Report of the
Comptroller and Auditor General of India

Performance Audit on Functioning of Bengaluru Metropolitan Transport Corporation

Government of Karnataka
Report No.4 of the year 2024

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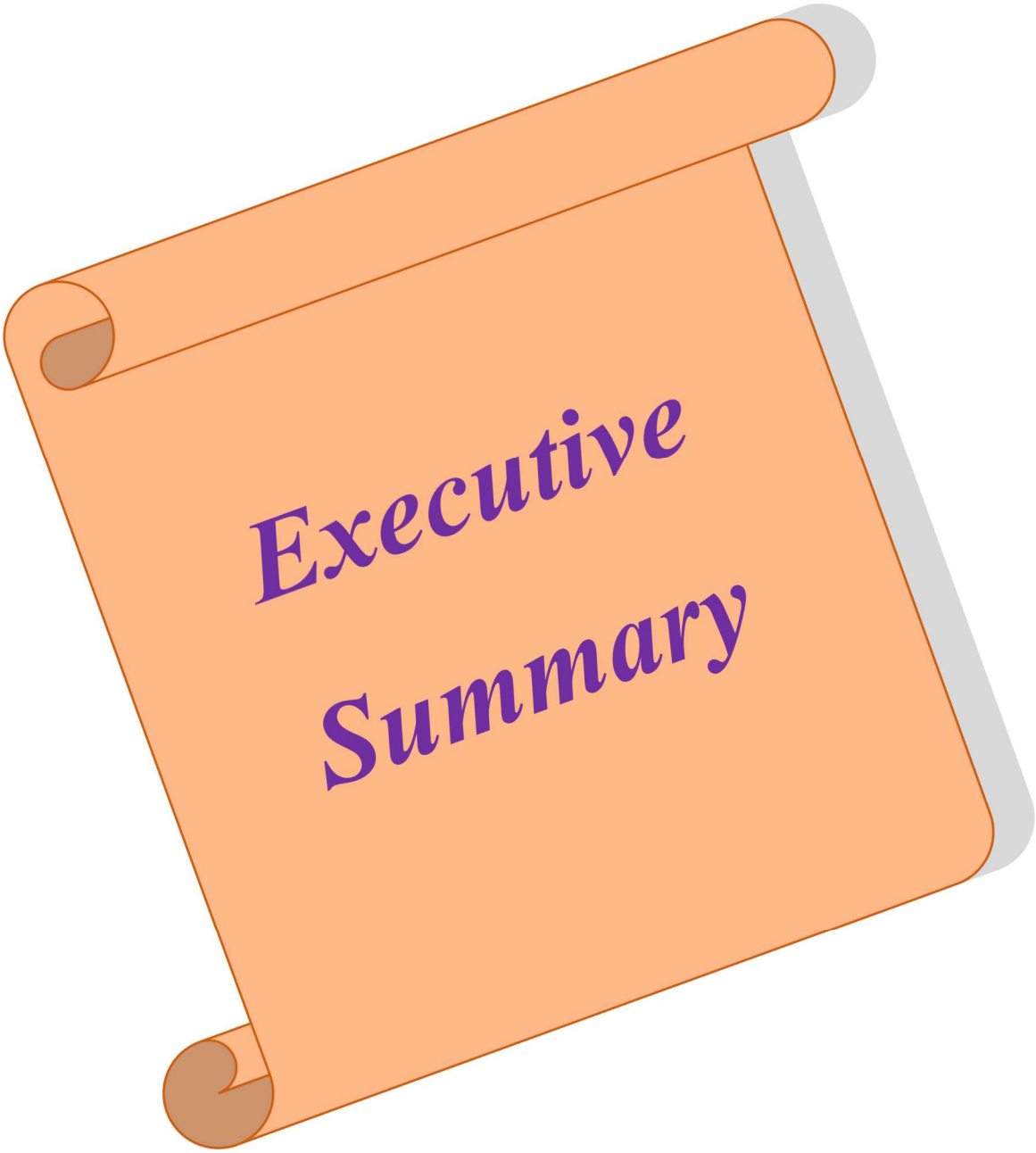
P R E F A C E

The Reports in relation to the accounts of a Government Company or Corporation are submitted to the Government by the CAG for laying before the State Legislature of Karnataka under the provisions of Section 19A of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971.

The Report contains the important audit findings which emerged as a result of Performance Audit on "Functioning of Bengaluru Metropolitan Transport Corporation" covering the period from 2017-18 to 2021-22.

The audit was conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.


Executive
Summary

Executive Summary

Public road transport plays a significant role in a city's economic development and acts as the main support system in carrying passengers across different places. Bengaluru Metropolitan Transport Corporation (BMTC), which is wholly owned by Government of Karnataka (GoK), has been providing public bus transportation service in Bengaluru since 1997. Over the years, BMTC's operations have grown and it currently serves over 5,130 Sq. kms, covering both urban and sub-urban areas.

A Performance audit was conducted to ascertain whether *(i) The resources/ assets of the Corporation were utilised economically & effectively, efficiency was achieved in the operations of the Corporation to maintain passenger satisfaction; (ii) The Corporation maintained the required fleet strength along with adequate infrastructure including bus stations, depots, workshops and human resources so as to provide safe and reliable urban transport facilities to passengers, and; (iii) Adequate maintenance was undertaken to keep the vehicles roadworthy.* The Performance Audit was covered for the period from 2017-18 to 2021-22. Impact of Covid-19 pandemic during 2020-22 on the operations and finances of the Corporation were also analysed in detail.

Issues relating to Operational Performance

As on 31 March 2022, BMTC had a fleet strength of 6,799 buses (comprising ordinary and premium buses) and operated 5,547 schedules from 48 bus stations and 46 depots. BMTC's fleet had an average operational kms per day of 11.31 lakh kms till March 2020 and this reduced to 5.88 to 6.81 lakh kms during the COVID-19 pandemic from 2020-22. The passenger base of BMTC recorded decline even before the pandemic from 44.37 lakh in 2017-2018 to 33.10 lakh in 2019-20. This indicated that BMTC was being less preferred for city transportation over the years. During 2017-20, the load factor ranged from 68 to 76.5 *per cent* in ordinary buses and ranged from 43.9 per cent to 54.7 *per cent* in premium buses.

Scientific planning of operations, optimal resource utilization and congenial working environment are essential to achieve BMTC's stated objectives of providing integrated, reliable and safe transport services and to make BMTC as most preferred choice of transport in the city. For this purpose, BMTC should have gathered passenger ticketing data and analysed the same from time to time. BMTC envisaged the implementation of Intelligent Transport System (ITS) which was to serve as an integrated IT system comprising Vehicle Tracking Units, Electronic Ticketing Units, Passenger Information System Display Units, Data & Command Control Centre to improve its operational efficiency. However, the project was only partially implemented due to erroneous vendor selection, inadequate follow-up and monitoring.

Resultantly, BMTC was riddled with operational issues such as unscientific planning of routes and schedules, poor connectivity and frequency, absence of passenger information system (PIS), cancellation of trips/schedules (kms) owing to shortage of buses/crew staff and use of overaged buses, etc.

BMTC must ensure that schedules are prepared scientifically using quantitative techniques such as queuing theory, time and motion studies and after

considering factors such as load factor, margin contribution, public demand, travel time, etc.

BMTC had 12.60 to 29.08 *per cent* of overaged buses in its fleet. The vehicle productivity of overaged buses was low and also inflated the fleet strength. Further, there was cancellation of scheduled kms due to vehicle related issues such as shortage of buses, vehicles kept off-road for repairs and maintenance, due to breakdown of buses, etc.

Adequate spare buses (which have not outlived their useful life) may be maintained in the fleet and a robust system for sharing spare buses across depots may be evolved to avoid cancellations.

Bus operations that do not fetch revenue are termed as dead kilometres and have to be minimised. Such operations are essential for taking buses from depots to bus stations, for regular maintenance, docking/ repair, topping up of oil/ fuel, etc. Nine Depots (out of 10 examined) operated excess dead kilometres which led to avoidable expenditure of ₹2.64 crore. *Audit recommends that decision on optimal depot location, origin/end points of routes and allocation of schedules amongst depots may be done after analysis of traffic and demand data to minimize the dead kilometres.*

With a view to make public transport the preferred mode of transport in Bengaluru, Directorate of Urban Land Transport (DULT), GoK recommended operating Metro Feeder (MF) services by BMTC. Audit noticed that BMTC suffered higher losses in MF services than its regular operations. *Audit recommends that while the losses on MF services can be brought down by better planning of schedules, BMTC should get adequately compensated by Government for losses from MF service.*

Issues relating to maintenance of fleet and related infrastructure

Systematic and regular maintenance of buses is essential for smooth fleet operation. In BMTC, regular maintenance of buses (docking) is carried out at the respective depots and for major repairs, buses are sent to workshops.

Audit noticed extensive delays in sending buses to Central Workshops (CWS) by Depots and delays at CWS in vehicle servicing for fitness certification. These delays caused a huge loss of bus days and consequent loss of BMTC's revenue. Shortage of men and equipment, infrastructure along with poor inventory management at CWS led to more off-road time for docked buses. BMTC was also dependent on Karnataka State Road Transport Corporation (KSRTC) for procurement of certain stores and for reconditioning of engines and fuel injection pumps.

Audit recommends that Government may ensure that BMTC has adequate working capital to guarantee timely supply of spare parts. BMTC may develop independent procurement procedure, CWS may be modernised with adequate machinery, equipment, technical staff and improved working conditions.

Audit also noticed that maintenance of records in CWS was not proper and uniform. This needs to be rectified to facilitate proper management information to improve performances of CWS. *Also, buses requiring shorter and longer time for repairs be segregated and buses requiring shorter time for repairs be prioritised to ensure availability of buses for operation.*

Delays in regular maintenance at Depots had an adverse impact on performance of engines, batteries and spare parts. Between 2017-18 and 2019-20, in six Depots, expected fuel efficiency in terms of kilometre per liter (KMPL) was underachieved and this resulted in extra financial burden to the BMTC. *BMTC must ensure that depots adhere to the prescribed maintenance schedules and may consider improving the frequency of docking by revising the norms.*

Issues relating to Financial Performance

Audit noticed that cost per km (CPKM) of operation has always been higher than the earning per km (EPKM). Operating Cost Ratio increased from 133.59 *per cent* in 2017-18 to 222.62 *per cent* in 2021-22. Personnel Cost (60 *per cent*) and Fuel Costs (27 *per cent*) were the major components of Operating Expenditure. Operational revenue did not increase commensurately to offset operational expenditure and since fare revision was not done since 2014-15, BMTC could not earn additional traffic revenue of ₹649.74 crore. Further, BMTC was not adequately compensated for implementation of GoK's schemes such as free/concessional bus passes to students, senior citizens, etc. *Considering that BMTC is a major public transport provider for the city, Audit recommends that Government should induce adequate capital, provide regular budgetary support and Government's share of expenditure in the concessional bus pass schemes to be reimbursed to ensure financial sustainability of the Corporation.*

In such a scenario, BMTC must aim to maximise revenue maximization from other non-operating sources such as license fee from letting out commercial/office spaces and advertisements. License fee from shops and commercial establishments and advertisements revenue contributed 61.73 *per cent* of the non-operational revenue (excluding financial assistance from GoK)[1] during 2017-22. As on 31 March 2022, BMTC had 1,062 acres of land at 239 locations. About 62 *per cent* of BMTC's land was vacant for more than 15 years. However, BMTC had no action plan to utilize the land to earn non-operating revenue. 22 *per cent* of the vacant lands held by BMTC were unsuitable for its operations and land parcels suffered from encroachment and litigations. *Audit recommends that BMTC may prepare an action plan for effective utilization and monetization of the land. BMTC may also reconsider acquiring land on lease basis unless it is required for immediate use.*

BMTC's revenue from advertisements reduced considerably between 2017-18 and 2021-22. This was due to restrictions imposed by Bruhat Bengaluru Mahanagara Palike (BBMP) and few litigations relating to road safety that were pending in Hon'ble High Court of Karnataka. However, no efforts were made by BMTC to resolve these issues and explore opportunities to earn advertisement revenue within the legal framework.

Other issues

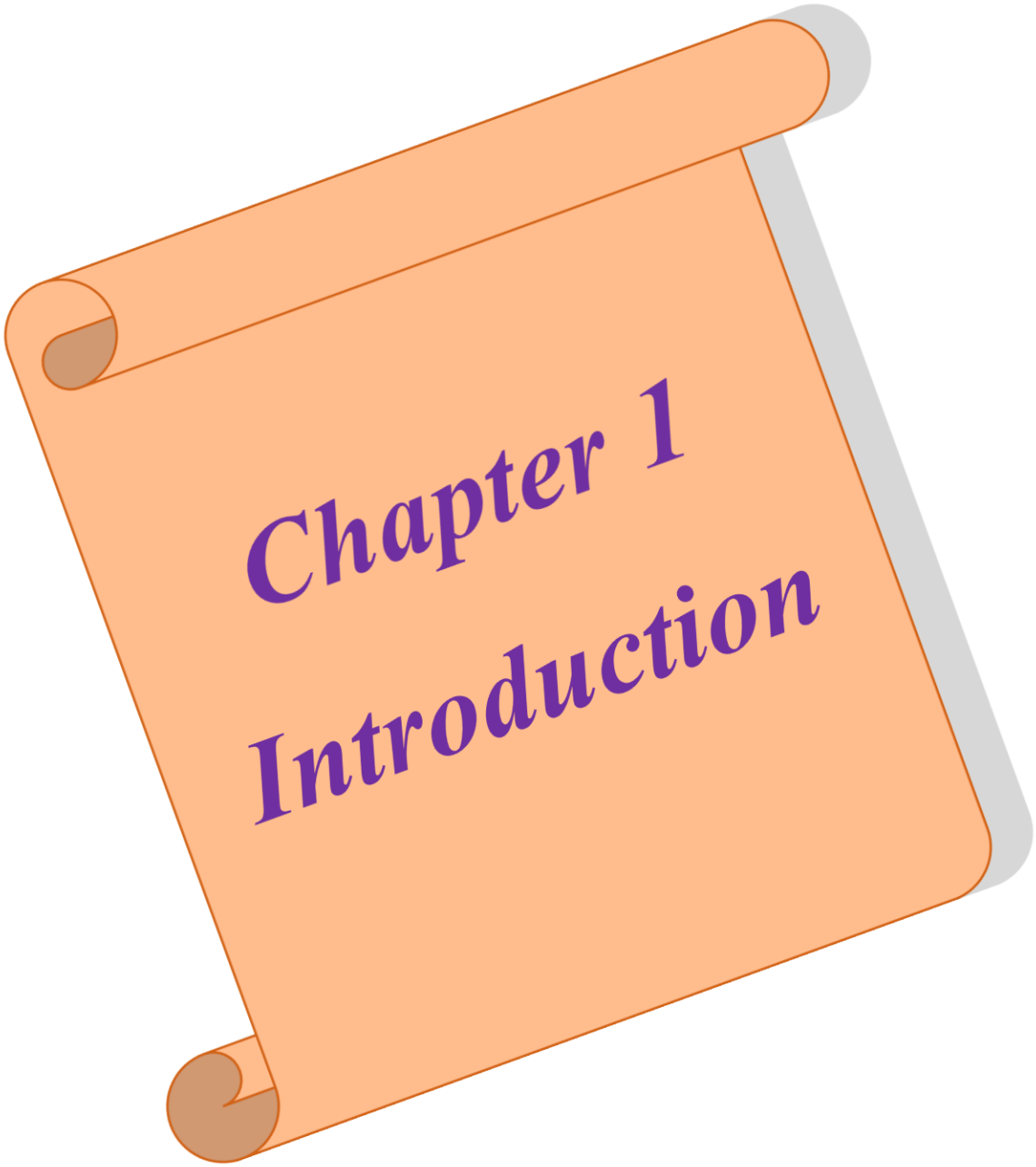
Though BMTC did not have any comprehensive environmental policy, There were certain initiatives such as scrapping of old vehicles and adoption of electric buses in the fleet and rainwater harvesting in the Corporation.

Despite BMTC's commitment to National Green Tribunal (NGT) regarding scrapping BS-III and BS-IV buses, there were unprecedented delays in scrapping

[1] License fee- 48.37 *per cent*; Advertisement Revenue- 13.35 *per cent*

of old buses. *Audit recommends that action may be taken for scrapping and disposal of old buses as per the commitment made to NGT.*

Further, BMTC was unable to meet internally set targets on rainwater harvesting and had set up one of its CWS in an ecologically sensitive area (without preparation of DPR) that restricted its operations. *Therefore, BMTC needs to identify ecologically sensitive lands in possession and construction may be done only after Environmental Impact Assessment studies and formulation of Detailed Project Reports.*


Chapter 1
Introduction

CHAPTER I

Introduction

1.1 Background

The National Urban Transportation Policy (NUTP), launched by Government of India in 2006, aims at providing better mobility and sustainability by focusing on people mobility rather than vehicle mobility. As per a study report[2] published by NITI Aayog, the need of the hour is to focus on public transportation (PT) in India, especially, as income levels increases, people too aspire to shift to private transport, due to infrequency and unreliability of public transport. For Indian cities to be livable, urban mobility, especially, public transport such as bus and bus rapid transit (BRT) systems must become a vital part of urban growth. Public Transport, when well utilized, generates important benefits for the community - air-quality improvements, less land consumption than an auto-dependent transportation system, lower energy requirements and lower accident costs. Governments, therefore, need to explore innovative ways of financing PT ventures and to disincentivise private vehicles. There is a need to improve operations of PT by adopting Intelligent Transport System (ITS) and GPS tracking of buses for better route planning. This would induce long term behavioral change where people would be encouraged to opt for public transport. Further, Governments need to oversee an integrated public transport mode approach for a transition into a low carbon pathway. In this background, the Performance Audit of the Bengaluru Metropolitan Transport Corporation (BMTC), the sole public road transport provider for Bengaluru, was undertaken.

BMTC was formed under the Road Transport Corporation Act, 1950 and came into existence on 15 August 1997 as a wholly owned Corporation of the State Government. The Vision and Mission of the BMTC are to provide integrated, efficient and safe transport services to the public. Presently, BMTC's operations are spread over 5,130 Sq. km serving urban and sub-urban areas of Bengaluru with a radius of about 40.40 km.

BMTC offers daily, weekly and monthly pass to passengers and annual pass at concessional rate to students[3]. Concession in ticket fare and ordinary bus monthly pass are also allowed to Senior Citizens. In addition to this, BMTC also provides chartered services to industries, schools and colleges. BMTC also envisioned (2012) to introduce Innovative Technology for Effective Transport Management such as (i) Vehicle Tracking Utility (VTU), (ii) Electronic Ticketing Machines (ETM), (iii) Passenger Information System (PIS) with LED screens, (iv) Rationalization of Schedules based on Real Time Operation Data from ITS.

[2] Sustainable Urban Transport is the Way Forward by Sunita Sanghi, Manshi Singh and Charlotte Adelina

[3] About 5 lakh students are availing this benefit annually

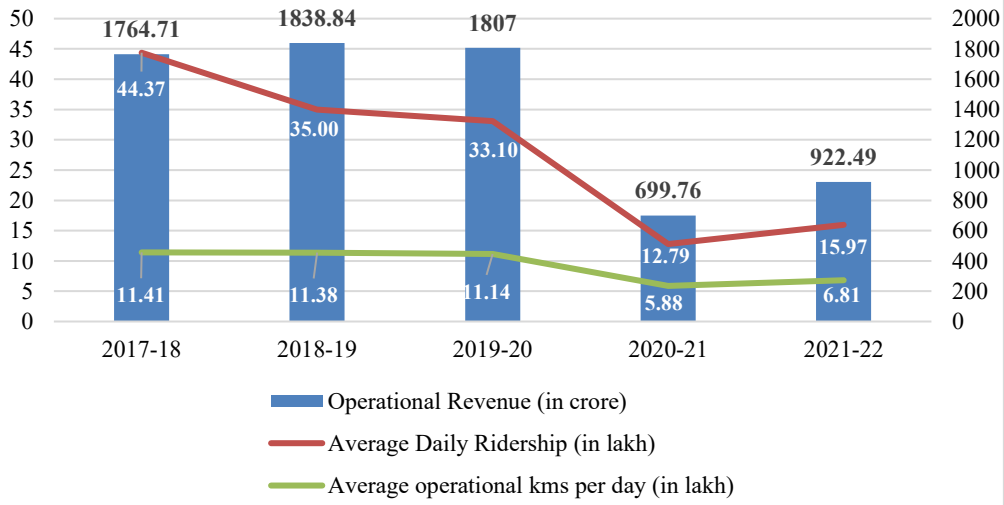
1.2 Operational Performance of BMTC

As of August 2022, BMTC had a fleet strength of 6,799 buses and operated 5,547 schedules from 48 bus stations and 46 depots across six[4] zones. The Corporation had a staff strength of 29,726 and earned an average daily traffic revenue of ₹3.56 crores[5].

Impact of COVID-19 Pandemic

The transportation sector suffered significantly due to lockdowns imposed during COVID-19 and BMTC too, had to curtail its operations in adherence to Government guidelines. ***Chart 1.1*** below depicts the average daily ridership during 2017-22 and as seen in the chart, there is a sharp decline in BMTC's operations and performance during 2020-22, which is due to the impact of COVID-19 pandemic.

Chart 1.1: BMTC's Operations during 2017-22



Source: Administrative reports of respective years

During COVID-19 pandemic, the fleet operation reduced significantly to 5.88 lakh kms and 6.81 lakh kms per day during 2020-21 and 2021-22 respectively as against an average 11.31 lakh kms per day operated during pre-covid years i.e., 2017-18 to 2019-20.

The average daily ridership during 2017-20 was approximately 37.48 lakh. This reduced to about 14.38 lakh during 2020-22 (reduction of 61.63 *per cent)*. Consequently, there was a decrease in the average annual operating revenue of the Corporation from ₹1,804 crore per annum during the pre-covid period to ₹811 crore per annum (decline by 55 *per cent*) in the years 2020-22.

Thus, COVID-19 pandemic had a significant impact on BMTC's operations. While, for the purpose of this report, 2017-2020 have been considered as "normal years" for data comparison and analysis, audit observations have been

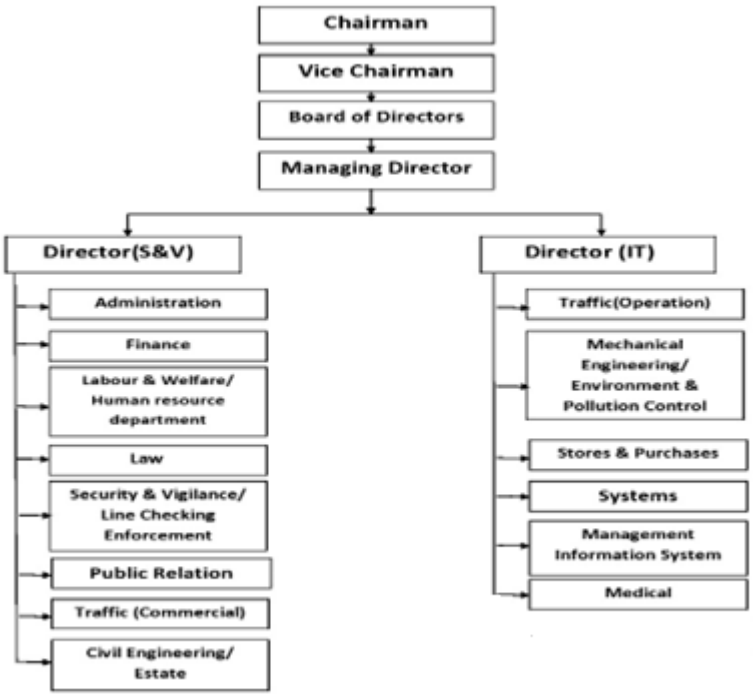
[4] Zones: North, East, West, South, North East and Central
[5] Revenue collection of 20 August 2022

drafted duly taking into consideration the impact of COVID-19 on the BMTC's operations.

1.3 Organisational Setup

BMTC is under the administrative jurisdiction of the Transport Department, Government of Karnataka (GoK). The Corporation is managed by the Board of Directors comprising of a Chairman, Vice Chairman and Directors. All the Directors including the Managing Director are appointed by the Government of Karnataka. The Managing Director is responsible for the day-to-day operations and is assisted by Executive Directors, Depot Managers and other Officers. The Corporation has a two-tier system of administration with Corporate office and Depots. The Organisation Structure of the Corporation is shown in ***Chart 1.2***:

Chart 1.2: BMTC's Organisation Structure



Source: BMTC Website

Traffic (Operations) department of BMTC deals with formulation of routes, schedules, fixation of bus fares, activities of control room, bus stands and call center, etc. It also deals with work related to accidents, public complaints, suggestions and redressal. There are four Central workshops for renewal of Fitness Certificates and for carrying out major repairs for the buses.

Traffic (Commercial) department is responsible for mobilisation of non-traffic revenue for the Corporation through management of commercial establishments. It also provides and maintains passenger amenities like Toilets, Drinking water, Refreshments, General stalls and parking facilities at bus stations.

1.4 Audit Objectives

This Performance Audit was taken up to ascertain whether:

i. The resources/ assets of the Corporation were utilised economically & effectively, efficiency was achieved in the operations of the Corporation to maintain passenger satisfaction;

ii. The Corporation maintained the required fleet strength along with adequate infrastructure including bus stations, depots, workshops and human resources so as to provide safe and reliable urban transport facilities to passengers; and

iii. Adequate maintenance was undertaken to keep the vehicles roadworthy.

1.5 Audit Scope and Sample

The Performance Audit was conducted in all six zones covering the period of five years from 2017-18 to 2021-22. An Audit Sample of 12 Bus depots (10 ordinary bus depots and two premium bus depots) was drawn through stratified random sampling based on the Depots' age. The selected Depots have a combined operation of 1,528 schedules (27.55 *per cent* of total schedules), covering 669.70 lakh kilometres (26.96 *per cent* of total effective kilometres) during the year 2021-22. Further, all four Central workshops and all 10 Traffic and Transit Management Center (TTMC [6]) and two major bus stations (Kempegowda bus station and Shivajinagar bus station) were also selected in the Audit sample. The details are given in ***Appendix 1.1***.

1.6 Audit Methodology

The Entry Conference was held on 6 July 2022 with the Secretary, Transport Department, Government of Karnataka and the Managing Director BMTC wherein Audit Objectives, Scope and Criteria were discussed.

Audit scrutinized the records maintained at selected Bus Depots, Central Workshops, Stores and offices of the Corporation. Joint physical verification regarding passenger amenities at 10 TTMCs and two major bus stations was also conducted. Besides, an online survey was carried out using OIOS[7] Toolkit to elicit passengers' opinion on transport services provided by BMTC. The survey was given wide publicity by advertising in newspapers and in TTMCs, Bus Depots and Bus Stands near schools and colleges.

Apart from this, information on key financial and other parameters related to the city public transport management system was collected from Delhi Transport Corporation (DTC), Ahmedabad Municipal Transport Service (AMTS), Metropolitan Transport Corporation, Chennai (MTC) and Pune

[6] TTMCs include bus bays, platforms, seating and lighting, public convenience infrastructure, information system, safety, and security system along with passenger amenities facilities such as Bengaluru One centers, other citizen amenity centers, ATMs, Daily needs shopping and Park and Ride facilities.

[7] One IAAD (Indian Audit & Accounts Department) One System.

Mahanagar Parivahan Mahamandal Ltd (PMPML) for doing comparative analysis with BMTC.

An Exit Conference was held with Secretary to GoK, Transport Department on 17 April 2023 during which Audit findings and recommendations were discussed. Further, reply of the Government on the draft Report was received in June 2023. The views of the Government are incorporated in the report, wherever necessary.

1.7 Audit Criteria

The audit criteria adopted includes the following:

- The Road Transport Corporation Act, 1950 and Motor Vehicle Act, 1988/ Central Motor Vehicle Rules 1989.
- Operational and financial targets/norms fixed by BMTC.
- Agenda and Minutes of Board meetings and Management Information System (MIS) of BMTC.
- Procurement procedure prescribed by the Corporation and Karnataka Transparency in Public Procurement (KTPP) Act, 1999/ Rules 2000.
- Norms fixed by the Pollution control authorities concerning water & air, and solid waste management.
- Orders of the Hon'ble Supreme Court of India and National Green Tribunal concerning transportation activities.
- Other Instructions of the State Government issued from time to time.

1.8 Acknowledgement

Audit acknowledges the cooperation and assistance extended by the Department of Transport, Government of Karnataka and the management of BMTC at various stages of the Performance Audit.

1.9 Audit Findings

The audit findings have been organised in the succeeding part of the Report as six chapters, viz.,

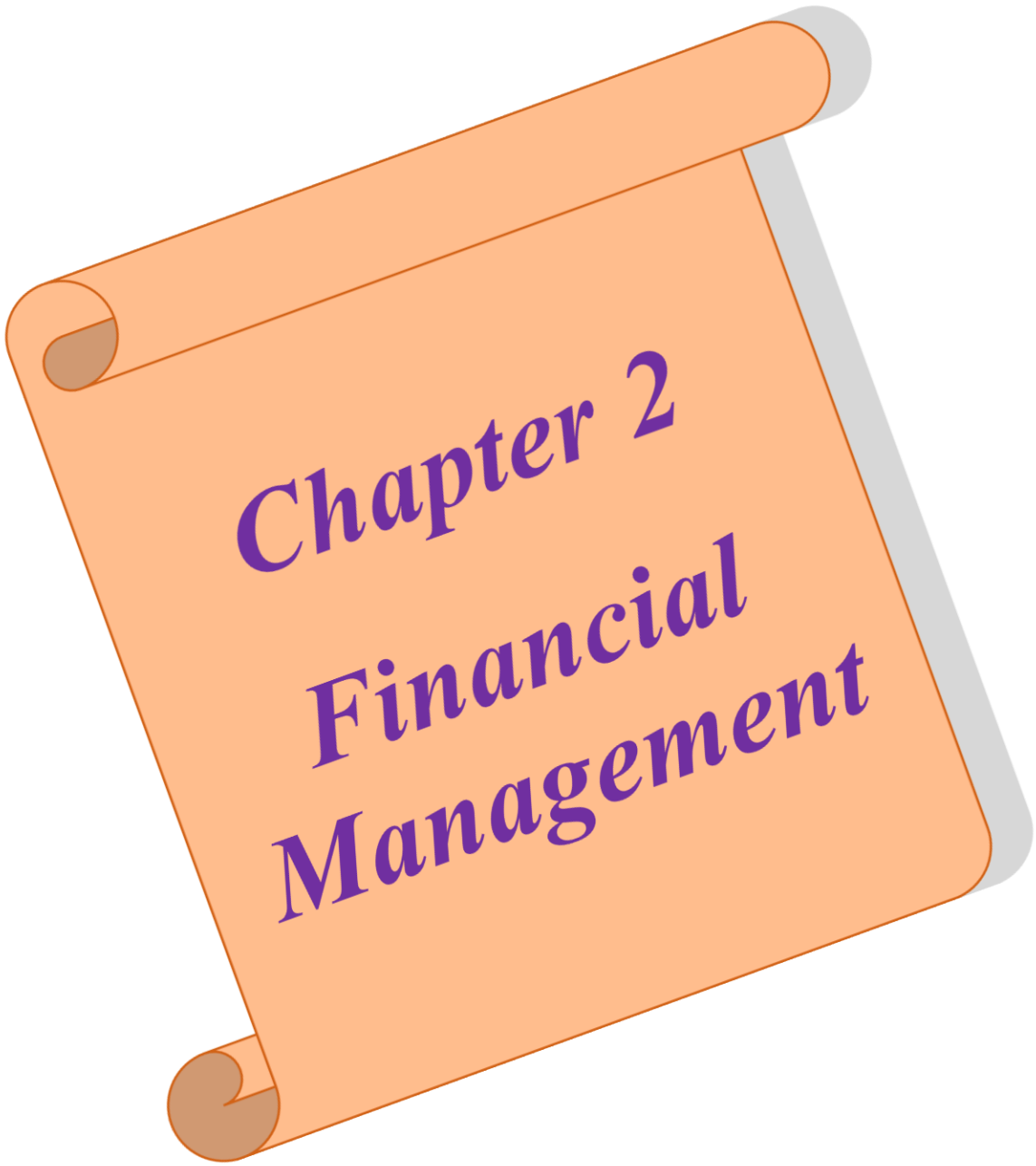
Chapter II: Financial Management

Chapter III: Operational Performance

Chapter IV: Repairs and Maintenance

Chapter V: Optimisation of Non-operating Revenue and Land Management

Chapter VI: Environmental Issues


Chapter 2
Financial
Management

Chapter II

Financial Management

Revenue from sale of tickets was the major source of revenue for BMTC followed by financial assistance by GoK. Personnel Cost and Fuel Costs accounted for about 87 *per cent* of expenditure of the Corporation during 2017-22. BMTC's operating revenue was not able to recover operating expenses and operating losses were incurred year-on-year. As BMTC could not increase passenger fare for the last eight years, it was mainly dependent on Government of Karnataka's financial assistance for meeting operating expenses and to mitigate its losses.

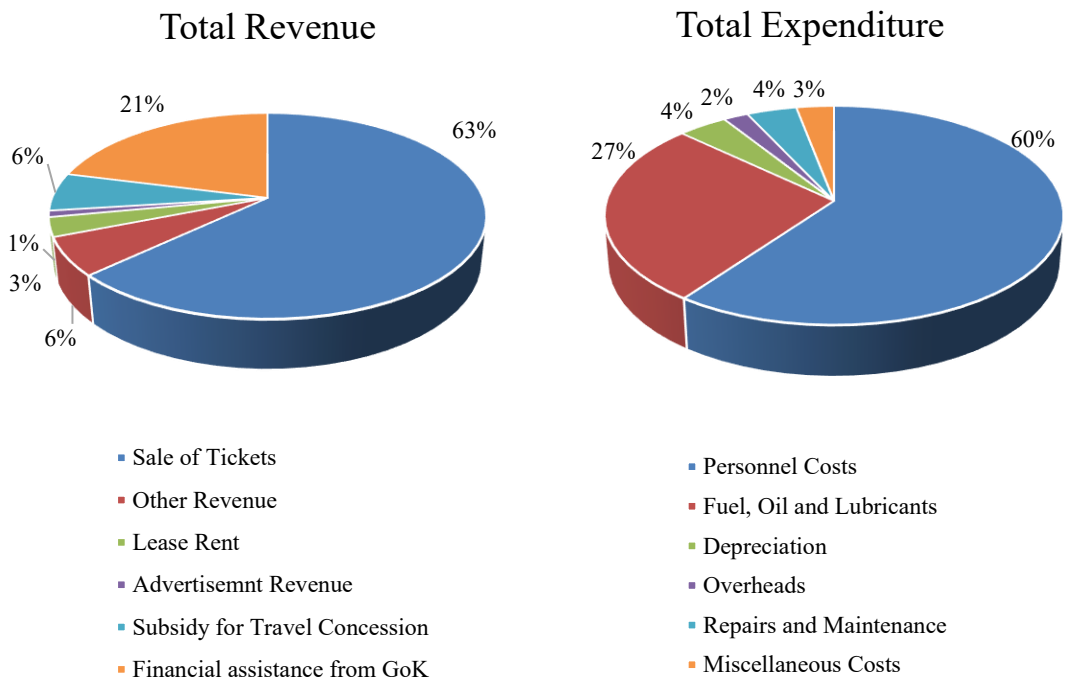
This chapter discusses the overall financial performance of BMTC during the Audit period 2017-22. It gives an overview of the operating cost and revenues. Audit analysis of BMTC's financial statements for five years and corresponding observations are also elaborated.

2.1 Background of BMTC's finances

The revenue and costs of any transport Corporation comprise of two major parts: operating and non-operating. Revenue from the sale of passenger tickets constitutes the major portion of BMTC's operating/ traffic revenue while License fee from commercial and office spaces, Advertisement revenue and financial assistance from Government constitute the major sources of non-operating/ non-traffic revenue. The operating cost includes salary and allowance, depreciation on buses, expenditure incurred towards fuel, oil and lubricants, repairs and maintenance and Motor Vehicle Tax. The non-operating cost includes depreciation on buildings, property insurance fund, third-party risk insurance, other provisions and financial cost (interest).

The share of various components of revenue and expenditure in the overall operational revenue and operational costs are given in the following ***Chart 2.1***.

Chart 2.1: Total Revenue and Total Expenditure for the period 2017-22



At *63 per cent* of the total revenue, sale of tickets has been the major source of revenue of the Corporation followed by financial assistance provided by GoK at 21 *per cent* during the period 2017-22. Pay and allowances of its employees (Personnel Cost) was the major component of Operating Expenditure with the highest share of 60 *per cent* followed by fuel, oil and lubricants at 27 *per cent*. The operating results of the Corporation are discussed in the following paragraph.

2.2 Operating Ratio

Operating ratio is calculated as a percentage of operating cost to operating revenue and it reflects the organisation's ability to generate sufficient revenue to meet its expenses. The cost of operations vis-a-vis revenues during 2017-22 is given in the following ***Table 2.1***:

Table 2.1: Year-wise details of Operating Revenue and Operating Expenditure

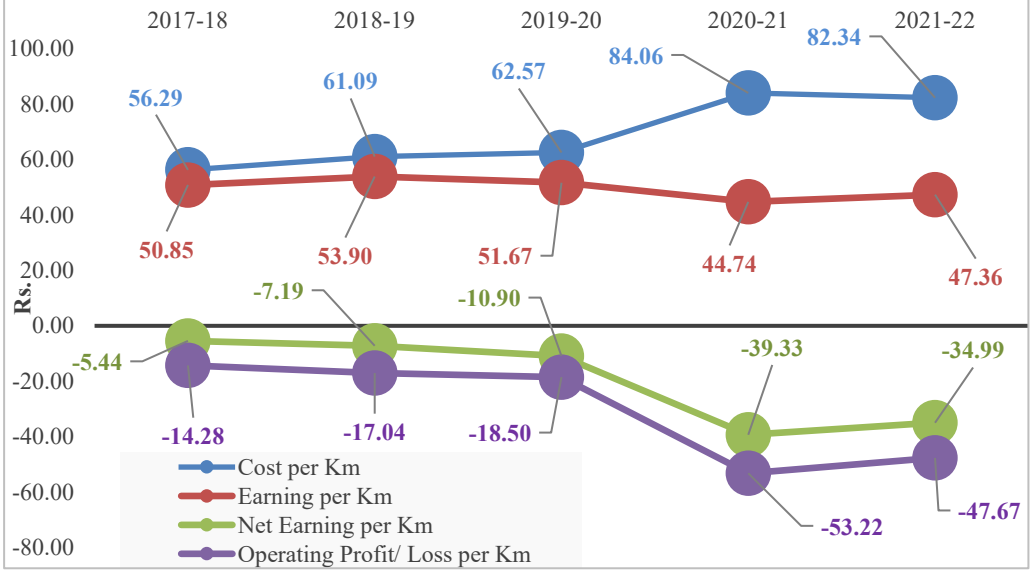
(₹ in crore)

Description	2017-18	2018-19	2019-20	2020-21	2021-22
Operating Revenue	1,764.70	1,838.85	1,807.00	699.76	922.49
Operating Expenditure	2,357.55	2,583.22	2,580.87	1,916.87	2,053.64
Operating Ratio (in percentage)	133.59	140.48	142.83	273.93	222.62

In all the years, the operating ratio remained above 100 *per cent*. This clearly indicated that operating revenue is insufficient to cover operating cost and the gap has only been widening year to year. BMTC's Operating Ratio almost doubled from 133.59 *per cent* in 2017-18 to 222.62 *per cent* in 2021-22.

The average cost of operations, earnings, net revenue earned and operating profit/loss *per* KM[8] for BMTC during period 2017-22 is shown below in ***Chart 2.2***:

Chart 2.2: Operating results per km



Source: Performance Appraisal Reports of BMTC

The steep increase in Cost per km (CPKM) during 2020-22, despite reduction in operations due to COVID-19, was due to high Personnel cost. The Operating loss per km was also the maximum in these years. To alleviate the financial position of BMTC, State Government provided financial assistance towards salary and other expenses of ₹1,980.60 crore[9] during 2020-22.

Issues relating to BMTC's operational efficiency that could result in cost and revenue optimization are discussed in Chapters III and IV of this Report.

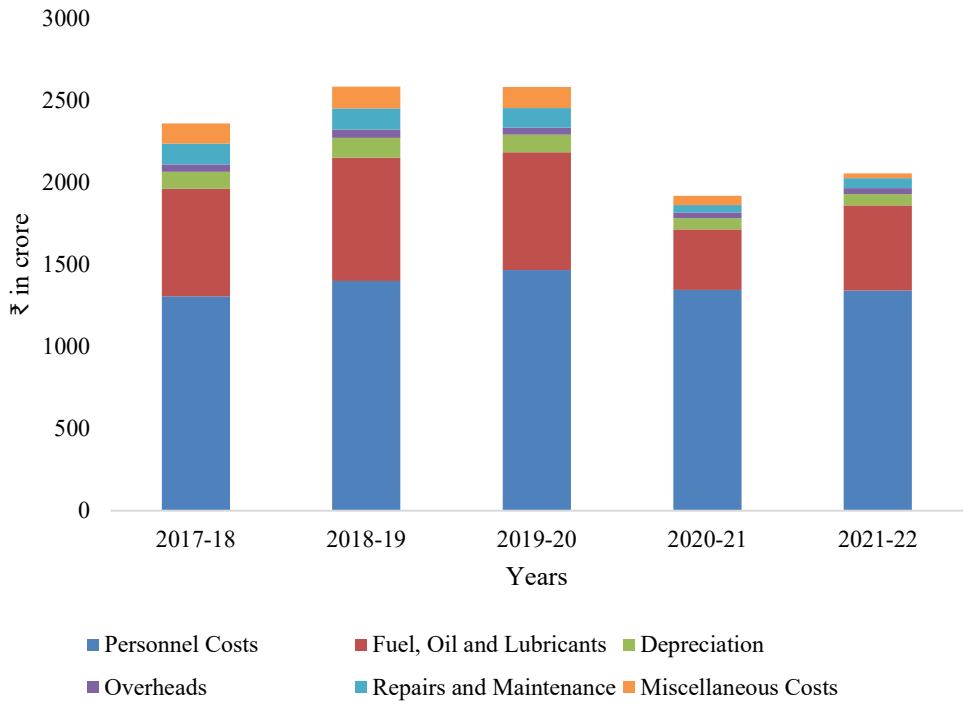
[8] Cost per KM represents total expenditure divided by effective KM operated. Earning per KM is arrived at by dividing total revenue with effective KM operated. Net earning per KM is revenue per KM reduced by Cost per KM. Operating profit/loss per KM would be operating expenditure per KM reduced by operating income per KM.

[9] 2020-21: ₹ 998.55 crore; 2021-22:₹ 982.05 crore

2.3 Increasing Operating Expenditure

The Operating Expenditure during 2017-22 in terms of its components is shown in ***Chart 2.3*** below:

Chart 2.3: Components of Operating Expenditure

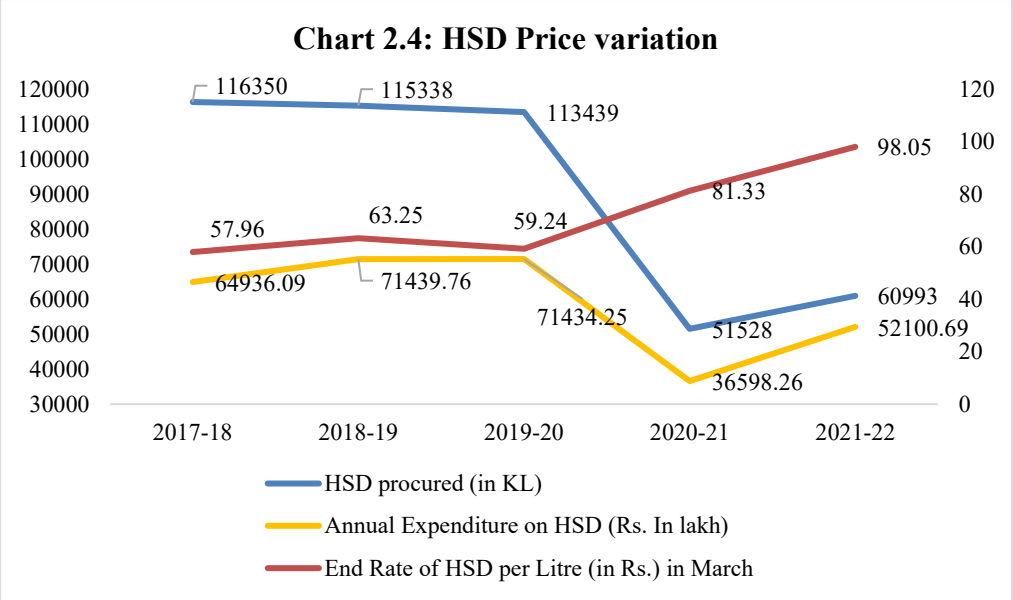


Source: Computed based on information from Annual Accounts of BMTC

Though the staff strength decreased due to retirement and transfer to other Corporations, Personnel costs remained inelastic throughout 2017-22 due to periodic revision of dearness allowance, annual increments, etc.

While the average procurement price of High Speed Diesel (HSD) increased by 71.96 *per cent* from ₹57.02 per litre in April 2017 to ₹98.05 per litre in 2021-22, there was a reduction in expenditure on fuel, oil and lubricants in these years due to reduced fleet operations during the pandemic.

The details of procurement of HSD in kiloliters (KLs), average annual price and variation in prices during the years from 2017-18 to 2021-22 are detailed in ***Chart 2.4*** below:



Source: Data provided by BMTC

As 87 *per cent* of operating cost (Personnel and fuel costs) is beyond the control of BMTC, the Corporation would have to necessarily focus on ensuring revenue maximization. Audit analysed three different strategies for BMTC to improve its earnings: (i) increase in the ticket fares as discussed below (ii) improving its overall operational efficiency as elaborated in Chapter III (iii) maximising non-operating revenue as discussed in Chapter V. These three strategies would play a crucial role in bridging the gap between operating expenses and revenue.

2.4 Non-revision of fares in accordance with the hike in input cost

The Government of Karnataka [10] granted autonomy to State Transport Undertakings (STUs) to revise passenger fares if the combined effect of increase in Diesel prices and Dearness Allowance payable to the employee exceed 0.25 paise per passenger KM. The proposal to revise fare is required to be sent to GoK[11] with Board approval and if no directions are received from the GoK within 10 clear working days, BMTC can implement the fare revision.

Cost per passenger per km which was ₹1.45 in 2017-18 increased to ₹2.43 in 2021-22 registering 67.59 *per cent* rise.

BMTC had submitted fare revision proposals to the Government thrice between 2017-22 and twice during the year 2022-23 (up to December 2022) as detailed in the ***Table 2.2*** below:

Table 2.2: Fare revision proposals submitted by BMTC

Date of proposal	Percentage of fare revision	Fare revision per km in paise
19.07.2018	18.60	17.32
08.02.2021	25.19	22.67
22.03.2022	47.93	43.14
18.04.2022	48.33	43.50
17.06.2022	52.19	46.97

Source: Records maintained in BMTC

[10] vide GO No. HTD 85 TRA 2000 dated 30th September 2000.
[11] vide revised GO No: HTD 261 TRA 2003 dated 4th September 2003.

As the dates of rejection of fare revision proposals by GoK were not made available by BMTC, Audit could not ascertain whether the proposals were rejected in time. However, no fare revision was implemented by BMTC during the five-year Audit period ending 31 March 2022. It is to be noted that the last fare revision was done in the year 2014-15 and in the following year, BMTC made a marginal profit.

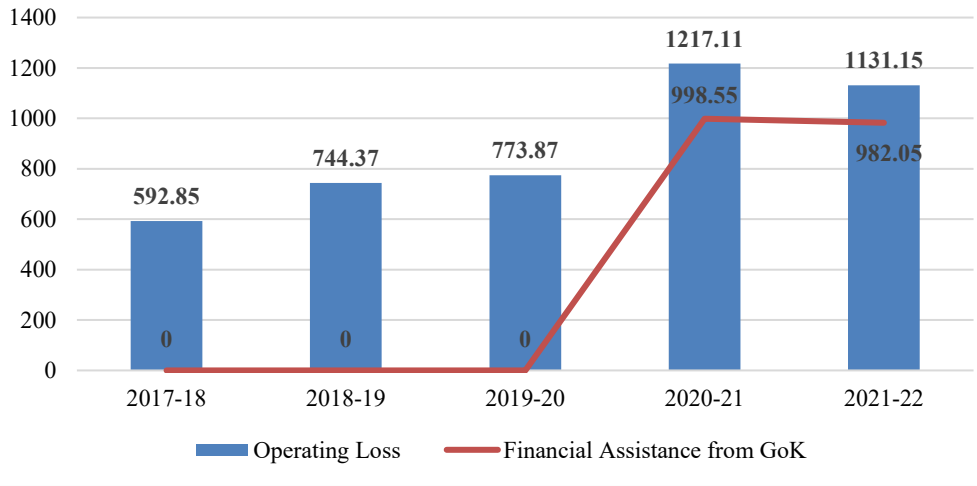
While Audit is conscious that an increase in fares has other ramifications and it could also affect BMTC's passenger base in absolute terms, due to inability to increase fares BMTC lost possible additional traffic revenue of ₹649.74 crore (details are given in ***Appendix 2.1***) which could have reduced the accumulated loss (as of 31 March 2022) by 46.30 *per cent.*

2.5 Financial Assistance given to BMTC by the Government of Karnataka

For any organisation to be viable in the long run, operating revenue should be sufficient to recover its operating cost. As discussed in *paragraph 2.3*, BMTC has no control over the input costs and it has not been able to increase fares to match the increasing operating costs. Resultantly, it has been incurring operating losses during the entire period under Audit and BMTC had also sought viability gap funding (VGF) from the GoK (January 2022) to sustain its operations.

Government's financial assistance to BMTC consists of Grants towards salaries given in the year 2020-22 The year-wise operating loss suffered by BMTC vis-a-vis the financial assistance provided by Government is given in the ***Chart 2.5*** below:

Chart 2.5: Year-wise details of Operating loss and financial assistance from GoK (₹ in crore)



As seen above, the financial assistance from GoK has been inadequate and did not cover the operational losses in any of the five years and BMTC's proposal for VGF has also been turned down by GoK (August 2022).

In the exit conference (April 2023), Government replied that the motive of Public Transport is not profit-oriented. The fare must be kept affordable to reduce the number of private vehicles on road and hence, the bus fare had not been revised. Further, the Government accepted (June 2023) the fact that BMTC cannot continuously sustain operating losses and financial assistance from Government is essential to cover the operating costs.

While audit acknowledges the immense importance of Public Transport, if such utilities are unable to provide reliable, comfortable and convenient travel options to the public due to financial unviability, the objectives of reliable, safe public transport cannot be achieved if the financial sustainability is not adequately addressed.

Recommendation 1: Considering that BMTC is a major public transport provider for the city, Audit recommends that Government should induce adequate capital and provide regular budgetary support to ensure financial sustainability of the Corporation.

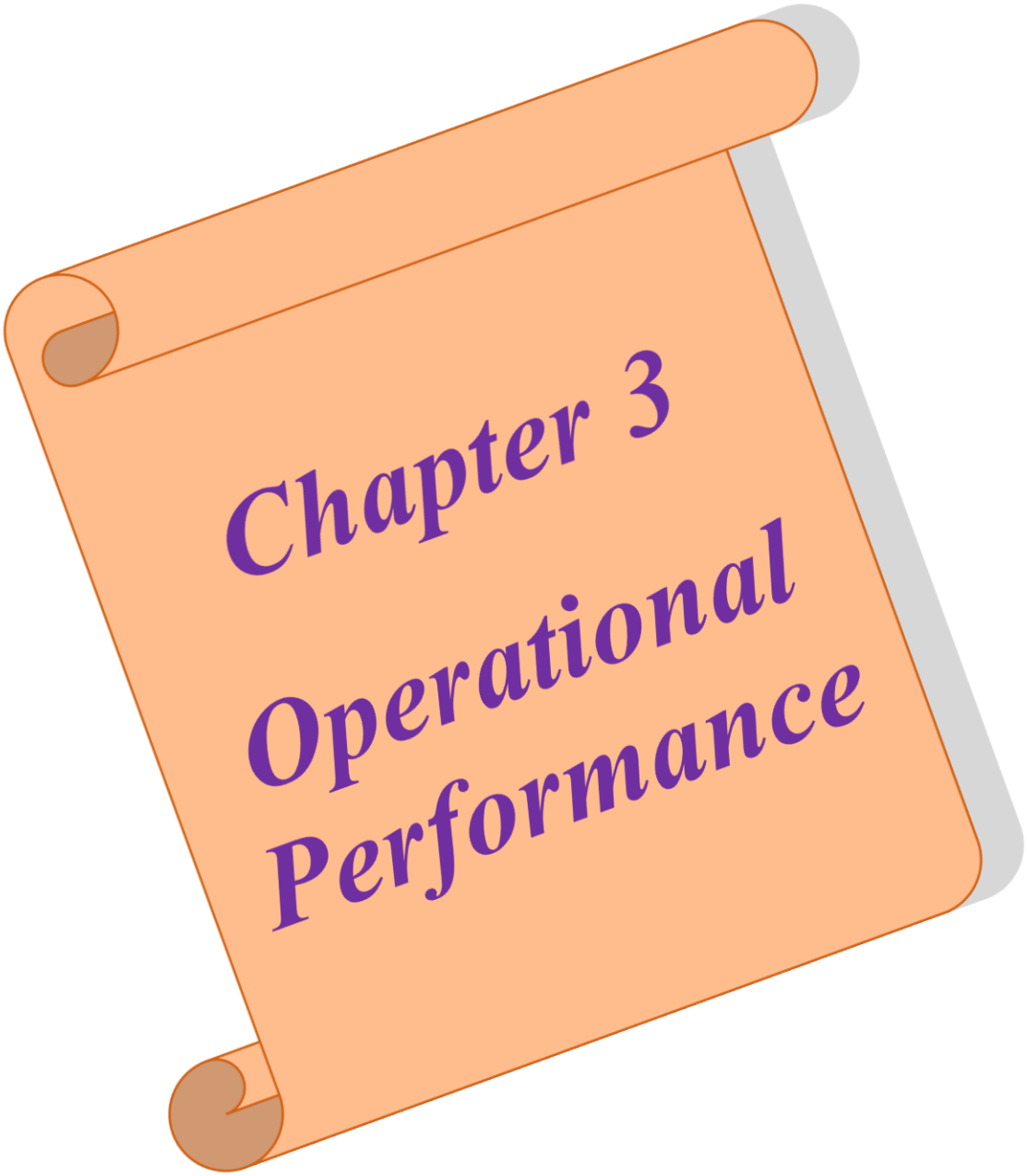
2.6 Non-reimbursement of Government share on concessional bus pass issued

Concessions in passenger fare were extended by BMTC to students, senior citizens, physically handicapped/visually impaired persons, freedom fighters/widows of freedom fighters, dependents of martyrs, *etc*. The financial burden on this account is shared between the GoK and the Corporations as per an agreed formula[12]. However, as on 31 March 2022, Government was yet to re-imburse its share of ₹344.14 crore to BMTC. The details of amounts claimed and received by BMTC towards concessional bus passes are detailed in ***Appendix 2.2*****.**

Recommendation 2: Government must ensure timely reimbursement of its share of expenditure in the concessional bus pass schemes to ensure financial sustainability of the Corporation.

In the exit conference (April 2023), Government accepted the audit observation and recommendation that the reimbursement towards concessional bus passes should be on par with the operating cost incurred by BMTC.

[12] **Students' bus pass concession:** Up to 2013-14, differential rate of expenditure per pass per week. With effect from 2014-15, Actual expenditure basis; **Concession / rebate to senior citizens:** 75 *per cent* of the bus fare to be borne by the beneficiary, and 25 *per cent* by the Corporations and GoK (12.50 *per cent* each).


Chapter 3
Operational
Performance

CHAPTER III

Operational Performance

BMTC's passenger base decreased continuously over the years despite increase in the city's population. The load factor[13] in ordinary buses ranged from 55 to 76 *per cent* and in premium buses, it ranged from 31 to 55 *per cent* only. These factors affected the operational revenue of BMTC. Schedules were not planned scientifically and BMTC adopted uniform trip durations, ignoring peak hours. Due to poor fleet management at Depots, operation of overaged buses and crew shortage, there were cancellation of kms which also resulted in substantial operational and financial loss to BMTC. Further, premium buses were not being operated till their expected life span in terms of kilometres.

In this chapter, operational performance of BMTC in terms of coverage of routes, fleet management, diminishing passenger base, cancellation of kilometres, load factor, vehicle productivity, etc. have been analysed. A comparative analysis of performance of BMTC with City Transport Corporations in other States is contextually provided, wherever necessary. The results of online passenger survey have also been incorporated in this chapter.

3.1 Diminishing passenger base of BMTC

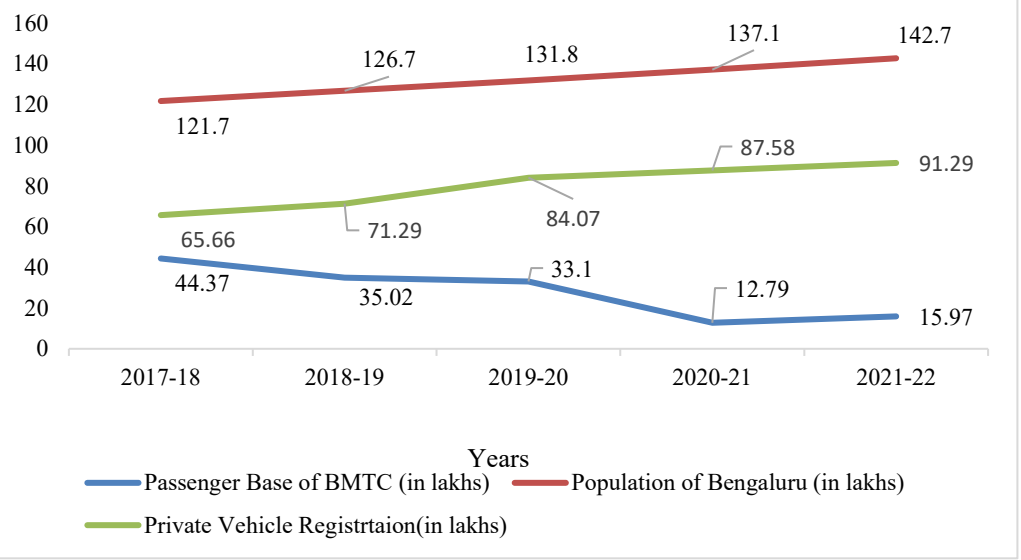
Good passenger load is key for earning more operational revenue in the transport sector. Audit observed that BMTC's passenger load continuously decreased (from 44.37 lakh per day to 33.10 lakh per day) during the years from 2017-18 to 2019-20 despite 8.29 *per cent*[14] growth in the population of the city. Further, there was a drastic reduction in 2020-21 due to COVID-19 pandemic, followed by slight recovery in 2021-22. ***Chart 3.1*** compares BMTC's average passengers carried per day along with Bengaluru's Population during 2017-22 and growth in registration of non-transport vehicles[15].

[13] 'load factor' which reflects the capacity utilisation of BMTC's services calculated using the formula: Load factor = actual revenue earned/(effective kilometer X passenger fare per km X carrying capacity) X 100

[14] Population as per Karnataka State At a Glance – Statistical Report – FY 2020-21 published by Directorate of Economics & Statistics of Government of Karnataka.

[15] Private Cars and two wheelers

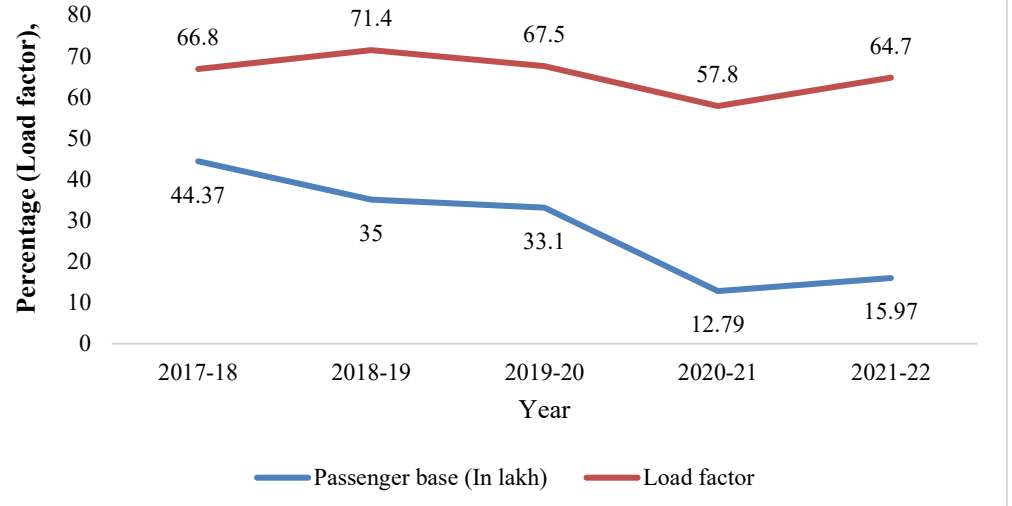
Chart 3.1: Comparison of BMTC's passenger base and Bengaluru's Population



Source: Karnataka State At a Glance – Statistical Report – FY 2020-21, annual administrative report of BMTC & annual report of commissioner of transport & road safety.

With a view to assess the impact of decline in passenger base, Audit analysed the 'load factor' which reflects the capacity utilisation of BMTC's services as depicted in ***Chart 3.2***[16]. Load factor is calculated as a percentage of traffic revenue actually realised to the total realisable traffic revenue.

Chart 3.2: Passenger base comparison with Load factor



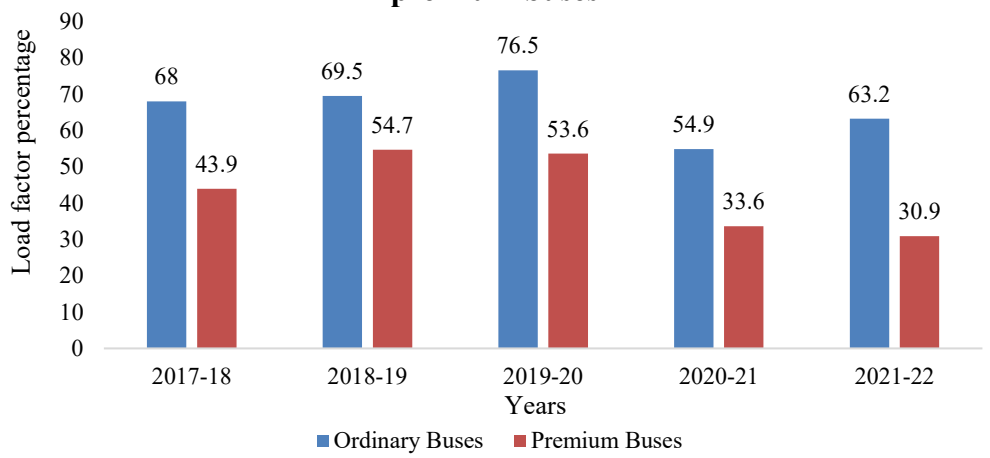
Source: Performance Appraisal Reports (PAR) of BMTC & annual administrative report of BMTC.

[16] BMTC considers in overall load factor, the operational revenue that are realised at central office such as pass revenue, casual contract revenue, fines collected, luggage revenue, reimbursement of Government share in concessional passes issued, etc. These factors are considered for calculating the overall load factor for the years 2017-18 and 2019-20 (*Chart 3.2*).

The passenger load factor[17] did not decline despite drop in passenger base during 2018-19 and 2019-20 due to delay in issue of concessional bus pass to students. Students bought tickets as normal passengers for commute which contributed to increase in traffic revenue.

The load factor was further analysed for ordinary and premium buses separately to ascertain their operational viability as shown in the ***Chart 3.3***.

Chart 3.3: Passenger Load Factor in ordinary and premium buses



Source: Performance Appraisal Reports of BMTC

The load factors of ordinary buses improved in the years 2017-18 to 2019-20 and was above 60 *per cent*. The load factor reduced to 54.9 *per cent* in 2020-21 due to the COVID-19 lockdown and restrictions. As the restrictions eased, the load factor increased to 63 *per cent* in 2021-22.

The load factor of premium buses was below 55 *per cent* even during 2017-18 to 2019-20, which further reduced to 33 *per cent* due to COVID-19 in 2020-21. There was no recovery in 2021-22 and it dropped to 31 *per cent*. This trend showed that ordinary bus services are preferred more by public than premium buses, possibly due to the fare differences. Apart from having different passenger bases, the premium bus fares are 25 *per cent* to 400 *per cent* more than the ordinary bus fares on the same routes. In the passenger survey, around 50 *per cent* respondents suggested that the reason for choosing BMTC for commutation was only because of its low fares.

On comparison with AMTS, DTC, MTC and PMPML, Audit noticed that DTC and PMPML had better passenger load than BMTC during 2017-18 to 2019-20. DTC and PMPML had passenger load of over 80 *per cent* and over 74 *per cent* respectively, suggesting that they attracted more passengers than BMTC. In this regard, BMTC's route and schedule planning are analysed in *paragraph 3.4*.

On this being pointed out, the Government replied (June 2023) that reduction in ridership was mainly due to growth in private vehicles (particularly two

[17] For calculation of load factor in ordinary and premium buses, only the ticket revenue is considered (*Chart 3.3*).

wheelers) in the city. Growth of cab aggregators who provide door to door services and Metro operations in high-density corridor (for about 70 kms) were the other major reasons for dip in the daily ridership in BMTC buses. Government also stated that to improve the load factor in BMTC buses, it planned to introduce Bus Priority Lanes in 12 High Density Corridors in coordination with BBMP, Directorate of Urban Land Transport and Bangalore Traffic Police. BMTC has also planned to implement Vehicle Tracking System, Passenger Information System, Mobile Application under Nirbhaya Scheme.

The Government reply confirms that the public transport utility has not been able to attract and retain its passenger base as seen by the increase in the number of private vehicles and other modes of transport.

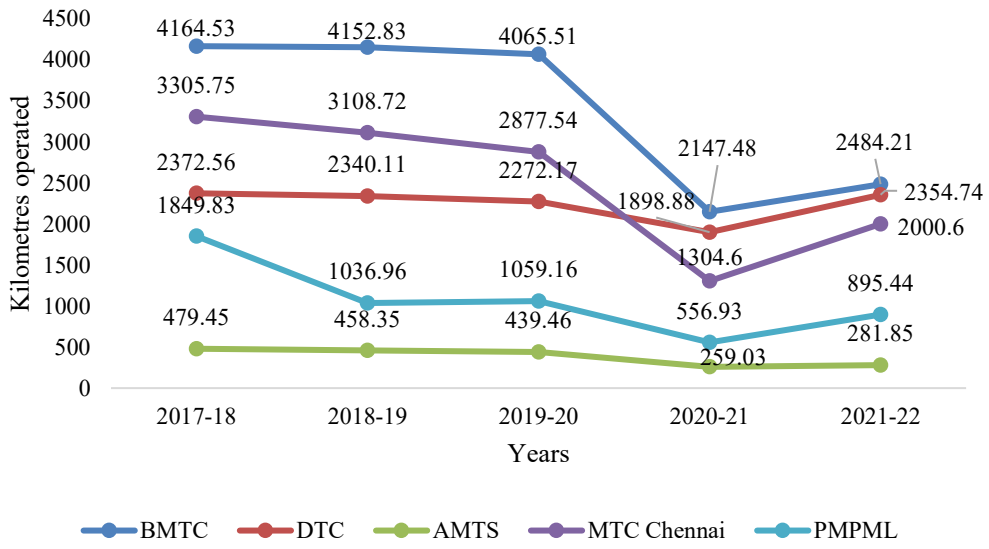
3.2 Operational Performance of BMTC

A public transportation system can sustain and increase its passenger base by providing reliable services. This depends on efficient operational management and optimum utilization of fleet. The total number of kms operated by BMTC in a year, number of routes, number of trips covered, etc. were analysed to assess its operational performance.

3.2.1 Operational Kms of BMTC and other Corporations

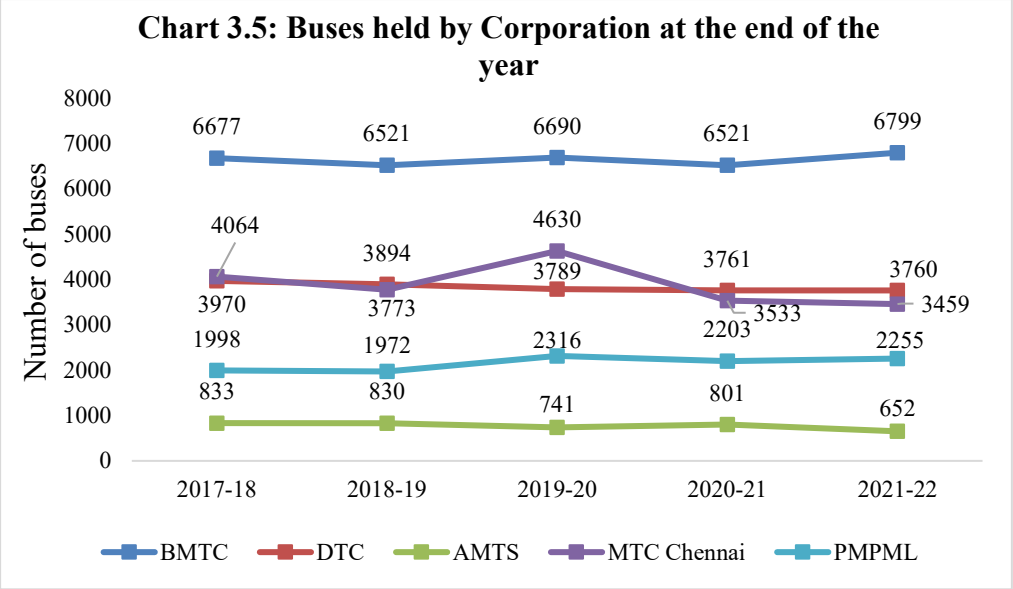
Operational Kilometres reflects the number of kms run by a transport Corporation's fleet in that particular year. The operational kms of BMTC and other transport Corporations are shown in ***Chart 3.4*** below.

Chart 3.4: Kilometres operated by different Transport Corporations (in lakh kms)



Source: PAR of BMTC and information collected from the respective Corporations.

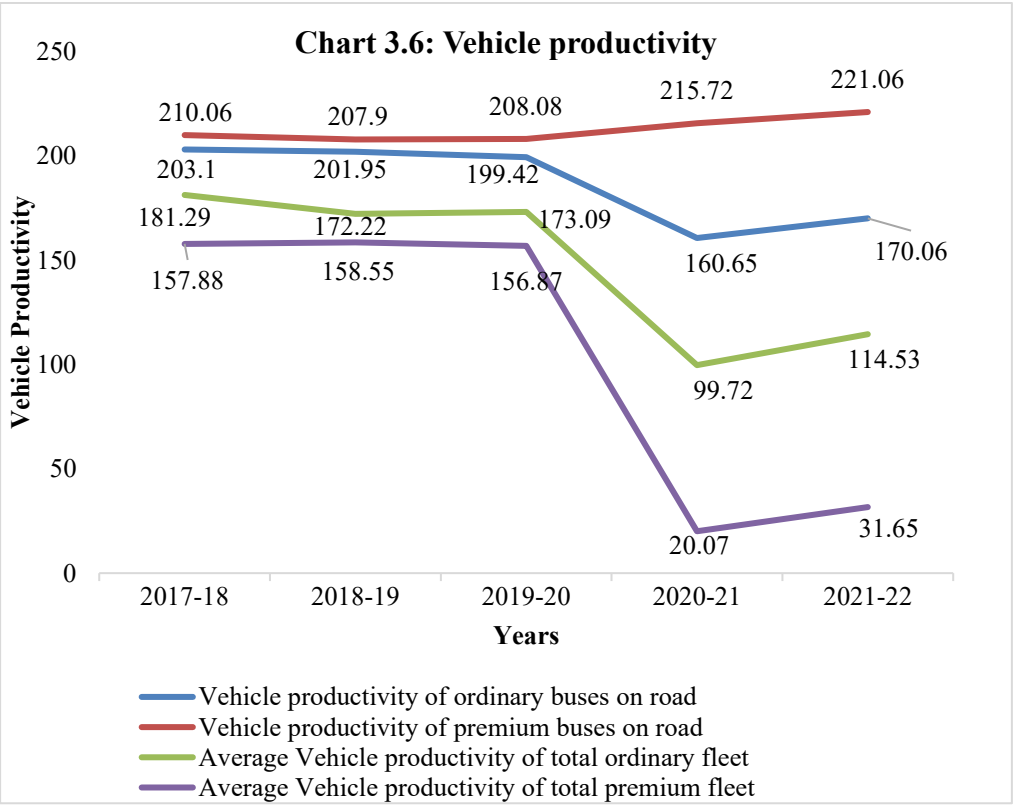
As seen, BMTC was operating higher number of kms per annum than others, especially during 2017-20. This could be because BMTC had significantly more buses in its fleet than other transport Corporations as shown in ***Chart 3.5***.



Source: PAR of BMTC and information collected from the respective Corporations.

3.2.2 Vehicle Productivity

Though BMTC had higher fleet strength than other RTCs, optimum fleet utilization is necessary to ensure operational and financial sustainability. One of the indicators of optimum fleet utilization is the 'Vehicle productivity', which refers to the average km run by each bus per day.



Source: PAR of BMTC

Vehicle productivity for ordinary buses showed a gradual declining trend (against target of 206 km per day) during 2017-20 and then reduced sharply during 2020-22 due to COVID-19 as shown in ***Chart 3.6***. Audit noticed that the shortfall in achievement of the vehicle productivity target was mainly because of high incidence of cancellation of scheduled km (*elaborated in paragraph 3.7*). In respect of premium buses, though average vehicle productivity of total fleet reduced drastically, the buses on road showed increased vehicle productivity. This was due to operation of these buses on longer routes (including the city-airport route).

On comparison with AMTS, DTC, MTC and PMPML, Audit noticed that MTC and PMPML had better vehicle productivity than BMTC during 2017-18 to 2021-22. MTC's fleet had vehicle productivity between 252-289 km and PMPML's fleet had vehicle productivity between 205-238 km.

On this being pointed out, Government accepted the Audit observation and stated (June 2023) that necessary steps would be taken to improve the vehicle productivity.

3.2.3 Fleet position of BMTC

With a view to assess the adequacy of services provided by BMTC to the city[18], Audit analysed the fleet availability vis-a-vis requirements as stipulated under the Service Level Benchmark (SLB) in Urban Transport for Indian Cities published by the Ministry of Housing and Urban Affairs (MoHUA), Government of India in 2012. As per the SLB, the minimum requirement for every 1,000 population is 0.6 bus in cities.

Table 3.1: Ratio of average fleet strength to population of the city

Year	Projected population in thousands	Average Fleet held	Ratio of average fleet held for every 1000 population	Minimum fleet at 0.6 bus for every 1000 population	Short (-)/ Excess (+) fleet	Shortage in percentage
	(a)	(b)	(c)	(d)	(e)	(f)
			=(b)/(a)	=(a) X 0.6	=(b)-(d)	=(e)/(d)X100
2017-18	12,179.58	6,394	0.52	7,308	-914	12.50
2018-19	12,670.71	6,674	0.53	7,602	-928	12.21
2019-20	13,182.50	6,515	0.49	7,910	-1,395	17.63
2020-21	13,715.82	6,608	0.48	8,229	-1,621	19.70
2021-22	14,271.58	6,565	0.46	8,563	-1,998	23.33

Source: PAR of BMTC

The average fleet held by BMTC was lesser than the minimum criteria of 0.6 bus per 1000 population and the annual shortage of fleet increased from 914 buses in 2017-18 to 1,998 buses during 2021-22.

[18] Population figures taken from Karnataka State At a Glance – Statistical Report – FY 2020-21 published by Directorate of Economics & Statistics of Government of Karnataka.

In such a scenario, a robust system to gather real time information of passenger load and vehicular movements in different routes/schedules is essential for optimal planning of fleet operations. The ability of the BMTC to gather relevant data and issues in planning and operating of schedules are discussed below.

3.3 Ineffective implementation of Intelligent Transport System (ITS) to aid fleet management

BMTC approved (July 2012) the implementation of ITS to (i) provide real-time information on bus operation and routes to commuters through various modes and (ii) to integrate and automate secure ticketing and data compilation for a reliable Management Information System. Implementation of ITS was expected to improve the operational efficiency of the fleet and reduce costs.

BMTC awarded (August 2013) the contract for Design, Development, Training, Communications, Operations, Maintenance and Management of the ITS project for five years to an agency[19] for ₹69.87 crore. Considering the complexity and large scope of the ITS project, a Project Management Consultant (PMC)[20] was also appointed (August 2013) for a period of five years. However, the ITS was not successfully implemented as of March 2022. Audit analysis revealed the following issues:

(i) As per the PMC, (Site Visit Report of June 2014) the Agency entrusted with ITS Development had no prior experience/ little knowledge in the development of a vehicle tracking system application and Passenger Information System. The agency lacked a subject matter expert and these issues could pose challenges in the quality of work and adherence to timelines. However, BMTC ignored the advice given by PMC and continued the contract with the same agency.

(ii) 6,500 Vehicle Tracking Units (VTU), 10,000 Electronic Ticketing Machines (ETMs) and 35 Passenger Information System (PIS) display units were essential to operationalise the ITS holistically[21]. Accordingly, the Agency was to provide and commission all devices i.e., from the Commercial Operational Date on BOOT[22] basis. However, the Agency was unable to meet the contractual obligations and did not ensure functioning of the entire agreed number of functional

PIS not giving information of the Bus stop

[19] M/s Trimax IT Infrastructure and Services Pvt Ltd. (Trimax)
[20] M/s Price Waterhouse Cooper (PWC)
[21] The VTUs would provide real time information on movement of buses when these information (PIS) passed on to passenger waiting in bus stops will get to know the availability of buses and waiting time. Also, the information gathered from would provide actual time taken by each bus to travel from source to destination in different routes at different times of the day. The ETMs give accurate information of stop wise, route wise details of passenger load at different times of the day.
[22] BOOT – Build-Own-Operate-Transfer.

units throughout the agreement period of five years. As of June 2021, the functional VTUs were 4,444 and ETMs were 2,903. Further, none of the PIS display units were functional.

(iii) The partially implemented ITS project needed upgradation and continuity after the contract period (June 2021). Though it was decided to appoint a new vendor in the 94th Meeting of the Board of Directors (August 2019), the contract with the original service provider was extended for another six months (till December 2021). Further, Audit noticed that no new vendor had been finalized till December 2022.

(iv) During Audit's field visits (July- September 2022) to the selected 12 depots, only 441 ETMs (out of 2,413 ETMs required) were in working condition. The shortage of ETMs in these 12 depots alone was 1,972 ETMs (81.73 *per cent*).

Thus, these issues resulted in only partial implementation of ITS and poor public service delivery by deprivation of real time information on availability of buses, probable waiting time, etc. Further, BMTC could not use accurate data on load factor, actual travel time, commuter travelling patronage, etc. that is necessary for scientific planning and operation of the schedules (*as discussed in the paragraph 3.4 below*).

Recommendation 3: Action may be taken for speedy implementation of IT system for issue of tickets, tracking buses and for providing real time information to commuters.

On this being pointed out, the Department stated (November 2021) that as on June 2021, all the schedules were provided with ETMs and VTUs have been commissioned. However, Government stated (June 2023) in reply to *paragraph 3.12* of this Report, that BMTC is in the process of implementing IT based system and ETM to all the buses. The replies are contradictory.

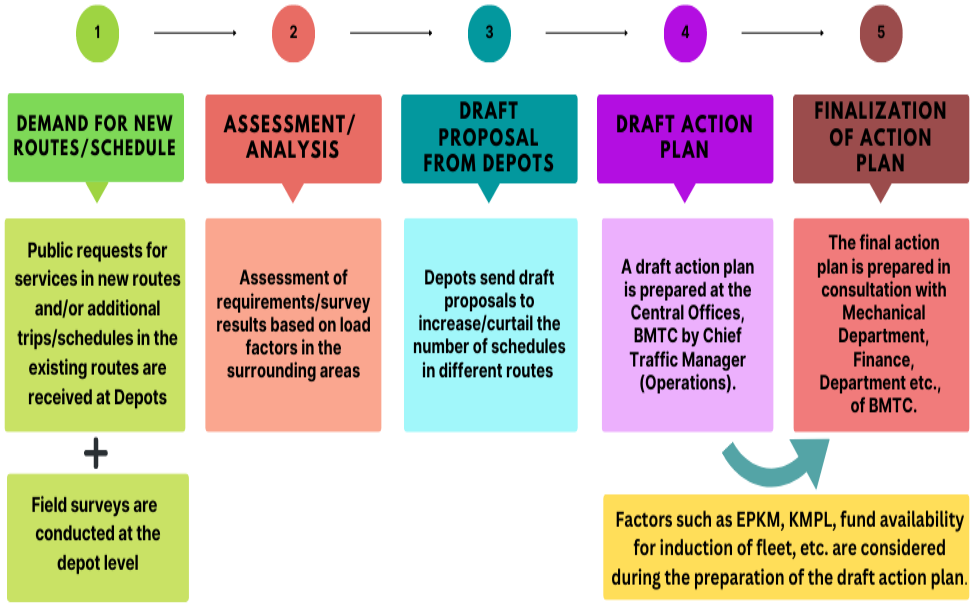
3.4 Unscientific planning of schedules

A 'Schedule'[23] refers to number of trips in one or more routes[24] assigned to a bus for a day. The schedule prepared for each bus details the route(s) through which the bus is operated, departure time from the Source, arrival time at the Destination, number of trips and the fare stages in one trip together with the duration allowed for each trip. The processes involved in the planning of schedules is given in the ***Diagram 3.1***:

[23] For example, the bus allocated with Schedule "61-J/5" operates two routes. It operates in 61-J route (from Chandra Layout 1st Stage and Kempegowda Bus Station) from 8.20 am to 11.05 am in the morning and from 17.20 pm to 19.20 pm in the evening. Between 11.10 am and 17.15 pm, the bus operates another Route viz, 238-V which is between Kempegowda Bus Station and Dr. Ambedkar Institute of Technology.

[24] A line of travel which specifies the road which may be traversed by a motor vehicle between one terminus and another.

Diagram 3.1: Process flowchart of planning of schedules



3.4.1 Issues in the Scheduling process

Details of public requests with respect to new schedules and relevant data collected by the Depots during surveys were not maintained and were not produced to Audit. Only draft proposals, draft action plans and finalised action plans were produced to Audit. Hence, Audit was unable to give an opinion on the robustness of the process in entirety.

On this being pointed out, the Government reiterated the process followed in finalizing the Schedules as mentioned in ***Diagram 3.1.*** However, in the absence of basic information such as survey data, public demands, etc. maintained by BMTC, adherence to the prescribed processes in planning the Schedules could not be verified by Audit.

In the absence of such information, Audit analysed modifications made by BMTC in number of schedules and trips in different routes with respect to load factor recorded by the Depots for respective Schedules. An analysis of 17 cancelled Schedules in nine Depots is given in ***Case Study 3.1***.

Case Study 3.1: Discontinuation of Schedules

51 Schedules (details given in ***Appendix 3.1***) that were operating in 32 routes with load factor of more than 90 *per cent* were discontinued by BMTC between June 2017 and February 2020. The reasons for discontinuation of these schedules were not on record.

Cost recovery in Schedule	No. of Schedules	Load Factor (Percentage)
Recovered both variable and fixed costs	11	94-134
Recovered only variable costs	28	90-105
Could not recover both variable and fixed costs	12	90-96

The analysis revealed that BMTC had arbitrarily cancelled Schedules which (i) had above average load factors and (ii) were contributing profits or at least achieving breakeven with respect to operating costs. This showed that planning of schedules was ad-hoc and not based on financial analysis, public demand or data driven.

Thus, these cancellations led to increase in losses for BMTC and caused inconvenience to public who depended on them. With accurate data on public demand and data analysis, BMTC would be able to optimize its operations scientifically.

3.4.2 Inadequate frequency of Schedules

As per the data furnished to Audit, 2,196 routes were being operated by BMTC as of March 2020. The data related to number of schedules and routes operated is given in the ***Table 3.2*** below:

Table 3.2: Details of Schedules and operated by BMTC

S. No.	Particulars	No. of routes	Percentage	Average load factor	Average route length (in Km)	Average trips per Schedule	Total number of Schedules
1	No. of routes with 1 schedule	1414	64.39	69.67	20.81	11.28	1414
2	No. of routes with 2 schedules	311	14.16	72.19	17.95	12.19	622
3	No. of routes with 3 schedules	128	5.83	74.89	17.25	12.18	384
4	No. of routes with more than 3 schedules	343	15.62	79.04	18.01	11.11	3765

Source: Information given by BMTC

Out of 2,196 routes, 1,414 routes (64.39 *per cent*) have only one schedule operating in the route and 343 routes (15.62 *per cent*) have more than three

schedules in the route. Audit analysed the timings of the schedules and computed that the waiting period for passengers who are travelling on routes with fewer than three schedules would be more. Practically, passengers would switch buses to finish their journeys instead of waiting. Operation of schedules at low frequency causes inconvenience to passengers and this may result in them migrating to other modes of transport.

In the passengers' survey conducted by Audit, about 40 *per cent* of the respondents stated that their waiting time for bus is more than 15 minutes and 17 *per cent* claimed that it is more than 30 minutes. Further, 63 *per cent* of the overall respondents felt that the frequency of buses should be increased.

On this being pointed out, the Government stated (June 2023) that BMTC operates most of the schedules in the main corridors of the city. The villages in the city outskirts or areas with less traffic flow or load factor are provided with single schedule to ensure minimum public transportation. Though the route number of different schedules vary, in the main corridor, their operations will be on the same route in certain stretches and hence, the frequency in the main corridor routes will be high.

The reply is not acceptable as 1,414 routes (64.39 *per cent*) out of 2,196 routes are being operated with only one schedule. These routes are from the areas in the outskirts of the city and travel longer distances. Consequently, time taken by these buses will be more. This may affect frequency and could possibly induce the public to switch to other modes of transport.

3.4.3 Unscientific trip duration in schedules

Audit noticed that the travel time for all trips in a particular route was fixed uniformly, irrespective of the time of the day. The traffic density and peak hours have a significant impact on the time taken for completion of a trip causing increased waiting time for the subsequent trips. Also, bunching of buses at different stops due to traffic conditions cannot be ruled out. It is not logical to fix uniform time for all trips, ignoring these external factors. Further, this could also result in cancellation of trips (or kms) due to peak hour traffic that is not initially factored in at the time of schedule preparation.

Recommendation 4: BMTC must ensure that schedules are prepared scientifically using quantitative techniques such as queuing theory, time and motion studies and after considering factors such as load factor, margin contribution, public demand, travel time, etc.

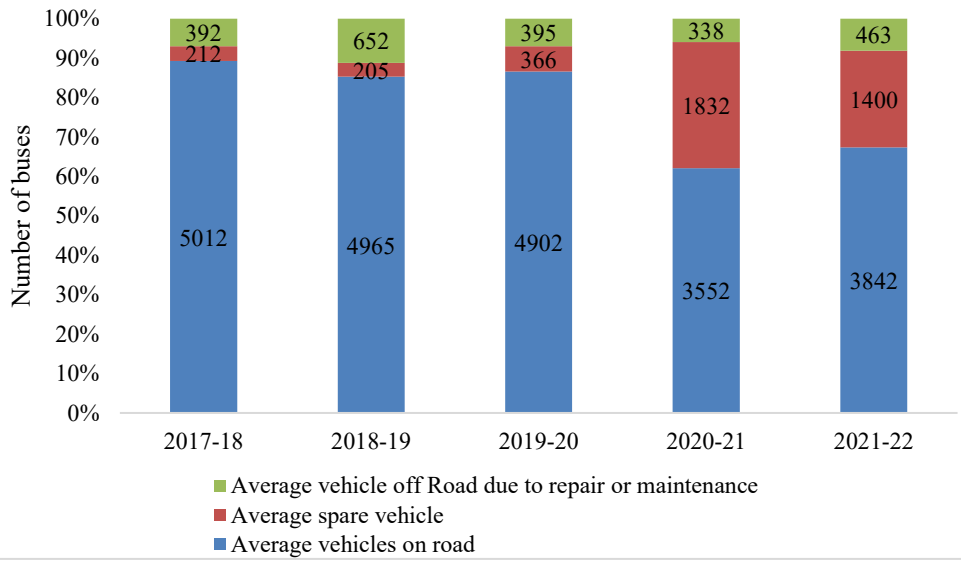
On this being pointed out, Government replied (June 2023) that BMTC is in the process of implementing Automatic Vehicle Location System (AVLS) (which would provide travel time data) and Electronic Ticketing Machines in all buses. After the implementation of AVLS system, more scientific way of preparing schedules will be followed.

3.5 Under-utilization of fleet

Fleet utilisation represents the average fleet run on road vis-à-vis the average fleet held at the Bus Depots. Technical Manual[25] stipulates that minimum fleet utilisation of 92 *per cent* should be achieved for operational efficiency and 8 *per cent* of spare vehicles are to be held at Depots to address repairs and maintenance of buses.

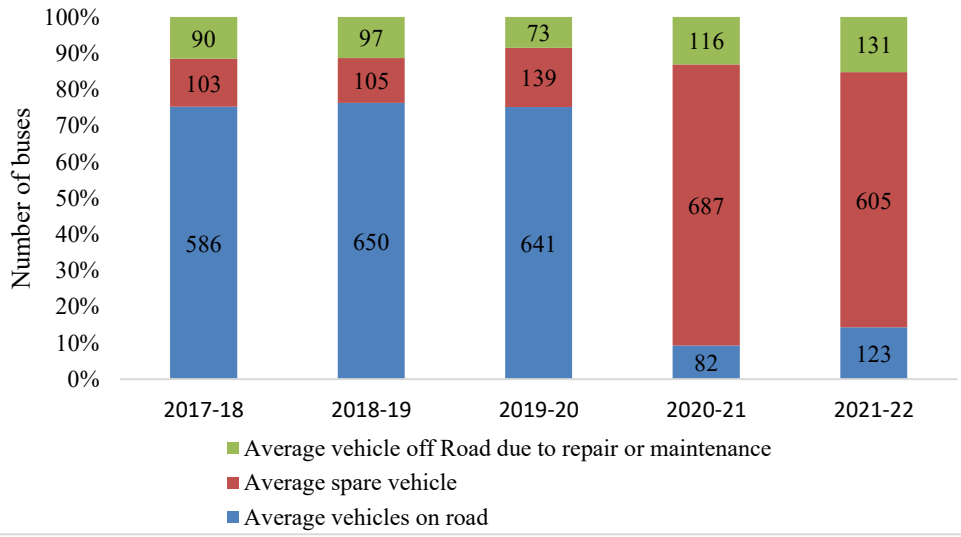
The year-wise position of average fleet strength and its utilisation of ordinary buses and premium buses during the period from 2017-18 to 2021-22 are given in ***Chart 3.7*** and ***Chart 3.8***. Further details are given in ***Appendix 3.2***.

Chart 3.7: Fleet utilization of Ordinary buses



Source: PAR of BMTC (staked bar height shows percentage and the actual number of buses under each category shown inside the bar)

Chart 3.8: Fleet utilization of Premium buses



[25] Point no. 1.1 of chapter 1 of Technical Manual (published by KSRTC and adopted by BMTC)

Source: PAR of BMTC (staked bar height shows percentage and the actual number of buses under each category shown inside the bar)

During the pre-covid years i.e., from 2017-18 to 2019-20, the fleet utilisation ranged between 85-89 *per cent* in respect of ordinary buses and 75-76 *per cent* in respect of premium buses. The fleet utilization during pre-covid period marginally fell short. During the pandemic years, i.e., in 2020-21, the fleet utilisation was only 62.1 *per cent* for ordinary buses and 9.3 *per cent* for premium buses. This improved to 67.3 *per cent* in respect of ordinary buses and to 14.3 *per cent* in respect of premium buses during 2021-22. Inefficient fleet management results in cancellation of schedules or trips due to shortage of buses and has an adverse effect on the operational revenue of BMTC (*as discussed in paragraph 3.6*).

While the facts as pointed out by Audit were not disputed, Government stated (June 2023) that due to repairs and maintenance work at Depots and CWS as also shortage of crew led to vehicles being off road and reduced fleet utilisation. It was assured that action is being taken to reduce cancellation of scheduled operations by inducting new buses into the fleet and scrapping overaged buses.

3.6 Operation of overaged buses by BMTC

As per the Accounting Policy of the Corporation, in respect of ordinary buses, depreciation is charged per km of operation and entire value of the buses are written off over 5.6 lakh kms of operation and in respect of premium buses, depreciation is charged as per the actual km of operation or 66,667 kms per annum whichever is higher.

However, for operational purposes, BMTC fixed the maximum age of ordinary buses at 11 years or 8.5 lakh kms whichever is achieved earlier. Similarly, the maximum age of Premium buses was fixed at 15 years or 10 lakh kms whichever is achieved earlier.

Audit noticed that during 2017-18 to 2021-22, BMTC operated 12.60 to 29.08 *per cent* of fleet (841 to 1,909 ordinary buses), which had completed their useful life as per the norms fixed. Of these, 341 to 823 buses were beyond their stipulated life span both in terms of number of years and number of kms. Further details are given in ***Appendix 3.3.***

- Of the buses which were older than 11 years, only those which had not run for 8.5 lakh kms were being used as part of the operational fleet. The productivity of vehicles which were older than 11 years was between 80-147 kms per day (as against the stipulated target of 206 kms per day) while that of vehicles that had operated for more than 8.5 lakh km was only between 0.11 and 3.27 kms per day. Thus, the criteria for stipulated lifespan in terms of age was not followed by BMTC.
- Vehicles which had run for more than 8.5 lakh kms and had not been operated on road were also shown as a part of fleet. Such vehicles accounted for 9.59 to 14.54 *per cent* of the fleet against eight *per cent* fleet required to be maintained as spare vehicles as per the Technical Manual.

On comparison with AMTS, DTC and PMPML, Audit noticed that BMTC was the poor performer in this aspect, having 28.50 *per cent* of overaged buses in the fleet[26] for the year ended 31 March 2022.

Government replied (June 2023) that the ordinary buses which have completed their services for 8.5 lakh kms or 11 years are thoroughly inspected/examined by the inspection team at Zones/Depot level and buses that are technically viable for operation only are made to ply on road. It was also stated that BMTC has set operational age limit as 8.5 lakh kms due to various constraints such as financial crisis of the Corporation and restrictions imposed by the National Green Tribunal (NGT) regarding induction of new BS-IV buses, etc.

The reply is not tenable as operation of overaged buses only inflates the fleet strength of BMTC, as such buses are either unavailable for operations or have very low vehicle productivity.

3.7 Cancellation of scheduled operations at BMTC Bus Depots

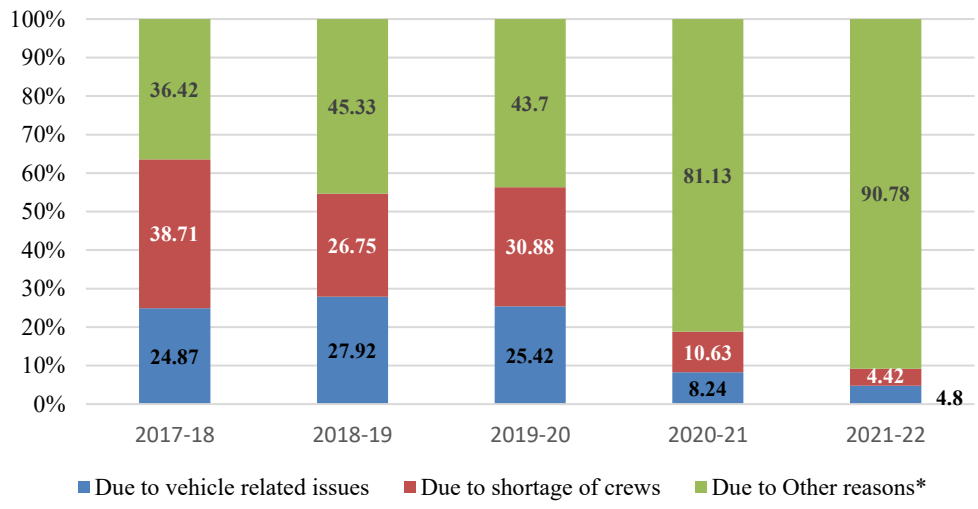
The operation of buses as per the approved schedule is required for maximisation of operational revenue. Further, it also ensures provision of reliable and assured public transport services which could trigger expansion of passenger base.

Audit observed that the cancellation of schedules (as a percentage of approved schedules) showed a declining trend over 2017-21 and increased in 2021-22. Further, the main reasons for cancellation of scheduled kms were (i) shortage of crew (ii) repair and maintenance and shortage of vehicles and (iii) 'other' reasons such as breakdown of buses, bandhs, strikes, etc. The details of cancellation of scheduled kms due during the period from 2017-18 to 2021-22 are given in the ***Appendix 3.4***.

Audit analysis revealed that during 2017-20, cancellation of scheduled kms in ordinary buses was mainly due to shortage of crew and vehicle related issues. However, during COVID-19, i.e., from 2020-22, cancellation of scheduled kms in ordinary buses mainly was due to 'other' reasons. Further, cancellation of scheduled kms in premium buses for the years 2018-22 was mainly due to 'other reasons'. The percentage-wise change in reasons for cancellation of scheduled kms in ordinary and premium buses are shown in the following ***Chart 3.9*** and ***Chart 3.10***.

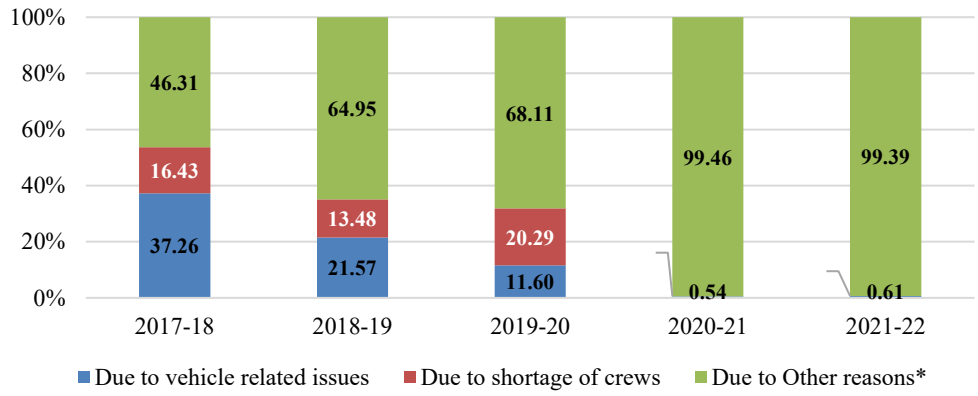
[26] As on 31 March 2022, BMTC has a fleet strength of 6,799.

Chart 3.9: Reasons for total cancelled kilometres for Ordinary buses



*Other reasons include cancellation due to bundh, strike, public unrest, road closure, lockdown (in 2020-21 & 2021-22) etc. which are unavoidable.

Chart 3.10: Reasons for total cancelled Kilometres for Premium buses



3.7.1 Cancellation of kilometres due to repairs or shortage of buses

The operation of schedules at depots is planned based on the available fleet position and crew position at the commencement of the year. However, 22.75 *per cent* (443.72 lakh kms) and 24.79 *per cent* (35.71 lakh kms) of the total cancelled kms in respect of ordinary and premium buses respectively, were cancelled due to vehicle related issues during 2017-22.

i. **Cancellation due to Shortage of buses:** Of the total cancellations due to vehicle related issues, up to 77 *per cent* was on account of 'bus shortages'. Shortage of buses for operation indicates that schedules were planned on inflated fleet strength. This was due to presence of overaged buses as discussed in *paragraph 3.6.*

ii. **Cancellation due to vehicle repairs:** The buses which are kept off-road for regular maintenance activities are considered as 'vehicles under repairs'. If the number of buses under repairs are in excess of

the spare fleet held at the depots, operation of schedules gets cancelled due to vehicle repairs.

The loss of earnings due to cancelled schedules when calculated at the actual EPKM shown in *paragraph 2.2,* works out to ₹179.74 crore for ordinary buses and ₹21.45 crore for premium buses, i.e., total earnings lost[27] by BMTC was worked at ₹201.19 crore. It is also pertinent to note that against these earnings, the probable CPKM would have been only 35 *per cent* of the CPKM[28] shown in *paragraph 2.2* (i.e. ₹89.60 crore for ordinary buses and ₹10.18 crore for premium buses). Thus, if these cancellations had been reduced or avoided, an additional contribution margin of ₹101.41[29] crore would have been available to bridge the negative gap between EPKM and CPKM to that extent.

On this being pointed out, Government replied (June 2023) that the kms cancelled due to vehicles related issues accounted on an average for only 2.11 *per cent* of total planned schedules and in the Depots selected by Audit, on an average per day by per schedule is in the range of 1.7 to 5.3 kms. The said kms cancellation is meagre and would not have much impact on the operations.

Reply is not tenable as ideally, there should be zero tolerance towards the cancellation of any schedule or trips. Therefore, computing kms cancelled in terms of per day per schedule, as stated in Government reply, does not convey the correct picture as any cancellation of kms leads to disruption of services for the entire trip or schedule, resulting in non-availability of bus services in that route.

3.7.2 Cancellation of Kms due to Crew Shortage

Manpower such as crew, mechanical staff, traffic staff, etc. are allotted to each depot. The ratio of crew per schedule was fixed by the GoK in December 2004 at 4.6 crew members consisting of 2.3 Drivers and 2.3 Conductors. Cancellation of scheduled Kms between 255.41 lakh kms (38.71 *per cent)* in 2017-18 and 137.63 lakh kms (30.88 *per cent)* in 2019-20 in case of ordinary buses and 9.55 lakh kms (16.43 *per cent)* in 2017-18 to 6.91 lakh kms (20.29 *per cent)* in 2019-20 for premium buses was attributed to crew shortage by BMTC. Audit observed that BMTC failed to maintain required crew strength according to the planned schedules. There was cancellation (though marginal) on this account even during COVID-19 period despite drastic reduction in schedules, pointing to lack of control by the management over this aspect.

Audit analysed the gap between crew required as per the planned schedules and the men-in-position as on 31 March each year to understand the impact of crew shortage on cancellation of scheduled kms. In this connection, crew position vis-à-vis schedules during the period 2017-18 to 2021-22 was examined as detailed in the ***Table 3.3***:

[27] Total revenue lost = total cancelled Kilometre X EPKM
[28] On account of fuel, oil and lubricants (27 *per cent*), depreciation (4 *per cent*) and repair and maintenance (*4 per cent*) as all other components of costs were incurred irrespective of operation or cancellations.
[29] Additional earnings ₹ 201.19 crore – (₹ 89.60 crore + ₹10.18 crore)

Table 3.3: Year-wise details of Crew strength in BMTC

Details	2018	2019	2020	2021	2022
No. of Schedules	6,143	6,190	6,159	5,313	5,547
Crew required for planned Schedules as per GoK order					
Conductors	14,129	14,237	14,166	12,220	12,758
Drivers	14,129	14,237	14,166	12,220	12,758
Total Crew Required	28,258	28,474	28,332	24,440	25,516
Total Sanctioned	28,433	28,512	**27,284***	27,384	27,384
Working Strength as on 31st March					
Conductor	5,254	5,413	5,095	4,958	4,353
Driver-cum Conductor	9,836	9,401	9,337	9,206	8,708
Driver	12,432	12,768	12,476	12,113	11,215
Total Working Strength	**27,522**	**27,582**	**26,908**	**26,277**	**24,276**
Over all Vacancies					
Excess(+)/Shortage(-) of crew over Required Strength	**-736**	**-892**	**-1,424**	**+1,837**	**-1,240**

*- *Sanctioned strength lesser than required crew strength*

As seen from the above table, crew shortage almost doubled from the year 2017-18 to the year 2019-20 leading to cancellation of schedules.

On this being pointed out, BMTC stated that recruitment could not be done due to restrictions imposed by Finance Department, GoK in May 2019 and July 2020. Government in their reply (June 2023) stated that BMTC had requested the Government for permission in December 2022 to recruit crew. However, the reply was silent regarding Government permission for recruitment (June 2023).

3.7.3 Cancellation of Kilometres due to Other Reasons

During 2017-20, about 40 *per cent* of overall cancelled kilometres was due to 'Other reasons'. However, other reasons became the major reason for the cancellation of kilometres during COVID-19 i.e., up to 99 *per cent*. The 'other reasons' for cancellation of kilometres given by BMTC include breakdown of buses during the operation, tyre puncture, bad roads, roadblocks, late departure/early arrival, bandhs/agitations/strikes, vehicle exchange, slack traffic and vehicle withdrawn for Casual Contracts[30]. Some of these reasons were directly attributable poor vehicle maintenance at depots and the reasons attributed to traffic conditions clearly establish that the trip durations under each schedule have not been determined scientifically as discussed in *paragraph 3.4.3*.

[30] Casual Contract service provided by BMTC i.e., buses hired by public for a day.

Recommendation 5: (i) BMTC should maintain adequate spare buses (which have not outlived their useful life) in its fleet and a robust system for sharing spare buses across depots may be evolved to avoid cancellation of operations due to repairs or shortage of buses.

(ii) Government must ensure that BMTC recruits required number crew as per the stipulated norms in the interest of public transport in the city.

(iii) The cancellation of kms due to breakdowns, tyre punctures, vehicle exchange, etc. that are directly attributable to maintenance of vehicles should be classified as 'vehicle repairs' instead of depicting under 'cancellation due to other reasons'.

On this being pointed out, Government accepted (June 2023) the Audit observation and stated that action has been taken for classification of cancelled kms as recommended.

3.8 Impact Analysis of Metro Rail Services on BMTC

As of March 2022, Bengaluru Metro Rail Corporation Limited (BMRCL) has provided metro rail services in two lines covering 80 km distance (40 kms in each line) to the public. BMRCL has a competitive advantage over BMTC as it offers a traffic-free solution for public transportation. Metro rail services may have a significant impact on BMTC's passenger base and operational revenue.

Metro Feeder bus

Nevertheless, Metro Rail has also provided a unique business opportunity to BMTC in terms of provision of Metro Feeder services. This would enhance first and last mile connectivity at Metro stations for the benefit of metro passengers which is expected to encourage people to use public transport system throughout their journey. Audit analysed the BMTC routes that run parallel to Metro lines and the additional operational revenue generated from metro feeder services.

3.8.1 Reduction in load factor in routes parallel to metro line

The two lines of BMRCL intersect at only one point. i.e., at the Kempegowda Bus Station (KBS). Considering this point as the central point, there are four routes in which BMRCL operates. The operations of BMTC in these four routes during 2017-18 to 2021-22 are given in ***Appendix 3.5***. Except for marginal reduction in two schedules during 2019-20, the number of schedules in these routes increased from 1 to 14 schedules. Analysis of the operational results revealed the following:

Bengaluru Metro Stations as of March 2022

i. In one route, K.R. Market to Bidadi[31], both Metro and BMTC services run parallel to each other for 8.9 kms[32]. In the overlapping route, there were 14 BMTC stops against 8 Metro stops. Audit noticed that the number of schedules increased by four[33] despite drop in load factor from 71 *per cent* in to 2019-20 to 54 *per cent* in 2021-22.

ii. In the other route, K.R. market to Silk Institute [34] which was operationalized in two phases[35], BMTC and Metro services run parallel to each other for 10.2 kms. In the overlapping route, there were 23 BMTC stops against 12 Metro stops. The number of schedules in this route increased from 21 in 2017-18 to 35 in 2021-22. The maximum load factor achieved in this route was 62 *per cent* in the year 2018-19.

iii. In respect of other two routes, no significant variations were noticed either in number of schedules or in the load factor achieved by BMTC.

Thus, Metro operations are affecting BMTC's operations to a certain extent. Through rationalization of schedule and partial modification in routes BMTC may be able to achieve better load factor in these routes.

On this being pointed out, Government replied (June 2023) that as suggested by Audit, suitable modification in the routes and rationalization of schedules would be done.

[31] Route length of 30.8 kms (BMTC)
[32] Deepanjali nagar Metro station to Kengeri Metro station
[33] From 18 schedules in 2019-20 to 22 schedules in 2021-22
[34] Route length of 26.6 km (BMTC)
[35] Metro initially operated in partial route from June 2017. Further route extension was done in January 2021.

3.8.2 Analysis of Metro Feeder services

With a view to make public transport the preferred mode of transport in Bengaluru, integrating public transport services (BMTC and BMRCL) was considered by Directorate of Urban Land Transport (DULT), GoK. As a part of integrating public transports, operation of Metro Feeder (MF) services was recommended (September 2018) by DULT at specified metro stations after conducting a willingness survey of public to shift to MF service at both origin to the boarding Metro station and at the alighting Metro station to the destination. As of March 2022, BMTC was operating 170 Metro Feeder services. The details are given in the ***Table 3.4*** below:

Table 3.4: Details of metro feeder schedules operated.

Year	No. of metro feeder schedules	Average load factor	Cumulative Effective KM (in Lakh)	EPKM (in ₹)	CPKM (in ₹)	Loss per km In ₹	Total operational loss (₹in crore)
2017-18	195	59.21	53.15	36.77	59.58	22.81	12.12
2018-19	138	72.68	61.72	45.12	65.01	19.89	12.27
2019-20	139	73.93	57.76	46.32	66.36	20.04	11.58
2020-21	87	44.17	14.14	25.08	114.99	89.91	12.71
2021-22	170	53.33	37.2	30.10	87.97	57.87	21.53
Total			**223.97**				**70.22**

Source: Information given by BMTC

As seen above, the MF services had average load factor ranging from 44 *per cent* to 74 *per cent*, indicating scope for better planning and scheduling of routes as brought out in ***Case Study 3.2***. The loss per km of operation from MF schedules was ₹19.89 and ₹20.04 respectively during 2018-19 and 2019-20. This was higher than the loss per km from BMTC's overall fleet operations (₹17.04 and ₹18.50 per km). Thus, MF services, though essential for integrating public transport systems, was resulting in increased operating loss to BMTC.

Recommendation 6: (i) BMTC may ensure optimal number of schedules and trips to achieve better frequency at reduced operational cost.

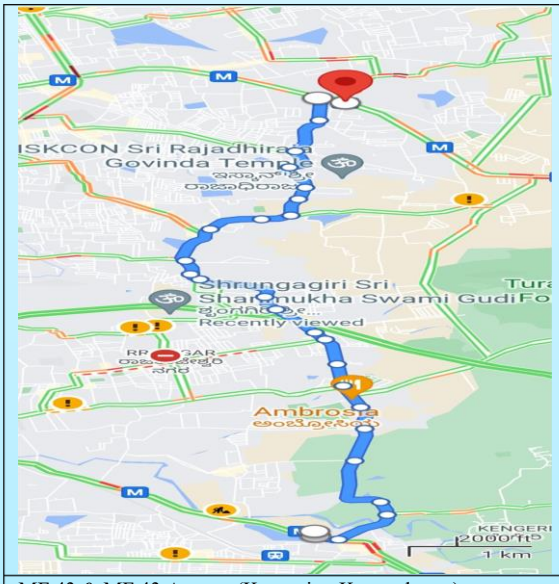
(ii) Government may ensure BMTC is adequately compensated for losses from operating MF service.

On this being pointed out, Government replied (June 2023) that rationalization of MF schedules would be considered and BMTC had requested for Viability Gap Funding (VGF) which was agreed in principle by Directorate of Urban Land Transport.

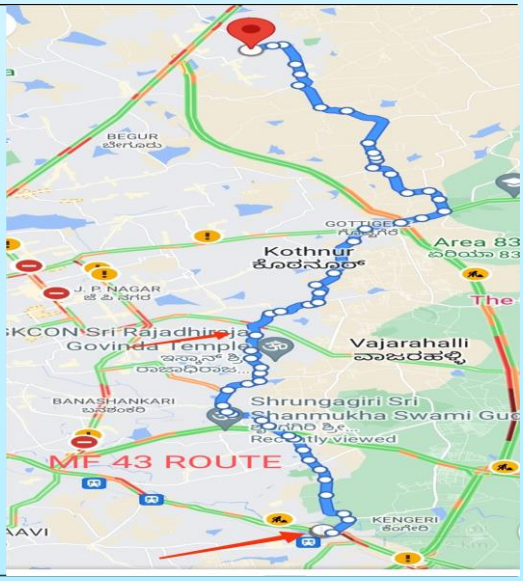
Lack of proper analysis before introducing new Metro feeder services: The normal schedules can also work as MF service when a part of the trip coincides with the metro lines. Therefore, while introducing a new exclusive metro feeder (MF) schedule in a route, BMTC should consider the existence of normal schedules and other overlapping metro feeder services in the same route. On analysis of the Metro Feeder services of West division during the year 2021-22, Audit observed that new metro feeder services were introduced without considering these factors as detailed below in the ***Case Study 3.2***.

Case Study 3.2: MF services parallel to existing schedules

The Corporation introduced two exclusive Metro feeder buses MF 43 with 6 schedules and MF 43 A with 3 schedules in the year 2021-22, to connect Kengeri Metro in purple line and Konanakunte Cross Metro in Green line. However, one normal service (378- with 32 schedules) and one Metro feeder service (MF 378- with 11 schedules) were already plying on this route. Thus, there was 100 *per cent* overlap in BMTC's two different services. Further, the load factor of MF 43 A and MF 43 were low (27.60 *per cent* and 32.21 *per cent* respectively) due to the presence of MF 378 and 378 services which were operating with higher load factors (57.5 *per cent* and 64.19 *per cent* respectively).



MF 43 & MF 43 A route (Kengeri to Konanakunte)



378 & MF 378 Route (Kengeri to Electronic City)

Audit also observed that the operations of the feeder services were cancelled due to poor performance:

- All the 3 schedules of MF 43 A which were introduced in November 2021 were terminated in February 2022 after operating 82 to 101 days.
- 3 out of 6 schedules in MF 43 introduced between September and November 2021 were curtailed in the same month of introduction after operating for 1 to 18 days.

3.9 Financial burden due to induction of inefficient premium buses

BMTC operates air conditioned premium buses of different models manufactured by Volvo and Corona. These buses are operated on certain routes including services to Kempegowda International Airport from different locations. Comparative analysis of operational efficiency and profitability

between ordinary and premium buses is shown in ***Appendix 3.6***. The analysis revealed the following:

i. During 2017-22, the total operational kms of premium buses was about 1,594.32 lakh kms which was about 9.37 *per cent* of the overall fleet operations of the BMTC. The loss per km of operation of premium buses was higher than the loss per km in case of ordinary buses and ranged from ₹18.30 per km to ₹195.86 per km as against loss of ₹13.39 per km to ₹48.77 per km incurred by the ordinary buses during 2017-18 to 2021-22.

ii. The State Government[36] has fixed the operational life of Volvo buses as 15 years or 10.00 lakh kms whichever is reached earlier.

Audit noticed that in selected depots, Mark IV (old) buses procured between 2011 and 2014 (85 buses) were operated more[37] than the Mark III buses procured earlier between 2007-11 (212). This is leading to a potential situation of scrapping under-utilized Volvo Mark III make buses due to the completion of 15 years of life between 2023 and 2026 and scrapping of Volvo Mark IV buses before 15 years on completion of 10.00 lakh Kms during the same period cannot be ruled out. Simultaneous scrapping of two generations of buses, in a situation of capital inadequacy for replacement of these vehicles will lead to reduced fleet strength.

iii. Further, it was also noticed that 25 Corona BS-IV buses inducted in the year 2011-12 were not being efficiently operated by BMTC. Analysis of their operation during the month of March of all the five years from 2017-22 showed that two to seven of these buses (8 to 28 *per cent*) were kept idle. Further, during March 2018, only 10 buses (40 *per cent*) were operated for more than 16 days at an average operation of 200 kms per day, which reduced to 8 buses during March 2019 and not operated at all from March 2020. A case study in respect of Depot No. 7 showing poor performance of premium buses is given below in ***Case Study 3.3***:

[36] Government Order No. Saree07 Nasae2016 dated 15.02.2016

[37] Minimum, Maximum and Average Kms run by Mark IV buses were 4.08 lakh, 10.71 lakh and 6.96 lakh and that of Mark III buses were 3.63 lakh, 10.13 lakh and 6.79 lakh only.

Case Study 3.3: Underutilization of premium buses

In Depot No.7 -Subashnagar, 270 premium buses of different models such as Mark-II, Mark-III, Mark IV (old) and Mark IV New Volvo buses were held. Of these, 37 Mark-II buses inducted in the year 2006 had already completed operational life of 15 years but were found to be operated on an average 5.8 lakh kms only. Also, 109 Mark-III buses inducted between 2007 and 2010, have been operated on an average 6.79 lakh kms as of March 2022 and possibility of serving for 10 lakh kms per bus within the remaining operational life period is most unlikely. The performance of these buses, even after allowing for COVID-19 lock down and consequential impacts post March 2020, was far less than the services expected from them.

After these cases were pointed out, BMTC stated that technical problems in Mark-III leading to engine failure engine and fuel efficiency in terms of better KMPL in new BS-IV Volvo buses were the reasons for underutilization of Mark-III buses.

Recommendation 7: (i) Action may be taken to regularly monitor the operation of Mark III and Mark IV buses and unviable buses may be phased out at the earliest.

(ii) Premium buses may be procured after conducting cost benefit analysis, demand analysis (considering the target population) and on the basis of sound technical evaluation.

In the exit conference (April 2023), Government stated that BMTC was the first Road Transport Corporation in the country to induct premium buses and these buses were mainly operated in the airport and IT corridor routes, both of which were affected by COVID 19. Further, Mark-IV buses yielded better mileage and required less maintenance than Mark-III buses. Government assured that Mark-III buses and Corona Make buses would be phased out following the prescribed procedure. Further, Government stated (June 2023) that measures are being taken to improve the ridership in premium buses.

3.10 Operation of Excessive Dead Kilometres

The non-revenue earning operation of buses are termed as dead kilometres. The dead kilometres are incurred when buses are taken from depots to bus stations, for regular maintenance, docking/ repair, topping up of oil/ fuel, etc. The expenses due to dead kilometres are normal loss to be absorbed in fleet operations. With a view to control dead kms, schedules are rationalized so that the schedules start from the nearest bus station. Also, limits for dead kms are fixed by BMTC for each depot separately depending on the distance between first bus stop/station or last/station to the depot, distance between depot and CWS or fueling point, etc.

Bus running without passengers accruing dead kilometres

Audit noticed that in nine out of sampled ten bus depots, ordinary buses exceeded the limit prescribed for dead kms by 11.50 lakh kms during the period from 2017-18 to 2021-22. This resulted in avoidable expenditure of ₹2.64 crore calculated on the basis of CPKM for the respective depots. The details are given in ***Appendix 3.7***.

No dead kilometres in excess of the targets fixed in case of Ordinary Bus Depot No. 08, Yeshwanthpura and Premium Bus Depots No.7, Subashnagar and No.13, Katriguppe were observed by audit, as the bus operations commenced just outside of these Bus Depots.

On comparison with other RTCs, Audit found that DTC incurred dead kilometre in the range of 0.1 to 0.5 *per cent* of total effective kilometres. PMPML has dead kilometres between 0.6 to 1.1 *per cent*. BMTC has dead kilometre in the range of 2.8 to 3.4 *per cent* of total effective kilometres, indicating that there is scope for BMTC to improve upon this factor.

Recommendation 8: Decision on optimal depot location, origin/end points of routes and allocation of schedules amongst depots may be done after analysis of traffic and demand data to minimize the dead kilometres.

In the exit conference in April 2023 and in the reply furnished in June 2023, Government accepted the Audit observation and recommendation and stated that appropriate steps would be taken to curtail excessive dead kilometres.

3.11 Issues in Passenger Amenities at TTMCs

Traffic Transit Management Centers (TTMC) are envisaged as passenger amenities centers by BMTC when the Government of India launched Jawaharlal Nehru National Urban Renewal Mission (JnNURM) to improve urban infrastructure in cities of India. The main objectives of the TTMCs are to provide an integrated transportation facility with adequate facilities and amenities to passengers, minimize the congestion on main roads and conflict between various traffic types, smooth flow of all type of traffic, etc.

Joint inspection and passenger survey was conducted in all the 10 TTMCs and major bus stations (Kempegowda Bus Station and Shivajinagara Bus Station) to check availability of basic infrastructure and adequate passenger amenities. They were lacking basic amenities like, toilets, drinking water, waiting rooms for ladies and Airport bound passengers, CCTV surveillance for safety, ramps for differently abled passengers, etc.

Gents and Ladies Toilet kept closed Koramangala TTMC

CCTV Set up not operational at KBS

No drinking water at Shanthinagar TTMC

The amenities provided were not in usable condition and cleanliness/ hygiene was also not maintained. Besides, there were no refreshment rooms, shops and other commercial establishments, which not only provide facilities to passengers but also earn rental income to BMTC. Minimum passenger information system such as Timetables of bus schedules were also not displayed. The TTMCs wise specific deficiencies noticed are detailed in ***Appendix 3.8***. It was also noticed that in Koramangala, BMTC buses were not entering the bus bays located in the TTMC. Passengers embarked the buses from bus shelters located outside the TTMC defeating the very purpose of construction of TTMCs.

Bus shelter outside Koramangala TTMC

In the exit conference (April 2023) and in the reply furnished in June 2023, Government stated that appropriate steps would be taken to improve the passenger amenities at TTMCs and BMTC would ensure that the buses would enter the bay of TTMCs as per the schedule.

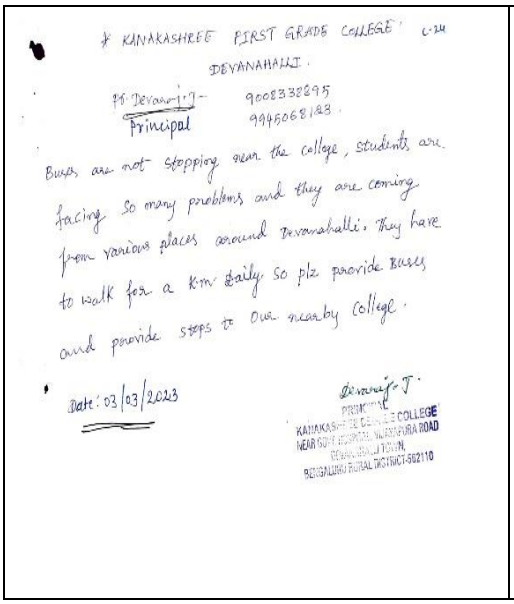
3.12 Passengers' satisfaction and expectations from BMTC Services

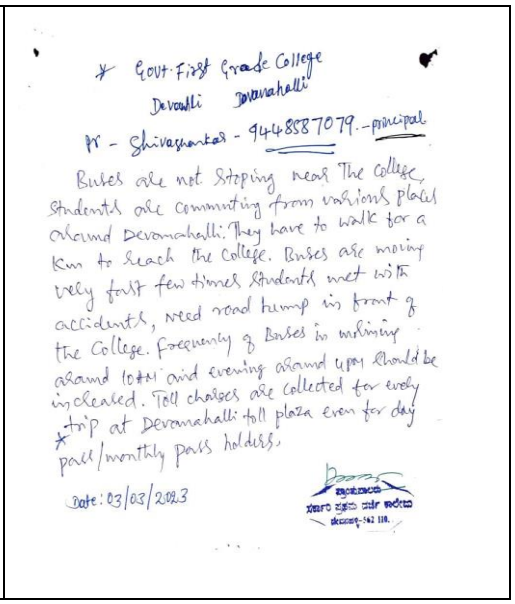
With a view to ascertain the reasons for low passenger turnout and the public expectations with respect to BMTC services, Audit conducted an online survey in which 2,079 respondents recorded their opinion.

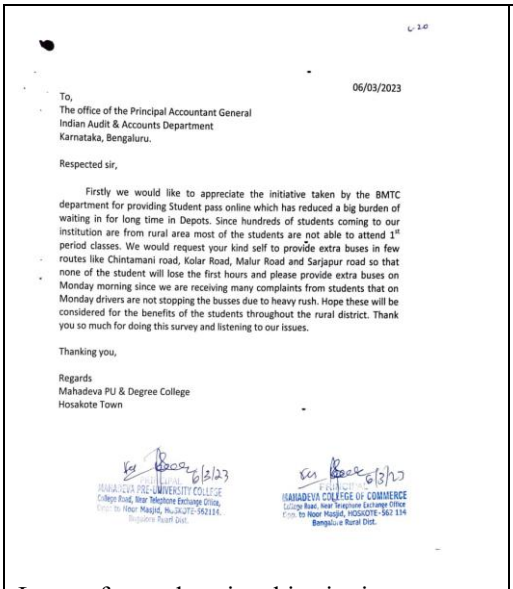
Around 50 *per cent* of the respondents felt that BMTC was the most preferred mode for travel and about 73 *per cent* of the overall respondents were satisfied with BMTC's services. While economical bus fare or bus stops being very close to their source/destination were the main reasons for passengers (90 *per cent*) to choose BMTC, more travel time and poor bus frequency were the main reasons for respondents who did not choose to travel by BMTC buses. Thus, improving connectivity and frequency would make BMTC's services dependable and help to widen its passenger base as the most economical transport facility in the city.

In general, the respondents were not satisfied with the crew behavior. The major complaints were that Buses did not stop at the designated bus stops and that conductors did not return the change on ticket purchase. About 26 *per cent* of the respondents reported that at the bus stops, buses stopped in the middle of the road, which could affect the safety of the passengers embarking and disembarking. While reporting on the crew behavior, a few heads of educational institutions reported to Audit that due to heavy rush, buses did not stop at the designated bus stops and due to inadequate frequency, many students were not able to attend their first hour classes. Copies of the letters addressed to Audit are shown below:

Buses stopped in the middle of the road.


* KANAKASHREE FIRST GRADE COLLEGE
DEVANAHALLI
Pr. Devaraj T - 9008338295
Principal 9945068123
Buses are not stopping near the college, students are facing so many problems and they are coming from various places around Devanahalli. They have to walk for a Km daily. So plz provide Buses and provide steps to Bus nearby college.
Date: 03/03/2023
Devaraj T.
PRINCIPAL
KANAKASHREE FIRST GRADE COLLEGE
NEAR BUS DEPOT, NANDAGUDA ROAD
DEVANAHALLI TOWN,
BENGALURU RURAL DISTRICT-562110


* Govt. First Grade College
Devanalli Devanahalli
Pr - Shivamantaa - 9448887079 - principal
Buses are not Stoping near The College, Students are commuting from various places around Devanahalli. They have to walk for a Km to reach the College. Buses are moving very fast few times Students met with accidents, need road hump in front of the College. Frequency of Buses in morning around 10** and evening around 4pm should be increased. Toll charges are collected for every trip at Devanahalli toll plaza even for day pass/monthly pass holders.
Date: 03/03/2023



To,
The office of the Principal Accountant General
Indian Audit & Accounts Department
Karnataka, Bengaluru.

06/03/2023

Respected sir,

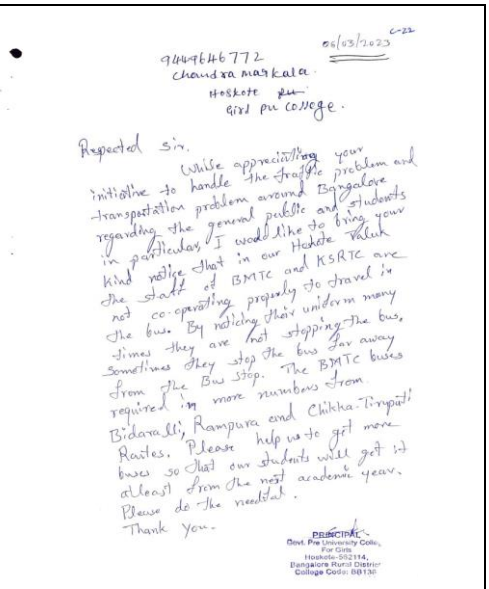
Firstly we would like to appreciate the initiative taken by the BMTC department for providing Student pass online which has reduced a big burden of waiting in for long time in Depots. Since hundreds of students coming to our institution are from rural area most of the students are not able to attend 1st period classes. We would request your kind self to provide extra buses in few routes like Chintamani road, Kolar Road, Malur Road and Sarjapur road so that none of the student will lose the first hours and please provide extra buses on Monday morning since we are receiving many complaints from students that on Monday drivers are not stopping the busses due to heavy rush. Hope these will be considered for the benefits of the students throughout the rural district. Thank you so much for doing this survey and listening to our issues.

Thanking you,

Regards
Mahadeva PU & Degree College
Hosakote Town

6/3/23
PRINCIPAL
JANADEVA PRE-UNIVERSITY COLLEGE
College Road, Near Telephone Exchange Office,
Cross to Noor Masjid, Ph.:08277-262114,
Bengaluru Rural Dist.

6/3/23
PRINCIPAL
JANADEVA COLLEGE OF COMMERCE
College Road, Near Telephone Exchange Office
Cross to Noor Masjid, HOSKOTE-562 114
Bengaluru Rural Dist.



9449646772
Chandra mastala
Hoskote pu
Girl pu college.

06/03/2023

Respected sir,
While appreciating your initiative to handle the traffic problem and transportation problem around Bangalore regarding the general public and students in particular, I would like to bring your kind notice that in our Hoskote Taluk the staff of BMTC and KSRTC are not co-operating properly to travel in the bus. By noticing their uniform many times they are not stopping the bus, sometimes they stop the bus far away from the Bus stop. The BMTC buses required in more numbers from Bidarali, Rampura and Chikka-Tirupati Routes. Please help us to get more buses so that our students will get it atleast from the next academic year. Please do the needful.
Thank you.

PRINCIPAL
Govt. Pre University Colle,
For Girls
Hoskote-562114,
Bangalore Rural District
College Code: 8813

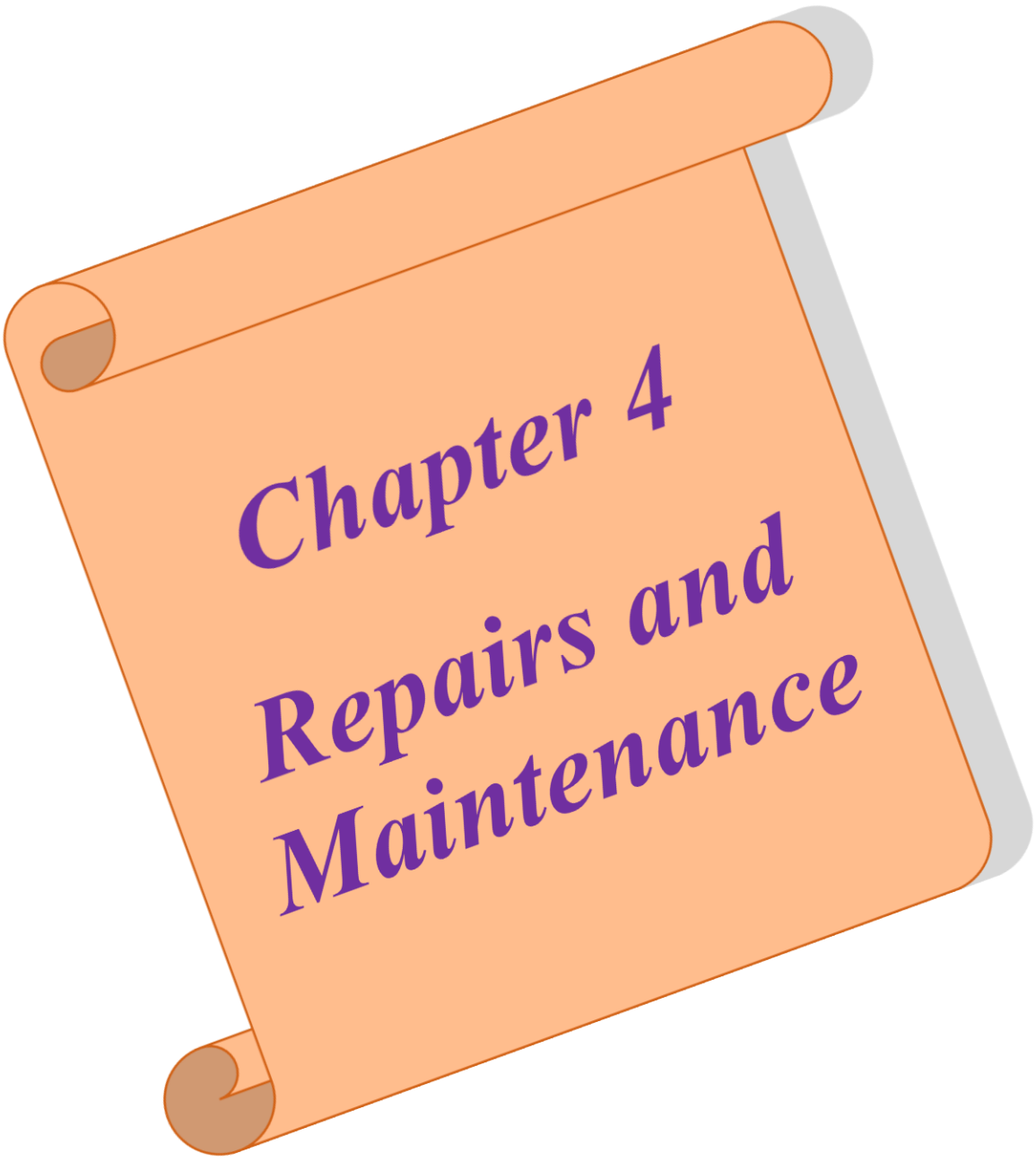
Letters from educational institutions

About 61 *per cent* of the respondents reported that buses were overcrowded, causing discomfort to passengers. This revealed that though there was substantial reduction in BMTC passenger base as discussed in *paragraph 3.1*, BMTC was unable to cater to existing passenger needs during peak hours. Optimum utilization of fleet and efficient schedule planning during peak hours are necessary to address this issue.

As regards cleanliness, only 10 *per cent* of the respondents were completely satisfied, 76 *per cent* reported that buses had different levels of cleanliness and 14 *per cent* of the respondents were not satisfied with the cleanliness in the buses. This could be another area that BMTC could work upon to improve passenger satisfaction and retain passenger base.

Further, 80 *per cent* of the respondents felt safe travelling by BMTC buses during early morning and late-night hours. This aspect is appreciable and effective implementation of initiatives taken under Nirbhaya Scheme (such as installation of CCTV cameras, panic button in buses, etc.) contributes to this rating.

On this being pointed out, Government replied (June 2023) that BMTC is in the process of implementing AVLS system & ETM in all buses and after getting the data from AVLS system, the schedule rationalization will be taken up based on the travel time during peak and non-peak hours, travel pattern, Demand & Supply basis, etc. Regular training programs would be arranged to crew and they will be instructed to follow traffic rules and improve their behavior with passengers. A complaint redressal system has also been established to take the necessary action on complaints received.


Chapter 4
Repairs and
Maintenance

CHAPTER IV

Repairs and Maintenance

BMTC's Repairs and Maintenance expenditure towards its fleet was reducing over the years. Audit noticed delays in sending buses to Central Workshops (CWS) by Depots and delays at CWS in vehicle servicing for fitness certification. These delays caused huge loss of bus days and consequent loss of BMTC's revenue. Shortage of men equipment and infrastructure along with poor inventory management at CWS led to more off-road time for docked buses. Delays in regular maintenance at Depots had an adverse impact on performance of engines, batteries and spare parts. Instances of buses not achieving the expected fuel efficiency in terms of kilometre per liter (KMPL) also led to extra financial burden on BMTC.

Systematic and regular maintenance of buses is essential for smooth fleet operation. In BMTC, regular maintenance of buses is carried out at the respective depots and for major repairs, buses are sent to workshops. Works relating to Bus body repair work, Assembly recondition work (including engines), Fitness Certificate Renewal (FCR), Heavy Body Repair (HBR), Tyre retreading, replacement of weak/ corroded structural parts, painting of buses, etc. take place in the Central Workshops. BMTC has established four Central Workshops (CWS) in Bengaluru. Important observations on repairs and maintenance at selected Depots and Central Workshops along with the deficiencies noticed in infrastructure, machinery and equipment are brought out in this Chapter. Also, expenses incurred in repair and maintenance of buses are analysed.

4.1 Repairs and Maintenance Expenses

Year wise details of available fleet, effective fleet, buses held up for repair, etc. have been discussed in *paragraph 3.5* and other details are given ***Appendix 3.2***.

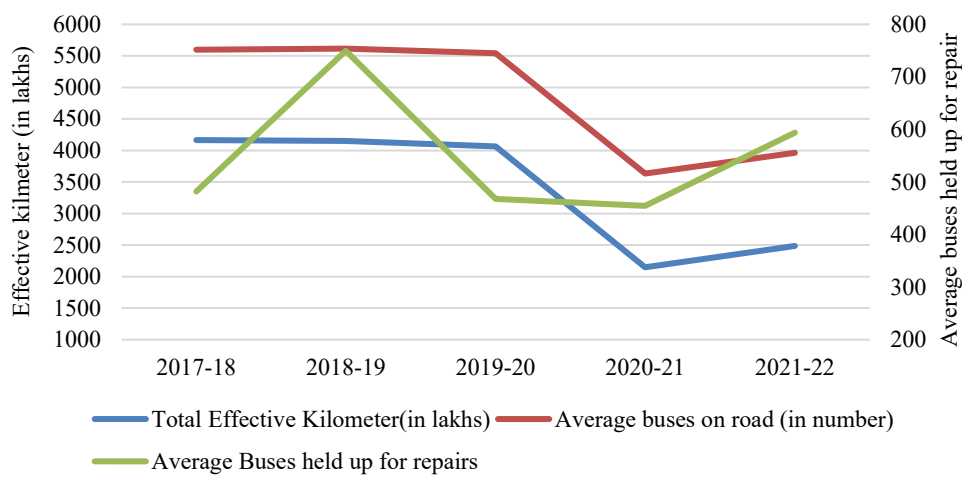
Details of annual Repair and Maintenance (R&M) expenditure and a summarized position of R&M expenses per km of fleet operation/ per vehicle held in the fleet are given in ***Appendix 4.1***. Audit observed the following:

i. Average buses held for repair and maintenance increased considerably in the year 2018-19 due to the management's decision to upgrade the aesthetics of bus body[38]. ***Chart 4.1*** shows the trend of average buses

[38] A new Standard of Work Procedure (SOP) was slated where in every FCR bus Fiber Reinforced Plastic (FRP), Glasses, Bus Body Sheets were replaced with new ones. Electrical items and the passenger seats were refurbished and painting work was done.

held for repairs along with total effective kms run and average buses on road during 2017-22.

Chart 4.1: Average buses on road and held up for repairs with Total effective km



Source: Performance Appraisal Report(PAR) of BMTC

As seen, the average buses held up for repairs had an adverse impact on the average buses on road. The average buses on road had a positive correlation with respect to total effective kilometres.

ii. ***Chart 4.2*** shows the average fleet strength during 2017-22. ***Chart 4.3*** shows that R&M expenses per vehicle showed a declining trend in five years i.e., from ₹3.90 lakh in the year 2017-18 to ₹2.84 lakh in the year 2021-22. This is mainly attributed to BMTC's failure to provide funds for procurement of spare parts (*discussed in paragraph 4.2.1*). However, the R&M expenses per vehicle effective km increased from ₹5.98 in 2017-18 to ₹7.51 in 2021-22 as described in ***Chart 4.4***. The increase for the last two years can be attributed to decrease in effective kms by approximately 40 to 48 *per cent* during COVID-19 pandemic.

Chart 4.2 : Average Fleet Strength (in number)

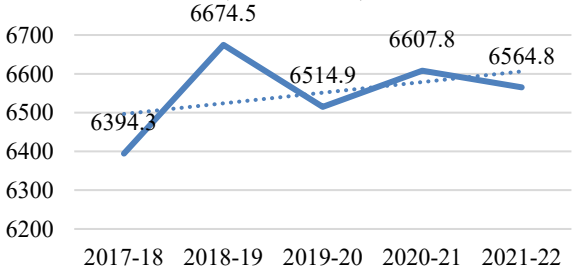


Chart 4.3: R&M Expenses per vehicle (₹ in lakh)

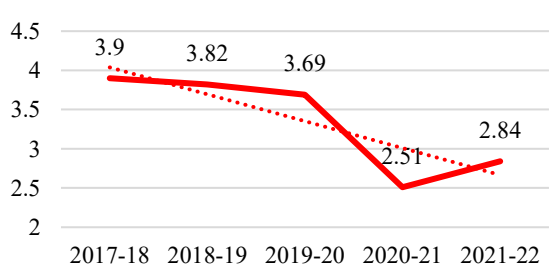
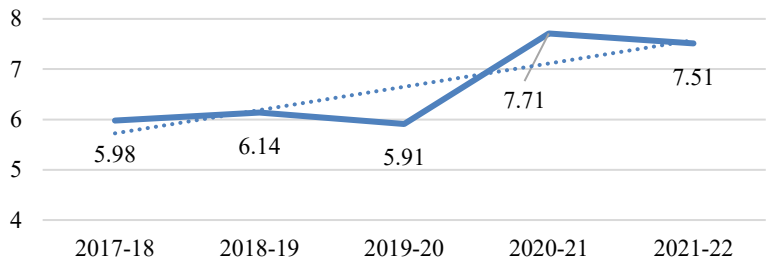


Chart 4.4: R&M Expense per vehicle effective km (in ₹)



On this being pointed out, Government accepted (June 2023) that the R&M expenses per vehicle reduced from 2017-18 to 2021-22. In order to improve the interior and exterior aesthetics, the buses were subjected to total refurbishing during 2018-19 and variation in the prices of the spares, assemblies, lubricants, etc. contributed to variation in R&M expenses.

4.2 Delay in Renewal of Fitness Certificate

According to Rule 62 of the Central Motor Vehicle Rules 1989, a certificate of fitness (FC) in respect of a transport vehicle is valid for the period of two years and it shall be renewed for every two years up to the first eight years. Thereafter, the FC shall be renewed annually. Fitness of the vehicles are tested and certified by the inspecting officers of the Regional Transport Offices (RTO).

The buses that are due for renewal of FC are sent from depots to the CWS for thorough examination. Any problems or damage found are repaired (including repainting) and then sent to the RTOs for certification. These activities require about 15 days at CWS.

Review of records related to Daily Vehicle Position (DVP) maintained at depots and CWS for the years 2017-18 to 2021-22 revealed the following:

i. There was an average delay of 21 days in bringing the buses to CWS from depots. The aggregate delay in respect of all the buses led to loss of 2,53,076 bus days for BMTC during 2018-19[39] to 2021-22. Of these, Depot No.34 (Kothanur Dinne) had an average delay of 30 days and Depot No. 12 (Kengeri) had an average delay of 24 days. These two Depots operating ordinary buses contributed to *8.2 per cent* of overall bus days lost. The details are given ***Appendix 4.2***.

[39] DVP records for the year 2017-18 were not produced to Audit.

ii. Similarly, there were delays in sending vehicles to RTOs from the CWS. There are no specific norms stipulated with respect to duration for checks and repairs to be done at CWS. Considering that 15 days[40] for each bus would be a reasonable timeframe for repair work, Audit noticed that there was average delay of 28 days at the CWS. This aggregated to potential loss of 85,880 bus days. BMTC attributed the delay to shortage of mechanical staff at CWS.

Bus with floor board removed during FC repair

iii. Buses that were involved in accidents and suffered from Heavy Body Damage (HBD) have to be repaired at CWS and renewal of FC has to be obtained from RTOs. Generally, 30 days' time is taken in CWS for repair. Audit noticed that during 2017-18 to 2021-22, there was an average delay of 43 days over and above the stipulated 30 days in case of HBD repairs. This aggregated to a total loss of 68,888 bus days.

The total loss of bus days due to delays in FC Renewal was 4,07,644. This disrupted the fleet operations and contributed to cancellation of kilometres due to vehicle repair (*as mentioned in paragraph 3.7.1*). Further, this resulted in potential revenue loss of ₹275.78 crore calculated at the applicable EPKM (ordinary buses) of the respective years. The details are given in ***Appendix 4.3.***

Internal facility for repair and maintenance of fleet requires proper infrastructure, skilled work force and inventory management to ensure uninterrupted service and aid smooth functioning of the fleet. Further, regular upgradation of facilities (including machineries and equipment) and frequent training of the work force in line with technological changes are also essential. Proper maintenance of records also helps in assessing, analysing and improving the performance at the Central workshops.

[40] After pointed out by Audit, BMTC issued a Circular to all the Workshops and Zonal Offices stipulating Seven days for minor repairs including FC Renewal and 21 days for Heavy Body Repairs with FC Renewal.

The reasons for the delay in repair of buses at Central Workshops could be attributed to non-availability of spare parts, lack of equipment, machineries and infrastructure, shortage of skilled manpower and non-maintenance of proper records.

Government, while agreeing with the Audit findings, stated (June 2023) that BMTC's inability to procure new buses was due to National Green Tribunal's (NGT) Stay Order[41] to procure BS-IV buses, delay in supply of spares by suppliers, which was partly attributable to financial constraints of the Corporation, shortage of skilled manpower at workshops, etc. were the main reasons for the delay. It was also stated that action is being taken to procure spares up to ₹2 crore directly by BMTC and CWS officers are instructed to complete the FC renewal and heavy body repairs works within the prescribed time limit.

4.2.1 Delay in Procurement of Spare Parts

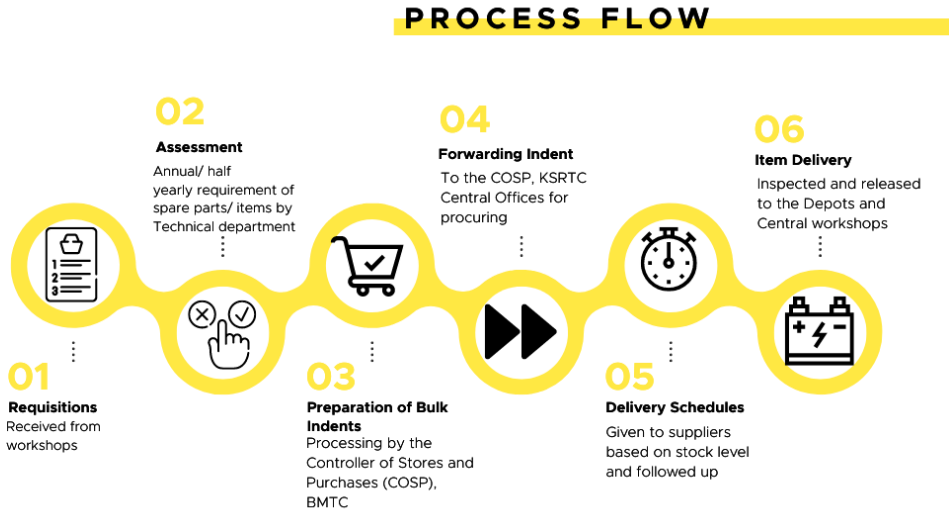
Availability of spare parts is key to service/ repair vehicles in a timely and cost-effective manner. Management of stores and stock in CWS/Tyre Retreading Plant (TRP) play an important role in this regard.

During test check of the records of Central Workshop-II, Dooravaninagar, it was noticed that the buses were sent to the Central Workshop-II (CWS) for Heavy Body Repairs (HBR) and Accident Repairs. However, it was observed that some buses were idling in the CWS for long duration. Further, test check of the records of such buses revealed that the buses remained idle in CWS for want of spare parts[42] and other materials ranged from 7 to 63 days. Though, the CWS had already indented for the requisite spare parts and materials, the said items were not available in the Central Stores and procurement of such items were unduly delayed resulting in loss of vehicle days.

[41] In the case of Shri Vinay Shivanand Naik Vs. State of Karnataka and 5 Others (Application No.183 of 2016) – Order dated 12th January, 2017.

[42] spare parts such as MS 1½ Inch L Angle, Suvarna Front Glass, BS-4 L/L Front Glass, BS-4 Tata Front Glass, 2'' rubber glazing, Paints such as PU Metallic blue and Mat black, PU Thinner, PU Putty and Masking Tape etc were not available at Central Workshop.

The process of procurement involves the following steps:



Audit noticed that there were delays in procuring spares due to delay in issue of Central Purchase Order (CPO) by COSP (Controller of Stores and Purchases), KSRTC. KSRTC generally collects requirements from other Transport Corporations and issues a CPO for all requirements altogether, which causes delay in supply of materials to BMTC. The shortages occurred in even common consumables. Also, other reasons for delay in material supply are:

i. Some spare parts are unique requirements of BMTC's fleet and orders are placed only as and when the need arises. The lead time inherent in supply of such items causes delays.

ii. Some items are being customized for BMTC only and are not readily available with the suppliers. The suppliers, in turn, procure these items from outside agencies and then supply them to BMTC.

iii. Audit came across some instances where vendors refused to supply items due to non-payment of outstanding dues.

Recommendation 9: BMTC may reconsider procurement of stores through KSRTC and aim at developing an independent procurement procedure. Government may ensure that BMTC has adequate working capital to guarantee timely supply of spare parts.

In the exit conference (April 2023), Government replied that delays were due to non-availability of spare parts and appropriate action has been initiated in this regard. Further, Government (June 2023) stated that Audit recommendation would be considered in future.

4.2.2 Lack of equipment at CWS and Tyre retreading plants (TRPs)

Review of records related to equipment used in CWS and TRPs revealed that they were either not available in adequate numbers or were too old to serve the purpose. Further details regarding the issues noticed by Audit in CWS are given ***Appendix 4.4***.

Audit also noticed that the CWS/TRP were not adequately equipped to handle the requirements of 46 depots and a fleet of 6,799 buses for repairs, reconditioning of engines/FIPs, recharge of batteries and in carrying out general services during FC renewal of buses.

After this was pointed out, Government replied (June 2023) that modernization was not taken up due to dearth of funds in BMTC. It will be taken up once the financial position of the Corporation improves. The reply is not tenable as BMTC is continuously incurring loss from the year 2016-17 and no action has been taken to increase the bus fare. Further, adequate budgetary support is also not provided by the Government to offset the operating loss. In this scenario, there is less scope for improvement in BMTC's financial position. Deferring the upgradation/modernization of CWS may affect the safety of buses and public (both passengers and public on road). Therefore, Government may reconsider their stand on this issue.

Recommendation 10: BMTC may take urgent measures to acquire required machinery and equipment and CWS be modernized with pneumatic and power-driven tools and equipment. Conducive working conditions at all CWS/TRPs be ensured by installing necessary equipment and by following the relevant pollution control norms.

4.2.3 Shortage of Mechanical/ Maintenance Staff

On review of the required and working staff strength available at Central Workshops and Depots of BMTC, Audit noticed that there was shortage of mechanical staff in BMTC which increased from 22.39 *per cent* in 2018 to 27.59 *per cent* by the end of March 2022. The details are given in ***Appendix 4.5***.

After this was pointed out, Government replied (June 2023) that action is being taken to recruit required number of mechanical staff.

4.2.4 Non-maintenance of requisite records at Central Workshops

Audit observed that vital information was not being captured/ records were not properly maintained in three out of four CWS[43]. The details are given below:

i. Date of commencement of bus repairs were not being recorded. The buses received at CWS were not taken for repairs immediately and lay idle due to want of floor space at CWS and manpower. The period of idling of buses at CWS was not being recorded.

ii. Defects noticed during preliminary inspection of buses and estimated time for repair were not being recorded. Due to this, the buses were not segregated into routine/ major repairs based on the quantum of repairs required. Hence, possibility of buses requiring minor/ routine repairs held at CWS for longer duration could not be ruled out. Also, the supervisor at CWS did not assess total time taken by mechanical staff to repair each bus. Such data could serve as an essential input to the management to assess and build required capacity.

[43] except CWS-1, Shantinagar

Recommendation 11: (i) Action may be taken to prescribe and maintain proper records in uniform formats across all the Central Workshops to facilitate creation of a proper management information system.

(ii) Appropriate action may be taken for creation of adequate infrastructure at CWS to avoid idling of buses. A system may be evolved for segregating the buses at CWS into buses requiring shorter and longer time for repairs. Further, buses requiring shorter time for repairs should be prioritized to ensure smooth availability of buses for operation.

On this being pointed out, Government stated (June 2023) that necessary instructions would be issued to CWS officers to record the activities and time taken at each stage of the repairs and maintenance.

4.3 Delay in Preventive Maintenance at BMTC Bus Depots

The Technical Manual of KSRTC (followed by BMTC) stipulates a preventive maintenance program referred to as 'Docking' to be carried after every 20,000 kilometres of bus operation in case of ordinary buses and as 'Servicing' for premium buses[44] to render them mechanically fit for operation. In addition to docking, the engine oil must be regularly topped up and changed at recommended intervals. Delay in preventive maintenance may reduce the operational fitness of vehicles. Moreover, delay in engine oil change may reduce engine life and affect its efficiency.

Audit review of vehicle docking details at the sampled 10 ordinary bus depots from 2017-22 revealed that in 2,453 cases (14.09 *per cent*) out of 17,414 cases, docking was done after operating the buses for more than 500 kms over and above the stipulated norm of 20,000 kms. Also, in 1,375 cases (11.39 *per cent*) out of 12,077 cases, engine oil was changed after running the vehicles for 500 kms in excess of the stipulated norms. The details are given in the ***Table 4.1*** below:

Table 4.1: Delay in preventive maintenance

Year	Docking			Engine Oil Change		
	Total No. of Vehicles	No. of cases delayed	Percentage of delay	Total No. of Vehicles	No. of cases delayed	Percentage of delay
2017-18	3,816	946	24.79	2866	532	18.56
2018-19	4,102	644	15.70	2902	329	11.34
2019-20	4,182	625	14.95	2921	327	11.19
2020-21	2,633	124	4.71	1534	126	8.21
2021-22	2,681	114	4.25	1854	61	3.29

Source: Information given by BMTC

During the year 2020-21 and 2021-22, as less number of kilometres were operated compared to previous years, the total number of vehicles taken for docking reduced and this led to reduction in the delays.

[44] For every 17,500 kilometres for Mark-II Volvo and 30,000 kilometres for Mark-III/BS-IV Volvo and 40,000 kilometres for Corona make

On this being pointed out, Government stated (June 2023) that shortage of mechanical staff and spare parts were the main reasons for delays in docking.

4.4 Fuel efficiency of fleet not maintained

BMTC, to exercise control over expenditure on fuel, stipulates[45] target in terms of kms per liter (KMPL) from time to time. The Corporation fixes targeted kmpl depot-wise considering the emission type and model of the vehicle held at the depot. Apart from this, driving habits, road condition and traffic conditions also influence the fuel efficiency of vehicles.

Audit analysis revealed that the set targets were not achieved by four out of 10 ordinary bus depots during the years 2017-22 as detailed in the ***Table 4.2*** below.

Table 4.2: Extra expenditure due to non-achievement of targeted KMPL (Ordinary buses)

Year	Target KMPL	Kms operated (In lakh)	HSD required as per target (In lakh litres)	Actual HSD consumed (In lakh litres)	Extra HSD consumed due to (In lakh litres) (Shortfall in KMPL)	Extra Financial Burden (₹in lakh)
Depot No.6, Indiranagar						
2018-19	4.32	100.00	23.15	23.68	0.53 (0.10)	33.52
2019-20	4.28	93.66	21.88	22.25	0.37 (0.07)	21.92
Depot No.3, Shanthinagar						
2017-18	4.42	143.09	32.37	33.61	1.24 (0.16)	71.86
2018-19	4.27	109.44	25.63	28.20	2.57 (0.39)	162.55
Depot No.17, Chandra layout						
2019-20	3.84	96.28	25.07	25.60	0.53 (0.08)	31.39
Depot No.34, Kothanur Dinne						
2017-18	4.26	99.86	23.44	24.24	0.80 (0.14)	46.36
2018-19	4.08	98.33	24.10	24.72	0.62 (0.10)	39.21
				Total	**6.66**	**406.81**

Source: Performance Appraisal Report(PAR) of BMTC and information provided by BMTC

The short fall in achieving target KMPL ranged between 0.07 to 0.39 in case of ordinary buses. Though the shortfall was minimal, due to its recurring nature, the financial burden caused to the BMTC from these four depots worked out to ₹4.07 crores.

Shortfall in achievement of targeted kmpl was also noticed in two premium bus depots during 2017-22 as detailed in ***Table 4.3*** below.

[45] Depot wise, Annual targets are communicated by Mechanical Engineering Department

Table 4.3: Extra expenditure due to non-achievement of targeted KMPL (Premium buses)

Year	Target KMPL	Kms operated (In lakh)	HSD required as per target (In lakh litres)	Actual HSD consumed (In lakh litres)	Extra HSD consumed due to (In lakh litres) (Shortfall in KMPL)	Extra Financial Burden (₹ in lakh)
Depot No.7, Subhashnagar						
2017-18	2.23	102.30	45.87	46.68	0.81 (0.04)	46.93
2021-22	3.34	43.61	13.06	14.08	1.02 (0.24)	100.01
Depot No.13, Katriguppe						
2017-18	2.33	109.69	47.07	48.16	1.09 (0.05)	63.17
2021-22	3.76	26.34	7.01	8.49	1.48 (0.66)	145.11
				Total	**4.40**	**355.22**

Source: Performance Appraisal Report(PAR) of BMTC and information provided by BMTC

The shortfall in respect of premium buses ranged between 0.04 and 0.66 KMPL, which was up to 17.55 *per cent* of the target fixed, is a cause of concern as operational losses from premium buses are higher than ordinary buses. The financial burden caused to the BMTC from these two depots is calculated and it amounts to ₹3.55 crore.

After this was pointed out, Government replied (June 2023) that overall BMTC had achieved the set KMPL target. However, the reply is not acceptable as BMTC fixes Depot wise target and the fact that six depots had achieved the KMPL targets indicates that either lenient targets were fixed for these six depots or better monitoring was required for the other six depots which could not achieve the KMPL target.

4.5 Non-achievement of targeted life span of engines and batteries

The expected life period of engines, batteries and tyres are notified as targets from time to time by BMTC in terms of number of operational kilometres. Besides, extended periods of usage are also notified for reconditioned engines and retreaded tyres.

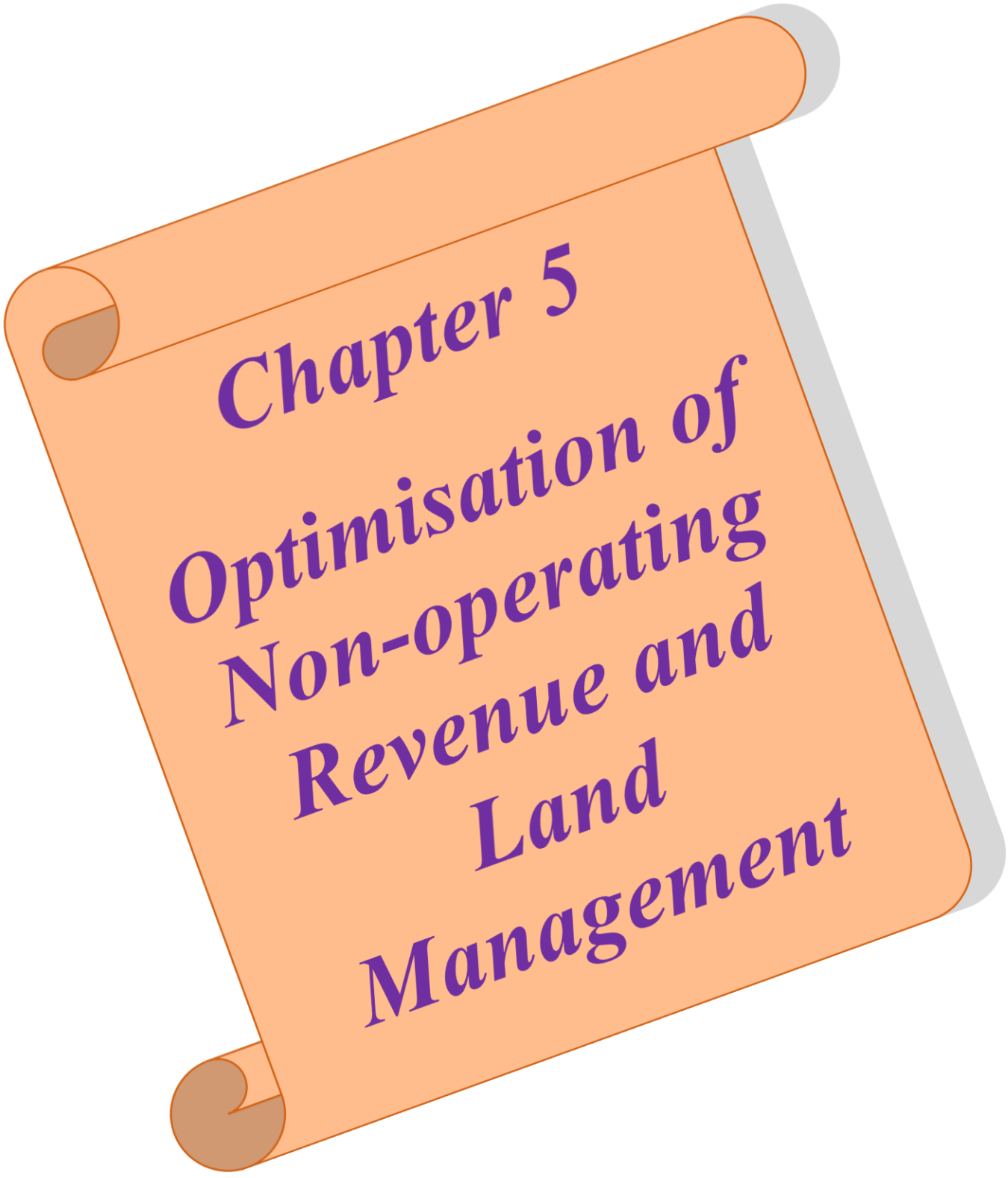
Audit noticed that during 2019-22, the targets stipulated were achieved only in respect of tyres (including retreaded tyres) in the selected Depots. The shortfall in respect of new engines[46] ranged between 0.86 to 8.85 *per cent,* in respect of batteries[47], it was between 1.36 and 21.89 *per cent* and the shortfall in respect of reconditioned engines was between 12.27 to 22.07 *per cent*. The details are given in ***Appendix 4.6***. The poor performance of these parts could be due to driving patterns, harsh road conditions, etc. However, these should have been factored in by BMTC while fixing targets. The shortfalls noticed in respect of engines and batteries are attributable to delayed preventive maintenance.

[46] 0.86 *per cent* to 8.85 *per cent* (Engine & Reconditioned engine - Sampled depots)
[47] 1.36 *per cent* to 21.89 *per cent* (Battery – Sampled depots)

Further, Kengeri Depot (Depot No.12) had not achieved even six lakh km for any new engine in any year between 2017-18 and 2020-21. The new engines in this Depot were subjected to reconditioning between 3.61 lakh kms to 5.7 lakh kms during 2017-21.

On this being pointed out, Government replied (June 2023) that overall, BMTC had achieved the target life stipulated for engines. However, no specific replies were furnished in respect of the 10 sampled ordinary Depots where non-achievement of targets were pointed out by Audit.

Recommendation 12: BMTC must ensure that depots adhere to the prescribed maintenance schedules and may consider improving the frequency of docking by revising the norms.


Chapter 5
Optimisation of Non-operating Revenue and Land Management

Chapter V

Optimisation of Non-operating Revenue and Land Management

The major sources of non-operating revenue for BMTC are (i) License Fee from shops and commercial spaces in its properties and (ii) Advertisement Revenue. BMTC did not have any Action Plan to maximise license fee from commercial spaces after COVID-19. Further, BMTC did not strategise to mitigate the loss of advertisement revenue over the years. About 62 *per cent* of BMTC's land was vacant for more than 15 years and land parcels suffered from encroachment and litigation issues.

This chapter focuses on two major sources of non-operating revenue, i.e., licensee fee from licensing shops and advertisement revenue. Further, BMTC's management of land has also been discussed.

5.1 Optimisation of Non-operating Revenue

As discussed in Chapter-II, BMTC's operational revenue was unable to cover even its operational costs. During 2017-22, non-operating resources (excluding Financial Assistance received from GoK) contributed a meager 5.89 to 8.33 *per cent* to the Gross Revenue of BMTC. License fee from shops and commercial establishments and advertisements revenue contributed 61.73 *per cent* of the non-operational revenue (excluding financial assistance from GoK)[48] during 2017-22.

The Service Level Benchmark in Urban Transport for Indian Cities published by the Ministry of Housing and Urban Affairs, Government of India (MoHUA) 2012 stipulates that more than 40 *per cent* of non-fare revenue is essential for the financial sustainability of a public transportation system. Therefore, it is imperative that BMTC makes sustained efforts to maximize revenue from non-operating/ non-fare sources.

On this being pointed out, Government replied (June 2023) that BMTC has invited (February 2023) expression of interest for selection of consultants for asset monetization of existing infrastructure/assets/vacant land parcels of BMTC and about ₹8.55 crore annual license fee is expected from letting out commercial spaces in two[49] newly constructed bus stations. It was also stated that BMTC had identified 13 properties where retail fuel outlets could be established on revenue sharing pattern, vacant lands are planned to be leased for go-downs, warehouse, scrap yard, etc. Further, retail electric vehicle

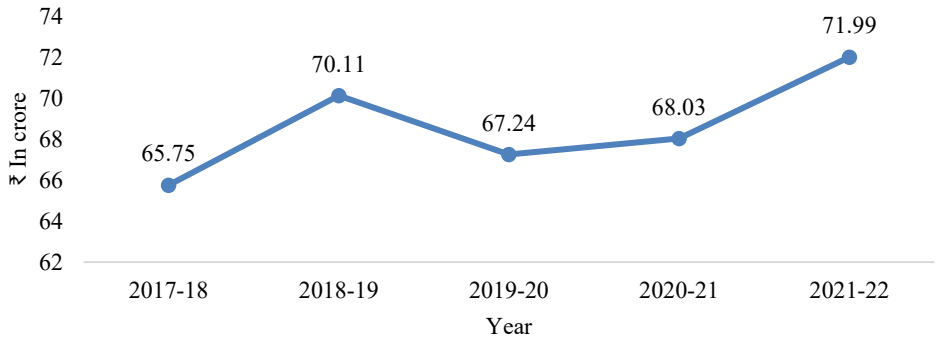
[48] License fee- 48.37 *per cent*; Advertisement Revenue- 13.35 *per cent*
[49] Kalasipalya and BTM Layout.

charging stations would be established in 31 locations under Central Government Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME) (Phase-II) scheme. However, the details of the properties and time frame for implementation were not mentioned in the reply.

5.2 License Fee from licensing shops/commercial spaces

BMTC rents out commercial establishments and office spaces constructed at Traffic Transit Management Centers (TTMCs) and bus stations to Private parties, Government organisations, etc., on payment of license fee from these organisations. Revenue from license fee on shops and commercial establishments ranged from ₹65.75 crore to ₹71.99 crore during the years between 2017-22 as shown in ***Chart 5.1***. During 2019-20 and 2020-21, license fee waiver was given to licensees of ₹1.22 crore and ₹9.75 crore respectively, as relief during the COVID-19 pandemic.

Chart 5.1: License Fee earned (in ₹ crore)



Source: Annual Accounts of BMTC of respective years

5.2.1 Vacant shops and commercial spaces in BMTC properties.

To ascertain whether BMTC has earned optimum revenue from licensing shops/commercial spaces in its properties, Audit analysed the vacancy position of Commercial establishments in BMTC. The extent of the commercial spaces that remained vacant (for more than six months) during the years 2017-18 to 2021-22 are detailed in ***Table 5.1*** below:

Table 5.1: Details of vacant commercial spaces during 2017-22

Year	Details of vacant Commercial establishments and Office/ Commercial spaces		Total Area (in Sq. ft)
	In numbers	Area (in Sq. ft)	
2017-18	28	44,072	No data available
2018-19	29	38,774	19,59,625
2019-20	17	10,379	20,04,611
2020-21	33	15,849	20,53,098
2021-22	38	2,26,968	21,42,709

Source: Information given by BMTC

There has been a substantial increase in vacant commercial spaces during 2020-21 and 2021-22 owing to COVID-19. However, Audit noticed that BMTC did not have an action plan in place to address this issue and find a solution as of December 2022.

Further, there were properties in prime locations such as Kempegowda Bus Station, Basaveshwaranagara, Malleshwaram, Yelahanka, etc. that remained vacant for more than two years during 2017-22. Location-wise details of the number of shops/commercial establishment spaces that were vacant for more than six months are given in ***Appendix 5.1.*** This resulted in a potential loss of license fee[50] to the extent of ₹4.81 crore during 2017-18 to 2019-20 and ₹7.36 crore during 2020-21 and 2021-22.

After this was pointed out, Government replied (June 2023) that BMTC had tendered 13 locations for establishing retail fuel outlets across the city and the same is under process. No reasons were furnished for the lack of prompt action to rent out vacant properties during the five year period. Also, Government reply is silent on the results of tenders invited for 13 locations and land allotment for establishing the retail fuel outlets.

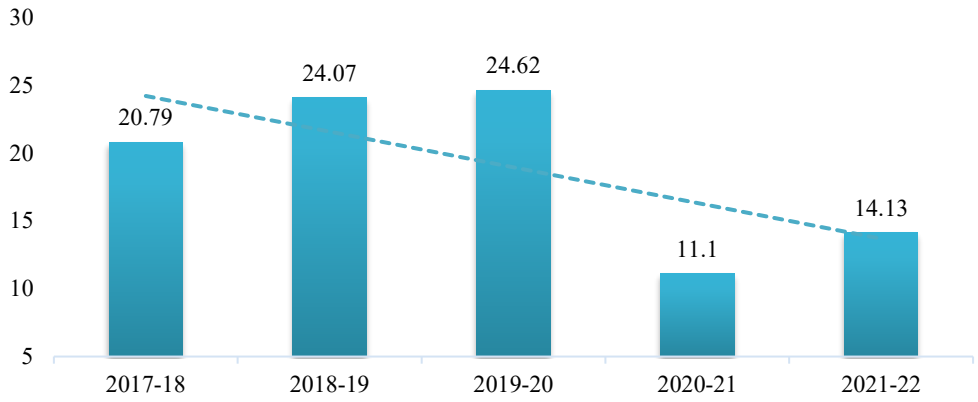
5.3 Revenue from Advertisements

BMTC has been earning non-traffic revenue from Advertisements by hosting hoardings on its premises such as bus stands, depots and TTMCs. However, Bruhat Bengaluru Mahanagara Palike (BBMP) issued (August 2018) a public notice for the removal of all advertisement hoardings and structures located in its jurisdiction to make Bengaluru City 'Flex Free', 'Poster Free' and 'Plastic Free'. Further, BBMP rejected BMTC's request (November 2018) for relaxation of ban on advertisements in its buses.

Despite these developments, in February 2019, BMTC issued a short-term tender notification inviting offers/ bids for grant of Sole Advertising Rights for inside[51] and outside portions[52] of 200 Vajra & Vajra (City) Volvo buses for a period of five years. Soon thereafter, BMTC withdrew the notification due to an interlocutory application filed[53] (March 2019) in the Hon'ble High Court of Karnataka, seeking to restrain BMTC from putting advertisements on its buses. Consequently, the revenue from advertisements decreased over the years during the period from 2017-18 to 2021-22 as shown in the following ***Chart 5.2***.

[50] Vacant area in sq.ft in any TTMC/Bus stand/Depot was multiplied with per sq. ft revenue realized in that TTMC/Bus stand/Depot in respect of occupied shops.
[51] on Driver/ Passenger Seat Back and grab handles
[52] except wing glasses and wall glasses
[53] Under an Original Writ Petition filed in 2017 in connection with road safety

Chart 5.2: Advertisement Revenue (₹ in crore)



** Source: Annual Accounts of BMTC of respective years*

Audit also noticed that no further action was taken by BMTC after March 2019 to assess and mitigate the reduction in advertisement revenue. Since the interlocutory application filed in the Hon'ble High Court of Karnataka sought a ban on advertisement only on the outside body of buses, BMTC could have explored the possibility of putting advertisements inside the buses separately. Besides, BMTC could have considered other opportunities in consultation with legal experts in the advertising field. For example, installation of LED screens to provide passenger information together with scrolling advertisements in major bus stands and TTMCs could have been considered.

Recommendation 13: BMTC may explore all opportunities within the legal framework to earn revenue from advertisements.

On this being pointed out, Government replied (June 2023) that Audit recommendation is considered and action will be taken in this regard.

5.4 Managements of Land Assets

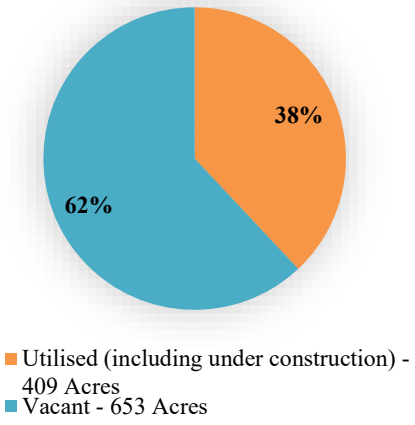
BMTC, as the sole public transport provider in Bengaluru city, has the responsibility to procure land for setting up bus stations, depots and TTMCs in the newly developing areas for the expansion of its operations in the future. As on 31 March 2022, BMTC's financial statements showed that it had land assets worth ₹ 157.71 crore[54].

[54] ₹151.62 crore of freehold land and ₹6.09 crore leasehold land.

5.4.1 Idle investment in procurement of land and construction works

While procurement of land out of Civic Amenities (CA) sites/areas provided by Urban Development Authorities at the initial stages of development results in the availability of sufficient land at the lowest possible price, there is a possibility of these lands remaining unused for longer durations. As on 31 March 2022, BMTC had 1,062 acres of land at 239 locations (details are given in ***Appendix 5.2***). Only 38 *per cent* of the land was utilized and the remaining land was vacant for more than 15 years[55] as shown in ***Chart 5.3***.

Chart 5.3: Land utilisation as on 31 March 2022



Source: Information given by BMTC

BMTC's Board of Directors had advised[56] the Managing Director in April 2008 to prepare a detailed report on the Action Plan for effective and fruitful use of land parcels held by BMTC. However, no such Action Plan had been prepared till October 2022. Audit noticed that 22 *per cent* of the vacant lands (14 properties measuring about 144 acres) were unsuitable due to various reasons such as (i) land parcels in hilly/rocky areas (ii) the presence of roads dividing the land parcels into small pieces (iii) presence of high-tension wires and (iv) absence of approach roads. Details are given in ***Appendix 5.3***.

BMTC neither took any action to surrender these lands to the concerned authorities nor did it move proposals seeking alternate land parcels. As a result, the investment made in land, taxes and other related maintenance expenses have burdened the already strained BMTC's finances. Few illustrative cases where the land could not be put to use as of March 2022 are given in the ***Case Studies 5.1 and 5.2*** below:

[55] 409 acres of land parcels in 122 locations were utilized (including areas under construction) and 653 acres in 117 locations was vacant
[56] in its 52nd Board meeting

Case Study 5.1: Infructuous expenditure due to unsuitable land

Bangalore Development Authority (BDA) allotted a Civic Amenity (CA) site measuring 2 acres and 23 guntas in Nagarabhavi II Stage on lease basis to BMTC. The lease was for a period of 30 years from November 2008. Entire lease rent for 30 years aggregating to ₹ 1.19 crore was paid in advance by BMTC to BDA. This site was located on a hillock where the difference in levels between the highest and lowest point was 18 to 20 meters. BMTC attempted to construct a Bus Terminus and Bus Depot between March 2014 and February 2015. The estimate for the work was ₹7 crore of which ₹3.13 crore was towards Grading & Formation including retaining wall that was necessitated due to hillock condition. However, citing financial crunch in BMTC and that the proposed Bus Terminus and Bus Depot were not necessary, the work was abandoned after incurring an expenditure of ₹1.48 crore towards earth work excavation. Thus, in addition to lease rent paid, the cost of construction paid to the contractor of ₹1.48 crore became infructuous expenditure.

Government stated (June 2023) that construction Nagarabhavi Depot was abandoned due to financial condition of the Corporation and it would be resumed depending on the financial position and traffic requirements.

The reply is not tenable as BMTC should have assessed its financial position and traffic requirements before commencement of the work. The imprudent decision had resulted in infructuous expenditure of ₹1.48 crore.

Case Study 5.2: Unfruitful expenditure

Construction of Bus Depot at Nagadasanahalli was completed in September 2015 at a cost of ₹4.49 crore. However, Audit noticed that this Bus Depots was not operational even after seven years of its completion (December 2022).

Government stated (June 2023) that Nagadasanahalli depot land is under dispute and status-quo to be maintained as per the Hon'ble High Court of Karnataka order. The depot would be operated once the court case is cleared.

The reply is not tenable as failure to ensure clear titles of the property before commencement of the construction of bus depot at Nagadasanahalli led to idle expenditure of ₹4.49 crore.

Recommendation 14: BMTC may prepare action plan for effective utilization and monetization of the land without further delay. BMTC may acquire land on lease basis, only when it is required for immediate use.

5.4.2 Failure to safeguard vacant lands

BMTC's Board in its 52nd meeting (April 2008) advised the Managing Director to initiate measures for the protection of land parcels against encroachment.

Audit noticed that BMTC was not taking timely actions to safeguard and maintain its properties. A few deficiencies noticed in this regard are detailed in the ***Table 5.2*** below:

Table 5.2: Details of lands unfenced/ under litigation/ encroached

Sl. No	Particulars[57]	No. of land parcels	Area of Land (in Acre–Guntas)	Percentage of land (out of total vacant land of 653 acres)
1	Lands unfenced	88	521-34	79.8%
2	Lands under litigation	27	108-00	16.5%
3	Lands yet to be mutated in favor of BMTC	11	68-2	10.4%
4	Lands encroached by private persons	6	31-10	4.8%

Source: Information given by BMTC

As seen, 31.7 *per cent* of vacant land cannot be immediately put to use as there were issues of encroachment, litigation etc. Upon land allotment, BMTC did

[57] The lands shown under different categories in the table are not mutually exclusive.

not ascertain the occupancy and possession (clear of all encumbrances) due to which few land parcels continued to be under unauthorized occupation. Further, as lands were kept vacant continuously, these were used by other departments for their own purposes. Few illustrative cases are mentioned in the Case Study 5.3 below.

Case Study 5.3: BMTC lands used for other purposes

Cases where lands allotted to BMTC was used for the other purposes:

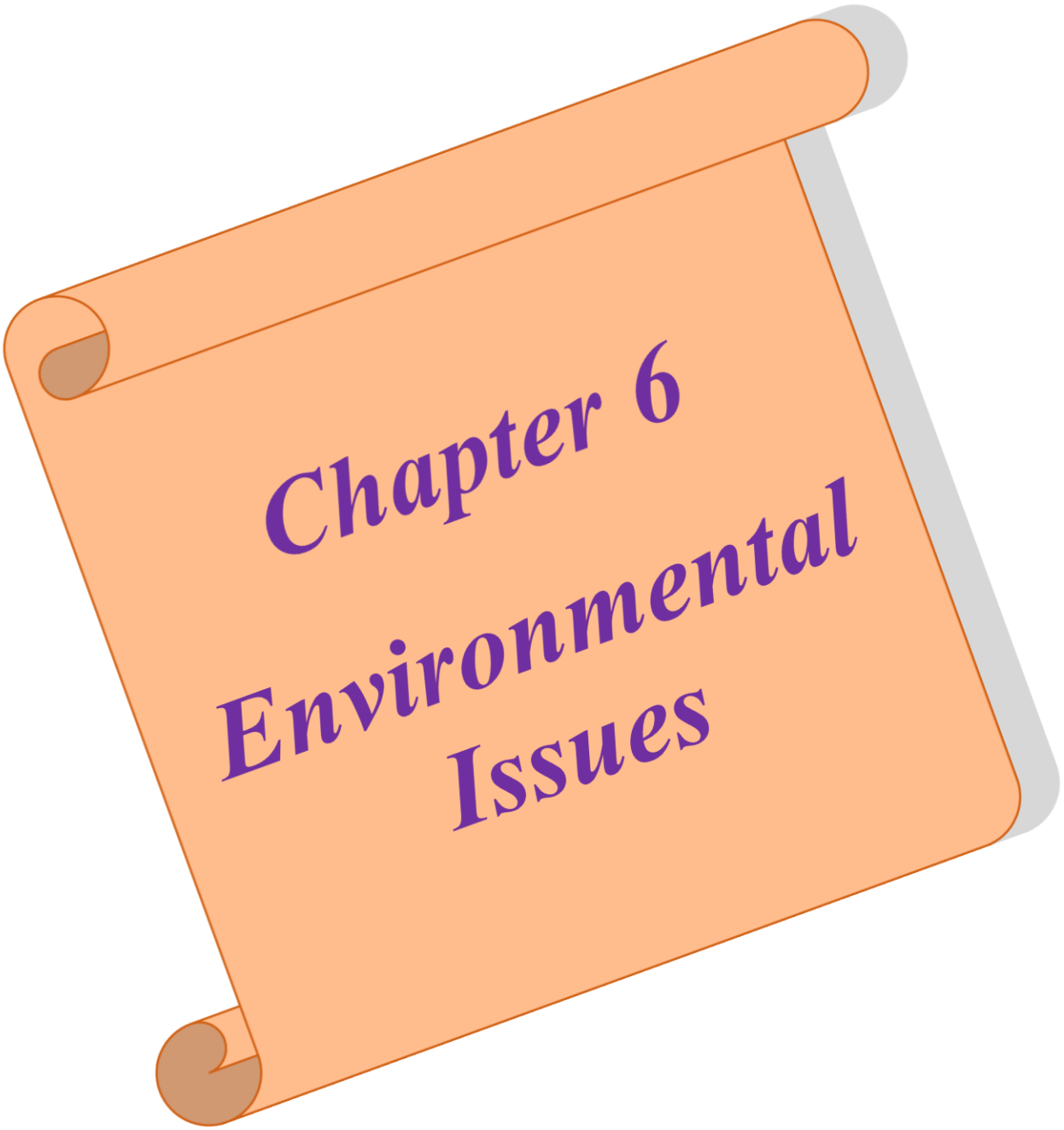
(i) In Survey No 116 of Mandur, where 4 acres and 12 guntas (procurement cost ₹1.02 crore), land parcels were being used for school, panchayat and veterinary health center.

(ii) In Survey No 130 of Byalakere village, out of 30-acre land held by BMTC, 11 acres were marked (October 2017) for houses constructed under Ashraya Yojana, a Government of Karnataka scheme to provide housing for Economically Weak Section.

(iii) A site measuring 2467.88 Sq. meters (24 guntas) situated at Pillanna Garden was leased out to BMTC during the year 1992 by BDA for a lease rent of ₹ 3.70 lakh for a period of 30 years (from 23.03.1992 to 22.03.2022) on payment of entire lease amount in advance. On demand by Government and public, this land was returned by BMTC for construction of a Sports Complex. In 89th Board Meeting dated (June 2017), it was resolved to authorize the Managing Director to surrender this Site to BDA and request BDA to allot an alternate site. However, no alternate land parcels were allotted to BMTC in lieu of the surrendered site.

On this being pointed out, Government replied (June 2023) that BMTC has written to Revenue Department in December 2022 to complete Podi and Haddubastu[58] process and once this process is completed, action would be taken to protect the lands allotted. This shows that BMTC took-up the issue with Revenue Department only after Audit observation and the process remained incomplete even after 10 to 15 years of allotment.

[58] Boundary marking


Chapter 6
Environmental
Issues

Chapter VI

Environmental issues

Though BMTC did not have a comprehensive environmental policy/strategy, there were certain initiatives such as scrapping of old vehicles and adoption of electric buses in the fleet and rainwater harvesting that were proposed. Audit observed that there were unprecedented delays in scrapping of old buses and induction of electric buses. BMTC was unable to meet internally set targets on rainwater harvesting and solar power generation. Further, BMTC set up its CWS in an ecologically sensitive area that restricted its operations.

A public transport utility also has the responsibility to ensure that pollution due to its fleet operations, workshop repairs, etc. is minimised. Audit reviewed BMTC's commitment and its initiatives toward environmental protection and sustainability during the period 2017-22.

6.1 Environmental Policy and initiatives

Though BMTC did not have a Comprehensive Environmental Policy in place (as of December 2022), the Corporation has been disclosing certain activities that it has taken towards 'Vehicular Air Pollution Management' in its Administrative Reports. Few such initiatives are:

i. Stringent checking of vehicles for compliance with pollution norms
ii. Computerised smoke testing system at Depot level
iii. Installation of water recycling plant at Depot level
iv. Installation of Rainwater harvesting system in the Depots
v. Installation of solar lights at Depots
vi. Induction of Electric Buses

The issues in implementation of the initiatives taken by BMTC are discussed in the following paragraphs.

6.2 Operation of overaged buses by BMTC

Audit analysis revealed that on an average, BMTC operated 12.60 to 29.08 *per cent* overaged buses in its fleet every year during the period 2017-22. Year-wise details are as *discussed in paragraph 3.6*.

Continuous usage of overaged buses in the fleet has an environmental impact in the form of lesser fuel efficiency and increased smoke emission.

On this being pointed out, Government replied (June 2023) that stay imposed by NGT on procurement of BS-IV buses was the main reason for not phasing

out overaged buses. Also, BMTC started procuring BS-VI buses from December 2021 and has also inducted electric buses into its fleet.

6.2.1 Non-compliance with the commitment made to National Green Tribunal

An affidavit was filed[59] (November 2020) before National Green Tribunal (South Zone) (NGT), Chennai regarding vehicular pollution in Bangalore City and the steps taken to phase out the old diesel vehicles. The State of Karnataka was the first respondent and BMTC was also made one of the respondents in the application. Further, BMTC was asked to submit its action plan for phasing out old diesel vehicles in its fleet.

Accordingly, BMTC filed an affidavit stating that it held 2,813 BS-III and 3,797 BS-IV buses in its fleet. As per the timeline submitted by BMTC, 2,349 BS-III and 66 BS-IV buses were to be phased out by March 2023 and replaced with BS-VI buses.

The year wise details of buses proposed to be scrapped and actually scrapped during 2020-22 are given in the ***Table 6.1*** below:

Table 6.1: Year wise details of buses scrapped

Sl No.	Year	Number of Buses committed to be scrapped as per affidavit		Actual No. of buses scrapped		Balance	
		BS-III	BS-IV	BS-III	BS-IV	BS-III	BS-IV
1	2020-21	450	14	146 (32%)	0	304 (68%)	14 (100%)
2	2021-22	1500	13	309 (21%)	0	1191 (79%)	13 (100%)
	Total	**1950**	**27**	**455 (23%)**	**0**	**1495 (77%)**	**27 (100%)**

Source: Affidavit filed by BMTC

In addition to the above, the affidavit filed by BMTC before NGT projected an action plan to phase out 464 Air-conditioned buses of Volvo make with BS-III emission standards after operation of 10 lakh Kilometres. However, none of these Volvo buses were scrapped even though 68 (14.65 *per cent*) of them[60] had completed 15 years of age or 10 lakh kms of operation.

Thus, BMTC failed to adhere to its action plan submitted to NGT and was able to meet only 23 *per cent* of its scrapping commitment.

Government stated (June 2023) that BMTC had scrapped 1,070 buses between 2020 and 2023 and it has planned to scrap 1,118 old buses (including 1,087 BS-III buses) during 2023-24. However, the number of buses to be scrapped by March 2023 as per the commitment made to NGT was 2,435 against 2,188 scrapped/ planned to be scrapped.

[59] O.A.No.183 of 2016

[60] 49 buses completed 15 years of age and 19 buses completed 10 lakh kms of operation

Recommendation 15: Necessary action may be taken to speed up the scrapping process and for disposal of the buses as per the commitment made to NGT.

6.3 Induction of Electric buses in BMTC

Charging facility being installed at Yeshwanthpura Depot during August-2022

BMTC introduced (December 2021) electric buses under the Bengaluru Smart City scheme and the buses were being operated on Gross Cost Contract (GCC) [61] mode in association with National Thermal Power Corporation's (NTPC) Vyapar Vidyut Nigam Limited (NVVN), a GoI undertaking. The GCC rate was fixed at ₹51.67 per km for an assured operation of 180 kms per day. As per the GCC, 90 buses were to be introduced in a phased manner from September 2021 to December 2021. These electric buses cost ₹1.23 crore per bus and are expected to run about 180 kms when fully charged (which takes around six hours). Further, there is a need for charging facilities at multiple locations for smooth operation.

Electric buses being charged at K.R.Puram Depot

Audit noticed that out of 90 electric buses that were to be made operational with effect from 15 December 2021, only 28 buses commenced operation from a single Depot (Kengeri) on 27 December 2021. The remaining buses were yet to be operationalised as of March 2022.

On this being pointed out, Government stated (June 2023) that all 90 buses on GCC model were inducted into BMTC fleet in May 2022 and charging stations have been constructed in three[62] Depots for smooth functioning of electric buses.

However, the details of schedules operated and vehicle productivity of these buses were not furnished to Audit (June 2023).

[61] A gross-cost contract pays the operator a specified sum to provide a specified service for a specified period

[62] Kengeri, K.R. Puram and Yeshwanthapuram.

6.4 Implementation of water conservation efforts

KSRTC issued[63] a Circular (applicable to all Road Transport Corporations in the State) which stipulated the construction of rainwater harvesting and storage facilities at all bus depots. Rainwater harvesting facilities were installed only in four[64] out of sampled 12 bus depots of BMTC. Of these, rainwater harvesting facilities were actively being utilised only by two[65] bus depots.

On this being pointed out, Government stated (June 2023) that action will be taken to rectify the broken pipeline Depot No.13 and 34 and harvested rainwater will be utilized fully. Further, BMTC has envisaged to provide Rain water Harvesting system to all depots in a phased manner, depending on the financial condition of the Corporation.

6.5 Construction of Central Workshop in an ecologically sensitive area

The activities carried out at CWS of BMTC have a higher potential to pollute the environment. Accordingly, Karnataka State Pollution Control Board (KSPCB) has classified motor vehicle workshops as an orange category[66] industry.

FCWS Dasanapura near Arkavathi River

Audit noticed that only three[67] CWS were fully functional during 2017-18 to 2021-22. Of these, Dasanapura[68] CWS was situated in an ecologically sensitive area[69] as notified (November 2003) by KSPCB and hence, only green category industries were allowed in that place. This CWS was constructed at a cost of ₹10.60 crore and operationalised in August 2018. The CWS was found (June 2022) violating the norms stipulated by KSPCB and it carried out prohibited operations such as renewal of Fitness Certification, Accident repairs, Heavy body repairs, etc (which fell under the orange category). Therefore, with directions to limit the operations to green category activities, KSPCB renewed

[63] No.2/2016-17 issued vide letter no. 336/2016-17 dated 07 June, 2016.
[64] Depot No. 3, Shanthinagar; Depot No. 13, Katriguppe; Depot No. 17, Chandra layout; and Depot No. 34, Kothanur dinne
[65] Depot No. 3, Shantinagar and Depot No. 17, Chandra layout.
[66] KSPCB has classified industrial activities in four categories based on the degree of the impact on the environment - Red, Orange, Green and White.
[67] CWS Dasanapura, Dooravaninagara and Shanthinagara.
[68] Constructed in land measuring 13 Acres, 04 guntas in Survey No. 106, at Bengaluru North Taluk, Dasanapura Hobli
[69] Tippagondanahalli Reservoir Catchment Area (TGRCA)

the consent for operation of the CWS till December 2036. Thus, the establishment of CWS in an ecologically sensitive area resulted in environmental pollution and restriction of maintenance operations. It also showed that BMTC had not conducted pre-feasibility studies before identifying the sites for setting up of CWS.

Recommendation 16: Action may be taken to identify ecologically sensitive lands in possession. Further, construction on these lands may be done only after Environmental Impact Assessment studies and formulation of Detailed Project Reports.

On this being pointed out, Government stated (June 2023) that Audit recommendation is considered and in future, BMTC would take up utmost care while developing the ecologically sensitive lands, duly conducting feasibility study. Environmental Impact Assessment studies will also be carried out and this will be included while formulating the Detailed Project Report.

Bengaluru
The

(Vimalendra Anand Patwardhan)
Principal Accountant General (Audit-II)
Karnataka

Countersigned

New Delhi
The

(Girish Chandra Murmu)
Comptroller and Auditor General of India


Appendices

Appendix -1.1

Details of audit sampled BMTC Depots, TTMCs and Major Bus stations (Paragraph 1.5)

Bus Depots		
Zone	**Selected Depots**	**Location**
Depots operating Ordinary buses		
North	Depot No.8	Yeshwanthpur
	Depot No.43	Shivanapura
East	Depot No.6	Indiranagar
	Depot No.19	Electronic City
West	Depot No.12	Kengeri
	Depot No.17	Chandra Layout
South	Depot No.3	Shanthinagar
	Depot No.34	Kothnur Dinne
Northeast	Depot No.10	Hennur Banasawadi
	Depot No.48	Bhairathi
Depots operating Premium buses		
Central	Depot No.7	Subashnagar
	Depot No.13	Kathriguppe
Central Workshop		
South & Central	Central Workshop - I	Shanthinagar
East & Northeast	Central Workshop - II	Dooravaninagar
West	Central Workshop - III	Challaghatta
North	Central Workshop - IV	Dasanapura

Sl. No.	TTMC/ Bus Station
1.	Kempegowda Bus Station
2.	Shivajinagar Bus Station
3.	Shanthinagar TTMC
4.	Jayanagar TTMC
5.	Vijayanagar TTMC
6.	Yeshwanthpur TTMC
7.	Koramangala TTMC
8.	Domlur TTMC
9.	Banashankari TTMC
10.	Kengeri TTMC
11.	Bannerughatta TTMC
12.	Whitefield TTMC

Appendix 2.1

Loss of traffic revenue due to non-revision of fares (Paragraph 2.4)

Year	Fare hike proposal date	Fare hike effective date (assumed)	Fare Revision per Km in paise	Calculation of Loss of traffic Revenue			Passenger in lakh Km per day operated from effective date till end of FY	Loss of traffic revenue (₹ in lakh)
				From	To	No. of days		
2018-19	19.07.2018	01.08.2018	17.32	01.08.2018	31.03.2019	243	47.96	11654.28
2019-20	-	-	-	01.04.2019	31.03.2020	366	70.24	25707.84
2020-21	-	-	-	01.04.2020	28.02.2021	334	27.22	9091.48
	08.02.2021	01.03.2021	22.67	01.03.2021	31.03.2021	31	3.31	102.61
2021-22	-	-	-	01.04.2021	31.03.2022	365	50.46	18417.90
	Total							**64974.11**

Appendix 2.2

Details of outstanding dues from Government on issue of concessional bus pass to students
(Paragraph 2.6)

(₹ in crore)

Year	Category	No. of Passes issued	*Per cent* of Government Share	Cost of Pass	Government Share receivable	Reimbursement from Government	Shortfall
2017-18	**General**	3,07,426	50	333.03	166.52	157.47	9.04
	SC	57,219	75	61.99	46.49	46.49	0.00
	ST	7,400	75	8.01	6.01	6.01	0.00
	Total	**3,72,045**	**-**	**403.03**	**219.02**	**209.97**	**9.04**
2018-19	**General**	2,63,420	50	285.36	142.68	128.61	14.07
	SC	65,421	75	70.87	53.15	41.2	11.95
	ST	9,577	75	10.37	7.78	6.91	0.87
	Total	**3,38,418**	**-**	**366.60**	**203.61**	**176.72**	**26.89**
2019-20	**General**	3,16,104	50	342.44	171.22	119.33	51.89
	SC	78,500	75	85.04	63.78	32.97	30.81
	ST	11,484	75	12.44	9.33	17.53	-8.20
	Total	**4,06,088**	**-**	**439.92**	**244.33**	**169.83**	**74.50**
2020-21	**General**	1,51,657	50	164.29	82.15	0	82.15
	SC	45,056	75	48.81	36.61	0	36.61
	ST	6,780	75	7.34	5.51	0	5.51
	Total	**2,03,493**	**-**	**220.44**	**124.26**	**0**	**124.26**
2021-22	**General**	1,86,890	50	202.46	101.23	0	101.23
	SC	54,840	75	59.41	44.56	37.28	7.28
	ST	7,915	75	8.57	6.43	5.49	0.94
	Total	**2,49,645**	**-**	**270.44**	**152.22**	**42.77**	**109.45**
Grand Total		**15,69,689**		**1700.43**	**943.43**	**599.29**	**344.14**

Appendix 3.1

High load factor Schedules cancelled (Paragraph 3.4.1 – Case Study 3.1)

Sl No.	Depot No.	Route No.	Origination	Destination	Load Factor
1	47	318E/1	KMT	TRH	123.2
2	26	MF9/3	Manthrimall metro stn	Kempegowda bus stn	116.7
3	26	MF9/4	Manthrimall metro stn	Kempegowda bus stn	113.6
4	26	MF9/5	Manthrimall metro stn	Kempegowda bus stn	115.3
5	26	MF9/2	Manthrimall metro stn	Kempegowda bus stn	132.1
6	26	MF9/1	Manthrimall metro stn	Kempegowda bus stn	133.6
7	41	KBS-1K/1	KBS	KDG	101.1
8	41	KBS-1K/2	KBS	KDG	94.6
9	41	KBS-1K/3	KBS	KDG	94.2
10	10	291J/2	K.R.Market	Rama Krishna Hegde Nagar	109.9
11	23	291J/6	K.R.Market	Ramakrishna Hegadenagar	103.7
12	6	KBS-1K/5	KBS	KDG	96.0
13	15	163D/1	Jayanagar 9th Block	KRM Housing Complex	92.1
14	10	290K/1	Shivajinagar Bus Station	Dr. Ambedkar college	99.4
15	6	KBS-1K/23	KBS	KDG	100.9
16	41	KBS-1I/9	KBS	KDG	90.8
17	41	KBS-1I/10	KBS	KDG	90.9
18	41	KBS-1I/12	KBS	KDG	91.6
19	41	KBS-1K/4	KBS	KDG	90.2
20	10	302B/6	Kempegowda Bus Station	Jalavayu Vihar	91.1
21	10	290G/1	Shivajinagar Bus Station	Vidyasagar	92.1
22	10	300E/15	Shivajinagar Bus Station	K.R.Puram	96.6
23	10	500C/2	K.R Puram	Central Silk Board	96.8
24	10	290EY/3	Kempegowda Bus Station	Yalahanka	92.5
25	10	290EY/4	Kempegowda Bus Station	Yalahanka	98.0

Sl No.	Depot No.	Route No.	Origination	Destination	Load Factor
26	10	291J/3	K.R.Market	Rama Krishna Hegde Nagar	101.3
27	10	PK291J/7	K.R.Market	Rama Krishna Hegde Nagar	104.5
28	11	500D/23	Hebbal	Central silk board	91.2
29	41	12F-5/14	HSK	SJP	92.2
30	10	290/5	Shivajinagar Bus Station	Thanisandra	100.8
31	10	290Q/4	Rama Krishna Hegde Nagar	Neelasandra Rose Garden	96.2
32	10	290B/5	Kempegowda Bus Station	Thanisandra	104.1
33	23	TR4/3	Jagjivanram Nagar	Nagavara	93.8
34	23	279K/1	Kempegowda Bus Station	Patalappa Lay Out	92.6
35	23	415/1	Shivajinagar Bus Station	Vishwanatha Nagenhalli	94.4
36	24	KBS-13K/2	KBS	KADUGODI	93.1
37	11	291D/3	Shivajinagara	Yelahanka	90.6
38	11	291D/6	Shivajinagara	Yelahanka	95.3
39	11	JPV3/3	HEBBAL	Central silk board	94.5
40	6	KBS-1K/22	KBS	KDG	92.6
41	6	KBS-1I/21	KBS	KDG	91.0
42	6	KBS-1I/22	KBS	KDG	92.7
43	10	290KA/1	K.R.Market	Nagawara	90.4
44	33	46/2	K.B.S	KORAMANGALA	93.9
45	10	290N/1	K.R.Market	Thanisandra	93.1
46	10	292E/1	Kempegowda Bus Station	N.Nagen Dinne	93.4
47	14	415B/2	kempegowda bus stand	vishvanatha nagenahalli	90.1
48	14	279E/10	kempegowda bus stand	boopasandra	92.8
49	14	139/4	shivajinagar bus stand	jeewanbhima nagar	92.6
50	8	102/1	Sadashivanagara	K.R.Market	96.4
51	16	126A/1	KMT	Jeevanahalli	94.2

Appendix 3.2

Underutilisation of fleet
(Paragraph 3.5)

Sl. No.	Particulars	2017-18		2018-19		2019-20		2020-21		2021-22	
		Ordinary	Premium	Ordinary	Premium	Ordinary	Premium	Ordinary	Premium	Ordinary	Premium
1	Average Fleet Strength held	5614.7	779.7	5822.4	851.7	5662.6	852.2	5721.9	885.6	5705	859.9
2	Ideal number of vehicle on road (92%)	5165.524	717.324	5356.608	783.564	5209.592	784.024	5264.148	814.752	5248.6	791.108
3	Average vehicles on road	5011.6	586	4965.2	649.5	4901.6	640.7	3551.6	82.4	3842.1	123.1
4	Shortage of vehicle on road	153.9	131.3	391.4	134.1	308.0	143.3	1712.5	732.4	1406.5	668.0
5	Average spare vehicle	211.5	103.3	205.1	105	366.1	138.6	1831.9	687.3	1400.2	605.4
6	Average vehicle off Road due to repair or maintenance	391.6	90.4	652.1	97.2	394.9	72.9	338.4	115.9	462.7	131.4
7	Percentage of Fleet utilisation	89.3	75.2	85.3	76.3	86.6	75.2	62.1	9.3	67.3	14.3

Appendix 3.3

(Use of overaged ordinary buses in BMTC)
(Paragraph 3.6)

Years	2017-18			2018-19			2019-20			2020-21			2021-22		
Overage Criteria	**Age > 11 years**	**Kms run > 8.5 lakhs**	**Both criteria**	**Age > 11 years**	**Kms run > 8.5 lakhs**	**Both criteria**	**Age > 11 years**	**Kms run > 8.5 lakhs**	**Both criteria**	**Age > 11 years**	**Kms run > 8.5 lakhs**	**Both criteria**	**Age > 11 years**	**Kms run > 8.5 lakhs**	**Both criteria**
Total overage buses	725	930	453	627	658	341	641	625	405	1132	825	769	1935	837	834
Total overaged bus operated	674	877	412	568	614	341	633	616	400	1082	794	739	1906	826	823
Total effective kilometre (in lakhs)	254.52	0.47	0.368	201.58	0.4	0.326	338.37	0.596	0.544	316.96	9.465	9.5	583.74	0.33	0.33
Vehicle productivity of overaged bus [effective km / (no. of bus operated x 365)]	**103.46**	**0.15**	**0.11**	**97.23**	**0.18**	**0.26**	**146.45**	**0.27**	**0.37**	**80.26**	**3.27**	**3.52**	**83.91**	**0.11**	**0.11**
Average fleet strength	6,394.3			6,674.5			6514.9			6,607.8			6,564.8		
Total number of overaged vehicles in the fleet (percentage of average fleet strength)	1202 (18.80)			944 (14.14)			861 (13.22)			1188 (17.98)			1938 (29.52)		
Total number of overaged vehicles operated in the fleet (percentage of average fleet strength)	1139 (17.81)			841 (12.60)			849 (13.03)			1137 (17.21)			1909 (29.08)		
Percentage of buses completed 8.5 lakh kms in the average fleet strength	14.54			9.86			9.59			12.49			12.75		
Average spare vehicle held	211.5			205.1			366.1			1931.9			1400.2		

Appendix 3.4

Cancellation of Scheduled Kilometres (Paragraph 3.7)

Sl. No.	Particulars/ Year	2017-18		2018-19		2019-20		2020-21		2021-22	
		Ordinary	Premium	Ordinary	Premium	Ordinary	Premium	Ordinary	Premium	Ordinary	Premium
1	No. of schedules as of 31st March	5463	680	5431	759	5399	760	5175	138	5219	328
2	Total Scheduled Kms (in lakh Kms)	4357.86	506.96	4154.78	537.55	4002.47	520.07	2168.78	58.80	2560.68	100.14
3	Total Cancellation of Kms (in lakh Kms)	659.84	58.11	524.73	46.73	445.74	34.06	129.31	1.86	190.78	3.29
4	**Percentage of cancellation of total kilometre**	15.14	11.46	12.63	8.69	11.14	6.55	5.96	3.16	7.45	3.29
5	Cancellation due to crew shortage (in lakh Kms)	255.41	9.55	140.36	6.30	137.63	6.91	13.74	0.00	8.44	0.00
6	**Percentage of Cancellation of Kms due to crew shortage**	38.71	16.43	26.75	13.48	30.88	20.29	10.63	0.00	4.42	0.00
4	Cancellation due to shortage of buses (in lakh Kms) (A)	120.77	8.66	113.24	3.71	75.84	1.11	1.64	0.00	1.67	0.00
5	Cancellation due to repair of buses (in lakh Kms) (B)	43.34	12.99	33.24	6.37	37.47	2.84	9.02	0.01	7.49	0.02
6	Total cancellation due to vehicle related issues(in lakhs km) (A) + (B)	164.11	21.65	146.48	10.08	113.31	3.95	10.66	0.01	9.16	0.02
7	**Percentage of Cancellation due to repair of vehicle**	24.87	37.26	27.92	21.57	25.42	11.60	8.24	0.54	4.80	0.61
8	Average number of spare vehicles held	211.5	103.3	205.1	105.0	366.1	138.6	1831.9	687.3	1400.2	605.4
9	Percentage of spare vehicles held	7.8	15.6	7.9	12.3	8.0	13.3	9.4	523.2	13.8	162.2

Appendix 3.5

BMTC routes parallel to BMRCL lines (Paragraph 3.8.1)

Route no.	Route description	Metro route	Metro line	2017-18		2018-19		2019-20		2020-21		2021-22		Metro Functioning date
				No. of schedules	Average Load factor	No. of schedules	Average Load factor	No. of schedules	Average Load factor	No. of schedules	Average Load factor	No. of schedules	Average Load factor	
226M	KR Market to Bidadi	Mysore road to kengeri	Purple	15	70.6	15	70.3	18	70.7	21	49.6	22	53.7	29.08.2021
211	KR Market to Somanahalli	KR market to Silk institute, Bansahankari to Silk institute	Green	21	59.7	25	62.1	26	61	37	49.3	35	55.1	Mantri Square Sampige Road to Yelachenahalli on 18.06.2017 and extended up to Silk Institute on 15.01.2021
258 CB	Yeshwanthpura to Nelamangala	Yeshwanthpur to Dasarahalli/Nagasandra	Green	10	66.2	10	66.4	8	68.8	9	57.6	11	63.2	01.05.2015
315	Kempegowda Bust station to KR puram	Majestic,Trinity, Halasuru, Swami Vivekananda Road, Baiyappanahalli	Purple	3	72.9	3	73.6	1	83.5	7	55	5	70.4	20.10.2011

Appendix 3.6

EPKM, CPKM and Margin from Ordinary and Premium Buses (Paragraph 3.9)

Description	2017-18	2018-19	2019-20	2020-21	2021-22
Ordinary buses					
No. of KMs operated (in lakh)	3715.21	3659.97	3577.57	2082.6	2384.89
Traffic Revenue earned (₹ in lakh)	148902.11	151803.43	148013.65	62677.07	81247.91
Cost of Operation (₹ in lakh)	198654.61	211840.26	214305.72	164259.18	186719.9
Targeted EPKM (in ₹)	39.85	40.05	43.19	28.42	30.95
Actual EPKM (in ₹)	40.08	41.48	41.37	30.10	34.07
CPKM (in ₹)	53.47	57.88	59.90	78.87	78.29
Margin per KM (in ₹)	-13.39	-16.40	-18.53	-48.77	-44.23
Premium buses					
Scheduled KMs (in lakh)	506.96	537.55	520.07	58.8	100.14
Effective KMs (in lakh)	449.3	492.87	487.94	64.88	99.33
Traffic Revenue earned (₹ in lakh)	26049.15	31105.86	31136.76	3559.07	4878.6
Cost of Operation (₹ in lakh)	35770.93	41844.14	40065.43	16266.73	17835.09
Targeted EPKM (in ₹)	58.97	59.84	65.90	54.34	68.95
Actual EPKM (in ₹)	57.98	63.11	63.81	54.85	49.11
CPKM (in ₹)	79.61	84.90	82.11	250.71	179.54
Margin per KM (in ₹)	-21.63	-21.79	-18.30	-195.86	-130.43

Appendix 3.7

Dead Kilometres exceeding targets for Selected Depots[70] (Paragraph 3.10)

Particulars/ Year	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Effective Km achieved (in lakh km)	784.41	786.29	777.38	462.22	539.61	**3349.91**
Target Dead Km (in lakh km)	31.75	34.61	36.24	17.34	21.94	
Actual Dead Km operated (in lakh km)	34.99	34.57	34.32	17.52	18.18	
Excess Dead Km operated (in lakh km)	3.66	2.53	2.57	1.30	1.44	**11.54**
Variable CPKM in ₹	20.86	23.71	23.90	22.13	26.22	
Avoidable expenditure on Variable Cost (₹ in lakh)	**76.35**	**59.99**	**61.43**	**28.77**	**37.75**	**264.30**

[70] Ordinary Bus Depot No. 3 Shanthinagar, Depot, Depot No. 6 Indiranagar, Depot No. 10 Hennur Banasawadi, Depot No. 12 Kengeri, Depot No. 17 Chandra Layout, Depot No. 19 Electronic City, Depot No. 34 Kothnur Dinne, Depot No. 43 Shivanapura, Depot No. 48 Bhairathi

Appendix 3.8

Details of amenities provided in TTMCs (Paragraph 3.11)

	Yashvantpura TTMC	Shanthinagar TTMC	Vijayanagar TTMC	Whitefield TTMC	Kengeri TTMC	Banashankari TTMC	Koramangala TTMC	Domlur TTMC	Jayanagar TTMC	Bannerghatta TTMC	Kempegowda Bus Station	Shivajinagar Bus Station
Vayu Vajra Area	X	✓	✓	X	X	X	X	X	✓	X	X	NA
TC Cabin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X
Pass Counter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gents Toilet	✓	✓	✓	✓	✓	✓	$	✓	✓	✓	✓	✓
Ladies Toilet	✓	✓	✓	$	✓	✓	$	$	✓	✓	✓	✓
Refreshment Room	X	✓	X	X	✓	X	X	X	✓	✓	✓	X
Commercial Stall	✓	✓	✓	✓	✓	✓	X	$	✓	✓	✓	✓
Security-Compound Wall	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	X
Ladies Waiting Room	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓
Crew Rest Room	X	X	X	X	✓	✓	X	X	✓	✓	X	X
Timetable	✓	✓	✓	✓	✓	✓	X	✓	✓	X	✓	✓
Advertisement Panels/ Publicity Hoarding	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓
Borewell	$	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓
Sump Tank	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Overhead Tank	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Ramp for HPs	✓	✓	✓	$	✓	✓	✓	X	✓	$	$	✓
Hand Railings for HPs	✓	✓	✓	X	✓	✓	X	X	X	$	X	✓
Separate Toilet for HPs	✓	✓	$	$	$	✓	$	$	✓	$	$	$
CCTV Camera and video Storage facility	4 cameras not working	24 cameras not working	Monitor not working	2 cameras not working	5 cameras not working	12 cameras not working	X	6 cameras not working	CCTV Set up is running only on UPS	✓	Set up is not working since October 2021	5 cameras not working
Ladies Toilet attached to BS and lighting facility available	✓	✓	✓	Poor lighting facility	✓	✓	$	✓	✓	✓	✓	✓
Rainwater harvesting, storage and recycling facility	X	✓	X	X	X	X	X	X	X	X	X	X
Solar lighting system and heating system	X	X	X	X	X	X	X	X	X	X	X	X
Fire Safety System	Only 2 fire extinguishers are present	No fire alarm system	No fire alarm system	No fire alarm system	No fire alarm system	No fire alarm system	✓	No fire alarm system, only 1 fire extinguisher	✓	X	No fire alarm system	No fire alarm system

✓ – Available, X – Not available, $ – Available but not operational, NA – Not required

Appendix 4.1

Summary of Repairs & Maintenance Expenses (Paragraph 4.1)

Sl. No.	Years	2017-18	2018-19	2019-20	2020-21	2021-22
1	Total Effective Kilometre(in lakhs)	4,164.53	4,152.85	4,065.51	2,147.48	2,484.23
2	Average Fleet Strength (in number)	6,394.30	6,674.50	6,514.90	6,607.80	6,564.80
3	Average buses on road (in number)	5,597.60	5,614.80	5,542.40	3,633.90	3,965.10
4	Average spare vehicle	314.70	310.10	504.70	2519.30	2,005.80
5	Average Buses held up for repairs (2-3-4)	482.00	749.60	467.80	454.60	593.90
6	R&M Expenses (in ₹ crore)	249.07	255.07	240.38	165.53	186.63
7	R&M Expenses per vehicle km in ₹ (6/1)	5.98	6.14	5.91	7.71	7.51
8	R&M Expenses per vehicle in ₹ lakhs (6/2)	3.90	3.82	3.69	2.51	2.84
9	R&M expenses per vehicle on road (in ₹ lakhs) (6/3)	4.45	4.54	4.34	4.56	4.71

The steep increase in the average buses held up for repairs which was due to onetime refurbishment of buses taken up by BMTC.

(Source: Performance Appraisal Reports of BMTC)

Appendix 4.2

Delay in bringing the buses to CWS (Paragraph 4.2)

Sl No.	Depot	Location	Zone	CWS	2018-19			2019-20			2020-21			2021-22			Overall Total Delay	Overall Average
					Total no. of cases	Total delay	Average delay	Total no. of cases	Total delay	Average delay	Total no. of cases	Total delay	Average delay	Total no. of cases	Total delay	Average delay		
1	3	Shantinagar	South	1	153	3385	22.12	39	66	1.69	50	1497	29.94	107	2721	25.43	7669	21.97
2	6	Indiranagar	East	1	108	1855	17.18	90	274	3.04	62	2147	34.63	106	3152	29.74	7428	20.30
3	8	Yeshwanthpur	North	1	17	117	6.88	4	12	3.00	3	435	145.00	0	0	0.00	5305	20.40
4				4	65	1093	16.82	72	1105	15.35	39	1868	47.90	60	675	11.25		
5	10	Hennur	North-East	2	115	894	7.77	111	375	3.38	67	2177	32.49	108	2340	21.67	5786	14.43
6	12	Kengeri	West	1	90	2612	29.02	114	614	5.39	54	1661	30.76	110	3586	32.60	9797	23.61
7				3	0	0	0.00	0	0	0.00	0	0	0.00	47	1324	28.17		
8	17	Chandra layout	West	1	92	756	8.22	96	1313	13.68	24	587	24.46	0	0	0.00	4619	15.76
9				3	0	0	0.00	0	0	0.00	0	0	0.00	81	1963	24.23		
10	19	Electronic city	East	2	81	1920	23.70	79	271	3.43	54	2133	39.50	91	940	10.33	5264	17.26
11	34	Kothanur Dinne	South	1	110	3501	31.83	24	88	3.67	26	586	22.54	203	6707	33.04	10882	29.98
12	43	Shivannapura	North	1	12	258	21.50	0	0	0.00	0	0	0.00	0	0	0.00	2245	18.55
13				4	17	485	28.53	46	83	1.80	18	701	38.94	28	718	25.64		
14	48	Byrathi	North East	2	18	350	19.44	40	138	3.45	44	1304	29.64	47	1119	23.81	2911	19.54

Appendix 4.3

Loss of revenue due to delay in FC Renewal (Paragraph 4.2)

S. No.	Description	2017-18	2018-19	2019-20	2020-21	2021-22
1	EPKM of ordinary buses (in ₹)	40.08	41.48	41.37	30.1	34.07
2	Delay at depots (in bus days)	Data not provided	76,036	20,496	64,896	91,648
3	Delay at CWS for FCR (in bus days)	2,529	28,210	12,292	25,747	16,902
4	Delay at CWS for HBR	1,511	43,863	7,535	8,706	7,273
5	Total bus days lost (2+3+4)	4,040	1,48,109	40,323	99,349	1,15,823
6	Vehicle productivity (average Kms operated by a bus in a day)	203.1	201.95	199.42	160.65	170.06
7	Total Kms of operations lost (6*5)	8,20,524	2,99,10,613	80,41,213	1,59,60,417	1,96,96,859
8	Potential revenue lost (₹ In crore) (7*1)	**3.29**	**124.07**	**33.27**	**48.04**	**67.11**

Source: Information given by BMTC and PAR

Appendix 4.4

Deficiencies noticed in CWS (Paragraph 4.2.2)

Sl. No.	Name of the CWS/TRP	Issues noticed
1.	**Central Workshop I, Shanthinagar**	Out of 153 equipment, only 37 were procured after formation of BMTC and the other 116 were too old and dates of procurement were not known. Of these, only one number of 15 HP Air Compressor, Cambering machine, Orbital Riveting machine (clutch plate), Plasma Prime Arc cutting machine and Power Hoisting machine (chain pulley) provided to the CWS was not in working condition. More than 50 *per cent* of CO2 Welding machine, Paint Pneumatic Buffer and Paint Spray guns were not in working condition. There was no pneumatic equipment (operated using compressed air) for riveting, hammering, tightening, and loosening of nuts & bolts, rachet guns besides equipment for the phosphating process which could prevent the corrosion of the bus body structural parts to a large extent and save large amounts of material and labour. The workshop did not possess jack trolleys, hand platform trolleys, fork-lifts etc. for lifting and carrying heavy materials, engine, machinery/ equipment to the work spot. None of the exhaust fans installed in the CWS I were working. Water logging was also observed during rains as the premises of the workshop were not completely asphalted.
2.	**Central Workshop II, Dooravaninagar**	Of the 64 equipment held at CWS, only one number of Induction motor 10 HP, Water pump 1.5 HP, Induction motor 5 HP, Submersible pump 5 HP, Water pump 0.5 HP and Auto sanitizer provided were not in working conditions. More than 50 *per cent* of Battery Charger, Power Hacksaw (Heavy Duty), Power steering checking unit, Pneumatic tightening tool/ Torque gun, Hand buffing machine 500 W, Hand buffing machine supplied to the CWS were not in working condition. Lacked pneumatic equipment for riveting, hammering, tightening, and loosening of nuts & bolts, rachet guns. The workshop also required additional welding machines, drill guns, hand grinding machines, wood cutting machines, drilling machines, etc. Eleven out of twenty-two exhaust fans installed in the CWS were only in working condition. II functioned and thus exhausts (containing smoke, vapours, suspended particles etc) generated during welding, cutting, grinding, painting and other activities carried out in the Workshop could not be removed effectively.
3.	**Central Workshop III, Challaghatta**	The CWS was not fully functional even after completion of two years of commencement of its operations in July 2020.

Sl. No.	Name of the CWS/TRP	Issues noticed
		A shed and buildings constructed for purposes such as Tyre Re-treading plant (TRP), Assembly Reconditioning section, Fibre Reinforced Plastic (FRP) section were devoid of any equipment/ machinery.
4.	**Central Workshop IV, Dasanapura**	The CWS was not fully functional even after completion of four years of commencement of operations on 20th August 2018. It is performing activities mainly related to fitness certification and minor reconditioning of assemblies besides heavy body repairs. A shed and buildings constructed for purposes such as Tyre Re-treading plant (TRP), and Fibre Reinforced Plastic (FRP) section were devoid of any equipment/ machinery.
5	**Tyre Retreading Plant Dooravaninagar**	It was noticed that one number each of Rasping Motor, Vacuum pump 0.5 HP, Envelope remover, Air dryer, Tyre Spreader machine, Builder machine and Movable tyre trolley hanger were not in working condition. Of these,

Appendix 4.5

Year-wise details of mechanical staff (Paragraph 4.2.3)

Details	2018	2019	2020	2021	2022
No. of Schedules	6143	6190	6159	5313	5547
Required Number of Mechanical Staff (0.85 * No. of schedules)	5222	5262	5235	4516	4715
Working Strength	4053	3803	3718	3596	3414
Shortage (-)/ Excess (+)	-1169	-1459	-1517	-920	-1301
Percentage of Shortage	-22.39	-27.73	-28.98	-20.37	-27.59

Source: Information provided by BMTC

Appendix 4.6

Non-achievement of targeted life span of engines, batteries and tyres (Paragraph 4.5)

1. Shortfall in Engines target (for 10 Sampled Depots)

Year / Particulars		2017-18	2018-19	2019-20	2020-21	2021-22
New Engines	Utilised (Nos.)	75	79	67	44	71
	Target Km (in lakh)	6.61	7.06	7.8	7.13	8.18
	Actual Km (in lakh)	6.39	6.53	7.11	6.81	8.11
	Shortfall (in %)	3.33	7.51	8.85	4.49	0.86
Reconditioned Engines	Utilised (Nos.)	95	88	70	79	59
	Target Km (in lakh)	1.63	1.95	2.22	1.98	2.11
	Actual Km (in lakh)	1.43	1.69	1.73	1.72	1.7
	Shortfall (in %)	12.27	13.33	22.07	13.13	19.43

2. Shortfall Percentage (Battery-in Sampled Ordinary Bus Depots)

Year/particulars	2017-18	2018-19	2019-20	2020-21	2021-22
No. of New Batteries utilised	623	604	1250	773	567
Targeted KM (in lakh)	2.24	2.21	2.21	2.25	2.09
Achieved KM (in lakh)	2.1	2.12	2.18	1.98	1.83
Shortfall (in %)	6.25	4.07	1.36	12.00	12.44
No. of Batteries scrapped	832	557	647	769	553
No. of buses held in the Depot as on 31st March	1267	1260	1308	1269	1298
Average No. of buses held in the Depot during the year	1175.4	1244.4	1226.2	1221	1213.7

3. Shortfall Percentage (Battery-in Sampled premium Depots)

Year/particulars	2017-18	2018-19	2019-20	2020-21	2021-22
No. of New Batteries utilised	208	149	190	2	148
Targeted KM (in lakh)	1.3	1.69	1.29	1.67	1.70
Achieved KM (in lakh)	1.31	1.32	1.64	1.73	1.34
Shortfall (in %)	-0.77	21.89	-27.13	-3.59	21.18
No. of Batteries scrapped	45	58	39	8	13
No. of buses held in the Depot as on 31st March	203	198	198	198	198
Average No. of buses held in the Depot during the year	202.2	201.5	197.9	201.6	196.2

4. Shortfall Percentage (in targets of tyres)

Year/particulars		2017-18	2018-19	2019-20	2020-21	2021-22
New tyres	No. of New Tyres	8323	10987	12978	11667	12344
	Targeted KM (in lakh)	0.99	0.99	0.96	1.04	1.05
	Achieved KM (in lakh)	0.90	0.93	1.00	1.04	1.09
Re-treaded tyres	No. of Tyres	14148	17002	18438	16105	16073
	Targeted KM (in lakh)	0.50	0.50	0.52	0.54	0.58
	Achieved KM (in lakh)	0.54	0.51	0.54	0.56	0.69
Total tyres	No. of Tyres	8323	10987	12978	11667	12344
	Targeted KM (in lakh)	2.01	2.01	1.76	1.78	1.86
	Achieved KM (in lakh)	1.83	1.73	1.77	1.81	1.98
Retreadability Factor	Target	2.03	2.03	1.53	1.37	1.40
	Actual	1.70	1.55	1.42	1.38	1.30
Details of new tyres scrapped	No. of Tyres	1055	2177	3393	2941	2591
	% of new tyres Scrapped	12.70	19.80	26.10	25.20	21.00

Appendix 5.1

Details shops and commercial establishments kept vacant for more than six months (Paragraph 5.2.1)

	2017-18				2018-19				2019-20				2020-21				2021-22			
Location	No. of CE	Vacant Area in Sq Ft.	Rate in ₹ per Sq Ft.	Amount in ₹	No. of CE	Vacant Area in Sq Ft.	Rate in ₹ per Sq Ft.	Amount in ₹	No. of CE	Vacant Area in Sq Ft.	Rate in ₹ per Sq Ft.	Amount in ₹	No. of CE	Vacant Area in Sq Ft.	Rate in ₹ per Sq Ft.	Amount in ₹	No. of CE	Vacant Area in Sq Ft.	Rate in ₹ per Sq Ft.	Amount in ₹
Domluru TTMC	3	3961	38	**150518**													1	10432	35	**365120**
Bannerghatta TTMC	3	768	13	**9984**	3	607	13	**7891**	3	345	13	**4485**	2	269	16	**4304**	2	269	17	**4573**
KBS	6	430	552	**237166**	6	430	531	**228187**	2	140	557	**77943**	5	637	302	**192109**	6	719	211	**152053**
Kengeri Satellite	1	21450	33	**702524**																
Hoskerehalli	2	8148	32	**262172**	2	8148	32	**262172**					1	4074	21	**86095**				
NR Colony	2	5374	67	**359842**	3	5204	67	**348459**	1	4587	74	**337864**					1	4587	55	**252847**
Yelahanka OT	1	2136	35	**74760**	2	3293	35	**115255**												
Laggere	1	181	27	**4863**									2	462	23	**10770**	2	462	23	**10595**
Yelahanka NT	2	308	123	**37864**									3	462	97	**44736**	3	462	101	**46849**
Yelahanka 5 P	1	190	18	**3502**					1	190	20	**3814**	1	190	17	**3199**	2	436	17	**7340**
Kalyananagar	1	184	41	**7539**	1	184	41	**7539**												
Hesaraghatta	2	529	25	**13105**	2	1419	25	**35153**	2	1420	27	**38695**	2	1420	30	**42568**	2	1420	33	**46828**
Jeevanbeemanagar	1	174	65	**11385**					1	174	46	**7939**	2	348	41	**14310**	1	174	70	**12204**
Kadugodi	1	161	59	**9422**	1	161	59	**9422**												
RR Nagar	1	78	50	**3900**									1	148	67	**9968**	1	78	54	**4217**
Shanthinagar TTMC					1	86	33	**2838**												
Kengeri TTMC					1	16006	12	**196874**												
Vidyaranyapura					1	222	23	**5125**	1	1400	26	**36863**	1	1400	29	**40549**				
Malleshwaram					2	399	67	**26863**	1	96	74	**7110**	1	96	22	**2121**	1	303	72	**21862**
Indiranagar					1	560	70	**39200**												
Chandra Layout					1	132	50	**6604**												
Basaveshwaranagar					1	900	88	**79305**	3	1201	88	**105613**	3	1202	73	**88125**	2	1044	27	**27882**
Kumaraswamy Layout					1	1023	72	**73992**					3	1361	75	**101431**	3	1361	75	**101431**
Nagarabhavi									1	583	38	**22038**	1	583	42	**24242**	1	583	46	**26668**
Channammanakere Acchakattu									1	243	144	**35078**	1	243	96	**23345**				
Bidadi													2	2734	62	**168220**	2	936	109	**101806**
Singapura													1	210	27	**5660**	1	210	31	**6560**
Yeshwantpur TTMC																	2	18000	41	**738000**
RPC Layout																	1	217	70	**15250**
Domluru-2																	3	5401	50	**270050**
Whitefield TTMC																	1	179874	17	**3057858**
Monthly Revenue Loss	**28**	**44072**		**1888547**	**29**	**38774**		**1444878**	**17**	**10379**		**677440**	**32**	**15839**		**861750**	**38**	**226968**		**5269993**
Yearly Revenue Loss				**22662559**				**17338541**				**8129286**				**10341002**				**63239914**
	Potential Revenue loss for the period 2017-20												Potential Revenue loss for the period 2020-22							
	48130385												**73580916**							

Appendix 5.2

Details of land held by BMTC
(Paragraph 5.4.1)

Sl. No.	Location Details	Hobli	Taluk	Survey No./Site No.	Extent of land Acre-Gunta	Date of acquisition /allotment	Title obtained/ Possession	Amount paid(₹)	Acquiring/ transferring agency	Land type (lease/ own)	Present Status	If vacant, then protected / Unprotected
1	Aduru	Bidarahalli	East	74	21-00	18.8.2008	Possession not obtained	17519095	Revenue	Own	Vacant	Unprotected
2	Agara	Kengeri	South	73	1-20	20.2.2008	05.6.2008	4386415	Revenue	Own	Vacant	Unprotected
3	Anjanapura 10th Block	Uttarahalli	South	CA-14	01-36	17.09.2003	17.6.2011	10061391	BDA	Lease	Depot-44	
4	Anjanapura 5th Block	Uttarahalli	South	CA-13	00-23	17.09.2003	17.6.2011	2717651	BDA	Lease	Vacant	Protected
5	Arebinnamangala	Jala	North(add)	23	7-00	27.12.2008	8.6.2009	10459735	Revenue	Own	Vacant	Unprotected
6	Arehalli	Uttarahalli	South	28	10-00	23.1.2008	05.6.2008	45742455	Revenue	Own	Vacant	Protected
7	Austin Town		North	CA-12	00 -14	18.03.1997	5.09.2000	1060199	BDA (KSRTC)	Lease	Bus stand	
8	Bagalur	Jala	North(add)	271	13-00	22.1.2008	9.6.2008	34442905	Revenue	Own	Vacant	Protected
9	Baiyappanahalli	Bidarahalli	East	44	3-10	30.6.2008	8.7.2008	3247585	Revenue	Own	Vacant	Unprotected
10	Banashankari	Uttarahalli	South	7	2-15	18.01.1990	18.03.1991	1488845	BDA (KSRTC)	Lease	TTMC	
11	Banashankari	Uttarahalli	South	7	0-32		11.11.2019	246155	BDA	Lease	Vacant	Bus Parking
12	Banashankari (Karisandra)	Uttarahalli	South	CA-4A	03-30.	06.12.2010	9.2.2011	791917	BDA	Lease	Depot-20	

Sl. No.	Location Details	Hobli	Taluk	Survey No./Site No.	Extent of land Acre-Gunta	Date of acquisition /allotment	Title obtained/ Possession	Amount paid(₹)	Acquiring/ transferring agency	Land type (lease/ own)	Present Status	If vacant, then protected / Unprotected
13	Banashankari 3rd stage 2nd phase	Uttarahalli	South	CA	00-21	30.07.2003	17.06.2011	1980699	BDA	Lease	Bus stand	
14	Banashankari (BWSSB)	Uttarahalli	South		00-03		12.03.2018	1301250	BWSSB	Own	Road Purpose	
15	Bandebommasandra	Bidarahalli	East	38	3-20	21.1.2008	10.6.2008	2919895	Revenue	Own	Vacant	Unprotected
16	Bannerghatta	Jigani	Anekal	20	2-00	6.02.2008	22.03.2014	10000000	Zoo Authority	Lease	TTMC	
17	Basaveshwaranagara	Yashavanthapura	North	CA	1-12	18.01.1990	17.01.2002	896461	BDA (KSRTC)	Lease	Bus stand	
18	Bendiganahalli	Bidarahalli	East	50	1-10	9.9.2008	16.10.2008	1042855	Revenue	Own	Vacant	Unprotected
19	Bettadasanapura	Beguru	South	20	5-00	23.01.2008	5.6.2008	9121255	Revenue	Own	Vacant	Unprotected
20	Bettahalli	Dasanapura	North	30	6-00	18.1.2008	27.2.2008	6985495	Revenue	Own	Vacant	Protected
21	Bettahalli	Dasanapura	North	38	3-00	18.1.2008	27.2.2008	3492775	Revenue	Own	Vacant	Protected
22	Bharathnagar (Magadi road)	Yashavanthapura	North	CA-04	00-28	10.07.2006	10.10.2006	Free of cost	BEL Cooperative	Own	Vacant	Protected
23	Bhutanahalli	Jigani	Anekal	114/1	3-30	24.4.2008	20.6.2008	6840955	Revenue	Own	Vacant	Unprotected
24	BIAL	Yalahanka	Devanahalli	2	1-14	07.10.2011	Possession not obtained	37970533	KHB	Own	Vacant	Unprotected
25	Bidadi	Bidadi	Bidadi	28B	05-00	18.10.2003	28.6.2005	6875000	KIADB	Own	Depot-36 & Quarters	
26	Bidadi	Bidadi	Bidadi	16,17	02-26	20.01.2006	13.2.2006	1844190	Revenue	Own	Vacant	Unprotected
27	Bidadi	Bidadi	Bidadi	42/3	00-33	20.1.2006	13.2.2006	1844190	Revenue	Own	Bus stand	
28	Bidadi	Bidadi	Bidadi	18	03-16,	17.2.2012	17.2.2012	26925923	Revenue	Own	Depot under construction	

Sl. No.	Location Details	Hobli	Taluk	Survey No./Site No.	Extent of land Acre-Gunta	Date of acquisition /allotment	Title obtained/ Possession	Amount paid(₹)	Acquiring/ transferring agency	Land type (lease/ own)	Present Status	If vacant, then protected / Unprotected
29	Bidaraguppe	Attibele	Anekal	366	2-00	28.4.2008	11.6.2008	2658535	Revenue	Own	Vacant	Unprotected
30	Bidaraguppe	Attibele	Anekal	331	1-04.	24.4.2008	11.6.2008	1462219	Revenue	Own	Vacant	Unprotected
31	Bidaraguppe	Attibele	Anekal	437	0-32	24.4.2008	11.6.2008	1063447	Revenue	Own	Vacant	Protected
32	Bommashettihalli	Dasanapura	North	61	5-15.	5.6.2008	23.6.2008	7144720	Revenue	Own	Vacant	Protected
33	Bommenahalli	Bidarahalli	East	96	2-02	18.8.2008	30.9.2008	2612247	Revenue	Own	Vacant	Unprotected
34	BTM Layout	Beguru	South	CA	00 - 15	5.08.1996	07.07.2001	1080410	BDA (KSRTC)	Lease	Bus stand	
		Beguru	South	CA1	01-19	21.02.2011	24.03.2011	485713	BDA	Lease	Bus stand	
		Beguru	South		00-19	11.7.2014		143312	BDA	Lease	Bus stand	
35	BTM Layout Quarters (LF-6/1-12)	Beguru	South	12 Nos.	12 Nos.	02.05.1990	05.06.1990	1318800	BDA		Quarters	
36	Bukkasagara	Jigani	Anekal	97	10-00	23.1.2008	20.6.2008	18242455	Revenue	Own	Vacant	Protected
37	Byalakere	Hesaraghatta	North(add)	130	30-00	19.3.2008	15.6.2008	46483555	Revenue	Own	Vacant	Unprotected
38	Bylakonenahalli	Dasanapura	North	21	1-04	3.6.2008	13.8.2008	1885719	Revenue	Own	Vacant	Protected
39	Byrathi	Bidarahalli	East	28	7-00	9.9.2008	16.10.2008	14694785	Revenue	Own	Depot-48	
40	Chagalahatti	Jala	North(add)	102	10-00	22.4.2008	26.6.2008	15494555	Revenue	Own	Vacant	Unprotected
41	Challagatta	Kengeri	South	13	05-00	28.2.2011	7.1.2012	15871255	Revenue (other)	Own	CWS-03	
42	Chandra Layout		North	CA-345	02 - 09,	14.02.1990	16.1.2001	1537342	BDA (KSRTC)	Lease	Depot-17 & Bus Stand	
43	Channamanakere Auchkattu	Uttarahalli	South	CA	00 - 18	18.01.1990	19.10.2001	600279	BDA (KSRTC)	Lease	Bus stand	
44	Chikkabettahalli	Yalahanka	North(add)	14	10-24	27.12.2008	8.6.2009	89296999	Revenue	Own	Depot-45	
45	Chikkamaranahalli		North	CA-20	00-32	13.03.2003	20.09.2003	2612915	BDA	Lease	Bus stand	

Sl. No.	Location Details	Hobli	Taluk	Survey No./Site No.	Extent of land Acre-Gunta	Date of acquisition /allotment	Title obtained/ Possession	Amount paid(₹)	Acquiring/ transferring agency	Land type (lease/ own)	Present Status	If vacant, then protected / Unprotected
46	Chikkanagamangala	Sarjapura	Anekal	189	01-12	2.2.2008	20.6.2008	8920978	Revenue	Own	Quarters	
47	Chikkanagamangala	Sarjapura	Anekal	29	10-00	23.6.2000	8.4.2002	1000000	Revenue	Own	Depot-38 & RTO Track	
48	Chikkelur	Tavarekere	South	35/3	0-31	21.4.2008	5.6.2008	987591	Revenue	Own	Vacant	Unprotected
49	Chimasandra	Bidarahalli	East	83	3-25	9.9.2008	16.10.2008	3024175	Revenue	Own	Vacant	Unprotected
50	Chinthalamadivala	Sarjapura	Anekal	17	2-00	24.4.2008	20.6.2008	4748535	Revenue	Own	Vacant	Unprotected
49	Chokkanahalli	Hesaraghatta	North(add)	6	10-00	15.11.2005	12.01.2006	2367455	Revenue	Own	Vehicle testing Centre under Construction	Protected
50	Chunchanaguppe	Tavarekere	South	43	10-00	21.4.2008	5.6.2008	17142455	Revenue	Own	Vacant	Unprotected
51	Dasanapura	Dasanapura	North	106	13-04	18.1.2008	27.2.2008	52717599	Revenue	Own	Depot-40 & Workshop	
52	Deepanjalinagara	Kengeri	South	KIMCO	3-15.	11.01.1996	17.10.1998	0	KIMCO	Own	Depot-16	
53	Devanahalli	Kasaba	Devanahalli	304, 305	02-23	3.5.2011	26.7.2011	25750130	Revenue	Own	Depot-50	
54	Doddabanahalli	Bidarahalli	East	3	2-00	7.3.2008	3.12.2011	3098535	Revenue	Own	Vacant	Unprotected
55	Doddajala	Jala	North(add)	46	2-00	19.3.2008	26.6.2009	6948955	Revenue	Own	Vacant	Unprotected
56	Dodderi	Tavarekere	South	77	10-00	21.4.2008	5.6.2008	12742455	Revenue	Own	Vacant	Unprotected
57	Dombarahalli	Dasanapura	North	18	5-27	18.1.2008	27.2.2008	9728367	Revenue	Own	Vacant	Unprotected
58	Domlur		North	CA	00 - 15	16.04.1984	24.07.1985	80000	BDA (KSRTC)	Lease	TTMC	
			North	CA	00-39	20.02.2009	7.03.2012	7860	BDA	Lease	TTMC	
59	Electronic City	Beguru	South	36(p)	02-00,	25.04.2000	20.7.2000	3378076	KIADB	Own	Depot-19	
60	Gattihalli	Sarjapura	Anekal	175	1-39.	24.4.2008	20.6.2008	3059804	Revenue	Own	Vacant	Protected
61	Gattihalli	Sarjapura	Anekal	216	1-18.	24.4.2008	20.6.2008	2246453	Revenue	Own	Vacant	Unprotected

Sl. No.	Location Details	Hobli	Taluk	Survey No./Site No.	Extent of land Acre-Gunta	Date of acquisition /allotment	Title obtained/ Possession	Amount paid(₹)	Acquiring/ transferring agency	Land type (lease/ own)	Present Status	If vacant, then protected / Unprotected
62	Gollarapalya	Dasanapura	North	28	05-00	5.6.2008	23.6.2008	5821255	Revenue	Own	Vacant	Unprotected
63	Gowdahalli	Dasanapura	North	20	4-09	25.8.2009	26.10.2009	8172219	Revenue	Own	Vacant	Unprotected
64	Gundur	Bidarahalli	East	66	1-05	19.8.2009	16.12.2009	938575	Revenue	Own	Vacant	Unprotected
65	Gunjur	Varthur	East	285	6-00	25.1.2008	25.3.2008	30745495	Revenue	Own	Depot-41 & Quarters	
66	Gunjurpalya	Varthur	East	109,53	20-00	28.10.2004	19.4.2006	9322030	Revenue	Own	Vacant	Unprotected
67	Hadosiddapura	Varthur	East	62	1-27	18.8.2008	3.12.2008	2595032	Revenue	Own	Vacant	Protected
68	Hancharahalli	Bidarahalli	East	52	13-30	18.6.2008	8.7.2008	32645855	Revenue	Own	Vacant	Unprotected
69	Hancharahalli	Bidarahalli	East	51	1-00	18.8.2008	3.12.2008	2374295	Revenue	Own	Vacant	Unprotected
70	Hebbal	Kasaba	North	82/1,84/4,85/7, 87/2, 88, 89, 90	5-29,	27.01.2004	27.05.2004	23852338	GKVK	Own	Depot-28	
71	Hennur	Yashavanthapura		CA -04	03 - 28	4.1.1986	22.9.1996	232125	BDA (KSRTC)	Lease	Depot-10	
72	Hesaragatta	Hesaraghatta	North(add)	32:3A	00-23	29.08.2003	12.02.2004	Free of cost	TMC	Own	Bus stand	
73	Hirandahalli	Bidarahalli	East	39P/1	13-39	25.1.2008	25.3.2008	13964434	Revenue	Own	Vacant	Unprotected
74	Hirandahalli	Bidarahalli	East	82	0-19	17.8.2009	Possession not obtained	474694	Revenue	Own	Vacant	Unprotected
75	Honnasandra	Dasanapura	North	26	11-28	25.8.2009	26.10.2009	13621663	Revenue	Own	Vacant	Unprotected
76	Honnasandra	Dasanapura	North	13	7-29	25.8.2009	26.10.2009	9008362	Revenue	Own	Vacant	Unprotected
77	Hosakote	Kasaba	Hoskote	300	03-08,	25.9.1992	23.7.2008	0	Revenue	Own	Depot-39	
78	Hosakote (PWD)	Kasaba	Hoskote	314 1A1& 315 1A1	01-30	26.12.2016	7.02.2017	Free of cost	PWD	Own	Bus stand	

Sl. No.	Location Details	Hobli	Taluk	Survey No./Site No.	Extent of land Acre-Gunta	Date of acquisition / allotment	Title obtained/ Possession	Amount paid(₹)	Acquiring/ transferring agency	Land type (lease/ own)	Present Status	If vacant, then protected / Unprotected
79	HRBR 1st Block (Kalyan nagar)	K R Puram	East	CA-11	1-21	18.01.1990	19.10.2001	1048678	BDA (KSRTC)	Lease	Depot-23	
80	HRBR 1st Block (Banasawadi)	K R Puram	East	CA.Sy no.211	03-12	12.7.1994	27.5.1998	2011812	BDA	Lease	Vacant	Unprotected
81	HSR Layout	Beguru	South	CA-38	3-34,	27.11.1998	28.03.2008	16310254	BDA	Lease	Depot-25	
82	Hucchanapalya	Dasanapura	North	8	16-21	25.8.2009	26.10.2009	28327871	Revenue	Own	Vacant	Unprotected
83	Huttanahalli	Jala	North(add)	148	7-22	22.1.2008	9.6.2008	26230567	Revenue	Own	Vacant	Protected
84	Huttanahalli	Jala	North(add)	72	3-00	22.4.2008	27.7.2008	10422775	Revenue	Own	Depot under construction	
85	Indiranagara		North	48	03-05	27.01.1971	18.09.2015	58326	BDA (KSRTC)	Lease	Depot-6 & Quarters	
86	ISRO Layout	Uttarahalli	South	CA	1-05	7.02.2009	16.09.2013	985882	BDA	Lease	Bus stand	
87	ITI	K.R Puram	East	68,62	12-06,	20.2.2004	22.06.2005	28500000	ITI	Own (MOU)	Depot-24,29 & CWS-02	
88	Jadigenahalli	Jadigenahalli	Hoskote	233	10-00	25.2.2008	26.08.2010	15000065	Revenue	Own	Vehicle testing Centre under Construction	
89	Jayanagara	Uttarahalli	South	CA-3/32A	04 - 15	17.02.1964	25.02.1964	253750	CITB (KSRTC)	Own	Depot-4	
90	Jayanagara 4th Block	Uttarahalli	South	CA-5	00 - 34	17.01.1961	07.04.1962	41200	CITB (KSRTC)	Own	TTMC	
91	Jayanagara pump house	Uttarahalli	South	1603-1606 &1653-1656	00-09	07.06.1969	03.6.1971	14954	CITB (KSRTC)	Own	Pump house	

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92	Jayanagara Quarters	Uttarahalli	South		37 Nos.	17.02.1964	25.02.1964	0	CITB (KSRTC)		Quarters	
93	Jeevanbhimanagara			CA	00 - 31	18.1.1990	17.1.2002	1028226	BDA (KSRTC)	Lease	Bus stand	
94	Jigani	Jigani	Anekal	38,39,40	06-00	18.10.2003	31.3.2005	6514830	KIADB	Own	Depot27 and quarters	
95	Jigani bus stand	Jigani	Anekal		00-03	8.3.2013	15.3.2013	Free of cost	Grama panchayat	Own	Bus stand	
96	K R Puram Bus Stand	K.R Puram	East	915	00 - 22	27.08.1991	24.07.1999	55555	CMC (KSRTC)	Own	Bus stand	
97	Kadagrahara	Bidarahalli	East	34	18-04	30.6.2008	8.7.2008	15099799	Revenue	Own	Vacant	Unprotected
98	Kadaranahalli	Dasanapura	North	42	21-10	11.4.2008	13.8.2008	69152655	Revenue	Own	Vacant	Protected
99	Kadugodi	Bidarahalli	East	259	00-32	04.12.1995	19.05.2001	208153	Revenue	Own	Bus stand	
100	Kalanayakanahalli	Kasaba	Anekal	24 /1,2,3	5-30`	22.4.2008	20.6.2008	4164435	Revenue	Own	Vacant	Unprotected
101	Kalasipalya		North		4-13	20.11.2012	19.10.2011	20233814	BBMP	Own	Bus stand under construction	
102	Kammasandra	Bidarahalli	East	34	1-32	19.8.2009	16.10.2009	1303687	Revenue	Own	Vacant	Unprotected
103	Kanminke	Kengeri	South	41	25-00	23.1.2008	4.6.2008	73106055	Revenue	Own	Vacant	Unprotected
104	Kannalli	Yashavanthapura	North	96	3-24	11.4.2008	9.7.2008	7557319	Revenue	Own	D-35 & Quarters	
105	Kannur	Bidarahalli	East	16	5-00	25.1.2008	24.6.2008	7746255	Revenue	Own	Vacant	Unprotected
106	Kathriguppe	Uttarahalli	South	48,49,50,53	05 - 10	3.8.1984	7.6.1989	60260	BDA (KSRTC)	Own	D-13 & Samudhaya	

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											Bhavana	
107	Kathriguppe, Bhavani HBCS	Uttarahalli	South	CA-1A	00-20	21.6.2007	28.03.2008	5000755	BDA	Lease	Vacant	Protected
108	Kavalbyrasandra	Kasaba	North	31	00 - 15	2.5.1997	20.08.1998	312155	Revenue	Own	Bus stand	
109	Kavalhosahalli	Kasaba	Anekal	9/1,2	4-37	16.1.2008	12.3.2008	8984437	Revenue	Own	Depot under construction	
110	Kenchanapura	Kengeri	South	8	0-14	21.4.2008	5.6.2008	638539	Revenue	Own	Vacant	Unprotected
111	Kengeri	Kengeri	South	111/112/113	06 - 00	10.06.1985	10.06.1985	152285	Revenue (KSRTC)	Own	D-12	
112	Kengeri	Kengeri	South	33/27/504	00-04		from KSRTC	2241	KSRTC	Own	Shops	
113	Kengeri	Kengeri	South	37/1, 37/2	04-20	19.04.2004	05.01.2005	12127250	BWSSB	Own	TTMC & D-37	
114	Kengeri - opp. To Shirke Aprt.	Kengeri	South	CA	00-12	30.01.2006	09.06.2006	9383700	KHB	Own	Vacant	Unprotected
115	Kengeri Approach Road	Kengeri	South	125/2	00-08	12.05.2000	04.05.2000	100000	Revenue	Own	Road	
116	Kengeri Additional land	Kengeri	South	126, 127, 128	06-34,	28.03.1994	25.02.1999	2586087	Revenue (KSRTC)	Own	Vacant	Unprotected
117	Kengeri St. Town	Kengeri	South	CA	00-38	13.4.2007	28.3.2008	7942170	BDA	Lease	Bus stand	
118	Khazisonnenahalli	Bidarahalli	East	22	2-00	21.4.2008	10.6.2008	1998535	Revenue	Own	Vacant	Unprotected
119	Kittaganur	Bidarahalli	East	21	1-25	18.8.2008	30.9.2008	2517570	Revenue	Own	Vacant	Unprotected
120	Kittanahalli	Dasanapura	North	47	6-32	18.1.2008	27.2.2008	7916887	Revenue	Own	Vacant	Unprotected
121	Kodalipura	Attibele	Anekal	97	1-27.	24.4.2008	11.6.2008	1305282	Revenue	Own	Vacant	Unprotected

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122	Kodati	Varthur	East	76	8-00	4.6.2009	25.3.2008	23393975	Revenue	Own	D-42 & Quarters	
123	Kodati	Varthur	East	41	1-18	18.08.2009	21.12.2009	4240203	Revenue	Own	Vacant	Protected
124	Kodigehalli	Bidarahalli	East	1	1-21	18.8.2008	18.10.2008	1272271	Revenue	Own	Vacant	Unprotected
125	Kommaghatta	Kengeri	South	162	2-07	23.1.2008	5.6.2008	5164027	Revenue	Own	Vacant	Protected
126	Koramangala	Beguru	South	36	05 - 00	19.7.1994	09.08.1994	1251445	Revenue	Own	D-15& TTMC	
127	Koramangala Sports Complex Qtrs	Beguru	South	502 & 505	2 Nos	21..07.2003	16.08.2003	6077590	KHB	Own	Quarters	
128	Kothanur Dinne	Uttarahalli	South	80/2A	03-31	10.06.2005	08.07.2005	2922811	Revenue	Own	D-34	
129	Kuduregere	Dasanapura	North	7	2-10.	5.6.2008	23.6.2008	5589595	Revenue	Own	Vacant	Unprotected
130	Kumaraswamy Layout	Uttarahalli	South	CA	00 - 12	09.04.1990	31.03.1998	201128	BDA (KSRTC)	Lease	Bus stand	
131	Kurubarahalli	Tavarekere	South	116	05-00	14.03.2007	28.05.2007	4371255	Revenue	Own	Vacant	Unprotected
132	Laggere	Yashavanthapura	North	92	00-36	14.03.2006	13.07.2006	2856871	Revenue	Own	Bus stand	
133	Lakshmidevinagara	Yashavanthapura	North	11, 12	00-07	28.02.2003	01.10.2004	Free of cost	Slum board	Own	Bus stand	
134	Lingadiranahalli	Yashavanthapura	North	25	00-19	26.03.2016	16.01.2017	Free of cost	Karnataka Govt class D Co-Soc .	Own	Bus stand	
135	Madappanahalli	Hesaraghatta	North(add)	58	18-00	22.1.2008	9.6.2008	13036428	Revenue	Own	Vacant	Unprotected
136	Madappanahalli	Hesaraghatta	North(add)	59	18-16	27.12.2008	8.6.2009	13326127	Revenue	Own	Vacant	Protected
137	Madhugirihalli	Hesaraghatta	North(add)	25	15-00	16.6.2009	29.6.2009	7563710	Revenue	Own	Vacant	Unprotected

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138	Mahanthalingapura	Jigani	Anekal	47, 48	40-00	24.4.2008	20.6.2008	39969710	Revenue	Own	Vacant	Unprotected
139	Mallapura	Kasaba	Nelamangala	5/1, 5/2	00-20	21.03.2008	20.03.2008	882599	KIADB	Own	Vacant	Protected
140	Mallasandra	Yashavanthapura	North	77	02-00	13.07.2010	21.04.2011	Free of cost	Revenue	Own	Bus stand	
141	Malleshwaram 18th cross	Yashavanthapura	North	57	00 - 13	19.12.1972	22.02.1973	Free of cost	BWSSB (KSRTC)	Own	Bus stand	
142	Mandur	Bidarahalli	East	116	4-12	25.1.2008	25.3.2008	10209287	Revenue	Own	Vacant	Unprotected
143	Mandur	Bidarahalli	East	64, 155	32-24	25.1.2008	25.3.2008	77400334	Revenue	Own	Depot-47	
144	Mandur	Bidarahalli	East	128	3-00	25.1.2008	25.3.2008	7122775	Revenue	Own	Vacant	Unprotected
145	Marathalli	Varthur	East	98	00-04,	23.05.2007	22.01.2008	2791828	BDA	Own	Bus stand	
146	Mattahalli	Dasanapura	North	41/B/1, 2,	16-00	4.11.2009	18.3.2010	27427895	Revenue	Own	Vacant	Unprotected
147	Menasiganahalli	Kasaba	Anekal	30	0-34	28.4.2008	20.6.2008	849409	Revenue	Own	Vacant	Unprotected
148	Mulluru	Varthur	East	23	2-00	19.8.2009	Possession not obtained	3648535	Revenue	Own	Vacant	Unprotected
149	Muneshwara Block	Uttarahalli	South	CA	00 - 32	18.01.1990	18.03.1991	146343	BDA (KSRTC)	Lease	Bus stand	
150	Munnekolalu	Varthur	East	99	2-00	27.02.2009	Possession not obtained	14098535	Revenue	Own	Vacant	Unprotected
151	Nagadasanahalli	yalahank	North(add)	11	2-35	27.12.2008	08.06.2009	4454120	Revenue	Own	Depot constructed	
152	Naganayakanahalli	Uttarahalli	South	48	2-30	17.4.2008	05.6.2008	3504215	Revenue	Own	Vacant	Unprotected
153	Nagarabhavi 10th	Yashavanthapura	North	CA 6/12	2-23	4.2.2006	21.11.2008	11875842	BDA	Lease	Vacant	Unprotected

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	Block 2nd stage											
154	Nagarabhavi 10th Block 2nd stage	Yashavanthapura	North	CA 6/11	0-25	01.01.2009	15.2.2014	249298	BDA	Lease	Vacant	Unprotected
155	Nagarabhavi 9th Block 2nd stage	Yashavanthapura	North	36/2	00-27	20.10.2003	20.10.2003	Free of cost	CMC	Own	Bus stand	
156	Nagasandra	Dasanapura	North	21	2-01	12.5.2008	23.6.2008	3471391	Revenue	Own	Vacant	Unprotected
157	Nagondanahalli	K.R Puram	East	120	2-00	19.8.2009	12.4.2010	4968535	Revenue	Own	Vacant	Unprotected
158	Nallurahalli	K.R Puram	East	5	2-38	19.8.2009	12.4.2010	11871563	Revenue	Own	Vacant	Unprotected
159	Nandini Layout		North	CA	00 - 39	18.01.1990	18.10.2001	664814	BDA (KSRTC)	Lease	Bus Stand	
160	Nandini Layout Quarters (LF-33)		North	1 to 12 of LF	12 Nos.	12.03.1991	12.3.91	13,18,800	BDA		Quarters	
161	Nanjamba Agrahara			CA	00 - 07	27.08.1984	23.02.1989	45200	BDA (KSRTC)	Lease	Vacant	Unprotected
162	Nimbekayipura	Bidarahalli	East	52	3-00	25.1.2008	7.8.2009	8442775	Revenue	Own	Vacant	Unprotected
163	N.R.Colony				00-07	23.09.2013	02.12.2013	Free of cost	BBMP	Own	Bus Stand	
164	Pattanagere Gollahalli	Kasaba	Anekal	18P/4	1-25	28.04.2008	20.06.2008	1176945	Revenue	Own	Vacant	Unprotected
165	Peenya 1st stage	Yashavanthapura	North	20A-1	01 - 16	29.11.1996	14.02.1997	793692	KIADB (KSRTC)	Own	RTO Track	
166	Peenya 4th phase	Yashavanthapura	North	481, 482, 483	7-27	7.6.1984	30.6.1984	253000	KIADB (KSRTC)	Own	Depot-9&22	
167	Peenya Quarters	Yashavanthapura	North	4A,G,H 5 &6	20 Nos	28.11.1988		2000000	KIADB (KSRTC)	Own	Quarters	

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168	Pillaganahalli	Uttarahalli	south	1	7-18	23.01.2008	05.6.2008	17688143	Revenue	Own	Depot under construction	
169	Pillannagarden	Yashavanthapura	North	CA Site	00 - 24	18.01.1990	23.03.1992	370182	BDA (KSRTC)	Lease	Handed over to BDA	Protected
170	Poornapragna Layout	Uttarahalli	South	CA	02-34	31.08.2006	26.8.2008	24229800	BDA	Lease	Depot-33	
171	Puradapalya	Tavarekere	South	37	0-27	21.4.2008	5.6.2008	860167	Revenue	Own	Vacant	Unprotected
172	Puttenahalli	Yelahanka	North(add)	CA Site-1	01-20	29.12.2006	13.10.2010	38733900	KHB	Own	Vacant	Protected
173	R T Nagara (Gangenahalli)	Yashavanthapura	North	CA-2	01 - 14	18.01.1990	19.10.2001	4151166	BDA (KSRTC)	Lease	Depot-14	
174	R.P.C Layout (Hampinagara)		North	CA-29P	00 - 31	18.01.1990	18.03.1991	363109	BDA (KSRTC)	Lease	Bus Stand	
175	Ragihalli	Jigani	Anekal	3	0-34	28.4.2008	20.6.2008	428659	Revenue	Own	Vacant	Unprotected
176	Rajarajeshwarinagara	Kengeri	South	CA-10	00 - 37	06.09.1995	19.10.2001	623138	BDA (KSRTC)	Lease	Bus Stand	
177	Rajarajeshwarinagara	Kengeri	South	CA-11	02 - 15,	06.09.1995	19.10.2001	1634367	BDA (KSRTC)	Lease	Depot-21	
178	Ravugodlu	Uttarahalli	South	6	10-00	29.4.2008	05.6.2008	23742455	Revenue	Own	Vacant	Unprotected
179	Sadaramangala	K.R Puram	East	60	2-25	19.8.2009	12.4.2010	12007435	Revenue	Own	Depot under construction	
180	Sadenahalli	Hesaraghatta	North(add)	24	10-00	22.1.2008.	9.6.2008	12742455	Revenue	Own	Vacant	Unprotected
181	Sadenahalli	Hesaraghatta	North(add)	20	5-00	22.4.2008	13.8.2008	6371255	Revenue	Own	Vacant	Unprotected
182	Sadenahalli	Hesaraghatta	North(add)	30	6-00	22.4.2008	8.6.2009	7646755	Revenue	Own	Depot-46	
183	Sathanoor	Jala	North(add)	54	3-00	22.1.2008.	9.6.2008	8772775	Revenue	Own	Vacant	Unprotected

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184	Shanthinagara(TTMC)	Beguru	South	443/1/23	07 - 12	23.04.1951	18.05.1972	73652	Govt Land (KSRTC)	Own	TTMC	
185	Shanthinagara (Depot-2)	Beguru	South	33	03 - 03	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	Depot-2	
186	Shanthinagara (Depot-3)	Beguru	South	33	03 - 18	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	Depot-3	
187	Shanthinagara (infront of south division)	Beguru	South	33	01 - 38	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	Parking	
188	Shanthinagara (Security gate)	Beguru	South	33	00-04	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	Security Gate	
189	Shanthinagara (Cycle stand)	Beguru	South	33	00-06	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	Cycle stand	
190	Shanthinagara (Hospital)	Beguru	South	33	00-12	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	hospital	
191	Shanthinagara (Corpporate office)	Beguru	South	33	02-05	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	Corporate Office	
192	Shanthinagara (RWB)	Beguru	South	33	17 - 03	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	RWB	
193	Shanthinagara (CTM (O) Office)	Beguru	South	33	01 - 12	23.04.1951	18.05.1972	10788	Govt Land (KSRTC)	Own	CTM(O) OFFICES	
194	Shanthinagara (infront of TTMC)	Beguru	South	33	00-34	20.03.1961	9.03.1962	24067	CITB (KSRTC)	Own	Water Way	
195	Shanthinagara PWD and SIHS Qtrs	Beguru	South		130Nos			53989	KSRTC	Own	Quarters	
196	Shivajinagar		North	43/2-1, 43/2-3, 43	01-36	01.04.1963		(2000/PM)	BBMP	Lease	Bus stand	

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197	Shivajinagar Additional land		North		00-10,	05.05.1976		(350/PM)	BBMP	Lease	Bus stand	
198	Shivajinagar (petrol bunk Additional land)		North		00-07,	02.11.2002		5353000	BBMP	Own	Bus stand	
199	Shivakote	Hesaraghatta	North(add)	24	6-00	19.3.2008	15.7.2008	5996755	Revenue	Own	Vacant	Protected
200	Shivanahalli	Jigani	Anekal	43	3-29	28.4.2008	20.6.2008	2697849	Revenue	Own	Vacant	Unprotected
201	Shivanahalli	Jigani	Anekal	13	4-36.	24.4.2008	20.6.2008	3548831	Revenue	Own	Vacant	Unprotected
202	Shivanahalli	Jigani	Anekal	58	3-14.	24.4.2008	20.6.2008	2426259	Revenue	Own	Vacant	Unprotected
203	Shivanapura	Dasanapura	North	116	05-00	27.01.2005	18.07.2005	2371255	Revenue	Own	Depot-43 & Quarters	
204	Singapura	Yelahanka	North(add)	109	0-24	08.06.2009	25.02.2014	Free of cost	Revenue	Own	Bus stand	
205	Siddapura	Varthur	East	6	1-00	18.8.2008	3.12.2008	3474295	Revenue	Own	Vacant	Unprotected
206	Siddapura	Varthur	East	3/1A-P-1	2-21	22.1.2008	25.3.2008	8772511	Revenue	Own	Vacant	Protected
207	Somanahalli	Uttarahalli	South	242	5-00	22.2.2008	19.3.2008	11871255	Revenue	Own	Vacant	Unprotected
208	Srigandadakaval (Summanahalli)	Yeshavanthapura	North	60, 68	04-00	19.12.2005	03.08.2007	240000	CRC (Social welfare dept)	Lease	Depot-31	
209	St.Johns Prestige Woods Apartments	Beguru	South	47Nos.		27.11.2004	16.09.2008	118404000	BDA	Own	Apartments	
210	Subhash Nagara (KBS)		North	91	07,-04	11.12.1979	28.04.1980	6872800	Revenue (KSRTC)	Own	Depot-7 & Bus stand	
211	Subhash Nagara		North	92	1,-22	19.02.1992	22.04.2000	Free of	Revenue	Own	Depot-7	

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	Additional Land							cost	(other)			
212	Sulivara	Tavarekere	South	60	10-00	21.4.2008	5.6.2008	12742455	Revenue	Own	Vacant	Unprotected
213	Surya City	Chandapura	Anekal	CA	05-00	24.02.2006	08.03.2006	27500000	KHB	Own	D-32	
214	Tavarekere (Magadi Road).	Tavarekere	South	61&62	00-20	03.09.2007	15.05.2007	Free of cost	village panchayath	Own	Vacant	Unprotected
215	Thammanayakanahalli	Kasaba	Anekal	23	4-00	28.04.2008	20.06.2008	1544015	Revenue	Own	Vacant	Unprotected
216	Thotagere	Dasanapura	North	26	13-15	25.8.2009	26.10.2009	15571899	Revenue	Own	Vacant	Unprotected
217	Uttari	Uttarahalli	South	165	2-02	17.4.2008	5.6.2008	3739747	Revenue	Own	Vacant	Protected
218	Uttari	Uttarahalli	South	70	1-13	21.4.2008	5.6.2008	2417173	Revenue	Own	Vacant	Protected
219	Vaddarahalli	Dasanapura	North	27 & 38	23-28	06.07.2005	18.07.2005	7092098	Revenue	Own	Training Institute	
220	Vartur	Varthur	East	123	2-20	11.3.2008	7.8.2008	10060655	Revenue	Own	Vacant	Unprotected
221	Vartur	Varthur	East	118/5	1-36	31.7.2008	30.9.2008	7646111	Revenue	Own	Vacant	Unprotected
222	Venkatapura	Dasanapura	North	14	8-00	18.1.2008	27.2.2008	12393975	Revenue	Own	Vacant	Protected
223	Venkatapura	Dasanapura	North	12	6-00	18.1.2008	27.2.2008	9295495	Revenue	Own	Vacant	Unprotected
224	Vidyaranyapura	Yelahanka	North(add)	CA	00-32	11.09.2003	20.10.2003	Free of cost	CMC	Own	Bus stand	
225	Vijayanagara	Kasaba	North	132,33	03 - 37	17.08.1964	21.05.1966	53383	REMCO (KSRTC)	Own	TTMC	
226	Vijaynagara Multi purpose land		North	541C	00-01	04.01.1999	28.04.2001	916200	KHB	Own	Multipurpose building	
227	Vishweshawaraiah Layout	Kengeri	South	CA-16	00-22	16.1.2004	22.01.2007	2334763	BDA	Lease	Vacant	Protected
228	Visweshvariaha layout			CA No.	2-29	01.01.2009	Possession not	2529049		Lease	Vacant	Protected

Sl. No.	Location Details	Hobli	Taluk	Survey No./Site No.	Extent of land Acre-Gunta	Date of acquisition /allotment	Title obtained/ Possession	Amount paid(₹)	Acquiring/ transferring agency	Land type (lease/ own)	Present Status	If vacant, then protected / Unprotected
							obtained					
229	Viveknagara		North	CA	00 - 08	18.01.1990	18.03.1991	37709	BDA (KSRTC)	Lease	Bus stand	
230	White Filed (ITPL)	K.R Puram	East	120A	02-36,	4.5.2000	24.5.2000	7257763	KIADB	Own	Depot-18 & TTMC	
231	Yelachaguppe Rampura	Tavarekere	South	4	1-18	21.4.2008	5.6.2008	2246453	Revenue	Own	Vacant	Unprotected
232	Yelahanka	Yelahanka	North(add)	69	13-20	30.12.1980	30.12.1982	625347	KHB (KSRTC)	Own	Depot-11&30	
233	Yelahanka 5th phase	Yelahanka	North(add)	CA	01-10	11.03.2003	09.07.2003	Free of cost	CMC	Own	Bus stand	
234	Yelahanka Satt. Town	Yelahanka	North(add)	CA	00 - 25	24.07.2002	13.10.2010	347835	KHB (KSRTC)	Own	Bus stand	
235	Yelahanka school land	Yelahanka	North(add)		0-32	10.05.2012	26.11.2012	20000000	Education Dept.	Own	Bus stand	
236	Yeshwanthapura	Yeshwanthapura	North	38, 37, 41	09-18	08.08.1975	30.03.2008	10345612	Revenue (KSRTC)	Own	Depot-8&26, TTMC	
237	Yeshwanthapura (Gopal theatre)	Yeshwanthapura	North		00-04	29.07.2015	Katha to be obtained	20721564	BBMP	Own	Road	
238	Madiwal (KSRP Land)	Beguru	South	21,22, 25 &26	01-38		07.01.2022	0	BMRCL	Own	Bus bay	
239	Roopena Agrahra	Beguru	South	18/9, 18/10 A B C	0-30		07.01.2022	0	BMRCL	Own	Bus bay	

Appendix 5.3

Statement showing details of unsuitable land purchased by BMTC (Paragraph 5.4.1)

Sl. No.	Location Details			Survey No./ Site No.	Extent of land Acre-Gunta	Date of acquisition/ allotment	Amount paid (₹ in lakh)	Remarks
	Locality/Village	Hobli	Taluk					
1.	Somanahalli	Uttarahalli	South	242	5-00.	22.02.2008	118.71	Presence of H.T lines, no approach road, land is not suitable for transport purposes
2.	Ravugodlu	Uttarahalli	South	6	10-00.	29.04.2008	237.42	Land is located in hilly area, land is not suitable for transport purposes
3.	Sulivara	Tavarekere	South	60	10-00.	21.04.2008	127.42	Land is located in hilly area, land is not suitable for transport purposes
4.	Chunchanaguppe	Tavarekere	South	43	10-00.	21.04.2008	171.42	Land is located in hilly area, land is not suitable for transport purposes
5.	Dodderi	Tavarekere	South	77	10-00.	21.04.2008	127.42	Land is not suitable for transport purposes, land exchange requested
6.	Kittanahalli	Dasanapura	North	47	6-32.	18.01.2008	79.17	Three roads are passing through the land dividing it into 4 small portions, land is not suitable for transport purposes, land exchange requested
7.	Gollarapalya	Dasanapura	Bangalore North	28	5-00.	05.06.08	58.21	Land is located in rocky area, land is not suitable for transport purposes, land exchange requested
8.	Thotagere	Dasanapura	North	26	13-15.	25.08.2009	155.72	Land is located in 4 small portions, Land is not suitable for transport purposes

Sl. No.	Location Details			Survey No./ Site No.	Extent of land Acre-Gunta	Date of acquisition/ allotment	Amount paid (₹ in lakh)	Remarks
	Locality/Village	Hobli	Taluk					
9.	Sadenahalli	Hesaraghatta	Additional North	24	10-00.	22.01.2008	127.42	Land is located in rocky area, No approach road Land is not suitable for transport purposes, land exchange requested
10.	Sadenahalli	Hesaraghatta	Additional North	20	5-00.	22.04.2008	63.71	Land exchange requested
11.	Hirandahalli	Bidarahalli	East	39P/1	13-39.	25.01.2008	139.64	Land is spread over 7 portions, land is not suitable for transport purposes, Court Case
12.	Kadagrahara	Bidarahalli	East	34	18-04.	30.06.2008	151.00	Land is located in rocky area and is 50-100 feet deep. Land is not suitable for transport purposes
13.	Aduru	Bidarahalli	East	74	21-00.	18.08.2008	175.19	Land is located in rocky area and has a stream flowing. Land is not suitable for transport purposes, Land exchange requested
14.	Kalanayakanahalli	Anekal Kasaba	Anekal	24 /1,2,3	5-30.	22.04.2008	41.64	Land is not suitable for transport purposes, Land exchange requested
					144		**1774.09**	

Glossary of Terms

Term		Explanation
ABC analysis in Inventory management	:	ABC analysis is a method in which inventory is divided into three categories, i.e. A, B, and C in descending value. The items in the A category have the highest value, B category items are of lower value than A, and C category items have the lowest value
ABC classification of Bus schedules	:	ABC classification of Bus schedules is type of classification based on the profitability of each bus schedule. Schedules which are profit earning are classified as 'A' schedules; Schedules which earn just enough revenue to cover their cost/ variable cost are classified as 'B' Schedules and Schedules which are loss making are classified as 'C' schedules
Advertisement Revenue	:	Rental revenue earned on the space let out or an electronic device located in bus stations or buses used for display of advertisements
BS-III & BS-IV emission standards	:	Smoke emission from vehicles have to comply with Bharath Stage III & Bharath Stage IV emission standards regarding the amount of Nitrogen Oxides, Sulphur-di-oxide and Particulate matter in the exhaust gases
Bus depots	:	A Bus depot is an operating base of a Transport corporation. It accommodates parking, servicing and maintenance facilities for vehicles, an administrative function and facilities for staff. Depots also dispense tickets/ electronic ticketing machines and account ticket revenue
Bus fare	:	Fare paid for journey in a bus and is variable on the distance travelled.
Bus priority lane	:	Bus priority lane is a portion of the road where only public transport buses are allowed to operate to enable buses to move faster in relation to other modes of private transport.
Bus Schedules	:	The programme of operation of a bus for 24 hours in one or more routes.
Bus stations	:	A bus station is a structure where buses stop to pick up and drop off passengers
CCTV	:	CCTV (closed-circuit television) is a TV system, primarily used for surveillance and security purposes.
Central Workshops (CWS)	:	A Central Workshop is a structure where major repairs of buses including reconditioning of assemblies. Refurbishment of buses, repairs for fitness certificate renewal are carried out.
Commercial establishments	:	A structure or space leased out to earn monthly lease rent
Cost per Km (CPKM)	:	The Cost per Kilometre or CPKM is computed by dividing the total cost by the total effective kilometres
Daily Vehicle position Register	:	A register where the details of vehicles not operated are entered along with reasons for off-road
Dead Kilometres	:	Non-revenue earning operation of buses incidental to effective kilometres such as operation of buses from depots to bus stations, for regular maintenance, docking/ repair, topping up of oil/ fuel, etc.
Docking / Servicing	:	Buses taken off-road for regular preventive maintenance activities such as lubrication, refilling of engine oil, replacement of minor spare parts etc.
Earning per Km (EPKM)	:	The Earning per Kilometre or EPKM is computed by dividing the Traffic revenue by the effective km

Term		Explanation
Effective Kms		Total revenue earning kilometres wherein revenue received through sale of tickets to passengers
Electronic Ticketing Machines	:	Machine operated by the bus conductor to print passenger tickets
Engine Oil change	:	Replacement of the engine oil for engine lubrication, cooling and cleaning
Engine Oil top-up	:	Filling engine oil up to the recommended level
Heavy Body Damage	:	Damages to bus bodies mainly due to accidents/ corrosion
KMPL	:	The Kilometres per liter or KMPL is computed by dividing the gross kilometres operated by a bus by the liters of fuel consumed by the bus
License Fee	:	License Fee is the monthly rental fixed for leased commercial structure/ space/ premises
Load factor	:	Load factor reflects the capacity utilisation of BMTC's services it is calculated using the formula: Load factor = actual revenue earned/(effective kilometre X passenger fare per km X carrying capacity) X 100
Non-operating cost of Non-operating expenditure of Fixed costs	:	Non-operating cost/ expenditure are the items of expenditure that are not linked to the operating activities such as depreciation on buildings, property insurance fund, other provisions and financial cost (interest).
Non-operating revenue/ non-traffic revenue	:	Non-operating revenue/ non-traffic revenue constitutes the revenue sources which are not linked to the operating activities such as License fee from commercial and office spaces, Advertisement revenue and financial assistance from Government.
Operating cost or Operating expenditure or Variable costs	:	Operating cost or Operating expenditure are the items which are linked with the operating activities such as salary and allowance, depreciation on buses, expenditure incurred towards fuel, oil and lubricants, repairs and maintenance and Motor Vehicle Tax
Operating ratio	:	Operating ratio is calculated as a percentage of operating cost to operating revenue and it reflects the organisation's ability to generate sufficient revenue to meet its expenses
Operating revenue or traffic revenue	:	Operating revenue or traffic revenue constitutes the revenue sources which are linked to the operating activities such as sale of tickets and bus passes.
Ordinary bus	:	Buses without air conditioning facility
Passenger Information system	:	A system where real-time information about approaching bus stops expected time of arrival / departure of buses/ emergency announcements and related information in buses, bus stands/ bus stations/ mobile apps
Passenger load	:	Passenger load denotes the capacity utilization of public transport, it is generally used to assess how efficiently the transport provider carries passenger to generate fare revenue
Premium bus	:	Buses with air conditioning facility
Rainwater harvesting	:	Rainwater harvesting is the collection and storage of rain, rather than allowing it to run off.
Ridership	:	Ridership is the number of passengers using a particular form of public transport
Scheduled Kms	:	Total effective kilometres required to be operated by a depot/ division/ undertaking during the period.

Term		Explanation
Scrapping of buses	:	Phasing out of buses which have completed their operational life/ uneconomical to repair after removal of all useful items/ parts
Staff ratio	:	The ratio of the staff or workforce required to operate a bus schedule
Traffic Transit Management Centres (TTMCs)	:	integrated transportation facility with adequate facilities and amenities to passengers such as park and ride, shopping/ office space, toilets, waiting rooms, etc
Tyre Retreading	:	Tyre Retreading means replacing a tyre's worn-out tread with a new tread. It is done to reduce operating costs.
Tyre Retreading Plant	:	A unit where the worn-out tread of a tyre is replaced with a new tread
Vehicle productivity	:	Vehicle productivity refers to the average km run by each bus per day
Vehicle Tracking System	:	A vehicle tracking system is the system that allows tracking and controlling of vehicles via an online computer, smart phone etc with the help of a hardware installed in the vehicle communicating with a GPS Satellite network.
Water recycling plant	:	Water recycling is the reuse of treated wastewater after removal of contaminants for beneficial purposes

Glossary of Abbreviations

Sl. No.	Abbreviation	Full Form
1	**AMTS**	Ahmedabad Municipal Transport Service
2	**AVLS**	Automatic Vehicle Location System
3	**BBMP**	Bruhat Bengaluru Mahanagara Palike
4	**BDA**	Bangalore Development Authority
5	**BMRCL**	Bengaluru Metro Rail Corporation Limited
6	**BMTC**	Bengaluru Metropolitan Transport Corporation
7	**BRT**	Bus and bus rapid transit
8	**BS-III**	Bharat Stage Emission Standards
9	**BS-IV**	Bharat Stage Emission Standards
10	**CA**	Civic Amenities
11	**CCTV**	Closed Circuit Television.
12	**COSP**	Controller of Stores and Purchases
13	**CPKM**	Cost Per Kilometre
14	**CPO**	Central Purchase Order
15	**CWS**	Central Workshops
16	**DPR**	Detailed Project Report
17	**DTC**	Delhi Transport Corporation
18	**DULT**	Directorate of Urban Land Transport
19	**DVP**	Daily Vehicle Position
20	**EPKM**	Earnings Per Kilometre
21	**ETM**	Electronic Ticketing Machines
22	**FAME**	Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India
23	**FC**	Fitness Certificate
24	**FCR**	Fitness Certificate Renewal
25	**FRP**	Fiber Reinforced Plastic
26	**GCC**	Gross Cost Contract
27	**GoK**	Government of Karnataka
28	**GPS**	Global Positioning System
29	**HBD**	Heavy Body Damage
30	**HBR**	Heavy Body Repair
31	**HSD**	High Speed Diesel
32	**IAAD**	Indian Audit & Accounts Department
33	**ITS**	Intelligent Transport System
34	**JnNURM**	Jawaharlal Nehru National Urban Renewal Mission
35	**KBS**	Kempegowda Bus Station
36	**KMPL**	Kilometre Per Liter
37	**KSPCB**	Karnataka State Pollution Control Board
38	**KSRTC**	Karnataka State Road Transport Corporation

Sl. No.	Abbreviation	Full Form
39	**KTPP**	Karnataka Transparency in Public Procurement
40	**LED**	Light-emitting diode
41	**MF**	Metro Feeder
42	**MIS**	Management Information System
43	**MoHUA**	Ministry of Housing and Urban Affairs
44	**MTC**	Metropolitan Transport Corporation
45	**NGT**	National Green Tribunal
46	**NTPC**	National Thermal Power Corporation's
47	**NUTP**	National Urban Transportation Policy
48	**NVVN**	Vyapar Vidyut Nigam Limited
49	**PIS**	Passenger Information System
50	**PMC**	Project Management Consultant
51	**PMPML**	Pune Mahanagar Parivahan Mahamandal Ltd
52	**PT**	Public Transportation
53	**R&M**	Repair and Maintenance
54	**RTC**	Regional Transport Corporation
55	**RTO**	Regional Transport Offices
56	**SLB**	Service Level Benchmark
57	**SOP**	Standard of Work Procedure
58	**STU**	State Transport Undertakings
59	**TRP**	Tyre Retreading Plant
60	**TTMC**	Traffic and Transit Management Center
61	**VGF**	Viability Gap Funding
62	**VTU**	Vehicle Tracking Utility