.2	721	778	599	340	216	131	89	75	59	38	763	587	333	212	128	87	74	58	37	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	53510	0L	12:47	2	23.4	22.2	25.3	27.2	716	763	591	339	216	131	91	76	60	38	753	584	335	213	129	90	75	59	38	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	53598	0L	12:48	1	23.1	22.1	25.3	27.0	692	489	363	201	128	97	72	63	51	32	500	371	205	131	99	74	64	52	33	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	53598	0L	12:48	2	23.1	22.2	25.3	27.0	693	483	361	201	129	95	72	63	51	33	493	368	205	132	97	73	64	52	34	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	53603	0R	13:28	1	23.1	21.1	28.8	27.2	680	745	577	347	219	130	89	76	59	37	775	600	361	228	135	93	79	61	38	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	53603	0R	13:28	2	23.1	21.2	28.8	27.2	679	730	567	343	217	130	88	75	59	39	760	590	357	226	135	92	78	61	41	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	53699	0R	13:27	1	23.0	20.9	28.8	27.2	698	788	586	284	190	130	89	75	59	37	798	594	288	192	132	90	76	60	37	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	53699	0R	13:27	2	23.1	20.9	28.8	27.3	696	767	576	283	190	130	90	76	59	36	779	585	287	193	132	91	77	60	37	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	53707	0L	12:48	1	22.3	22.0	25.3	27.9	740	1120	876	452	281	151	97	82	67	45	1070	837	432	268	144	93	78	64	43	2.8
Magumu - Thika	B20/D1315	22-Apr-21	7	53707	0L	12:48	2	22.3	22.0	25.3	27.9	738	1108	869	453	283	152	97	83	66	46	1061	832	434	271	146	93	80	63	44	2.8
Magumu - Thika	B20/D1315	22-Apr-21	7	53802</																											



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	54000	0L	12:51	1	23.2	22.2	25.3	28.4	713	1209	958	541	364	211	133	111	83	53	1199	950	536	361	209	132	110	82	53	2.6
Magumu - Thika	B20/D1315	22-Apr-21	7	54000	0L	12:51	2	23.3	22.2	25.3	28.1	718	1188	952	541	364	210	132	112	83	54	1170	937	533	358	207	130	110	82	53	2.7
Magumu - Thika	B20/D1315	22-Apr-21	7	54008	0R	13:24	1	23.3	20.4	28.8	27.1	683	728	542	306	187	118	81	69	52	31	754	561	317	194	122	84	71	54	32	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	54008	0R	13:24	2	23.4	20.5	28.8	27.1	691	711	535	304	188	118	81	69	53	31	727	547	311	192	121	83	71	54	32	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	54099	0R	13:23	1	23.6	20.0	28.8	26.6	670	334	274	191	129	95	70	64	50	32	352	289	202	136	100	74	68	53	34	5.2
Magumu - Thika	B20/D1315	22-Apr-21	7	54099	0R	13:23	2	23.6	20.0	28.8	26.6	669	333	273	191	130	95	71	65	51	32	352	289	202	137	100	75	69	54	34	5.2
Magumu - Thika	B20/D1315	22-Apr-21	7	54106	0L	12:52	1	23.4	22.4	25.3	27.3	718	801	622	370	225	142	96	84	68	44	789	612	364	222	140	95	83	67	43	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	54106	0L	12:52	2	23.4	22.5	25.3	27.3	719	788	614	369	225	141	96	83	68	44	775	604	363	221	139	94	82	67	43	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	54203	0L	12:53	1	22.9	22.2	25.3	27.0	697	555	427	264	179	119	82	69	54	32	563	433	268	182	121	83	70	55	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	54203	0L	12:53	2	23.0	22.2	25.3	27.0	700	547	424	264	179	119	82	69	54	32	552	428	267	181	120	83	70	55	32	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	54203	0R	13:22	1	23.6	20.6	28.8	-0.4	693	617	419	217	139	99	72	65	50	31	629	427	221	142	101	73	66	51	32	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	54203	0R	13:22	2	23.6	20.6	28.8	27.2	684	605	415	217	139	99	72	63	50	31	625	429	224	144	102	74	65	52	32	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	54295	0R	13:21	1	23.4	20.8	28.8	26.8	664	388	309	207	140	100	74	65	50	30	413	329	220	149	106	79	69	53	32	4.8
Magumu - Thika	B20/D1315	22-Apr-21	7	54295	0R	13:21	2	23.5	20.8	28.8	26.6	661	384	305	204	139	99	72	63	49	29	411	326	218	149	106	77	67	52	31	4.8
Magumu - Thika	B20/D1315	22-Apr-21	7	54302	0L	12:54	1	22.9	21.8	25.3	26.9	723	722	581	395	273	156	97	78	62	42	706	568	386	267	153	95	76	61	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	54302	0L	12:54	2	23.0	21.8	25.3	27.1	720	716	577	394	273	156	97	79	63	42	703	567	387	268	153	95	78	62	41	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	54399	0L	12:55	1	23.2	22.1	25.3	27.0	710	586	436	236	148	106	79	70	56	37	584	434	235	147	106	79	70	56	37	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	54399	0L	12:55	2	23.2	22.2	25.3	26.7	706	573	431	235	147	105	78	70	56	37	574	432	235	147	105	78	70	56	37	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	54403	0R	13:20	1	23.4	20.5	28.8	26.9	662	427	291	180	120	92	70	63	50	32	456	311	192	128	98	75	67	53	34	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	54403	0R	13:20	2	23.4	20.5	28.8	26.7	656	418	288	179	120	92	70	64	50	33	450	310	193	129	99	75	69	54	36	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	54497	0R	13:19	1	23.6	20.7	28.8	26.9	680	529	386	216	138	93	67	59	45	28	550	401	225	143	97	70	61	47	29	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	54497	0R	13:19	2	23.6	20.7	28.8	26.9	681	520	381	214	137	93	66	56	45	27	540	396	222	142	97	69	58	47	28	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	54505	0L	12:56	1	23.7	22.2	25.3	27.0	718	564	380	213	136	101	75	66	53	33	555	374	210	134	99	74	65	52	32	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	54505	0L	12:56	2	23.7	22.3	25.3	27.3	717	556	382	214	139	103	77	68	55	35	548	377	211	137	102	76	67	54	35	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	54604	0R	13:17	1	23.5	20.0	28.8	26.6	680	469	395	254	153	89	64	55	43	25	488	411	264	159	93	67	57	45	26	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	54604	0R	13:17	2	23.6	20.0	28.8	26.5	673	458	386	249	150	87	64	54	42	24	481	406	262	158	91	67	57	44	25	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	54604	0L	12:57	1	23.3	22.2	25.3	26.9	704	507	381	218	140	95	67	57	45	27	509	383	219	141	95	67	57	45	27	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	54604	0L	12:57	2	23.3	22.3	25.3	26.8	711	504	380	219	141	95	67	58	46	27	501	378	218	140	94	67	58	46	27	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	54702	0L	12:58	1	23.8	22.8	25.3	26.9	700	545	411	229	142	98	71	61	49	30	550	415	231	143	99	72	62	49	30	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	54702	0L	12:58	2	23.9	22.9	25.3	27.0	701	539	407	229	143	98	70	61	49	31	544	410	231	144	99	71	62	49	31	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	54708	0R	13:14	1	23.2	19.8	28.8	26.7	664	394	302	185	117	82	60	52	41	24	420	322	197	125	87	64	55	44	26	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	54708	0R	13:14	2	23.2	19.8	28.8	26.6	659	389	298	183	116	82	59	52	41	24	417	320	196	124	88	63	56	44	26	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	54801	0L	12:59	1	24.0	22.7	25.3	27.6	717	611	447	250	150	99	70	60	47	30	602	441	247	148	98	69	59	46	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	54801	0L	12:59	2	24.0	22.8	25.3	26.9	708	604	445	249	151	98	70	60	47	30	603	444	249	151	98	70	60	47	30	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	54808	0R	13:13	1	23.5	19.5	28.8	27.3	700	968	803	413	249	149	94	76	61	39	978	811	417	251	150	95	77	62	39	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	54808	0R	13:13	2	23.5	19.5	28.8	27.5	697	948	791	411	249	149	94	77	61	39	962	802	417	253	151	95	78	62	40	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	54899	0R	13:07	1	22.4	20.1	28.8	26.8	704	579	426	232	147	101	71	59	47	28	581	428	233	148	101	71	59	47	28	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	54899	0R	13:07	2	22.4	20.1	28.8	26.9	695	561	416	229	145	100	71	63	48	29	571	423	233	148	102	72	64	49	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	54905	0L	13:00	1	23.6	22.5	25.3	27.2	731	822	613	347	206	119	80	67	52	32	795	593	336	199	115	77	65	50	31	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	54905	0L	13:00	2	23.6	22.6	25.3	27.5	731	804	603	343	204	118	79	67	51	31	778	583	332	197	114	76	65	49	30	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	55007	0L	13:02	1	23.6	22.5	25.3	27.1	704	567	411	226	142	100	76	68	54	36	569	413	227	143	100	76	68	54	36	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	55007	0L	13:02	2	23.6	22.6	25.3	27.2	711	562	409	226	142	99	76	67	53	34	559	407	225	141	98	76	67	53	34	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	55011	0R	12:59	1	22.0	20.5	28.8	26.7	791	646	478	268	180	120	83	70	57	39	577	427	240	161	107	74	63	51	35	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	55011	0R	12:59	2	22.0	20.5	28.8	26.7	787	642	473	267	180	119	83	71	55	40	577	425	240	162	107	75	64	49	36	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	55096	0R	12:57	1	22.8	20.7	28.8	26.8	667	507	359	208	141	97	69	57	43	24	537	381	220	149	103	73	60	46	25	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	55096	0R	12																									

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	55298	OR	12:54	2	22.1	20.4	28.8	26.6	671	553	395	226	148	97	69	58	44	26	583	416	238	156	102	73	61	46	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	55302	OL	13:07	1	22.5	21.3	25.3	27.2	704	694	508	299	202	130	88	76	60	39	697	510	300	203	131	88	76	60	39	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	55302	OL	13:07	2	22.6	21.4	25.3	27.2	701	688	506	298	201	129	88	76	60	38	694	510	301	203	130	89	77	61	38	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	55397	OR	12:53	1	22.1	20.4	28.8	27.1	684	600	449	263	170	110	76	63	50	32	620	464	272	176	114	79	65	52	33	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	55397	OR	12:53	2	22.1	20.4	28.8	27.2	683	589	443	261	169	108	76	64	50	32	610	459	270	175	112	79	66	52	33	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	55404	OL	13:09	1	22.7	21.5	25.3	27.1	705	590	430	245	152	107	78	68	54	33	592	431	246	152	107	78	68	54	33	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	55404	OL	13:09	2	22.7	21.6	25.3	26.9	704	574	421	241	152	104	76	67	52	32	576	423	242	153	104	76	67	52	32	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	55502	OL	13:12	1	22.3	21.1	25.3	27.1	705	500	383	238	159	103	71	62	49	30	501	384	239	159	103	71	62	49	30	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	55502	OL	13:12	2	22.3	21.1	25.3	26.7	695	496	381	238	158	103	71	62	49	30	505	388	242	161	105	72	63	50	31	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	55503	OR	12:52	1	22.3	20.4	28.8	26.9	671	514	352	199	140	100	71	59	44	25	542	371	210	148	105	75	62	46	26	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	55503	OR	12:52	2	22.3	20.4	28.8	26.8	673	507	350	199	140	101	70	59	44	25	533	368	209	147	106	74	62	46	26	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	55596	OR	12:52	1	22.8	20.1	28.8	26.5	657	383	288	167	101	75	56	50	38	21	412	310	180	109	81	60	54	41	23	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	55596	OR	12:52	2	22.8	20.2	28.8	26.5	673	376	284	165	100	73	55	49	38	21	395	298	173	105	77	58	51	40	22	4.8
Magumu - Thika	B20/D1315	22-Apr-21	7	55602	OL	13:13	1	22.8	20.8	25.3	27.3	716	698	478	259	172	121	84	71	55	33	689	472	256	170	119	83	70	54	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	55602	OL	13:13	2	22.8	20.8	25.3	27.2	714	685	473	259	172	120	84	71	54	33	678	468	256	170	119	83	70	53	33	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	55693	OR	12:51	1	22.7	20.2	28.8	27.0	683	641	469	261	159	105	75	65	51	31	664	485	270	165	109	78	67	53	32	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	55693	OR	12:51	2	22.7	20.2	28.8	27.1	682	622	462	259	159	105	75	64	50	31	645	479	268	165	109	78	66	52	32	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	55700	OL	13:32	1	23.8	20.8	33.3	27.2	726	658	489	241	161	118	85	73	56	36	641	476	235	157	115	83	71	55	35	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	55700	OL	13:32	2	23.7	20.8	33.3	27.1	724	639	479	238	159	117	84	71	55	34	624	468	232	155	114	82	69	54	33	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	55797	OR	12:50	1	22.7	20.3	28.8	26.8	673	556	394	217	141	99	70	61	46	27	584	414	228	148	104	74	64	48	28	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	55797	OR	12:50	2	22.8	20.2	28.8	27.0	681	547	389	216	140	97	70	60	45	26	568	404	224	145	101	73	62	47	27	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	55802	OL	13:35	1	23.0	21.5	33.3	26.8	708	611	462	276	185	122	84	71	56	34	610	461	276	185	122	84	71	56	34	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	55802	OL	13:35	2	22.9	21.6	33.3	26.8	707	602	459	276	186	123	84	71	56	34	602	459	276	186	123	84	71	56	34	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	55894	OR	12:49	1	22.4	20.4	28.8	27.2	692	662	474	266	166	104	69	56	44	25	676	484	272	170	106	70	57	45	26	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	55894	OR	12:49	2	22.4	20.4	28.8	27.0	696	644	463	262	163	103	69	56	43	24	654	470	266	166	105	70	57	44	24	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	55900	OL	13:36	1	22.8	21.4	33.3	27.2	717	783	564	312	204	135	93	78	59	37	772	556	308	201	133	92	77	58	36	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	55900	OL	13:36	2	22.8	21.5	33.3	27.1	716	766	558	311	205	136	93	78	59	37	756	551	307	202	134	92	77	58	37	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	56001	OL	13:37	1	23.0	21.6	33.3	27.1	726	812	605	351	213	115	73	59	46	27	791	589	342	207	112	71	57	45	26	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	56001	OL	13:37	2	23.1	21.6	33.3	27.2	743	803	601	352	214	117	75	59	46	27	764	572	335	204	111	71	56	44	26	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	56002	OR	12:48	1	22.1	20.0	28.8	26.9	684	599	419	226	129	82	59	48	39	21	619	433	234	133	85	61	50	40	22	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	56002	OR	12:48	2	22.1	20.0	28.8	27.0	682	590	413	223	129	81	58	50	38	21	612	428	231	134	84	60	52	39	22	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	56102	OL	13:38	1	23.5	21.9	33.3	27.0	720	769	588	344	217	126	80	64	48	28	755	577	338	213	124	79	63	47	27	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	56102	OL	13:38	2	23.6	22.0	33.3	27.0	724	755	580	340	215	123	78	62	46	26	737	566	332	210	120	76	61	45	25	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	56105	OR	12:46	1	21.7	20.2	28.8	26.9	681	515	372	200	126	81	58	49	38	22	535	386	208	131	84	60	51	39	23	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	56105	OR	12:46	2	21.7	20.3	28.8	26.8	676	503	366	198	125	81	58	48	38	22	526	383	207	131	85	61	50	40	23	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	56200	OL	13:39	1	23.6	22.7	33.3	27.0	707	574	415	229	143	97	72	62	49	30	574	415	229	143	97	72	62	49	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	56200	OL	13:39	2	23.6	22.8	33.3	26.9	707	565	411	228	143	95	71	61	49	30	565	411	228	143	95	71	61	49	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	56202	OR	12:45	1	21.3	19.9	28.8	26.8	667	416	305	173	105	78	59	52	41	23	441	323	183	111	83	63	55	43	24	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56202	OR	12:45	2	21.4	20.0	28.8	26.8	659	407	301	173	106	77	59	53	42	24	437	323	186	114	83	63	57	45	26	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56299	OL	13:40	1	23.8	22.4	33.3	27.0	713	532	405	222	132	91	64	56	45	28	528	402	220	131	90	63	56	45	28	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	56299	OL	13:40	2	23.9	22.4	33.3	27.0	716	521	399	220	132	92	66	55	45	27	514	394	217	130	91	65	54	44	27	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	56303	OR	12:44	1	20.8	19.6	28.8	26.6	679	490	357	201	127	89	65	57	44	27	510	372	209	132	93	68	59	46	28	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	56303	OR	12:44	2	20.8	19.6	28.8	26.6	675	481	352	200	127	89	65	57	44	26	504	369	209	133	93	68	60	46	27	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	56399	OR	12:43	1	20.5	19.5	28.8	27.0	686	593	420	230	145	96	69	59	46	26	611	433	237	149	99	71	61	47	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	56399	OR	12:43	2	20.6	19.6	28.8	27.1	687	583	416	230	146	96	69	59	46	26	600	428	237	150	99	71	61	47	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	56402	OL	13:41	1	24.2	22.7	33.3	27.2</																				

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	56605	0L	13:43	1	24.7	23.2	33.3	26.9	712	538	424	258	170	114	79	66	52	32	534	421	256	169	113	78	66	52	32	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	56605	0L	13:43	2	24.8	23.4	33.3	26.7	709	529	420	256	169	111	78	65	51	31	528	419	255	169	111	78	65	51	31	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	56693	0R	12:39	1	21.9	20.7	28.8	27.0	688	696	546	344	236	145	95	80	60	37	715	561	354	243	149	98	82	62	38	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	56693	0R	12:39	2	21.9	20.7	28.8	27.0	693	689	542	343	235	145	95	79	59	35	703	553	350	240	148	97	81	60	36	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56704	0L	13:44	1	24.3	23.0	33.3	27.3	717	683	498	270	164	112	79	67	51	31	673	491	266	162	110	78	66	50	31	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56704	0L	13:44	2	24.4	23.1	33.3	26.9	719	673	495	270	165	114	80	67	52	32	662	487	265	162	112	79	66	51	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	56804	0L	13:45	1	24.5	23.2	33.3	27.1	712	685	500	281	177	111	77	66	50	32	680	496	279	176	110	76	66	50	32	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56804	0L	13:45	2	24.5	23.3	33.3	27.1	715	678	499	282	179	112	78	66	52	32	670	493	279	177	111	77	65	51	32	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56805	0R	12:38	1	21.5	20.4	28.8	27.0	698	651	466	263	167	106	73	61	48	27	659	472	266	169	107	74	62	49	27	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	56805	0R	12:38	2	21.6	20.5	28.8	27.0	692	637	458	260	167	105	72	60	47	29	651	468	266	171	107	74	61	48	30	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	56906	0L	13:46	1	24.9	23.1	33.3	27.2	718	705	543	308	180	101	69	58	43	26	694	535	303	177	99	68	57	42	26	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56906	0L	13:46	2	24.9	23.1	33.3	26.8	717	694	539	308	180	101	70	57	45	26	684	531	304	177	100	69	56	44	26	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	56910	0R	12:37	1	21.6	20.3	28.8	26.8	675	590	437	232	141	91	65	55	41	23	618	458	243	148	95	68	58	43	24	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	56910	0R	12:37	2	21.5	20.3	28.8	26.9	678	578	431	230	140	92	64	55	42	23	603	449	240	146	96	67	57	44	24	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	56996	0R	12:36	1	22.5	20.4	28.8	26.7	665	422	301	164	101	76	59	53	42	25	449	320	174	107	81	63	56	45	27	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	56996	0R	12:36	2	22.5	20.4	28.8	26.5	669	414	297	163	101	76	59	53	42	25	438	314	172	107	80	62	56	44	26	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	57007	0L	13:47	1	25.0	24.0	33.3	26.9	705	526	382	225	147	103	75	65	50	30	527	383	226	147	103	75	65	50	30	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	57007	0L	13:47	2	25.0	24.1	33.3	26.9	697	518	374	219	141	102	73	63	50	31	525	379	222	143	103	74	64	51	31	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	57099	0L	13:48	1	24.5	23.5	33.3	27.1	712	658	518	324	215	135	90	77	61	38	653	514	322	213	134	89	76	61	38	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	57099	0L	13:48	2	24.5	23.7	33.3	27.0	714	652	513	323	214	134	91	78	60	39	646	508	320	212	133	90	77	59	39	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	57099	0R	12:35	1	22.1	20.4	28.8	26.9	693	624	402	192	110	77	58	51	40	23	637	410	196	112	79	59	52	41	23	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	57099	0R	12:35	2	22.1	20.4	28.8	26.9	692	604	395	190	109	75	59	50	39	23	617	404	194	111	77	60	51	40	23	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	57185	0R	12:34	1	22.3	20.5	28.8	27.1	683	571	419	237	142	90	65	53	44	25	591	434	245	147	93	67	55	46	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	57185	0R	12:34	2	22.3	20.5	28.8	27.0	678	556	412	235	141	90	64	53	42	24	580	430	245	147	94	67	55	44	25	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	57207	0L	13:49	1	24.5	20.6	33.3	26.8	708	517	391	226	134	81	57	49	38	23	516	390	226	134	81	57	49	38	23	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	57207	0L	13:49	2	24.5	20.7	33.3	26.6	715	510	388	226	136	81	57	49	39	23	504	384	223	134	80	56	48	39	23	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	57296	0R	12:32	1	22.5	20.3	28.8	27.0	678	558	405	215	126	83	61	51	40	22	582	422	224	131	87	64	53	42	23	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	57296	0R	12:32	2	22.5	20.4	28.8	27.2	693	551	402	215	128	83	61	51	40	22	562	410	219	131	85	62	52	41	22	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	57302	0L	13:50	1	24.6	20.0	33.3	27.1	703	659	504	299	202	131	88	73	56	34	663	507	301	203	132	89	73	56	34	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	57302	0L	13:50	2	24.6	20.1	33.3	27.1	703	649	498	298	202	132	89	74	56	34	653	501	300	203	133	90	74	56	34	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	57398	0R	12:30	1	21.6	20.4	28.8	27.0	697	681	484	247	143	87	60	50	39	23	691	491	251	145	88	61	51	40	23	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	57398	0R	12:30	2	21.6	20.4	28.8	27.1	696	662	475	245	142	86	60	50	39	22	672	483	249	144	87	61	51	40	22	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	57403	0L	13:51	1	23.9	21.2	33.3	27.6	712	970	710	400	255	152	95	77	58	35	963	705	397	253	151	94	76	58	35	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	57403	0L	13:51	2	23.8	21.4	33.3	27.5	714	956	705	400	256	151	95	77	58	35	947	698	396	253	150	94	76	57	35	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	57503	0L	13:52	1	24.2	22.2	33.3	27.7	720	834	647	373	242	150	98	81	61	37	819	635	366	238	147	96	80	60	36	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	57503	0L	13:52	2	24.2	22.3	33.3	27.5	711	806	631	365	237	148	96	80	60	36	801	627	363	236	147	95	80	60	36	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	57503	0R	12:29	1	22.4	20.7	28.8	27.1	692	716	482	259	152	96	67	57	45	26	732	492	265	155	98	68	58	46	27	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	57503	0R	12:29	2	22.4	20.8	28.8	26.9	689	704	477	258	152	96	68	57	45	26	722	489	265	156	99	70	58	46	27	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	57597	0R	12:26	1	21.9	21.1	28.8	26.6	670	472	348	192	116	80	57	47	39	20	498	367	203	122	84	60	50	41	21	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	57597	0R	12:26	2	22.0	21.1	28.8	26.7	669	465	343	192	116	80	57	49	38	21	491	362	203	123	85	60	52	40	22	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	57601	0L	13:52	1	24.6	22.7	33.3	27.4	735	764	558	282	164	95	65	57	43	26	735	537	271	158	91	63	55	41	25	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	57601	0L	13:52	2	24.7	22.8	33.3	27.3	737	759	558	283	166	97	65	55	43	27	728	535	271	159	93	62	53	41	26	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	57697	0R	12:25	1	22.2	21.0	28.8	26.8	683	583	437	229	136	95	70	61	47	28	603	452	237	141	98	72	63	49	29	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	57697	0R	12:25	2	22.2	21.1	28.8	26.9	676	569	430	228	136	96	71	61	48	28	595	450	238	142	100	74	64	50	29	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	57701	0L	13:54	1	25.2	23.0	33.3	27.4	714	751	554	290	171	106	76	67	51	32	744	549	287	169	105	75	66	51	32	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	57701	0L	13:54	2	25.2																							

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	7	57903	0L	13:56	2	24.4	23.3	33.3	27.4	729	760	562	312	192	114	79	69	54	36	737	545	303	186	111	77	67	52	35	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	57998	0R	12:22	1	22.3	20.8	28.8	27.3	682	717	528	271	147	79	49	36	22	5	743	547	281	152	82	51	37	23	5	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	57998	0R	12:22	2	22.3	20.8	28.8	27.1	684	703	520	270	148	79	49	34	23	5	727	537	279	153	82	51	35	24	5	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	58009	0L	13:56	1	24.6	23.0	33.3	27.1	695	561	440	276	184	118	82	68	50	28	571	448	281	187	120	83	69	51	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	58009	0L	13:56	2	24.5	23.0	33.3	27.1	702	550	433	273	182	118	81	68	50	27	554	436	275	183	119	82	68	50	27	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	58099	0R	12:19	1	23.9	21.2	28.8	27.2	687	579	425	225	129	85	63	55	43	25	596	437	232	133	87	65	57	44	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	58099	0R	12:19	2	23.9	21.3	28.8	26.9	679	562	416	222	128	84	63	55	43	25	585	433	231	133	87	66	57	45	26	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	58102	0L	13:57	1	24.8	23.1	33.3	27.2	694	488	345	195	128	96	70	63	49	31	497	351	199	130	98	71	64	50	32	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58102	0L	13:57	2	24.8	23.2	33.3	27.0	690	482	343	196	128	94	70	62	49	30	494	351	201	131	96	72	64	50	31	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58193	0R	12:19	1	23.6	21.3	28.8	26.9	685	595	425	227	137	90	64	55	42	25	614	439	234	141	93	66	57	43	26	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	58193	0R	12:19	2	23.6	21.4	28.8	26.9	691	588	423	228	139	90	64	56	43	26	602	433	233	142	92	65	57	44	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	58203	0L	13:58	1	24.3	22.9	33.3	27.5	725	832	614	335	202	118	81	68	54	34	811	599	327	197	115	79	66	53	33	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58203	0L	13:58	2	24.3	23.0	33.3	27.5	727	820	608	334	203	119	81	68	54	36	797	591	325	197	116	79	66	53	35	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58300	0R	12:17	1	23.6	21.2	28.8	26.8	685	553	382	189	108	73	55	49	37	22	571	394	195	111	75	57	51	38	23	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	58300	0R	12:17	2	23.6	21.3	28.8	26.9	682	540	374	188	107	73	56	48	38	21	560	388	195	111	76	58	50	39	22	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	58306	0L	13:59	1	24.4	23.2	33.3	27.3	715	728	561	310	181	105	73	64	51	32	720	555	307	179	104	72	63	50	32	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	58306	0L	13:59	2	24.4	23.2	33.3	27.2	718	718	559	311	183	106	74	64	51	34	707	550	306	180	104	73	63	50	33	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	58401	0R	12:16	1	23.6	21.6	28.8	26.8	670	472	329	171	96	67	50	43	33	18	498	347	180	101	71	53	45	35	19	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58401	0R	12:16	2	23.6	21.6	28.8	26.6	669	465	326	171	97	69	52	45	35	19	491	345	181	103	73	55	48	37	20	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58410	0L	14:00	1	24.3	23.1	33.3	27.5	709	754	613	409	264	137	88	75	60	40	752	611	408	263	137	88	75	60	40	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	58410	0L	14:00	2	24.3	23.2	33.3	27.1	706	741	606	406	265	137	88	75	60	39	742	607	407	265	137	88	75	60	39	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	58497	0R	12:14	1	23.0	21.7	28.8	26.8	676	441	312	169	95	65	51	45	35	20	461	326	177	99	68	53	47	37	21	4.4
Magumu - Thika	B20/D1315	22-Apr-21	7	58497	0R	12:14	2	23.1	21.8	28.8	26.7	677	435	307	167	95	64	51	45	35	19	454	321	174	99	67	53	47	37	20	4.5
Magumu - Thika	B20/D1315	22-Apr-21	7	58508	0L	14:00	1	24.3	23.1	33.3	27.7	723	873	644	353	219	122	78	64	50	30	854	630	345	214	119	76	63	49	29	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	58508	0L	14:00	2	24.3	23.2	33.3	27.7	720	847	628	347	216	122	77	62	49	30	832	617	341	212	120	76	61	48	29	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	58597	0R	12:13	1	22.5	21.8	28.8	26.9	676	561	392	209	123	82	60	50	38	21	587	410	219	129	86	63	52	40	22	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	58597	0R	12:13	2	22.5	21.8	28.8	26.9	672	545	385	205	121	80	58	48	37	20	573	405	216	127	84	61	51	39	21	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	58606	0L	14:01	1	25.1	23.5	33.3	27.7	720	883	668	353	202	113	77	67	54	34	867	656	347	198	111	76	66	53	33	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	58606	0L	14:01	2	25.2	23.6	33.3	27.5	722	872	662	352	202	113	78	67	54	35	854	648	345	198	111	76	66	53	34	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	58700	0R	12:12	1	22.6	21.7	28.8	26.8	672	470	335	180	102	72	56	50	39	22	494	352	189	107	76	59	53	41	23	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58700	0R	12:12	2	22.6	21.8	28.8	26.7	669	461	331	180	102	72	56	50	39	22	487	350	190	108	76	59	53	41	23	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	58716	0L	14:02	1	24.9	23.5	33.3	27.1	696	554	415	237	147	96	70	61	48	30	563	422	241	149	98	71	62	49	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	58716	0L	14:02	2	24.9	23.6	33.3	26.9	697	547	413	237	147	99	71	62	50	31	555	419	240	149	100	72	63	51	31	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	58793	0R	12:11	1	22.5	21.6	28.8	26.9	674	536	383	219	134	88	63	54	42	25	562	402	230	141	92	66	57	44	26	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	58793	0R	12:11	2	22.4	21.7	28.8	26.7	669	525	378	217	134	87	63	55	44	25	555	399	229	142	92	67	58	46	26	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	58812	0L	14:03	1	25.4	23.9	33.3	27.1	713	658	495	269	158	100	74	66	48	30	652	491	267	157	99	73	65	48	30	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	58812	0L	14:03	2	25.4	23.9	33.3	27.2	718	650	492	269	159	101	74	65	48	31	640	484	265	157	99	73	64	47	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	58904	0L	14:03	1	25.4	23.8	33.3	27.6	719	650	492	269	159	101	74	65	48	31	640	484	265	157	99	73	64	47	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	58904	0L	14:03	2	25.3	23.9	33.3	27.6	716	646	493	269	159	101	74	65	48	31	640	484	265	157	99	73	64	47	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	58904	0L	14:03	2	25.3	23.9	33.3	27.6	716	916	703	398	239	130	89	78	61	41	904	694	393	236	128	88	77	60	40	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	58906	0R	12:11	1	22.4	21.4	28.8	26.7	670	482	347	193	118	88	67	60	48	29	509	366	204	125	93	71	63	51	31	4.2
Magumu - Thika	B20/D1315	22-Apr-21	7	58906	0R	12:11	2	22.4	21.4	28.8	26.6	669	472	342	192	118	88	68	60	48	29	499	361	203	125	93	72	63	51	31	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	59001	0R	12:10	1	22.8	21.5	28.8	27.1	692	665	467	234	130	83	61	54	44	27	679	477	239	133	85	62	55	45	28	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	59001	0R	12:10	2	22.9	21.6	28.8	27.1	696	652	459	233	130	83	62	54	44	27	662	466	237	132	84	63	55	45	27	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	59003	0L	14:04	1	25.3	23.6	33.3	27.2	696	485	348	187	115	84	63	56	44	26	493	354	190	117	85	64	57	45	26	4.3
Magumu - Thika	B20/D1315	22-Apr-21	7	59003	0L	14:04	2	25.2	23.6	33.3																					



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			7	59301	OR	12:07	1	23.1	21.1	28.8	26.8	678	649	492	281	171	105	74	64	50	31
Magumu - Thika	B20/D1315	22-Apr-21	7	59301	OR	12:07	2	23.1	21.1	28.8	26.7	678	637	488	281	173	105	74	64	51	33	664	509	293	180	109	77	67	53	34	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	59304	OL	14:07	1	24.5	23.0	33.3	27.0	717	622	448	238	139	89	66	60	50	32	613	442	235	137	88	65	59	49	32	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	59304	OL	14:07	2	24.6	23.1	33.3	27.2	718	608	443	237	139	88	66	60	50	33	599	436	233	137	87	65	59	49	32	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	59395	OR	12:06	1	23.5	20.8	28.8	27.3	697	741	508	253	147	97	72	62	50	32	752	515	257	149	98	73	63	51	32	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	59395	OR	12:06	2	23.5	20.8	28.8	27.1	699	730	504	254	148	97	72	63	51	30	738	510	257	150	98	73	64	52	30	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	59403	OL	14:08	1	24.7	23.0	33.3	27.3	711	687	507	278	162	98	69	61	49	32	683	504	276	161	97	69	61	49	32	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	59403	OL	14:08	2	24.8	23.0	33.3	26.9	709	675	499	275	162	97	69	61	49	31	673	498	274	162	97	69	61	49	31	3.6
Magumu - Thika	B20/D1315	22-Apr-21	7	59497	OR	12:05	1	23.3	20.0	28.8	26.9	683	543	413	236	140	87	67	60	45	27	562	428	244	145	90	69	62	47	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	59497	OR	12:05	2	23.4	20.0	28.8	2.9	683	536	410	236	141	88	64	58	45	27	555	424	244	146	91	66	60	47	28	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	59504	OL	14:08	1	24.6	22.4	33.3	27.7	713	758	567	318	189	110	72	69	50	31	752	562	315	187	109	71	68	50	31	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	59504	OL	14:08	2	24.5	22.5	33.3	27.6	712	743	558	316	189	107	73	63	48	32	738	554	314	188	106	72	63	48	32	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	59592	OR	11:51	1	22.5	21.4	28.8	26.7	696	613	467	258	151	93	66	56	45	27	623	474	262	153	94	67	57	46	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	59592	OR	11:51	2	22.5	21.5	28.8	26.7	691	606	462	255	149	93	65	55	44	26	620	473	261	152	95	67	56	45	27	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	59606	OL	14:09	1	23.8	22.2	33.3	27.4	710	774	588	321	189	111	77	67	54	36	771	586	320	188	111	77	67	54	36	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	59606	OL	14:09	2	23.9	22.3	33.3	27.5	712	760	583	321	188	110	76	67	54	35	755	579	319	187	109	75	67	54	35	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	59685	OR	11:50	1	22.3	21.4	28.8	26.8	680	516	374	209	121	76	58	53	40	25	536	389	217	126	79	60	55	42	26	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	59685	OR	11:50	2	22.3	21.4	28.8	26.9	681	506	369	208	120	75	58	54	41	25	525	383	216	125	78	60	56	43	26	4.1
Magumu - Thika	B20/D1315	22-Apr-21	7	59699	OL	14:10	1	23.6	22.1	33.3	27.6	719	745	553	272	169	104	74	64	52	33	733	544	267	166	102	73	63	51	32	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	59699	OL	14:10	2	23.6	22.1	33.3	27.3	717	731	546	272	170	105	74	65	52	34	721	538	268	168	104	73	64	51	34	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	59802	OR	11:49	1	22.2	21.2	28.8	27.2	687	569	404	214	122	80	61	52	41	24	586	416	220	126	82	63	54	42	25	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	59802	OR	11:49	2	22.2	21.2	28.8	26.9	693	557	400	214	123	81	60	54	42	25	568	408	218	125	83	61	55	43	26	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	59804	OL	14:11	1	23.5	21.9	33.3	27.6	727	820	610	341	204	108	72	63	50	32	797	593	332	198	105	70	61	49	31	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	59804	OL	14:11	2	23.6	21.9	33.3	27.6	722	804	601	339	204	107	72	62	49	32	787	589	332	200	105	71	61	48	31	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	59895	OR	11:48	1	21.6	21.2	28.8	27.3	703	801	566	302	169	90	61	53	41	23	806	569	304	170	91	61	53	41	23	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	59895	OR	11:48	2	21.7	21.3	28.8	27.3	705	779	556	299	168	89	61	52	41	23	781	558	300	168	89	61	52	41	23	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	59907	OL	14:12	1	23.9	21.9	33.3	27.7	736	902	574	300	179	111	76	65	52	33	866	551	288	172	107	73	62	50	32	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	59907	OL	14:12	2	23.8	21.9	33.3	27.8	738	887	567	299	180	111	76	65	51	32	850	543	286	172	106	73	62	49	31	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	60001	OR	11:47	1	21.1	21.2	28.8	27.0	687	634	478	274	176	110	77	66	52	31	652	492	282	181	113	79	68	54	32	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	60001	OR	11:47	2	21.2	21.2	28.8	27.1	677	619	470	271	175	110	77	67	51	30	646	491	283	183	115	80	70	53	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	60005	OL	14:14	1	24.3	22.2	33.3	27.4	689	705	526	279	175	116	85	76	59	36	723	540	286	180	119	87	78	61	37	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	60005	OL	14:14	2	24.4	22.2	33.3	27.3	692	689	519	278	175	116	84	75	59	36	704	530	284	179	119	86	77	60	37	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	60094	OR	11:46	1	22.2	21.6	28.8	26.6	653	396	291	173	109	78	60	52	42	23	429	315	187	118	84	65	56	45	25	4.6
Magumu - Thika	B20/D1315	22-Apr-21	7	60094	OR	11:46	2	22.2	21.7	28.8	26.7	660	391	290	172	110	78	59	52	42	24	419	311	184	118	84	63	56	45	26	4.7
Magumu - Thika	B20/D1315	22-Apr-21	7	60104	OL	14:15	1	24.5	22.3	33.3	27.3	708	646	482	273	163	98	69	60	49	31	645	481	273	163	98	69	60	49	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	60104	OL	14:15	2	24.6	22.4	33.3	27.2	705	633	475	270	162	98	68	60	48	31	635	476	271	162	98	68	60	48	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	7	60201	OR	11:45	1	22.0	21.7	28.8	27.3	684	748	536	280	173	109	78	67	52	30	773	554	289	179	113	81	69	54	31	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	60201	OR	11:45	2	22.0	21.7	28.8	26.9	683	731	528	278	172	109	79	66	52	31	757	547	288	178	113	82	68	54	32	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	60203	OL	14:15	1	25.0	22.7	33.3	27.4	710	743	570	318	188	108	73	61	48	30	740	568	317	187	108	73	61	48	30	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	60203	OL	14:15	2	25.1	22.8	33.3	27.6	708	728	560	315	187	108	72	61	47	29	727	559	315	187	108	72	61	47	29	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	60292	OR	11:44																									

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			7	60500	OL	14:19	2	25.2	23.3	33.3	27.6	719	618	483	270	159	97	67	61	49	31
Magumu - Thika	B20/D1315	22-Apr-21	7	60500	OL	14:18	1	24.6	23.0	33.3	27.5	713	633	488	269	159	96	68	60	49	31	628	484	267	158	95	67	59	49	31	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	60500	OL	14:18	2	24.7	23.1	33.3	27.5	716	626	485	269	159	96	68	61	49	31	618	479	266	157	95	67	60	48	31	3.8
Magumu - Thika	B20/D1315	22-Apr-21	7	60601	OR	11:42	1	22.2	21.4	28.8	27.0	679	753	591	342	207	118	81	68	52	31	784	615	356	216	123	84	71	54	32	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	60601	OR	11:42	2	22.2	21.4	28.8	27.3	674	743	586	341	208	119	82	68	51	30	779	615	358	218	125	86	71	53	31	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	60604	OL	14:20	1	25.5	23.1	33.3	27.4	692	565	413	237	147	100	73	63	49	30	577	422	242	150	102	75	64	50	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	60604	OL	14:20	2	25.5	23.2	33.3	27.4	696	559	410	237	148	101	73	63	49	30	568	416	241	150	103	74	64	50	30	4.0
Magumu - Thika	B20/D1315	22-Apr-21	7	60672	OR	11:41	1	22.2	21.3	28.8	27.6	707	921	661	333	190	106	76	65	50	30	921	661	333	190	106	76	65	50	30	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	60672	OR	11:41	2	22.3	21.3	28.8	27.6	708	906	653	333	191	107	76	65	49	30	905	652	333	191	107	76	65	49	30	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	60700	OL	14:20	1	25.5	23.3	33.3	27.9	715	957	727	386	228	134	87	73	56	34	946	719	382	225	133	86	72	55	34	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	60700	OL	14:20	2	25.5	23.4	33.3	28.0	713	932	712	383	227	134	87	72	55	34	924	706	380	225	133	86	71	55	34	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	60801	OR	11:40	1	22.0	21.3	28.8	27.6	693	787	543	255	152	102	75	64	50	30	803	554	260	155	104	77	65	51	31	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	60801	OR	11:40	2	22.0	21.3	28.8	27.4	695	762	533	255	152	103	75	66	51	30	775	542	259	155	105	76	67	52	31	3.3
Magumu - Thika	B20/D1315	22-Apr-21	7	60802	OL	18:47	1	20.0	19.8	28.2	27.7	767	1401	952	463	268	153	98	81	63	41	1291	878	427	247	141	90	75	58	38	2.5
Magumu - Thika	B20/D1315	22-Apr-21	7	60802	OL	18:47	2	20.0	19.8	28.2	27.8	764	1375	937	461	269	154	98	81	62	42	1272	867	427	249	143	91	75	57	39	2.5
Magumu - Thika	B20/D1315	22-Apr-21	7	60899	OL	18:48	1	20.0	20.0	28.2	27.3	775	1006	761	408	243	132	88	75	59	40	918	694	372	222	120	80	68	54	36	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	60899	OL	18:48	2	20.0	20.0	28.2	27.4	764	978	745	402	241	131	88	75	60	39	905	689	372	223	121	81	69	56	36	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	60900	OR	11:39	1	22.9	21.8	28.8	27.9	706	964	730	382	224	122	84	69	55	33	965	731	383	224	122	84	69	55	33	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	60900	OR	11:39	2	22.9	21.8	28.8	27.5	708	944	719	380	224	122	84	70	55	34	943	718	379	224	122	84	70	55	34	3.0
Magumu - Thika	B20/D1315	22-Apr-21	7	60993	OR	11:38	1	23.0	21.6	28.8	27.3	689	722	521	297	185	114	80	70	55	34	741	535	305	190	117	82	72	56	35	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	60993	OR	11:38	2	23.0	21.7	28.8	27.2	684	707	513	295	185	113	80	68	55	34	731	530	305	191	117	83	70	57	35	3.5
Magumu - Thika	B20/D1315	22-Apr-21	7	61006	OL	18:49	1	20.1	20.1	28.2	27.1	765	835	611	339	211	121	83	72	59	38	772	565	313	195	112	77	67	55	35	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	61006	OL	18:49	2	20.1	20.1	28.2	27.1	760	817	600	335	207	121	83	71	58	38	760	558	312	193	113	77	66	54	35	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	61099	OR	11:37	1	22.6	21.0	28.8	27.6	702	1092	863	446	259	142	97	84	70	72	1100	869	449	261	143	98	85	70	73	2.7
Magumu - Thika	B20/D1315	22-Apr-21	7	61099	OR	11:37	2	22.6	21.1	28.8	27.7	698	1087	859	445	258	141	97	84	70	70	1101	870	451	261	143	98	85	71	71	2.7
Magumu - Thika	B20/D1315	22-Apr-21	7	61104	OL	18:50	1	20.1	20.0	28.2	27.5	770	960	711	394	262	165	109	88	68	45	881	653	362	241	152	100	81	62	41	3.1
Magumu - Thika	B20/D1315	22-Apr-21	7	61104	OL	18:50	2	20.1	20.0	28.2	27.6	760	931	697	389	259	164	107	86	65	44	866	648	362	241	153	100	80	60	41	3.2
Magumu - Thika	B20/D1315	22-Apr-21	7	61197	OR	11:35	1	22.8	21.0	28.8	26.9	670	564	406	232	144	95	70	62	47	28	595	428	245	152	100	74	65	50	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	61197	OR	11:35	2	22.8	21.0	28.8	26.7	674	558	404	232	146	97	70	59	47	28	585	424	243	153	102	73	62	49	29	3.9
Magumu - Thika	B20/D1315	22-Apr-21	7	61199	OL	18:51	1	20.1	20.2	28.2	27.2	757	798	607	363	229	130	88	74	61	40	745	567	339	214	121	82	69	57	37	3.4
Magumu - Thika	B20/D1315	22-Apr-21	7	61199	OL	18:51	2	20.1	20.2	28.2	27.1	748	780	595	357	226	128	87	73	60	41	737	562	337	214	121	82	69	57	39	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	61297	OR	11:35	1	22.9	20.1	28.8	26.9	684	573	436	252	158	99	70	61	46	26	592	451	260	163	102	72	63	48	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	61297	OR	11:35	2	22.9	20.2	28.8	26.7	675	562	432	251	158	99	70	60	46	26	589	452	263	165	104	73	63	48	27	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	61304	OL	18:52	1	20.1	20.3	28.2	27.4	791	1105	881	424	259	141	93	80	66	48	988	787	379	231	126	83	72	59	43	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	61304	OL	18:52	2	20.1	20.3	28.2	27.5	774	1064	850	413	252	139	92	78	65	48	972	776	377	230	127	84	71	59	44	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	61390	OR	11:34	1	22.8	19.8	28.8	27.0	688	624	455	241	149	99	72	61	47	27	641	468	248	153	102	74	63	48	28	3.7
Magumu - Thika	B20/D1315	22-Apr-21	8	61390	OR	11:34	2	22.8	19.9	28.8	26.8	677	610	447	239	148	98	72	61	47	26	637	467	250	155	102	75	64	49	27	3.7
Magumu - Thika	B20/D1315	22-Apr-21	8	61415	OL	18:53	1	20.1	20.3	28.2	28.2	772	1348	1073	588	358	176	107	86	65	41	1235	983	538	328	161	98	79	60	38	2.6
Magumu - Thika	B20/D1315	22-Apr-21	8	61415	OL	18:53	2	20.1	20.3	28.2	28.1	764	1317	1057	584	358	175	107	86	68	42	1219	978	540	331	162	99	80	63	39	2.6
Magumu - Thika	B20/D1315	22-Apr-21	8	61500	OL	18:54	1	20.2	20.3	28.2	26.9	752	814	643	394	259	144	91	73	56	33	765	605	370	244	135	86	69	53	31	3.4
Magumu - Thika	B20/D13																														

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	8	61828	0L	18:59	1	20.1	19.7	28.2	27.9	728	1293	929	495	303	158	91	65	42	16	1256	902	481	294	153	88	63	41	16	2.6
Magumu - Thika	B20/D1315	22-Apr-21	8	61828	0L	18:59	2	20.1	19.7	28.2	27.8	716	1259	911	488	299	157	91	64	43	15	1243	900	482	295	155	90	63	42	15	2.6
Magumu - Thika	B20/D1315	22-Apr-21	8	61896	0R	11:27	1	22.4	21.0	28.8	27.5	702	775	576	313	204	126	81	60	40	17	781	580	315	205	127	82	60	40	17	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	61896	0R	11:27	2	22.4	21.0	28.8	27.1	696	770	574	314	206	129	82	62	40	17	782	583	319	209	131	83	63	41	17	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	61914	0L	19:01	1	20.1	19.7	28.2	27.4	737	978	766	461	280	132	72	48	29	9	938	735	442	269	127	69	46	28	9	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	61914	0L	19:01	2	20.1	19.7	28.2	27.4	725	964	757	455	277	132	69	47	28	8	940	738	444	270	129	67	46	27	8	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	62004	0L	19:02	1	20.1	20.0	28.2	27.7	760	1029	768	371	203	113	75	59	41	19	957	714	345	189	105	70	55	38	18	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	62004	0L	19:02	2	20.1	20.0	28.2	27.8	754	1001	750	365	198	112	74	59	41	18	939	703	342	186	105	69	55	38	17	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	62011	0R	11:26	1	22.3	21.0	28.8	26.7	692	456	373	237	155	90	53	37	25	7	466	381	242	158	92	54	38	26	7	4.5
Magumu - Thika	B20/D1315	22-Apr-21	8	62011	0R	11:26	2	22.4	21.0	28.8	26.6	694	449	369	235	155	90	53	37	25	7	457	376	239	158	92	54	38	25	7	4.6
Magumu - Thika	B20/D1315	22-Apr-21	8	62091	0L	19:03	1	20.2	20.1	28.2	28.2	760	1145	801	346	189	96	60	43	27	8	1065	745	322	176	89	56	40	25	7	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	62091	0L	19:03	2	20.2	20.1	28.2	28.1	752	1108	780	341	187	94	59	43	27	8	1042	733	321	176	88	55	40	25	8	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	62101	0R	11:25	1	22.8	20.9	28.8	26.5	678	424	324	174	87	52	38	29	21	7	442	338	181	91	54	40	30	22	7	4.6
Magumu - Thika	B20/D1315	22-Apr-21	8	62101	0R	11:25	2	22.9	20.9	28.8	26.4	676	419	320	172	88	54	37	30	21	7	438	335	180	92	56	39	31	22	7	4.6
Magumu - Thika	B20/D1315	22-Apr-21	8	62190	0R	11:24	1	22.8	20.2	28.8	26.6	693	600	451	251	149	78	48	35	20	4	612	460	256	152	80	49	36	20	4	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	62190	0R	11:24	2	22.8	20.3	28.8	26.8	693	588	443	248	148	77	48	34	20	4	600	452	253	151	79	49	35	20	4	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	62211	0L	19:05	1	20.1	19.6	28.2	27.2	716	808	605	301	175	96	59	41	26	6	798	597	297	173	95	58	40	26	6	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	62211	0L	19:05	2	20.1	19.6	28.2	27.3	715	792	596	299	175	96	59	41	25	7	783	589	296	173	95	58	41	25	7	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	62239	0R	11:23	1	22.7	20.6	28.8	26.3	685	366	307	217	145	80	50	37	24	7	378	317	224	150	83	52	38	25	7	5.1
Magumu - Thika	B20/D1315	22-Apr-21	8	62239	0R	11:23	2	22.7	20.7	28.8	26.1	683	360	302	213	143	80	49	36	24	7	373	313	220	148	83	51	37	25	7	5.1
Magumu - Thika	B20/D1315	22-Apr-21	8	62297	0R	11:22	1	22.5	20.7	28.8	26.7	689	564	432	279	183	95	56	40	28	11	579	443	286	188	97	57	41	29	11	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	62297	0R	11:22	2	22.5	20.8	28.8	26.6	691	556	429	278	183	93	56	40	28	11	569	439	284	187	95	57	41	29	11	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	62307	0L	19:06	1	20.0	19.5	28.2	26.9	735	524	401	243	152	71	38	23	14	3	504	386	234	146	68	37	22	13	3	4.3
Magumu - Thika	B20/D1315	22-Apr-21	8	62307	0L	19:06	2	20.0	19.5	28.2	26.8	723	508	389	237	148	70	37	23	14	3	497	380	232	145	68	36	22	14	3	4.3
Magumu - Thika	B20/D1315	22-Apr-21	8	62395	0R	11:21	1	22.3	20.6	28.8	28.3	734	1507	790	274	140	68	42	30	20	5	1452	761	264	135	65	40	29	19	5	2.3
Magumu - Thika	B20/D1315	22-Apr-21	8	62395	0R	11:21	2	22.4	20.7	28.8	28.3	736	1491	793	277	142	68	41	31	21	5	1432	762	266	136	65	39	30	20	5	2.3
Magumu - Thika	B20/D1315	22-Apr-21	8	62410	0L	19:07	1	20.2	19.8	28.2	26.7	728	475	375	237	153	86	54	39	26	10	461	364	230	149	84	52	38	25	10	4.5
Magumu - Thika	B20/D1315	22-Apr-21	8	62410	0L	19:07	2	20.2	19.8	28.2	26.7	726	466	370	234	151	87	54	39	26	10	454	360	228	147	85	53	38	25	10	4.6
Magumu - Thika	B20/D1315	22-Apr-21	8	62495	0R	11:20	1	22.4	20.8	28.8	26.9	674	577	477	288	182	102	58	40	25	7	605	500	302	191	107	61	42	26	7	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	62495	0R	11:20	2	22.4	20.9	28.8	26.7	671	566	470	285	181	101	58	40	25	7	596	495	300	191	106	61	42	26	7	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	62502	0L	19:08	1	20.2	19.8	28.2	27.2	761	746	513	223	120	68	49	40	31	14	693	477	207	111	63	46	37	29	13	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	62502	0L	19:08	2	20.2	19.8	28.2	27.4	749	732	506	220	118	67	48	40	29	15	691	478	208	111	63	45	38	27	14	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	62601	0L	19:09	1	20.2	19.7	28.2	27.7	714	897	644	345	231	141	95	72	50	26	888	638	342	229	140	94	71	50	26	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	62601	0L	19:09	2	20.2	19.7	28.2	27.8	707	875	632	342	232	147	95	73	48	24	875	632	342	232	147	95	73	48	24	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	62608	0R	11:19	1	22.6	20.7	28.8	27.7	689	976	691	377	267	171	113	91	65	37	1001	709	387	274	175	116	93	67	38	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	62608	0R	11:19	2	22.6	20.7	28.8	27.9	692	946	678	375	266	171	113	95	67	37	967	693	383	272	175	115	97	68	38	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	62700	0R	11:17	1	22.2	21.0	28.8	28.0	691	1016	791	380	275	167	101	72	45	14	1040	809	389	281	171	103	74	46	14	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	62700	0R	11:17	2	22.2	21.0	28.8	27.6	686	987	774	381	276	168	102	73	46	14	1017	798	393	284	173	105	75	47	14	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	62709	0L	19:11	1	20.3	19.8	28.2	27.8	732	927	680	355	216	126	85	72	56	28	895	657	343	209	122	82	70	54	27	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	62709	0L	19:11	2	20.3	19.8	28.2	27.7	741	910	671	353	216	128	85	73	55	28	868	640	337	206	122	81	70	52	27	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	62799	0R	11:16	1	22.3	21.3	28.8	27.3	689	846	647	355	210	110	65	46	31	11	868	664	364	215	113	67	47	32	11	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	62799	0R	11:16	2	22.4	21.3	28.8	27.3	694	825	638	353	210	110	65	46	31	11	840	650	360	214	112	66	47	32	11	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	62804	0L	19:13	1	20.4	19.9	28.2	27.2	730	806	558	260	157	92	58	42	28	10	781	540	252	152	89	56	41	27	10	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	62804	0L	19:13	2	20.4	19.9	28.2	27.2	726	781	543	254	154	92	58	42	28	10	761	529	247	150	90	56	41	27	10	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	62890	0R	11:15	1	22.7	21.4	28.8	26.3	684	333	242	143	71	35	31	21	14	4	344	250	148	73	36	32	22	14	4	5.2
Magumu - Thika	B20/D1315	22-Apr-21	8	62890	0R	11:15	2	22.7	21.4	28.8	26.4</																				



Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			8	63094	OR	11:12	2	22.5	21.4	28.8	26.5	661	617	469	281	201	135	87	62	39	12
Magumu - Thika	B20/D1315	22-Apr-21	8	63130	OL	19:16	1	20.5	20.1	28.2	26.7	724	419	353	263	200	119	74	55	38	17	409	345	257	195	116	72	54	37	17	4.9
Magumu - Thika	B20/D1315	22-Apr-21	8	63130	OL	19:16	2	20.5	20.1	28.2	26.6	722	417	350	261	198	120	73	55	38	16	408	343	256	194	118	71	54	37	16	4.9
Magumu - Thika	B20/D1315	22-Apr-21	8	63194	OR	11:11	1	22.6	21.9	28.8	26.2	672	282	229	160	99	56	36	25	17	3	297	241	168	104	59	38	26	18	3	5.7
Magumu - Thika	B20/D1315	22-Apr-21	8	63194	OR	11:11	2	22.6	21.9	28.8	26.3	672	283	227	160	98	56	36	25	16	3	298	239	168	103	59	38	26	17	3	5.7
Magumu - Thika	B20/D1315	22-Apr-21	8	63217	OL	19:17	1	20.6	20.3	28.2	26.7	715	419	301	159	88	53	36	29	22	8	414	298	157	87	52	36	29	22	8	4.7
Magumu - Thika	B20/D1315	22-Apr-21	8	63217	OL	19:17	2	20.6	20.3	28.2	26.7	706	410	296	157	87	52	36	29	21	9	411	296	157	87	52	36	29	21	9	4.7
Magumu - Thika	B20/D1315	22-Apr-21	8	63295	OR	11:10	1	22.5	21.9	28.8	26.8	687	683	567	378	259	137	76	53	33	10	703	584	389	267	141	78	55	34	10	3.6
Magumu - Thika	B20/D1315	22-Apr-21	8	63295	OR	11:10	2	22.6	22.0	28.8	26.8	687	678	562	375	257	136	76	53	33	10	698	578	386	264	140	78	55	34	10	3.6
Magumu - Thika	B20/D1315	22-Apr-21	8	63309	OL	19:18	1	20.5	20.4	28.2	26.9	711	521	399	256	156	81	47	28	15	0	518	397	255	155	81	47	28	15	0	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	63309	OL	19:18	2	20.5	20.3	28.2	26.9	708	511	393	253	154	80	47	28	14	0	510	392	253	154	80	47	28	14	0	4.3
Magumu - Thika	B20/D1315	22-Apr-21	8	63391	OR	11:08	1	22.5	21.4	28.8	26.8	691	659	496	262	155	100	71	56	40	18	674	507	268	159	102	73	57	41	18	3.6
Magumu - Thika	B20/D1315	22-Apr-21	8	63391	OR	11:08	2	22.5	21.4	28.8	26.9	687	652	493	261	154	100	71	57	40	17	671	507	269	158	103	73	59	41	17	3.6
Magumu - Thika	B20/D1315	22-Apr-21	8	63407	OL	19:19	1	20.6	20.5	28.2	27.2	703	763	527	253	164	102	64	46	29	9	767	530	254	165	103	64	46	29	9	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	63407	OL	19:19	2	20.6	20.5	28.2	27.3	698	741	516	249	162	101	64	46	29	9	751	523	252	164	102	65	47	29	9	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	63501	OR	11:06	1	22.1	21.8	28.8	27.2	713	802	558	259	143	88	60	45	30	11	795	553	257	142	87	59	45	30	11	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	63501	OR	11:06	2	22.1	21.9	28.8	27.0	719	785	551	258	143	88	60	45	30	11	772	542	254	141	87	59	44	29	11	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	63516	OL	19:20	1	20.6	20.2	28.2	27.3	733	884	613	297	160	88	56	41	25	7	853	591	286	154	85	54	40	24	7	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	63516	OL	19:20	2	20.6	20.2	28.2	27.3	726	864	597	291	158	86	56	40	25	7	841	581	283	154	84	55	39	24	7	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	63596	OR	11:06	1	22.2	21.6	28.8	27.5	701	1020	778	392	223	114	73	57	39	18	1029	785	395	225	115	74	57	39	18	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	63596	OR	11:06	2	22.2	21.6	28.8	27.7	700	994	761	389	222	114	73	57	39	17	1004	769	393	224	115	74	58	39	17	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	63605	OL	19:20	1	20.5	20.3	28.2	27.4	725	807	585	307	174	100	63	45	29	10	787	570	299	170	98	61	44	28	10	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	63605	OL	19:20	2	20.5	20.3	28.2	27.4	721	785	575	303	173	99	63	44	29	10	770	564	297	170	97	62	43	28	10	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	63696	OR	11:05	1	22.3	21.3	28.8	27.4	692	851	555	281	175	110	71	55	38	17	869	567	287	179	112	73	56	39	17	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	63696	OR	11:05	2	22.3	21.3	28.8	27.3	690	829	550	280	175	111	72	55	38	16	849	564	287	179	114	74	56	39	16	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	63706	OL	19:21	1	20.7	20.3	28.2	27.8	726	970	760	381	220	122	75	55	37	23	945	740	371	214	119	73	54	36	22	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	63706	OL	19:21	2	20.7	20.3	28.2	27.7	722	949	744	376	218	122	74	55	37	23	929	729	368	213	119	72	54	36	23	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	63800	OL	19:22	1	20.6	20.0	28.2	27.6	723	858	604	315	198	115	70	51	34	15	839	591	308	194	112	68	50	33	15	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	63800	OL	19:22	2	20.6	20.1	28.2	27.9	719	831	594	312	197	115	69	52	36	15	817	584	307	194	113	68	51	35	15	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	63802	OR	11:04	1	22.3	21.7	28.8	26.8	676	712	515	278	176	101	63	43	26	6	745	539	291	184	106	66	45	27	6	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	63802	OR	11:04	2	22.3	21.8	28.8	27.2	681	696	508	275	175	100	62	43	25	5	723	527	285	182	104	64	45	26	5	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	63891	OR	11:03	1	21.9	22.0	28.8	26.8	682	595	432	234	142	81	56	42	28	10	617	448	243	147	84	58	44	29	10	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	63891	OR	11:03	2	21.9	22.0	28.8	26.9	682	585	426	231	142	83	56	42	28	11	606	442	239	147	86	58	44	29	11	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	63911	OL	19:23	1	20.8	20.4	28.2	27.2	705	605	424	213	121	73	54	46	36	17	607	425	214	121	73	54	46	36	17	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	63911	OL	19:23	2	20.8	20.4	28.2	27.1	700	593	415	210	119	73	54	47	37	17	599	419	212	120	74	55	47	37	17	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	63998	OL	19:24	1	20.7	20.4	28.2	27.9	722	890	661	389	261	155	95	71	51	29	872	647	381	256	152	93	70	50	28	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	63998	OL	19:24	2	20.7	20.4	28.2	27.8	728	875	651	385	258	153	94	70	51	28	850	632	374	251	149	91	68	50	27	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	64003	OR	11:02	1	21.7	21.9	28.8	27.2	730	855	616	292	136	74	58	52	42	23	828	597	283	132	72	56	50	41	22	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	64003	OR	11:02	2	21.7	22.0	28.8	27.2	719	831	603	289	135	74	57	51	41	23	817	593	284	133	73	56	50	40	23	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	64101	OR	11:01	1	21.8	21.9	28.8	26.8	678	688	557	359	236	138	96	80	59	33	717	581	374	246	144	100	83	62	34	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	64101	OR	11:01	2	21.8																							

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	8	64406	0L	19:28	1	20.8	20.7	28.2	28.1	709	1115	859	504	342	191	109	76	50	22	1112	857	503	341	190	109	76	50	22	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	64406	0L	19:28	2	20.8	20.7	28.2	28.2	708	1086	844	498	339	190	109	76	50	23	1084	843	497	339	190	109	76	50	23	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	64495	0L	19:29	1	20.8	20.4	28.2	27.9	732	969	701	353	194	117	82	70	56	34	936	677	341	187	113	79	68	54	33	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	64495	0L	19:29	2	20.8	20.4	28.2	27.8	728	945	689	350	194	116	81	70	55	33	918	669	340	188	113	79	68	53	32	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	64500	0R	10:57	1	22.2	21.6	28.8	27.0	706	804	578	312	192	112	70	54	37	16	805	579	312	192	112	70	54	37	16	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	64500	0R	10:57	2	22.2	21.6	28.8	27.0	700	791	570	311	191	110	71	54	38	17	799	576	314	193	111	72	55	38	17	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	64600	0L	19:30	1	20.8	20.4	28.2	27.6	720	887	681	376	261	157	98	77	57	31	871	669	369	256	154	96	76	56	30	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	64600	0L	19:30	2	20.8	20.4	28.2	27.8	715	869	671	370	257	155	97	76	57	32	859	663	366	254	153	96	75	56	32	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	64601	0R	10:56	1	22.3	21.7	28.8	26.7	685	554	426	278	182	98	63	51	39	20	572	440	287	188	101	65	53	40	21	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	64601	0R	10:56	2	22.3	21.7	28.8	26.6	677	544	419	273	179	94	62	50	38	18	568	438	285	187	98	65	52	40	19	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	64693	0R	10:55	1	22.1	21.8	28.8	27.0	695	961	820	537	389	231	146	115	86	56	978	834	546	396	235	149	117	87	57	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	64693	0R	10:55	2	22.1	21.8	28.8	27.2	690	938	805	531	385	227	144	114	85	55	961	825	544	394	233	148	117	87	56	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	64710	0L	19:32	1	20.7	20.1	28.2	27.5	746	870	621	292	133	56	37	28	20	8	825	589	277	126	53	35	27	19	8	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	64710	0L	19:32	2	20.7	20.1	28.2	27.6	741	851	610	289	132	56	36	27	21	7	812	582	276	126	53	34	26	20	7	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	64802	0R	10:54	1	22.0	21.8	28.8	27.2	701	886	642	312	174	95	74	68	57	37	894	647	315	175	96	75	69	57	37	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	64802	0R	10:54	2	22.1	21.8	28.8	27.1	690	863	625	307	172	94	74	67	56	37	884	640	315	176	96	76	69	57	38	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	64804	0L	19:33	1	20.9	20.3	28.2	28.0	731	1122	765	395	218	100	64	54	44	25	1085	740	382	211	97	62	52	43	24	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	64804	0L	19:33	2	20.9	20.3	28.2	28.1	731	1100	758	395	220	100	64	53	43	24	1064	733	382	213	97	62	51	42	23	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	64893	0R	10:52	1	21.9	21.7	28.8	26.8	687	692	541	313	182	99	66	51	41	23	712	557	322	187	102	68	52	42	24	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	64893	0R	10:52	2	21.9	21.8	28.8	26.9	684	674	529	308	180	98	66	51	41	22	697	547	318	186	101	68	53	42	23	3.6
Magumu - Thika	B20/D1315	22-Apr-21	8	64896	0L	19:34	1	20.8	20.1	28.2	27.3	718	791	592	317	168	83	55	44	32	16	779	583	312	165	82	54	43	32	16	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	64896	0L	19:34	2	20.8	20.1	28.2	27.4	711	774	582	313	167	82	54	44	32	16	770	579	311	166	82	54	44	32	16	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	65001	0L	19:35	1	20.6	20.0	28.2	28.3	724	1123	889	521	335	180	108	93	63	36	1097	868	509	327	176	105	91	62	35	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	65001	0L	19:35	2	20.6	20.0	28.2	28.0	719	1097	875	516	334	181	109	94	63	36	1079	860	507	328	178	107	92	62	35	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	65011	0R	10:51	1	21.7	21.7	28.8	27.6	670	1071	862	533	346	182	114	89	64	36	1130	910	562	365	192	120	94	68	38	2.7
Magumu - Thika	B20/D1315	22-Apr-21	8	65011	0R	10:51	2	21.7	21.8	28.8	27.6	668	1057	854	532	348	182	114	88	64	36	1119	904	563	368	193	121	93	68	38	2.7
Magumu - Thika	B20/D1315	22-Apr-21	8	65103	0L	19:36	1	20.9	20.4	28.2	28.2	710	1148	881	536	325	155	90	72	54	31	1143	877	534	324	154	90	72	54	31	2.7
Magumu - Thika	B20/D1315	22-Apr-21	8	65103	0L	19:36	2	20.9	20.4	28.2	27.9	706	1117	864	529	321	154	89	72	54	31	1119	865	530	321	154	89	72	54	31	2.7
Magumu - Thika	B20/D1315	22-Apr-21	8	65103	0R	10:50	1	21.8	21.8	28.8	27.4	677	962	764	468	299	154	94	75	54	31	1005	798	489	312	161	98	78	56	32	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	65103	0R	10:50	2	21.8	21.8	28.8	27.2	672	950	756	466	299	154	94	74	54	31	999	795	490	315	162	99	78	57	33	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	65197	0R	10:49	1	21.8	21.8	28.8	26.7	685	715	568	364	242	138	90	71	52	29	738	586	376	250	142	93	73	54	30	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	65197	0R	10:49	2	21.8	21.8	28.8	26.7	678	704	560	361	240	139	90	71	52	29	734	584	376	250	145	94	74	54	30	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	65206	0L	19:37	1	20.9	20.5	28.2	27.9	706	1174	915	547	342	170	104	84	63	40	1176	916	548	342	170	104	84	63	40	2.7
Magumu - Thika	B20/D1315	22-Apr-21	8	65206	0L	19:37	2	20.9	20.5	28.2	27.9	701	1161	908	545	342	172	104	83	65	40	1171	916	550	345	173	105	84	66	40	2.7
Magumu - Thika	B20/D1315	22-Apr-21	8	65301	0R	10:48	1	21.8	21.7	28.8	26.5	672	547	453	316	220	136	88	72	55	32	575	477	332	231	143	93	76	58	34	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	65301	0R	10:48	2	21.8	21.7	28.8	26.5	673	544	452	316	221	134	88	72	55	31	571	475	332	232	141	92	76	58	33	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	65307	0L	19:37	1	20.9	20.4	28.2	27.4	692	783	627	386	243	133	84	71	53	33	800	641	394	248	136	86	73	54	34	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	65307	0L	19:37	2	20.9	20.3	28.2	27.3	689	772	619	383	242	132	86	73	55	33	792	635	393	248	135	88	75	56	34	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	65396	0R	10:47	1	22.0	21.6	28.8	26.7	683	791	637	404	265	144	90	70	52	29	819	659	418	274	149	93	72	54	30	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	65396	0R	10:47	2	22.0	21.7	28.8	26.8	678	776	629	400	264	145	90	71	52	29	809	656	417	275	151	94	74	54	30	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	65404	0L	19:39	1	20.9	20.1	28.2	27.1	703	639	508	316	200	114	76	64	50	31	643	511	318	201	115	76	64	50	31	3.7
Magumu - Thika	B20/D1315	22-Apr-21	8	65404	0L	19:39	2	20.9	20.1	28.2	26.9	705	631	502	314	199	114	76	64	50	31	633	503	315	200	114	76	64	50	31	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	65496	0R	10:46	1	21.6	21.9	28.8	26.4	683	520	435	296	202	121	80	65	49	27	538	450	306	209	125	83	67	51	28	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	65496	0R	10:46	2	21.7	21.9	28.8	26.4	681	517	433	295	203	122	80	65	49	28	537	450	306	211	127	83	67	51	29	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	65507	0L	19:40	1	20.9	20.4	28.2	27.8	712	956	716	399	241	131	85	71	55	34	949	711	396	239	130	84	71	55	34	3.0
Magumu - Thika</																															

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
								Magumu - Thika	B20/D1315	22-Apr-21			8	65701	0L	19:43	2	21.2	21.0	28.2	28.1	705	1016	801	474	300	169	110	91	70	47
Magumu - Thika	B20/D1315	22-Apr-21	8	65797	0L	19:43	1	21.0	21.0	28.2	27.7	698	903	690	414	257	133	84	69	52	31	915	699	419	260	135	85	70	53	31	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	65797	0L	19:43	2	21.0	21.0	28.2	27.6	700	889	683	414	257	133	84	69	52	32	898	690	417	260	134	85	70	55	32	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	65808	0R	10:43	1	21.9	22.0	28.8	27.0	671	865	679	426	282	155	95	73	53	29	911	715	449	297	163	100	77	56	31	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	65808	0R	10:43	2	21.9	22.0	28.8	27.2	682	856	677	428	283	157	96	74	53	29	887	702	444	293	163	100	77	55	30	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	65896	0R	10:42	1	21.7	21.9	28.8	26.8	687	756	608	380	242	131	81	65	49	28	778	626	391	249	135	83	67	50	29	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	65896	0R	10:42	2	21.7	21.9	28.8	26.9	683	739	596	374	239	125	80	65	49	28	765	617	387	247	129	83	67	51	29	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	65907	0L	19:45	1	21.1	21.2	28.2	27.8	700	903	709	415	256	145	93	74	55	31	912	716	419	259	146	94	75	56	31	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	65907	0L	19:45	2	21.1	21.1	28.2	27.8	696	884	696	410	254	144	92	73	56	31	898	707	416	258	146	93	74	57	31	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	65997	0R	10:41	1	21.9	21.6	28.8	27.2	681	833	702	470	315	159	91	68	48	25	865	729	488	327	165	94	71	50	26	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	65997	0R	10:41	2	21.9	21.6	28.8	26.9	678	826	699	471	317	161	92	69	49	25	861	729	491	331	168	96	72	51	26	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	66003	0L	19:46	1	21.2	21.0	28.2	27.3	698	811	655	423	280	150	94	76	58	35	821	663	428	284	152	95	77	59	35	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	66003	0L	19:46	2	21.2	21.0	28.2	27.4	698	799	649	420	279	150	93	76	58	35	809	657	425	283	152	94	77	59	35	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	66103	0R	10:40	1	21.8	21.1	28.8	26.8	702	767	611	366	217	94	48	30	19	3	772	615	369	219	95	48	30	19	3	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	66103	0R	10:40	2	21.8	21.2	28.8	26.7	699	750	598	361	215	94	48	30	19	3	759	605	365	217	95	49	30	19	3	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	66105	0L	19:47	1	21.3	21.0	28.2	27.7	710	885	698	418	241	102	57	39	25	8	881	695	416	240	102	57	39	25	8	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	66105	0L	19:47	2	21.3	21.0	28.2	27.6	714	876	691	415	240	103	56	39	24	7	867	684	411	238	102	55	39	24	7	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	66197	0L	19:48	1	21.3	20.8	28.2	27.3	711	810	625	377	221	93	48	32	20	4	805	621	375	220	92	48	32	20	4	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	66197	0L	19:48	2	21.3	20.7	28.2	27.4	706	805	622	375	220	94	48	35	19	4	806	623	376	220	94	48	35	19	4	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	66198	0R	10:39	1	21.6	21.1	28.8	26.2	705	424	337	226	140	60	31	23	10	0	425	338	227	140	60	31	23	10	0	4.7
Magumu - Thika	B20/D1315	22-Apr-21	8	66198	0R	10:39	2	21.6	21.1	28.8	26.1	704	416	332	222	138	59	31	22	11	0	418	333	223	139	59	31	22	11	0	4.7
Magumu - Thika	B20/D1315	22-Apr-21	8	66297	0R	10:38	1	20.8	21.7	28.8	26.8	685	737	546	303	207	129	82	58	35	11	761	564	313	214	133	85	60	36	11	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	66297	0R	10:38	2	20.9	21.7	28.8	26.6	676	707	527	299	205	129	82	58	36	11	739	551	313	214	135	86	61	38	12	3.5
Magumu - Thika	B20/D1315	22-Apr-21	8	66306	0L	19:49	1	21.3	20.4	28.2	27.6	700	900	657	376	240	133	75	48	26	6	909	664	380	242	134	76	48	26	6	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	66306	0L	19:49	2	21.3	20.3	28.2	27.4	694	876	646	374	239	133	75	48	28	6	892	658	381	243	135	76	49	29	6	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	66391	0R	10:37	1	21.4	21.8	28.8	26.7	698	945	742	429	251	109	57	35	20	3	957	752	435	254	110	58	35	20	3	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	66391	0R	10:37	2	21.4	21.8	28.8	26.8	705	936	738	427	251	109	56	34	20	3	939	740	428	252	109	56	34	20	3	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	66399	0L	19:50	1	21.2	20.2	28.2	26.9	728	521	384	213	109	52	39	38	33	21	506	373	207	106	51	38	37	32	20	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	66399	0L	19:50	2	21.2	20.2	28.2	26.8	725	517	381	211	108	52	39	38	33	21	504	372	206	105	51	38	37	32	20	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	66501	0R	10:36	1	21.3	21.7	28.8	26.3	680	572	459	294	194	116	79	66	50	29	595	477	306	202	121	82	69	52	30	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	66501	0R	10:36	2	21.3	21.7	28.8	26.3	681	567	456	293	195	115	79	66	50	30	589	473	304	202	119	82	69	52	31	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	66507	0L	19:52	1	21.2	20.4	28.2	27.4	703	828	659	402	259	145	90	74	58	36	833	663	404	260	146	91	74	58	36	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	66507	0L	19:52	2	21.2	20.4	28.2	27.3	706	814	649	397	257	139	89	74	58	36	815	650	398	257	139	89	74	58	36	3.3
Magumu - Thika	B20/D1315	22-Apr-21	8	66600	0L	19:53	1	21.4	20.5	28.2	27.9	703	1058	834	501	318	162	99	79	58	34	1064	839	504	320	163	100	79	58	34	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	66600	0L	19:53	2	21.4	20.5	28.2	27.9	703	1036	818	494	314	161	98	77	58	34	1042	823	497	316	162	99	77	58	34	2.9
Magumu - Thika	B20/D1315	22-Apr-21	8	66601	0R	10:35	1	21.8	21.3	28.8	26.7	689	740	590	376	245	132	77	59	43	22	759	605	386	251	135	79	61	44	23	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	66601	0R	10:35	2	21.8	21.4	28.8	26.7	685	730	582	373	242	131	77	59	43	22	753	601	385	250	135	79	61	44	23	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	66699	0R	10:34	1	21.7	20.8	28.8	27.2	714	841	572	262	133	68	51	44	32	14	833	566	259	132	67	51	44	32	14	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	66699	0R	10:34	2	21.7	20.9	28.8	27.2	716	821	562	260	134	69	51	45	33	14	811	555	257	132	68	50	44	33	14	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	66705	0L	19:54	1	21.4	20.6	28.2	27.9	725	1056	814	470	275	119	64	46	33	15	1030	794	458	268	116	62	45	32	15	2.9
Magumu - Thika	B20/D1315																														

Appendix 4-F: Deflection Measurements

Road Name	Road No.	Date	HS	Chainage, m	Lane	Time	Drop Name	Temperature, °C			Pulse Time	Pressure, Kpa	Raw Deflections, µm									Normalized Deflections, µm									
								Air	Surface	Manual			rd1	rd2	rd3	rd4	rd5	rd6	rd7	rd8	rd9	nd1	nd2	nd3	nd4	nd5	nd6	nd7	nd8	nd9	SNP
Magumu - Thika	B20/D1315	22-Apr-21	8	67099	0L	19:59	1	21.4	20.1	28.2	27.2	717	583	408	198	96	49	36	28	19	6	575	402	195	95	48	35	28	19	6	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	67099	0L	19:59	2	21.4	20.1	28.2	27.1	717	574	403	197	96	49	36	29	20	6	566	397	194	95	48	35	29	20	6	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67101	0R	10:28	1	21.1	21.3	28.8	27.0	701	946	670	345	193	92	53	35	22	4	954	676	348	195	93	53	35	22	4	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67101	0R	10:28	2	21.2	21.3	28.8	27.0	701	920	661	343	193	93	53	35	21	5	928	667	346	195	94	53	35	21	5	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67193	0R	10:27	1	21.3	21.0	28.8	27.0	693	877	644	361	209	96	52	34	22	6	895	657	368	213	98	53	35	22	6	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	67193	0R	10:27	2	21.3	21.1	28.8	26.8	695	857	634	357	208	96	52	34	22	6	872	645	363	212	98	53	35	22	6	3.1
Magumu - Thika	B20/D1315	22-Apr-21	8	67201	0L	20:00	1	21.3	20.3	28.2	27.7	697	956	725	423	259	127	69	45	31	11	970	735	429	263	129	70	46	31	11	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67201	0L	20:00	2	21.3	20.3	28.2	27.4	696	938	715	420	257	127	69	43	31	11	953	726	427	261	129	70	44	31	11	3.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67304	0L	20:01	1	21.6	20.5	28.2	27.4	708	779	535	294	187	108	67	50	34	15	778	534	294	187	108	67	50	34	15	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	67304	0L	20:01	2	21.5	20.5	28.2	27.3	713	752	527	292	186	107	67	51	34	15	746	523	290	184	106	66	51	34	15	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	67314	0R	10:26	1	21.2	21.3	28.8	25.9	649	485	383	237	153	90	57	41	27	8	528	417	258	167	98	62	45	29	9	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	67314	0R	10:26	2	21.2	21.3	28.8	25.8	650	481	380	236	152	90	57	41	27	8	523	413	257	165	98	62	45	29	9	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	67399	0R	10:25	1	21.2	21.4	28.8	26.4	652	621	504	328	215	118	73	55	38	16	673	547	356	233	128	79	60	41	17	3.7
Magumu - Thika	B20/D1315	22-Apr-21	8	67399	0R	10:25	2	21.3	21.4	28.8	26.4	651	614	499	326	215	118	74	56	38	16	667	542	354	233	128	80	61	41	17	3.7
Magumu - Thika	B20/D1315	22-Apr-21	8	67405	0L	20:02	1	21.6	20.6	28.2	27.1	707	631	502	318	212	117	71	51	34	14	631	502	318	212	117	71	51	34	14	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	67405	0L	20:02	2	21.6	20.5	28.2	26.9	697	623	497	317	212	117	71	51	34	14	632	504	322	215	119	72	52	34	14	3.8
Magumu - Thika	B20/D1315	22-Apr-21	8	67502	0R	10:22	1	21.9	21.9	28.8	25.9	643	531	411	272	189	117	75	54	38	17	584	452	299	208	129	82	59	42	19	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67502	0R	10:22	2	21.9	21.9	28.8	26.2	645	525	408	271	189	115	74	54	38	17	575	447	297	207	126	81	59	42	19	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67502	0R	10:22	1	21.8	21.7	28.8	26.4	645	547	417	275	190	114	75	56	38	17	600	457	301	208	125	82	61	42	19	3.9
Magumu - Thika	B20/D1315	22-Apr-21	8	67502	0R	10:22	2	21.8	21.7	28.8	7.7	650	538	412	274	189	115	75	55	39	17	585	448	298	206	125	82	60	42	18	4.0
Magumu - Thika	B20/D1315	22-Apr-21	8	67510	0L	20:04	1	21.6	20.6	28.2	27.1	701	650	482	281	166	91	59	47	33	15	656	486	283	167	92	60	47	33	15	3.7
Magumu - Thika	B20/D1315	22-Apr-21	8	67510	0L	20:04	2	21.6	20.6	28.2	27.0	706	639	477	279	166	91	60	46	32	14	640	478	279	166	91	60	46	32	14	3.7
Magumu - Thika	B20/D1315	22-Apr-21	8	67597	0L	20:05	1	21.7	20.6	28.2	27.3	715	770	547	271	165	95	60	44	32	14	761	541	268	163	94	59	44	32	14	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	67597	0L	20:05	2	21.7	20.6	28.2	27.2	713	762	541	270	165	95	61	45	32	14	756	536	268	164	94	60	45	32	14	3.4
Magumu - Thika	B20/D1315	22-Apr-21	8	67605	0R	10:20	1	21.8	21.5	28.8	27.2	664	1040	795	534	374	234	165	150	120	76	1107	846	569	398	249	176	160	128	81	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	67605	0R	10:20	2	21.8	21.5	28.8	27.1	666	1019	787	531	374	235	166	151	122	75	1082	835	564	397	249	176	160	130	80	2.8
Magumu - Thika	B20/D1315	22-Apr-21	8	67630	0R	10:19	1	21.8	21.8	28.8	26.8	707	855	620	321	166	73	47	36	26	11	855	620	321	166	73	47	36	26	11	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	67630	0R	10:19	2	21.8	21.8	28.8	26.8	706	851	618	321	167	73	47	36	26	10	852	619	321	167	73	47	36	26	10	3.2
Magumu - Thika	B20/D1315	22-Apr-21	8	67671	0L	20:06	1	21.6	20.7	28.2	26.8	679	524	436	317	225	131	76	55	37	17	546	454	330	234	136	79	57	39	18	4.2
Magumu - Thika	B20/D1315	22-Apr-21	8	67671	0L	20:06	2	21.6	20.7	28.2	26.9	680	516	431	314	223	130	75	55	36	16	536	448	326	232	135	78	57	37	17	4.2

Road Name	HS	Chainage (m)	Residual Life, yrs		Reinforcement, mm		Critical Layer	Drop No	Pressure, KPa	Layer Moduli, Mpa				Temperature, °C		
			15-YR	20-YR	15-YR	20-YR				Surfacing	Base	Subbase	Subgrade	Air	Surface	Pavement
Magumu - Thika	1	199	0	0	130	150	2	1	721	1655	578	3163	61	20.5	18.3	28.1
Magumu - Thika	1	199	1	1	135	155	2	2	715	1745	609	2792	61	20.5	18.6	28.1
Magumu - Thika	1	301	0	0	230	255	2	1	718	918	190	505	42	19.2	19.2	28.1
Magumu - Thika	1	301	0	0	230	255	2	2	720	991	180	546	41	19.2	19.4	28.1
Magumu - Thika	1	303	0	0	230	250	2	1	722	793	155	469	45	21.6	19.7	28.5
Magumu - Thika	1	303	0	0	230	250	2	2	719	822	164	491	44	21.7	19.8	28.5
Magumu - Thika	1	402	0	0	245	270	2	1	707	948	136	431	39	19.7	19.8	28.1
Magumu - Thika	1	402	0	0	245	265	2	2	705	989	145	451	38	19.8	20	28.1
Magumu - Thika	1	496	0	0	155	175	3	1	750	1410	350	211	141	22.2	19	28.5
Magumu - Thika	1	496	0	0	165	185	2	2	757	1374	277	181	139	22.2	19.1	28.5
Magumu - Thika	1	500	0	0	150	175	4	1	713	2281	498	1251	66	19.4	20	28.1
Magumu - Thika	1	500	0	0	150	170	2	2	713	2407	439	1515	65	19.4	20.1	28.1
Magumu - Thika	1	602	0	0	305	305	2	1	685	7734	15	274	40	19.8	20.1	28.1
Magumu - Thika	1	602	0	0	305	305	2	2	689	7558	16	326	39	19.9	20.3	28.1
Magumu - Thika	1	623	0	0	220	245	2	1	725	930	175	1285	38	21.3	19.5	28.5
Magumu - Thika	1	623	0	0	220	245	2	2	716	991	196	1148	37	21.4	19.7	28.5
Magumu - Thika	1	696	0	0	305	305	2	1	708	10394	22	534	43	20.1	20.4	28.1
Magumu - Thika	1	696	0	0	305	305	2	2	715	10868	23	541	43	20.1	20.6	28.1
Magumu - Thika	1	705	0	0	220	250	2	1	717	972	258	1771	32	21.5	18.8	28.5
Magumu - Thika	1	705	0	0	225	250	2	2	708	996	257	1705	32	21.5	19	28.5
Magumu - Thika	1	799	0	0	220	240	2	1	748	815	201	897	42	21	19	28.5
Magumu - Thika	1	799	0	0	220	240	2	2	745	872	204	886	42	21	19.2	28.5
Magumu - Thika	1	806	0	0	225	250	2	1	701	826	211	1516	33	19.6	20.1	28.1
Magumu - Thika	1	806	0	0	225	250	2	2	700	870	224	1615	32	19.7	20.2	28.1
Magumu - Thika	1	899	0	0	170	195	4	1	732	2444	602	2313	42	20.4	19.6	28.5
Magumu - Thika	1	899	0	0	170	195	4	2	730	2546	636	2162	42	20.5	19.7	28.5
Magumu - Thika	1	904	0	0	215	240	2	1	718	989	258	1587	35	19.8	21.2	28.1
Magumu - Thika	1	904	0	0	215	240	2	2	713	980	240	1673	35	19.9	21.4	28.1
Magumu - Thika	1	1000	0	0	190	210	2	1	743	1278	244	575	62	19.6	20.6	28.5
Magumu - Thika	1	1000	0	0	190	210	2	2	750	1382	245	562	63	19.7	20.7	28.5
Magumu - Thika	1	1002	0	0	255	280	2	1	698	644	102	815	32	19.9	20.9	28.1
Magumu - Thika	1	1002	0	0	250	275	2	2	702	680	105	818	32	20	21	28.1
Magumu - Thika	1	1094	0	0	215	240	2	1	740	994	169	549	49	20.8	19.9	28.5
Magumu - Thika	1	1094	0	0	215	240	2	2	743	1023	177	575	49	20.9	20.1	28.5
Magumu - Thika	1	1104	0	0	220	245	2	1	724	1199	198	745	42	20.8	21	28.1
Magumu - Thika	1	1104	0	0	220	245	2	2	724	1198	208	796	42	20.8	21.2	28.1
Magumu - Thika	1	1202	0	0	165	180	2	1	742	1412	264	631	85	19.4	19.7	28.5
Magumu - Thika	1	1202	0	0	165	180	2	2	741	1435	270	696	84	19.6	19.9	28.5
Magumu - Thika	1	1206	0	0	180	205	2	1	739	1406	336	1523	49	21.3	22	28.1
Magumu - Thika	1	1206	0	0	185	210	2	2	739	1507	283	1358	49	21.4	22.1	28.1
Magumu - Thika	1	1296	0	0	270	295	2	1	675	470	93	904	27	21.6	21.8	28.1
Magumu - Thika	1	1296	0	0	270	295	2	2	682	498	95	971	27	21.6	21.9	28.1
Magumu - Thika	1	1314	0	0	250	275	2	1	696	649	121	874	33	20.8	19.9	28.5
Magumu - Thika	1	1314	0	0	245	270	2	2	705	688	126	878	33	20.6	20.1	28.5
Magumu - Thika	1	1393	0	0	215	240	2	1	706	928	214	1375	37	21	19.7	28.5
Magumu - Thika	1	1393	0	0	215	240	2	2	711	979	228	1443	37	20.9	19.8	28.5
Magumu - Thika	1	1419	0	0	250	275	2	1	711	659	140	775	32	21.8	22.2	28.1
Magumu - Thika	1	1419	0	0	250	275	2	2	719	692	148	797	33	21.8	22.2	28.1
Magumu - Thika	1	1497	0	0	180	200	2	1	751	1325	229	558	72	19.5	19.5	28.5
Magumu - Thika	1	1497	0	0	180	200	2	2	746	1407	223	532	73	19.7	19.6	28.5
Magumu - Thika	1	1502	0	0	215	235	2	1	730	952	162	432	53	22.3	22.7	28.1
Magumu - Thika	1	1502	0	0	210	235	2	2	744	1012	168	437	54	22.3	22.9	28.1
Magumu - Thika	1	1600	1	1	110	130	2	1	715	3517	663	945	108	22	19.3	28.5
Magumu - Thika	1	1600	1	1	110	130	2	2	726	3639	660	916	111	21.9	19.5	28.5
Magumu - Thika	1	1601	0	0	170	190	2	1	745	1601	257	631	75	21.3	22.4	28.1
Magumu - Thika	1	1601	0	0	170	190	2	2	747	1640	267	650	74	21.4	22.6	28.1
Magumu - Thika	1	1709	0	0	280	305	2	1	679	730	88	566	26	22.6	19.8	28.5
Magumu - Thika	1	1709	0	0	280	305	2	2	680	738	89	565	26	22.6	19.9	28.5
Magumu - Thika	1	1713	0	0	270	295	2	1	681	541	96	1008	26	21.4	21.8	28.1
Magumu - Thika	1	1713	0	0	265	290	2	2	681	564	132	1094	26	21.5	22	28.1
Magumu - Thika	1	1795	0	0	245	270	2	1	681	380	76	119	51	23.2	19.6	28.5
Magumu - Thika	1	1795	0	0	245	270	2	2	680	408	80	121	51	23.3	19.7	28.5
Magumu - Thika	1	1801	0	0	230	255	2	1	717	559	140	814	39	21.9	21.4	28.1
Magumu - Thika	1	1801	0	0	230	255	2	2	714	528	148	814	39	21.9	21.6	28.1
Magumu - Thika	1	1893	0	0	205	225	2	1	753	911	159	449	59	22.7	20.7	28.5
Magumu - Thika	1	1893	0	0	205	225	2	2	757	916	168	471	59	22.7	20.8	28.5
Magumu - Thika	1	1905	0	0	225	250	2	1	751	1091	150	482	45	22.4	21.7	28.1
Magumu - Thika	1	1905	0	0	225	250	2	2	750	1114	155	483	45	22.4	21.8	28.1
Magumu - Thika	1	1993	0	0	195	215	4	1	743	403	382	220	68	23.6	20.7	28.5
Magumu - Thika	1	1993	0	0	195	215	2	2	748	1093	175	380	67	23.5	20.7	28.5
Magumu - Thika	1	2012	0	0	165	185	2	1	749	1715	331	736	73	22.3	21.3	28.1
Magumu - Thika	1	2012	0	0	165	185	2	2	739	1725	339	649	75	22.4	21.5	28.1
Magumu - Thika	1	2090	0	0	195	215	2	1	740	1206	238	707	55	23	20	28.5
Magumu - Thika	1	2090	0	0	195	215	2	2	742	1253	239	703	55	22.9	20.1	28.5
Magumu - Thika	1	2104	0	0	145	165	2	1	736	2353	508	1009	79	21.6	21.2	28.1
Magumu - Thika	1	2104	0	0	140	160	4	2	735	2395	563	1023	79	21.6	21.3	28.1



Magumu - Thika	1	2186	0	0	230	255	2	1	717	982	185	803	38	23.3	20.2	28.5
Magumu - Thika	1	2186	0	0	230	255	2	2	711	1037	198	857	37	23.4	20.3	28.5
Magumu - Thika	1	2201	0	0	140	160	2	1	731	2671	511	873	86	20.7	21.3	28.1
Magumu - Thika	1	2201	0	0	135	155	2	2	730	2772	528	902	85	20.8	21.4	28.1
Magumu - Thika	1	2295	0	0	140	155	2	1	752	1117	415	309	193	23.2	20.2	28.5
Magumu - Thika	1	2295	0	0	140	150	2	2	751	1154	428	322	184	23.1	20.3	28.5
Magumu - Thika	1	2305	1	1	110	130	4	1	747	5144	965	1423	82	19.9	20.8	28.1
Magumu - Thika	1	2305	1	1	105	130	4	2	740	5283	993	1434	82	19.9	21	28.1
Magumu - Thika	1	2398	0	0	220	245	2	1	735	877	161	520	47	19.2	20.2	28.1
Magumu - Thika	1	2398	0	0	220	245	2	2	738	899	173	550	47	19.3	20.3	28.1
Magumu - Thika	1	2404	0	0	195	215	2	1	740	1345	239	630	57	23	20.7	28.5
Magumu - Thika	1	2404	0	0	195	215	2	2	739	1368	244	676	56	23	20.8	28.5
Magumu - Thika	1	2497	0	0	195	220	2	1	737	1171	267	845	52	21.4	20.9	28.5
Magumu - Thika	1	2497	0	0	195	215	2	2	739	1238	279	861	51	21.5	21	28.5
Magumu - Thika	1	2512	0	0	175	195	2	1	735	1478	215	488	79	18.8	20	28.1
Magumu - Thika	1	2512	0	0	175	195	2	2	734	1497	220	521	78	18.8	20.2	28.1
Magumu - Thika	1	2596	0	0	180	200	2	1	735	1527	244	637	68	22.4	21	28.5
Magumu - Thika	1	2596	0	0	175	200	2	2	739	1570	257	652	69	22.2	21.2	28.5
Magumu - Thika	1	2601	0	0	220	240	2	1	728	929	167	596	47	19.1	20.4	28.1
Magumu - Thika	1	2601	0	0	220	240	2	2	731	973	177	609	46	19.1	20.6	28.1
Magumu - Thika	1	2697	0	0	180	200	2	1	743	1592	244	576	68	21.9	20.2	28.5
Magumu - Thika	1	2697	0	0	180	200	2	2	743	1648	259	600	67	22	20.4	28.5
Magumu - Thika	1	2704	0	0	170	190	2	1	733	1861	377	803	66	19.4	21	28.1
Magumu - Thika	1	2704	0	0	170	190	2	2	732	1977	382	796	66	19.4	21.1	28.1
Magumu - Thika	1	2802	0	0	205	225	2	1	741	1137	212	781	50	22.7	20.4	28.5
Magumu - Thika	1	2802	0	0	200	225	2	2	746	1143	231	890	49	22.8	20.5	28.5
Magumu - Thika	1	2813	0	0	215	235	2	1	738	611	139	598	52	18.2	20.3	28.1
Magumu - Thika	1	2813	0	0	215	235	2	2	738	631	144	606	51	18.2	20.4	28.1
Magumu - Thika	1	2885	0	0	190	215	2	1	737	1362	223	667	59	22.7	20.4	28.5
Magumu - Thika	1	2885	0	0	190	210	2	2	736	1370	232	704	59	22.7	20.5	28.5
Magumu - Thika	1	2905	0	0	210	235	2	1	731	634	165	458	54	17.3	19.1	28.1
Magumu - Thika	1	2905	0	0	210	235	2	2	730	668	164	439	55	17.4	19.3	28.1
Magumu - Thika	1	2996	0	0	185	210	2	1	730	1451	240	704	61	22.4	18.8	28.5
Magumu - Thika	1	2996	0	0	185	205	2	2	736	1490	255	732	60	22.4	19.1	28.5
Magumu - Thika	1	3002	0	0	210	230	2	1	740	907	161	515	56	17.7	19.5	28.1
Magumu - Thika	1	3002	0	0	210	230	2	2	737	986	160	485	56	17.8	19.7	28.1
Magumu - Thika	1	3097	0	0	215	240	2	1	728	841	153	624	48	22.2	18.3	28.5
Magumu - Thika	1	3097	0	0	215	240	2	2	736	903	161	623	48	22.2	18.5	28.5
Magumu - Thika	1	3107	0	0	190	210	2	1	741	939	181	503	70	19	20.4	28.1
Magumu - Thika	1	3107	0	0	185	210	2	2	740	939	198	599	67	19	20.5	28.1
Magumu - Thika	1	3196	0	0	180	205	4	1	754	378	358	210	80	21.8	18.6	28.5
Magumu - Thika	1	3196	0	0	180	200	4	2	759	409	388	218	78	21.8	18.8	28.5
Magumu - Thika	1	3206	0	0	260	285	2	1	688	472	90	462	34	18.2	20	28.1
Magumu - Thika	1	3206	0	0	260	285	2	2	691	501	92	459	34	18.2	20.1	28.1
Magumu - Thika	1	3290	0	0	265	295	2	1	689	457	81	734	29	21.8	17.9	28.5
Magumu - Thika	1	3290	0	0	265	290	2	2	693	470	88	797	29	21.8	18.1	28.5
Magumu - Thika	1	3294	0	0	175	200	2	1	725	1407	310	989	60	18	19.8	28.1
Magumu - Thika	1	3294	0	0	175	195	2	2	724	1422	318	1027	60	18	19.9	28.1
Magumu - Thika	1	3398	0	0	245	270	2	1	705	610	165	1231	30	21.6	18.1	28.5
Magumu - Thika	1	3398	0	0	245	270	2	2	705	652	172	1240	30	21.6	18.3	28.5
Magumu - Thika	1	3404	0	0	305	305	2	1	653	6687	14	559	26	17.4	19	28.1
Magumu - Thika	1	3404	0	0	305	305	2	2	656	6586	14	712	25	17.4	19.2	28.1
Magumu - Thika	1	3501	0	0	305	305	2	1	675	6773	14	410	31	15.9	18	28.1
Magumu - Thika	1	3501	0	0	305	305	2	2	679	7162	14	502	31	15.9	18	28.1
Magumu - Thika	1	3505	0	0	230	255	2	1	721	786	184	851	38	21.4	18.4	28.5
Magumu - Thika	1	3505	0	0	225	250	2	2	731	830	190	865	38	21.4	18.6	28.5
Magumu - Thika	1	3596	0	0	220	240	2	1	730	781	201	1003	41	21.1	18.1	28.5
Magumu - Thika	1	3596	0	0	220	240	2	2	727	836	205	978	41	21.1	18.3	28.5
Magumu - Thika	1	3602	0	0	200	225	2	1	714	1372	255	773	50	15.4	16.6	28.1
Magumu - Thika	1	3602	0	0	200	225	2	2	713	1433	262	760	50	15.4	16.7	28.1
Magumu - Thika	1	3695	0	0	185	210	2	1	731	1387	255	583	63	20.8	18.5	28.5
Magumu - Thika	1	3695	0	0	185	210	2	2	736	1417	269	617	62	20.8	18.7	28.5
Magumu - Thika	1	3701	0	0	195	215	2	1	724	1338	274	720	55	15.6	16.5	28.1
Magumu - Thika	1	3701	0	0	190	215	2	2	721	1398	290	756	54	15.6	16.6	28.1
Magumu - Thika	1	3802	0	0	190	215	2	1	756	995	180	431	69	20.3	18.7	28.5
Magumu - Thika	1	3802	0	0	190	215	2	2	753	1069	183	416	69	20.3	18.8	28.5
Magumu - Thika	1	3804	0	0	155	175	2	1	725	2212	403	731	79	15.6	16.5	28.1
Magumu - Thika	1	3804	0	0	150	175	2	2	721	2258	435	772	78	15.6	16.6	28.1
Magumu - Thika	1	3898	0	0	185	200	2	1	746	717	186	184	107	20.5	18.1	28.5
Magumu - Thika	1	3898	0	0	180	195	2	2	753	750	193	188	106	20.6	18.3	28.5
Magumu - Thika	1	3901	0	0	180	195	2	1	730	1161	201	397	88	15.3	16.2	28.1
Magumu - Thika	1	3901	0	0	175	190	2	2	737	1250	214	421	88	15.3	16.3	28.1
Magumu - Thika	1	3995	0	0	295	305	2	1	754	12136	25	281	70	20.5	17.9	28.5
Magumu - Thika	1	3995	0	0	290	305	2	2	749	12741	26	353	67	20.5	18	28.5
Magumu - Thika	1	4006	11	10	15	40	4	1	743	7311	7000	3000	72	15.4	16	28.1
Magumu - Thika	1	4006	0	0	190	210	4	2	743	362	347	203	73	15.5	16.1	28.1
Magumu - Thika	1	4094	0	0	190	210	2	1	745	1196	212	596	62	20.1	17.8	28.5
Magumu - Thika	1	4094	0	0	190	210	2	2	744	1236	223	639	62	20.1	18	28.5

Magumu - Thika	1	4103	0	0	305	305	2	1	719	9842	19	142	54	15.7	16	28.1
Magumu - Thika	1	4103	0	0	305	305	2	2	718	9959	20	141	55	15.8	16.1	28.1
Magumu - Thika	1	4197	0	0	225	245	2	1	739	741	141	378	50	19.7	18	28.5
Magumu - Thika	1	4197	0	0	225	250	2	2	741	808	130	399	50	19.8	18.1	28.5
Magumu - Thika	1	4205	0	0	305	305	2	1	698	4083	20	64	47	15.7	16.2	28.1
Magumu - Thika	1	4205	0	0	305	305	2	2	703	4448	21	71	46	15.8	16.2	28.1
Magumu - Thika	1	4294	0	0	150	170	4	1	723	2215	541	1721	60	18.9	17.6	28.5
Magumu - Thika	1	4294	0	0	150	170	4	2	721	2315	580	1842	59	18.9	17.7	28.5
Magumu - Thika	1	4308	0	0	175	195	2	1	717	1724	362	959	60	15.8	16.3	28.1
Magumu - Thika	1	4308	0	0	170	195	2	2	718	1755	360	1100	59	15.8	16.4	28.1
Magumu - Thika	1	4396	0	0	170	190	2	1	751	1768	245	495	78	19.9	17.5	28.5
Magumu - Thika	1	4396	0	0	170	190	2	2	753	1823	254	496	79	19.9	17.6	28.5
Magumu - Thika	1	4404	0	0	205	230	2	1	721	697	144	532	57	15.6	16.2	28.1
Magumu - Thika	1	4404	0	0	205	230	2	2	721	725	155	572	56	15.4	16.2	28.1
Magumu - Thika	1	4500	0	0	170	180	2	1	743	1468	256	492	94	19.8	17.2	28.5
Magumu - Thika	1	4500	0	0	165	180	2	2	743	1531	268	510	93	19.8	17.3	28.5
Magumu - Thika	1	4505	0	0	190	210	2	1	734	959	172	415	71	15	15.3	28.1
Magumu - Thika	1	4505	0	0	190	210	2	2	731	983	186	452	69	15.1	15.4	28.1
Magumu - Thika	1	4597	0	0	185	200	2	1	756	542	178	689	76	19.7	17.8	28.5
Magumu - Thika	1	4597	0	0	185	200	2	2	747	565	182	691	75	19.7	17.9	28.5
Magumu - Thika	1	4607	0	0	200	220	2	1	719	774	142	435	67	14.8	15.2	28.1
Magumu - Thika	1	4607	0	0	195	220	2	2	717	818	146	431	67	14.8	15.3	28.1
Magumu - Thika	1	4696	0	0	180	200	2	1	751	1185	205	425	78	19.1	18	28.5
Magumu - Thika	1	4696	0	0	175	195	2	2	764	1315	213	428	80	19.2	18.1	28.5
Magumu - Thika	1	4705	0	0	225	240	2	1	740	876	94	225	91	14.7	14.8	28.1
Magumu - Thika	1	4705	0	0	235	250	2	2	740	1039	81	218	90	14.7	15	28.1
Magumu - Thika	1	4783	0	0	225	250	2	1	708	863	161	628	44	19.3	18.2	28.5
Magumu - Thika	1	4783	0	0	220	245	2	2	713	924	171	643	44	19.2	18.3	28.5
Magumu - Thika	1	4805	0	0	165	180	2	1	729	1106	277	351	161	14.9	15	28.1
Magumu - Thika	1	4805	0	0	175	190	2	2	729	1106	232	339	161	14.9	15.1	28.1
Magumu - Thika	1	4895	0	0	175	195	2	1	731	1581	386	881	62	20	17.4	28.5
Magumu - Thika	1	4895	0	0	170	195	2	2	732	1649	396	897	62	20	17.4	28.5
Magumu - Thika	1	4901	0	0	160	180	2	1	719	1914	408	681	78	14.5	13.5	28.1
Magumu - Thika	1	4901	0	0	155	175	2	2	714	2024	422	694	77	14.5	13.6	28.1
Magumu - Thika	1	4998	0	0	200	215	2	1	758	705	139	228	96	14.7	13.8	28.1
Magumu - Thika	1	4998	0	0	210	225	2	2	752	756	116	208	95	14.7	13.9	28.1
Magumu - Thika	1	5011	0	0	180	195	2	1	752	1302	198	293	146	19.9	17.4	28.5
Magumu - Thika	1	5011	0	0	180	195	2	2	748	1425	197	281	148	19.9	17.4	28.5
Magumu - Thika	1	5086	0	0	285	305	2	1	761	13070	27	463	96	19.8	18.1	28.5
Magumu - Thika	1	5086	0	0	280	305	2	2	755	13557	27	522	94	19.8	18.1	28.5
Magumu - Thika	1	5104	0	0	275	295	2	1	689	554	45	130	50	15.1	14.6	28.1
Magumu - Thika	1	5104	0	0	275	295	2	2	687	571	45	128	50	15	14.7	28.1
Magumu - Thika	1	5196	0	0	170	195	2	1	772	1319	276	667	72	19.3	18.5	28.5
Magumu - Thika	1	5196	0	0	170	195	2	2	763	1418	274	722	71	19.3	18.6	28.5
Magumu - Thika	1	5197	0	0	185	210	2	1	742	1112	196	472	70	15.1	14.5	28.1
Magumu - Thika	1	5197	0	0	185	205	2	2	744	1179	207	489	70	15.1	14.6	28.1
Magumu - Thika	2	5295	0	0	175	190	2	1	755	968	221	342	158	19.9	17.8	28.5
Magumu - Thika	2	5295	0	0	175	185	2	2	753	1028	237	358	158	19.9	17.9	28.5
Magumu - Thika	2	5304	0	0	155	175	3	1	731	424	406	233	106	14.9	14.2	28.1
Magumu - Thika	2	5304	0	0	155	175	4	2	730	450	431	248	104	14.9	14.4	28.1
Magumu - Thika	2	5401	0	0	160	175	2	1	743	1884	295	446	112	19.9	17.4	28.5
Magumu - Thika	2	5401	0	0	155	170	2	2	750	2043	325	478	111	19.9	17.5	28.5
Magumu - Thika	2	5412	0	0	185	200	2	1	727	843	187	435	130	15.1	14.2	28.1
Magumu - Thika	2	5412	0	0	180	195	2	2	725	920	205	466	126	15.2	14.3	28.1
Magumu - Thika	2	5490	0	0	155	175	2	1	743	1827	340	598	89	20.1	17.8	28.5
Magumu - Thika	2	5490	0	0	150	170	2	2	740	1969	356	607	88	20.1	17.9	28.5
Magumu - Thika	2	5498	0	0	130	150	2	1	711	2393	522	901	94	14.8	14.1	28.1
Magumu - Thika	2	5498	0	0	130	150	2	2	703	2579	553	909	94	14.8	14.2	28.1
Magumu - Thika	2	5587	0	0	135	150	2	1	715	2242	427	589	110	20.1	18	28.5
Magumu - Thika	2	5587	0	0	130	150	2	2	719	2282	444	608	110	20.1	18.1	28.5
Magumu - Thika	2	5605	0	0	180	200	2	1	701	1164	266	775	65	14.4	13.9	28.1
Magumu - Thika	2	5605	0	0	175	200	2	2	703	1276	288	789	65	14.5	14	28.1
Magumu - Thika	2	5694	0	0	170	190	2	1	739	1422	309	740	70	20.2	17.5	28.5
Magumu - Thika	2	5694	0	0	170	190	2	2	729	1494	318	761	70	20.2	17.6	28.5
Magumu - Thika	2	5700	0	0	175	195	2	1	715	1270	250	512	78	15.1	14.5	28.1
Magumu - Thika	2	5700	0	0	170	190	2	2	719	1393	263	516	78	15.1	14.6	28.1
Magumu - Thika	2	5799	0	0	180	200	2	1	736	1460	322	666	63	20.2	17.4	28.5
Magumu - Thika	2	5799	0	0	180	200	2	2	733	1569	323	722	62	20.2	17.4	28.5
Magumu - Thika	2	5800	0	0	170	195	2	1	721	1584	304	568	73	14.7	14.2	28.1
Magumu - Thika	2	5800	0	0	170	190	2	2	716	1661	311	581	73	14.7	14.3	28.1
Magumu - Thika	2	5901	0	0	125	135	2	1	689	2596	523	575	133	14.6	13.9	28.1
Magumu - Thika	2	5901	0	0	120	135	2	2	694	2740	543	590	132	14.6	14	28.1
Magumu - Thika	2	5902	0	0	160	175	2	1	731	1812	300	451	106	20.2	17.4	28.5
Magumu - Thika	2	5902	0	0	155	170	2	2	730	1911	321	458	107	20.2	17.5	28.5
Magumu - Thika	2	5999	0	0	130	150	2	1	688	2460	477	585	107	13.8	13.5	28.1
Magumu - Thika	2	5999	0	0	130	150	2	2	683	2550	523	640	105	13.9	13.6	28.1
Magumu - Thika	2	6000	0	0	150	165	2	1	714	2551	356	434	116	20.5	18.1	28.5
Magumu - Thika	2	6000	0	0	150	160	2	2	707	2665	372	461	114	20.5	18.1	28.5



Magumu - Thika	2	6101	0	0	140	155	2	1	710	1862	392	529	115	20.7	18.9	28.5
Magumu - Thika	2	6101	0	0	135	150	2	2	709	1987	409	539	115	20.7	19	28.5
Magumu - Thika	2	6118	0	0	170	190	2	1	722	1593	301	566	77	14.5	13.8	28.1
Magumu - Thika	2	6118	0	0	165	185	2	2	726	1707	324	598	77	14.5	14	28.1
Magumu - Thika	2	6202	0	0	150	170	2	1	729	1924	380	616	90	20.5	18.7	28.5
Magumu - Thika	2	6202	0	0	145	165	2	2	720	1960	408	683	88	20.5	18.8	28.5
Magumu - Thika	2	6206	0	0	160	185	2	1	708	1721	350	683	76	14.7	14.2	28.1
Magumu - Thika	2	6206	0	0	160	180	2	2	711	1876	355	730	75	14.7	14.2	28.1
Magumu - Thika	2	6294	0	0	155	175	2	1	723	1631	371	741	82	19.8	19.1	28.5
Magumu - Thika	2	6294	0	0	150	170	2	2	729	1753	402	761	83	19.9	19.2	28.5
Magumu - Thika	2	6303	0	0	155	165	2	1	719	1705	354	565	110	14.6	14.3	28.1
Magumu - Thika	2	6303	0	0	140	165	2	2	715	1771	375	591	108	14.6	14.3	28.1
Magumu - Thika	2	6398	0	0	180	205	2	1	737	1597	334	768	59	20.6	19.3	28.5
Magumu - Thika	2	6398	0	0	180	200	2	2	739	1679	346	766	60	20.6	19.4	28.5
Magumu - Thika	2	6399	0	0	165	185	2	1	712	1716	347	695	75	14.8	14.4	28.1
Magumu - Thika	2	6399	0	0	165	185	2	2	701	1841	376	609	77	14.8	14.5	28.1
Magumu - Thika	2	6501	0	0	160	180	2	1	714	1869	362	880	72	20.1	19.1	28.5
Magumu - Thika	2	6501	0	0	160	180	2	2	719	1968	385	918	72	20.1	19.2	28.5
Magumu - Thika	2	6512	0	0	165	190	2	1	723	1376	282	735	74	15	14.8	28.1
Magumu - Thika	2	6512	0	0	165	190	2	2	723	1397	285	837	72	15	14.9	28.1
Magumu - Thika	2	6599	0	0	155	175	2	1	727	1919	430	914	75	19.9	18.8	28.5
Magumu - Thika	2	6599	0	0	155	175	2	2	716	2020	453	933	74	19.9	18.9	28.5
Magumu - Thika	2	6601	0	0	150	170	2	1	705	1773	363	640	91	15	14.9	28.1
Magumu - Thika	2	6601	0	0	145	165	2	2	701	1861	388	668	90	15	15	28.1
Magumu - Thika	2	6699	0	0	175	200	2	1	722	1369	308	893	62	19.2	18.3	28.5
Magumu - Thika	2	6699	0	0	175	195	2	2	722	1462	318	908	62	19.2	18.4	28.5
Magumu - Thika	2	6702	0	0	180	205	2	1	702	1308	308	818	60	14.4	14.5	28.1
Magumu - Thika	2	6702	0	0	180	200	2	2	695	1357	323	841	60	14.4	14.6	28.1
Magumu - Thika	2	6800	0	0	170	190	2	1	704	1410	312	981	66	14.2	14.4	28.1
Magumu - Thika	2	6800	0	0	170	190	2	2	701	1427	342	961	66	14.1	14.4	28.1
Magumu - Thika	2	6801	0	0	170	185	2	1	733	1212	247	469	123	17.9	17.5	28.5
Magumu - Thika	2	6801	0	0	170	180	2	2	736	1275	261	495	121	18	17.6	28.5
Magumu - Thika	2	6901	0	0	235	260	2	1	707	553	139	768	38	16.8	16.1	28.5
Magumu - Thika	2	6901	0	0	235	260	2	2	708	586	142	802	38	16.9	16.2	28.5
Magumu - Thika	2	6902	0	0	180	195	2	1	729	883	199	479	82	14.2	14	28.1
Magumu - Thika	2	6902	0	0	180	195	2	2	734	896	210	494	82	14.3	14	28.1
Magumu - Thika	2	6996	0	0	170	190	4	1	712	2304	459	480	69	17.5	16.1	28.5
Magumu - Thika	2	6996	0	0	170	190	4	2	711	2336	496	530	67	17.6	16.2	28.5
Magumu - Thika	3	7002	0	0	170	195	4	1	701	1873	452	739	63	14.7	14.4	28.1
Magumu - Thika	3	7002	0	0	170	190	4	2	699	1966	483	788	62	14.8	14.4	28.1
Magumu - Thika	3	7116	0	0	205	230	2	1	755	698	153	469	58	17.8	15.7	28.5
Magumu - Thika	3	7116	0	0	205	225	2	2	756	716	159	468	59	18.7	15.8	28.5
Magumu - Thika	3	7140	0	0	170	185	2	1	731	1183	257	421	102	15.8	15.1	28.1
Magumu - Thika	3	7140	0	0	170	185	2	2	731	1211	247	452	99	15.8	15.2	28.1
Magumu - Thika	3	7199	0	0	170	190	2	1	741	1185	282	579	78	18.6	17.3	28.5
Magumu - Thika	3	7199	0	0	170	190	2	2	748	1242	271	615	78	18.6	17.3	28.5
Magumu - Thika	3	7207	0	0	175	195	4	1	849	413	395	226	85	14.9	14.7	28.1
Magumu - Thika	3	7207	0	0	175	195	4	2	848	420	402	234	85	14.9	14.8	28.1
Magumu - Thika	3	7294	0	0	195	215	2	1	726	1324	289	967	50	18.7	17.9	28.5
Magumu - Thika	3	7294	0	0	195	215	2	2	728	1324	287	1017	50	18.7	17.9	28.5
Magumu - Thika	3	7299	0	0	200	220	2	1	733	853	199	893	52	16.5	14.5	28.1
Magumu - Thika	3	7299	0	0	200	220	2	2	721	901	212	755	54	16.5	14.6	28.1
Magumu - Thika	3	7399	0	0	170	195	2	1	733	1223	300	842	67	18.4	17.6	28.5
Magumu - Thika	3	7399	0	0	170	190	2	2	732	1364	296	723	70	18.4	17.6	28.5
Magumu - Thika	3	7400	0	0	175	200	2	1	719	1457	371	1603	50	15.6	14.8	28.1
Magumu - Thika	3	7400	0	0	175	200	2	2	717	1596	398	1489	51	15.5	14.9	28.1
Magumu - Thika	3	7488	0	0	190	205	2	1	753	1498	153	235	128	18.2	17.5	28.5
Magumu - Thika	3	7488	0	0	195	210	2	2	754	1773	138	228	127	18.2	17.6	28.5
Magumu - Thika	3	7500	0	0	170	185	2	1	750	1513	249	268	155	15.2	14.9	28.1
Magumu - Thika	3	7500	0	0	175	190	2	2	733	1617	211	253	152	15.3	15	28.1
Magumu - Thika	3	7599	0	0	165	190	2	1	740	1192	280	637	78	17.8	17.5	28.5
Magumu - Thika	3	7599	0	0	165	185	2	2	742	1242	297	659	78	17.8	17.6	28.5
Magumu - Thika	3	7608	0	0	175	190	2	1	708	913	222	434	112	15.5	15	28.1
Magumu - Thika	3	7608	0	0	170	185	2	2	723	987	249	507	111	15.6	15.1	28.1
Magumu - Thika	3	7696	0	0	170	185	2	1	752	1309	234	424	106	18.5	17.3	28.5
Magumu - Thika	3	7696	0	0	170	185	2	2	751	1408	242	419	107	18.5	17.4	28.5
Magumu - Thika	3	7703	0	0	155	175	3	1	728	448	429	244	109	15.6	15.3	28.1
Magumu - Thika	3	7703	0	0	175	190	2	2	730	1225	217	419	106	15.6	15.3	28.1
Magumu - Thika	3	7795	0	0	180	195	2	1	728	778	211	424	117	15.1	15.1	28.1
Magumu - Thika	3	7795	0	0	175	190	2	2	737	841	224	448	116	15.1	15.1	28.1
Magumu - Thika	3	7889	0	0	165	180	2	1	742	1158	272	337	149	18.3	16.6	28.5
Magumu - Thika	3	7889	0	0	165	180	2	2	738	1231	272	332	150	18.3	16.6	28.5
Magumu - Thika	3	7903	0	0	160	175	2	1	743	1091	316	333	163	14.6	14.7	28.1
Magumu - Thika	3	7903	0	0	170	185	2	2	736	1088	253	297	162	14.6	14.8	28.1
Magumu - Thika	3	7998	0	0	165	190	4	1	689	1755	471	1102	59	14.1	14.3	28.1
Magumu - Thika	3	7998	0	0	165	190	4	2	690	1866	480	1105	59	14.1	14.3	28.1
Magumu - Thika	3	7999	0	0	210	230	2	1	729	1046	243	735	48	18	16.3	28.5
Magumu - Thika	3	7999	0	0	205	230	2	2	729	1089	261	752	48	18	16.3	28.5

Magumu - Thika	3	8091	0	0	200	225	2	1	728	913	211	624	54	17.5	16.7	28.5
Magumu - Thika	3	8091	0	0	200	225	2	2	730	955	224	645	54	17.6	16.7	28.5
Magumu - Thika	3	8098	0	0	180	200	2	1	712	868	243	753	68	14	13.8	28.1
Magumu - Thika	3	8098	0	0	180	200	2	2	708	911	241	727	68	14	13.9	28.1
Magumu - Thika	3	8195	0	0	255	280	2	1	708	475	79	424	38	17.2	16.9	28.5
Magumu - Thika	3	8195	0	0	255	280	2	2	708	491	85	449	38	17.2	16.9	28.5
Magumu - Thika	3	8202	0	0	305	305	2	1	727	9342	19	1539	62	14.2	13.9	28.1
Magumu - Thika	3	8202	0	0	305	305	2	2	735	9887	20	1495	63	14.1	14	28.1
Magumu - Thika	3	8298	0	0	240	265	2	1	693	372	109	765	38	13.9	14	28.1
Magumu - Thika	3	8298	0	0	240	265	2	2	704	395	115	786	38	14	14.1	28.1
Magumu - Thika	3	8399	0	0	170	195	2	1	718	1587	330	533	73	17.2	16.8	28.5
Magumu - Thika	3	8399	0	0	170	190	2	2	715	1706	340	542	73	17.3	16.9	28.5
Magumu - Thika	3	8411	0	0	160	180	4	1	735	481	460	268	93	14.1	13.8	28.1
Magumu - Thika	3	8411	0	0	160	180	4	2	738	488	468	274	95	14.1	13.9	28.1
Magumu - Thika	3	8494	0	0	215	235	2	1	720	730	179	879	45	16.9	16.4	28.5
Magumu - Thika	3	8494	0	0	210	235	2	2	722	793	179	860	46	17	16.4	28.5
Magumu - Thika	3	8539	0	0	195	220	2	1	709	863	239	756	54	14.6	14.2	28.1
Magumu - Thika	3	8539	0	0	195	220	2	2	710	936	239	731	54	14.6	14.3	28.1
Magumu - Thika	3	8607	0	0	175	200	2	1	717	970	369	2214	46	16.9	16.8	28.5
Magumu - Thika	3	8607	0	0	175	195	2	2	716	1056	384	2171	47	16.9	16.8	28.5
Magumu - Thika	3	8614	0	0	205	230	2	1	711	469	167	853	50	14.6	14.2	28.1
Magumu - Thika	3	8614	0	0	205	230	2	2	706	484	175	881	49	14.6	14.3	28.1
Magumu - Thika	3	8697	0	0	240	265	2	1	707	661	146	952	33	17	16.7	28.5
Magumu - Thika	3	8697	0	0	240	265	2	2	711	696	155	938	34	17	16.8	28.5
Magumu - Thika	3	8699	0	0	215	235	2	1	709	671	188	895	45	15.1	14.4	28.1
Magumu - Thika	3	8699	0	0	215	235	2	2	705	700	196	901	45	15	14.5	28.1
Magumu - Thika	3	8782	0	0	200	220	2	1	719	693	168	693	57	14.7	14.6	28.1
Magumu - Thika	3	8782	0	0	200	220	2	2	714	724	193	623	58	14.6	14.6	28.1
Magumu - Thika	3	8806	0	0	220	245	2	1	721	1022	238	728	41	16.5	16.2	28.5
Magumu - Thika	3	8806	0	0	220	245	2	2	720	1062	238	683	42	16.6	16.3	28.5
Magumu - Thika	3	8898	0	0	155	170	2	1	747	1322	351	271	163	15.9	15.8	28.5
Magumu - Thika	3	8898	0	0	165	180	2	2	752	1362	287	241	163	15.9	15.8	28.5
Magumu - Thika	3	8903	0	0	175	195	2	1	719	1363	285	458	76	14.7	14.6	28.1
Magumu - Thika	3	8903	0	0	175	195	2	2	716	1401	278	444	77	14.7	14.6	28.1
Magumu - Thika	3	9000	0	0	210	235	2	1	718	332	118	770	51	14.5	14.5	28.1
Magumu - Thika	3	9000	0	0	210	235	2	2	713	413	136	738	51	14.5	14.5	28.1
Magumu - Thika	3	9001	0	0	185	210	2	1	735	670	202	841	61	16.1	15.8	28.5
Magumu - Thika	3	9001	0	0	185	205	2	2	729	722	224	813	62	16.1	15.8	28.5
Magumu - Thika	3	9096	0	0	170	195	2	1	718	1239	385	852	63	17.2	16.4	28.5
Magumu - Thika	3	9096	0	0	170	190	4	2	723	1343	411	886	64	17.2	16.4	28.5
Magumu - Thika	3	9100	0	0	180	200	2	1	717	744	210	767	67	14.9	14.6	28.1
Magumu - Thika	3	9100	0	0	180	200	2	2	714	792	222	792	67	14.9	14.6	28.1
Magumu - Thika	4	9200	0	0	150	170	2	1	704	2394	420	480	92	14.1	14.1	28.1
Magumu - Thika	4	9200	0	0	145	165	2	2	700	2492	468	528	90	14.1	14.1	28.1
Magumu - Thika	4	9302	0	0	160	170	2	1	732	1338	325	581	100	14.7	13.8	28.1
Magumu - Thika	4	9302	0	0	155	170	2	2	719	1436	336	517	102	14.6	13.9	28.1
Magumu - Thika	4	9400	0	0	150	160	2	1	728	2184	385	467	104	17.3	16.3	28.5
Magumu - Thika	4	9400	0	0	140	160	2	2	732	2263	398	486	103	17.3	16.3	28.5
Magumu - Thika	4	9401	0	0	175	190	2	1	731	1115	227	324	109	14.5	14	28.1
Magumu - Thika	4	9401	0	0	170	185	2	2	725	1157	244	341	107	14.4	14	28.1
Magumu - Thika	4	9502	1	1	125	145	4	1	712	3345	640	825	96	17.4	16	28.5
Magumu - Thika	4	9502	1	1	120	140	4	2	714	3420	684	813	96	17.4	16.1	28.5
Magumu - Thika	4	9503	0	0	165	185	2	1	717	780	274	720	82	14.2	14.2	28.1
Magumu - Thika	4	9503	0	0	165	180	2	2	719	821	299	754	80	14.2	14.3	28.1
Magumu - Thika	4	9595	0	0	160	185	2	1	718	1764	420	816	70	16.9	15.3	28.5
Magumu - Thika	4	9595	0	0	160	180	4	2	719	1868	453	803	71	17	15.4	28.5
Magumu - Thika	4	9601	0	0	185	205	2	1	722	1155	229	555	68	14.1	14.2	28.1
Magumu - Thika	4	9601	0	0	185	205	2	2	718	1122	240	595	67	14	14.2	28.1
Magumu - Thika	4	9705	0	0	160	180	4	1	718	2360	580	1007	62	17	15	28.5
Magumu - Thika	4	9705	0	0	160	180	4	2	712	2475	586	1008	62	17	15	28.5
Magumu - Thika	4	9708	0	0	210	230	2	1	713	405	164	650	53	14.3	14.1	28.1
Magumu - Thika	4	9708	0	0	205	230	2	2	720	455	165	632	54	14.3	14.1	28.1
Magumu - Thika	4	9790	0	0	165	180	2	1	734	1133	295	608	85	17.5	14.6	28.5
Magumu - Thika	4	9790	0	0	160	180	2	2	736	1165	298	588	86	17.5	14.7	28.5
Magumu - Thika	4	9803	0	0	140	160	4	1	695	2520	574	831	83	14.6	14.2	28.1
Magumu - Thika	4	9803	0	0	140	160	4	2	698	2514	611	840	82	14.6	14.2	28.1
Magumu - Thika	4	9886	0	0	140	160	2	1	693	1975	469	577	98	13.9	13.7	28.1
Magumu - Thika	4	9886	0	0	140	160	2	2	690	2114	480	584	99	13.8	13.7	28.1
Magumu - Thika	4	9896	0	0	150	170	2	1	722	1850	433	558	87	18.2	17.7	28.5
Magumu - Thika	4	9896	0	0	150	170	2	2	725	2007	423	567	88	18.2	17.8	28.5
Magumu - Thika	4	10000	0	0	150	170	2	1	723	1790	391	728	84	17.9	17.5	28.5
Magumu - Thika	4	10000	0	0	150	170	2	2	717	1862	413	749	83	18	17.6	28.5
Magumu - Thika	4	10003	0	0	155	175	2	1	705	1709	369	706	81	13.7	13.1	28.1
Magumu - Thika	4	10003	0	0	155	175	2	2	705	1741	398	824	78	13.7	13.2	28.1
Magumu - Thika	4	10094	0	0	180	200	2	1	723	798	227	791	67	14.2	13.4	28.1
Magumu - Thika	4	10094	0	0	175	200	2	2	728	862	233	799	68	14.2	13.4	28.1
Magumu - Thika	4	10099	0	0	180	200	2	1	723	1016	248	512	74	18.2	17.8	28.5
Magumu - Thika	4	10099	0	0	175	195	2	2	726	1077	262	530	74	18.2	17.9	28.5

Magumu - Thika	4	10191	0	0	165	185	2	1	738	1480	301	639	76	18.5	18.1	28.5
Magumu - Thika	4	10191	0	0	165	190	2	2	739	1577	302	644	76	18.5	18	28.5
Magumu - Thika	4	10205	0	0	155	175	2	1	707	1362	367	706	85	13.5	13.6	28.1
Magumu - Thika	4	10205	0	0	155	175	2	2	705	1355	372	721	85	13.5	13.6	28.1
Magumu - Thika	4	10300	0	0	200	220	2	1	733	847	157	498	62	17.9	18.1	28.5
Magumu - Thika	4	10300	0	0	200	220	2	2	734	909	147	538	61	17.9	18.1	28.5
Magumu - Thika	4	10302	0	0	180	200	4	1	697	1732	401	880	56	14.1	13.8	28.1
Magumu - Thika	4	10302	0	0	180	200	4	2	703	1773	415	863	57	14.2	13.9	28.1
Magumu - Thika	4	10399	0	0	210	230	2	1	718	675	172	753	51	14.7	14	28.1
Magumu - Thika	4	10399	0	0	205	230	2	2	712	715	197	735	51	14.7	14.1	28.1
Magumu - Thika	4	10503	0	0	175	190	2	1	729	777	224	572	82	14.6	14	28.1
Magumu - Thika	4	10503	0	0	170	190	2	2	723	773	247	648	79	14.5	14	28.1
Magumu - Thika	4	10506	0	0	180	200	2	1	716	731	330	1163	56	18.5	18.2	28.5
Magumu - Thika	4	10506	0	0	175	200	2	2	723	774	335	1153	57	18.6	18.2	28.5
Magumu - Thika	4	10598	0	0	195	215	2	1	720	998	281	735	55	18.2	18.1	28.5
Magumu - Thika	4	10598	0	0	190	210	2	2	724	1093	317	734	56	18.2	18.1	28.5
Magumu - Thika	4	10607	0	0	190	210	2	1	714	1097	248	608	63	14.6	14	28.1
Magumu - Thika	4	10607	0	0	185	210	2	2	707	1152	263	611	62	14.6	14.1	28.1
Magumu - Thika	4	10697	0	0	160	180	2	1	730	1451	352	712	77	18.1	18.4	28.5
Magumu - Thika	4	10697	0	0	160	180	2	2	731	1569	381	731	76	18.2	18.4	28.5
Magumu - Thika	4	10698	0	0	155	175	4	1	714	2694	517	736	74	14.6	14.1	28.1
Magumu - Thika	4	10698	0	0	150	170	4	2	711	2881	548	780	73	14.6	14.1	28.1
Magumu - Thika	4	10800	0	0	170	195	2	1	719	1360	371	1589	53	18.2	18.3	28.5
Magumu - Thika	4	10800	0	0	170	195	4	2	722	1574	424	1360	54	18.2	18.3	28.5
Magumu - Thika	4	10804	0	0	155	175	4	1	701	2053	589	1503	58	14.9	14.3	28.1
Magumu - Thika	4	10804	0	0	155	175	4	2	701	2146	626	1518	58	14.9	14.3	28.1
Magumu - Thika	4	10900	0	0	180	200	2	1	744	944	204	439	76	14.5	14.2	28.1
Magumu - Thika	4	10900	0	0	180	200	2	2	734	966	211	475	75	14.5	14.2	28.1
Magumu - Thika	4	10903	0	0	175	195	3	1	748	344	326	193	90	18.2	18.2	28.5
Magumu - Thika	4	10903	0	0	175	195	4	2	752	378	358	202	88	18.3	18.3	28.5
Magumu - Thika	4	10998	0	0	170	195	2	1	726	1527	298	609	72	18.8	17.9	28.5
Magumu - Thika	4	10998	0	0	170	190	2	2	727	1613	317	638	72	18.8	17.9	28.5
Magumu - Thika	4	10999	0	0	175	195	2	1	727	1459	243	450	79	14.8	14.5	28.1
Magumu - Thika	4	10999	0	0	175	195	2	2	720	1454	241	444	79	14.8	14.5	28.1
Magumu - Thika	4	11103	0	0	155	170	2	1	735	1885	331	417	118	18.7	17.3	28.5
Magumu - Thika	4	11103	0	0	155	165	2	2	728	1958	350	433	116	18.7	17.4	28.5
Magumu - Thika	4	11108	0	0	185	200	2	1	727	776	172	300	109	14.6	14.2	28.1
Magumu - Thika	4	11108	0	0	185	200	2	2	730	785	178	325	108	14.6	14.2	28.1
Magumu - Thika	4	11198	0	0	180	200	2	1	725	1287	241	481	75	18.5	17.2	28.5
Magumu - Thika	4	11198	0	0	175	195	2	2	733	1398	246	453	78	18.6	17.2	28.5
Magumu - Thika	4	11204	0	0	175	195	4	1	708	1810	390	816	61	14.5	14.3	28.1
Magumu - Thika	4	11204	0	0	175	200	4	2	692	1808	389	798	60	14.5	14.3	28.1
Magumu - Thika	4	11297	0	0	150	165	4	1	753	504	478	282	110	18.4	17.4	28.5
Magumu - Thika	4	11297	0	0	145	165	4	2	758	517	490	286	113	18.4	17.4	28.5
Magumu - Thika	4	11298	0	0	155	175	3	1	725	448	429	227	107	14.2	14	28.1
Magumu - Thika	4	11298	0	0	220	240	2	2	722	11319	64	186	109	14.3	14	28.1
Magumu - Thika	4	11399	0	0	170	190	2	1	755	1414	252	541	78	17.9	18.2	28.5
Magumu - Thika	4	11399	0	0	170	190	2	2	754	1487	272	572	78	18	18.2	28.5
Magumu - Thika	4	11404	0	0	155	170	2	1	715	1813	341	492	104	14.7	14.2	28.1
Magumu - Thika	4	11404	0	0	155	170	2	2	717	1909	335	466	105	14.7	14.2	28.1
Magumu - Thika	4	11497	0	0	175	195	2	1	745	1551	275	494	73	17.5	17.9	28.5
Magumu - Thika	4	11497	0	0	175	195	2	2	743	1677	282	481	74	17.5	18	28.5
Magumu - Thika	4	11503	0	0	170	190	2	1	731	1201	282	539	78	14.8	14.3	28.1
Magumu - Thika	4	11503	0	0	165	190	2	2	736	1298	306	561	78	14.8	14.3	28.1
Magumu - Thika	4	11597	0	0	190	210	2	1	735	1495	320	785	54	18.1	18	28.5
Magumu - Thika	4	11597	0	0	185	210	4	2	732	1620	361	776	54	18.1	18	28.5
Magumu - Thika	4	11606	0	0	190	215	2	1	712	1615	270	547	60	14.9	14.3	28.1
Magumu - Thika	4	11606	0	0	190	210	2	2	716	1744	281	547	60	14.9	14.4	28.1
Magumu - Thika	4	11702	0	0	160	180	2	1	756	1821	425	776	74	18.8	17.9	28.5
Magumu - Thika	4	11702	0	0	155	180	2	2	747	1906	438	794	74	18.9	17.9	28.5
Magumu - Thika	4	11708	0	0	155	175	4	1	731	474	454	257	101	14.6	14.6	28.1
Magumu - Thika	4	11708	0	0	155	175	4	2	728	484	463	264	102	14.6	14.6	28.1
Magumu - Thika	4	11799	0	0	130	150	4	1	844	2368	588	774	97	20.8	20.2	28.5
Magumu - Thika	4	11799	1	0	130	150	4	2	843	2410	597	835	96	20.8	20.2	28.5
Magumu - Thika	4	11805	0	0	155	180	2	1	729	1834	394	661	79	14.5	14.5	28.1
Magumu - Thika	4	11805	0	0	160	180	2	2	716	1786	396	661	78	14.5	14.6	28.1
Magumu - Thika	4	11898	0	0	160	175	2	1	732	1452	305	308	170	20.4	19.8	28.5
Magumu - Thika	4	11898	0	0	165	180	2	2	732	1570	259	281	171	20.4	19.9	28.5
Magumu - Thika	4	11912	0	0	130	145	3	1	707	628	601	318	159	14.5	14.6	28.1
Magumu - Thika	4	11912	0	0	125	140	3	2	708	656	628	343	157	14.4	14.6	28.1
Magumu - Thika	4	12001	0	0	175	195	2	1	725	1194	246	451	78	14.7	14.6	28.1
Magumu - Thika	4	12001	0	0	175	195	2	2	725	1200	259	481	78	14.7	14.6	28.1
Magumu - Thika	4	12002	0	0	175	195	2	1	721	1315	286	502	75	20.1	19.7	28.5
Magumu - Thika	4	12002	0	0	175	195	2	2	722	1379	300	512	75	20.1	19.7	28.5
Magumu - Thika	4	12099	0	0	170	185	2	1	722	1310	238	468	91	20.6	19.8	28.5
Magumu - Thika	4	12099	0	0	170	185	2	2	723	1424	248	470	92	20.6	19.9	28.5
Magumu - Thika	4	12104	0	0	240	260	2	1	732	1907	70	195	99	14.9	14.5	28.1
Magumu - Thika	4	12104	0	0	275	300	2	2	731	13537	29	260	96	14.9	14.6	28.1

Magumu - Thika	4	12197	0	0	175	190	2	1	729	1088	222	407	99	20.3	20	28.5
Magumu - Thika	4	12197	0	0	170	185	2	2	728	1160	252	406	101	20.3	20	28.5
Magumu - Thika	4	12216	0	0	195	210	2	1	725	1602	145	200	119	15.1	14.8	28.1
Magumu - Thika	4	12216	0	0	205	225	2	2	739	2281	114	181	119	15.1	14.8	28.1
Magumu - Thika	4	12296	0	0	170	190	2	1	733	1505	320	652	72	20.3	20.2	28.5
Magumu - Thika	4	12296	0	0	170	190	2	2	733	1557	332	659	71	20.3	20.2	28.5
Magumu - Thika	4	12298	0	0	165	185	4	1	733	487	466	274	89	14.4	14.6	28.1
Magumu - Thika	4	12298	0	0	165	185	4	2	739	499	478	274	91	14.4	14.6	28.1
Magumu - Thika	4	12399	0	0	165	185	4	1	714	2006	424	838	66	14.5	14.3	28.1
Magumu - Thika	4	12399	0	0	165	185	4	2	714	2127	442	745	68	14.5	14.3	28.1
Magumu - Thika	4	12402	0	0	145	165	4	1	723	2363	483	664	84	20.4	20.3	28.5
Magumu - Thika	4	12402	0	0	145	165	4	2	717	2491	504	672	84	20.4	20.4	28.5
Magumu - Thika	4	12484	0	0	175	195	2	1	728	857	323	860	64	19.5	19.6	28.5
Magumu - Thika	4	12484	0	0	175	195	2	2	728	887	315	1017	63	19.6	19.7	28.5
Magumu - Thika	4	12493	0	0	255	275	2	1	718	9192	43	140	73	14.8	14.5	28.1
Magumu - Thika	4	12493	0	0	195	215	4	2	721	366	350	186	72	14.8	14.5	28.1
Magumu - Thika	4	12585	0	0	185	205	4	1	706	2332	357	363	66	18.7	18.8	28.5
Magumu - Thika	4	12585	0	0	180	205	4	2	707	2434	383	384	66	18.7	18.9	28.5
Magumu - Thika	4	12602	0	0	205	225	2	1	721	961	216	854	49	14.8	14.6	28.1
Magumu - Thika	4	12602	0	0	205	225	2	2	718	1038	229	847	49	14.8	14.6	28.1
Magumu - Thika	4	12700	0	0	160	180	4	1	701	2335	517	908	67	14.3	14.5	28.1
Magumu - Thika	4	12700	0	0	155	175	4	2	706	2456	535	914	68	14.2	14.5	28.1
Magumu - Thika	4	12701	0	0	165	185	2	1	721	1961	389	779	69	18.7	18.7	28.5
Magumu - Thika	4	12701	0	0	160	185	4	2	716	2017	429	767	70	18.8	18.8	28.5
Magumu - Thika	4	12795	0	0	165	190	4	1	713	1994	476	851	63	19	18.9	28.5
Magumu - Thika	4	12795	0	0	165	190	4	2	713	2043	487	861	63	19.1	19	28.5
Magumu - Thika	4	12799	0	0	190	210	2	1	716	1421	294	850	55	14.3	14.3	28.1
Magumu - Thika	4	12799	0	0	190	210	2	2	712	1550	299	830	55	14.3	14.3	28.1
Magumu - Thika	4	12896	0	0	165	185	4	1	718	2006	470	725	69	20.1	19.2	28.5
Magumu - Thika	4	12896	0	0	160	180	4	2	717	2165	501	756	69	20	19.2	28.5
Magumu - Thika	4	12914	0	0	155	170	2	1	719	1792	350	509	93	14.5	14.3	28.1
Magumu - Thika	4	12914	0	0	150	170	2	2	717	1912	361	508	95	14.5	14.4	28.1
Magumu - Thika	4	13000	0	0	155	175	2	1	711	2007	425	715	80	14.4	14.3	28.1
Magumu - Thika	4	13000	0	0	150	175	2	2	703	2120	453	644	82	14.4	14.4	28.1
Magumu - Thika	4	13001	1	1	125	140	4	1	712	3227	735	754	97	20.1	19.3	28.5
Magumu - Thika	4	13001	1	1	125	145	4	2	706	3241	727	685	99	20.1	19.3	28.5
Magumu - Thika	4	13098	0	0	150	170	4	1	705	2978	612	892	70	20.9	19.4	28.5
Magumu - Thika	4	13098	0	0	145	170	4	2	706	3014	609	910	71	20.9	19.5	28.5
Magumu - Thika	4	13099	0	0	170	190	2	1	710	1461	399	1048	62	14.2	14.2	28.1
Magumu - Thika	4	13099	0	0	165	190	2	2	705	1523	426	1123	61	14.2	14.2	28.1
Magumu - Thika	4	13196	0	0	170	190	3	1	746	361	342	206	95	19.5	18.2	28.5
Magumu - Thika	4	13196	0	0	170	190	3	2	748	380	360	212	95	19.6	18.2	28.5
Magumu - Thika	4	13216	0	0	185	205	2	1	719	1600	306	513	65	14.4	14.2	28.1
Magumu - Thika	4	13216	0	0	185	205	2	2	716	1686	324	523	64	14.4	14.2	28.1
Magumu - Thika	4	13288	0	0	210	235	4	1	706	1855	342	367	48	18.8	17.5	28.5
Magumu - Thika	4	13288	0	0	210	235	4	2	702	1934	364	389	47	18.8	17.7	28.5
Magumu - Thika	4	13298	0	0	195	215	4	1	689	2564	415	387	54	14.3	14.3	28.1
Magumu - Thika	4	13298	0	0	195	215	4	2	700	2773	405	362	56	14.4	14.3	28.1
Magumu - Thika	4	13403	0	0	130	150	4	1	711	720	682	385	118	22.2	18.5	28.5
Magumu - Thika	4	13403	0	0	130	150	4	2	709	724	686	393	118	22.2	18.4	28.5
Magumu - Thika	4	13416	0	0	175	200	2	1	708	1391	302	638	67	14.1	14.2	28.1
Magumu - Thika	4	13416	0	0	175	200	2	2	704	1488	309	623	68	14	14.2	28.1
Magumu - Thika	4	13492	0	0	170	190	2	1	716	1830	363	677	68	23.3	19.5	28.5
Magumu - Thika	4	13492	0	0	170	190	2	2	713	1912	380	675	67	23.3	19.5	28.5
Magumu - Thika	4	13500	0	0	155	175	2	1	705	1685	404	572	85	14.6	14.4	28.8
Magumu - Thika	4	13500	0	0	155	175	2	2	703	1708	410	564	86	14.6	14.4	28.8
Magumu - Thika	4	13599	0	0	195	215	2	1	724	2041	318	742	51	23.4	19.5	28.5
Magumu - Thika	4	13599	0	0	190	215	2	2	730	2172	325	723	52	23.4	19.5	28.5
Magumu - Thika	4	13602	0	0	160	180	2	1	718	2173	418	564	80	14.8	14.6	28.8
Magumu - Thika	4	13602	0	0	160	180	4	2	716	2258	434	564	79	14.8	14.6	28.8
Magumu - Thika	4	13698	0	0	150	170	2	1	732	1987	447	686	85	23.5	19	28.5
Magumu - Thika	4	13698	0	0	150	170	2	2	731	2157	445	720	84	23.5	19.1	28.5
Magumu - Thika	4	13713	0	0	170	185	2	1	727	1347	255	368	105	14.9	15	28.8
Magumu - Thika	4	13713	0	0	165	180	2	2	730	1401	274	390	104	14.9	15.1	28.8
Magumu - Thika	4	13804	0	0	305	305	3	1	742	10672	44	22	226	14.7	15	28.8
Magumu - Thika	4	13804	0	0	305	305	3	2	749	11258	45	24	218	14.8	15	28.8
Magumu - Thika	4	13895	0	0	175	200	4	1	710	1676	426	1185	53	22.8	20.4	28.5
Magumu - Thika	4	13895	0	0	175	200	4	2	710	1827	437	1181	53	22.7	20.4	28.5
Magumu - Thika	4	13906	0	0	200	225	2	1	702	1245	249	822	49	14.3	14.4	28.8
Magumu - Thika	4	13906	0	0	200	225	2	2	702	1299	268	840	48	14.4	14.4	28.8
Magumu - Thika	4	13983	0	0	165	185	2	1	726	1770	331	521	80	22.7	20.5	28.5
Magumu - Thika	4	13983	0	0	165	185	2	2	728	1853	345	539	80	22.7	20.5	28.5
Magumu - Thika	4	13998	0	0	195	215	4	1	721	1911	358	648	53	14.2	14.4	28.8
Magumu - Thika	4	13998	0	0	190	215	4	2	718	1979	361	622	53	14.2	14.4	28.8
Magumu - Thika	4	14095	0	0	125	140	2	1	717	2660	506	548	160	23	20.4	28.5
Magumu - Thika	4	14095	0	0	130	140	2	2	721	2772	462	547	159	23.1	20.5	28.5
Magumu - Thika	4	14115	1	1	110	125	3	1	716	804	756	445	165	14.5	14.5	28.8
Magumu - Thika	4	14115	1	1	105	120	3	2	726	848	797	453	167	14.5	14.5	28.8

Magumu - Thika	4	14202	0	0	135	155	4	1	708	2791	572	537	96	14.4	14.5	28.8
Magumu - Thika	4	14202	0	0	135	155	4	2	689	2817	579	588	93	14.4	14.6	28.8
Magumu - Thika	4	14294	0	0	185	205	4	1	716	1698	350	686	57	22.2	19.8	28.5
Magumu - Thika	4	14294	0	0	185	205	4	2	716	1718	350	675	58	22.3	19.9	28.5
Magumu - Thika	4	14304	0	0	170	190	4	1	707	2080	419	763	64	14.5	14.4	28.8
Magumu - Thika	4	14304	0	0	170	190	4	2	703	2068	445	796	64	14.5	14.5	28.8
Magumu - Thika	4	14398	0	0	185	210	4	1	698	1824	450	1268	46	14.4	14.6	28.8
Magumu - Thika	4	14398	0	0	185	210	4	2	691	1950	470	1266	46	14.5	14.6	28.8
Magumu - Thika	4	14401	0	0	175	195	4	1	703	2062	513	700	60	22.2	19.7	28.5
Magumu - Thika	4	14401	0	0	175	195	4	2	697	2272	516	620	61	22.2	19.7	28.5
Magumu - Thika	4	14497	0	0	160	180	4	1	719	2252	507	768	68	21.9	20	28.5
Magumu - Thika	4	14497	0	0	160	180	4	2	720	2381	532	800	68	22	20	28.5
Magumu - Thika	4	14506	0	0	165	185	2	1	722	1748	354	750	73	14.3	14.5	28.8
Magumu - Thika	4	14506	0	0	160	180	2	2	716	1820	371	768	74	14.3	14.5	28.8
Magumu - Thika	4	14595	0	0	160	185	4	1	724	2127	454	663	71	21.2	20	28.5
Magumu - Thika	4	14595	0	0	160	185	4	2	718	2219	455	686	71	21.3	20.1	28.5
Magumu - Thika	4	14606	0	0	205	220	2	1	740	1447	126	189	110	14.6	14.6	28.8
Magumu - Thika	4	14606	0	0	200	220	2	2	740	1549	127	186	110	14.6	14.6	28.8
Magumu - Thika	4	14702	0	0	140	160	2	1	721	2302	481	566	94	21.3	19.2	28.5
Magumu - Thika	4	14702	0	0	140	160	2	2	721	2469	496	562	94	21.3	19.3	28.5
Magumu - Thika	4	14705	0	0	295	305	2	1	719	12203	24	354	64	14.7	14.6	28.8
Magumu - Thika	4	14705	0	0	290	305	2	2	720	13037	25	346	64	14.7	14.6	28.8
Magumu - Thika	4	14797	0	0	145	165	4	1	702	3241	608	480	85	20.3	19.2	28.5
Magumu - Thika	4	14797	0	0	140	160	4	2	699	831	788	438	98	20.4	19.2	28.5
Magumu - Thika	4	14807	0	0	160	185	2	1	711	1788	349	505	82	14.4	14.5	28.8
Magumu - Thika	4	14807	0	0	160	180	2	2	705	1875	340	464	84	14.4	14.5	28.8
Magumu - Thika	4	14898	0	0	150	165	2	1	719	2299	415	431	97	19.4	19.1	28.5
Magumu - Thika	4	14898	0	0	145	165	2	2	717	2390	425	432	98	19.5	19.1	28.5
Magumu - Thika	4	14905	0	0	150	170	4	1	703	2689	536	493	87	14.6	14.6	28.8
Magumu - Thika	4	14905	0	0	145	170	4	2	689	2787	560	506	85	14.6	14.6	28.8
Magumu - Thika	4	15001	0	0	135	150	2	1	713	2243	425	595	113	20.2	19.6	28.5
Magumu - Thika	4	15001	0	0	135	150	2	2	715	2461	413	540	116	20.1	19.6	28.5
Magumu - Thika	4	15010	0	0	135	155	2	1	709	2336	505	751	95	14.6	14.7	28.8
Magumu - Thika	4	15010	0	0	135	150	2	2	707	2537	515	742	96	14.6	14.8	28.8
Magumu - Thika	4	15097	0	0	160	170	2	1	738	1823	315	487	110	21.6	19.9	28.5
Magumu - Thika	4	15097	0	0	155	170	2	2	737	1845	319	480	111	21.6	19.9	28.5
Magumu - Thika	4	15113	0	0	160	175	2	1	710	1840	311	413	116	14.8	15	28.8
Magumu - Thika	4	15113	0	0	160	175	2	2	717	1955	307	400	119	14.8	15	28.8
Magumu - Thika	4	15198	0	0	145	165	4	1	705	2956	648	737	76	20.7	19.2	28.5
Magumu - Thika	4	15198	0	0	145	165	4	2	703	3177	631	692	77	20.7	19.2	28.5
Magumu - Thika	4	15204	0	0	160	180	2	1	706	1817	381	753	76	14.1	14	28.8
Magumu - Thika	4	15204	0	0	155	175	2	2	707	1894	398	735	77	14.1	14	28.8
Magumu - Thika	4	15303	0	0	155	175	4	1	712	2532	541	603	77	20.1	19.1	28.5
Magumu - Thika	4	15303	0	0	150	170	4	2	713	2707	587	600	77	20.1	19.2	28.5
Magumu - Thika	4	15316	0	0	145	165	4	1	690	2410	556	611	87	14.3	14.1	28.8
Magumu - Thika	4	15316	0	0	140	160	4	2	686	2645	578	629	86	14.4	14.2	28.8
Magumu - Thika	4	15392	0	0	150	170	2	1	728	1972	418	733	84	20.5	19.1	28.5
Magumu - Thika	4	15392	0	0	145	165	2	2	736	2178	435	733	85	20.5	19.1	28.5
Magumu - Thika	4	15403	0	0	150	170	2	1	720	1646	392	809	82	14.4	14.3	28.8
Magumu - Thika	4	15403	0	0	150	170	2	2	717	1665	438	881	79	14.4	14.3	28.8
Magumu - Thika	4	15495	0	0	150	170	2	1	715	2308	433	479	91	14.6	14.6	28.8
Magumu - Thika	4	15495	0	0	150	170	2	2	708	2402	437	478	90	14.6	14.6	28.8
Magumu - Thika	4	15498	0	0	180	200	4	1	719	1599	386	740	59	19.8	18.8	28.5
Magumu - Thika	4	15498	0	0	175	200	4	2	718	1705	419	721	60	19.9	18.8	28.5
Magumu - Thika	4	15585	0	0	140	155	3	1	711	518	487	272	132	14.7	14.6	28.8
Magumu - Thika	4	15585	0	0	140	155	3	2	712	548	515	282	135	14.8	14.6	28.8
Magumu - Thika	4	15598	0	0	165	180	2	1	740	1581	270	380	105	19.3	18	28.5
Magumu - Thika	4	15598	0	0	160	175	2	2	740	1629	295	412	102	19.3	18.1	28.5
Magumu - Thika	4	15697	0	0	165	185	2	1	726	1774	414	814	67	19	17.6	28.5
Magumu - Thika	4	15697	0	0	165	185	4	2	718	1859	428	835	66	19.1	17.6	28.5
Magumu - Thika	4	15701	0	0	170	190	2	1	705	1699	366	801	67	14.7	14.8	28.8
Magumu - Thika	4	15701	0	0	165	185	2	2	701	1798	408	798	67	14.6	14.8	28.8
Magumu - Thika	4	15795	0	0	170	190	2	1	740	1474	273	474	81	18.6	17.6	28.5
Magumu - Thika	4	15795	0	0	170	190	2	2	737	1481	283	492	80	18.7	17.6	28.5
Magumu - Thika	4	15803	0	0	165	190	2	1	726	1832	368	584	73	14.2	14.5	28.8
Magumu - Thika	4	15803	0	0	165	190	2	2	719	1974	367	637	72	14.3	14.5	28.8
Magumu - Thika	4	15900	0	0	180	205	4	1	693	1814	404	773	56	14.3	14.4	28.8
Magumu - Thika	4	15900	0	0	180	205	4	2	691	1882	430	798	55	14.3	14.4	28.8
Magumu - Thika	4	16000	0	0	175	200	2	1	710	1488	336	669	65	19.5	17.1	28.5
Magumu - Thika	4	16000	0	0	175	200	2	2	704	1569	343	653	65	19.5	17.2	28.5
Magumu - Thika	4	16002	0	0	300	305	2	1	717	11403	23	943	54	14.7	14.5	28.8
Magumu - Thika	4	16002	0	0	215	240	2	2	713	963	133	448	53	14.7	14.6	28.8
Magumu - Thika	4	16097	0	0	190	215	2	1	726	982	204	519	64	19.5	16.8	28.5
Magumu - Thika	4	16097	0	0	190	215	2	2	728	1058	216	528	63	19.5	16.8	28.5
Magumu - Thika	4	16101	0	0	170	195	2	1	704	1667	326	566	71	14.9	14.7	28.8
Magumu - Thika	4	16101	0	0	170	190	2	2	701	1739	350	582	71	14.9	14.7	28.8
Magumu - Thika	4	16201	0	0	190	210	2	1	717	1192	264	676	60	19.1	16.6	28.5
Magumu - Thika	4	16201	0	0	185	210	2	2	720	1300	261	704	60	19.1	16.7	28.5

Magumu - Thika	4	16203	0	0	185	210	4	1	688	1836	336	604	58	15.2	14.7	28.8
Magumu - Thika	4	16203	0	0	185	210	4	2	689	1866	342	599	59	15.2	14.8	28.8
Magumu - Thika	4	16299	0	0	160	175	2	1	739	1521	296	410	98	18.3	16.8	28.5
Magumu - Thika	4	16299	0	0	160	175	2	2	724	1518	302	405	97	18.4	16.8	28.5
Magumu - Thika	4	16306	0	0	155	175	2	1	700	2381	413	507	84	15.4	14.9	28.8
Magumu - Thika	4	16306	0	0	155	175	2	2	706	2507	423	498	86	15.4	14.9	28.8
Magumu - Thika	4	16399	0	0	165	180	2	1	709	2906	245	244	182	15.3	14.8	28.8
Magumu - Thika	4	16399	0	0	165	180	2	2	713	3097	246	240	186	15.3	14.8	28.8
Magumu - Thika	4	16495	0	0	145	165	2	1	725	2396	462	580	88	17.5	18.1	28.5
Magumu - Thika	4	16495	0	0	145	165	2	2	730	2468	462	591	89	17.5	18.1	28.5
Magumu - Thika	4	16509	0	0	135	155	4	1	711	2875	602	707	88	15.5	15.1	28.8
Magumu - Thika	4	16509	0	0	130	150	4	2	711	826	777	421	112	15.5	15.1	28.8
Magumu - Thika	4	16600	0	0	135	155	4	1	709	2198	674	916	84	16.9	17.8	22
Magumu - Thika	4	16600	0	0	135	155	4	2	710	2350	715	886	84	16.9	17.8	22
Magumu - Thika	4	16604	0	0	155	175	2	1	694	1820	347	539	88	15	15	28.8
Magumu - Thika	4	16604	0	0	155	175	2	2	694	1917	378	588	87	14.9	15	28.8
Magumu - Thika	4	16694	0	0	170	190	4	1	709	1378	443	582	70	16.4	17.7	22
Magumu - Thika	4	16694	0	0	170	190	4	2	713	1507	460	586	70	16.4	17.7	22
Magumu - Thika	4	16707	0	0	135	155	4	1	704	3662	901	777	74	15.3	15.1	28.8
Magumu - Thika	4	16707	1	0	135	160	4	2	691	3731	914	784	73	15.3	15.1	28.8
Magumu - Thika	4	16800	0	0	155	175	2	1	716	1613	398	603	84	16.5	17.3	22
Magumu - Thika	4	16800	0	0	155	175	2	2	713	1762	416	607	84	16.5	17.4	22
Magumu - Thika	4	16801	0	0	175	195	2	1	729	1215	373	862	63	15.4	15	28.8
Magumu - Thika	4	16801	0	0	175	195	2	2	713	1294	350	787	64	15.4	15	28.8
Magumu - Thika	4	16898	0	0	180	200	4	1	704	1580	514	1340	48	15.9	17	22
Magumu - Thika	4	16898	0	0	175	200	4	2	705	1797	548	1279	48	15.9	17	22
Magumu - Thika	4	16901	0	0	155	175	2	1	721	1586	425	668	82	15.3	15.2	28.8
Magumu - Thika	4	16901	0	0	155	175	2	2	717	1567	438	733	80	15.4	15.2	28.8
Magumu - Thika	4	16983	0	0	140	160	4	1	713	1958	613	843	83	16	16.7	22
Magumu - Thika	4	16983	0	0	140	160	4	2	717	2070	633	843	84	16	16.8	22
Magumu - Thika	4	17006	0	0	155	175	2	1	702	1859	409	749	80	15.3	15.3	28.8
Magumu - Thika	4	17006	0	0	150	170	2	2	703	1890	434	800	79	15.3	15.3	28.8
Magumu - Thika	4	17097	0	0	190	210	4	1	707	1540	416	558	57	15.7	16.6	22
Magumu - Thika	4	17097	0	0	185	205	4	2	714	1704	438	578	57	15.7	16.6	22
Magumu - Thika	4	17105	0	0	180	200	4	1	704	1358	412	1022	54	14.4	14.5	28.8
Magumu - Thika	4	17105	0	0	180	200	4	2	701	1466	425	1015	55	14.4	14.5	28.8
Magumu - Thika	4	17199	0	0	160	180	2	1	708	1881	379	637	80	14.6	14.6	28.8
Magumu - Thika	4	17199	0	0	160	180	2	2	695	1847	376	622	79	14.6	14.7	28.8
Magumu - Thika	4	17201	0	0	155	175	2	1	732	966	415	1016	74	15	16.3	22
Magumu - Thika	4	17201	0	0	155	175	2	2	724	1025	412	1082	73	15	16.3	22
Magumu - Thika	4	17297	0	0	175	195	2	1	729	1355	250	503	77	15	14.9	28.8
Magumu - Thika	4	17297	0	0	170	190	2	2	736	1460	256	495	79	15	14.9	28.8
Magumu - Thika	4	17299	0	0	185	210	2	1	717	843	291	869	57	15.2	16.2	22
Magumu - Thika	4	17299	0	0	185	205	2	2	721	907	334	890	57	15.2	16.2	22
Magumu - Thika	4	17399	0	0	150	170	4	1	710	2702	607	672	74	14.6	16	22
Magumu - Thika	4	17399	0	0	150	170	4	2	712	2820	639	777	72	14.7	16	22
Magumu - Thika	4	17406	0	0	160	180	4	1	696	2433	482	544	75	15.2	15.1	28.8
Magumu - Thika	4	17406	0	0	160	180	4	2	693	2500	528	542	75	15.2	15.1	28.8
Magumu - Thika	4	17497	0	0	165	180	2	1	738	1267	276	532	88	15.3	16.3	22
Magumu - Thika	4	17497	0	0	160	180	2	2	741	1370	302	574	88	15.3	16.3	22
Magumu - Thika	4	17503	0	0	145	165	3	1	728	461	433	251	127	15.1	15.2	28.8
Magumu - Thika	4	17503	0	0	145	160	3	2	725	486	457	259	128	15	15.2	28.8
Magumu - Thika	4	17596	0	0	200	220	4	1	720	2014	425	915	44	14.9	15.8	22
Magumu - Thika	4	17596	0	0	195	220	4	2	719	2140	470	898	43	15	15.7	22
Magumu - Thika	4	17602	0	0	200	220	2	1	687	1296	269	633	53	14.7	15	28.8
Magumu - Thika	4	17602	0	0	195	220	2	2	684	1337	284	663	53	14.7	15	28.8
Magumu - Thika	4	17690	0	0	170	195	2	1	723	1483	338	676	69	14.7	16.2	22
Magumu - Thika	4	17690	0	0	170	190	2	2	722	1499	366	717	68	14.7	16.2	22
Magumu - Thika	4	17701	0	0	185	210	2	1	717	982	306	790	58	14.7	14.9	28.8
Magumu - Thika	4	17701	0	0	180	205	2	2	717	1025	329	867	58	14.6	14.9	28.8
Magumu - Thika	4	17796	0	0	160	180	2	1	728	1661	404	687	75	14.4	16	22
Magumu - Thika	4	17796	0	0	160	180	4	2	725	1624	438	701	75	14.5	16	22
Magumu - Thika	4	17819	0	0	160	180	2	1	718	1365	315	541	88	15.1	15.3	28.8
Magumu - Thika	4	17819	0	0	155	175	2	2	723	1453	336	574	87	15.1	15.3	28.8
Magumu - Thika	4	17897	0	0	175	200	2	1	738	853	233	696	71	14.9	15.3	28.8
Magumu - Thika	4	17897	0	0	175	195	2	2	733	913	241	762	69	15	15.3	28.8
Magumu - Thika	4	17898	0	0	155	180	2	1	726	1370	381	779	78	15.2	16.3	22
Magumu - Thika	4	17898	0	0	155	175	2	2	727	1468	406	789	78	15.2	16.3	22
Magumu - Thika	4	17981	0	0	130	150	2	1	715	1866	566	785	100	14.9	16	22
Magumu - Thika	4	17981	0	0	130	150	4	2	709	1940	579	779	99	14.9	16	22
Magumu - Thika	4	17999	0	0	170	190	2	1	712	1399	294	605	73	14.8	15.1	28.8
Magumu - Thika	4	17999	0	0	170	190	2	2	713	1517	310	624	74	14.8	15.1	28.8
Magumu - Thika	4	18097	0	0	200	215	2	1	751	1673	133	215	126	14.8	16.2	22
Magumu - Thika	4	18097	0	0	230	245	2	2	749	11659	57	191	124	14.8	16.2	22
Magumu - Thika	4	18106	0	0	175	190	2	1	748	1178	214	246	132	14.8	15.2	28.8
Magumu - Thika	4	18106	0	0	185	195	2	2	747	1299	183	226	131	14.9	15.2	28.8
Magumu - Thika	4	18195	0	0	210	235	2	1	721	1005	243	935	43	15	16.2	22
Magumu - Thika	4	18195	0	0	210	235	2	2	720	1075	259	926	43	15	16.2	22

Magumu - Thika	4	18201	0	0	235	260	2	1	695	836	173	1009	35	15.1	15.3	28.8
Magumu - Thika	4	18201	0	0	230	255	2	2	694	882	181	1036	35	15.1	15.3	28.8
Magumu - Thika	4	18295	0	0	165	180	2	1	750	1391	273	484	94	14.4	15.9	22
Magumu - Thika	4	18295	0	0	165	180	2	2	746	1487	281	487	94	14.4	15.8	22
Magumu - Thika	4	18304	0	0	180	195	2	1	755	754	200	431	86	15.4	15.4	28.8
Magumu - Thika	4	18304	0	0	175	195	2	2	752	791	215	461	84	15.4	15.5	28.8
Magumu - Thika	4	18396	0	0	165	180	2	1	738	1123	287	476	104	15.3	16.6	22
Magumu - Thika	4	18396	0	0	165	180	2	2	736	1199	287	451	107	15.3	16.5	22
Magumu - Thika	4	18409	0	0	165	185	2	1	717	1284	279	495	86	15.4	15.5	28.8
Magumu - Thika	4	18409	0	0	165	185	2	2	722	1420	275	531	85	15.4	15.5	28.8
Magumu - Thika	4	18509	0	0	165	190	2	1	735	877	313	895	71	14.8	16.2	22
Magumu - Thika	4	18509	0	0	165	185	2	2	729	922	322	892	72	14.8	16.2	22
Magumu - Thika	4	18525	0	0	200	225	2	1	719	736	198	955	50	15	15	28.8
Magumu - Thika	4	18525	0	0	200	220	2	2	717	745	214	949	51	15	15	28.8
Magumu - Thika	4	18604	0	0	155	175	4	1	717	2222	455	670	76	15	15	28.8
Magumu - Thika	4	18604	0	0	155	175	4	2	719	2322	474	690	77	15	15	28.8
Magumu - Thika	4	18697	0	0	150	165	2	1	715	1721	359	462	108	14.7	16.1	22
Magumu - Thika	4	18697	0	0	140	165	2	2	719	1839	381	475	109	14.7	16.1	22
Magumu - Thika	4	18699	0	0	175	190	2	1	741	946	228	307	115	14.8	14.9	28.8
Magumu - Thika	4	18699	0	0	175	190	2	2	732	1015	217	325	111	14.8	14.9	28.8
Magumu - Thika	4	18795	0	0	160	175	2	1	738	1305	311	367	109	14.9	16	22
Magumu - Thika	4	18795	0	0	155	170	2	2	737	1347	337	389	109	14.9	16	22
Magumu - Thika	4	18806	0	0	155	175	4	1	735	515	484	276	100	14.8	14.8	28.8
Magumu - Thika	4	18806	0	0	155	175	4	2	730	529	497	293	101	14.8	14.8	28.8
Magumu - Thika	4	18909	0	0	160	180	2	1	710	1443	323	433	91	14.9	15	28.8
Magumu - Thika	4	18909	0	0	160	180	2	2	705	1522	329	431	91	14.9	15	28.8
Magumu - Thika	4	18912	0	0	180	200	2	1	740	952	252	492	72	14.7	16.3	22
Magumu - Thika	4	18912	0	0	180	200	2	2	735	1026	274	517	72	14.7	16.2	22
Magumu - Thika	4	19018	0	0	165	180	2	1	750	1519	268	249	161	14.9	16.1	22
Magumu - Thika	4	19018	0	0	170	185	2	2	746	1717	233	232	161	14.9	16.1	22
Magumu - Thika	4	19040	0	0	135	150	2	1	750	1442	439	328	198	15.3	15.1	28.8
Magumu - Thika	4	19040	0	0	135	150	2	2	747	1479	442	326	200	15.3	15.1	28.8
Magumu - Thika	4	19100	0	0	175	195	4	1	710	1589	506	1009	56	14.7	15.8	22
Magumu - Thika	4	19100	0	0	170	195	4	2	707	1649	498	1063	56	14.7	15.8	22
Magumu - Thika	4	19198	0	0	165	180	2	1	743	1534	278	327	171	14.6	15.9	22
Magumu - Thika	4	19198	0	0	160	175	2	2	744	1601	297	343	170	14.6	15.9	22
Magumu - Thika	4	19202	0	0	145	165	3	1	747	510	479	273	114	15.5	15.4	28.8
Magumu - Thika	4	19202	0	0	145	160	3	2	740	527	495	279	116	15.5	15.4	28.8
Magumu - Thika	4	19301	0	0	175	200	4	1	703	2253	428	621	61	15.6	15.4	28.8
Magumu - Thika	4	19301	0	0	170	190	4	2	689	654	615	330	75	15.5	15.4	28.8
Magumu - Thika	4	19397	0	0	215	235	4	1	700	1001	357	1341	36	13.8	15.4	22
Magumu - Thika	4	19397	0	0	210	235	4	2	704	1128	390	1270	36	13.9	15.4	22
Magumu - Thika	4	19398	0	0	195	220	4	1	694	1919	341	405	56	15.5	15.5	28.8
Magumu - Thika	4	19398	0	0	195	220	4	2	693	1965	373	439	54	15.6	15.5	28.8
Magumu - Thika	4	19496	0	0	170	190	2	1	735	659	272	829	73	13.3	14.9	22
Magumu - Thika	4	19496	0	0	170	190	2	2	731	711	280	813	74	13.3	14.9	22
Magumu - Thika	4	19503	0	0	210	230	2	1	704	908	242	810	46	15.7	15.4	28.8
Magumu - Thika	4	19503	0	0	210	230	2	2	703	963	249	823	46	15.7	15.3	28.8
Magumu - Thika	4	19600	0	0	210	230	2	1	695	1206	273	834	44	15.7	15.3	28.8
Magumu - Thika	4	19600	0	0	205	230	2	2	695	1254	298	927	44	15.7	15.2	28.8
Magumu - Thika	4	19605	0	0	155	170	2	1	726	1153	349	668	99	13.9	15.6	22
Magumu - Thika	4	19605	0	0	155	165	2	2	724	1267	362	644	100	14	15.6	22
Magumu - Thika	4	19699	0	0	135	155	2	1	734	2549	424	363	116	14.1	15.8	22
Magumu - Thika	4	19699	0	0	135	155	2	2	727	2574	458	390	114	14.1	15.7	22
Magumu - Thika	4	19700	1	1	115	130	3	1	748	2061	700	361	244	15.3	15.2	28.8
Magumu - Thika	4	19700	1	1	115	130	3	2	741	2112	713	364	244	15.3	15.2	28.8
Magumu - Thika	4	19799	0	0	130	145	3	1	736	520	548	321	157	14.3	16	22
Magumu - Thika	4	19799	0	0	125	140	3	2	740	560	591	344	157	14.3	15.9	22
Magumu - Thika	4	19811	0	0	145	165	2	1	724	1368	400	942	88	15.4	15.3	28.8
Magumu - Thika	4	19811	0	0	140	160	2	2	722	1416	426	1014	87	15.4	15.3	28.8
Magumu - Thika	5	19898	0	0	130	145	2	1	735	1863	468	540	128	14.1	15.9	22
Magumu - Thika	5	19898	0	0	130	140	2	2	734	1928	493	559	129	14.1	15.9	22
Magumu - Thika	5	19902	0	0	145	165	2	1	717	1875	410	836	85	15.5	15.4	28.8
Magumu - Thika	5	19902	0	0	145	165	2	2	716	1914	409	812	85	15.5	15.4	28.8
Magumu - Thika	5	19991	0	0	155	175	4	1	705	2316	450	697	76	15.5	15.5	28.8
Magumu - Thika	5	19991	0	0	155	175	2	2	707	2368	434	759	74	15.5	15.5	28.8
Magumu - Thika	5	20010	0	0	185	210	2	1	719	757	302	1713	47	14.2	16.1	22
Magumu - Thika	5	20010	0	0	190	215	2	2	714	871	313	1354	47	14.2	16.1	22
Magumu - Thika	5	20095	0	0	190	210	2	1	745	831	228	1042	55	13.8	16	22
Magumu - Thika	5	20095	0	0	185	210	2	2	744	904	244	1097	55	13.8	16	22
Magumu - Thika	5	20111	0	0	190	215	2	1	719	963	252	964	53	15.7	15.8	28.8
Magumu - Thika	5	20111	0	0	190	215	2	2	712	1063	263	941	54	15.7	15.7	28.8
Magumu - Thika	5	20179	0	0	230	255	2	1	706	692	209	802	37	14	16.2	22
Magumu - Thika	5	20179	0	0	230	250	2	2	707	672	218	984	36	14	16.2	22
Magumu - Thika	5	20196	0	0	220	245	2	1	699	1011	265	1205	36	15.8	15.7	28.8
Magumu - Thika	5	20196	0	0	220	240	2	2	707	1034	274	1199	37	15.7	15.7	28.8
Magumu - Thika	5	20296	0	0	180	200	4	1	707	1803	487	1068	51	14.4	16.3	22
Magumu - Thika	5	20296	0	0	185	205	4	2	712	1991	420	425	63	14.5	16.2	22



Magumu - Thika	5	20313	0	0	205	225	4	1	690	1148	328	921	45	15.7	15.7	28.8
Magumu - Thika	5	20313	0	0	200	225	4	2	688	1227	348	956	44	15.7	15.7	28.8
Magumu - Thika	5	20395	0	0	125	145	2	1	719	2045	521	666	114	14.6	16.5	22
Magumu - Thika	5	20395	0	0	125	140	2	2	712	2153	540	667	114	14.6	16.5	22
Magumu - Thika	5	20404	0	0	165	180	2	1	724	1246	272	607	94	15.5	15.6	28.8
Magumu - Thika	5	20404	0	0	165	180	2	2	721	1330	282	604	94	15.5	15.6	28.8
Magumu - Thika	5	20496	0	0	165	190	4	1	714	1734	598	1494	52	14.6	16.4	22
Magumu - Thika	5	20496	0	0	165	190	4	2	708	1886	611	1465	52	14.6	16.4	22
Magumu - Thika	5	20513	0	0	175	195	4	1	700	2046	397	795	60	15.5	15.4	28.8
Magumu - Thika	5	20513	0	0	175	195	4	2	701	2143	403	784	61	15.5	15.4	28.8
Magumu - Thika	5	20596	0	0	185	210	4	1	718	1464	404	767	54	14.4	16.5	22
Magumu - Thika	5	20596	0	0	185	210	4	2	711	1540	421	766	54	14.4	16.5	22
Magumu - Thika	5	20599	0	0	190	215	2	1	704	1025	359	1942	41	15.5	15.5	28.8
Magumu - Thika	5	20599	0	0	190	215	4	2	708	1109	383	1895	41	15.5	15.4	28.8
Magumu - Thika	5	20701	0	0	145	165	4	1	710	2506	607	863	76	14.3	16.4	22
Magumu - Thika	5	20701	0	0	145	165	4	2	711	2683	570	618	84	14.3	16.3	22
Magumu - Thika	5	20705	0	0	165	185	4	1	698	1692	425	755	69	15.7	15.3	28.8
Magumu - Thika	5	20705	0	0	160	185	4	2	710	1841	463	802	69	15.7	15.3	28.8
Magumu - Thika	5	20796	0	0	215	240	2	1	708	783	303	2183	31	13.9	16	22
Magumu - Thika	5	20796	0	0	215	240	2	2	705	826	314	2243	31	13.9	16	22
Magumu - Thika	5	20803	0	0	190	215	4	1	695	1573	457	1795	39	15.7	15.3	28.8
Magumu - Thika	5	20803	0	0	190	210	4	2	694	1686	466	1772	40	15.7	15.3	28.8
Magumu - Thika	5	20894	0	0	140	160	4	1	738	543	572	324	114	14	16	22
Magumu - Thika	5	20894	0	0	135	155	4	2	735	562	592	338	116	13.9	16	22
Magumu - Thika	5	20904	0	0	130	150	3	1	712	643	604	323	128	15.8	15.3	28.8
Magumu - Thika	5	20904	0	0	130	150	4	2	707	672	632	340	126	15.8	15.3	28.8
Magumu - Thika	5	20997	0	0	200	225	2	1	724	1048	234	869	49	14.3	16	22
Magumu - Thika	5	20997	0	0	200	225	2	2	725	1063	259	888	48	14.3	16	22
Magumu - Thika	5	21004	0	0	200	225	2	1	708	782	271	2059	39	15.6	15.2	28.8
Magumu - Thika	5	21004	0	0	200	220	2	2	708	851	279	1934	40	15.6	15.2	28.8
Magumu - Thika	5	21098	0	0	210	235	4	1	706	943	312	907	42	14.9	16.3	22
Magumu - Thika	5	21098	0	0	210	230	4	2	709	998	330	911	42	14.9	16.3	22
Magumu - Thika	5	21126	0	0	200	225	4	1	705	1487	302	578	51	15.4	15.1	28.8
Magumu - Thika	5	21126	0	0	200	225	4	2	701	1528	334	734	48	15.4	15.1	28.8
Magumu - Thika	5	21199	0	0	170	190	2	1	727	1289	311	715	73	14.9	16.2	22
Magumu - Thika	5	21199	0	0	165	185	2	2	725	1355	346	707	73	14.9	16.2	22
Magumu - Thika	5	21222	0	0	135	155	2	1	695	2705	444	338	113	15	14.9	28.8
Magumu - Thika	5	21222	0	0	135	155	2	2	697	2783	453	340	114	15	14.9	28.8
Magumu - Thika	5	21293	0	0	185	210	2	1	725	1016	334	1505	47	14.5	16.4	22
Magumu - Thika	5	21293	0	0	185	210	2	2	715	1064	353	1543	47	14.6	16.4	22
Magumu - Thika	5	21300	0	0	160	180	4	1	707	1916	499	985	65	14.9	14.9	28.8
Magumu - Thika	5	21300	0	0	160	180	4	2	713	2066	516	983	66	15	14.9	28.8
Magumu - Thika	5	21395	0	0	180	200	4	1	690	2137	556	1346	46	15.1	15	28.8
Magumu - Thika	5	21395	0	0	185	205	4	2	701	2423	523	641	53	15.1	15	28.8
Magumu - Thika	5	21400	0	0	205	230	2	1	699	606	271	2205	35	14.8	16.6	22
Magumu - Thika	5	21400	0	0	205	230	2	2	698	677	285	2220	35	14.8	16.6	22
Magumu - Thika	5	21492	0	0	170	190	4	1	702	2291	509	532	67	15.5	17.1	22
Magumu - Thika	5	21492	0	0	165	190	4	2	704	2462	513	576	67	15.5	17.1	22
Magumu - Thika	5	21522	0	0	190	210	4	1	698	1121	393	754	54	15.2	15.1	28.8
Magumu - Thika	5	21522	0	0	190	210	4	2	692	1326	348	486	60	15.1	15	28.8
Magumu - Thika	5	21594	0	0	185	205	2	1	722	1329	288	844	59	15	16.8	22
Magumu - Thika	5	21594	0	0	180	205	2	2	720	1362	318	875	58	15	16.8	22
Magumu - Thika	5	21598	0	0	180	205	4	1	709	1520	408	1054	53	14.8	14.8	28.8
Magumu - Thika	5	21598	0	0	175	200	2	2	696	1478	410	1420	51	14.8	14.8	28.8
Magumu - Thika	5	21696	0	0	165	185	4	1	703	2342	439	409	79	14.9	16.7	22
Magumu - Thika	5	21696	0	0	160	180	4	2	695	2406	474	440	78	14.9	16.7	22
Magumu - Thika	5	21704	0	0	145	165	2	1	698	2725	440	494	93	14.6	14.7	28.8
Magumu - Thika	5	21704	0	0	145	165	2	2	695	2826	442	480	93	14.6	14.7	28.8
Magumu - Thika	5	21801	0	0	235	260	2	1	688	756	276	1980	27	14.7	14.9	28.8
Magumu - Thika	5	21801	0	0	235	260	2	2	672	752	267	2114	26	14.7	14.9	28.8
Magumu - Thika	5	21813	0	0	240	265	4	1	702	966	251	1283	29	15.1	16.6	22
Magumu - Thika	5	21813	0	0	240	265	4	2	700	1000	257	1305	29	15.1	16.6	22
Magumu - Thika	5	21898	0	0	160	180	2	1	723	1561	355	477	85	15.4	16.8	22
Magumu - Thika	5	21898	0	0	160	180	2	2	716	1665	345	515	83	15.4	16.8	22
Magumu - Thika	5	21899	0	0	130	145	3	1	713	617	580	318	147	14.7	15.1	28.8
Magumu - Thika	5	21899	0	0	125	145	3	2	714	633	595	328	150	14.7	15.1	28.8
Magumu - Thika	5	21995	0	0	210	235	2	1	705	725	273	1946	35	15.1	16.9	22
Magumu - Thika	5	21995	0	0	210	235	2	2	708	768	286	1943	35	15.1	16.9	22
Magumu - Thika	5	22006	0	0	155	175	2	1	708	1355	456	2461	55	14.7	15.1	28.8
Magumu - Thika	5	22006	0	0	150	175	2	2	708	1435	470	2496	55	14.7	15.1	28.8
Magumu - Thika	5	22099	0	0	200	225	2	1	715	1085	245	547	54	14.9	15.2	28.8
Magumu - Thika	5	22099	0	0	200	225	2	2	713	1220	248	530	54	14.9	15.2	28.8
Magumu - Thika	5	22101	0	0	180	200	2	1	721	1233	282	545	71	14.9	16.6	22
Magumu - Thika	5	22101	0	0	175	195	2	2	720	1318	314	524	73	14.9	16.6	22
Magumu - Thika	5	22191	0	0	200	220	4	1	712	1104	349	1325	42	15.1	16.8	22
Magumu - Thika	5	22191	0	0	195	220	4	2	715	1234	366	1227	44	15.1	16.7	22
Magumu - Thika	5	22202	0	0	210	235	2	1	693	1188	218	605	48	15.1	15.4	28.8
Magumu - Thika	5	22202	0	0	210	235	2	2	687	1259	205	646	48	15.1	15.4	28.8

Magumu - Thika	5	22298	0	0	175	195	2	1	728	1227	231	518	78	15.3	15.4	28.8
Magumu - Thika	5	22298	0	0	170	190	2	2	730	1268	256	570	77	15.3	15.4	28.8
Magumu - Thika	5	22403	0	0	160	180	2	1	721	1359	336	616	82	14	16.1	22
Magumu - Thika	5	22403	0	0	160	180	2	2	720	1416	359	650	81	14	16.1	22
Magumu - Thika	5	22413	0	0	180	200	2	1	715	1372	222	507	72	15.4	15.4	28.8
Magumu - Thika	5	22413	0	0	180	200	2	2	714	1495	228	505	72	15.4	15.4	28.8
Magumu - Thika	5	22497	0	0	175	195	4	1	721	425	399	227	87	15.3	15.3	28.8
Magumu - Thika	5	22497	0	0	170	190	4	2	718	455	427	244	87	15.3	15.3	28.8
Magumu - Thika	5	22502	0	0	155	170	2	1	715	1983	329	442	110	13.7	15.8	22
Magumu - Thika	5	22502	0	0	150	165	2	2	713	2049	351	458	110	13.7	15.8	22
Magumu - Thika	5	22598	0	0	180	200	4	1	705	1893	418	475	64	14.1	16.1	22
Magumu - Thika	5	22598	0	0	175	200	4	2	704	1951	465	530	63	14	16.1	22
Magumu - Thika	5	22610	0	0	185	205	2	1	709	1234	280	590	64	15.3	15.3	28.8
Magumu - Thika	5	22610	0	0	185	205	2	2	704	1385	288	576	64	15.3	15.3	28.8
Magumu - Thika	5	22693	0	0	200	225	4	1	710	1555	434	738	45	14	15.9	22
Magumu - Thika	5	22693	0	0	200	225	4	2	706	1613	421	811	45	14	15.9	22
Magumu - Thika	5	22699	0	0	185	205	4	1	691	2287	566	517	54	15.4	15.3	28.8
Magumu - Thika	5	22699	0	0	185	205	4	2	695	2345	614	513	54	15.4	15.3	28.8
Magumu - Thika	5	22801	0	0	195	220	2	1	721	850	294	1665	42	14	16.1	22
Magumu - Thika	5	22801	0	0	195	220	2	2	716	911	311	1613	42	14	16.1	22
Magumu - Thika	5	22804	0	0	255	280	2	1	677	399	149	1526	26	15.6	15.5	28.8
Magumu - Thika	5	22804	0	0	255	280	2	2	670	362	155	1568	26	15.6	15.5	28.8
Magumu - Thika	5	22900	0	0	245	270	2	1	703	580	170	1260	30	14.6	16.5	22
Magumu - Thika	5	22900	0	0	240	265	2	2	701	578	176	1369	30	14.6	16.5	22
Magumu - Thika	5	22902	0	0	205	225	4	1	708	1518	339	1231	41	15.7	15.6	28.8
Magumu - Thika	5	22902	0	0	200	225	4	2	714	1634	362	1256	41	15.6	15.6	28.8
Magumu - Thika	5	23001	0	0	245	270	4	1	687	1129	259	796	30	15.7	15.4	28.8
Magumu - Thika	5	23001	0	0	245	270	4	2	688	1115	250	893	30	15.7	15.4	28.8
Magumu - Thika	5	23099	0	0	200	225	4	1	707	1517	365	919	44	15.2	16.4	22
Magumu - Thika	5	23099	0	0	195	220	4	2	700	1572	410	1056	43	15.2	16.4	22
Magumu - Thika	5	23105	0	0	195	215	4	1	696	1850	398	719	50	15.9	15.4	28.8
Magumu - Thika	5	23105	0	0	195	220	4	2	686	1914	404	753	48	15.9	15.4	28.8
Magumu - Thika	5	23193	0	0	250	265	2	1	718	1491	63	112	72	16	15.4	28.8
Magumu - Thika	5	23193	0	0	285	305	2	2	720	7178	32	88	72	15.9	15.4	28.8
Magumu - Thika	5	23201	0	0	175	195	2	1	742	1195	246	466	77	15.2	16.2	22
Magumu - Thika	5	23201	0	0	175	195	2	2	737	1264	254	485	77	15.2	16.2	22
Magumu - Thika	5	23298	0	0	170	190	2	1	724	1506	334	744	70	15.1	16.4	22
Magumu - Thika	5	23298	0	0	165	190	2	2	721	1578	354	763	70	15.1	16.4	22
Magumu - Thika	5	23304	0	0	230	255	2	1	702	795	179	1297	33	15.7	15.4	28.8
Magumu - Thika	5	23304	0	0	235	260	2	2	693	799	184	1287	33	15.7	15.4	28.8
Magumu - Thika	5	23385	0	0	200	225	2	1	714	961	245	1232	45	14.6	16.2	22
Magumu - Thika	5	23385	0	0	200	220	2	2	714	993	233	1428	45	14.6	16.1	22
Magumu - Thika	5	23405	0	0	165	180	2	1	725	1251	285	689	86	15.8	15.6	28.8
Magumu - Thika	5	23405	0	0	160	175	2	2	721	1300	297	744	85	15.7	15.6	28.8
Magumu - Thika	5	23492	0	0	210	235	4	1	719	1276	284	748	44	14.4	16.4	22
Magumu - Thika	5	23492	0	0	210	235	4	2	717	1369	302	692	45	14.4	16.4	22
Magumu - Thika	5	23507	0	0	190	210	2	1	720	1286	313	772	56	15.8	15.8	28.8
Magumu - Thika	5	23507	0	0	190	210	2	2	719	1379	306	787	56	15.8	15.7	28.8
Magumu - Thika	5	23598	0	0	225	250	2	1	714	794	212	802	40	14.4	16.2	22
Magumu - Thika	5	23598	0	0	225	245	2	2	712	877	221	815	40	14.4	16.2	22
Magumu - Thika	5	23603	0	0	180	200	2	1	724	983	237	764	67	15.9	15.8	28.8
Magumu - Thika	5	23603	0	0	175	200	2	2	720	1048	242	766	68	15.9	15.8	28.8
Magumu - Thika	5	23700	0	0	200	220	4	1	711	1240	365	1367	41	14.2	15.8	22
Magumu - Thika	5	23700	0	0	200	220	4	2	709	1305	384	1349	41	14.2	15.8	22
Magumu - Thika	5	23717	0	0	225	250	4	1	695	1066	272	1069	36	15.8	15.8	28.8
Magumu - Thika	5	23717	0	0	220	245	2	2	698	1059	272	1297	35	15.8	15.8	28.8
Magumu - Thika	5	23794	0	0	220	245	4	1	689	966	299	760	40	15.7	15.6	28.8
Magumu - Thika	5	23794	0	0	220	245	4	2	692	1003	307	771	40	15.7	15.6	28.8
Magumu - Thika	5	23810	0	0	160	180	4	1	716	1589	508	964	68	13.8	15.7	22
Magumu - Thika	5	23810	0	0	155	180	4	2	711	1633	493	1042	67	13.8	15.6	22
Magumu - Thika	5	23895	0	0	180	205	4	1	715	1598	418	972	54	13.9	15.8	22
Magumu - Thika	5	23895	0	0	180	200	4	2	714	1659	408	1106	53	13.9	15.8	22
Magumu - Thika	5	23918	0	0	185	205	2	1	698	1447	323	842	58	15.7	15.5	28.8
Magumu - Thika	5	23918	0	0	180	205	2	2	701	1518	357	899	56	15.7	15.5	28.8
Magumu - Thika	5	24003	0	0	195	215	4	1	692	1336	366	1340	44	15.7	15.4	28.8
Magumu - Thika	5	24003	0	0	195	215	4	2	685	1494	391	1203	44	15.7	15.4	28.8
Magumu - Thika	5	24006	0	0	140	160	4	1	713	2796	588	643	86	13.9	15.4	22
Magumu - Thika	5	24006	0	0	140	160	4	2	707	2806	629	622	87	13.9	15.4	22
Magumu - Thika	5	24097	0	0	235	260	4	1	704	1085	241	946	32	14	15.5	22
Magumu - Thika	5	24097	0	0	235	260	4	2	701	1092	248	951	32	14	15.5	22
Magumu - Thika	5	24107	0	0	210	235	2	1	691	1324	247	1129	40	15.7	15.4	28.8
Magumu - Thika	5	24107	0	0	210	235	2	2	687	1385	273	1047	40	15.7	15.4	28.8
Magumu - Thika	5	24198	0	0	200	225	4	1	722	1381	326	820	48	13.9	15.6	22
Magumu - Thika	5	24198	0	0	200	220	4	2	720	1396	345	839	47	13.9	15.6	22
Magumu - Thika	5	24202	0	0	215	240	4	1	693	1311	323	1177	37	15.9	15.6	28.8
Magumu - Thika	5	24202	0	0	215	235	4	2	694	1372	342	1211	37	15.9	15.6	28.8
Magumu - Thika	5	24300	0	0	170	190	2	1	746	1297	305	757	71	14.1	15.5	22
Magumu - Thika	5	24300	0	0	165	190	2	2	746	1385	316	760	72	14.1	15.5	22

Magumu - Thika	5	24307	0	0	160	180	4	1	708	1763	470	1274	62	16	15.7	28.8
Magumu - Thika	5	24307	0	0	160	180	4	2	709	1943	475	1102	63	16	15.7	28.8
Magumu - Thika	5	24392	0	0	210	225	2	1	764	2397	108	231	135	14.2	15.6	22
Magumu - Thika	5	24392	0	0	150	165	3	2	761	413	435	239	134	14.2	15.6	22
Magumu - Thika	5	24406	0	0	130	145	3	1	741	600	564	313	139	16.1	15.6	28.8
Magumu - Thika	5	24406	0	0	130	145	3	2	729	624	586	305	137	16	15.6	28.8
Magumu - Thika	5	24501	0	0	195	215	2	1	711	1962	313	699	52	15.6	15.6	28.8
Magumu - Thika	5	24501	0	0	195	215	2	2	702	2051	325	739	51	15.6	15.6	28.8
Magumu - Thika	5	24505	0	0	175	195	2	1	734	1165	274	597	74	14.8	15.6	22
Magumu - Thika	5	24505	0	0	170	190	2	2	734	1208	288	612	74	14.8	15.6	22
Magumu - Thika	5	24601	0	0	185	210	4	1	709	1698	392	827	53	14.5	15.4	22
Magumu - Thika	5	24601	0	0	185	205	4	2	711	1827	416	836	53	14.6	15.4	22
Magumu - Thika	5	24604	0	0	185	205	2	1	716	985	258	714	63	15.9	15.7	28.8
Magumu - Thika	5	24604	0	0	185	205	2	2	707	1053	280	750	62	15.9	15.7	28.8
Magumu - Thika	5	24700	0	0	130	150	3	1	757	526	555	322	130	14.6	15.2	22
Magumu - Thika	5	24700	0	0	130	150	3	2	749	544	574	325	131	14.6	15.2	22
Magumu - Thika	5	24701	0	0	150	165	2	1	733	1924	356	618	105	15.9	15.7	28.8
Magumu - Thika	5	24701	0	0	140	160	2	2	733	2014	383	651	104	15.9	15.7	28.8
Magumu - Thika	5	24799	0	0	210	235	4	1	699	1350	307	772	42	15.9	15.7	28.8
Magumu - Thika	5	24799	0	0	210	235	4	2	702	1461	333	753	43	15.9	15.7	28.8
Magumu - Thika	5	24800	0	0	220	240	4	1	706	1195	268	713	41	15.2	15.2	22
Magumu - Thika	5	24800	0	0	215	240	4	2	706	1269	283	717	42	15.2	15.2	22
Magumu - Thika	5	24801	0	0	205	230	4	1	724	1209	337	1309	39	15.7	15.8	25.4
Magumu - Thika	5	24801	0	0	205	230	4	2	723	1317	350	1314	39	15.7	15.8	25.4
Magumu - Thika	5	24896	0	0	155	175	2	1	742	1953	430	967	74	15.6	15.3	25.4
Magumu - Thika	5	24896	0	0	150	175	2	2	739	2045	434	946	75	15.6	15.3	25.4
Magumu - Thika	5	24903	0	0	205	230	4	1	684	1233	329	1111	40	16	15.6	28.8
Magumu - Thika	5	24903	0	0	205	230	4	2	686	1298	347	1165	40	16	15.6	28.8
Magumu - Thika	5	24997	0	0	170	195	2	1	735	1224	238	713	73	16.1	15.3	28.8
Magumu - Thika	5	24997	0	0	170	190	2	2	731	1304	245	704	74	16.1	15.3	28.8
Magumu - Thika	5	24998	0	0	155	175	4	1	702	1890	454	384	91	15.6	16.8	19.9
Magumu - Thika	5	24998	0	0	155	175	4	2	697	1977	464	377	91	15.6	16.8	19.9
Magumu - Thika	5	25099	1	0	135	155	4	1	690	1899	604	2117	66	15.6	16.5	19.9
Magumu - Thika	5	25099	1	0	135	155	4	2	685	2003	625	2117	65	15.6	16.5	19.9
Magumu - Thika	5	25123	0	0	155	175	2	1	701	2074	326	417	97	16.1	15.3	28.8
Magumu - Thika	5	25123	0	0	150	170	2	2	699	2263	353	463	95	16.1	15.3	28.8
Magumu - Thika	5	25199	0	0	165	190	2	1	685	1506	335	482	79	15.4	16.4	19.9
Magumu - Thika	5	25199	0	0	165	185	2	2	684	1604	338	467	80	15.4	16.3	19.9
Magumu - Thika	5	25227	0	0	130	145	4	1	715	635	597	342	130	16	15.3	28.8
Magumu - Thika	5	25227	0	0	155	165	2	2	722	2089	344	494	128	16	15.2	28.8
Magumu - Thika	6	25304	1	1	110	125	3	1	721	1954	723	408	277	15.4	16.8	19.9
Magumu - Thika	6	25304	1	1	110	125	3	2	721	2009	725	403	282	15.3	16.7	19.9
Magumu - Thika	6	25315	0	0	215	235	2	1	710	992	188	557	49	16.1	15.5	28.8
Magumu - Thika	6	25315	0	0	210	235	2	2	704	1042	213	538	50	16.1	15.5	28.8
Magumu - Thika	6	25400	0	0	145	165	4	1	696	552	603	357	104	15.4	16.6	19.9
Magumu - Thika	6	25400	0	0	145	165	4	2	691	585	639	364	102	15.4	16.6	19.9
Magumu - Thika	6	25409	1	1	95	110	3	1	755	2168	938	466	337	10.9	13.9	16.6
Magumu - Thika	6	25409	1	1	90	110	3	2	755	2204	945	469	337	10.9	14	16.6
Magumu - Thika	6	25496	0	0	230	255	2	1	675	839	269	1466	30	15.3	16.4	19.9
Magumu - Thika	6	25496	0	0	230	255	4	2	669	893	283	1507	30	15.3	16.4	19.9
Magumu - Thika	6	25502	0	0	190	205	2	1	718	1463	159	188	123	10.8	14	16.6
Magumu - Thika	6	25502	0	0	220	240	2	2	717	11367	63	160	122	10.8	14	16.6
Magumu - Thika	6	25596	0	0	170	195	4	1	693	1354	479	1055	57	15	16.1	19.9
Magumu - Thika	6	25596	0	0	170	190	4	2	689	1418	484	1065	58	15.1	16.1	19.9
Magumu - Thika	6	25603	0	0	220	240	2	1	690	781	214	774	43	10.8	14.1	16.6
Magumu - Thika	6	25603	0	0	215	240	2	2	694	792	229	803	43	10.8	14.1	16.6
Magumu - Thika	6	25691	0	0	165	185	2	1	695	1609	424	1112	62	15.1	15.8	19.9
Magumu - Thika	6	25691	0	0	165	185	4	2	692	1676	435	1085	62	15.1	15.8	19.9
Magumu - Thika	6	25716	0	0	140	160	4	1	708	1630	676	1124	75	10.9	14.2	16.6
Magumu - Thika	6	25716	0	0	140	160	4	2	706	1713	688	1254	74	10.9	14.2	16.6
Magumu - Thika	6	25805	0	0	155	175	4	1	688	2444	540	698	75	15.3	16.6	19.9
Magumu - Thika	6	25805	0	0	155	175	4	2	684	2467	546	708	74	15.3	16.6	19.9
Magumu - Thika	6	25807	0	0	175	200	2	1	702	1318	348	944	60	11	14.3	16.6
Magumu - Thika	6	25807	0	0	175	195	2	2	705	1449	354	927	61	11	14.3	16.6
Magumu - Thika	6	25899	0	0	160	180	2	1	683	1611	425	867	73	15.3	17.1	19.9
Magumu - Thika	6	25899	0	0	155	180	2	2	685	1791	423	856	73	15.3	17.1	19.9
Magumu - Thika	6	25903	0	0	140	160	2	1	705	1988	414	498	103	11	14.2	16.6
Magumu - Thika	6	25903	0	0	140	160	2	2	703	2035	440	517	101	11	14.2	16.6
Magumu - Thika	6	26004	0	0	160	180	4	1	710	1308	464	1015	69	11.1	14.3	16.6
Magumu - Thika	6	26004	0	0	155	180	2	2	706	1387	457	1100	68	11.1	14.3	16.6
Magumu - Thika	6	26098	0	0	210	235	2	1	681	899	293	1231	40	14.6	17.3	19.9
Magumu - Thika	6	26098	0	0	210	230	4	2	681	960	310	1232	40	14.6	17.3	19.9
Magumu - Thika	6	26108	0	0	155	175	2	1	697	995	339	944	77	11	14.6	16.6
Magumu - Thika	6	26108	0	0	155	175	2	2	695	1080	345	927	78	11	14.6	16.6
Magumu - Thika	6	26206	1	1	130	150	4	1	690	2162	672	1306	82	14.6	17.2	19.9
Magumu - Thika	6	26206	1	1	125	150	4	2	689	2245	694	1289	82	14.7	17.2	19.9
Magumu - Thika	6	26217	0	0	185	210	2	1	697	876	334	1596	47	11	14.4	16.6
Magumu - Thika	6	26217	0	0	185	210	2	2	703	938	362	1473	47	11	14.4	16.6

Magumu - Thika	6	26301	0	0	140	160	2	1	693	1631	402	775	96	14.9	17.2	19.9
Magumu - Thika	6	26301	0	0	140	160	2	2	692	1740	414	755	97	14.9	17.1	19.9
Magumu - Thika	6	26399	0	0	160	185	4	1	694	1878	586	1042	61	11.3	15.1	16.6
Magumu - Thika	6	26399	0	0	160	185	4	2	696	2000	624	905	61	11.3	15	16.6
Magumu - Thika	6	26403	1	0	115	130	3	1	697	667	728	395	206	14.7	17.3	19.9
Magumu - Thika	6	26403	1	1	110	125	3	2	691	686	750	419	204	14.8	17.2	19.9
Magumu - Thika	6	26497	0	0	140	160	2	1	689	2072	445	627	99	14.6	17.2	19.9
Magumu - Thika	6	26497	0	0	135	155	2	2	689	2137	474	666	98	14.7	17.2	19.9
Magumu - Thika	6	26514	0	0	115	130	3	1	718	591	696	386	164	11.5	15.3	16.6
Magumu - Thika	6	26514	1	1	110	125	3	2	715	649	765	412	164	11.5	15.3	16.6
Magumu - Thika	6	26605	0	0	215	240	2	1	676	1033	261	1338	36	15.4	17.2	19.9
Magumu - Thika	6	26605	0	0	215	240	2	2	679	1068	276	1359	36	15.4	17.1	19.9
Magumu - Thika	6	26612	0	0	165	185	2	1	722	1250	263	473	86	11.6	15.3	16.6
Magumu - Thika	6	26612	0	0	165	185	2	2	715	1301	269	482	85	11.6	15.3	16.6
Magumu - Thika	6	26698	0	0	175	195	2	1	710	1371	282	553	74	15.5	17.2	19.9
Magumu - Thika	6	26698	0	0	170	195	2	2	705	1400	298	568	74	15.5	17.2	19.9
Magumu - Thika	6	26699	0	0	210	235	4	1	697	1334	385	1379	35	11.7	15.4	16.6
Magumu - Thika	6	26699	0	0	210	235	4	2	699	1463	399	1353	35	11.7	15.4	16.6
Magumu - Thika	6	26801	0	0	175	200	4	1	685	1386	413	1411	50	15.4	17.2	19.9
Magumu - Thika	6	26801	0	0	175	200	4	2	688	1482	441	1417	51	15.4	17.1	19.9
Magumu - Thika	6	26811	0	0	210	235	2	1	700	946	268	806	45	11.7	15.4	16.6
Magumu - Thika	6	26811	0	0	210	235	2	2	703	1011	273	786	45	11.7	15.4	16.6
Magumu - Thika	6	26896	0	0	165	185	2	1	694	1124	320	813	74	15.3	17.7	19.9
Magumu - Thika	6	26896	0	0	165	185	2	2	693	1188	333	861	73	15.3	17.6	19.9
Magumu - Thika	6	26908	0	0	195	220	2	1	688	891	286	905	51	11.4	15.2	16.6
Magumu - Thika	6	26908	0	0	195	215	2	2	697	987	301	943	51	11.4	15.2	16.6
Magumu - Thika	6	27000	0	0	165	175	2	1	703	2464	269	258	191	14.9	17.5	19.9
Magumu - Thika	6	27000	0	0	160	170	2	2	697	2349	302	258	197	14.9	17.4	19.9
Magumu - Thika	6	27003	0	0	165	180	2	1	736	1089	267	598	91	11.2	14.8	16.6
Magumu - Thika	6	27003	0	0	165	180	2	2	739	1170	278	605	91	11.2	14.8	16.6
Magumu - Thika	6	27099	0	0	120	140	4	1	694	614	671	387	134	15.2	17.6	19.9
Magumu - Thika	6	27099	0	0	120	140	4	2	695	661	723	418	131	15.2	17.6	19.9
Magumu - Thika	6	27108	0	0	155	165	2	1	715	1618	355	454	117	11.4	14.9	16.6
Magumu - Thika	6	27108	0	0	155	165	2	2	711	1677	354	432	120	11.4	15	16.6
Magumu - Thika	6	27200	0	0	130	150	3	1	708	489	575	306	144	11.8	15.3	16.6
Magumu - Thika	6	27200	0	0	125	145	3	2	692	506	596	329	140	11.8	15.3	16.6
Magumu - Thika	6	27300	0	0	135	155	2	1	699	1801	463	598	103	14.8	17	19.9
Magumu - Thika	6	27300	0	0	135	155	2	2	698	1890	491	618	103	14.8	16.9	19.9
Magumu - Thika	6	27302	0	0	180	205	2	1	692	1170	361	1109	53	12	15.6	16.6
Magumu - Thika	6	27302	0	0	180	205	2	2	696	1246	343	1238	53	12	15.6	16.6
Magumu - Thika	6	27399	0	0	180	205	4	1	682	1231	388	918	55	14.5	17.1	19.9
Magumu - Thika	6	27399	0	0	180	200	4	2	674	1262	388	1029	55	14.5	17.1	19.9
Magumu - Thika	6	27400	0	0	155	170	2	1	711	1718	322	393	109	11.7	15.4	16.6
Magumu - Thika	6	27400	0	0	155	170	2	2	710	1794	337	401	109	11.7	15.4	16.6
Magumu - Thika	6	27499	1	0	115	130	3	1	691	628	686	390	158	14.6	17.1	19.9
Magumu - Thika	6	27499	1	0	115	130	3	2	687	646	705	403	159	14.6	17	19.9
Magumu - Thika	6	27502	0	0	210	230	2	1	693	1010	244	788	46	11.4	14.9	16.6
Magumu - Thika	6	27502	0	0	210	230	2	2	680	1106	248	748	46	11.4	14.9	16.6
Magumu - Thika	6	27599	0	0	150	170	2	1	684	1802	429	541	87	15	17.2	19.9
Magumu - Thika	6	27599	0	0	150	170	2	2	681	1920	441	544	87	15	17.2	19.9
Magumu - Thika	6	27613	0	0	170	185	2	1	710	1917	233	279	174	11.6	15.1	16.6
Magumu - Thika	6	27613	0	0	170	185	2	2	705	2032	227	261	178	11.6	15.1	16.6
Magumu - Thika	6	27700	0	0	130	145	2	1	696	2398	453	304	241	15.1	17	19.9
Magumu - Thika	6	27700	0	0	130	145	2	2	689	2415	463	312	238	15.1	17	19.9
Magumu - Thika	6	27702	0	0	140	160	2	1	681	2281	479	498	101	11.6	15.1	16.6
Magumu - Thika	6	27702	0	0	140	155	2	2	687	2336	491	513	102	11.6	15.1	16.6
Magumu - Thika	6	27800	0	0	160	175	2	1	711	2049	305	275	192	11.5	14.8	16.6
Magumu - Thika	6	27800	0	0	160	170	2	2	713	2119	307	275	194	11.5	14.8	16.6
Magumu - Thika	6	27801	1	1	105	120	3	1	695	768	840	487	189	15	17.1	19.9
Magumu - Thika	6	27801	1	1	105	120	3	2	692	762	833	453	192	15	17.1	19.9
Magumu - Thika	6	27898	1	1	100	115	3	1	722	795	868	484	325	15.1	17	19.9
Magumu - Thika	6	27898	1	1	100	115	3	2	724	809	884	479	332	15.1	17	19.9
Magumu - Thika	6	27901	0	0	170	180	2	1	701	1802	250	259	180	11.5	14.9	16.6
Magumu - Thika	6	27901	0	0	165	180	2	2	708	1895	262	271	180	11.5	14.9	16.6
Magumu - Thika	6	28001	0	0	160	175	2	1	709	2313	287	264	196	11.6	15	16.6
Magumu - Thika	6	28001	0	0	160	175	2	2	709	2429	297	260	200	11.6	15	16.6
Magumu - Thika	6	28099	0	0	160	180	4	1	685	1600	442	847	71	15	17.2	19.9
Magumu - Thika	6	28099	0	0	160	180	4	2	684	1690	468	852	71	15	17.1	19.9
Magumu - Thika	6	28106	0	0	135	150	2	1	702	1963	431	470	122	11.8	15.2	16.6
Magumu - Thika	6	28106	0	0	135	150	2	2	698	1975	435	466	122	11.8	15.2	16.6
Magumu - Thika	6	28198	0	0	150	170	2	1	701	1493	386	701	87	11.9	15.3	16.6
Magumu - Thika	6	28198	0	0	150	170	2	2	698	1573	399	697	87	11.9	15.3	16.6
Magumu - Thika	6	28199	0	0	155	175	2	1	691	1282	433	916	76	15	16.9	19.9
Magumu - Thika	6	28199	0	0	150	170	2	2	695	1333	451	1122	74	15	16.9	19.9
Magumu - Thika	6	28297	0	0	145	165	4	1	692	1944	525	807	83	15	17.2	19.9
Magumu - Thika	6	28297	0	0	140	160	4	2	695	2035	554	820	83	15	17.1	19.9
Magumu - Thika	6	28307	0	0	130	145	2	1	696	1927	459	571	145	11.8	15	16.6
Magumu - Thika	6	28307	0	0	135	145	2	2	691	1946	446	537	146	11.8	15	16.6

Magumu - Thika	6	28400	0	0	145	165	4	1	700	2287	530	783	82	14.9	17.1	19.9
Magumu - Thika	6	28400	0	0	145	165	4	2	702	2345	554	827	81	14.9	17	19.9
Magumu - Thika	6	28411	0	0	115	130	3	1	710	576	678	388	149	11.7	15	16.6
Magumu - Thika	6	28411	0	0	140	150	2	2	708	2001	393	421	148	11.7	15	16.6
Magumu - Thika	6	28493	0	0	195	220	2	1	696	1421	309	690	53	14.9	17	19.9
Magumu - Thika	6	28493	0	0	195	220	2	2	689	1435	312	677	53	14.9	16.9	19.9
Magumu - Thika	6	28504	0	0	130	145	3	1	718	499	588	315	167	11.9	15.1	16.6
Magumu - Thika	6	28504	0	0	130	145	3	2	715	504	594	324	166	11.9	15.1	16.6
Magumu - Thika	6	28599	0	0	190	215	2	1	694	1248	319	726	55	11.8	15	16.6
Magumu - Thika	6	28599	0	0	190	215	2	2	694	1365	320	662	56	11.8	15	16.6
Magumu - Thika	6	28602	0	0	160	180	2	1	695	1564	332	592	83	15	17.4	19.9
Magumu - Thika	6	28602	0	0	160	180	2	2	694	1643	346	600	83	14.9	17.3	19.9
Magumu - Thika	6	28699	0	0	145	165	4	1	697	2084	630	937	74	14.9	17.4	19.9
Magumu - Thika	6	28699	0	0	145	165	4	2	698	2187	676	983	74	14.9	17.4	19.9
Magumu - Thika	6	28702	1	0	125	145	4	1	707	2318	585	644	106	11.9	15.1	16.6
Magumu - Thika	6	28702	0	0	125	145	2	2	702	2439	566	693	105	11.9	15.1	16.6
Magumu - Thika	6	28798	0	0	145	165	4	1	710	457	499	290	110	14.9	17.2	19.9
Magumu - Thika	6	28798	0	0	145	165	4	2	703	470	514	301	110	14.9	17.2	19.9
Magumu - Thika	6	28802	1	1	110	125	3	1	699	643	758	404	194	12.2	15.3	16.6
Magumu - Thika	6	28802	1	1	110	125	3	2	708	630	742	416	195	12.2	15.3	16.6
Magumu - Thika	6	28899	0	0	140	160	2	1	696	1859	455	679	94	14.7	17.1	19.9
Magumu - Thika	6	28899	0	0	140	160	2	2	697	1925	427	698	94	14.8	17	19.9
Magumu - Thika	6	28905	0	0	135	150	2	1	700	2002	417	515	126	12.4	15.6	16.6
Magumu - Thika	6	28905	0	0	130	145	2	2	693	1989	475	521	126	12.4	15.6	16.6
Magumu - Thika	6	28997	0	0	140	160	2	1	688	1906	472	555	97	14.7	17.2	19.9
Magumu - Thika	6	28997	0	0	140	160	2	2	689	1978	484	558	98	14.7	17.2	19.9
Magumu - Thika	6	29002	0	0	135	150	2	1	698	2114	424	498	132	12.4	15.7	16.6
Magumu - Thika	6	29002	0	0	130	145	2	2	696	2192	456	524	132	12.4	15.7	16.6
Magumu - Thika	6	29099	0	0	125	140	2	1	689	2431	538	557	119	14.8	17.5	19.9
Magumu - Thika	6	29099	0	0	125	140	2	2	681	2460	532	535	120	14.7	17.4	19.9
Magumu - Thika	6	29100	0	0	160	185	4	1	692	1848	481	795	68	12.2	15.5	16.6
Magumu - Thika	6	29100	0	0	160	185	4	2	689	1918	487	799	68	12.2	15.5	16.6
Magumu - Thika	6	29199	0	0	185	205	2	1	697	859	256	725	63	14.6	17.6	19.9
Magumu - Thika	6	29199	0	0	185	205	2	2	695	889	273	743	62	14.6	17.6	19.9
Magumu - Thika	6	29206	0	0	115	130	3	1	703	591	696	388	164	12.2	15.2	16.6
Magumu - Thika	6	29206	1	1	110	125	3	2	697	637	750	403	161	12.2	15.2	16.6
Magumu - Thika	6	29298	0	0	155	170	2	1	677	1556	350	503	95	14.6	17.6	19.9
Magumu - Thika	6	29298	0	0	155	170	2	2	683	1733	348	461	98	14.6	17.6	19.9
Magumu - Thika	6	29304	0	0	180	200	2	1	701	1068	317	887	61	12.2	15.3	16.6
Magumu - Thika	6	29304	0	0	175	200	2	2	703	1172	337	887	62	12.2	15.3	16.6
Magumu - Thika	6	29401	0	0	180	200	2	1	706	1202	229	403	77	12.4	15.4	16.6
Magumu - Thika	6	29401	0	0	175	200	2	2	713	1255	245	418	78	12.4	15.4	16.6
Magumu - Thika	6	29408	0	0	155	175	2	1	689	1496	385	686	85	14.5	17.4	19.9
Magumu - Thika	6	29408	0	0	155	175	2	2	687	1567	376	715	83	14.5	17.4	19.9
Magumu - Thika	6	29505	0	0	160	180	2	1	704	1609	348	583	84	12.7	15.6	16.6
Magumu - Thika	6	29505	0	0	155	175	2	2	709	1702	356	664	82	12.6	15.7	16.6
Magumu - Thika	6	29508	0	0	235	260	2	1	667	674	200	776	37	14.6	17.3	19.9
Magumu - Thika	6	29508	0	0	235	255	2	2	669	706	210	783	37	14.6	17.2	19.9
Magumu - Thika	6	29598	0	0	175	200	2	1	688	1356	269	478	74	12.6	15.7	16.6
Magumu - Thika	6	29598	0	0	175	200	2	2	687	1469	280	477	73	12.5	15.7	16.6
Magumu - Thika	6	29601	0	0	185	205	2	1	671	1144	326	664	61	14.6	17.1	19.9
Magumu - Thika	6	29601	0	0	185	205	2	2	674	1216	336	642	61	14.6	17.1	19.9
Magumu - Thika	6	29692	0	0	170	190	2	1	694	1355	332	592	74	14.5	17	19.9
Magumu - Thika	6	29692	0	0	165	190	2	2	699	1371	357	626	74	14.5	17	19.9
Magumu - Thika	6	29713	0	0	145	165	2	1	685	1752	420	603	92	12.4	15.3	16.6
Magumu - Thika	6	29713	0	0	145	165	2	2	686	1844	438	613	92	12.4	15.3	16.6
Magumu - Thika	6	29785	0	0	140	160	2	1	693	2559	480	538	95	14.4	16.8	19.9
Magumu - Thika	6	29785	0	0	140	160	2	2	694	2588	500	563	95	14.4	16.8	19.9
Magumu - Thika	6	29799	0	0	185	205	4	1	697	1193	385	915	55	12.5	15.4	16.6
Magumu - Thika	6	29799	0	0	180	205	4	2	698	1251	405	968	54	12.5	15.4	16.6
Magumu - Thika	6	29895	1	1	110	120	2	1	644	1993	736	1614	112	14.5	16.9	19.9
Magumu - Thika	6	29895	1	1	105	120	2	2	648	1999	786	1713	112	14.5	16.9	19.9
Magumu - Thika	6	29899	1	0	115	135	4	1	704	638	752	420	138	12.7	15.6	16.6
Magumu - Thika	6	29899	1	0	115	130	4	2	704	665	783	439	139	12.7	15.6	16.6
Magumu - Thika	6	29998	0	0	150	170	4	1	686	1760	573	978	73	15.7	14.7	18
Magumu - Thika	6	29998	0	0	150	170	4	2	684	1778	595	906	73	15.7	14.7	18
Magumu - Thika	6	30007	0	0	145	165	4	1	701	1901	517	851	81	12.9	15.8	16.6
Magumu - Thika	6	30007	0	0	145	165	4	2	706	2013	567	887	80	12.8	15.8	16.6
Magumu - Thika	6	30098	0	0	130	145	3	1	700	513	584	308	144	15.5	14.6	18
Magumu - Thika	6	30098	0	0	125	145	3	2	701	523	595	334	144	15.5	14.6	18
Magumu - Thika	6	30102	0	0	165	185	2	1	719	1516	374	903	70	12.8	16	16.6
Magumu - Thika	6	30102	0	0	165	185	2	2	716	1542	394	933	68	12.8	16	16.6
Magumu - Thika	6	30199	0	0	130	145	2	1	719	1287	477	364	211	12.9	16	16.6
Magumu - Thika	6	30199	0	0	145	155	2	2	717	1233	382	321	209	12.9	15.9	16.6
Magumu - Thika	6	30201	0	0	175	195	2	1	693	1255	300	665	70	15.9	14.8	18
Magumu - Thika	6	30201	0	0	175	195	2	2	692	1272	316	715	69	15.9	14.8	18
Magumu - Thika	6	30299	0	0	125	145	4	1	676	585	666	360	129	15.7	14.5	18
Magumu - Thika	6	30299	0	0	125	140	4	2	676	610	694	380	131	15.7	14.5	18

Magumu - Thika	6	30302	0	0	185	205	2	1	701	1284	266	576	65	13	16	16.6
Magumu - Thika	6	30302	0	0	185	205	2	2	703	1367	284	593	65	13	16	16.6
Magumu - Thika	6	30399	1	1	115	130	2	1	679	2822	613	648	153	16.3	15.2	18
Magumu - Thika	6	30399	1	1	115	125	2	2	686	2952	632	656	153	16.4	15.2	18
Magumu - Thika	6	30402	0	0	125	140	4	1	706	577	679	365	134	12.9	15.9	16.6
Magumu - Thika	6	30402	0	0	120	140	4	2	711	614	723	386	131	12.9	15.9	16.6
Magumu - Thika	6	30496	0	0	140	160	2	1	697	1604	399	671	100	16.6	15.5	18
Magumu - Thika	6	30496	0	0	140	160	2	2	701	1644	418	691	100	16.5	15.5	18
Magumu - Thika	6	30504	0	0	145	165	2	1	697	1926	383	474	103	13.2	16.1	16.6
Magumu - Thika	6	30504	0	0	140	160	2	2	706	2013	411	507	103	13.2	16.1	16.6
Magumu - Thika	6	30601	0	0	170	190	4	1	681	2110	495	917	59	16	15.1	18
Magumu - Thika	6	30601	0	0	165	190	4	2	690	2173	516	948	59	16	15.1	18
Magumu - Thika	6	30604	0	0	140	155	3	1	699	405	476	282	143	13.4	16.2	16.6
Magumu - Thika	6	30604	0	0	135	150	3	2	698	430	507	297	141	13.4	16.2	16.6
Magumu - Thika	6	30707	0	0	160	180	2	1	707	1476	306	501	86	13.3	16.2	16.6
Magumu - Thika	6	30707	0	0	160	180	2	2	709	1527	330	530	85	13.2	16.1	16.6
Magumu - Thika	6	30708	0	0	170	190	2	1	703	1270	337	629	72	16	14.9	18
Magumu - Thika	6	30708	0	0	170	190	2	2	703	1286	348	646	72	16	14.9	18
Magumu - Thika	6	30800	1	1	110	125	2	1	690	2832	675	765	131	16.1	15.2	18
Magumu - Thika	6	30800	1	1	110	120	2	2	693	2867	700	780	131	16.1	15.2	18
Magumu - Thika	6	30806	0	0	140	160	4	1	705	2525	516	601	92	13.1	15.9	16.6
Magumu - Thika	6	30806	0	0	140	160	4	2	702	2516	554	653	90	13.1	16	16.6
Magumu - Thika	6	30902	0	0	160	180	4	1	683	1980	567	881	65	16.3	15.3	18
Magumu - Thika	6	30902	0	0	155	180	4	2	694	2090	594	890	66	16.3	15.3	18
Magumu - Thika	6	30905	0	0	165	185	2	1	704	1200	326	775	73	13.3	16.1	16.6
Magumu - Thika	6	30905	0	0	165	185	2	2	700	1255	328	737	74	13.4	16.1	16.6
Magumu - Thika	6	30999	0	0	140	160	2	1	702	2152	399	527	102	16.6	15.4	18
Magumu - Thika	6	30999	0	0	140	160	2	2	697	2171	424	558	100	16.6	15.3	18
Magumu - Thika	6	31001	0	0	145	160	4	1	710	494	581	325	109	13.4	16.3	16.6
Magumu - Thika	6	31001	0	0	145	160	4	2	706	519	611	329	107	13.4	16.3	16.6
Magumu - Thika	6	31097	0	0	160	180	4	1	683	1969	489	719	72	16.7	15.2	18
Magumu - Thika	6	31097	0	0	155	180	4	2	684	2007	515	767	71	16.7	15.2	18
Magumu - Thika	6	31101	0	0	135	155	2	1	693	1990	433	541	111	13.5	16.3	16.6
Magumu - Thika	6	31101	0	0	135	150	2	2	691	2015	457	639	105	13.5	16.3	16.6
Magumu - Thika	6	31194	0	0	155	175	2	1	704	1557	371	702	82	16.6	15.3	18
Magumu - Thika	6	31194	0	0	155	175	2	2	702	1669	362	659	83	16.6	15.3	18
Magumu - Thika	6	31203	0	0	165	185	2	1	687	1555	355	505	81	13.7	16.2	16.6
Magumu - Thika	6	31203	0	0	165	185	2	2	687	1662	364	502	81	13.7	16.2	16.6
Magumu - Thika	6	31299	0	0	150	170	4	1	682	1870	510	744	79	16.5	15.3	18
Magumu - Thika	6	31299	0	0	150	170	4	2	679	2019	516	732	79	16.5	15.3	18
Magumu - Thika	6	31308	0	0	165	180	2	1	720	1388	280	474	94	13.6	16.1	16.6
Magumu - Thika	6	31308	0	0	160	175	2	2	713	1402	313	534	91	13.6	16.1	16.6
Magumu - Thika	6	31398	0	0	140	155	2	1	695	1154	396	653	111	13.7	16.2	16.6
Magumu - Thika	6	31398	0	0	135	150	2	2	702	1249	448	676	111	13.7	16.2	16.6
Magumu - Thika	6	31494	1	0	130	150	4	1	679	2284	630	794	97	15.7	14.9	18
Magumu - Thika	6	31494	1	0	125	145	4	2	680	2331	691	858	94	15.8	14.9	18
Magumu - Thika	6	31509	0	0	135	150	4	1	713	537	632	355	119	13.4	16	16.6
Magumu - Thika	6	31509	0	0	150	205	2	2	714	13998	95	276	120	13.4	16.1	16.6
Magumu - Thika	6	31594	0	0	155	175	2	1	699	1939	445	809	76	15.6	14.7	18
Magumu - Thika	6	31594	0	0	155	175	4	2	693	1959	461	816	75	15.6	14.7	18
Magumu - Thika	6	31602	0	0	165	180	2	1	724	1270	285	317	188	13.3	16.1	16.6
Magumu - Thika	6	31602	0	0	160	175	2	2	725	1304	308	344	184	13.3	16.1	16.6
Magumu - Thika	6	31689	0	0	200	225	2	1	693	984	248	625	54	15.6	14.8	18
Magumu - Thika	6	31689	0	0	200	225	2	2	685	1053	256	632	53	15.6	14.8	18
Magumu - Thika	6	31701	0	0	155	170	2	1	713	1586	343	463	115	13.6	16.2	16.6
Magumu - Thika	6	31701	0	0	160	175	2	2	710	1682	307	473	114	13.6	16.2	16.6
Magumu - Thika	6	31802	0	0	170	190	2	1	693	1223	304	538	76	15.4	14.7	18
Magumu - Thika	6	31802	0	0	170	190	2	2	692	1273	330	576	75	15.4	14.6	18
Magumu - Thika	6	31807	0	0	195	220	2	1	699	1238	301	863	50	13.8	16.4	16.6
Magumu - Thika	6	31807	0	0	195	220	2	2	695	1287	317	804	50	13.8	16.4	16.6
Magumu - Thika	6	31899	0	0	145	165	4	1	680	2441	590	600	84	15.7	14.9	18
Magumu - Thika	6	31899	0	0	145	165	4	2	687	2553	602	595	85	15.7	14.9	18
Magumu - Thika	6	31902	0	0	155	175	4	1	690	2295	637	1306	61	15.9	15.2	18
Magumu - Thika	6	31902	0	0	150	175	4	2	691	2445	668	1195	63	15.9	15.2	18
Magumu - Thika	6	31909	0	0	165	185	4	1	718	387	455	270	92	13.8	16.4	16.6
Magumu - Thika	6	31909	0	0	160	180	4	2	713	396	466	271	93	13.8	16.4	16.6
Magumu - Thika	6	32001	0	0	160	180	4	1	691	1820	486	940	67	16.3	15.5	18
Magumu - Thika	6	32001	0	0	160	180	4	2	689	1824	509	991	66	16.2	15.5	18
Magumu - Thika	6	32005	0	0	190	210	2	1	702	1044	204	546	67	13.9	16.5	16.6
Magumu - Thika	6	32005	0	0	185	205	2	2	700	1106	210	568	67	13.9	16.5	16.6
Magumu - Thika	6	32092	0	0	180	200	4	1	697	1530	394	889	57	16.1	15.2	18
Magumu - Thika	6	32092	0	0	180	200	4	2	694	1572	409	886	57	16.1	15.2	18
Magumu - Thika	6	32103	0	0	145	165	2	1	706	1612	453	729	90	14	16.6	16.6
Magumu - Thika	6	32103	0	0	145	160	2	2	708	1737	472	738	90	14	16.6	16.6
Magumu - Thika	6	32198	0	0	175	200	2	1	687	1401	356	858	61	15.8	15	18
Magumu - Thika	6	32198	0	0	175	195	2	2	694	1479	358	927	60	15.8	15	18
Magumu - Thika	6	32201	0	0	165	185	2	1	717	1248	394	902	68	14.3	16.7	16.6
Magumu - Thika	6	32201	0	0	165	185	2	2	715	1255	390	877	69	14.3	16.7	16.6

Magumu - Thika	6	32301	0	0	130	145	2	1	702	2038	464	521	123	14.1	16.7	16.6
Magumu - Thika	6	32301	0	0	130	145	2	2	701	2040	465	515	123	14.1	16.6	16.6
Magumu - Thika	6	32310	1	1	125	140	4	1	716	2045	643	875	101	15.7	14.5	18
Magumu - Thika	6	32310	1	1	120	140	4	2	709	2081	660	908	100	15.7	14.5	18
Magumu - Thika	6	32402	1	0	115	130	4	1	695	595	700	403	149	13.7	16.3	16.6
Magumu - Thika	6	32402	1	0	115	130	3	2	695	607	715	402	150	13.7	16.3	16.6
Magumu - Thika	6	32497	0	0	120	135	2	1	691	2393	555	666	119	16	14.7	18
Magumu - Thika	6	32497	0	0	120	135	2	2	696	2619	566	634	120	16	14.6	18
Magumu - Thika	6	32500	0	0	205	230	4	1	695	1394	348	764	45	13.7	16.1	16.6
Magumu - Thika	6	32500	0	0	205	225	4	2	698	1419	357	763	45	13.7	16.2	16.6
Magumu - Thika	6	32597	0	0	135	155	4	1	694	2176	607	909	85	16.1	14.8	18
Magumu - Thika	6	32597	0	0	135	155	4	2	691	2265	593	940	84	16.1	14.8	18
Magumu - Thika	6	32600	0	0	140	155	2	1	702	1884	387	516	111	14	16.4	16.6
Magumu - Thika	6	32600	0	0	135	155	2	2	702	1979	406	532	111	14	16.4	16.6
Magumu - Thika	6	32698	0	0	145	165	2	1	697	1353	408	673	95	16.2	15	18
Magumu - Thika	6	32698	0	0	145	165	2	2	694	1392	424	690	95	16.2	15	18
Magumu - Thika	6	32702	0	0	140	165	4	1	706	2682	709	968	73	14.1	16.6	16.6
Magumu - Thika	6	32702	0	0	140	160	4	2	703	2785	692	939	75	14.2	16.6	16.6
Magumu - Thika	6	32799	0	0	150	170	2	1	686	1760	362	448	97	15.9	14.8	18
Magumu - Thika	6	32799	0	0	155	170	2	2	684	1828	352	493	94	15.9	14.8	18
Magumu - Thika	6	32815	0	0	170	190	2	1	705	1229	304	599	75	13.6	16.3	16.6
Magumu - Thika	6	32815	0	0	170	190	2	2	706	1273	316	634	75	13.6	16.3	16.6
Magumu - Thika	6	32898	0	0	160	180	2	1	701	1436	408	985	70	16.1	14.9	18
Magumu - Thika	6	32898	0	0	160	180	2	2	691	1436	438	1083	68	16.1	14.9	18
Magumu - Thika	6	32905	0	0	140	155	2	1	696	2219	459	471	106	13.9	16.4	16.6
Magumu - Thika	6	32905	0	0	140	155	2	2	689	2175	475	487	104	13.9	16.5	16.6
Magumu - Thika	6	32995	0	0	160	180	2	1	694	2219	409	665	77	13.7	16.2	16.6
Magumu - Thika	6	32995	0	0	155	175	2	2	701	2307	433	685	77	13.7	16.2	16.6
Magumu - Thika	6	32996	0	0	135	155	2	1	688	1942	493	822	95	16.2	15	18
Magumu - Thika	6	32996	0	0	135	155	2	2	686	2116	499	763	97	16.2	15	18
Magumu - Thika	6	33089	0	0	130	150	4	1	679	2318	604	788	96	16.2	14.5	18
Magumu - Thika	6	33089	1	0	125	145	4	2	676	2348	653	790	96	16.2	14.5	18
Magumu - Thika	6	33099	0	0	170	190	2	1	720	1565	244	398	85	14.2	16.7	16.6
Magumu - Thika	6	33099	0	0	170	190	2	2	718	1598	253	414	85	14.2	16.7	16.6
Magumu - Thika	6	33203	0	0	155	175	4	1	704	1726	471	971	72	14.3	16.8	16.6
Magumu - Thika	6	33203	0	0	155	175	2	2	700	1810	457	882	74	14.4	16.8	16.6
Magumu - Thika	6	33204	0	0	220	245	2	1	676	281	205	1363	38	16.2	14.2	18
Magumu - Thika	6	33204	0	0	220	240	2	2	682	311	217	1349	38	16.2	14.2	18
Magumu - Thika	6	33304	0	0	225	250	4	1	688	958	257	708	39	14.2	16.8	16.6
Magumu - Thika	6	33304	0	0	225	250	4	2	685	1031	260	755	38	14.2	16.8	16.6
Magumu - Thika	6	33305	0	0	190	210	2	1	703	1130	246	772	57	16.5	15.1	22
Magumu - Thika	6	33305	0	0	190	210	2	2	702	1176	254	768	57	16.5	15.1	22
Magumu - Thika	6	33397	0	0	170	190	4	1	699	1357	425	960	62	16.9	15.4	22
Magumu - Thika	6	33397	0	0	165	190	4	2	691	1401	444	1033	61	16.9	15.4	22
Magumu - Thika	6	33401	0	0	225	250	2	1	683	752	185	753	41	14.5	16.7	16.6
Magumu - Thika	6	33401	0	0	225	250	2	2	683	800	190	683	41	14.5	16.7	16.6
Magumu - Thika	6	33498	0	0	165	180	2	1	692	1378	268	328	183	16.8	15.4	22
Magumu - Thika	6	33498	0	0	165	175	2	2	690	1464	288	339	181	16.8	15.4	22
Magumu - Thika	6	33500	0	0	185	205	4	1	704	1315	365	793	57	14.6	16.9	16.6
Magumu - Thika	6	33500	0	0	180	205	4	2	699	1384	375	801	57	14.6	16.9	16.6
Magumu - Thika	6	33597	0	0	125	140	2	1	700	2332	508	559	128	16.8	15.5	22
Magumu - Thika	6	33597	0	0	125	140	2	2	687	2417	505	541	128	16.8	15.5	22
Magumu - Thika	6	33608	0	0	150	170	2	1	700	1711	401	577	91	15	17.2	16.6
Magumu - Thika	6	33608	0	0	150	170	2	2	702	1772	419	596	91	15	17.2	16.6
Magumu - Thika	6	33699	0	0	150	165	2	1	684	2047	370	306	210	17.1	15.9	22
Magumu - Thika	6	33699	0	0	155	170	2	2	684	2197	328	299	204	17.1	15.9	22
Magumu - Thika	6	33702	0	0	150	175	4	1	702	1771	500	855	75	14.6	17	16.6
Magumu - Thika	6	33702	0	0	150	175	4	2	693	1854	502	808	76	14.7	17	16.6
Magumu - Thika	6	33797	0	0	130	150	2	1	685	2420	532	658	105	17.4	16.2	22
Magumu - Thika	6	33797	0	0	130	145	2	2	689	2633	499	576	110	17.4	16.2	22
Magumu - Thika	6	33809	0	0	115	135	3	1	696	583	686	380	150	14.9	17.1	16.6
Magumu - Thika	6	33809	0	0	115	130	3	2	698	609	717	375	151	14.9	17.1	16.6
Magumu - Thika	6	33898	0	0	145	165	2	1	700	2036	400	560	93	17.2	16	22
Magumu - Thika	6	33898	0	0	145	165	2	2	701	2062	416	688	90	17.2	16	22
Magumu - Thika	6	33904	0	0	165	185	2	1	713	1443	272	402	88	15	17.3	16.6
Magumu - Thika	6	33904	0	0	165	185	2	2	713	1450	284	413	88	15	17.3	16.6
Magumu - Thika	6	33996	0	0	135	150	2	1	687	1896	421	493	132	17.4	16.4	22
Magumu - Thika	6	33996	0	0	135	150	2	2	682	1983	428	487	133	17.4	16.4	22
Magumu - Thika	7	34001	0	0	135	155	4	1	701	2640	600	808	86	14.9	17.2	16.6
Magumu - Thika	7	34001	0	0	135	155	4	2	703	2781	616	822	87	14.9	17.1	16.6
Magumu - Thika	7	34099	1	1	110	125	4	1	698	754	794	454	154	17.9	16.9	22
Magumu - Thika	7	34099	0	0	130	145	2	2	697	2787	448	457	151	17.9	16.9	22
Magumu - Thika	7	34101	0	0	135	150	2	1	701	1872	437	508	129	14.8	17.1	16.6
Magumu - Thika	7	34101	0	0	135	150	2	2	699	1980	436	480	132	14.9	17.2	16.6
Magumu - Thika	7	34193	0	0	130	150	3	1	707	517	545	317	130	18	16.9	22
Magumu - Thika	7	34193	0	0	130	150	3	2	699	518	546	316	132	18	16.9	22
Magumu - Thika	7	34195	1	0	115	130	4	1	702	645	759	411	144	14.8	17	16.6
Magumu - Thika	7	34195	1	1	110	130	4	2	695	659	776	427	143	14.8	17	16.6



Magumu - Thika	7	34298	0	0	135	150	2	1	694	2333	410	471	132	17.7	16.7	22
Magumu - Thika	7	34298	0	0	130	145	2	2	694	2332	465	545	127	17.8	16.6	22
Magumu - Thika	7	34306	0	0	160	175	2	1	717	1359	306	432	103	14.5	16.8	16.6
Magumu - Thika	7	34306	0	0	155	170	2	2	713	1392	328	460	101	14.5	16.8	16.6
Magumu - Thika	7	34398	1	1	115	135	4	1	687	2834	657	741	115	18.3	17	22
Magumu - Thika	7	34398	1	1	115	130	2	2	688	2934	637	702	118	18.3	17	22
Magumu - Thika	7	34401	0	0	140	160	4	1	705	2100	528	779	88	14.9	17	16.6
Magumu - Thika	7	34401	0	0	140	160	4	2	700	2116	535	774	89	14.9	17	16.6
Magumu - Thika	7	34493	0	0	120	135	4	1	686	666	702	402	137	18.3	16.6	22
Magumu - Thika	7	34493	1	0	115	135	4	2	690	682	719	421	138	18.3	16.6	22
Magumu - Thika	7	34504	0	0	135	155	4	1	717	447	526	313	122	15	17.1	16.6
Magumu - Thika	7	34504	0	0	135	155	4	2	709	463	546	310	123	14.9	17	16.6
Magumu - Thika	7	34600	0	0	125	140	2	1	698	2353	505	494	126	14.4	16.7	16.6
Magumu - Thika	7	34600	0	0	125	140	2	2	701	2370	531	517	125	14.4	16.7	16.6
Magumu - Thika	7	34601	0	0	170	190	2	1	688	1421	386	917	64	18.5	16.9	22
Magumu - Thika	7	34601	0	0	170	190	2	2	691	1530	386	913	64	18.5	16.9	22
Magumu - Thika	7	34700	0	0	165	185	2	1	708	1429	373	660	76	14.4	16.5	16.6
Magumu - Thika	7	34700	0	0	160	185	2	2	709	1429	358	676	77	14.5	16.5	16.6
Magumu - Thika	7	34703	0	0	120	135	2	1	691	2661	563	576	137	18.7	16.7	22
Magumu - Thika	7	34703	1	1	115	130	2	2	689	2726	606	621	134	18.7	16.7	22
Magumu - Thika	7	34798	0	0	160	180	2	1	697	1786	346	550	81	18.6	17.6	22
Magumu - Thika	7	34798	0	0	160	180	2	2	701	1896	363	563	80	18.6	17.6	22
Magumu - Thika	7	34801	0	0	135	155	2	1	707	1959	437	533	109	14.4	16.4	16.6
Magumu - Thika	7	34801	0	0	135	155	2	2	703	2016	443	535	110	14.4	16.4	16.6
Magumu - Thika	7	34900	0	0	150	170	4	1	693	2499	573	488	85	15	16.9	16.6
Magumu - Thika	7	34900	0	0	145	165	4	2	690	2538	661	631	79	15	16.9	16.6
Magumu - Thika	7	35007	0	0	130	150	2	1	715	2170	519	592	109	15.4	17.2	16.6
Magumu - Thika	7	35007	0	0	130	145	2	2	717	2256	529	584	110	15.4	17.2	16.6
Magumu - Thika	7	35008	0	0	150	165	2	1	701	1779	361	521	111	18.2	17.3	22
Magumu - Thika	7	35008	0	0	150	165	2	2	699	1782	368	528	111	18.2	17.2	22
Magumu - Thika	7	35095	0	0	130	145	2	1	693	2272	446	503	126	18.2	17.2	22
Magumu - Thika	7	35095	0	0	135	150	2	2	682	2316	410	484	123	18.2	17.2	22
Magumu - Thika	7	35102	0	0	200	220	2	1	698	1058	285	812	50	15.2	17.1	16.6
Magumu - Thika	7	35102	0	0	200	220	2	2	695	1107	291	790	51	15.2	17.1	16.6
Magumu - Thika	7	35201	0	0	155	175	2	1	689	1398	360	677	87	18.1	17.2	22
Magumu - Thika	7	35201	0	0	150	170	2	2	692	1444	368	674	87	18.1	17.2	22
Magumu - Thika	7	35209	1	1	120	140	4	1	701	2651	615	678	111	15.2	17.1	16.6
Magumu - Thika	7	35209	1	1	120	140	4	2	701	2693	621	695	111	15.2	17.1	16.6
Magumu - Thika	7	35300	0	0	140	150	2	1	695	1878	395	497	126	17.9	16.7	22
Magumu - Thika	7	35300	0	0	140	155	2	2	701	1946	390	473	129	17.9	16.7	22
Magumu - Thika	7	35303	0	0	130	150	2	1	705	2020	496	706	104	15.2	17.2	16.6
Magumu - Thika	7	35303	0	0	130	150	2	2	703	2088	490	689	104	15.2	17.2	16.6
Magumu - Thika	7	35398	0	0	155	175	4	1	689	2609	646	600	74	17.8	16.7	22
Magumu - Thika	7	35398	0	0	155	175	4	2	680	2677	587	522	76	17.8	16.7	22
Magumu - Thika	7	35402	0	0	185	205	2	1	715	1109	218	505	71	14.8	16.8	25.3
Magumu - Thika	7	35402	0	0	185	205	2	2	714	1169	224	504	71	14.8	16.8	25.3
Magumu - Thika	7	35494	1	1	110	125	2	1	687	3492	629	599	139	18.1	16.8	22
Magumu - Thika	7	35494	1	1	105	120	2	2	692	3514	700	686	134	18.1	16.8	22
Magumu - Thika	7	35504	0	0	140	160	4	1	699	1883	566	1017	80	15	16.6	25.3
Magumu - Thika	7	35504	0	0	140	160	4	2	698	1925	596	1032	80	15	16.6	25.3
Magumu - Thika	7	35598	0	0	120	135	2	1	709	3063	535	495	163	15.1	16.8	25.3
Magumu - Thika	7	35598	1	0	120	130	2	2	704	3165	570	533	159	15.1	16.8	25.3
Magumu - Thika	7	35603	0	0	180	200	4	1	692	433	456	258	74	18.1	17	22
Magumu - Thika	7	35603	0	0	185	205	2	2	693	1291	196	455	74	18	17	22
Magumu - Thika	7	35688	0	0	155	170	2	1	702	1808	321	446	122	18.2	17.1	22
Magumu - Thika	7	35688	0	0	155	165	2	2	695	1793	355	487	118	18.2	17	22
Magumu - Thika	7	35710	1	1	115	130	4	1	708	3636	773	840	104	15.3	16.9	25.3
Magumu - Thika	7	35710	1	1	110	130	4	2	701	3662	796	846	103	15.3	16.9	25.3
Magumu - Thika	7	35802	0	0	125	140	2	1	692	2359	518	575	133	18.2	17.1	22
Magumu - Thika	7	35802	0	0	120	135	2	2	691	2423	555	673	127	18.2	17.1	22
Magumu - Thika	7	35808	0	0	115	130	3	1	710	697	702	377	155	15.5	17.2	25.3
Magumu - Thika	7	35808	1	0	110	130	3	2	709	748	753	392	157	15.5	17.2	25.3
Magumu - Thika	7	35896	0	0	175	195	2	1	704	1205	244	553	75	18.5	17.1	22
Magumu - Thika	7	35896	0	0	175	195	2	2	707	1265	253	563	75	18.5	17.1	22
Magumu - Thika	7	35903	1	1	100	110	4	1	693	915	921	536	182	15.4	17.2	25.3
Magumu - Thika	7	35903	1	1	95	110	4	2	700	941	947	545	183	15.4	17.2	25.3
Magumu - Thika	7	36000	0	0	155	165	2	1	708	2178	344	520	114	15.9	17.4	25.3
Magumu - Thika	7	36000	0	0	145	160	2	2	710	2288	384	475	117	15.9	17.4	25.3
Magumu - Thika	7	36001	0	0	150	170	2	1	692	2234	396	482	93	18.8	17.2	22
Magumu - Thika	7	36001	0	0	145	165	2	2	706	2312	421	512	93	18.8	17.2	22
Magumu - Thika	7	36081	0	0	145	165	4	1	684	2616	641	1205	67	19.2	17.1	22
Magumu - Thika	7	36081	0	0	145	165	4	2	695	2758	581	1316	67	19.1	17.1	22
Magumu - Thika	7	36110	1	0	130	150	4	1	698	2922	595	769	95	15.6	17.3	25.3
Magumu - Thika	7	36110	0	0	130	150	4	2	698	2951	588	651	99	15.6	17.3	25.3
Magumu - Thika	7	36196	0	0	155	170	2	1	700	2002	315	372	120	19.5	17.6	25
Magumu - Thika	7	36196	0	0	155	170	2	2	693	2076	320	372	121	19.5	17.6	25
Magumu - Thika	7	36202	0	0	200	220	2	1	701	909	239	708	54	15.6	17.2	25.3
Magumu - Thika	7	36202	0	0	200	220	2	2	699	999	244	693	54	15.6	17.2	25.3

Magumu - Thika	7	36293	0	0	165	180	2	1	689	1842	277	424	105	19	17.4	25
Magumu - Thika	7	36293	0	0	160	175	2	2	695	1954	287	429	106	19	17.4	25
Magumu - Thika	7	36302	1	0	115	130	3	1	695	717	722	399	186	15.4	17.3	25.3
Magumu - Thika	7	36302	1	1	110	125	3	2	699	751	756	421	181	15.4	17.3	25.3
Magumu - Thika	7	36398	2	1	95	110	2	1	679	3625	822	758	152	19.3	17.5	25
Magumu - Thika	7	36398	2	1	95	110	2	2	684	3753	840	766	152	19.3	17.5	25
Magumu - Thika	7	36401	0	0	160	175	4	1	710	434	437	247	101	15.2	17.1	25.3
Magumu - Thika	7	36401	0	0	155	175	4	2	704	445	449	269	101	15.1	17.1	25.3
Magumu - Thika	7	36504	0	0	125	145	4	1	708	669	673	384	127	15.2	17.1	25.3
Magumu - Thika	7	36504	0	0	125	145	4	2	702	682	687	397	127	15.3	17.1	25.3
Magumu - Thika	7	36598	0	0	145	165	2	1	702	2223	421	557	94	19.1	17.1	25
Magumu - Thika	7	36598	0	0	145	165	2	2	691	2331	409	529	95	19.1	17.1	25
Magumu - Thika	7	36603	0	0	140	160	2	1	705	2355	405	539	101	15.3	17.1	25.3
Magumu - Thika	7	36603	0	0	140	160	2	2	703	2497	407	516	103	15.3	17.1	25.3
Magumu - Thika	7	36701	3	2	80	100	4	1	696	7373	2933	1193	77	15.7	17.1	25.3
Magumu - Thika	7	36701	3	2	80	100	4	2	692	7526	2933	1195	77	15.7	17.1	25.3
Magumu - Thika	7	36706	0	0	170	190	2	1	691	1372	307	635	73	19.2	17.1	25
Magumu - Thika	7	36706	0	0	170	190	2	2	693	1421	297	693	72	19.2	17.1	25
Magumu - Thika	7	36803	0	0	175	195	2	1	705	1615	237	469	77	15.6	17.3	25.3
Magumu - Thika	7	36803	0	0	175	195	2	2	713	1724	253	484	77	15.7	17.4	25.3
Magumu - Thika	7	36908	1	0	115	130	3	1	692	712	712	399	152	19.4	17.6	25
Magumu - Thika	7	36908	1	1	110	125	3	2	691	766	766	412	154	19.4	17.6	25
Magumu - Thika	7	36909	0	0	140	160	2	1	705	2396	422	625	100	15.8	17.5	25.3
Magumu - Thika	7	36909	0	0	135	155	2	2	707	2535	448	658	98	15.8	17.5	25.3
Magumu - Thika	7	37002	1	1	115	130	2	1	697	3624	652	666	117	19.4	17.5	25
Magumu - Thika	7	37002	1	1	110	130	4	2	700	3655	712	669	118	19.4	17.5	25
Magumu - Thika	7	37003	0	0	135	150	3	1	719	553	557	301	161	16	17.6	25.3
Magumu - Thika	7	37003	0	0	130	150	3	2	715	554	558	308	160	16	17.6	25.3
Magumu - Thika	7	37101	0	0	125	140	2	1	697	2650	554	640	111	16	17.6	25.3
Magumu - Thika	7	37101	1	0	120	140	2	2	694	2729	587	674	109	16.1	17.6	25.3
Magumu - Thika	7	37102	1	1	100	115	3	1	684	892	892	500	231	19.3	17.3	25
Magumu - Thika	7	37102	1	1	95	110	3	2	688	964	964	519	224	19.3	17.3	25
Magumu - Thika	7	37200	0	0	170	185	2	1	718	1428	249	287	156	16.1	17.5	25.3
Magumu - Thika	7	37200	0	0	175	190	2	2	722	1672	221	276	156	16.1	17.5	25.3
Magumu - Thika	7	37294	1	1	105	120	3	1	683	816	816	433	176	19	17.2	25
Magumu - Thika	7	37294	1	1	105	120	3	2	688	831	831	436	174	19	17.2	25
Magumu - Thika	7	37308	1	1	115	135	4	1	700	3020	695	758	108	15.9	17.3	25.3
Magumu - Thika	7	37308	1	1	115	135	4	2	695	3152	668	737	110	15.9	17.3	25.3
Magumu - Thika	7	37398	0	0	135	150	2	1	704	2558	415	543	114	18.8	16.9	25
Magumu - Thika	7	37398	0	0	135	150	2	2	691	2603	430	558	111	18.8	16.9	25
Magumu - Thika	7	37405	0	0	185	205	2	1	715	1524	305	760	58	16.1	17.2	25.3
Magumu - Thika	7	37405	0	0	185	205	2	2	709	1597	298	833	57	16.1	17.2	25.3
Magumu - Thika	7	37498	0	0	120	135	2	1	682	3024	559	599	120	19.1	17.1	25
Magumu - Thika	7	37498	1	1	115	135	2	2	687	3109	604	626	119	19.1	17.1	25
Magumu - Thika	7	37501	0	0	135	150	2	1	705	2270	432	637	106	16.2	17.2	25.3
Magumu - Thika	7	37501	0	0	130	150	2	2	701	2305	463	712	104	16.2	17.2	25.3
Magumu - Thika	7	37605	1	1	120	140	4	1	683	3487	833	1020	89	19.3	17.1	25
Magumu - Thika	7	37605	1	1	115	135	4	2	685	3549	848	971	92	19.3	17	25
Magumu - Thika	7	37613	0	0	145	165	4	1	706	2653	532	769	81	15.9	17	25.3
Magumu - Thika	7	37613	0	0	145	165	4	2	704	2742	545	786	81	15.9	17	25.3
Magumu - Thika	7	37703	1	1	110	125	4	1	708	4235	891	699	109	15.8	16.9	25.3
Magumu - Thika	7	37703	1	1	110	125	4	2	699	4457	904	694	108	15.7	16.9	25.3
Magumu - Thika	7	37800	1	1	115	125	2	1	709	3432	606	604	137	15.4	16.9	25.3
Magumu - Thika	7	37800	1	0	115	130	2	2	709	3595	583	564	141	15.4	16.9	25.3
Magumu - Thika	7	37806	1	1	100	120	4	1	690	3839	817	923	114	18.7	17.1	25
Magumu - Thika	7	37806	1	1	100	120	4	2	692	3864	885	883	116	18.7	17.1	25
Magumu - Thika	7	37897	1	1	100	115	2	1	689	3954	751	688	155	18.2	16.4	25
Magumu - Thika	7	37897	1	1	100	115	2	2	693	4152	725	629	163	18.2	16.4	25
Magumu - Thika	7	37899	1	1	105	115	2	1	701	3615	731	655	190	15.5	16.9	25.3
Magumu - Thika	7	37899	1	1	100	115	2	2	703	3862	735	636	192	15.5	17	25.3
Magumu - Thika	7	37993	0	0	135	155	2	1	685	2538	478	598	101	18.2	16.3	25
Magumu - Thika	7	37993	0	0	135	155	2	2	688	2667	512	630	100	18.2	16.4	25
Magumu - Thika	7	38007	2	2	85	105	4	1	706	5379	1105	896	123	15.6	17	25.3
Magumu - Thika	7	38007	2	2	85	100	4	2	708	5473	1114	902	124	15.7	17	25.3
Magumu - Thika	7	38102	0	0	150	165	2	1	700	2219	365	466	115	18.4	16.5	25
Magumu - Thika	7	38102	0	0	150	165	2	2	699	2352	358	510	112	18.5	16.5	25
Magumu - Thika	7	38103	1	1	95	110	3	1	684	923	930	512	217	16.1	17.1	25.3
Magumu - Thika	7	38103	2	1	90	105	3	2	689	988	994	545	221	16.1	17.1	25.3
Magumu - Thika	7	38197	0	0	125	140	2	1	694	2592	506	536	127	18.7	16.5	25
Magumu - Thika	7	38197	0	0	125	135	2	2	688	2705	521	547	126	18.7	16.5	25
Magumu - Thika	7	38206	0	0	175	195	2	1	724	1201	304	653	70	16.5	17.1	25.3
Magumu - Thika	7	38206	0	0	170	195	2	2	738	1279	313	645	71	16.5	17.1	25.3
Magumu - Thika	7	38281	0	0	135	155	4	1	709	2566	598	964	85	19.3	16.6	25
Magumu - Thika	7	38281	1	0	130	150	4	2	703	2598	648	946	86	19.3	16.6	25
Magumu - Thika	7	38308	0	0	140	160	2	1	701	2571	467	656	93	16.7	17.5	25.3
Magumu - Thika	7	38308	0	0	140	160	2	2	704	2615	478	694	92	16.7	17.5	25.3
Magumu - Thika	7	38404	0	0	190	210	2	1	789	1511	255	1463	48	19.8	17.8	25
Magumu - Thika	7	38404	0	0	185	210	2	2	789	1479	359	1343	48	19.8	17.8	25

Magumu - Thika	7	38409	0	0	135	155	2	1	701	2339	468	678	100	16.9	17.7	25.3
Magumu - Thika	7	38409	0	0	135	150	2	2	705	2392	488	702	100	16.9	17.7	25.3
Magumu - Thika	7	38491	0	0	135	150	3	1	693	527	527	297	159	20	17.8	25
Magumu - Thika	7	38491	0	0	130	145	3	2	698	534	534	319	160	20	17.8	25
Magumu - Thika	7	38501	0	0	160	185	2	1	709	1997	430	913	67	17	18	25.3
Magumu - Thika	7	38501	0	0	160	180	2	2	710	2127	437	887	68	16.9	18	25.3
Magumu - Thika	7	38594	1	1	105	125	4	1	686	3431	701	698	123	20.2	18	25
Magumu - Thika	7	38594	1	1	105	125	4	2	686	3465	744	754	122	20.2	17.9	25
Magumu - Thika	7	38601	0	0	155	165	2	1	696	2452	338	290	211	16.2	17.7	25.3
Magumu - Thika	7	38601	0	0	150	165	2	2	695	2491	353	297	207	16.2	17.7	25.3
Magumu - Thika	7	38698	1	0	125	145	2	1	688	2604	591	744	104	20.3	17.8	25
Magumu - Thika	7	38698	1	0	125	145	2	2	694	2597	598	742	104	20.3	17.8	25
Magumu - Thika	7	38700	0	0	120	130	2	1	693	3474	559	492	140	16.4	17.7	25.3
Magumu - Thika	7	38700	0	0	115	130	2	2	706	3642	560	531	143	16.4	17.7	25.3
Magumu - Thika	7	38801	0	0	120	135	2	1	687	2824	558	582	123	20.3	17.6	25
Magumu - Thika	7	38801	1	1	115	130	2	2	696	2882	621	651	121	20.3	17.6	25
Magumu - Thika	7	38804	0	0	160	185	2	1	706	1835	386	833	71	16.7	18	25.3
Magumu - Thika	7	38804	0	0	160	180	2	2	709	1880	404	885	71	16.7	18.1	25.3
Magumu - Thika	7	38903	0	0	130	145	2	1	684	2739	434	500	145	20.6	17.9	25
Magumu - Thika	7	38903	0	0	135	145	2	2	683	2953	423	468	148	20.5	17.9	25
Magumu - Thika	7	38905	0	0	130	145	2	1	709	2730	433	510	117	16.8	18.1	25.3
Magumu - Thika	7	38905	0	0	125	145	2	2	710	2700	482	491	119	16.8	18.2	25.3
Magumu - Thika	7	38995	0	0	145	160	2	1	694	2891	382	280	232	20.2	17.8	25
Magumu - Thika	7	38995	0	0	145	160	2	2	686	3045	386	280	229	20.2	17.7	25
Magumu - Thika	7	39000	0	0	205	225	2	1	704	13107	75	222	140	16.9	18.2	25.3
Magumu - Thika	7	39000	0	0	130	145	3	2	703	559	563	325	138	16.9	18.2	25.3
Magumu - Thika	7	39093	1	0	120	140	2	1	690	2886	575	762	108	19.8	17.5	25
Magumu - Thika	7	39093	1	1	120	140	2	2	694	2973	597	803	107	19.8	17.4	25
Magumu - Thika	7	39104	2	2	80	95	4	1	694	1171	1179	640	219	16.6	18.1	25.3
Magumu - Thika	7	39104	3	2	75	95	4	2	702	1182	1191	667	218	16.6	18.1	25.3
Magumu - Thika	7	39194	1	1	105	115	2	1	686	4126	711	630	173	19.5	17.6	25
Magumu - Thika	7	39194	1	1	100	115	2	2	675	4009	740	662	167	19.6	17.6	25
Magumu - Thika	7	39202	0	0	125	145	4	1	716	654	658	376	126	16.2	17.8	25.3
Magumu - Thika	7	39202	0	0	125	145	4	2	717	647	651	383	128	16.3	17.8	25.3
Magumu - Thika	7	39300	0	0	125	140	3	1	694	632	632	347	180	20.1	17.7	25
Magumu - Thika	7	39300	0	0	125	140	3	2	685	612	612	342	178	20.1	17.7	25
Magumu - Thika	7	39302	0	0	145	160	2	1	701	3209	367	284	231	16.7	18.1	25.3
Magumu - Thika	7	39302	0	0	145	160	2	2	697	3199	376	289	228	16.8	18.1	25.3
Magumu - Thika	7	39397	0	0	165	185	2	1	681	1572	352	806	70	19.8	17.8	25
Magumu - Thika	7	39397	0	0	160	185	2	2	692	1677	388	852	70	19.8	17.8	25
Magumu - Thika	7	39405	0	0	150	165	2	1	716	2018	368	546	98	17	18.3	25.3
Magumu - Thika	7	39405	0	0	145	165	2	2	718	2101	398	577	97	17	18.3	25.3
Magumu - Thika	7	39499	0	0	185	210	2	1	694	1380	319	953	53	20.1	17.7	25
Magumu - Thika	7	39499	0	0	185	210	2	2	692	1411	305	1026	53	20.1	17.8	25
Magumu - Thika	7	39503	0	0	155	175	4	1	701	2639	630	1264	60	16.7	18.2	25.3
Magumu - Thika	7	39503	0	0	155	175	4	2	699	2728	642	1247	60	16.7	18.2	25.3
Magumu - Thika	7	39595	0	0	165	185	2	1	689	1441	267	499	83	20.3	17.5	25
Magumu - Thika	7	39595	0	0	165	185	2	2	695	1565	274	500	83	20.3	17.5	25
Magumu - Thika	7	39605	0	0	145	165	4	1	704	2333	504	782	83	17.4	18.8	25.3
Magumu - Thika	7	39605	0	0	140	160	4	2	705	2457	540	821	82	17.4	18.8	25.3
Magumu - Thika	7	39704	0	0	170	190	2	1	697	1453	336	718	70	20.1	18.1	25
Magumu - Thika	7	39704	0	0	170	190	2	2	708	1521	324	767	71	20.1	18.1	25
Magumu - Thika	7	39709	0	0	150	170	2	1	718	1792	362	701	87	17.1	18.7	25.3
Magumu - Thika	7	39709	0	0	150	170	2	2	720	1885	371	703	87	17.2	18.7	25.3
Magumu - Thika	7	39798	0	0	190	215	2	1	692	1385	295	905	52	19.7	17.9	25
Magumu - Thika	7	39798	0	0	190	215	2	2	689	1495	291	878	52	19.7	17.9	25
Magumu - Thika	7	39803	0	0	180	205	2	1	704	1303	348	1105	54	17	18.5	25.3
Magumu - Thika	7	39803	0	0	180	205	2	2	707	1388	363	1101	54	17	18.5	25.3
Magumu - Thika	7	39900	0	0	180	205	2	1	704	1384	282	574	66	19.6	17.6	25
Magumu - Thika	7	39900	0	0	180	205	2	2	703	1483	282	550	66	19.6	17.6	25
Magumu - Thika	7	39901	0	0	195	215	2	1	707	1216	245	717	55	17.1	18.7	25.3
Magumu - Thika	7	39901	0	0	195	220	2	2	708	1246	251	689	55	17.1	18.7	25.3
Magumu - Thika	7	39991	0	0	155	165	2	1	714	1942	349	521	106	19	17.4	25
Magumu - Thika	7	39991	0	0	155	170	2	2	717	2019	339	488	109	19.1	17.4	25
Magumu - Thika	7	39997	0	0	165	185	2	1	714	1566	348	714	74	17	18.4	25.3
Magumu - Thika	7	39997	0	0	160	185	2	2	718	1669	361	733	74	17	18.4	25.3
Magumu - Thika	7	40094	1	1	95	110	4	1	683	972	972	564	178	19.3	17.7	25
Magumu - Thika	7	40094	1	0	115	130	2	2	686	3797	566	484	177	19.4	17.7	25
Magumu - Thika	7	40107	1	0	115	130	4	1	722	694	699	399	146	17.4	18.7	25.3
Magumu - Thika	7	40107	1	0	115	130	3	2	724	686	691	399	149	17.5	18.7	25.3
Magumu - Thika	7	40194	0	0	145	160	2	1	679	3090	389	289	244	20.5	18.1	25
Magumu - Thika	7	40194	0	0	145	155	2	2	676	3196	397	299	243	20.5	18.1	25
Magumu - Thika	7	40204	0	0	125	140	2	1	706	2654	485	572	135	17.1	18.6	25.3
Magumu - Thika	7	40204	0	0	125	140	2	2	698	2589	487	573	136	17.1	18.6	25.3
Magumu - Thika	7	40298	1	0	110	130	3	1	673	736	736	396	195	20	17.9	25
Magumu - Thika	7	40298	0	0	160	175	2	2	672	3512	270	240	202	20	17.9	25
Magumu - Thika	7	40301	1	1	100	115	4	1	697	901	907	499	170	17.6	18.7	25.3
Magumu - Thika	7	40301	1	1	95	110	4	2	695	954	961	513	171	17.6	18.7	25.3

Magumu - Thika	7	40403	0	0	130	145	2	1	698	2859	455	513	142	20	17.8	25
Magumu - Thika	7	40403	0	0	130	145	2	2	694	3013	450	495	142	20	17.8	25
Magumu - Thika	7	40406	0	0	130	140	2	1	694	2773	466	474	145	17	18.3	25.3
Magumu - Thika	7	40406	0	0	125	140	2	2	706	2999	487	489	148	17	18.3	25.3
Magumu - Thika	7	40497	0	0	130	145	2	1	693	2383	470	546	134	19.2	17.4	25
Magumu - Thika	7	40497	0	0	130	140	2	2	697	2479	480	544	136	19.3	17.4	25
Magumu - Thika	7	40502	1	1	120	140	4	1	706	3359	680	823	100	17.7	18.6	25.3
Magumu - Thika	7	40502	1	1	120	140	4	2	717	3440	691	796	102	17.7	18.7	25.3
Magumu - Thika	7	40593	0	0	165	185	2	1	689	1813	424	934	64	19.3	17.6	25
Magumu - Thika	7	40593	0	0	165	185	4	2	695	1937	433	889	66	19.3	17.6	25
Magumu - Thika	7	40602	0	0	115	135	3	1	705	698	703	371	163	17.6	18.6	25.3
Magumu - Thika	7	40602	0	0	120	135	3	2	698	669	674	369	164	17.7	18.6	25.3
Magumu - Thika	7	40699	0	0	165	190	2	1	700	1644	350	849	68	17.9	18.7	25.3
Magumu - Thika	7	40699	0	0	165	185	2	2	698	1697	357	812	69	17.8	18.7	25.3
Magumu - Thika	7	40706	1	1	110	130	4	1	686	2664	689	848	117	20.4	18.3	25
Magumu - Thika	7	40706	1	1	110	125	2	2	697	2844	693	843	120	20.4	18.3	25
Magumu - Thika	7	40801	0	0	160	175	2	1	716	1549	315	430	128	18.1	18.6	25.3
Magumu - Thika	7	40801	0	0	155	170	2	2	717	1605	326	444	127	18.1	18.6	25.3
Magumu - Thika	7	40809	0	0	150	170	4	1	709	2554	524	889	72	20.3	17.8	25
Magumu - Thika	7	40809	0	0	150	170	4	2	703	2589	533	882	71	20.3	17.8	25
Magumu - Thika	7	40892	0	0	125	145	2	1	692	2400	525	753	104	20	17.3	25
Magumu - Thika	7	40892	0	0	125	145	2	2	690	2464	538	780	104	20	17.3	25
Magumu - Thika	7	40903	0	0	140	160	2	1	708	2340	519	773	89	17.8	18.6	25.3
Magumu - Thika	7	40903	0	0	140	160	4	2	710	2496	529	759	89	17.8	18.6	25.3
Magumu - Thika	7	40992	0	0	130	145	3	1	710	565	565	314	140	20.4	17.8	25
Magumu - Thika	7	40992	0	0	130	145	3	2	715	595	595	312	141	20.4	17.8	25
Magumu - Thika	7	41000	0	0	130	145	2	1	711	2477	486	619	110	18.4	19.2	25.3
Magumu - Thika	7	41000	0	0	130	145	2	2	708	2396	512	649	108	18.4	19.3	25.3
Magumu - Thika	7	41100	0	0	160	170	2	1	709	3161	286	264	208	18.3	19.3	25.3
Magumu - Thika	7	41100	0	0	155	170	2	2	716	3338	287	259	213	18.3	19.3	25.3
Magumu - Thika	7	41101	0	0	170	190	2	1	704	1582	347	972	64	20.2	18.1	25
Magumu - Thika	7	41101	0	0	165	190	2	2	712	1631	363	990	65	20.2	18.1	25
Magumu - Thika	7	41199	0	0	155	170	2	1	681	2574	327	276	211	21	18.4	25
Magumu - Thika	7	41199	0	0	150	165	2	2	677	2605	342	286	207	21	18.5	25
Magumu - Thika	7	41201	0	0	175	195	2	1	706	1403	327	916	62	18.4	19.6	25.3
Magumu - Thika	7	41201	0	0	170	195	2	2	719	1461	360	969	62	18.4	19.6	25.3
Magumu - Thika	7	41299	1	1	110	120	3	1	694	791	791	437	224	20.6	18	25
Magumu - Thika	7	41299	1	1	105	125	3	2	691	808	808	423	217	20.6	18	25
Magumu - Thika	7	41302	1	1	110	125	2	1	698	3236	658	607	170	18.4	19.5	25.3
Magumu - Thika	7	41302	1	1	105	120	2	2	698	3318	723	608	172	18.3	19.6	25.3
Magumu - Thika	7	41399	0	0	120	135	3	1	691	657	657	376	149	20.7	17.7	25
Magumu - Thika	7	41399	1	0	115	130	4	2	689	688	688	396	146	20.7	17.7	25
Magumu - Thika	7	41404	0	0	150	165	2	1	716	2066	351	448	126	18.4	19.5	25.3
Magumu - Thika	7	41404	0	0	150	165	2	2	713	2049	369	476	126	18.4	19.5	25.3
Magumu - Thika	7	41494	1	0	120	135	3	1	689	2146	621	346	274	20.6	17.6	25
Magumu - Thika	7	41494	1	0	115	130	3	2	689	2198	641	358	268	20.6	17.6	25
Magumu - Thika	7	41500	0	0	130	145	2	1	710	2580	450	492	121	18.4	19.5	25.3
Magumu - Thika	7	41500	0	0	130	145	2	2	708	2656	450	479	123	18.5	19.6	25.3
Magumu - Thika	7	41597	0	0	115	130	3	1	688	679	679	381	165	20.3	17.9	25
Magumu - Thika	7	41597	1	0	115	130	3	2	684	705	705	393	169	20.3	18	25
Magumu - Thika	7	41611	0	0	160	175	2	1	721	2856	280	246	195	18	19.4	25.3
Magumu - Thika	7	41611	0	0	155	170	2	2	718	2664	324	257	200	18.1	19.4	25.3
Magumu - Thika	7	41696	0	0	205	220	2	1	718	13285	78	226	140	18.3	19.3	25.3
Magumu - Thika	7	41696	0	0	135	150	3	2	713	529	533	293	140	18.3	19.3	25.3
Magumu - Thika	7	41704	0	0	140	160	2	1	700	1899	390	672	101	20.6	17.8	25
Magumu - Thika	7	41704	0	0	135	155	2	2	696	1986	415	707	99	20.6	17.8	25
Magumu - Thika	7	41799	0	0	130	145	3	1	697	555	555	316	141	20.5	17.8	25
Magumu - Thika	7	41799	0	0	125	140	3	2	706	591	591	336	140	20.5	17.8	25
Magumu - Thika	7	41801	0	0	140	160	4	1	723	558	561	327	113	18.6	19.6	25.3
Magumu - Thika	7	41801	0	0	140	155	4	2	726	565	569	323	116	18.7	19.7	25.3
Magumu - Thika	7	41898	1	0	115	130	4	1	707	679	683	404	149	18.1	19.3	25.3
Magumu - Thika	7	41898	1	1	115	130	4	2	703	705	710	406	150	18.1	19.3	25.3
Magumu - Thika	7	41899	0	0	150	165	2	1	701	1725	371	422	133	20.3	17.4	25
Magumu - Thika	7	41899	0	0	140	155	2	2	711	1884	388	427	133	20.3	17.4	25
Magumu - Thika	7	42001	0	0	130	145	3	1	718	579	583	309	150	18.5	19.3	25.3
Magumu - Thika	7	42001	0	0	130	145	3	2	722	591	595	318	154	18.5	19.3	25.3
Magumu - Thika	7	42009	0	0	155	175	4	1	681	1967	470	861	72	20.6	18.8	25
Magumu - Thika	7	42009	0	0	155	175	4	2	689	2044	498	876	72	20.6	18.8	25
Magumu - Thika	7	42101	0	0	155	175	2	1	703	1372	450	966	73	19.2	19.9	25.3
Magumu - Thika	7	42101	0	0	155	175	4	2	703	1488	473	1006	72	19.2	20	25.3
Magumu - Thika	7	42108	0	0	150	165	2	1	696	2185	370	468	99	20.2	18.6	25
Magumu - Thika	7	42108	0	0	145	165	2	2	692	2194	408	547	95	20.3	18.6	25
Magumu - Thika	7	42205	0	0	155	170	2	1	687	1505	341	466	130	20.2	18.7	25
Magumu - Thika	7	42205	0	0	150	165	2	2	687	1581	362	479	130	20.2	18.8	25
Magumu - Thika	7	42210	0	0	140	160	4	1	715	585	589	340	113	18.8	19.7	25.3
Magumu - Thika	7	42210	0	0	135	155	4	2	723	609	613	360	115	18.8	19.7	25.3
Magumu - Thika	7	42287	0	0	155	175	4	1	689	1717	485	926	74	19.6	18.2	25
Magumu - Thika	7	42287	0	0	150	170	4	2	687	1782	536	1039	72	19.7	18.2	25

Magumu - Thika	7	42304	0	0	155	175	2	1	715	2414	432	807	73	18.7	19.6	25.3
Magumu - Thika	7	42304	0	0	155	175	2	2	716	2479	457	820	74	18.7	19.6	25.3
Magumu - Thika	7	42404	0	0	130	150	2	1	702	2300	503	698	103	18.7	19.7	25.3
Magumu - Thika	7	42404	0	0	130	145	2	2	705	2334	539	749	102	18.7	19.8	25.3
Magumu - Thika	7	42407	0	0	155	165	2	1	686	1817	351	549	100	20.1	18.5	25
Magumu - Thika	7	42407	0	0	150	165	2	2	688	1925	360	551	101	20.1	18.6	25
Magumu - Thika	7	42495	0	0	150	170	2	1	675	2099	459	694	85	19.7	18.2	25
Magumu - Thika	7	42495	0	0	145	165	2	2	682	2247	465	786	83	19.7	18.2	25
Magumu - Thika	7	42502	1	1	120	140	4	1	697	2614	656	806	103	18.3	19.5	25.3
Magumu - Thika	7	42502	1	1	120	140	4	2	701	2746	667	802	104	18.3	19.5	25.3
Magumu - Thika	7	42598	0	0	180	200	4	1	710	1185	391	968	56	18.4	19.5	25.3
Magumu - Thika	7	42598	0	0	175	200	2	2	713	1202	379	1046	57	18.5	19.5	25.3
Magumu - Thika	7	42600	0	0	130	145	3	1	672	587	587	325	139	19	17.6	25
Magumu - Thika	7	42600	0	0	125	145	3	2	680	607	607	328	142	19.1	17.7	25
Magumu - Thika	7	42691	0	0	120	140	3	1	691	2218	561	330	256	19.4	18	25
Magumu - Thika	7	42691	1	0	120	135	3	2	695	2274	598	350	253	19.4	18	25
Magumu - Thika	7	42705	0	0	135	155	4	1	710	576	580	310	120	18.7	19.5	25.3
Magumu - Thika	7	42705	0	0	135	155	4	2	711	584	588	314	120	18.7	19.6	25.3
Magumu - Thika	7	42799	0	0	125	145	3	1	701	600	600	332	171	19.8	18.1	25
Magumu - Thika	7	42799	0	0	130	145	3	2	698	590	590	323	178	19.8	18.1	25
Magumu - Thika	7	42802	0	0	130	145	2	1	716	2029	476	326	220	19.4	19.6	25.3
Magumu - Thika	7	42802	0	0	135	150	2	2	715	2081	408	305	217	19.4	19.6	25.3
Magumu - Thika	7	42900	0	0	130	150	4	1	693	2148	587	912	93	20	18.5	25
Magumu - Thika	7	42900	1	0	125	145	4	2	686	2085	652	1070	90	20	18.4	25
Magumu - Thika	7	42903	0	0	125	140	4	1	712	673	678	385	131	19.7	19.8	25.3
Magumu - Thika	7	42903	0	0	120	140	4	2	710	678	682	396	133	19.7	19.9	25.3
Magumu - Thika	7	43000	0	0	140	150	2	1	695	2173	396	504	136	20	18.6	25
Magumu - Thika	7	43000	0	0	135	150	2	2	698	2314	408	484	138	20.1	18.6	25
Magumu - Thika	7	43001	1	0	115	130	2	1	690	3762	571	534	134	19.1	19.8	25.3
Magumu - Thika	7	43001	1	1	115	125	2	2	693	3826	594	536	135	19	19.8	25.3
Magumu - Thika	7	43099	1	0	115	135	3	1	707	1928	629	357	252	20.1	18.8	25
Magumu - Thika	7	43099	0	0	125	140	2	2	705	1832	520	326	240	20.2	18.8	25
Magumu - Thika	7	43102	0	0	115	130	3	1	708	688	693	384	176	19	19.4	25.3
Magumu - Thika	7	43102	1	1	110	125	3	2	707	742	748	442	173	19	19.5	25.3
Magumu - Thika	7	43204	1	1	95	110	3	1	672	939	939	518	191	20.5	19	25
Magumu - Thika	7	43204	1	1	95	110	3	2	676	969	969	528	190	20.5	19	25
Magumu - Thika	7	43206	1	1	105	120	3	1	698	833	839	469	184	18.8	19.4	25.3
Magumu - Thika	7	43206	1	1	100	115	3	2	696	864	870	482	187	18.9	19.4	25.3
Magumu - Thika	7	43300	0	0	130	145	2	1	695	2568	455	590	119	21.1	19.2	25
Magumu - Thika	7	43300	0	0	130	140	2	2	689	2758	463	572	121	21.1	19.2	25
Magumu - Thika	7	43303	1	1	100	115	3	1	684	868	874	472	177	19.5	19.7	25.3
Magumu - Thika	7	43303	1	1	100	115	3	2	684	857	863	483	178	19.5	19.8	25.3
Magumu - Thika	7	43401	0	0	135	150	2	1	695	2400	414	472	161	20.6	19.3	25
Magumu - Thika	7	43401	0	0	130	145	2	2	692	2498	443	502	159	20.6	19.3	25
Magumu - Thika	7	43403	1	0	115	130	2	1	694	3300	588	571	143	19.9	20.1	25.3
Magumu - Thika	7	43403	1	1	115	125	2	2	709	3575	608	579	147	19.9	20.1	25.3
Magumu - Thika	7	43503	0	0	125	145	3	1	720	630	635	346	134	20.1	20.5	25.3
Magumu - Thika	7	43503	0	0	125	145	3	2	716	611	615	344	136	20.1	20.5	25.3
Magumu - Thika	7	43599	0	0	135	155	2	1	712	1766	420	284	200	21	19.2	25
Magumu - Thika	7	43599	0	0	155	165	2	2	713	1866	353	256	198	21	19.2	25
Magumu - Thika	7	43603	0	0	170	185	2	1	727	2494	233	233	169	20	20.7	25.3
Magumu - Thika	7	43603	0	0	130	145	3	2	724	595	599	319	167	20	20.7	25.3
Magumu - Thika	7	43703	1	1	115	135	4	1	683	2922	693	777	111	21	19.1	25
Magumu - Thika	7	43703	1	1	115	130	4	2	681	3096	689	756	112	21	19.1	25
Magumu - Thika	7	43704	0	0	155	170	2	1	705	2438	329	244	202	19.4	20.5	25.3
Magumu - Thika	7	43704	0	0	150	165	2	2	702	2514	350	254	201	19.4	20.5	25.3
Magumu - Thika	7	43798	0	0	120	135	2	1	683	3131	523	511	152	20.5	18.8	25
Magumu - Thika	7	43798	0	0	120	135	2	2	690	3311	542	518	153	20.5	18.9	25
Magumu - Thika	7	43800	0	0	135	155	2	1	698	2738	524	636	97	19.7	20.4	25.3
Magumu - Thika	7	43800	0	0	130	150	4	2	701	2845	560	688	96	19.7	20.5	25.3
Magumu - Thika	7	43897	0	0	130	145	2	1	687	2220	458	510	163	20.4	18.4	25
Magumu - Thika	7	43897	0	0	130	145	2	2	689	2298	468	508	165	20.4	18.4	25
Magumu - Thika	7	43903	0	0	135	150	2	1	711	2295	430	600	108	19.4	20	25.3
Magumu - Thika	7	43903	0	0	130	150	2	2	706	2353	477	677	105	19.4	20	25.3
Magumu - Thika	7	43999	1	1	100	115	3	1	709	2422	826	419	308	20.2	18.2	25
Magumu - Thika	7	43999	1	1	115	130	3	2	703	2222	665	369	296	20.2	18.2	25
Magumu - Thika	7	44006	0	0	135	145	2	1	704	2169	445	647	115	19.5	20.2	25.3
Magumu - Thika	7	44006	0	0	130	145	2	2	702	2315	449	643	116	19.5	20.2	25.3
Magumu - Thika	7	44098	0	0	160	180	2	1	699	1569	388	931	72	20.3	18.4	25
Magumu - Thika	7	44098	0	0	155	180	2	2	694	1584	405	928	73	20.3	18.4	25
Magumu - Thika	7	44101	1	1	95	110	3	1	738	2446	936	451	314	19.8	20.4	25.3
Magumu - Thika	7	44101	1	1	90	110	3	2	732	2521	956	460	309	19.9	20.4	25.3
Magumu - Thika	7	44189	0	0	135	150	2	1	700	2112	422	633	110	20.2	20.4	25.3
Magumu - Thika	7	44189	0	0	135	150	2	2	695	2226	442	661	109	20.2	20.4	25.3
Magumu - Thika	7	44200	1	1	110	120	3	1	686	791	791	442	244	20.4	18.2	25
Magumu - Thika	7	44200	0	0	150	165	2	2	688	4352	304	315	250	20.4	18.2	25
Magumu - Thika	7	44298	1	1	115	130	2	1	675	3370	607	359	305	20.8	18.2	25
Magumu - Thika	7	44298	1	1	115	130	2	2	673	3423	599	351	309	20.8	18.2	25

Magumu - Thika	7	44308	0	0	130	145	2	1	701	1983	459	330	241	20.5	20.8	25.3
Magumu - Thika	7	44308	0	0	130	145	2	2	702	2069	474	340	241	20.5	20.8	25.3
Magumu - Thika	7	44399	0	0	135	145	2	1	681	2886	412	316	243	21.3	18.2	25
Magumu - Thika	7	44399	0	0	135	145	2	2	686	2999	415	313	245	21.2	18.2	25
Magumu - Thika	7	44404	7	6	50	70	3	1	692	1462	1472	886	471	20.1	20.5	25.3
Magumu - Thika	7	44404	3	3	75	95	3	2	694	1183	1192	707	442	20.1	20.6	25.3
Magumu - Thika	7	44502	0	0	145	160	2	1	697	2364	382	307	214	20.1	20.6	25.3
Magumu - Thika	7	44502	0	0	155	170	2	2	692	2633	328	279	213	20.1	20.6	25.3
Magumu - Thika	7	44504	0	0	165	180	2	1	698	2324	249	293	185	21.1	17.8	25
Magumu - Thika	7	44504	0	0	130	145	3	2	695	593	593	319	180	21.1	17.9	25
Magumu - Thika	7	44596	0	0	140	160	2	1	695	2034	386	359	220	21.1	19	25
Magumu - Thika	7	44596	0	0	150	165	2	2	691	2076	376	341	224	21.1	19	25
Magumu - Thika	7	44601	0	0	120	135	3	1	714	617	621	363	147	20.3	20.8	25.3
Magumu - Thika	7	44601	0	0	115	135	3	2	713	667	671	381	146	20.3	20.8	25.3
Magumu - Thika	7	44698	1	1	110	130	4	1	707	729	734	408	150	19.9	20.5	25.3
Magumu - Thika	7	44698	1	1	110	125	4	2	708	812	817	460	144	19.9	20.5	25.3
Magumu - Thika	7	44705	1	1	115	130	2	1	688	2745	618	622	140	20.7	18.6	25
Magumu - Thika	7	44705	1	1	115	125	2	2	682	2710	644	649	137	20.7	18.6	25
Magumu - Thika	7	44801	0	0	150	165	2	1	701	2043	381	519	101	20.1	20.6	25.3
Magumu - Thika	7	44801	0	0	145	160	2	2	703	2106	384	512	102	20	20.6	25.3
Magumu - Thika	7	44803	1	1	100	115	4	1	693	882	882	509	182	20.2	18.3	25
Magumu - Thika	7	44803	1	1	100	110	4	2	684	914	914	518	178	20.2	18.3	25
Magumu - Thika	7	44899	1	1	110	125	2	1	676	2765	663	756	133	20.2	18.3	25
Magumu - Thika	7	44899	1	1	110	125	2	2	677	2894	666	765	132	20.2	18.4	25
Magumu - Thika	7	44902	0	0	150	160	2	1	692	2704	369	314	233	19.2	20.2	25.3
Magumu - Thika	7	44902	0	0	145	160	2	2	699	2798	375	314	235	19.2	20.1	25.3
Magumu - Thika	7	45000	0	0	130	140	2	1	708	1540	504	386	238	20.8	18.6	25
Magumu - Thika	7	45000	0	0	130	140	2	2	705	1559	514	395	233	20.9	18.6	25
Magumu - Thika	7	45002	0	0	125	140	2	1	704	2410	544	813	107	20	20.2	25.3
Magumu - Thika	7	45002	0	0	120	140	2	2	693	2438	552	814	106	19.9	20.2	25.3
Magumu - Thika	7	45095	0	0	230	250	2	1	718	11543	47	1108	191	20.7	18.9	25
Magumu - Thika	7	45095	0	0	225	245	2	2	714	11886	48	1045	190	20.7	18.9	25
Magumu - Thika	7	45117	0	0	155	170	2	1	734	1117	313	338	306	20.5	20.5	25.3
Magumu - Thika	7	45117	0	0	150	165	2	2	733	1148	323	347	305	20.5	20.6	25.3
Magumu - Thika	7	45200	0	0	225	245	2	1	721	11479	49	2226	120	20.9	19	25
Magumu - Thika	7	45200	0	0	225	245	2	2	712	11850	47	2985	116	20.9	19	25
Magumu - Thika	7	45205	0	0	225	245	2	1	720	11992	48	803	157	20.5	20.5	25.3
Magumu - Thika	7	45205	0	0	220	240	2	2	718	12276	50	866	155	20.4	20.5	25.3
Magumu - Thika	7	45301	0	0	205	225	2	1	698	14234	58	1252	128	19.8	20.3	25.3
Magumu - Thika	7	45301	0	0	200	220	2	2	700	14556	60	1084	130	19.9	20.3	25.3
Magumu - Thika	7	45400	0	0	220	240	2	1	728	12479	50	788	166	20.2	20.4	25.3
Magumu - Thika	7	45400	0	0	215	235	2	2	724	12700	52	793	165	20.2	20.4	25.3
Magumu - Thika	7	45402	0	0	225	240	2	1	744	11299	51	772	190	20.9	18.9	25
Magumu - Thika	7	45402	0	0	220	240	2	2	739	11646	52	844	183	20.9	18.9	25
Magumu - Thika	7	45504	0	0	170	185	2	1	746	791	229	305	268	20.9	18.9	25
Magumu - Thika	7	45504	0	0	170	185	2	2	741	816	226	296	273	20.9	19	25
Magumu - Thika	7	45506	0	0	210	225	2	1	741	827	105	227	175	21.6	19.9	25.3
Magumu - Thika	7	45506	0	0	245	265	2	2	748	10026	40	617	168	21.6	20	25.3
Magumu - Thika	7	45600	0	0	195	210	2	1	700	1222	132	266	226	20.6	18.8	25
Magumu - Thika	7	45600	0	0	210	230	2	2	698	13275	56	705	225	20.7	18.8	25
Magumu - Thika	7	45602	0	0	215	230	2	1	739	13007	55	540	170	21.5	20.4	25.3
Magumu - Thika	7	45602	0	0	210	230	2	2	744	13748	55	612	170	21.5	20.5	25.3
Magumu - Thika	7	45705	0	0	200	220	2	1	709	13603	63	689	216	21.6	20.5	25.3
Magumu - Thika	7	45705	0	0	195	215	2	2	713	13957	66	775	210	21.6	20.6	25.3
Magumu - Thika	7	45718	0	0	220	240	2	1	723	12268	51	1075	139	21.7	19.7	25
Magumu - Thika	7	45718	0	0	215	235	2	2	728	12833	52	1032	142	21.7	19.7	25
Magumu - Thika	7	45801	0	0	175	190	2	1	714	1252	190	288	273	22.1	20.7	25.3
Magumu - Thika	7	45801	0	0	175	190	2	2	706	1320	187	277	275	21.8	20.8	25.3
Magumu - Thika	7	45805	0	0	130	145	2	1	701	461	461	478	204	21.5	19.6	25
Magumu - Thika	7	45805	0	0	130	140	2	2	693	481	481	487	200	21.5	19.6	25
Magumu - Thika	7	45897	0	0	230	250	2	1	708	11500	46	2219	153	20.8	19.4	25
Magumu - Thika	7	45897	0	0	230	250	2	2	717	11642	47	2505	154	20.9	19.4	25
Magumu - Thika	7	45900	0	0	230	250	2	1	732	11431	47	884	199	21.5	20.7	25.3
Magumu - Thika	7	45900	0	0	230	250	2	2	729	11555	47	964	196	21.5	20.7	25.3
Magumu - Thika	7	45990	0	0	195	215	2	1	742	1116	126	274	221	22.3	20.7	25
Magumu - Thika	7	45990	0	0	215	235	2	2	738	12314	53	696	220	22.3	20.7	25
Magumu - Thika	7	45999	0	0	250	270	2	1	733	9377	39	1933	150	21.5	20.9	25.3
Magumu - Thika	7	45999	0	0	250	270	2	2	731	9471	40	1728	150	21.5	20.9	25.3
Magumu - Thika	7	46105	0	0	125	140	2	1	725	523	523	528	186	22.1	20.3	25
Magumu - Thika	7	46105	0	0	125	140	2	2	709	522	522	538	184	22.1	20.2	25
Magumu - Thika	7	46121	0	0	200	220	2	1	716	14505	62	883	221	20.6	20.4	25.3
Magumu - Thika	7	46121	0	0	195	215	2	2	713	14751	64	1128	213	20.6	20.4	25.3
Magumu - Thika	7	46200	0	0	230	250	2	1	704	11582	47	2184	109	21.9	19.8	25
Magumu - Thika	7	46200	0	0	225	245	2	2	712	12028	48	2113	109	21.9	19.8	25
Magumu - Thika	7	46205	0	0	225	240	2	1	723	12035	50	704	149	20.9	20.5	25.3
Magumu - Thika	7	46205	0	0	220	240	2	2	723	12696	51	581	155	21	20.6	25.3
Magumu - Thika	7	46297	0	0	220	240	2	1	705	12544	52	1874	135	22.2	19.6	25
Magumu - Thika	7	46297	0	0	220	235	2	2	703	12895	52	2426	133	22.2	19.6	25

Magumu - Thika	7	46308	0	0	130	145	2	1	697	459	463	478	174	20.7	20.8	25.3
Magumu - Thika	7	46308	0	0	130	140	2	2	700	476	479	504	171	20.8	20.9	25.3
Magumu - Thika	7	46397	0	0	225	245	2	1	726	11585	48	1063	176	22.2	19.4	25
Magumu - Thika	7	46397	0	0	225	245	2	2	727	12069	49	1253	175	22.2	19.4	25
Magumu - Thika	7	46403	0	0	220	240	2	1	709	12488	50	1657	133	19.9	20.8	25.3
Magumu - Thika	7	46403	0	0	220	240	2	2	712	12487	51	1998	130	19.9	20.8	25.3
Magumu - Thika	7	46491	0	0	235	255	2	1	709	10823	44	8233	160	22.2	19	25
Magumu - Thika	7	46491	0	0	225	245	2	2	708	11904	48	3915	164	22.2	19	25
Magumu - Thika	7	46508	0	0	210	230	2	1	736	11824	58	1168	208	19.5	20.2	25.3
Magumu - Thika	7	46508	0	0	210	225	2	2	734	12077	60	983	209	19.5	20.3	25.3
Magumu - Thika	7	46514	0	0	125	135	2	1	686	540	540	519	255	22.3	18.9	25
Magumu - Thika	7	46514	0	0	120	135	2	2	687	551	551	544	250	22.3	18.9	25
Magumu - Thika	7	46601	0	0	125	140	2	1	700	2135	441	723	156	20.3	20.4	25.3
Magumu - Thika	7	46601	1	1	105	120	2	2	698	731	736	750	157	20.4	20.5	25.3
Magumu - Thika	7	46602	0	0	130	145	2	1	683	472	472	463	218	22.2	19	25
Magumu - Thika	7	46602	0	0	130	140	2	2	681	484	484	478	208	22.2	19	25
Magumu - Thika	7	46696	0	0	120	135	2	1	683	567	567	583	118	22.4	19.3	25
Magumu - Thika	7	46696	0	0	120	135	2	2	681	566	566	580	119	22.4	19.3	25
Magumu - Thika	7	46706	0	0	155	170	2	1	692	1058	299	645	89	20.8	20.8	25.3
Magumu - Thika	7	46706	0	0	155	170	2	2	696	1173	306	651	90	20.8	20.9	25.3
Magumu - Thika	7	46800	0	0	195	215	2	1	694	14471	66	1719	163	21.8	19.4	25
Magumu - Thika	7	46800	0	0	205	220	2	2	695	14602	59	3835	162	21.8	19.4	25
Magumu - Thika	7	46801	0	0	225	245	2	1	709	11958	48	2057	78	20.5	20.5	25.3
Magumu - Thika	7	46801	0	0	220	240	2	2	713	12333	50	1920	80	20.5	20.6	25.3
Magumu - Thika	7	46902	0	0	180	195	2	1	719	1260	158	285	261	20.9	21	25.3
Magumu - Thika	7	46902	0	0	180	195	2	2	718	1314	165	294	261	20.9	21.1	25.3
Magumu - Thika	7	46903	0	0	200	220	2	1	704	14822	62	630	225	21.8	19.6	25
Magumu - Thika	7	46903	0	0	200	220	2	2	701	14888	62	578	233	21.8	19.6	25
Magumu - Thika	7	46998	0	0	135	145	2	1	686	1432	394	415	380	23	20	25
Magumu - Thika	7	46998	0	0	135	150	2	2	681	1469	384	388	395	23	20	25
Magumu - Thika	7	47001	0	0	155	170	2	1	701	1293	307	393	369	20.1	20.7	25.3
Magumu - Thika	7	47001	0	0	155	170	2	2	703	1334	307	393	370	20.1	20.7	25.3
Magumu - Thika	7	47102	0	0	180	195	2	1	744	1132	166	293	247	20.8	21	25.3
Magumu - Thika	7	47102	0	0	180	195	2	2	741	1185	170	273	253	20.8	21	25.3
Magumu - Thika	7	47104	0	0	170	185	2	1	722	1006	214	301	271	22.8	20.3	25
Magumu - Thika	7	47104	0	0	170	180	2	2	711	1026	226	317	265	22.8	20.3	25
Magumu - Thika	7	47200	1	1	115	125	2	1	684	646	650	648	267	21	21.1	25.3
Magumu - Thika	7	47200	1	1	115	125	2	2	690	652	656	646	261	21	21.1	25.3
Magumu - Thika	7	47304	0	0	120	135	2	1	691	555	555	564	147	22.5	20.1	25
Magumu - Thika	7	47304	0	0	120	135	2	2	682	577	577	578	143	22.5	20.2	25
Magumu - Thika	7	47318	0	0	210	230	2	1	710	13546	54	1145	156	20.3	21	25.3
Magumu - Thika	7	47318	0	0	205	225	2	2	710	14119	58	1008	158	20.2	21.1	25.3
Magumu - Thika	7	47401	0	0	210	230	2	1	699	13742	56	1477	117	20	21	25.3
Magumu - Thika	7	47401	0	0	205	225	2	2	699	13974	57	1468	119	20.1	21.1	25.3
Magumu - Thika	7	47483	0	0	240	260	2	1	709	10766	43	7004	117	22.3	20.1	25
Magumu - Thika	7	47483	0	0	235	255	2	2	706	11274	45	5747	119	22.3	20.1	25
Magumu - Thika	7	47501	0	0	225	245	2	1	717	11860	49	1034	122	20.6	21.2	25.3
Magumu - Thika	7	47501	0	0	220	240	2	2	715	12387	50	1062	122	20.6	21.3	25.3
Magumu - Thika	7	47602	1	1	115	125	2	1	685	648	648	657	153	22.1	19.9	25
Magumu - Thika	7	47602	1	1	115	125	2	2	689	656	656	658	157	22.1	19.9	25
Magumu - Thika	7	47603	0	0	205	225	2	1	703	14152	57	1839	151	20.6	21.3	25.3
Magumu - Thika	7	47603	0	0	205	225	2	2	703	14025	57	2080	148	20.6	21.4	25.3
Magumu - Thika	7	47705	0	0	215	235	2	1	730	12642	52	1651	145	21	21.2	25.3
Magumu - Thika	7	47705	0	0	215	235	2	2	727	12641	55	1370	147	21	21.3	25.3
Magumu - Thika	7	47801	0	0	235	255	2	1	728	10964	44	2636	128	22.1	20.4	25.3
Magumu - Thika	7	47801	0	0	230	250	2	2	728	11343	46	2190	130	22.1	20.4	25.3
Magumu - Thika	7	47804	0	0	135	145	2	1	696	437	437	414	205	21.9	20.7	25
Magumu - Thika	7	47804	0	0	130	145	2	2	698	446	446	420	208	21.9	20.7	25
Magumu - Thika	7	47910	0	0	165	180	2	1	705	1389	241	333	314	21.3	20.1	25
Magumu - Thika	7	47910	0	0	160	175	2	2	705	1370	253	350	314	21.3	20.1	25
Magumu - Thika	7	47911	0	0	210	230	2	1	715	13383	54	639	227	22.2	20.6	25.3
Magumu - Thika	7	47911	0	0	210	230	2	2	715	13782	56	614	226	22.2	20.7	25.3
Magumu - Thika	7	47999	0	0	120	130	2	1	693	580	580	616	193	21.2	20	25
Magumu - Thika	7	47999	1	0	120	130	2	2	687	589	589	611	194	21.2	20	25
Magumu - Thika	7	48005	0	0	220	240	2	1	730	11698	52	904	194	22.2	21	25.3
Magumu - Thika	7	48005	0	0	215	235	2	2	728	12018	55	757	198	22.1	21.1	25.3
Magumu - Thika	7	48097	0	0	210	225	2	1	704	14079	56	11111	203	21.1	19.6	25
Magumu - Thika	7	48097	0	0	205	225	2	2	711	14509	58	10002	201	21.1	19.6	25
Magumu - Thika	7	48102	0	0	230	250	2	1	729	11084	46	746	176	21.3	21	25.3
Magumu - Thika	7	48102	0	0	225	245	2	2	725	11942	48	842	176	21.3	21.1	25.3
Magumu - Thika	7	48200	0	0	210	225	2	1	717	13962	57	773	178	21.4	21.1	25.3
Magumu - Thika	7	48200	0	0	205	225	2	2	719	13828	58	1019	169	21.4	21.1	25.3
Magumu - Thika	7	48202	0	0	225	245	2	1	713	12122	49	1810	190	21.1	19.3	25
Magumu - Thika	7	48202	0	0	220	240	2	2	704	12526	50	1606	190	21.1	19.4	25
Magumu - Thika	7	48298	0	0	130	145	2	1	703	445	445	422	212	22.5	20.6	25
Magumu - Thika	7	48298	0	0	130	145	2	2	694	451	451	413	211	22.5	20.6	25
Magumu - Thika	7	48300	0	0	235	255	2	1	728	10667	44	1226	145	21.6	21	25.3
Magumu - Thika	7	48300	0	0	235	255	2	2	725	11005	45	1453	143	21.6	21.1	25.3



Magumu - Thika	7	48395	0	0	215	235	2	1	718	12293	56	1575	196	22.4	20.6	25
Magumu - Thika	7	48395	0	0	210	230	2	2	719	12527	58	1350	199	22.4	20.6	25
Magumu - Thika	7	48401	0	0	200	220	2	1	718	14624	61	617	200	21.8	21.5	25.3
Magumu - Thika	7	48401	0	0	200	220	2	2	718	14871	62	717	196	21.9	21.6	25.3
Magumu - Thika	7	48500	0	0	245	265	2	1	721	9879	40	1530	103	21.7	21.3	25.3
Magumu - Thika	7	48500	0	0	245	265	2	2	716	9511	41	1745	100	21.8	21.3	25.3
Magumu - Thika	7	48501	0	0	225	245	2	1	724	11380	49	1016	180	22.6	20.2	25
Magumu - Thika	7	48501	0	0	220	240	2	2	723	11749	51	990	181	22.6	20.2	25
Magumu - Thika	7	48591	0	0	130	145	2	1	689	457	457	491	188	23	20.3	25
Magumu - Thika	7	48591	0	0	130	145	2	2	686	453	453	429	195	23	20.3	25
Magumu - Thika	7	48599	0	0	205	220	2	1	715	14726	59	1595	145	22.2	21.1	25.3
Magumu - Thika	7	48599	0	0	200	215	2	2	712	14964	62	1133	151	22.2	21.2	25.3
Magumu - Thika	7	48702	0	0	235	255	2	1	736	10755	44	434	147	21.7	21.2	25.3
Magumu - Thika	7	48702	0	0	235	255	2	2	736	10863	46	435	145	21.8	21.3	25.3
Magumu - Thika	7	48708	0	0	205	225	2	1	722	13934	57	651	186	22.9	20.3	25
Magumu - Thika	7	48708	0	0	205	225	2	2	720	14145	57	647	190	22.9	20.3	25
Magumu - Thika	7	48791	0	0	130	145	2	1	682	471	471	438	235	22.3	20.1	25
Magumu - Thika	7	48791	0	0	130	145	2	2	684	445	445	434	240	22.3	20.1	25
Magumu - Thika	7	48801	0	0	230	250	2	1	730	11490	47	867	160	21.7	21.2	25.3
Magumu - Thika	7	48801	0	0	225	245	2	2	727	12229	49	819	162	21.7	21.2	25.3
Magumu - Thika	7	48896	0	0	130	140	2	1	673	474	474	497	160	21.8	20	25
Magumu - Thika	7	48896	0	0	130	140	2	2	665	481	481	492	159	21.8	20	25
Magumu - Thika	7	48906	0	0	200	220	2	1	715	14720	62	509	211	22.1	21.3	25.3
Magumu - Thika	7	48906	0	0	130	145	2	2	715	451	454	426	210	22.2	21.3	25.3
Magumu - Thika	7	49002	0	0	135	145	2	1	712	430	433	455	175	22.3	21.4	25.3
Magumu - Thika	7	49002	0	0	135	145	2	2	704	439	443	467	171	22.3	21.4	25.3
Magumu - Thika	7	49006	0	0	190	205	2	1	662	5755	108	308	179	23.1	20.7	25
Magumu - Thika	7	49006	0	0	125	140	2	2	664	508	508	522	174	23.1	20.7	25
Magumu - Thika	7	49104	0	0	210	225	2	1	676	13870	57	1073	158	23	20.4	25
Magumu - Thika	7	49104	0	0	205	220	2	2	679	14442	59	888	162	23	20.4	25
Magumu - Thika	7	49107	0	0	220	240	2	1	745	12790	51	452	139	22.2	21.6	25.3
Magumu - Thika	7	49107	0	0	220	235	2	2	735	12511	52	400	140	22.6	21.7	25.3
Magumu - Thika	7	49197	0	0	130	140	2	1	675	479	479	470	209	23.3	20.9	25
Magumu - Thika	7	49197	0	0	130	140	2	2	661	493	493	460	206	23.3	20.9	25
Magumu - Thika	7	49201	0	0	195	215	2	1	713	8077	86	255	205	22.3	21.8	25.3
Magumu - Thika	7	49201	0	0	135	150	2	2	715	397	400	397	199	22.3	21.8	25.3
Magumu - Thika	7	49301	0	0	130	140	2	1	714	473	477	496	157	21.5	21.7	25.3
Magumu - Thika	7	49301	0	0	125	140	2	2	716	490	494	516	159	21.5	21.7	25.3
Magumu - Thika	7	49302	0	0	205	225	2	1	687	13707	58	726	188	23.1	20.8	25
Magumu - Thika	7	49302	0	0	200	220	2	2	691	14004	63	706	185	23.1	20.8	25
Magumu - Thika	7	49400	0	0	140	155	2	1	675	359	359	359	226	23.2	21.1	25
Magumu - Thika	7	49400	0	0	135	150	2	2	676	410	410	384	224	23.2	21.1	25
Magumu - Thika	7	49402	0	0	125	135	2	1	715	521	525	536	156	21.7	21.9	25.3
Magumu - Thika	7	49402	0	0	125	135	2	2	702	526	530	530	153	21.8	22	25.3
Magumu - Thika	7	49497	0	0	125	140	2	1	667	507	507	485	203	23.4	20.9	25
Magumu - Thika	7	49497	0	0	175	195	2	2	660	6464	126	349	199	23.4	21	25
Magumu - Thika	7	49502	0	0	130	140	2	1	702	477	480	514	173	22.1	22	25.3
Magumu - Thika	7	49502	0	0	125	140	2	2	694	492	495	521	175	22.1	22	25.3
Magumu - Thika	7	49601	0	0	130	145	2	1	709	467	470	490	152	22.3	22	25.3
Magumu - Thika	7	49601	0	0	130	140	2	2	706	487	491	502	151	22.4	22.1	25.3
Magumu - Thika	7	49609	0	0	200	220	2	1	688	14882	61	763	192	23.1	20.7	25
Magumu - Thika	7	49609	0	0	140	155	2	2	679	364	364	361	193	23.1	20.7	25
Magumu - Thika	7	49700	0	0	200	220	2	1	678	14714	60	859	174	23.6	21	25
Magumu - Thika	7	49700	0	0	130	145	2	2	675	452	452	480	173	23.6	21	25
Magumu - Thika	7	49701	0	0	140	150	2	1	713	390	393	361	214	22.7	22.2	25.3
Magumu - Thika	7	49701	0	0	135	150	2	2	713	405	408	397	216	22.7	22.2	25.3
Magumu - Thika	7	49794	0	0	205	220	2	1	684	14563	59	807	187	23.2	20.8	25
Magumu - Thika	7	49794	0	0	200	220	2	2	674	14845	60	838	183	23.2	20.8	25
Magumu - Thika	7	49801	0	0	130	140	2	1	702	476	479	495	152	22.1	21.9	25.3
Magumu - Thika	7	49801	0	0	130	140	2	2	702	486	489	500	151	22.1	22	25.3
Magumu - Thika	7	49901	0	0	140	155	2	1	714	380	383	381	228	21.7	21.3	25.3
Magumu - Thika	7	49901	0	0	130	145	2	2	708	442	445	424	246	21.6	21.4	25.3
Magumu - Thika	7	49906	0	0	130	145	2	1	664	448	448	431	182	23.4	20.8	25
Magumu - Thika	7	49906	0	0	130	145	2	2	662	463	463	443	181	23.4	20.8	25
Magumu - Thika	7	50000	0	0	125	140	2	1	672	533	501	528	150	23.4	20.8	28.8
Magumu - Thika	7	50000	0	0	125	135	2	2	673	569	535	553	146	23.4	20.8	28.8
Magumu - Thika	7	50002	0	0	125	140	2	1	706	515	518	530	109	22	21.5	25.3
Magumu - Thika	7	50002	0	0	125	140	2	2	696	518	522	526	108	22	21.5	25.3
Magumu - Thika	7	50093	0	0	120	135	2	1	666	612	575	594	185	24	21.1	28.8
Magumu - Thika	7	50093	1	0	120	130	2	2	667	624	587	601	185	24	21.1	28.8
Magumu - Thika	7	50106	0	0	135	145	2	1	710	428	431	451	170	21.7	21.4	25.3
Magumu - Thika	7	50106	0	0	135	145	2	2	709	435	438	457	172	21.8	21.5	25.3
Magumu - Thika	7	50200	0	0	135	145	2	1	717	439	442	403	216	21.6	21.7	25.3
Magumu - Thika	7	50200	0	0	135	145	2	2	710	439	442	407	209	21.7	21.8	25.3
Magumu - Thika	7	50201	0	0	125	135	2	1	667	574	540	566	145	24	21.1	28.8
Magumu - Thika	7	50201	0	0	120	135	2	2	666	592	556	563	147	24	21.1	28.8
Magumu - Thika	7	50299	0	0	200	220	2	1	713	14860	60	1924	130	21.5	21.7	25.3
Magumu - Thika	7	50299	0	0	130	140	2	2	719	487	490	496	134	21.3	21.8	25.3

Magumu - Thika	7	50300	1	1	110	125	2	1	650	705	662	665	160	23.9	21	28.8
Magumu - Thika	7	50300	1	1	110	125	2	2	655	705	663	665	165	24	21	28.8
Magumu - Thika	7	50392	0	0	205	225	2	1	677	14771	57	2406	139	23.9	20.9	28.8
Magumu - Thika	7	50392	0	0	205	225	2	2	672	14957	56	3267	133	23.9	20.9	28.8
Magumu - Thika	7	50409	0	0	150	165	2	1	698	1250	336	703	138	21.2	21.8	25.3
Magumu - Thika	7	50409	0	0	150	165	2	2	710	1292	339	657	143	21.2	21.9	25.3
Magumu - Thika	7	50501	0	0	125	135	2	1	669	569	534	539	144	23.4	20.3	28.8
Magumu - Thika	7	50501	0	0	120	135	2	2	670	591	555	560	141	23.4	20.4	28.8
Magumu - Thika	7	50503	0	0	140	155	2	1	713	365	367	365	214	21.9	21.7	25.3
Magumu - Thika	7	50503	0	0	135	150	2	2	716	397	400	370	215	21.9	21.8	25.3
Magumu - Thika	7	50606	0	0	130	140	2	1	674	517	486	486	141	23.3	19.6	28.8
Magumu - Thika	7	50606	0	0	130	140	2	2	667	503	473	612	137	23.3	19.6	28.8
Magumu - Thika	7	50608	0	0	200	220	2	1	710	14262	61	1087	196	22.3	21.6	25.3
Magumu - Thika	7	50608	0	0	200	215	2	2	712	14861	62	1144	196	22.3	21.7	25.3
Magumu - Thika	7	50705	0	0	125	135	2	1	674	567	533	551	150	23.3	21.4	28.8
Magumu - Thika	7	50705	0	0	120	135	2	2	673	593	558	571	149	23.4	21.4	28.8
Magumu - Thika	7	50715	0	0	200	220	2	1	709	14596	61	823	180	21.4	21.5	25.3
Magumu - Thika	7	50715	0	0	135	145	2	2	711	434	437	456	181	21.4	21.5	25.3
Magumu - Thika	7	50799	1	1	115	130	2	1	711	622	626	659	160	21.5	21.5	25.3
Magumu - Thika	7	50799	1	1	115	130	2	2	705	622	626	658	166	21.5	21.5	25.3
Magumu - Thika	7	50806	0	0	135	150	2	1	682	445	418	447	198	22.5	21.4	28.8
Magumu - Thika	7	50806	0	0	130	145	2	2	686	473	445	456	195	22.6	21.4	28.8
Magumu - Thika	7	50900	1	0	115	130	2	1	664	642	604	601	230	23.5	21.8	28.8
Magumu - Thika	7	50900	1	1	105	120	2	2	666	764	718	723	231	23.5	21.8	28.8
Magumu - Thika	7	50908	0	0	135	150	2	1	718	403	406	394	214	22	21.7	25.3
Magumu - Thika	7	50908	0	0	135	150	2	2	713	417	420	387	215	22.1	21.8	25.3
Magumu - Thika	7	50997	0	0	135	150	2	1	673	443	416	414	245	23.8	21.4	28.8
Magumu - Thika	7	50997	0	0	130	140	2	2	667	508	478	440	243	23.8	21.4	28.8
Magumu - Thika	7	51000	0	0	125	140	2	1	708	496	499	510	149	22.7	22.2	25.3
Magumu - Thika	7	51000	0	0	125	140	2	2	725	510	513	525	153	22.8	22.3	25.3
Magumu - Thika	7	51085	0	0	130	140	2	1	675	506	475	479	139	23.1	20.9	28.8
Magumu - Thika	7	51085	0	0	130	140	2	2	671	516	485	497	141	23.2	20.9	28.8
Magumu - Thika	7	51100	0	0	130	140	2	1	713	482	486	459	227	23.1	22.4	25.3
Magumu - Thika	7	51100	0	0	130	145	2	2	706	460	464	461	219	23	22.5	25.3
Magumu - Thika	7	51202	0	0	130	145	2	1	659	497	467	382	370	22.1	20.3	28.8
Magumu - Thika	7	51202	0	0	150	165	2	2	652	3108	291	289	383	22.2	20.3	28.8
Magumu - Thika	7	51206	0	0	210	230	2	1	717	13634	56	939	180	22.5	22.4	25.3
Magumu - Thika	7	51206	0	0	205	225	2	2	716	13971	57	1069	178	22.5	22.5	25.3
Magumu - Thika	7	51290	0	0	205	225	2	1	682	7549	77	203	243	23.2	20.9	28.8
Magumu - Thika	7	51290	0	0	205	220	2	2	682	7741	80	205	243	23.2	20.9	28.8
Magumu - Thika	7	51303	0	0	150	165	2	1	711	1348	338	331	348	21.7	22.1	25.3
Magumu - Thika	7	51303	0	0	145	160	2	2	713	1378	351	319	340	21.7	22.1	25.3
Magumu - Thika	7	51404	0	0	130	145	2	1	720	1387	420	350	405	22.2	21.9	25.3
Magumu - Thika	7	51404	0	0	130	140	2	2	715	1428	439	376	386	22.3	22	25.3
Magumu - Thika	7	51498	0	0	210	230	2	1	673	14235	54	1531	120	22.8	20.5	28.8
Magumu - Thika	7	51498	0	0	210	225	2	2	673	14453	56	1381	122	22.8	20.5	28.8
Magumu - Thika	7	51500	0	0	120	135	2	1	693	542	545	558	136	23	22.1	25.3
Magumu - Thika	7	51500	0	0	120	135	2	2	698	562	566	573	135	23	22.2	25.3
Magumu - Thika	7	51602	0	0	215	235	2	1	714	13140	53	1627	125	22	22.1	25.3
Magumu - Thika	7	51602	0	0	210	230	2	2	716	13426	55	1331	129	22	22.1	25.3
Magumu - Thika	7	51606	0	0	135	150	2	1	696	441	414	393	219	23.2	21	28.8
Magumu - Thika	7	51606	0	0	140	150	2	2	690	423	397	372	214	23.2	21.1	28.8
Magumu - Thika	7	51702	0	0	220	240	2	1	706	12664	52	1377	123	21.7	21.5	25.3
Magumu - Thika	7	51702	0	0	215	235	2	2	712	12781	52	1846	121	21.8	21.6	25.3
Magumu - Thika	7	51704	0	0	135	145	2	1	672	458	431	422	205	23.6	21.2	28.8
Magumu - Thika	7	51704	0	0	135	150	2	2	669	432	406	396	209	23.6	21.2	28.8
Magumu - Thika	7	51794	0	0	130	145	2	1	675	478	449	469	148	23.6	21.1	28.8
Magumu - Thika	7	51794	0	0	130	145	2	2	675	485	456	479	149	23.6	21.1	28.8
Magumu - Thika	7	51803	0	0	125	140	2	1	709	493	496	518	174	22.4	21.5	25.3
Magumu - Thika	7	51803	0	0	125	140	2	2	701	500	504	521	173	22.4	21.5	25.3
Magumu - Thika	7	51890	0	0	125	140	2	1	671	529	497	513	158	24	20.8	28.8
Magumu - Thika	7	51890	0	0	130	145	2	2	664	502	472	503	165	24	20.9	28.8
Magumu - Thika	7	51898	0	0	210	230	2	1	714	13816	55	1461	132	22.6	21.5	25.3
Magumu - Thika	7	51898	0	0	210	230	2	2	715	13871	56	1862	128	22.6	21.6	25.3
Magumu - Thika	7	51999	0	0	130	145	2	1	667	488	459	466	132	24.3	21.1	28.8
Magumu - Thika	7	51999	0	0	130	145	2	2	672	502	472	488	131	24.3	21	28.8
Magumu - Thika	7	52008	0	0	130	140	2	1	714	487	491	498	135	22.7	21.8	25.3
Magumu - Thika	7	52008	0	0	130	140	2	2	709	485	489	508	137	22.7	21.9	25.3
Magumu - Thika	7	52098	0	0	130	140	2	1	666	513	482	485	131	23.8	21.2	28.8
Magumu - Thika	7	52098	0	0	125	140	2	2	669	526	494	498	130	23.8	21.2	28.8
Magumu - Thika	7	52102	1	1	110	125	2	1	687	662	666	683	158	21.8	21.8	25.3
Magumu - Thika	7	52102	1	1	110	125	2	2	684	670	675	692	159	21.7	21.9	25.3
Magumu - Thika	7	52199	0	0	215	235	2	1	680	13575	53	1072	114	24.1	21	28.8
Magumu - Thika	7	52199	0	0	210	230	2	2	679	14043	54	994	115	24.1	21	28.8
Magumu - Thika	7	52204	0	0	205	225	2	1	710	14446	58	1352	137	21.3	21.3	25.3
Magumu - Thika	7	52204	0	0	135	145	2	2	717	435	438	459	141	21.3	21.3	25.3
Magumu - Thika	7	52296	0	0	220	240	2	1	695	12724	49	2339	124	23.7	21.1	28.8
Magumu - Thika	7	52296	0	0	220	240	2	2	691	12909	49	2282	123	23.7	21.1	28.8

Magumu - Thika	7	52299	1	1	110	125	2	1	696	680	685	698	147	21.4	21.5	25.3
Magumu - Thika	7	52299	0	0	130	140	2	2	694	1975	421	680	145	21.5	21.5	25.3
Magumu - Thika	7	52403	0	0	215	230	2	1	721	13449	54	4143	126	22.3	21.7	25.3
Magumu - Thika	7	52403	0	0	215	235	2	2	714	13237	53	4772	121	22.3	21.8	25.3
Magumu - Thika	7	52500	0	0	125	140	2	1	666	542	509	526	145	23.7	20.6	28.8
Magumu - Thika	7	52500	0	0	125	135	2	2	659	559	526	542	142	23.8	20.6	28.8
Magumu - Thika	7	52503	0	0	185	205	2	1	703	12864	80	448	269	22.2	21.8	25.3
Magumu - Thika	7	52503	0	0	135	150	2	2	706	407	410	408	262	22.3	21.9	25.3
Magumu - Thika	7	52605	0	0	200	220	2	1	699	14785	62	773	164	22.1	21.7	25.3
Magumu - Thika	7	52605	0	0	130	145	2	2	706	442	445	480	164	22.1	21.8	25.3
Magumu - Thika	7	52619	0	0	135	145	2	1	658	468	440	421	204	23.1	20.2	28.8
Magumu - Thika	7	52619	0	0	130	140	2	2	658	520	489	484	199	23.1	20.2	28.8
Magumu - Thika	7	52702	0	0	220	240	2	1	713	12543	51	1450	126	21.8	21.6	25.3
Magumu - Thika	7	52702	0	0	215	235	2	2	712	13056	53	1273	128	21.8	21.6	25.3
Magumu - Thika	7	52724	0	0	205	225	2	1	695	14463	56	602	136	23.8	20.9	28.8
Magumu - Thika	7	52724	0	0	135	150	2	2	698	430	405	435	136	23.8	20.9	28.8
Magumu - Thika	7	52796	0	0	220	240	2	1	708	12365	51	1162	109	21.4	21	25.3
Magumu - Thika	7	52796	0	0	220	235	2	2	705	12697	52	1211	110	21.5	21.1	25.3
Magumu - Thika	7	52809	0	0	235	255	2	1	705	11094	43	637	132	23.7	21.1	28.8
Magumu - Thika	7	52809	0	0	235	255	2	2	702	11623	44	674	131	23.7	21.1	28.8
Magumu - Thika	7	52895	0	0	130	145	2	1	684	502	472	474	139	23.8	21.2	28.8
Magumu - Thika	7	52895	0	0	130	140	2	2	682	514	483	495	139	23.8	21.2	28.8
Magumu - Thika	7	52902	0	0	230	250	2	1	718	11457	47	1060	97	21.2	21	25.3
Magumu - Thika	7	52902	0	0	225	245	2	2	719	11750	48	1043	97	21.3	21	25.3
Magumu - Thika	7	53003	0	0	225	245	2	1	725	11802	48	1112	89	21.4	20.9	25.3
Magumu - Thika	7	53003	0	0	225	240	2	2	720	12281	49	835	91	21.4	21	25.3
Magumu - Thika	7	53008	0	0	140	160	2	1	686	1369	359	828	98	23.4	21.1	28.8
Magumu - Thika	7	53008	0	0	135	150	2	2	688	1389	369	874	98	23.5	21.1	28.8
Magumu - Thika	7	53009	0	0	135	150	2	1	682	1347	369	880	98	23.7	21.5	28.8
Magumu - Thika	7	53009	0	0	135	150	2	2	682	1431	372	872	98	23.8	21.5	28.8
Magumu - Thika	7	53104	0	0	235	255	2	1	719	10640	44	1300	90	22.2	21.4	25.3
Magumu - Thika	7	53104	0	0	230	250	2	2	716	10438	47	1220	89	22.3	21.5	25.3
Magumu - Thika	7	53108	1	1	100	115	2	1	669	3209	674	907	128	24	21	28.8
Magumu - Thika	7	53108	1	1	100	110	2	2	665	3195	695	921	128	24	21	28.8
Magumu - Thika	7	53200	1	1	105	115	2	1	707	755	760	1550	108	22.7	22	25.3
Magumu - Thika	7	53200	1	1	110	120	2	2	703	707	712	1511	108	22.7	22.1	25.3
Magumu - Thika	7	53214	0	0	205	220	2	1	689	14745	59	445	184	23.8	21.3	28.8
Magumu - Thika	7	53214	0	0	140	150	2	2	688	420	395	386	182	23.8	21.3	28.8
Magumu - Thika	7	53308	0	0	130	140	2	1	680	522	491	515	113	23.4	21.4	28.8
Magumu - Thika	7	53308	0	0	125	140	2	2	675	546	513	516	113	23.5	21.4	28.8
Magumu - Thika	7	53315	0	0	205	225	2	1	720	14456	58	549	145	23.1	21.9	25.3
Magumu - Thika	7	53315	0	0	200	220	2	2	709	14443	60	569	141	23.1	21.9	25.3
Magumu - Thika	7	53404	0	0	185	200	2	1	674	7000	111	335	149	23.5	21.9	28.8
Magumu - Thika	7	53404	0	0	125	140	2	2	673	538	506	534	149	23.5	21.9	28.8
Magumu - Thika	7	53406	1	1	110	125	2	1	722	656	660	1575	107	22.9	21.8	25.3
Magumu - Thika	7	53406	0	0	125	140	2	2	719	494	498	519	109	22.9	21.9	25.3
Magumu - Thika	7	53498	0	0	135	150	2	1	681	446	419	409	162	23.3	21.6	28.8
Magumu - Thika	7	53498	0	0	135	145	2	2	678	461	433	428	161	23.3	21.6	28.8
Magumu - Thika	7	53510	0	0	215	235	2	1	721	12832	54	1194	95	23.4	22.2	25.3
Magumu - Thika	7	53510	0	0	210	230	2	2	716	13635	55	1056	96	23.4	22.2	25.3
Magumu - Thika	7	53598	0	0	120	135	2	1	692	554	558	543	191	23.1	22.1	25.3
Magumu - Thika	7	53598	0	0	170	190	2	2	693	12456	102	447	192	23.1	22.2	25.3
Magumu - Thika	7	53603	0	0	205	225	2	1	680	14182	59	976	88	23.1	21.1	28.8
Magumu - Thika	7	53603	0	0	200	220	2	2	679	13622	64	961	88	23.1	21.2	28.8
Magumu - Thika	7	53699	0	0	235	255	2	1	698	11172	43	1560	109	23	20.9	28.8
Magumu - Thika	7	53699	0	0	230	250	2	2	696	11800	45	1419	110	23.1	20.9	28.8
Magumu - Thika	7	53707	0	0	265	290	2	1	740	6939	35	1091	70	22.3	22	25.3
Magumu - Thika	7	53707	0	0	265	285	2	2	738	6727	37	1025	69	22.3	22	25.3
Magumu - Thika	7	53802	0	0	210	230	2	1	692	14131	54	1852	89	23.8	21.4	28.8
Magumu - Thika	7	53802	0	0	165	180	2	2	688	1215	247	676	88	23.8	21.4	28.8
Magumu - Thika	7	53803	0	0	255	275	2	1	723	7142	39	937	67	22	21.5	25.3
Magumu - Thika	7	53803	0	0	255	275	2	2	732	6896	40	961	67	22	21.6	25.3
Magumu - Thika	7	53900	0	0	165	185	2	1	704	13074	107	863	95	22.6	21.9	25.3
Magumu - Thika	7	53900	0	0	145	155	2	2	704	2068	361	821	92	22.7	22	25.3
Magumu - Thika	7	53908	0	0	270	290	2	1	683	8335	32	2179	50	23	20.9	28.8
Magumu - Thika	7	53908	0	0	265	290	2	2	686	8598	33	2327	50	23	20.9	28.8
Magumu - Thika	7	54000	0	0	275	300	2	1	713	7297	30	2302	51	23.2	22.2	25.3
Magumu - Thika	7	54000	0	0	275	295	2	2	718	7501	31	2318	52	23.3	22.2	25.3
Magumu - Thika	7	54008	0	0	210	225	2	1	683	14412	55	932	106	23.3	20.4	28.8
Magumu - Thika	7	54008	0	0	205	225	2	2	691	14989	57	1070	106	23.4	20.5	28.8
Magumu - Thika	7	54099	2	1	95	110	3	1	670	912	858	445	200	23.6	20	28.8
Magumu - Thika	7	54099	1	1	95	110	3	2	669	916	860	367	205	23.6	20	28.8
Magumu - Thika	7	54106	0	0	210	230	2	1	718	13571	56	813	91	23.4	22.4	25.3
Magumu - Thika	7	54106	0	0	205	225	2	2	719	14281	58	794	91	23.4	22.5	25.3
Magumu - Thika	7	54203	0	0	135	145	2	1	697	2012	377	707	115	22.9	22.2	25.3
Magumu - Thika	7	54203	0	0	130	145	2	2	700	2121	389	710	115	23	22.2	25.3
Magumu - Thika	7	54295	2	2	85	100	2	1	664	3226	854	649	173	23.4	20.8	28.8
Magumu - Thika	7	54295	2	2	80	95	2	2	661	3272	901	703	169	23.5	20.8	28.8

Magumu - Thika	7	54302	0	0	125	140	2	1	723	1611	450	1181	68	22.9	21.8	25.3
Magumu - Thika	7	54302	0	0	130	140	2	2	720	1637	428	1218	68	23	21.8	25.3
Magumu - Thika	7	54399	0	0	130	145	2	1	710	465	468	449	163	23.2	22.1	25.3
Magumu - Thika	7	54399	0	0	130	140	2	2	706	479	483	466	162	23.2	22.2	25.3
Magumu - Thika	7	54403	1	0	120	130	2	1	662	632	594	587	205	23.4	20.5	28.8
Magumu - Thika	7	54403	1	1	115	125	2	2	656	689	648	635	203	23.4	20.5	28.8
Magumu - Thika	7	54497	0	0	125	135	2	1	680	577	542	573	155	23.6	20.7	28.8
Magumu - Thika	7	54497	0	0	120	135	2	2	681	598	562	594	153	23.6	20.7	28.8
Magumu - Thika	7	54505	0	0	130	145	2	1	718	465	468	445	183	23.7	22.2	25.3
Magumu - Thika	7	54505	0	0	130	140	2	2	717	483	486	453	181	23.7	22.3	25.3
Magumu - Thika	7	54604	1	1	115	130	2	1	704	626	631	641	154	23.3	22.2	25.3
Magumu - Thika	7	54604	1	1	115	125	2	2	711	644	649	666	154	23.3	22.3	25.3
Magumu - Thika	7	54702	0	0	180	195	2	1	700	6771	122	354	158	23.8	22.8	25.3
Magumu - Thika	7	54702	0	0	120	135	2	2	701	553	557	586	153	23.9	22.9	25.3
Magumu - Thika	7	54708	1	1	100	115	2	1	664	830	780	728	185	23.2	19.8	28.8
Magumu - Thika	7	54708	1	1	105	115	2	2	659	820	771	734	182	23.2	19.8	28.8
Magumu - Thika	7	54801	0	0	130	140	2	1	717	480	484	496	145	24	22.7	25.3
Magumu - Thika	7	54801	0	0	130	140	2	2	708	485	489	498	143	24	22.8	25.3
Magumu - Thika	7	54808	0	0	255	280	2	1	700	9351	36	980	74	23.5	19.5	28.8
Magumu - Thika	7	54808	0	0	255	275	2	2	697	9426	37	1012	73	23.5	19.5	28.8
Magumu - Thika	7	54899	0	0	125	140	2	1	704	542	509	540	147	22.4	20.1	28.8
Magumu - Thika	7	54899	0	0	125	135	2	2	695	559	525	528	149	22.4	20.1	28.8
Magumu - Thika	7	54905	0	0	220	240	2	1	731	12516	52	984	99	23.6	22.5	25.3
Magumu - Thika	7	54905	0	0	215	235	2	2	731	13094	53	1058	99	23.6	22.6	25.3
Magumu - Thika	7	55007	0	0	135	145	2	1	704	439	442	441	172	23.6	22.5	25.3
Magumu - Thika	7	55007	0	0	130	140	2	2	711	480	483	471	175	23.6	22.6	25.3
Magumu - Thika	7	55011	0	0	120	130	2	1	791	618	581	591	130	22	20.5	28.8
Magumu - Thika	7	55011	0	0	120	130	2	2	787	620	583	587	131	22	20.5	28.8
Magumu - Thika	7	55096	1	0	115	130	2	1	667	638	600	612	147	22.8	20.7	28.8
Magumu - Thika	7	55096	1	1	115	130	2	2	669	667	627	630	148	22.8	20.6	28.8
Magumu - Thika	7	55099	0	0	115	125	2	1	698	2942	526	712	139	23.1	22.1	25.3
Magumu - Thika	7	55099	0	0	130	140	2	2	699	13366	220	641	141	23.1	22.2	25.3
Magumu - Thika	7	55198	0	0	185	200	2	1	677	6875	109	324	143	22.7	20.5	28.8
Magumu - Thika	7	55198	0	0	125	140	2	2	680	534	502	510	141	22.7	20.6	28.8
Magumu - Thika	7	55203	1	1	110	120	2	1	716	703	708	1750	114	22.3	22.1	25.3
Magumu - Thika	7	55203	1	1	110	125	2	2	719	669	673	1722	114	22.2	22.1	25.3
Magumu - Thika	7	55298	0	0	125	135	2	1	687	576	542	548	140	22	20.4	28.8
Magumu - Thika	7	55298	0	0	120	135	2	2	671	579	544	559	138	22.1	20.4	28.8
Magumu - Thika	7	55302	0	0	160	175	2	1	704	1244	264	715	100	22.5	21.3	25.3
Magumu - Thika	7	55302	0	0	160	175	2	2	701	1290	260	686	101	22.6	21.4	25.3
Magumu - Thika	7	55397	0	0	120	135	2	1	684	590	554	555	118	22.1	20.4	28.8
Magumu - Thika	7	55397	0	0	120	135	2	2	683	592	556	573	121	22.1	20.4	28.8
Magumu - Thika	7	55404	0	0	130	140	2	1	705	473	477	462	151	22.7	21.5	25.3
Magumu - Thika	7	55404	0	0	180	195	2	2	704	7130	119	356	149	22.7	21.6	25.3
Magumu - Thika	7	55502	0	0	125	135	2	1	705	2219	461	751	130	22.3	21.1	25.3
Magumu - Thika	7	55502	0	0	130	140	2	2	695	2322	407	745	129	22.3	21.1	25.3
Magumu - Thika	7	55503	0	0	120	130	2	1	671	617	579	581	152	22.3	20.4	28.8
Magumu - Thika	7	55503	0	0	135	150	2	2	673	1569	378	736	148	22.3	20.4	28.8
Magumu - Thika	7	55596	1	1	115	125	2	1	657	696	654	641	228	22.8	20.1	28.8
Magumu - Thika	7	55596	1	1	105	120	2	2	673	795	747	746	236	22.8	20.2	28.8
Magumu - Thika	7	55602	0	0	210	230	2	1	716	13053	56	2173	127	22.8	20.8	25.3
Magumu - Thika	7	55602	0	0	210	225	2	2	714	13773	57	2119	127	22.8	20.8	25.3
Magumu - Thika	7	55693	0	0	135	145	2	1	683	464	436	460	132	22.7	20.2	28.8
Magumu - Thika	7	55693	0	0	130	145	2	2	682	491	462	478	132	22.7	20.2	28.8
Magumu - Thika	7	55700	0	0	135	145	2	1	726	578	430	440	148	23.8	20.8	33.3
Magumu - Thika	7	55700	0	0	130	145	2	2	724	605	450	452	149	23.7	20.8	33.3
Magumu - Thika	7	55797	0	0	125	140	2	1	673	540	508	518	149	22.7	20.3	28.8
Magumu - Thika	7	55797	0	0	125	140	2	2	681	545	512	540	155	22.8	20.2	28.8
Magumu - Thika	7	55802	1	1	110	120	2	1	708	938	697	1657	112	23	21.5	33.3
Magumu - Thika	7	55802	1	1	110	125	2	2	707	893	663	1651	111	22.9	21.6	33.3
Magumu - Thika	7	55894	0	0	200	220	2	1	692	13847	64	1597	116	22.4	20.4	28.8
Magumu - Thika	7	55894	0	0	125	140	2	2	696	525	494	507	120	22.4	20.4	28.8
Magumu - Thika	7	55900	0	0	135	150	2	1	717	561	417	420	104	22.8	21.4	33.3
Magumu - Thika	7	55900	0	0	135	145	2	2	716	586	435	442	102	22.8	21.5	33.3
Magumu - Thika	7	56001	0	0	205	225	2	1	726	13627	60	1154	90	23	21.6	33.3
Magumu - Thika	7	56001	0	0	200	215	2	2	743	14806	63	1143	92	23.1	21.6	33.3
Magumu - Thika	7	56002	0	0	135	150	2	1	684	441	415	409	162	22.1	20	28.8
Magumu - Thika	7	56002	0	0	135	150	2	2	682	446	419	407	160	22.1	20	28.8
Magumu - Thika	7	56102	0	0	195	215	2	1	720	12391	70	1112	87	23.5	21.9	33.3
Magumu - Thika	7	56102	0	0	195	210	2	2	724	12445	73	1137	89	23.6	22	33.3
Magumu - Thika	7	56105	0	0	120	135	2	1	681	582	547	557	165	21.7	20.2	28.8
Magumu - Thika	7	56105	0	0	120	135	2	2	676	593	558	583	166	21.7	20.3	28.8
Magumu - Thika	7	56200	0	0	130	140	2	1	707	640	475	472	162	23.6	22.7	33.3
Magumu - Thika	7	56200	0	0	130	140	2	2	707	653	485	446	162	23.6	22.8	33.3
Magumu - Thika	7	56202	1	1	115	125	2	1	667	695	653	633	227	21.3	19.9	28.8
Magumu - Thika	7	56202	1	0	115	130	2	2	659	637	599	598	223	21.4	20	28.8
Magumu - Thika	7	56299	0	0	125	135	2	1	713	717	533	495	166	23.8	22.4	33.3
Magumu - Thika	7	56299	0	0	120	135	2	2	716	749	556	531	172	23.9	22.4	33.3

Magumu - Thika	7	56303	0	0	165	185	2	1	679	8257	134	375	174	20.8	19.6	28.8
Magumu - Thika	7	56303	0	0	165	180	2	2	675	8151	141	385	173	20.8	19.6	28.8
Magumu - Thika	7	56399	0	0	130	145	2	1	686	498	468	492	147	20.5	19.5	28.8
Magumu - Thika	7	56399	0	0	130	140	2	2	687	518	487	512	146	20.6	19.6	28.8
Magumu - Thika	7	56402	0	0	125	140	2	1	706	687	510	522	116	24.2	22.7	33.3
Magumu - Thika	7	56402	0	0	125	135	2	2	713	714	531	544	116	24.2	22.8	33.3
Magumu - Thika	7	56502	1	0	115	130	2	1	705	814	604	1764	109	24.4	22.7	33.3
Magumu - Thika	7	56502	1	1	115	125	2	2	705	866	644	1748	111	24.5	22.9	33.3
Magumu - Thika	7	56517	0	0	215	230	2	1	694	13935	53	841	141	22.1	20.3	28.8
Magumu - Thika	7	56517	0	0	210	230	2	2	699	14418	54	815	142	22.1	20.3	28.8
Magumu - Thika	7	56604	0	0	120	135	2	1	680	580	545	570	153	22.1	20.8	28.8
Magumu - Thika	7	56604	0	0	120	135	2	2	675	588	553	570	153	22.1	20.8	28.8
Magumu - Thika	7	56605	2	2	90	105	2	1	712	1218	905	1678	125	24.7	23.2	33.3
Magumu - Thika	7	56605	2	2	90	105	2	2	709	1236	918	1649	126	24.8	23.4	33.3
Magumu - Thika	7	56693	0	0	150	165	2	1	688	1589	308	891	80	21.9	20.7	28.8
Magumu - Thika	7	56693	0	0	150	165	2	2	693	1649	316	891	81	21.9	20.7	28.8
Magumu - Thika	7	56704	0	0	135	145	2	1	717	568	422	443	134	24.3	23	33.3
Magumu - Thika	7	56704	0	0	135	145	2	2	719	582	432	464	134	24.4	23.1	33.3
Magumu - Thika	7	56804	0	0	130	140	2	1	712	632	470	475	118	24.5	23.2	33.3
Magumu - Thika	7	56804	0	0	130	140	2	2	715	653	485	486	117	24.5	23.3	33.3
Magumu - Thika	7	56805	0	0	130	140	2	1	698	518	487	491	121	21.5	20.4	28.8
Magumu - Thika	7	56805	0	0	125	140	2	2	692	537	505	510	120	21.6	20.5	28.8
Magumu - Thika	7	56906	1	1	110	120	2	1	718	932	692	1687	113	24.9	23.1	33.3
Magumu - Thika	7	56906	0	0	130	145	2	2	717	620	461	480	114	24.9	23.1	33.3
Magumu - Thika	7	56910	0	0	130	145	2	1	675	492	462	474	146	21.6	20.3	28.8
Magumu - Thika	7	56910	0	0	130	140	2	2	678	515	484	507	144	21.5	20.3	28.8
Magumu - Thika	7	56996	0	0	160	180	2	1	665	11825	122	302	249	22.5	20.4	28.8
Magumu - Thika	7	56996	0	0	160	175	2	2	669	12037	128	311	251	22.5	20.4	28.8
Magumu - Thika	7	57007	1	0	120	130	2	1	705	789	586	609	156	25	24	33.3
Magumu - Thika	7	57007	0	0	120	130	2	2	697	776	577	610	160	25	24.1	33.3
Magumu - Thika	7	57099	0	0	150	160	2	1	712	2404	317	742	93	24.5	23.5	33.3
Magumu - Thika	7	57099	0	0	120	135	2	2	714	728	541	1511	95	24.5	23.7	33.3
Magumu - Thika	7	57185	0	0	125	140	2	1	683	523	492	521	148	22.3	20.5	28.8
Magumu - Thika	7	57185	0	0	125	140	2	2	678	554	521	522	145	22.3	20.5	28.8
Magumu - Thika	7	57207	1	0	115	130	2	1	708	807	600	641	155	24.5	20.6	33.3
Magumu - Thika	7	57207	1	1	115	125	2	2	715	849	631	665	154	24.5	20.7	33.3
Magumu - Thika	7	57296	0	0	135	150	2	1	678	450	423	415	171	22.5	20.3	28.8
Magumu - Thika	7	57296	0	0	130	140	2	2	693	503	473	459	171	22.5	20.4	28.8
Magumu - Thika	7	57302	0	0	120	135	2	1	703	756	561	1640	99	24.6	20	33.3
Magumu - Thika	7	57302	0	0	120	130	2	2	703	781	580	1612	100	24.6	20.1	33.3
Magumu - Thika	7	57398	0	0	210	230	2	1	697	14513	54	938	140	21.6	20.4	28.8
Magumu - Thika	7	57398	0	0	205	225	2	2	696	14942	57	856	143	21.6	20.4	28.8
Magumu - Thika	7	57403	0	0	235	250	2	1	712	8068	51	1184	73	23.9	21.2	33.3
Magumu - Thika	7	57403	0	0	230	250	2	2	714	8298	53	1132	73	23.8	21.4	33.3
Magumu - Thika	7	57503	0	0	210	230	2	1	720	11692	60	1066	81	24.2	22.2	33.3
Magumu - Thika	7	57503	0	0	205	225	2	2	711	12134	63	1040	81	24.2	22.3	33.3
Magumu - Thika	7	57597	0	0	170	185	2	1	670	8089	132	382	180	21.9	21.1	28.8
Magumu - Thika	7	57597	0	0	165	180	2	2	669	7910	141	385	180	22	21.1	28.8
Magumu - Thika	7	57601	0	0	140	155	2	1	735	508	378	388	127	24.6	22.7	33.3
Magumu - Thika	7	57601	0	0	135	150	2	2	737	531	394	404	123	24.7	22.8	33.3
Magumu - Thika	7	57697	0	0	135	145	2	1	683	462	435	407	165	22.2	21	28.8
Magumu - Thika	7	57697	0	0	135	145	2	2	676	467	439	436	166	22.2	21.1	28.8
Magumu - Thika	7	57701	0	0	140	155	2	1	714	498	370	382	126	25.2	23	33.3
Magumu - Thika	7	57701	0	0	140	150	2	2	713	510	379	408	124	25.2	23.1	33.3
Magumu - Thika	7	57785	0	0	135	145	2	1	681	453	426	407	166	22.5	20.8	28.8
Magumu - Thika	7	57785	0	0	140	150	2	2	681	421	396	389	166	22.5	20.8	28.8
Magumu - Thika	7	57802	0	0	125	135	2	1	720	717	533	533	125	25.3	23.4	33.3
Magumu - Thika	7	57802	0	0	125	135	2	2	720	711	528	545	127	25.4	23.5	33.3
Magumu - Thika	7	57886	0	0	130	145	2	1	685	488	459	441	153	22.7	20.9	28.8
Magumu - Thika	7	57886	0	0	135	145	2	2	684	460	433	426	152	22.7	20.9	28.8
Magumu - Thika	7	57903	0	0	135	145	2	1	723	569	423	425	106	24.4	23.3	33.3
Magumu - Thika	7	57903	0	0	135	145	2	2	729	576	428	431	109	24.4	23.3	33.3
Magumu - Thika	7	57998	0	0	220	240	2	1	682	12875	50	1053	120	22.3	20.8	28.8
Magumu - Thika	7	57998	0	0	220	240	2	2	684	13301	51	1207	119	22.3	20.8	28.8
Magumu - Thika	7	58009	1	1	105	115	2	1	695	1011	751	1568	111	24.6	23	33.3
Magumu - Thika	7	58009	1	1	105	120	2	2	702	993	737	1589	112	24.5	23	33.3
Magumu - Thika	7	58099	0	0	130	145	2	1	687	487	458	450	172	23.9	21.2	28.8
Magumu - Thika	7	58099	0	0	135	145	2	2	679	467	439	438	173	23.9	21.3	28.8
Magumu - Thika	7	58102	0	0	160	175	2	1	694	9669	142	380	184	24.8	23.1	33.3
Magumu - Thika	7	58102	0	0	120	130	2	2	690	772	573	547	186	24.8	23.2	33.3
Magumu - Thika	7	58193	0	0	130	145	2	1	685	484	455	455	153	23.6	21.3	28.8
Magumu - Thika	7	58193	0	0	130	145	2	2	691	501	471	495	151	23.6	21.4	28.8
Magumu - Thika	7	58203	0	0	140	155	2	1	725	504	374	393	102	24.3	22.9	33.3
Magumu - Thika	7	58203	0	0	140	150	2	2	727	528	392	409	101	24.3	23	33.3
Magumu - Thika	7	58300	0	0	135	145	2	1	685	471	442	411	212	23.6	21.2	28.8
Magumu - Thika	7	58300	0	0	130	145	2	2	682	478	449	438	219	23.6	21.3	28.8
Magumu - Thika	7	58306	0	0	135	145	2	1	715	568	422	435	114	24.4	23.2	33.3
Magumu - Thika	7	58306	0	0	130	145	2	2	718	593	440	442	114	24.4	23.2	33.3

Magumu - Thika	7	58401	0	0	125	135	2	1	670	557	524	496	234	23.6	21.6	28.8
Magumu - Thika	7	58401	0	0	175	190	2	2	669	10594	106	284	238	23.6	21.6	28.8
Magumu - Thika	7	58410	0	0	150	160	2	1	709	2084	323	911	72	24.3	23.1	33.3
Magumu - Thika	7	58410	0	0	150	165	2	2	706	2258	310	919	71	24.3	23.2	33.3
Magumu - Thika	7	58497	0	0	170	185	2	1	676	9893	119	267	254	23	21.7	28.8
Magumu - Thika	7	58497	0	0	165	185	2	2	677	9971	123	269	257	23.1	21.8	28.8
Magumu - Thika	7	58508	0	0	220	240	2	1	723	12076	51	1304	87	24.3	23.1	33.3
Magumu - Thika	7	58508	0	0	220	240	2	2	720	11497	54	1344	87	24.3	23.2	33.3
Magumu - Thika	7	58597	0	0	135	150	2	1	676	437	410	410	175	22.5	21.8	28.8
Magumu - Thika	7	58597	0	0	130	145	2	2	672	480	451	440	174	22.5	21.8	28.8
Magumu - Thika	7	58606	0	0	225	245	2	1	720	14466	44	650	100	25.1	23.5	33.3
Magumu - Thika	7	58606	0	0	145	165	2	2	722	453	337	356	102	25.2	23.6	33.3
Magumu - Thika	7	58700	0	0	175	195	2	1	672	9457	108	247	237	22.6	21.7	28.8
Magumu - Thika	7	58700	0	0	175	190	2	2	669	9481	111	256	236	22.6	21.8	28.8
Magumu - Thika	7	58716	0	0	120	135	2	1	696	724	538	557	149	24.9	23.5	33.3
Magumu - Thika	7	58716	0	0	120	135	2	2	697	747	555	577	148	24.9	23.6	33.3
Magumu - Thika	7	58793	0	0	125	140	2	1	674	554	521	539	155	22.5	21.6	28.8
Magumu - Thika	7	58793	0	0	125	135	2	2	669	567	533	564	155	22.4	21.7	28.8
Magumu - Thika	7	58812	0	0	130	145	2	1	713	589	438	404	143	25.4	23.9	33.3
Magumu - Thika	7	58812	0	0	135	145	2	2	718	585	434	414	141	25.4	23.9	33.3
Magumu - Thika	7	58904	0	0	225	245	2	1	719	14686	44	757	85	25.4	23.8	33.3
Magumu - Thika	7	58904	0	0	130	140	2	2	716	650	482	1550	84	25.3	23.9	33.3
Magumu - Thika	7	58906	0	0	125	135	2	1	670	569	534	515	206	22.4	21.4	28.8
Magumu - Thika	7	58906	0	0	170	185	2	2	669	11224	113	293	211	22.4	21.4	28.8
Magumu - Thika	7	59001	0	0	210	230	2	1	692	14034	55	465	167	22.8	21.5	28.8
Magumu - Thika	7	59001	0	0	205	225	2	2	696	14407	57	469	172	22.9	21.6	28.8
Magumu - Thika	7	59003	0	0	125	135	2	1	696	714	531	510	211	25.3	23.6	33.3
Magumu - Thika	7	59003	0	0	120	135	2	2	692	739	549	532	208	25.2	23.6	33.3
Magumu - Thika	7	59097	0	0	130	145	2	1	687	494	464	497	126	23	21.6	28.8
Magumu - Thika	7	59097	0	0	130	140	2	2	686	514	483	498	127	23.1	21.6	28.8
Magumu - Thika	7	59101	0	0	135	150	2	1	702	545	405	423	131	24.6	23.3	33.3
Magumu - Thika	7	59101	0	0	135	145	2	2	704	570	423	438	129	24.5	23.4	33.3
Magumu - Thika	7	59196	1	1	100	110	2	1	670	881	828	1528	117	22.9	21.4	28.8
Magumu - Thika	7	59196	0	0	145	160	2	2	679	13824	143	524	119	22.7	21.4	28.8
Magumu - Thika	7	59199	1	0	115	130	2	1	701	811	603	1732	104	24.2	22.7	33.3
Magumu - Thika	7	59199	1	1	115	130	2	2	705	827	614	1718	105	24.2	22.8	33.3
Magumu - Thika	7	59301	0	0	130	145	2	1	678	497	467	471	117	23.1	21.1	28.8
Magumu - Thika	7	59301	0	0	130	140	2	2	678	515	484	507	116	23.1	21.1	28.8
Magumu - Thika	7	59304	0	0	135	145	2	1	717	570	424	392	164	24.5	23	33.3
Magumu - Thika	7	59304	0	0	135	145	2	2	718	588	437	413	166	24.6	23.1	33.3
Magumu - Thika	7	59395	0	0	220	240	2	1	697	13008	50	502	153	23.5	20.8	28.8
Magumu - Thika	7	59395	0	0	215	235	2	2	699	13189	52	510	152	23.5	20.8	28.8
Magumu - Thika	7	59403	0	0	135	150	2	1	711	565	420	443	129	24.7	23	33.3
Magumu - Thika	7	59403	0	0	135	145	2	2	709	580	431	449	130	24.8	23	33.3
Magumu - Thika	7	59497	0	0	180	195	2	1	683	12661	91	415	161	23.3	20	28.8
Magumu - Thika	7	59497	0	0	170	185	2	2	683	10357	114	404	149	23.4	20	28.8
Magumu - Thika	7	59504	0	0	120	135	2	1	713	744	553	1825	102	24.6	22.4	33.3
Magumu - Thika	7	59504	0	0	135	145	2	2	712	586	436	437	106	24.5	22.5	33.3
Magumu - Thika	7	59592	0	0	130	145	2	1	696	484	454	437	137	22.5	21.4	28.8
Magumu - Thika	7	59592	0	0	130	140	2	2	691	513	482	491	136	22.5	21.5	28.8
Magumu - Thika	7	59606	0	0	140	150	2	1	710	519	386	411	108	23.8	22.2	33.3
Magumu - Thika	7	59606	0	0	135	150	2	2	712	542	402	416	109	23.9	22.3	33.3
Magumu - Thika	7	59685	0	0	125	140	2	1	680	533	501	476	184	22.3	21.4	28.8
Magumu - Thika	7	59685	0	0	125	140	2	2	681	541	509	493	189	22.3	21.4	28.8
Magumu - Thika	7	59699	0	0	140	155	2	1	719	507	376	399	127	23.6	22.1	33.3
Magumu - Thika	7	59699	0	0	135	150	2	2	717	538	400	402	125	23.6	22.1	33.3
Magumu - Thika	7	59802	0	0	130	145	2	1	687	482	453	446	188	22.2	21.2	28.8
Magumu - Thika	7	59802	0	0	135	145	2	2	693	467	439	438	181	22.2	21.2	28.8
Magumu - Thika	7	59804	0	0	125	140	2	1	727	694	516	1795	98	23.5	21.9	33.3
Magumu - Thika	7	59804	0	0	125	135	2	2	722	712	529	1774	98	23.6	21.9	33.3
Magumu - Thika	7	59895	0	0	225	245	2	1	703	12720	48	869	116	21.6	21.2	28.8
Magumu - Thika	7	59895	0	0	220	240	2	2	705	13219	51	777	118	21.7	21.3	28.8
Magumu - Thika	7	59907	0	0	245	265	2	1	736	12468	37	4847	118	23.9	21.9	33.3
Magumu - Thika	7	59907	0	0	240	260	2	2	738	12721	39	4837	118	23.8	21.9	33.3
Magumu - Thika	7	60001	0	0	125	140	2	1	687	547	514	520	115	21.1	21.2	28.8
Magumu - Thika	7	60001	0	0	125	135	2	2	677	562	528	529	114	21.2	21.2	28.8
Magumu - Thika	7	60005	0	0	140	150	2	1	689	522	388	415	125	24.3	22.2	33.3
Magumu - Thika	7	60005	0	0	135	150	2	2	692	556	413	433	124	24.4	22.2	33.3
Magumu - Thika	7	60094	1	1	115	125	2	1	653	681	640	621	214	22.2	21.6	28.8
Magumu - Thika	7	60094	1	1	110	120	2	2	660	758	712	703	207	22.2	21.7	28.8
Magumu - Thika	7	60104	0	0	130	140	2	1	708	635	472	492	128	24.5	22.3	33.3
Magumu - Thika	7	60104	0	0	125	140	2	2	705	665	494	503	126	24.6	22.4	33.3
Magumu - Thika	7	60201	0	0	220	240	2	1	684	12991	50	861	120	22	21.7	28.8
Magumu - Thika	7	60201	0	0	215	235	2	2	683	13458	51	777	122	22	21.7	28.8
Magumu - Thika	7	60203	0	0	135	145	2	1	710	580	431	440	106	25	22.7	33.3
Magumu - Thika	7	60203	1	0	120	130	2	2	708	790	587	1657	105	25.1	22.8	33.3
Magumu - Thika	7	60292	1	1	105	115	2	1	666	818	768	753	178	22.5	21.7	28.8
Magumu - Thika	7	60292	1	1	105	120	2	2	668	786	738	722	185	22.4	21.7	28.8

Magumu - Thika	7	60303	0	0	160	175	2	1	701	1701	262	809	91	25.1	22.4	33.3
Magumu - Thika	7	60303	0	0	155	170	2	2	702	1760	274	827	91	25.2	22.5	33.3
Magumu - Thika	7	60392	0	0	210	230	2	1	699	13252	57	1151	141	22.6	21.8	28.8
Magumu - Thika	7	60392	0	0	205	225	2	2	695	13755	59	1035	143	22.7	21.8	28.8
Magumu - Thika	7	60407	0	0	235	255	2	1	712	13152	41	1132	83	24.9	22.9	33.3
Magumu - Thika	7	60407	0	0	230	250	2	2	716	13596	43	1139	82	25	23	33.3
Magumu - Thika	7	60492	0	0	205	225	2	1	683	14944	57	1492	114	21.6	21.4	28.8
Magumu - Thika	7	60492	0	0	130	145	2	2	680	484	455	461	115	21.7	21.4	28.8
Magumu - Thika	7	60500	0	0	125	140	2	1	713	673	500	511	131	25.2	23.3	33.3
Magumu - Thika	7	60500	0	0	125	140	2	2	719	694	515	536	131	25.2	23.3	33.3
Magumu - Thika	7	60601	0	0	210	230	2	1	679	14146	54	797	93	22.2	21.4	28.8
Magumu - Thika	7	60601	0	0	210	225	2	2	674	14712	55	776	92	22.2	21.4	28.8
Magumu - Thika	7	60604	0	0	125	140	2	1	692	658	489	468	151	25.5	23.1	33.3
Magumu - Thika	7	60604	0	0	125	135	2	2	696	709	527	562	149	25.5	23.2	33.3
Magumu - Thika	7	60672	0	0	245	265	2	1	707	10398	40	547	110	22.2	21.3	28.8
Magumu - Thika	7	60672	0	0	240	260	2	2	708	10599	41	599	109	22.3	21.3	28.8
Magumu - Thika	7	60700	0	0	235	260	2	1	715	13283	39	1016	85	25.5	23.3	33.3
Magumu - Thika	7	60700	0	0	230	255	2	2	713	13457	41	983	85	25.5	23.4	33.3
Magumu - Thika	7	60801	0	0	235	255	2	1	693	11276	44	562	147	22	21.3	28.8
Magumu - Thika	7	60801	0	0	230	250	2	2	695	12161	46	551	146	22	21.3	28.8
Magumu - Thika	7	60802	0	0	290	305	2	1	767	6445	26	1535	76	20	19.8	28.2
Magumu - Thika	7	60802	0	0	290	305	2	2	764	6374	27	1422	75	20	19.8	28.2
Magumu - Thika	7	60899	0	0	240	260	2	1	775	10680	42	940	88	20	20	28.2
Magumu - Thika	7	60899	0	0	240	260	2	2	764	10961	43	911	88	20	20	28.2
Magumu - Thika	7	60900	0	0	250	270	2	1	706	10239	38	692	89	22.9	21.8	28.8
Magumu - Thika	7	60900	0	0	245	265	2	2	708	10390	40	686	90	22.9	21.8	28.8
Magumu - Thika	7	60993	0	0	205	225	2	1	689	14703	56	1208	110	23	21.6	28.8
Magumu - Thika	7	60993	0	0	135	145	2	2	684	457	430	448	110	23	21.7	28.8
Magumu - Thika	7	61006	0	0	215	235	2	1	765	13311	51	1406	103	20.1	20.1	28.2
Magumu - Thika	7	61006	0	0	215	230	2	2	760	13814	53	1261	104	20.1	20.1	28.2
Magumu - Thika	7	61099	0	0	265	290	2	1	702	8503	33	534	76	22.6	21	28.8
Magumu - Thika	7	61099	0	0	265	290	2	2	698	8615	33	512	77	22.6	21.1	28.8
Magumu - Thika	7	61104	0	0	240	260	2	1	770	11100	42	2393	81	20.1	20	28.2
Magumu - Thika	7	61104	0	0	225	245	2	2	760	7789	56	1166	80	20.1	20	28.2
Magumu - Thika	7	61197	0	0	130	140	2	1	670	519	488	505	149	22.8	21	28.8
Magumu - Thika	7	61197	0	0	125	140	2	2	674	548	515	527	144	22.8	21	28.8
Magumu - Thika	7	61199	0	0	200	220	2	1	757	13226	64	1092	93	20.1	20.2	28.2
Magumu - Thika	7	61199	0	0	200	220	2	2	748	13402	65	1071	93	20.1	20.2	28.2
Magumu - Thika	8	61297	0	0	120	135	2	1	684	582	547	572	129	22.9	20.1	28.8
Magumu - Thika	8	61297	0	0	120	135	2	2	675	598	562	577	128	22.9	20.2	28.8
Magumu - Thika	8	61304	0	0	265	285	2	1	791	8640	33	971	83	20.1	20.3	28.2
Magumu - Thika	8	61304	0	0	260	285	2	2	774	8813	35	931	84	20.1	20.3	28.2
Magumu - Thika	8	61390	0	0	135	145	2	1	688	460	432	454	146	22.8	19.8	28.8
Magumu - Thika	8	61390	0	0	135	145	2	2	677	467	439	453	146	22.8	19.9	28.8
Magumu - Thika	8	61415	0	0	275	295	2	1	772	5461	34	843	55	20.1	20.3	28.2
Magumu - Thika	8	61415	0	0	270	290	2	2	764	5537	35	824	55	20.1	20.3	28.2
Magumu - Thika	8	61500	0	0	160	175	2	1	752	1446	247	920	76	20.2	20.3	28.2
Magumu - Thika	8	61500	0	0	160	175	2	2	750	1479	254	933	76	20.2	20.3	28.2
Magumu - Thika	8	61505	0	0	120	135	2	1	670	600	564	568	118	22.8	19.8	28.8
Magumu - Thika	8	61505	0	0	120	135	2	2	669	610	573	593	119	22.8	19.8	28.8
Magumu - Thika	8	61587	0	0	305	305	2	1	688	3618	24	980	51	22.6	20.1	28.8
Magumu - Thika	8	61587	0	0	305	305	2	2	688	3981	25	987	51	22.6	20.1	28.8
Magumu - Thika	8	61602	0	0	155	170	2	1	747	1581	293	806	87	20.2	20.3	28.2
Magumu - Thika	8	61602	0	0	185	200	2	2	718	11173	91	959	89	20.2	20.3	28.2
Magumu - Thika	8	61694	0	0	265	285	2	1	773	8505	33	273	110	20.2	20.4	28.2
Magumu - Thika	8	61694	0	0	260	285	2	2	759	8596	34	272	110	20.2	20.4	28.2
Magumu - Thika	8	61703	0	0	125	140	2	1	716	1424	475	408	378	22.7	20.3	28.8
Magumu - Thika	8	61703	0	0	120	135	2	2	714	1496	500	433	356	22.7	20.4	28.8
Magumu - Thika	8	61802	0	0	180	195	2	1	697	460	185	849	92	22.6	20.9	28.8
Magumu - Thika	8	61802	0	0	175	190	2	2	698	509	198	907	90	22.6	20.9	28.8
Magumu - Thika	8	61828	0	0	275	300	2	1	728	3567	36	1118	59	20.1	19.7	28.2
Magumu - Thika	8	61828	0	0	275	295	2	2	716	3642	36	1087	59	20.1	19.7	28.2
Magumu - Thika	8	61896	0	0	220	240	2	1	702	9169	59	1416	92	22.4	21	28.8
Magumu - Thika	8	61896	0	0	220	235	2	2	696	8323	62	1338	90	22.4	21	28.8
Magumu - Thika	8	61914	0	0	250	270	2	1	737	9891	38	4060	63	20.1	19.7	28.2
Magumu - Thika	8	61914	0	0	165	180	2	2	725	899	237	1264	60	20.1	19.7	28.2
Magumu - Thika	8	62004	0	0	255	280	2	1	760	8926	36	580	103	20.1	20	28.2
Magumu - Thika	8	62004	0	0	255	275	2	2	754	9226	37	566	104	20.1	20	28.2
Magumu - Thika	8	62011	1	1	105	120	2	1	692	2942	630	1551	110	22.3	21	28.8
Magumu - Thika	8	62011	1	1	100	115	2	2	694	3072	655	1595	110	22.4	21	28.8
Magumu - Thika	8	62091	0	0	280	305	2	1	760	7570	29	1190	105	20.2	20.1	28.2
Magumu - Thika	8	62091	0	0	275	300	2	2	752	7760	30	1137	105	20.2	20.1	28.2
Magumu - Thika	8	62101	0	0	165	180	2	1	678	12093	118	324	238	22.8	20.9	28.8
Magumu - Thika	8	62101	0	0	120	130	2	2	676	620	582	574	220	22.9	20.9	28.8
Magumu - Thika	8	62190	0	0	190	210	2	1	693	14791	71	1619	119	22.8	20.2	28.8
Magumu - Thika	8	62190	1	1	115	130	2	2	693	657	617	2173	122	22.8	20.3	28.8
Magumu - Thika	8	62211	0	0	235	255	2	1	716	11136	43	1738	105	20.1	19.6	28.2
Magumu - Thika	8	62211	0	0	235	255	2	2	715	11291	45	1693	105	20.1	19.6	28.2



Magumu - Thika	8	62239	4	3	65	80	2	1	685	4571	1034	1439	123	22.7	20.6	28.8
Magumu - Thika	8	62239	3	3	70	85	2	2	683	4626	1007	1646	122	22.7	20.7	28.8
Magumu - Thika	8	62297	0	0	125	140	2	1	689	1728	451	1565	93	22.5	20.7	28.8
Magumu - Thika	8	62297	0	0	120	135	2	2	691	1854	492	1382	96	22.5	20.8	28.8
Magumu - Thika	8	62307	0	0	125	135	2	1	735	1916	471	1874	114	20	19.5	28.2
Magumu - Thika	8	62307	0	0	120	135	2	2	723	1953	496	1956	114	20	19.5	28.2
Magumu - Thika	8	62395	0	0	250	270	2	1	734	287	59	282	136	22.3	20.6	28.8
Magumu - Thika	8	62395	0	0	245	265	2	2	736	292	63	302	132	22.4	20.7	28.8
Magumu - Thika	8	62410	0	0	115	130	2	1	728	2728	516	1146	124	20.2	19.8	28.2
Magumu - Thika	8	62410	0	0	115	125	2	2	726	2828	530	1217	124	20.2	19.8	28.2
Magumu - Thika	8	62495	0	0	130	145	2	1	674	2057	408	1363	89	22.4	20.8	28.8
Magumu - Thika	8	62495	0	0	130	140	2	2	671	2137	415	1340	89	22.4	20.9	28.8
Magumu - Thika	8	62502	0	0	235	255	2	1	761	4720	59	241	189	20.2	19.8	28.2
Magumu - Thika	8	62502	0	0	225	245	2	2	749	12275	47	611	188	20.2	19.8	28.2
Magumu - Thika	8	62601	0	0	245	265	2	1	714	10498	40	2731	87	20.2	19.7	28.2
Magumu - Thika	8	62601	0	0	230	250	2	2	707	6925	55	1391	83	20.2	19.7	28.2
Magumu - Thika	8	62608	0	0	185	200	2	1	689	702	161	754	72	22.6	20.7	28.8
Magumu - Thika	8	62608	0	0	180	195	2	2	692	767	173	762	72	22.6	20.7	28.8
Magumu - Thika	8	62700	0	0	280	300	2	1	691	7742	29	5050	63	22.2	21	28.8
Magumu - Thika	8	62700	0	0	275	295	2	2	686	7923	31	4916	63	22.2	21	28.8
Magumu - Thika	8	62709	0	0	240	260	2	1	732	10675	41	1217	95	20.3	19.8	28.2
Magumu - Thika	8	62709	0	0	240	260	2	2	741	10927	43	1372	95	20.3	19.8	28.2
Magumu - Thika	8	62799	0	0	230	250	2	1	689	8735	50	1217	82	22.3	21.3	28.8
Magumu - Thika	8	62799	0	0	225	245	2	2	694	8616	54	1148	82	22.4	21.3	28.8
Magumu - Thika	8	62804	0	0	240	260	2	1	730	10054	43	2481	122	20.4	19.9	28.2
Magumu - Thika	8	62804	0	0	235	255	2	2	726	10334	45	2501	124	20.4	19.9	28.2
Magumu - Thika	8	62890	0	0	135	155	3	1	684	720	677	172	348	22.7	21.4	28.8
Magumu - Thika	8	62890	0	0	135	150	3	2	685	706	664	180	340	22.7	21.4	28.8
Magumu - Thika	8	62907	0	0	255	275	2	1	757	9247	36	2322	115	20.4	20	28.2
Magumu - Thika	8	62907	0	0	255	275	2	2	752	9276	37	2400	115	20.4	20	28.2
Magumu - Thika	8	62992	0	0	180	195	2	1	703	736	174	1435	57	22.7	21.1	28.8
Magumu - Thika	8	62992	0	0	170	185	2	2	701	778	208	1426	57	22.6	21.1	28.8
Magumu - Thika	8	63012	0	0	125	135	2	1	734	1839	474	1238	84	20.4	20	28.2
Magumu - Thika	8	63012	0	0	125	135	2	2	727	1868	468	1207	85	20.4	20	28.2
Magumu - Thika	8	63094	0	0	150	165	2	1	664	1501	322	1078	89	22.5	21.4	28.8
Magumu - Thika	8	63094	0	0	150	165	2	2	661	1514	322	1057	90	22.5	21.4	28.8
Magumu - Thika	8	63130	7	6	45	65	2	1	724	4702	1290	1835	94	20.5	20.1	28.2
Magumu - Thika	8	63130	7	6	50	65	2	2	722	4588	1285	2054	93	20.5	20.1	28.2
Magumu - Thika	8	63194	4	3	65	80	2	1	672	5559	1003	1269	181	22.6	21.9	28.8
Magumu - Thika	8	63194	4	3	65	80	2	2	672	5299	1016	1252	183	22.6	21.9	28.8
Magumu - Thika	8	63217	1	1	110	125	2	1	715	696	665	709	230	20.6	20.3	28.2
Magumu - Thika	8	63217	1	1	110	120	2	2	706	729	696	725	234	20.6	20.3	28.2
Magumu - Thika	8	63295	0	0	130	140	2	1	687	1772	430	1841	63	22.5	21.9	28.8
Magumu - Thika	8	63295	0	0	130	140	2	2	687	1789	433	1790	63	22.6	22	28.8
Magumu - Thika	8	63309	0	0	130	145	2	1	711	2090	404	1334	112	20.5	20.4	28.2
Magumu - Thika	8	63309	0	0	125	140	2	2	708	2138	443	1245	114	20.5	20.3	28.2
Magumu - Thika	8	63391	0	0	135	150	2	1	691	449	422	432	135	22.5	21.4	28.8
Magumu - Thika	8	63391	0	0	135	150	2	2	687	425	399	395	135	22.5	21.4	28.8
Magumu - Thika	8	63407	0	0	230	250	2	1	703	8395	51	2184	112	20.6	20.5	28.2
Magumu - Thika	8	63407	0	0	235	255	2	2	698	11096	43	4755	114	20.6	20.5	28.2
Magumu - Thika	8	63501	0	0	235	260	2	1	713	11320	42	814	142	22.1	21.8	28.8
Magumu - Thika	8	63501	0	0	230	250	2	2	719	11782	45	757	143	22.1	21.9	28.8
Magumu - Thika	8	63516	0	0	245	265	2	1	733	10385	41	1122	121	20.6	20.2	28.2
Magumu - Thika	8	63516	0	0	240	260	2	2	726	10641	42	1042	124	20.6	20.2	28.2
Magumu - Thika	8	63596	0	0	260	285	2	1	701	8871	34	847	84	22.2	21.6	28.8
Magumu - Thika	8	63596	0	0	260	280	2	2	700	9315	35	876	84	22.2	21.6	28.8
Magumu - Thika	8	63605	0	0	225	245	2	1	725	11973	47	1427	109	20.5	20.3	28.2
Magumu - Thika	8	63605	0	0	225	245	2	2	721	12568	48	1377	110	20.5	20.3	28.2
Magumu - Thika	8	63696	0	0	240	260	2	1	692	8360	46	2016	107	22.3	21.3	28.8
Magumu - Thika	8	63696	0	0	250	275	2	2	690	9961	37	5662	107	22.3	21.3	28.8
Magumu - Thika	8	63706	0	0	255	275	2	1	726	9289	37	1090	84	20.7	20.3	28.2
Magumu - Thika	8	63706	0	0	255	275	2	2	722	9448	37	1320	84	20.7	20.3	28.2
Magumu - Thika	8	63800	0	0	235	255	2	1	723	6938	53	1602	93	20.6	20	28.2
Magumu - Thika	8	63800	0	0	230	250	2	2	719	6687	56	1651	91	20.6	20.1	28.2
Magumu - Thika	8	63802	0	0	215	235	2	1	676	9038	63	1526	100	22.3	21.7	28.8
Magumu - Thika	8	63802	0	0	210	230	2	2	681	9214	65	1596	100	22.3	21.8	28.8
Magumu - Thika	8	63891	0	0	130	140	2	1	682	521	489	505	137	21.9	22	28.8
Magumu - Thika	8	63891	0	0	125	140	2	2	682	549	516	530	134	21.9	22	28.8
Magumu - Thika	8	63911	0	0	135	150	2	1	705	420	401	374	181	20.8	20.4	28.2
Magumu - Thika	8	63911	0	0	135	145	2	2	700	449	429	393	184	20.8	20.4	28.2
Magumu - Thika	8	63998	0	0	170	180	2	1	722	890	230	1015	71	20.7	20.4	28.2
Magumu - Thika	8	63998	0	0	165	180	2	2	728	930	237	1017	72	20.7	20.4	28.2
Magumu - Thika	8	64003	0	0	240	260	2	1	730	8688	46	154	174	21.7	21.9	28.8
Magumu - Thika	8	64003	0	0	235	255	2	2	719	8571	48	154	169	21.7	22	28.8
Magumu - Thika	8	64101	0	0	180	195	2	1	678	13945	87	702	83	21.8	21.9	28.8
Magumu - Thika	8	64101	0	0	125	135	2	2	675	570	536	1290	85	21.8	21.9	28.8
Magumu - Thika	8	64107	6	5	50	65	2	1	699	5966	1184	1210	172	20.7	20.5	28.2
Magumu - Thika	8	64107	4	4	60	75	2	2	692	6127	1078	1126	174	20.7	20.5	28.2

Magumu - Thika	8	64203	7	6	50	65	2	1	711	5124	1250	1932	125	20.8	20.7	28.2
Magumu - Thika	8	64203	6	5	55	70	2	2	708	5182	1190	1788	129	20.8	20.7	28.2
Magumu - Thika	8	64204	0	0	240	260	2	1	689	7087	48	1269	80	22.1	21.7	28.8
Magumu - Thika	8	64204	0	0	235	255	2	2	690	7543	51	1258	80	22.1	21.8	28.8
Magumu - Thika	8	64288	0	0	210	230	2	1	687	10214	62	1181	89	22.2	22	28.8
Magumu - Thika	8	64288	0	0	210	230	2	2	687	10287	63	1215	89	22.2	22	28.8
Magumu - Thika	8	64304	0	0	235	255	2	1	706	10281	46	1539	95	20.8	20.6	28.2
Magumu - Thika	8	64304	0	0	230	250	2	2	698	10029	49	1425	95	20.8	20.6	28.2
Magumu - Thika	8	64399	0	0	190	210	2	1	685	12199	77	1222	100	21.9	22	28.8
Magumu - Thika	8	64399	0	0	185	205	2	2	686	13404	78	1206	102	21.9	22	28.8
Magumu - Thika	8	64406	0	0	180	195	2	1	709	656	177	1419	50	20.8	20.7	28.2
Magumu - Thika	8	64406	0	0	180	190	2	2	708	706	184	1407	50	20.8	20.7	28.2
Magumu - Thika	8	64495	0	0	245	270	2	1	732	10008	39	457	110	20.8	20.4	28.2
Magumu - Thika	8	64495	0	0	245	265	2	2	728	10429	40	477	109	20.8	20.4	28.2
Magumu - Thika	8	64500	0	0	225	245	2	1	706	9202	54	1489	96	22.2	21.6	28.8
Magumu - Thika	8	64500	0	0	220	240	2	2	700	10818	53	1460	98	22.2	21.6	28.8
Magumu - Thika	8	64600	0	0	245	265	2	1	720	10462	40	4472	72	20.8	20.4	28.2
Magumu - Thika	8	64600	0	0	240	260	2	2	715	10637	41	4180	73	20.8	20.4	28.2
Magumu - Thika	8	64601	0	0	130	140	2	1	685	1996	414	1007	100	22.3	21.7	28.8
Magumu - Thika	8	64601	0	0	125	140	2	2	677	2011	430	931	103	22.3	21.7	28.8
Magumu - Thika	8	64693	0	0	165	190	2	1	695	1437	283	937	47	22.1	21.8	28.8
Magumu - Thika	8	64693	0	0	165	190	2	2	690	1536	260	974	47	22.1	21.8	28.8
Magumu - Thika	8	64710	0	0	245	265	2	1	746	4244	52	155	157	20.7	20.1	28.2
Magumu - Thika	8	64710	0	0	240	260	2	2	741	10854	41	348	154	20.7	20.1	28.2
Magumu - Thika	8	64802	0	0	245	265	2	1	701	10108	40	324	129	22	21.8	28.8
Magumu - Thika	8	64802	0	0	245	265	2	2	690	10102	40	322	130	22.1	21.8	28.8
Magumu - Thika	8	64804	0	0	265	285	2	1	731	8546	33	1125	90	20.9	20.3	28.2
Magumu - Thika	8	64804	0	0	260	285	2	2	731	8944	34	1122	89	20.9	20.3	28.2
Magumu - Thika	8	64893	1	0	115	130	2	1	687	638	599	1790	104	21.9	21.7	28.8
Magumu - Thika	8	64893	1	1	115	130	2	2	684	670	630	1636	106	21.9	21.8	28.8
Magumu - Thika	8	64896	0	0	220	240	2	1	718	13144	50	547	117	20.8	20.1	28.2
Magumu - Thika	8	64896	0	0	220	235	2	2	711	13065	51	566	116	20.8	20.1	28.2
Magumu - Thika	8	65001	0	0	270	290	2	1	724	8352	32	3120	54	20.6	20	28.2
Magumu - Thika	8	65001	0	0	265	285	2	2	719	8477	34	2954	54	20.6	20	28.2
Magumu - Thika	8	65011	0	0	185	200	2	1	670	902	157	868	50	21.7	21.7	28.8
Magumu - Thika	8	65011	0	0	260	280	2	2	668	9183	35	2246	50	21.7	21.8	28.8
Magumu - Thika	8	65103	0	0	180	195	2	1	710	659	176	1027	54	20.9	20.4	28.2
Magumu - Thika	8	65103	0	0	185	200	2	2	706	706	160	1048	54	20.9	20.4	28.2
Magumu - Thika	8	65197	0	0	155	170	2	1	685	1623	294	859	76	21.8	21.8	28.8
Magumu - Thika	8	65197	0	0	150	165	2	2	678	1625	306	871	76	21.8	21.8	28.8
Magumu - Thika	8	65206	0	0	250	270	2	1	706	4423	48	804	53	20.9	20.5	28.2
Magumu - Thika	8	65206	0	0	180	195	2	2	701	689	169	983	52	20.9	20.5	28.2
Magumu - Thika	8	65301	1	1	110	125	2	1	672	2672	587	1038	83	21.8	21.7	28.8
Magumu - Thika	8	65301	1	1	110	125	2	2	673	2713	576	1027	83	21.8	21.7	28.8
Magumu - Thika	8	65307	0	0	205	220	2	1	692	8068	78	873	75	20.9	20.4	28.2
Magumu - Thika	8	65307	0	0	200	220	2	2	689	10085	74	821	77	20.9	20.3	28.2
Magumu - Thika	8	65396	0	0	160	175	2	1	683	1404	251	982	67	22	21.6	28.8
Magumu - Thika	8	65396	0	0	160	175	2	2	678	1462	264	996	66	22	21.7	28.8
Magumu - Thika	8	65404	0	0	120	135	2	1	703	571	545	1610	97	20.9	20.1	28.2
Magumu - Thika	8	65404	0	0	125	135	2	2	705	565	540	1588	98	20.9	20.1	28.2
Magumu - Thika	8	65496	1	0	110	125	2	1	683	2959	555	987	93	21.6	21.9	28.8
Magumu - Thika	8	65496	0	0	115	125	2	2	681	3071	533	1028	92	21.7	21.9	28.8
Magumu - Thika	8	65507	0	0	240	260	2	1	712	9651	44	1071	79	20.9	20.4	28.2
Magumu - Thika	8	65507	0	0	240	260	2	2	709	9981	44	1080	80	20.9	20.4	28.2
Magumu - Thika	8	65597	0	0	215	230	2	1	684	8200	67	848	71	21.5	21.7	28.8
Magumu - Thika	8	65597	0	0	205	225	2	2	684	7577	75	869	71	21.5	21.7	28.8
Magumu - Thika	8	65605	0	0	210	230	2	1	708	14240	54	858	99	21.1	20.8	28.2
Magumu - Thika	8	65605	0	0	205	225	2	2	708	14690	56	772	102	21.1	20.8	28.2
Magumu - Thika	8	65698	0	0	150	160	2	1	679	1989	330	737	99	21.7	22	28.8
Magumu - Thika	8	65698	0	0	145	160	2	2	676	1998	344	806	97	21.5	22	28.8
Magumu - Thika	8	65701	0	0	240	260	2	1	703	6912	49	807	62	21.2	21	28.2
Magumu - Thika	8	65701	0	0	235	255	2	2	705	7559	50	795	63	21.2	21	28.2
Magumu - Thika	8	65797	0	0	225	245	2	1	698	7611	59	934	71	21	21	28.2
Magumu - Thika	8	65797	0	0	220	240	2	2	700	7636	61	929	72	21	21	28.2
Magumu - Thika	8	65808	0	0	160	175	2	1	671	1036	265	1009	61	21.9	22	28.8
Magumu - Thika	8	65808	0	0	160	175	2	2	682	1109	278	1017	61	21.9	22	28.8
Magumu - Thika	8	65896	0	0	210	230	2	1	687	13929	54	2560	73	21.7	21.9	28.8
Magumu - Thika	8	65896	0	0	190	210	2	2	683	8431	91	840	76	21.7	21.9	28.8
Magumu - Thika	8	65907	0	0	230	250	2	1	700	9213	52	920	73	21.1	21.2	28.2
Magumu - Thika	8	65907	0	0	225	245	2	2	696	8663	55	892	73	21.1	21.1	28.2
Magumu - Thika	8	65997	0	0	155	170	2	1	681	1460	302	1364	53	21.9	21.6	28.8
Magumu - Thika	8	65997	0	0	150	165	2	2	678	1505	314	1366	52	21.9	21.6	28.8
Magumu - Thika	8	66003	0	0	160	175	2	1	698	1390	268	992	65	21.2	21	28.2
Magumu - Thika	8	66003	0	0	155	165	2	2	698	1407	311	1016	65	21.2	21	28.2
Magumu - Thika	8	66103	0	0	225	245	2	1	702	12389	47	4264	76	21.8	21.1	28.8
Magumu - Thika	8	66103	0	0	155	170	2	2	699	1360	288	1214	76	21.8	21.2	28.8
Magumu - Thika	8	66105	0	0	225	245	2	1	710	8386	57	920	73	21.3	21	28.2
Magumu - Thika	8	66105	0	0	225	240	2	2	714	7012	62	981	72	21.3	21	28.2

Magumu - Thika	8	66197	0	0	210	225	2	1	711	6482	79	1060	76	21.3	20.8	28.2
Magumu - Thika	8	66197	0	0	230	250	2	2	706	11645	45	4446	75	21.3	20.7	28.2
Magumu - Thika	8	66198	1	1	95	110	2	1	705	2984	726	1885	119	21.6	21.1	28.8
Magumu - Thika	8	66198	1	1	95	110	2	2	704	3131	717	1832	122	21.6	21.1	28.8
Magumu - Thika	8	66297	0	0	165	180	2	1	685	1137	234	931	88	20.8	21.7	28.8
Magumu - Thika	8	66297	0	0	160	175	2	2	676	1177	260	958	88	20.9	21.7	28.8
Magumu - Thika	8	66306	0	0	170	185	2	1	700	735	223	1357	69	21.3	20.4	28.2
Magumu - Thika	8	66306	0	0	165	180	2	2	694	784	235	1356	69	21.3	20.3	28.2
Magumu - Thika	8	66391	0	0	235	255	2	1	698	4990	56	1086	66	21.4	21.8	28.8
Magumu - Thika	8	66391	0	0	255	275	2	2	705	9618	37	3733	66	21.4	21.8	28.8
Magumu - Thika	8	66399	0	0	125	140	2	1	728	536	512	499	204	21.2	20.2	28.2
Magumu - Thika	8	66399	0	0	175	190	2	2	725	10231	109	304	205	21.2	20.2	28.2
Magumu - Thika	8	66501	1	0	115	130	2	1	680	636	598	1487	99	21.3	21.7	28.8
Magumu - Thika	8	66501	0	0	155	170	2	2	681	14955	117	882	100	21.3	21.7	28.8
Magumu - Thika	8	66507	0	0	225	245	2	1	703	12304	48	2670	70	21.2	20.4	28.2
Magumu - Thika	8	66507	0	0	200	220	2	2	706	7352	82	878	73	21.2	20.4	28.2
Magumu - Thika	8	66600	0	0	260	280	2	1	703	9272	35	2479	57	21.4	20.5	28.2
Magumu - Thika	8	66600	0	0	255	275	2	2	703	9286	36	2594	57	21.4	20.5	28.2
Magumu - Thika	8	66601	0	0	150	160	2	1	689	1408	348	1236	69	21.8	21.3	28.8
Magumu - Thika	8	66601	0	0	145	160	2	2	685	1449	351	1195	70	21.8	21.4	28.8
Magumu - Thika	8	66699	0	0	240	265	2	1	714	10810	40	368	164	21.7	20.8	28.8
Magumu - Thika	8	66699	0	0	240	260	2	2	716	11270	42	406	161	21.7	20.9	28.8
Magumu - Thika	8	66705	0	0	245	265	2	1	725	4840	49	1007	64	21.4	20.6	28.2
Magumu - Thika	8	66705	0	0	245	265	2	2	722	4378	52	1054	63	21.4	20.6	28.2
Magumu - Thika	8	66802	0	0	265	285	2	1	714	8393	34	594	105	21.4	20.6	28.2
Magumu - Thika	8	66802	0	0	260	285	2	2	709	8854	34	640	105	21.4	20.5	28.2
Magumu - Thika	8	66807	0	0	240	260	2	1	715	10464	42	314	136	21.7	20.6	28.8
Magumu - Thika	8	66807	0	0	240	260	2	2	712	10702	43	313	138	21.7	20.6	28.8
Magumu - Thika	8	66894	0	0	260	280	2	1	712	8650	35	344	142	21.7	21.7	28.8
Magumu - Thika	8	66894	0	0	260	280	2	2	717	9157	36	388	142	21.7	21.7	28.8
Magumu - Thika	8	66912	0	0	250	275	2	1	714	9794	37	426	123	21.3	20.3	28.2
Magumu - Thika	8	66912	0	0	250	270	2	2	710	9848	38	435	122	21.3	20.3	28.2
Magumu - Thika	8	66994	0	0	270	290	2	1	697	3405	40	1014	54	21.3	20.2	28.2
Magumu - Thika	8	66994	0	0	295	305	2	2	698	6278	25	4710	51	21.3	20.2	28.2
Magumu - Thika	8	67003	0	0	230	250	2	1	734	12115	46	597	133	21.4	21.8	28.8
Magumu - Thika	8	67003	0	0	230	250	2	2	730	11812	46	681	131	21.4	21.8	28.8
Magumu - Thika	8	67099	0	0	205	225	2	1	717	6832	80	226	224	21.4	20.1	28.2
Magumu - Thika	8	67099	0	0	205	220	2	2	717	6846	83	231	224	21.4	20.1	28.2
Magumu - Thika	8	67101	0	0	250	270	2	1	701	8482	39	1516	90	21.1	21.3	28.8
Magumu - Thika	8	67101	0	0	245	270	2	2	701	8757	41	1529	89	21.2	21.3	28.8
Magumu - Thika	8	67193	0	0	235	255	2	1	693	6953	54	1262	79	21.3	21	28.8
Magumu - Thika	8	67193	0	0	230	250	2	2	695	6773	56	1279	80	21.3	21.1	28.8
Magumu - Thika	8	67201	0	0	260	280	2	1	697	8965	35	5206	63	21.3	20.3	28.2
Magumu - Thika	8	67201	0	0	170	185	2	2	696	797	221	1210	64	21.3	20.3	28.2
Magumu - Thika	8	67304	0	0	170	185	2	1	708	845	215	851	98	21.6	20.5	28.2
Magumu - Thika	8	67304	0	0	170	185	2	2	713	988	222	835	100	21.5	20.5	28.2
Magumu - Thika	8	67314	0	0	130	140	2	1	649	2304	415	1041	112	21.2	21.3	28.8
Magumu - Thika	8	67314	0	0	125	140	2	2	650	2343	421	1039	113	21.2	21.3	28.8
Magumu - Thika	8	67399	0	0	135	145	2	1	652	1878	383	1071	78	21.2	21.4	28.8
Magumu - Thika	8	67399	0	0	130	140	2	2	651	1890	428	991	79	21.3	21.4	28.8
Magumu - Thika	8	67405	0	0	130	145	2	1	707	1782	410	1287	84	21.6	20.6	28.2
Magumu - Thika	8	67405	0	0	130	140	2	2	697	1809	422	1282	83	21.6	20.5	28.2
Magumu - Thika	8	67502	0	0	120	135	2	1	643	1895	490	1231	91	21.9	21.9	28.8
Magumu - Thika	8	67502	0	0	120	135	2	2	645	1969	506	1232	92	21.9	21.9	28.8
Magumu - Thika	8	67510	1	1	115	125	2	1	701	680	649	1910	113	21.6	20.6	28.2
Magumu - Thika	8	67510	1	1	110	125	2	2	706	695	663	1896	116	21.6	20.6	28.2
Magumu - Thika	8	67597	0	0	230	250	2	1	715	10555	49	1977	114	21.7	20.6	28.2
Magumu - Thika	8	67597	0	0	230	245	2	2	713	11065	49	1991	115	21.7	20.6	28.2
Magumu - Thika	8	67605	0	0	180	200	2	1	664	879	218	522	53	21.8	21.5	28.8
Magumu - Thika	8	67605	0	0	175	200	2	2	666	949	226	531	53	21.8	21.5	28.8
Magumu - Thika	8	67630	0	0	235	255	2	1	707	11601	44	532	116	21.8	21.8	28.8
Magumu - Thika	8	67630	0	0	235	255	2	2	706	11509	44	535	115	21.8	21.8	28.8
Magumu - Thika	8	67671	1	1	95	110	2	1	679	2783	748	1924	73	21.6	20.7	28.2
Magumu - Thika	8	67671	1	1	95	105	2	2	680	2904	772	1968	74	21.6	20.7	28.2