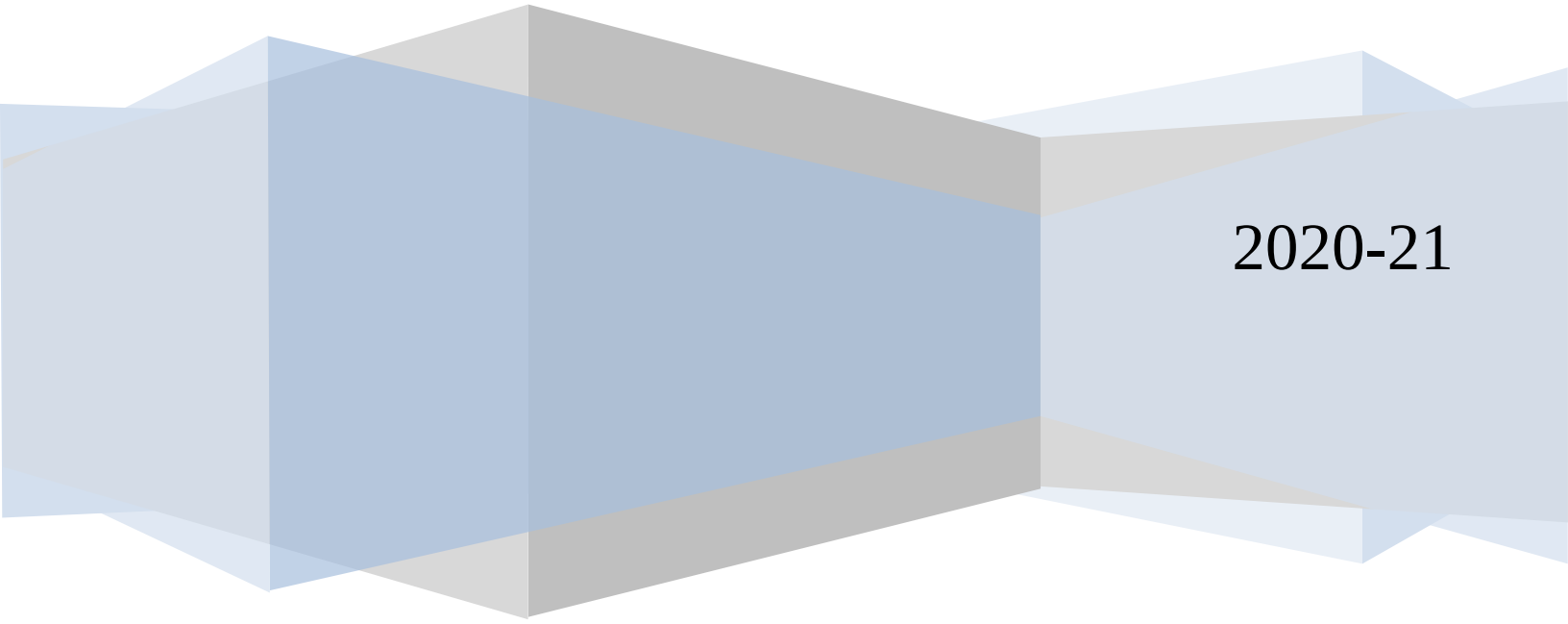
WSCR/Elect/BB/08(A)/19-20

# Review of Redundant / Non-Operative & Outsourced Posts in Electric (Loco) Department,

# Mumbai Division.



2020-21

| Officers & Inspectors | |
|---|---|
| **Officer** | **Inspector** |
| Miss Anshu Priya | Shri Anand Kumar Kewat |
| **Secretary to AGM** | **WSI-II/HQ** |
| | Shri Santosh Kumar Sharma |
| Shri K. T. Wani | **WSI-I/HQ** |
| **DWSO** | Shri Pradeep S Kalal |
| | **WSI-I/BB** |

| Co-Ordinating Officers & Supervisors | |
|---|---|
| **Officer** | **Supervisors** |
| Shri Mohan Choudhary | Shri Biju Phillip |
| **DEE(TRS) / KYN** | **SSE/Technical.** |

## Synopsis of the Study

| | |
|---|---|
| Study Number | : WSCR/Elect/BB/08(A)/19-20 |
| | |
| Name of Study | : Review of Redundant/ Non-Operative & Outsourced Posts in Electric (Loco) Department, Mumbai Division |
| | |
| Approved by | : AGM |
| | |
| Department | : Electrical |
| | |
| Division | : BB |
| | |
| Date of Commencement | 09.03.2020 |
| | |
| Date of Completion | 15.10.2020 |
| | |
| Date of Submission | 27.10.2020 |
| | |
| No. of Recommendations | one |
| | |
| Sanctioned Strength | 1057 Posts ELS /KYN |
| | |
| No. of Men studied | 700 posts |
| | |
| No. of posts identified surplus | 126 posts |
| | |
| Financial implications (Tentative) | 4,05,99,468 (Tentative) |
| | |

# Index

## Acknowledgement

The work study team is grateful to Shri Hemant Jindal, Sr. DEE/(TRS/KYN), Shri Mohan Choudhary DEE, Electric Loco Shed, for their kind guidance and co-operation for conducting the study.

The work study team is also thankful to Shri Biju Phillip SSE (Technical),Shri. S K Saxena SSE(TM/SL), Shri. S. G Pawar (Pneumatic/Valve), Shri Govind Prasad (Pantograph) Shri R. K. Meena (SPART/ ART and Development) and other section SSE of ELS/KYN for their assistance rendered to work study team for the completion of study.

## Terms of Reference & Authority

The work-study on "Review of Redundant/ Non-Operative & Outsourced Posts in Electric (Loco) Department, Mumbai Division." has been approved by AGM and included in Annual work-study programme 2019-20 with No WSCR/Elect/BB/08(A)/19-20.

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## Rational for Conducting the Study

1. Man power is the most costly and precious resource over Indian Railways and Right Sizing is the need of hour.
2. Up gradation of automations/innovations.
3. Availability of better process/technology.
4. Removing/reducing redundancy in assets as well as work.
5. To study present manpower availability per electric loco.
6. maintenance on different Railways and suggest the revised norms

## Methodology

The work study team has assessed the following techniques in completion of the study.

1. Collection of the details of existing staff strength, work load, allotment of duties.
2. Discussion with co-coordinating Officer and officials' staff.
3. Recent Yardstick

## Summary of Recommendations

| Sr. No | Particulars | Ref. page No |
|---|---|---|
| 1 | **Recommendation 01:** Redundant 126 posts need to be surrendered. | 27 |

# Chapter – I

## Introduction

It was almost 95 years ago that the first Electric train ran in India with the inauguration of services between Bombay VT and Kurla Harbour on 3rd Feb 1925 on Ex GIP Railway system. Production of Electric locomotives was simultaneously taken up indigenously at *Chittaranjan Locomotive Works* (CLW) in 1960 and the first 1500 v DC electric locomotive for Bombay Area was flagged off on 14.10.1961. The section was electrified on 1500 volt DC. Electric traction was subsequently extended on Central Railway up to Igatpuri on Northeast line and Pune on Southeast line where heavy gradients on the Western Ghats compelled introduction of electric traction.

Electric loco shed at Kalyan was set up on 28th Nov. 1928 to maintain DC electric locomotives for Goods and Mail express trains. Trip sheds were also formed in Kalyan, IGP, LNL to conduct Trip Inspection and Minor repairs of Mail Exp and BKR loco motives.

Kalyan Electric Loco Shed is the first loco Shed on Indian Railways to maintain DC locomotives working on 1500 Volts OHE System. As over the years, the OHE was converted into 25 KV AC, the shed started maintaining AC/DC and AC locomotives. Presently, the Loco Shed handles 211 locos including 62 WAG-9/WAP7 locos having latest 3-phase technology. Kalyan Electric Loco Shed plays an important role in train operations of Mumbai Division specially for banking operations in both North East & South East Ghats.

**Activities carried out in Electric Loco Shed.**

1. Schedule & unscheduled inspection of locomotive with Trouble shooting/testing of locos, planning of loco schedules, PPIO staff, investigations etc.
2. Maintenance & overhauling of all types of static electric/ electronic equipment – VCB, Relays, Transformer, GR & SMGR, EP&EMC Contactors, Reversers cab equipment, etc.
3. Maintenance & overhauling of Traction Motors
4. Maintenance & overhauling of Auxiliary motors, fans etc.
5. Maintenance & overhauling of all mechanical items (Bogies/ wheel, axle boxes, brake rigging, CBC, cattle guard, Doors, Corridors etc.)
6. Maintenance & overhauling of pneumatic valves/system
7. Millwright & Tool room section including general section
8. Lab.(C&M staff) including VST, DGA rubber item testing etc.
9. All Office Estt./Tech./Drg. Section/Stores Section staff

**Types of Maintenance Activities in shed:**

At present, the activities of sheds undertaken through OEM/trade are limited to repair/rehabilitation of major equipment like Transformers, Compressors, Smoothing Reactor, Tap Chargers, PCB Cards, Valve Sets, etc. This has been done based on the guidelines for repair/rehabilitation of equipment issued by Railway Board from time to time. Some of the sheds have also started undertaking maintenance activities in sheds on a limited basis for equipment like bogies, body filters, cleaning of loco/equipment etc. As per the present practices of maintenance being adopted by the sheds, the overall maintenance of equipment after removal from the locomotive can be broadly classified into two activities/components.

A) Repair/Rehabilitation of failed/old Equipment: Major items in this category are listed below.

1) Transformer.
2) Auxiliary Motors.
3) Compressors.
4) Speedometers.
5) DBR.
6) VCB.
7) Relays.
8) Tap Changers.
9) Smoothing Reactors.
10) Power Convertors.
11) Aux Converters.
12) PCB Cards.
13) Three Phase TMs.
14) Brake Equipments.
15) FDCS & SIV.
16) BA Panels etc.

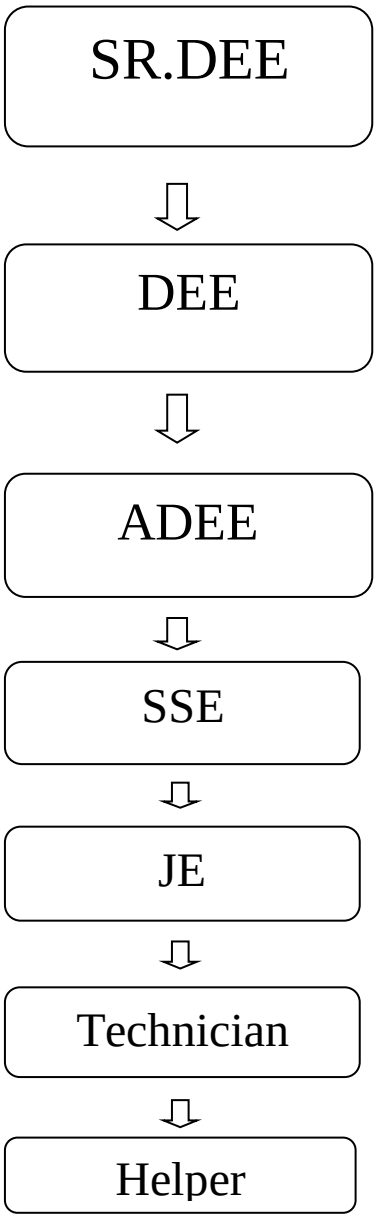
B) Overhauling of equipment during maintenance schedules of locomotives: The second type of maintenance carried out on equipment is their overhauling during major schedules. At present, generally all the sheds are carrying out overhauling of all equipment in sheds through maintenance staff only. However, as mentioned earlier, a very few sheds with less availability of staff are undertaking overhauling of the following components through OEMs/trade:

1) Overhauling of Bogies.
2) Overhauling of Compressors.
3) Overhauling of Line & Shunting contractors.
4) Cleaning of loco filters.
5) PU painting of locomotives.
6) Cleaning of shed premises and general upkeep/maintenance in shed.

## Chapter-II

### Existing Scenario

Electric loco shed, Kalyan is situated about 2 KM away from Kalyan Rly. Station which came into existence in 1925, this shed is headed by Sr.DEE (TRS) and assisted by DEE & ADEE. This loco shed is mainly doing the major repair work to AC locomotives. A total 1057 posts are sanctioned in different categories for carrying out the scheduled and unscheduled repair work of locomotives.



**2.1. Summary of Sanctioned Strength of Staff in Electric Loco Shed Kalyan**:

# A.

| Sl. | Category | Group | ELS/KYN | | | Trip Shed | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SS | MOR | VAC | SS | MOR | VAC | SS | MOR | VAC |
| 1 | **Supervisor** | IR | 103 | 82 | 21 | 33 | 38 | -5 | 136 | 120 | 16 |
| | | AW | 24 | 12 | 12 | 00 | 00 | 00 | 24 | 12 | 12 |
| | | THK | 00 | 1 | -1 | 00 | 00 | 00 | 00 | 1 | -1 |
| 2 | **Skilled** | IR | 736 | 446 | 290 | 175 | 153 | 22 | 911 | 599 | 312 |
| | | AW | 122 | 53 | 69 | 9 | 0 | 9 | 131 | 53 | 78 |
| | | THK | 0 | 6 | -6 | 0 | 0 | 0 | 0 | 6 | -6 |
| | | FBWP | 26 | 25 | 1 | 0 | 0 | 0 | 26 | 25 | 1 |
| 3 | **Unskilled "D"** | IR | 43 | 72 | -29 | 14 | 17 | -3 | 57 | 89 | -32 |
| | | AW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | S/Wala | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 0 |
| | **Total (A)** | | **1057** | **700** | **357** | **231** | **208** | **23** | **1288** | **908** | **380** |

# B.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **4** | **Ministerial** | 28 | 19 | 9 | 4 | 1 | 3 | 32 | 20 | 12 |
| **5** | **Lab** | 3 | 2 | 1 | 0 | 0 | 0 | 3 | 2 | 1 |
| **6** | **Drawing** | 9 | 4 | 5 | 0 | 0 | 0 | 9 | 4 | 5 |
| **7** | **Canteen** | 12 | 6 | 6 | 0 | 0 | 0 | 12 | 6 | 6 |
| **8** | **Other Staff** | 8 | 11 | -3 | 0 | 0 | 0 | 8 | 11 | -3 |
| **9** | **Jeep Dr.** | 4 | 2 | 2 | 0 | 0 | 0 | 4 | 2 | 2 |
| | **Total (B)** | 64 | 44 | 20 | 4 | 1 | 3 | 68 | 45 | 23 |
| **Grand Total (A+B)** | | **1121** | **744** | **377** | **235** | **209** | **26** | **1356** | **953** | **403** |

**Note:** Staff mentioned in table **B** is not included in this study. It is only for overall staff position of ELS and Trip Shed.

**2.2 Staff position of the ELS KYN (bill Unit wise)**

| **BILL UNIT 0102-4G1** | | | | | | |
|---|---|---|---|---|---|---|
| Sr.No | Category | Grade | GP | SS | MOR | VAC |
| 1 | SSE (IR) | 9300-34800 | 4800 | 14 | 38 | -24 |
| 2 | SSE (IR) | 9300-34800 | 4600 | 21 | 20 | 1 |
| 3 | SSE(AW) | 9300-34800 | 4800 | 5 | 5 | 0 |
| 4 | SE(AW) | 9300-34800 | 4600 | 8 | 5 | 3 |
| 5 | SSE(BTC) | 9300-34800 | 4800 | 1 | 2 | -1 |
| 6 | SSE(UP YD) | 9300-34800 | 4800 | 3 | 3 | 0 |
| 7 | SE(UP YD) | 9300-34800 | 4600 | 1 | 0 | 1 |
| 8 | SSE (THK) | 9300-34800 | 4800 | 3 | 3 | 0 |
| 9 | SE (THK) | 9300-34800 | 4600 | 2 | 0 | 2 |
| 10 | CM | 9300-34800 | 4800 | 3 | 2 | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Bill Unit : 0102-4G8** | | | | | | |
| 1 | MCM | 9300-34800 | 4200 | 21 | 17 | 4 |
| 2 | Tech I | 5200-20200 | 2800 | 57 | 32 | 25 |
| 3 | Tech II | 5200-20200 | 2400 | 25 | 08 | 17 |
| 4 | Tech III | 5200-20200 | 1900 | 08 | 20 | -12 |
| 5 | Khalasi | 5200-20200 | 1800 | 20 | 16 | 04 |
| **Bill Unit : 0102-4H2** | | | | | | |
| 1 | MCM | 9300-34800 | 4200 | 09 | 12 | -03 |
| 2 | Tech I | 5200-20200 | 2800 | 21 | 16 | 5 |
| 3 | Tech II | 5200-20200 | 2400 | 15 | 11 | 4 |
| 4 | Tech III | 5200-20200 | 1900 | 16 | 11 | 5 |
| 5 | Khalasi | 5200-20200 | 1800 | 00 | 09 | -09 |
| **Bill Unit : 0102-4H3** | | | | | | |
| 1 | MCM | 9300-34800 | 4200 | 35 | 30 | 05 |
| 2 | Fitter I | 5200-20200 | 2800 | 39 | 17 | 22 |
| 3 | Fitter II | 5200-20200 | 2400 | 17 | 16 | 1 |
| 4 | Fitter III | 5200-20200 | 1900 | 16 | 10 | 06 |
| 5 | Khalasi | 5200-20200 | 1800 | 13 | 12 | 01 |
| **Bill Unit : 0102-4G9** | | | | | | |
| 1 | JE | 9300-34800 | 4200 | 37 | 19 | 18 |
| 2 | JE (AW) | 9300-34800 | 4200 | 14 | 01 | 13 |
| 3 | JE THK | 9300-34800 | 4200 | 06 | 02 | 04 |
| **Bill Unit : 0102-4G9** | | | | | | |
| 1 | COS (P) | 9300-34800 | 4600 | 02 | 02 | 00 |
| 2 | OS (P) | 9300-34800 | 4200 | 05 | 02 | 03 |
| 3 | Sr. Clerk | 5200-20200 | 2800 | 0 | 0 | 0 |
| 4 | Jr. Clerk | 5200-20200 | 1900 | 01 | 03 | -02 |
| 5 | Sr. Steno | 9300-34800 | 4200 | 01 | 01 | 00 |
| 6 | Hindi Asst | 9300-34800 | 4200 | 0 | 0 | 0 |
| 7 | Chief Typist | 9300-34800 | 4200 | 01 | 00 | 01 |
| 8 | Jr. Peon | 5200-20200 | 1800 | 01 | 00 | 01 |
| 9 | Office Peon | 5200-20200 | 1800 | 03 | 03 | 00 |
| 10 | J/ Dr. I | 5200-20200 | 2800 | 01 | 01 | 00 |
| 11 | J/Dr. II | 5200-20200 | 2400 | 01 | 00 | 01 |
| 12 | J/DR. III | 5200-20200 | 1900 | 01 | 02 | -01 |
| 13 | S/Wala | 5200-20200 | 1800 | 03 | 03 | 00 |
| 14 | COS (NP) | 9300-34800 | 4600 | 02 | 02 | 00 |
| 15 | OS (NP) | 9300-34800 | 4600 | 02 | 02 | 00 |
| 16 | Sr. Clerk (NP) | 5200-20200 | 2800 | 01 | 01 | 00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17 | Jr. Clerk (NP) | 5200-20200 | 1900 | 01 | 01 | 00 |
| 18 | SSE (DRG) | 9300-34800 | 4600 | 03 | 03 | 00 |
| 19 | JE (DRG) | 9300-34800 | 4200 | 01 | 01 | 00 |
| 20 | P/Printer | 5200-20200 | 1800 | 01 | 01 | 00 |
| 21 | Bungalow Peon | 5200-20200 | 1800 | 01 | 00 | 01 |
| **Bill Unit : 0102-4G3** | | | | | | |
| 1 | Canteen Manager | 9300-34800 | 4200 | 1 | 0 | 1 |
| 2 | Master Cook | 9300-34800 | 4200 | 1 | 0 | 1 |
| 3 | Sr. Cook | 5200-20200 | 2400 | 2 | 0 | 2 |
| 4 | Canteen Manager Gr II | 5200-20200 | 2000 | 1 | 1 | 0 |
| 5 | Cook Gr I | 5200-20200 | 2800 | 1 | 0 | 1 |
| 6 | Asst. Cook | 5200-20200 | 1800 | 1 | 3 | -2 |
| 7 | Salesman I | 5200-20200 | 1800 | 1 | 1 | 0 |
| 8 | Salesman II | 5200-20200 | 1800 | 3 | 0 | 3 |
| 9 | Cleaner | 5200-20200 | 1800 | 1 | 1 | 0 |
| **Bill Unit : 0102-4H4** | | | | | | |
| 1 | MCM Fitter | 9300-34800 | 4200 | 28 | 29 | -1 |
| 2 | Fitter Gr-I | 5200-20200 | 2800 | 25 | 15 | 10 |
| 3 | Fitter Gr-II | 5200-20200 | 2400 | 16 | 15 | 1 |
| 4 | Fitter Gr-III | 5200-20200 | 1900 | 17 | 22 | -5 |
| 5 | Sr. Turner | 9300-34800 | 4200 | 13 | 09 | 4 |
| 6 | Turner Gr. I | 5200-20200 | 2800 | 12 | 03 | 9 |
| 7 | Turner Gr. II | 5200-20200 | 2400 | 01 | 04 | -3 |
| 8 | Turner Gr. III | 5200-20200 | 1900 | 05 | 0 | 5 |
| 9 | MCM Painter | 9300-34800 | 4200 | 01 | 01 | 0 |
| 10 | Sr. Crane Dr. | 9300-34800 | 4200 | 01 | 6 | -5 |
| 11 | Crane Dr I | 5200-20200 | 2800 | 02 | 09 | -7 |
| 12 | Crane Dr II | 5200-20200 | 2400 | 04 | 0 | 4 |
| 13 | Khalasi | 5200-20200 | 1800 | 09 | 11 | -2 |
| **Bill Unit : 0102-4H8** | | | | | | |
| 2 | MCM | 9300-34800 | 4200 | 23 | 23 | 0 |
| 3 | Tech Gr. I | 5200-20200 | 2800 | 31 | 22 | 9 |
| 4 | Tech Gr. II | 5200-20200 | 2400 | 17 | 10 | 7 |
| 5 | Tech Gr. III | 5200-20200 | 1900 | 12 | 02 | 10 |
| 9 | Khalasi | 5200-20200 | 1800 | 06 | 06 | 00 |
| **Bill Unit : 0102-4D5** | | | | | | |
| 1 | SSE | 9300-34800 | 4800 | 02 | 02 | 00 |
| 2 | SSE | 9300-34800 | 4600 | 03 | 04 | -01 |
| 3 | JE | 9300-34800 | 4200 | 01 | 00 | 01 |
| 4 | MCM EF | 9300-34800 | 4200 | 04 | 04 | 00 |
| 5 | EF I | 5200-20200 | 2800 | 11 | 06 | 05 |
| 6 | EF II | 5200-20200 | 2400 | 02 | 04 | -02 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 7 | EF III | 5200-20200 | 1900 | 05 | 00 | 05 |
| 8 | MCM MF | 5200-20200 | 4200 | 02 | 03 | -01 |
| 9 | MF I | 5200-20200 | 2800 | 05 | 03 | 02 |
| 10 | MF II | 5200-20200 | 2400 | 00 | 01 | -01 |
| 11 | MF III | 5200-20200 | 1900 | 03 | 02 | 01 |
| 12 | TECH II | 5200-20200 | 2400 | 00 | 01 | -01 |
| 13 | ASST Loco Shed | 5200-20200 | 1800 | 00 | 02 | -02 |
| **Bill Unit : 0102-4H1** | | | | | | |
| 1 | JE | 5200-20200 | 4200 | 05 | 0 | 5 |
| 2 | MCM | 9300-34800 | 4200 | 01 | 01 | 0 |
| 3 | MCM E/F | 9300-34800 | 4200 | 03 | 04 | -1 |
| 4 | EF Gr I | 5200-20200 | 2800 | 03 | 03 | 0 |
| 5 | EF Gr II | 5200-20200 | 2400 | 04 | 0 | 4 |
| 6 | EF Gr III | 5200-20200 | 1900 | 02 | 2 | 0 |
| 7 | MF Gr. I | 5200-20200 | 2800 | 08 | 1 | 7 |
| 8 | MF Gr. II | 5200-20200 | 2400 | 05 | 1 | 4 |
| 9 | MF Gr. III | 5200-20200 | 1900 | 05 | 04 | 1 |
| 10 | Khalasi Helper | 5200-20200 | 1800 | 17 | 0 | 17 |
| 11 | Khalasi | 5200-20200 | 1800 | 03 | 0 | 3 |
| **Bill Unit : 0102-4H7** | | | | | | |
| 1 | MCM Tech | 9300-34800 | 4200 | 13 | 19 | -6 |
| 2 | Tech. Gr-I | 5200-20200 | 2800 | 23 | 12 | 11 |
| 3 | Tech Gr-II | 5200-20200 | 2400 | 22 | 25 | -3 |
| 4 | Tech Gr-III | 5200-20200 | 1900 | 19 | 14 | 5 |
| 5 | P/ Man A | 5200-20200 | 1900 | 06 | 07 | -1 |
| 6 | P/Man B | 5200-20200 | 1800 | 02 | 03 | -1 |
| 7 | Khalasi | 5200-20200 | 1800 | 06 | 11 | -5 |
| **Bill Unit : 0102-4H5** | | | | | | |
| 1 | MCM Tech | 9300-34800 | 4200 | 10 | 10 | 0 |
| 2 | Tech. Gr-I | 5200-20200 | 2800 | 33 | 25 | 8 |
| 3 | Tech Gr-II | 5200-20200 | 2400 | 25 | 18 | 7 |
| 4 | Tech Gr-III | 5200-20200 | 1900 | 22 | 26 | -4 |
| 5 | Khalasi | 5200-20200 | 1800 | 23 | 12 | 11 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Bill Unit : CSMT ELECTRIC LOCO TRIP SHED** | | | | | | |
| 1 | SSE | 9300-34800 | 4800 | 6 | 2 | 4 |
| 2 | SSE | 9300-34800 | 4600 | 2 | 4 | -2 |
| 3 | JE | 9300-34800 | 4200 | 02 | 03 | -1 |
| 4 | MCM ELE | 9300-34800 | 4200 | 01 | 02 | -1 |
| 5 | MCM MECH | 9300-34800 | 4200 | 04 | 09 | -5 |
| 6 | EF Gr I | 5200-20200 | 2800 | 09 | 07 | 2 |
| 7 | EF Gr II | 5200-20200 | 2400 | 05 | 06 | -1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | EF Gr III | 5200-20200 | 1900 | 08 | 1 | 7 |
| 9 | MF Gr. I | 5200-20200 | 2800 | 10 | 6 | 4 |
| 10 | MF Gr. II | 5200-20200 | 2400 | 08 | 3 | 5 |
| 11 | MF Gr. III | 5200-20200 | 1900 | 07 | 01 | 6 |
| 12 | TECH II | 5200-20200 | 1900 | 2 | 0 | 2 |
| 13 | Khalasi | 5200-20200 | 1800 | 07 | 06 | 1 |

| **Bill Unit : LONAVALA ELECTRIC LOCO TRIP SHED** | | | | | | |
|---|---|---|---|---|---|---|
| 1 | SSE | 9300-34800 | 4800 | 4 | 3 | 1 |
| 3 | JE | 9300-34800 | 4200 | 1 | 3 | -2 |
| 5 | MCM MECH/ELE | 9300-34800 | 4200 | 1 | 6 | -5 |
| 6 | EF Gr I | 5200-20200 | 2800 | 7 | 7 | 0 |
| 7 | EF Gr II | 5200-20200 | 2400 | 4 | 1 | 3 |
| 8 | EF Gr III | 5200-20200 | 1900 | 1 | 0 | 1 |
| 9 | MF Gr. I | 5200-20200 | 2800 | 5 | 3 | 2 |
| 10 | MF Gr. II | 5200-20200 | 2400 | 4 | 0 | 4 |
| 11 | MF Gr. III | 5200-20200 | 1900 | 2 | 0 | 2 |
| 12 | P/MEN A | 5200-20200 | 1900 | 4 | 4 | 0 |
| 13 | Khalasi | 5200-20200 | 1800 | 3 | 3 | 0 |

| **Bill Unit : VVH ELECTRIC LOCO TRIP SHED** | | | | | | |
|---|---|---|---|---|---|---|
| 1 | SSE | 9300-34800 | 4800 | | 1 | |
| 2 | SSE | 9300-34800 | 4600 | 7 | 3 | 3 |
| 3 | JE | 9300-34800 | 4200 | 1 | 1 | |
| 4 | MCM ELE | 9300-34800 | 4200 | - | 3 | -3 |
| 5 | MCM MECH | 9300-34800 | 4200 | 2 | 5 | -3 |
| 6 | EF Gr I | 5200-20200 | 2800 | 5 | 4 | 1 |
| 7 | EF Gr II | 5200-20200 | 2400 | 5 | 5 | - |
| 8 | EF Gr III | 5200-20200 | 1900 | 10 | 2 | 8 |
| 9 | MF Gr. I | 5200-20200 | 2800 | 9 | 5 | 4 |
| 10 | MF Gr. II | 5200-20200 | 2400 | 5 | 3 | 2 |
| 11 | MF Gr. III | 5200-20200 | 1900 | 9 | 3 | 6 |
| 12 | TECH II | 5200-20200 | 1900 | 1 | 3 | -2 |
| 13 | TECH III | 5200-20200 | 1900 | 0 | - | - |
| 14 | Fitter AW | 5200-20200 | 1900 | 0 | - | - |
| 15 | Khalasi | 5200-20200 | 1800 | 6 | 0 | 6 |
| 1 | Head Clerk/OS I | 9300-34800 | 4800 | 0 | 0 | 0 |
| 2 | OS | 9300-34800 | 4200 | 0 | 0 | 0 |
| 3 | O/Peon | 5200-20200 | 1900 | 0 | 0 | 0 |

**Trip Shed PUNE**

| SS | MOR | VAC |
|---|---|---|
| 50 | 42 | 08 |

**Trip Shed IGP**

| SS | MOR | VAC |
|---|---|---|
| 38 | 32 | 06 |

## 2.3 Duty List of Staff Working In Electric Loco Shed Kalyan:

### 1.2.1 Duties of Section Supervisors:

Each of the sections will be under a supervisor of appropriate rank who will be directly responsible for the following:

1. To scrutinize the job card for the loco received for inspection/unscheduled repairs, carefully study the work to be carried out and based on his personal inspection, list out additional items of work, if any, for approval.
2. To allot the work to the staff under him with special instructions, if any.
3. To ensure that the work is carried out within the time allotted and the loco released in time.
4. To maintain a record of work done by staff with the purpose of taking corrective action in the event of reported malfunctioning of the equipment immediately after overhaul/repair.
5. He is responsible for drawing, distributing and recording of all stores required by his section, as well as any tools and testing instruments.
6. Before returning the job card in token of having completed the work, he will satisfy himself that all work has been done satisfactorily.
7. To ensure this he will make frequent checks while the work is in progress.
8. To ensure necessary co-ordination with other sections as well as with PPO.

## 2.4 Duties of Electrical Foreman (Planning and Progress Office)

1. To maintain liaison with the operating wing and ensure timely availability of locos from the shed.
2. To plan the scheduled and unscheduled repairs of locos to the shed as required, keeping in view the shed capacity and proper utilization of inspection, lifting and heavy repair berths.
3. To issue job cards and to coordinate the working of the sections so as to ensure timely turn-out of the locos after attention / repair.
4. To maintain necessary documents to enable scheduled attention to various locos and for revision of maintenance practices and instructions.
5. To keep a watch on tests and trials and performance of modified equipment and maintenance of requisite records in this connection.

6. To maintain the History Register, Equipment Cards, Modification Charts and other prescribed records.
7. To coordinate with the workshops regarding release of locos for POH and special shop repairs and to arrange for dispatch of requisite information and records to shops.
8. To maintain statistics of engine-kilometres, failure records etc.
9. To keep a record of wheel wear and to programme for tyre-turning.
10. Furnishing shed statistics to HQ office.

At present loco holding of Kalyan electrical loco shed is 211. locomotives including AC/DC conventional loco and loco motives with three phase technology, to maintain these loco's maintenance schedule is defined as per the RDSO and Railway Board guidelines and accordingly these locomotives are scheduled for maintenance, to carry out maintenance activities various sections are formed and accordingly manpower is nominated for smooth working on the maintenance of locomotives.

## 2.5 **Distribution of Work Load in the Shed:**

1. AC equipment Section.
2. Power Electronics.
3. TM/SL Section.
4. Bogie Section.
5. Body Section.
6. Millwright section.
7. Pneumatic /Valve section.
8. Breakdown Section.
9. Auxiliary section.
10. Investigation section.
11. PPIO
12. Inspection section.
13. Battery section.
14. Laboratory section.
15. Instrument & electronics section.
16. Drawing section.
17. Gen office.
18. Technical section.
19. Stores.
20. Development section.

**1. AC equipment Section**: Is responsible for scheduled loco inspection, minor inspection of SNGR,ZSM GR panel,MOM,HDM VCB earthing switch,maiantenance of Primary voltage transformers,cable head transformers,radiator,RPS conservator,RGR(deviator resistance)CGR(contractor GR)Notch repeater,master controller,LTBA(low voltage lighting armature, magnet valve, BA panel, inductive shunt,line contractor weak fill registance,Q20 Relays RHOBA(switch) etc

**2. Power Electronics:** This section is looking after maintenance of Traction convertor (TRC), Auxiliary converter cubicle, FB cubicle, traction converter TRC cubicle etc.

**3. TM/SL Section**: TM section is responsible for Overhauling and schedule maintenance of TM ( traction motor) & SL (Smoothing Reactors) etc. the maintenance activity includes Pinion fitting, initial and final running test of TM, pinion checking, assembly bearing check, insulation check, cleaning of TM parts and final assembly of TM including carbon brush fitting, inspection cover fitting, stud and nut fittings.etc these activity requires close inspection of armature, insulation, bearing and stator which requires to bake in baking machine at 150C.

**Note :** Traction Motor Cleaning and Dismantling work is being carried out by outsourcing from 17.06.2019

**4 Boggie Section:** The activities in boggies section includes:

- Boggie inspection
- Boggies overhauling.
- Wheel overhauling.
- Rediscing.
- Lifting in unscheduled maintenance.
- TM Changing.
- Loco lifting.
- Gear case overhauling.
- Compensating of Coil spring.
- Damper overhauling
- Sand gear over hauling.
- Axle box greasing.
- Break block changing etc.

**5. Body Section:** This section deals with maintenance of pantograph unit of locomotives which includes overhauling of pantograph, right from removal of pantograph to fitment of the same which includes dismantling of all parts, bearings Rubber items, Tension bolt split pin copper shut etc. DPT test is carried out to find out defects, polishing of contact points testing of pantograph in which balancing (Static), transfer flexibility test and painting is done.

**4. Millwright section**: Activities in millwright section includes:

a) M& P maintenance
b) EOT crane maintenance
c) Fork lift, staff car and Truck maintenance etc.
d) Electrical distribution maintenance
e) Filtration plant of loco
f) Loco wheel turning.

**5. Pneumatic /Valve section**: In this section all valves and filters in locomotives are maintained in schedules and unscheduled maintenance which includes pneumatic blowing of 30 valves in each conventional loco and 10 valves in each WAG 9 locos, stripping of all valves overhauling of valves replacement of Rubber items, checking of fasteners of all accessories, DP shunts, clamps, modification/alteration in foundation of valves etc.

**6. Breakdown Section:** "B" Class ART is controlled under Sr.DEE TRS KYN and staff is nominated as per guidelines of Railway Board, ARME and SPART is also maintained in Kalyan Loco shed and regular maintenance of it is managed by the break down staff only.

**7. Auxiliary section**: This section is looking after overhauling of Auxiliary Machines, removal and fitment of Auxiliary machine, rewinding of auxiliary motors, DBR of WAG 7 locomotives etc. To carry out scheduled inspection and unscheduled repairs, modifications and overhauling schedule of auxiliary motors. To disconnect and connect auxiliary motors while removing / refitting during overhauling scheduled and unscheduled repairs.

**Note: Rewinding, cleaning and dismantling of auxiliary machines work is going to be outsourced.**

**8. Investigation section: T**his section is responsible for:

a) Defective loco investigation.
b) Testing of major schedule.
c) Quality testing.
d) Action plan and modification.
e) Suggestion and implementation.
f) Line attention.
g) Train of loco after AOH major schedule.
h) Trail after modification.
i) Liaisoning work.
j) Downloading of data and analysis of WAG 9 loco
k) Testing of loco at POH BSL and MTR DHD
l) Unscheduled loco testing.
m) Maintains of Loco history etc.

**9. Inspection section**: This section looks after formation of bankers, mechanical quality control, electric test, pneumatic test of locomotives etc.

**10. Laboratory section**: Physical and chemical testing of all items including ultrasonic testing of axles and shafts. staff in laboratory has to carry out ultra sonic of all loco, non-destruction test gas

chromatograph, DG test (dissolve Gas analysis), BDV test of transformer oil, GR oil after POH and scheduled AOH, grease test of Axle box and TM bearing, material analysis i.e. conductivity test, rubber material testing, acidity test, TAN D test etc.

**11. Instrument/electronics & Battery section**: Battery section in ELS has to look after the batteries fitted in locomotives including discharge and charging of batteries, checking of electrode, gravity measurement of batteries. This same section is looking after Instrumentation and Electronics side of locomotives and staff is utilised in checking of cables circuit check, HV cable test, All Relay checking, checking of SPME, VCD, Speedo meter, lights, Relay overhauling, SPME overhauling, to carry out FDCS test, in three phase loco MCB, Relay conductors, VCU, power supply cards contracts, programme switches overhauling, master controller, FDU, sensors, LED indicators, Air flow relays etc. Electrical inspection and repairs (minor) of parts noticed defective during inspections i.e. head lights. Flasher lights, electrical equipments in BA panels, TFP, RPS, SL, Programme switches, MP. EMC, DBR. SMGR. CGR, tap changer, cables, cable sockets and cable connections.

**12. Drawing section:** Drawing section has to maintain records of all drawings of all types of Locomotives, depression as per samples, alteration in drawings, tracing, printing, issue of drawing to COS, CEE and other depts.

**13. General office**: General office staff has to deal with all personnel matters of Loco shed staff and satellite trip shed staff. Two post of COS is deputed for general administration part including Correspondence on RTI matters, union matters and other one is working on policy matters i.e. promotions, transfers and restructuring of staff. OS staff is working on preparation of pay sheets of staffs distributed in token numbers, one clerk is utilised for preparation of PASS/PTO complimentary passes etc. 04 non-personnel staff is also working in ELS out of which 01 non-personnel staff is looking after DAR cases of ELS staff and Shed staff.

**14. Stores**: The stores section looks after preparation of procurement budget of non-stock items, scrapping tenders, budgeting and vetting correspondence, zero base budget, technical scrutiny of non-stock items, correspondence of non-stock items etc.

**15. Development section:** This section is not directly involved in maintenance of locomotives and is formed for carry out supporting activities of loco shed which involves:

a) Fire extinguisher repair and over hauling (cartridge refilling)
b) Fabrication and repair work(miscellaneous)
c) Carpentry work
d) Engineering work
e) Scrap disposal etc.

### 16. PPO Section:

1. Receipt and dispatch of locomotives/ EMUs for their scheduled and unscheduled visits,
2. Planning of scheduled and unscheduled repairs of locomotives.
3. Monitoring the performance of developmental equipment.
4. Maintenance of history books, history cards of equipment fitted.
5. Keeping liaison with RSO regarding calling of locomotives/EMUs for scheduled/unscheduled work.
6. To keep record of wheel wear and to programme reprofiling.
7. To scrutinize Electric Loco/EMUs log books on arrival of locomotives and issuing all job cards to the section supervisor for proper attention to the defects and to ensure that the work is done when the job cards are returned.
8. All works pertaining to procurement of stores and liaison with HQ for timely procurement of stores and upkeep of custody stores for non-stock items.
9. Specification updating section.

### 17. Technical Section:

1. Technical Section is king pin of ELS which covers investigation section, Quality cell & Computer section in loco shed & technical section deals in PCDO, RAP. UOR, Punctuality of loco & its analysis & foreign locos also. Co-ordination during performance review meeting & higher authority visits.
2. Trouble shooting of running repair locos & its final testing, Super checking, Loco online escorting& foot plating with officers.
3. SSE Quality Cell directly work under Sr. DEE/RS/CNB monitor all quality checks of loco as assigned by Sr. DEE /RS/CNB & suggest the preventive action & imp. Suggestions to prevent failures.
4. Trouble shooting of running repair locos & its final testing, super checking.
5. Record updating of running repair locos & overall management of Technical Shift Section.
6. Unscheduled visit of loco, daily super checking & monthly summary of super checking, Failure withdrawal & UOR- Correspondence with firm regarding UOR, lifting analysis, Morning & evening meeting, Trouble shooting of loco if no supervisor in day shift, Store case and Technical letters.
7. Keeping track of every failure of components. The failure should be analyzed in detail on the basis of which should emerge the analysis of the causes of failure, suggestions for improvements, modifications etc.
8. Documentation of all technical information.
9. Keeping a watch that the maintenance instructions issued to the shed staff is up-to-date and ensuring that the instructions are explained to the concerned staff.
10. All technical correspondence of the shed i.e. outside and within shed, updating and feeding of technical data in computer etc

## 2.6 Satellite Loco shed of Mumbai division:

1. VVH
2. KYN
3. IGP
4. LNL

These satellite sheds are functioning in round the clock and duty list of the staffs are as follows:-

1. Loco check in Banker.
2. Coupler / Tripler formation done.
3. Ist trip new banker accompany UP and DN (IGP/KSRA) for motoring and dynamic testing.
4. Trip examination (TI) of banker's locos.
5. Yard call of banker's locos including brake adjustment, sanders attentions, conjunction braking testing with mail locos and foreign of railway goods Locos.
6. Attending Load parting in Ghat section.
7. Accompanying Defective Banker.
8. Accompanying Goods loco and attention.
9. Accompanying VIP BKR Loco is RSR IGP-KSRA section.
10. Accompanying Heavy tonnage load.
11. Mail locos visual checking (VC).
12. Mail locos defects attention.
13. Accompanying Mail locos up to CST & MMR/Amravati if necessary.
14. Store material collection and defective equipment replacement daily.
15. MR, BC pipe collection.
16. Sand collection.
17. MCDO preparation.

## 2.7 Maintenance Schedules and Periodicity of Electric Locomotives

**Conventional Locos: Coaching locos – WCAM-4/WCAM-1,2/WCAG-2**

| Maintenance Schedule | Periodicity | Duration |
|---|---|---|
| Trip inspection (TI) | After 3000 kms or one trip whichever is later. | 2 hrs |
| IA | 40 + 3 days | 4 hrs |
| IB | 80 + 3 days | 6 hrs |
| IC | 120 + 3 days | 8 hrs |
| AOH | 12 months + 15 days | 6 working days |
| IOH | 36 months + 1 month or 4 lakh kms whichever is earlier. | 9 working days |
| POH | 6 years + 3 months or 8 lakh kms whichever is earlier. | 24 working days |

**Coaching locos - WCAM-2P & 3 fitted with Roller bearing MSU**

| Maintenance Schedule | Periodicity |
|---|---|
| Trip inspection (TI) | After 3000 kms or one trip whichever is later. |
| IA | 45 + 3 days |
| IB | 90 + 3 days |
| IC | 135 + 3 days |
| AOH | 18 months + 15 days |
| IOH | 54 months + 1 month or 4 lakh kms whichever is earlier. |
| POH | 9 years + 3 months or 8 lakh kms whichever is earlier. |

**Freight locos - WAG-5 TAOchi, WAG-5H & WAG-7 locos**

| Maintenance Schedule | Periodicity | Duration |
|---|---|---|
| Trip inspection (TI) | 20 days | 2 hrs |
| IA | 60+ 3 days * | 4 hrs |
| IB | 120 + 3 days * | 6 hrs |
| IC | 180 + 3 days * | 8 hrs |
| AOH | 24 months+15 days | 6 working days |
| IOH | 54 months + 1 month or 6 lakh kms whichever is earlier. | 9 working days |
| POH | 9 years + 3 months or 12 lakh kms whichever is earlier. | 28 working days |

***On trial basis for 2 year**

**3-Phase (ABB) locomotives**

**Coaching Locos - WAP5/WAP7 locos**

| Maintenance Schedule | Periodicity | Duration |
|---|---|---|
| Trip inspection (TI) | 4500 kms or one trip, whichever is later | 2 hrs |
| IA | 90 days | 4 hrs |
| IB | 180 days | 6 hrs |
| IC | 270 days | 8 hrs |
| TOH** | 18 months WAP-5 loco<br>24 months for WAP-7 loco | 6 working days |
| IOH | 4.5 years + 6 months or 12 lakh kms. whichever is earlier WAP-5<br>4 years +6 month or 12 km whichever is earlier WAP-7 | WAP-7 - 11 working days<br>WAP-5 - 20 working days |
| POH | 9 years + 6 months or 24 lakh kms. whichever is earlier. | 28 working days |

****MOH is re-designated as TOH (Term overhaul)**

**Freight Locos - WAG9/WAG9H locos**

| Maintenance Schedule | Periodicity | Duration |
|---|---|---|
| Trip inspection (TI) | 45 days | 4 hrs |
| IA | 90 days | 4 hrs |
| IB | 180 days | 6 hrs |
| IC | 270 days | 8 hrs |
| TOH** | 24 months | 6 working days /<br>8 working days for 2nd MOH |
| IOH | 6 years + 6 months or 12 lakh kms. whichever is earlier. | 11 working days |
| POH | 12 years + 6 months or 24 lakh kms. whichever is earlier. | 28 working days |

****MOH is re-designated as TOH (Term overhaul)**

Loco Holding of the Depot.

# Chapter III

## Critical Analysis

Kalyan Electric Loco Shed is the first loco Shed on Indian Railways to maintain DC locomotives working on 1500 Volts OHE System. As over the years, the OHE was converted into 25 KV AC, the shed started maintaining AC/DC and AC locomotives. Presently, the Loco Shed handles 203 locos including 29 WAG-9 locos and 31 WAP 7 locos (8 WAP-7 locos are under commissioning) having latest 3-phase technology. Kalyan Electric Loco Shed plays an important role in train operations of Mumbai Divison specially for banking operations in both North East & South East Ghats.

Accordingly, Work-study team during its visit and subsequent discussions with officers and supervisors of various sections has concluded with inferences considering the actual work load available viz a viz available manpower.

Earlier Locomotives with 1500-volt DC power supply were in operation which required more attention, whereas locomotives with AC power supply and three phase technology the maintenance pattern has changed and require less attention comparing to DC locomotives. However, Railway board has also laid down certain guidelines for manpower requirement for maintenance of DC, AC loco and Three Phase Technology enable loco.

As per data made available from ELS KYN Locomotives with different Traction motors is given below as on 31.08.2020

| Sr. No. | Type of Locomotives | No's of Locomotives | Type of TM |
|---|---|---|---|
| 1 | WAG 7 | 56 | Hitachi AC TM |
| 2 | WAG 9 | 29 | 3 Phase AC TM |
| 3 | WAP 7 | 31 (8 under commissioning) | 3 Phase AC TM |
| 4 | WCAM 2 P | 20 | Hitachi DC TM |
| 5 | WCAM 3 | 53 | Hitachi DC TM |
| 6 | WCAG 1 | 12 | Hitachi DC TM |
| 7 | WCM 6 | 2 | Hitachi DC TM |
| **Total Loco holding** | | **211** | |

As per discussion with the coordinating officer, loco holding of the shed is going to be 250 locos in near future.

**The manpower norms for maintenance of electric loco sheds have been laid down by Railway Board vide their letter No. E(MPP)2019/1/12 dated 30.09.19.**

| Types of Locomotives | Revised Yard stick |
|---|---|
| Conventional Loco (Freight) with DC Drive with Hitachi TM (WAG 5) and WAG 7 | 3 Staff per Loco |
| Other Conventional Locos with DC Drive including coaching Locos | 3.5 staff per Loco |
| 3 Phase locomotives (WAG9, WAP7) | 2.5 Staff per loco |

With activities for outsourcing noted under here:

Already a number of activities are mandated to be outsourced and are being outsourced in various loco sheds. In addition, the following activities to be additionally outsourced –

**Conventional Locomotives-** DC TM overhauling; overhauling of contractors by OEMs; Overhauling of Auxiliary motor.

**Three phase locomotives** – TM overhauling; Overhauling of Auxiliary motors.

Further, activities to be outsourced can be identified by respective loco sheds and followed accordingly with the approval of respective PCEE on local need basis and local conditions

**Staff requirement for LOCO Shed KYN: As per new yard stick is as under**

| Type of Loco | | No of Loco | Norms for Manpower Reqd.per Loco | Total Requirement of Manpower | Sanctioned Strength | Actual Manpower | Excess |
|---|---|---|---|---|---|---|---|
| AC Loco | WAG 7 | 56 | 3 | 168 | | | |
| AC/DC Loco | WCAM 2 | 20 | 3.5 | 70 | | | |
| | WCAM 3 | 53 | 3.5 | 185.5 | | | |
| | WCAM 6 | 02 | 3.5 | 7 | | | |
| | WCAG 1 | 12 | 3.5 | 42 | | | |
| | WAG 9 | 29 | 2.5 | 72.5 | | | |
| Three Phase | WAP 7 | 39 | 2.5 | 97.5 | | | |
| Total | | 211 | | 642.5 | | | |
| **RG @16.5% for 321 posts** | | | | 53 | | | |
| **LR @12.5%** | | | | 80 | | | |
| **Training Reserve 4 %** | | | | **25.7** | | | |
| **Total Maintenance staff Requirement as per Yard stick** | | | | **802** | | | |
| **SPART & ART** | | | | **21** | | | |
| **Banker** | | | | **10** | | | |
| G. Total | | | | 833 | 1057 | 700 | 224 |

As considering loco holding of the shed 250 (39 WAP-7) this calculation goes to 833+98 =931-man power. **Therefore 1057-931=126-man powers are found excess**

**Note: Outsourced activities at ELS KYN –**

| Sl. | Type of work | Date of commencement | Total Amount in Rs. | Manpower | Duration |
|---|---|---|---|---|---|
| 1 | Bogie Cleaning | 24.06.2019 | 5346468 | -- | Two Years |
| 2 | TM Cleaning (conv.) | 17.06.2019 | 5251276 | | Two years |
| 3 | Washing and filter Cleaning | 17.06.2019 | 2531285 | | Two years |
| 4 | Maintenance of Shed | ---- | --- | 30 men | Two years |

## *Outsourcing of Rewinding of Auxiliary machine in progress.

**At present the sanctioned strength of Electrical Loco shed Kalyan 1057 staff whereas 700 staff are on Roll, which is deployed in various sections in the Loco Shed**.

As seen above the manpower requirement for maintenance of Electrical Locomotives at Kalyan Loco Shed is calculated to 931 staff including provision for Trainee reserve as per the Yardsticks of Railway Board, further Accident Relief Train and Accident Relief Medical Van is also attached to Loco Shed Kalyan and being classified "B" class ART/ SPART, staff has to be nominated as per guidelines of Railway Board, therefore as per norms 9 staff for ART and 10 Staff for SPART with 02 supervisors are nominated for this purpose, hence 21 additional staff is required as per yardsticks. More ever 62 bankers are also looked after by ELS staff Kalyan and more attention is required for these locos in operation on NE & SE ghat section. The running frequency of these bankers is more than other locos. Hence these locos are moved anytime to ELS for maintenance due working on steep gradient in ghat section frequently application of brakes causes defects in wheel requires wheel skidding. Therefore **10 staff** are kept for this purpose which is found justified.

Therefore, considering the workload and applying the Railway board Yardsticks and provision for other core activities like break down staff, yard staff and staff for banker loco attention etc. Work study team calculated the need base requirement of staff to 931 staff as against sanctioned strength of 1057 staff hence posts are found redundant.

In view of the above, work study team proposed that overall 126 posts may be surrendered.

**Recommendation No.1. Redundant 126 posts need to be surrendered.**

# Chapter 4

## Financial Implications

**4.1.** The financial implications (Tentative) will be as under:

| Sr. No. | Category | Grade | GP | No. of Posts | Annual Money Value per post in Rs. | Annual Money Value Total in Rs. |
|---|---|---|---|---|---|---|
| 1 | Technician | 5200-20200 | 1900 | 126 | 322218 | 4,05,99,468 |

**Note:** The above financial implications are subject to actual surrendering of posts.