CHAPTER II: OPERATION OF SUBURBURN TRAIN SERVICES

Audit objective 1: To assess the operational efficiency in providing adequate suburban train services

The operational efficiency of Indian Railways is depended on the assessment of originating passengers in suburban sections 0and providing suburban train services in these sections due to the fact that bulk numbers of passengers are carried in this segment of operations by the seven zonal railways.

The position of suburban traffic in the seven Zonal Railways *vis-a-vis* total traffic of the Indian Railways is tabulated below:

Table No. 1: Number of passengers (in Crore)

Year	Suburban section	Non- suburban section	Total	Percentage of Suburban traffic with reference to total traffic
1	*2*	*3*	*4*	*5*
2010-11	426	156	582	73.20
2011-12	443	169	612	72.39
2012-13	451	173	624	72.28
2013-14	455	167	622	73.15
2014-15	450	164	614	73.29
TOTAL	2225	829	3054	72.86

Source: Indian Railways Annual Statistical Statement No. 12 of respective years.

During the review period 2010-11 to 2014-15, suburban train services carried 2225 crore passengers which ranged between 72.28 per cent (2012-13) and 73.29 per cent (2014-15) of total passenger traffic of the Indian Railways with respect to non-suburban services during the same period. This was more or less static on an average per cent of 72.86 over the five years under the period of review.

A comparison of average number of suburban train services run per day **(**indicated as **A**) with average number of passengers carried per rake[2] (indicated as **B**) and total suburban passengers carried annually in crore (indicated as **C**) during 2010-11 to 2014-15 in the concerned zonal railways is depicted in the Table No. 2.

[2] ***Ppassengers carried per day in crore / Average number of services run per day***

Table No. 2: Comparison of Number of Trains, Passenger/rake and Passenger carried/Annum

Zonal Railways	Particulars	2010-11	2011-12	2012-13	2013-14	2014-15	Per cent increase in last 5 years
CR	A-Average Trains/day	1446	1464	1484	1533	1519	5
	B-Average Passenger/Rake	2652	2681	2651	2624	2666	1
	C-Passenger carried/Annum	140	143	144	147	148	6
ER	A-Average Trains/day	1196	1274	1309	1327	1336	12
	B-Average Passenger/Rake	2170	2134	2127	2087	2002	-8
	C-Passenger carried/Annum	95	99	102	101	98	3
SCR	A-Average Trains/day	54	103	92	100	96	78
	B-Average Passenger/Rake	2303	1434	1620	1420	1521	-34
	C-Passenger carried/Annum	5	5	5	5	5	0
SER	A-Average Trains/day	79	82	158	168	175	122
	B-Average Passenger/Rake	4037	4106	2229	2235	2139	-47
	C-Passenger carried/Annum	12	12	13	14	14	17
SR	A-Average Trains/day	554	564	569	566	564	2
	B-Average Passenger/Rake	1762	1857	1903	1975	1922	9
	C-Passenger carried/Annum	36	38	40	41	40	11
WR	A-Average Trains/day	1180	1188	1225	1275	1279	8
	B-Average Passenger/Rake	2874	2944	2896	2748	2743	-5
	C-Passenger carried/Annum	124	128	129	128	128	3
MR, Kolkata	A-Average Trains/day	213	231	262	263	268	26
	B-Average Passenger/Rake	2046	1986	1969	2030	1872	-9
	C-Passenger carried/Annum	16	17	19	19	18	13

Source: Monthly Confidential Dem-Official (MCDO)/ Periodical Confidential Demi-Official (PCDO) records

An analysis of average number of suburban train services per day, average number of passenger per rake and suburban passengers carried annually by each concerned zonal railways indicate that there has been substantial increases in services in 2014-15 in comparison with 2010-11. However, there is no uniformity in such increases in train services in inter-zonal comparison. It also can be seen that the passenger per rake has been decreased over the five years by easing the over-crowding situation. In spite of such facts, there has been a marginal increase of passengers over the years ranging between 0 crore (SCR) and 8 crore (CR).

It would be seen from the table above that the suburban train services were not commensurate with the volume of passengers handled by the suburban stations during the period from 2010-11 to 2014-15. It was further observed that:

i. Increase in services ranged between 2 *per cent (SR)* and 122 *per cent (SER)*. In ER and WR, the increase in services was 12 *per cent* and *8 per cent* respectively.

ii. Though there was increase in suburban train services, the number of passengers carried per rake was much higher than the carrying capacity.

iii. Increase in passenger carried (per annum) ranged between 3 *per cent* and 17 *per cent.* However, increase in carrying capacity in CR was about 6 per cent, while in ER and WR this increase was 3 *per cent* during the period 2010-11 to 2014-15.

Overcrowding at Kings Circle station (CR)

iv. In CR and WR, 16 and 30 suburban services with 15 coach Electrical Multiple Unit (EMU) rakes respectively are run to ease overcrowding. However, comparison of the average number of passengers carried per rake with its carrying capacity indicated an average *crush load* of 2510 passengers per rake[3] in CR and WR. As a result, passenger fatalities due to falling from running trains are very high in CR and WR. Analysis of the data (January 2010 to December 2014) of death cases reported by Government Railway Police reveals that out of 33445, 4002 deaths (CR-2741 and WR-1261) occurred due to falling from running trains.

Overcrowding at Malad Station (WR)

This indicated that the number of services is not sufficient to cater the needs of heavy passenger traffic in CR and WR where the figures of deaths of passengers are very high

In Railway Budget, 2011, it was announced that the development of integrated suburban Railway networks in large cities, like, Mumbai bringing together suburban Railway, Metro Railway and other Railway infrastructure under a single integrated system would provide faster, efficient, affordable and conformable transportation to the citizens. This was also announced that enhancement of carrying capacity of suburban services would be taken up in Mumbai area with 47 additional services on different sections of CR and WR, while augmentation of 107 suburban services would be made in Mumbai area from the present 9 car EMUs to 12 Car EMUs. In Chennai area, 9 additional services on different section were proposed. Further, 50 new services in Kolkata suburban area on different sections was also proposed. In Secunderabad area, 10 additional services and 83 suburban services would be augmented from the present 6-car to 9-car services.

Review revealed that in CR and WR, average number of services run per day increased by 18 and 8 services respectively whereas services in Kolkata area were increased by 81 in the same period. In Chennai area 10 additional services were increased while in Secunderabad

[3] ***Crush load is twice the seating capacity of a rake.***

area, no service was increased. Further, all the services on WR were run with 12 car rakes except for one 9 coach rake being run on Harbour line, while 43 nine car rakes were being run on CR.

In Railway Budget, 2012, it was announced that there would be 75 new services on CR and WR on different suburban section in Mumbai area, 18 additional services in Chennai area and 44 new services in Kolkata area on different section. Introduction of 50 new services in Metro Railway, Kolkata in the coming year was also announced.

Review revealed that Average number of services run per day increased by 20 and 37 services on CR and WR respectively during the period. Further, 35 and 76 services increased on ER and SER during the year 2012 respectively.

Thus, IR could not provide adequate number of services commensurate with the rising passenger traffic, leading to overcrowding and death of passengers as discussed in Para 2.3.

2.1 Growth of Traffic - Target *vis-a vis* Achievement

In March 2014, Railway Board for the first time fixed targets for the number of passengers to be carried on the suburban section during 2014-15. Accordingly, the targeted growth in number of passengers was set at 5 *per cent*. Review of the position revealed that during the year 2014-15 none of the Zonal Railway was able to achieve the targeted growth of 5 *per cent*. Achievement of the Zonal Railways was as follows:

Table No. 3: Achievement of Traffic Targets

Zonal Railways	Passenger carried in 2013-14 (crore)	Achievement During 2014-15 (crore)	Achievement of traffic targets (Col. (3-2)X100/col.2) (in per cent)
1	*2*	*3*	*4*
CR	147	148	0.68
ER	101	98	-2.97
SCR	5	5	0.00
SER	14	14	0.00
SR	41	40	-2.43
WR	128	128	0.00
MR, Kolkata	19	18	-5.26
Total	455	451	-0.88

Source: Railway Board circulars regarding targets for traffic to be carried and Indian Railways Annual Statistical Statement.

The above figures indicate that ER, SR and MR, Kolkata registered negative growth. There was no growth on SCR, SER and WR. Further, overall growth in number of passengers in suburban section of the Indian Railways during 2014-15 was also negative as compared to the previous year 2013-14. The number of passenger carried during 2014-15 was one *per cent* less than the previous year.

2.2 Punctuality of Suburban Trains

Citizen's Charter of Indian Railways is a commitment to the citizens to provide safe and dependable train services. Punctuality of suburban trains is an important necessity for the daily commuters who mostly depends on suburban trains services. Punctuality performance

reported by the General Managers of the concerned Zonal Railways to the Railway Board through their Periodical Confidential Demi-official letters revealed that the punctuality target of 95 *per cent* fixed (July 1986) by the Railway Board was achieved by all the Zonal Railways except CR and SR. The details of such facts may be seen from the table 4 as under:-

Table 4: Status of Punctuality of Suburban Trains (in *per cent*)

Zonal Railways	2010-11	2011-12	2012-13	2013-14	2014-15
1	*2*	*3*	*4*	*5*	*6*
CR	95.8	96.1	90.9	88.1	87.1
ER	NA	96.78	96.19	96.55	95.29
SCR	46.5	81.23	90.34	95.86	93.98
SER	94.1	97.7	97.9	98.4	99.1
SR	96.87	87.34	79.82	83.44	82.18
WR	94	96.4	96.3	94.8	95.59
MR, Kolkata	98.42	99.45	99.58	99.66	99.85

Source: MCDOs/PCDOs.

On CR, average monthly punctuality target indicates a steady decline since 2012-13. In case of SR, adherence to punctuality declined from 96.87 *per cent* in 2010-11 to 82.18 *per cent* in 2014-15.

Scrutiny of records revealed that the percentage of late running of services by more than 10 to 15 minutes and by more than 15 minutes was in increasing trend during 2012-15 in CR and SR due to various reasons as shown in the table 5 below:.

Table No. 5: Percentage of trains running late

Zonal Railways	2012-13			2013-14			2014-15		
	6 to 10 minutes late	More than 10 to 15 minutes late	More than 15 minutes late	6 to 10 minutes late	More than 10 to 15 minutes late	More than 15 minutes late	6 to 10 minutes late	More than 10 to 15 minutes late	More than 15 minutes late
CR	3.00	3.00	3.00	5.00	4.00	3.00	3.00	5.00	5.00
SR	10.28	4.95	4.97	7.10	4.22	5.21	7.38	4.42	6.05

Source: MCDOs/PCDOs

The reasons for loss of punctuality are in the table below:

Table No. 6: Number of services and reasons for loss of punctuality during 2010-15

Zonal Railways	Cautious driving	Accidents/ derailments	Signal failures	Unit shortage/ defects	Misc. reasons	Total
1	*2*	*3*	*4*	*5*	*6*	*7*
CR	18160	3580	38188	15980	154158	230066
SR	Nil	465	10149	Nil	16348	26962

Source: Data maintained in the O/o Sr. Divisional Operating Managers in Divisions

Ministry of Railways in their Action Taken Note (December 2006) on Para 2.2 of C&AG's Report No.9 of 2001 stated that they had identified the reasons for punctuality losses as

cautious driving, accidents/derailments, signal failures and Unit shortage/defects etc. However, from the table 4 above, it would be seen that punctuality targets set by the Railway Board were not achieved on CR during the year 2012-15 and on SR during the years 2011-15 citing the same reasons identified and stated earlier.

2.3 Death of passengers in suburban train services

Indian Railways in its Citizen's Charter made a commitment to provide safe and dependable train services to passengers. The report[4] submitted (February 2012) to the Minister of Railways stated that out of the 15000 deaths every year on the Railway system, about 6000 deaths are on Mumbai suburban system only. Such large numbers of deaths were mainly attributed to unlawful trespassing. The report further stated that trespassing takes place mainly on account of lack of barricading, fencing, inadequate number of pedestrian over-bridges and reluctance to replace pedestrian level crossings with foot over bridges (FOBs) etc.

Review of records to ascertain reasons for fatalities in CR, ER, SER, SCR, SR, WR and MR, Kolkata during the period January 2010 to December 2014, out of 33445 deaths, 19868 deaths (59 *per cent*) occurred due to line crossing / trespassing only. 17638 (52.74 *per cent*) death cases occurred in Mumbai suburban sections (both CR and WR) due to various reasons. It may be seen that in ER, 1014 passengers died due to hitting/crashing with poles. While 4885 deaths cases (15 *per cent*) out of 33445 occurred due to falling from running trains, 4002 deaths (82 per cent) occurred in Mumbai suburban section alone as cited below Table 7:

Table No. 7: Reasons for death of passengers

Zonal Railways	Line Crossings/ Trespassing	Fall in platform gap	Falling from running Trains	Death due to hitting/crashing to Poles	Others	Total
1	*2*	*3*	*4*	*5*	*6*	*7*
CR	6181	25	2741	33	2274	11254
ER	6307	167	368	1014	2093	9949
SCR	814	1	48	8	239	1110
SER	1239	80	262	217	736	2534
SR	1616	13	205	6	315	2155
WR	3711	61	1261	41	1310	6384
MR, Kolkata	0	0	0	0	59	59
TOTAL	**19868**	**347**	**4885**	**1319**	**7026**	**33445**

Source: Records and data maintained in the O/o GRP of the concerned Zonal Railway.

Scrutiny of records revealed that fencing between tracks was not provided at seven stations[5] of CR, while at three stations (Kalva, Dombivali and Badlapur), the fencing was partially provided. In WR, fencing between Tracks within station premises to prevent trespassing had not been provided at Mahim, Virar, Kelve Road, Palghar, Boisar and Dahanu Road stations.

[4] ***The report of the High Level Safety Review Committee headed by Dr. Anil Kakodkar***
[5] ***Bhandup, Ambernath, Ulhasnagar, Mulund, Ghatkopar, Vikhroli and Sion***

Further, highest 1117 deaths due to trespassing were reported on Jogeshwari- Dahisar section and 849 deaths on Mira Road- Virar Section. On ER, out of 9949 deaths, 6307 (63.39 *per cent*) deaths were attributed to line crossing/ trespassing as fencing between Tracks within station premises to prevent trespassing had not been provided at 30 out of 40 selected suburban stations of Howrah and Sealdah Divisions.

Scrutiny of records further revealed that there was vast difference between number of deaths reported in Annual Statistical Statement of Indian Railways and the figures reported by the Government Railway Police (GRP). In its Annual Statistical Statement, ER reported 154 deaths during 2010-14. However, GRP reported 7923 deaths during the period 2010 to 2013 in two Divisions (Sealdah and Howrah) of the ER. This shows a mismatch on reporting of deaths by Railway administration to the Railway Board concerning safety issues.

2.3.1 Medical Care for Accident Victims

On Mumbai suburban section, 17638 deaths (CR-11254 and WR-6384) had occurred during the review period (2010-15) as stated in Table 7. While dealing with Public Interest Litigations, Hon'ble Bombay High Court directed Railway administration to take preventive measures to check death of passengers on tracks. It further directed (November 2014) CR and WR to make available ambulances at all Mumbai passengers. Hon'ble Bombay High Court also directed (November 2014) the Railway administration to set up Emergency Medical Rooms at all suburban Stations, similar to "Trauma Care Centre" already set up at Dadar (CR) in March 2011. In response, Railway administration had agreed (December 2014) to setup Emergency Medical Rooms (EMRs) on 15 suburban stations (CR and WR).

Scrutiny of records of 37 selected stations (CR-15 and WR-22) of Mumbai suburban section revealed that ambulance service was not available at 10[6] of these selected stations (CR-6 and WR-4) while, Emergency Medical Rooms had not been provided at any of the Mumbai suburban stations except at Dadar (CR). CR had decided (December 2014) to set up Emergency Medical Rooms (EMR) at eight[7] suburban stations on the Main and Harbour lines within six months. However, EMRs were not set up at any station of CR till September 2015.

It also revealed that First Aid Boxes were available with Station Masters at all selected suburban Railway stations of CR, ER, SCR, SER, SR, WR and Metro Railway, Kolkata except for Kulgachia station of SER. However, physical verification at Garia and Rishra station in ER revealed that some of the medicines were well past their shelf life (expiry date).

Test check of availability of ambulances at 153 selected stations out of 578 suburban stations revealed that ambulance had not been provided at 112 stations (ER-38, SCR-15, SER-20, SR-24 and Metro Railway, Kolkata-15). Further, boards displaying name and telephone numbers

[6] ***Ambernath, Ulhasnagar, Ghatkopar, Badlapur, Chembur, Panvel (CR), Kelve Road, Palghar, Boisar, Dahanu Road (WR).***
[7] ***Kurla, Wadala Road, Vashi, Panvel, Dombivali, Kalyan, Karjat and Thane***

of hospitals were not put up at 19[8] selected stations (ER-1, SCR-15 and SER-3) stations.

2.3.2 Compensation in case of accidents and unusual occurrences

Railway Claims Tribunals have been set up to consider, *inter alia*, compensation claims arising out of the death/injury due to train accidents and other unusual occurrences due to violent attack, robberies, dacoities, rioting, shoot-outs, arson, etc. or accidental falling of any passenger as defined in sections 124 and 124-A of the Railways Act 1989. Such tribunals shall make suitable awards after considering the claims of passenger in this regard. Compensation in case of death or permanent disability is ₹4 lakhs and in case of injuries, the minimum compensation is ₹ 32,000/- and the maximum is ₹ 3, 60,000/- depending upon the gravity of injury.

Review of records pertaining accidental death/injury cases for the period 2010-11 to 2014-15 and the compensation claims settled/rejected by the Railway Claims Tribunals revealed as under :-

Table 8: Compensation claims paid for accidental death/injury in Railway Claims Tribunals during the period from 2010-11 to 2014-15

Zonal Railways	Opening balance as on 1st April 2010	Number of cases registered	Number of cases settled	Number of cases rejected	Number of cases pending	Compensation paid (₹ in crore)
1	*2*	*3*	*4*	*5*	*6*	*7*
CR	2889	4213	1914	565	4623	81.51
ER	2220	2628	694	709	3445	29.34
SCR	72	99	0	0	171	0
SER	289	310	14	17	568	0.48
SR	0	380	231	52	97	8.61
WR	1738	2168	1482	554	1870	61.19
TOTAL	**7208**	**9798**	**4335**	**1897**	**10774**	**181.13**

Source: Records maintained in the O/o CCO of respective Zonal Railways.

2.4 Speed Restrictions

A number of permanent and temporary speed restrictions are imposed every year and several permanent speed restrictions continue for years together due to existence of certain engineering constraints. Speed restrictions result in longer running time of train services thereby reducing availability of path in the heavily congested suburban sections.

The mains reasons for the speed restrictions were identified as follows:

(i) Weak condition of track - 116 - [SR (20), ER (61) and WR (35)],
(ii) Land Encroachment along the Railway tracks – ER (06)
(iii) Level crossing etc. - 250 [CR (125), ER (62), SCR (13), SR (29), SER (3) and WR (1), Metro Railway, Kolkata (17)]

[8] ***Garia (ER), Chandanagar, Hafizpeta,.Hi-tech City, Borabanda, Bharathnagar, Fateh Nagar, Necklace Road, Khiaratabad, Lakdi-ka-pool, Arts College, Vidyanagar, Malakpet, Dabirpura, Yakutpura, Huppuguda (SCR), Andul, Uluberia and Kulgachia (SER)***

(iv) Points and crossings - 23 - [ER (12) and WR (11)] and
(v) Weak Bridges - 7 - [ER (2), SER (3) and WR (2)] etc.

Permanent speed restrictions on suburban section of Indian Railways increased from 384 (2010-11) to 402 (2014-15). There was four *per cent* reduction in the number of permanent speed restrictions on CR, SR and WR and increase in the number of permanent speed restrictions on ER and Metro Railway, Kolkata as indicated in the table 9 below.

Table No. 9: Number of Permanent Speed Restrictions

Railway	2010-11	2011-12	2012-13	2013-14	2014-15
1	*2*	*3*	*4*	*5*	*6*
CR	130	130	135	135	125
ER	117	118	141	138	143
SCR	13	13	13	13	13
SER	6	7	5	7	6
SR	51	51	49	48	49
WR	51	51	51	49	49
MR, Kolkata	16	16	16	16	17
TOTAL	**384**	**386**	**410**	**406**	**402**

Source: Working timetable for suburban sections

The nature of reasons attributed to speed restrictions and their persistence for years indicated that the Indian Railways could not initiate effective remedial measures to withdraw speed restrictions and thus speeding up the suburban train services.

2.4.1 Maintenance of Tracks

Proper maintenance of track is an important factor for smooth suburban train operations as poor condition of track results in imposition of speed restrictions and risk of derailment and consequent losses. During rainy season poor drainage on tracks causes flooding, often leading to delay and or cancellation of trains. Railway Board does not allot funds separately to Zonal Railways for suburban section. As a result, details of utilization of funds for suburban and non-suburban sections are not maintained separately by Zonal Railways. In its 23rd Report, Standing Committee on Railways (2013-14) observed that in absence of budgetary segregation for suburban services, funding of improvement works and achievement of intended benefits could not be measured.

In the minutes of meeting held between Commissioner of Railway Safety and CR authorities in October 2014, it was recorded that major arrears existed in the suburban sections, especially in track attention. Deep screening was not carried out for decades and on a large portion of suburban section there is negligible ballast cushion and possibility of building up embankment does not exist.

Review of records to ascertain status of planning and execution of track related works on suburban sections undertaken during 2010-11 to 2014-15 revealed that:

Central Railway

The targets fixed for execution of track renewal works as well as other track related works connected with the improvement in the condition of track in the suburban sections during 2010-11 to 2014-15 were not achieved in most of the works. The shortfall ranged from 10.14 to 97.00 *per cent*. Detailed analysis of the target vis-à-vis achievement in respect of major works revealed that during the review period, as against the target of 383.61 kms of Complete Track Renewal works (primary and secondary), the achievement was only 258.02 km leaving a shortfall of 125.59 km (32.74 *per cent*) during 2010-11 to 2014-15. Similarly in respect of Through Rail Renewal works, as against the target of 388.18 km, the achievement was only 260.80 km leaving a shortfall of 127.38 km (32.81 *per cent*). In respect of Through Sleeper Renewal works, as against the target of 379.01 km, the achievement was only 244.86 km leaving a shortfall of 134.15 km (35.39 *per cent*).

In the enquiry report on derailment of a suburban train at Titwala station in March 2014, the Commissioner of Railway Safety stated that the speeding train derailed due to poor track maintenance and breakage of couplers that connect coaches. Further, in June 2015, it was reported that a deep crater formed in between two railway tracks on the Kalyan- Ambernath section which was detected in the early morning led to cancellation of a few suburban services besides delay of several trains.

South Eastern Railway

The targets fixed for execution of track related works on suburban section were not achieved except in respect of supply of ballast. The shortfall ranged from 15 to 59 *per cent* during the review period. Further, it was observed that Zonal administration did not maintain details of allotment and utilization of funds for suburban and non-suburban sections separately during 2010-11 to 2014-15.

Metro Railway, Kolkata

Thirteen works were completed at a cost ₹ 37.93 crore against the initial sanctioned cost of ₹ 32.33 crore involving cost overrun of ₹ 5.60 crore and time overrun which ranged between 3 months and 27 months.

Western Railway

Target fixed for Through Sleeper Renewal was not achieved in the year 2010-11, 2011-12, 2012-13 and 2014-15.Overall Through Sleeper Renewal was carried out on 5.86 Kms against a target of 7.40 Kms during the review period.

Through Fittings Renewal targets ranged between 30 km to 50 km during 2010-11 to 2014-15, but actual work done was 19.42 km and 29.68 km. In the years 2010-11 and 2011-12 no Through Fittings Renewal work had been carried out.

Targets for Through Weld Renewal had not been fixed since April 2012, and available data did not reveal any work having been carried out on this account. During this period 2013-2015, 70 cases of weld failures had been reported.

As against the target for 80 Cum/km (2010-11), 60 Cum/km (2011-12), 50 Cum/km (2012-13) and 30 Cum/ km (2014-15), of ballast recoupment, the achievement was 33.65, 26.94, 37.06 and 24.22 Cum/km. Overall against a target of 245 Cum/km achievement was 153.32 Cum/km.

The consolidated Budget grant and expenditure pertaining to Plan Head 31 i.e. Track renewal was maintained for Mumbai Central Division. Further, it was also observed that in the years 2010-11, 2011-12 and 2014-15, funds allotted were not fully utilized as evident from savings of ₹7 crore, ₹16.98 crore and ₹1.12 crore respectively reported during these years.

Non-achievement of the targets set for track related works on the suburban section of all the Zonal Railways indicate that Indian Railways could not monitor the on-going works which led to deficiencies in track maintenance affecting punctuality and safe operations of suburban services as discussed in Para 2.3.

2.4.2 Land Encroachment

Railway Board decided (November 2002) that the term "safety zone" in the context of removal of encroachments along the track for areas coming under Mumbai Urban Transport Project will be "land within 10 metres on either side of the centre line of the extreme future track". There are a large number of locations on the suburban sections where hutments have encroached upon Railway land. At many locations these hutments were close to the running lines or along the Railway track hampering smooth operation of services due to speed restrictions, accumulation of garbage and drainage problems etc. Land encroachment on suburban sections as on 31 March 2015 is indicated in the table below:

Table No. 10: Encroachments on suburban section as on 31 March 2015

Zonal Railways	Number of encroachments	Encroachments within safety Zone
1	*2*	*3*
CR	13849	NMA
ER	42380	35201
SCR	NMA*	NMA
SER	3384	411
SR	806	242
WR	2347	152

Source: Records maintained in the respective Divisions of concerned Zonal Railways *Not made available to Audit

Failure on the part of the Railway administration to protect their land from encroachments had resulted in imposition of speed restrictions and consequential delay in train operations as discussed in Para 2.4 and 2.2.

In their Action Taken Note (December 2006) on Para 2.2 of C&AG, Report No.9 of 2001, Ministry of Railways stated that encroachments within the safety zone had been removed in Mumbai suburban section of WR. However, the fact remained that there were 152 encroachments in safety zone till March 2015. The Railway Act does not permit rehabilitation of the hutment dwellers that have encroached upon Railway land. As a result of this, removal of encroachers was often delayed. In Mumbai, it was observed that Mumbai Railway Vikas Corporation had undertaken rehabilitation of the 2839 project affected

households who had encroached upon Railway land required for development of suburban Railway infrastructure at an sanctioned cost of ₹ 124 crore. Till March 2015, ₹ 18.90 crore had been incurred for this purpose.

2.4.3 Level Crossings

Level Crossings pose a serious challenge to operation of safe, reliable and efficient train services. Existence of a large number of level crossings adversely affects smooth operations and punctuality of suburban train services. The task of elimination of Level Crossings is a collective responsibility of Railways and State Governments concerned. Further, Vision 2020 document of Indian Railways (December 2009) had observed that nearly 70 *per cent* of the fatalities in Railway mishaps took place at unmanned level crossings and therefore, envisaged elimination of Unmanned Level Crossings by March 2015.

Scrutiny of records, however, revealed that during the review period 2010-15,out of 922 Level Crossings as on 31/03/2010 on the suburban sections of six Zonal Railways, 908 Level Crossings were not closed [CR- 47, ER-653, SCR-3, SER- 127 (66 manned and 61 unmanned), SR- 58 (55 manned and 3 unmanned) and WR-20]. To eliminate the level crossings, work on 139 Road over bridges (ROBs)/ Road under bridges (RUBs) had been taken up between 1997-98 and 2014-15 at an estimated cost of ₹3879.93 crore, out of these, only 14 ROBs/RUBs were completed during 2010-15.

Review of physical progress of 34 works pertaining to construction of these ROBs/RUBs in lieu of LCs revealed following:

Table No. 11: Physical progress of ROBs/RUBs

No. of works	Physical Progress	Remarks
15	NIL	Works were sanctioned during 2004-05 to 2011-12
7	5 -20 per cent	
3	50-60 per cent	
9	100 per cent	Six ROB/RUBs were commissioned while in three works, railway portion of the work were completed.

Source: Records maintained in the respective Zonal Railways.

Thus, Indian Railways could not achieve the target of elimination of level crossings as envisaged in the Vision 2020 documents. Besides, tardy progress of bridge works for elimination of level crossings indicated lack of concern of IR in minimising accidents at level crossings.

2.5 Status of Rolling Stock

2.5.1 Holding of Electrical Multiple Units (EMU)

An Electric Multiple Unit (EMU) is a train consisting of self-propelled carriages, using electricity as the motive power. The holding of 5249 EMU coaches as on 1 April 2010 had

increased to 6424 as on 31 March 2015 in the seven Zonal Railways[9] registering an increase of 22.39 *per cent* in five years. The average number of coaches in use ranged between 85.99 *per cent* (2012-13) and 87.20 *per cent* (2011-12) as detailed below Table No 12:

Table No. 12:-Year-wise stock of EMU

Period	Holding of coaches in the beginning of year	Addition during the year	Condemnation during the year	Number of coaches available for use	Average number of coaches in use	Percentage of usage (Col.6 to Col.4)
1	*2*	*3*	*4*	*5*	*6*	*7*
2010-11	5249	607	149	5707	4967	87.03
2011-12	5707	457	115	6049	5275	87.20
2012-13	6049	377	61	6365	5473	85.99
2013-14	6365	196	177	6384	5504	86.22
2014-15	6384	96	56	6424	5596	87.11
TOTAL		1733	558			

Source: Records maintained in the respective Zonal Railways

From the table above, it would be seen that utilisation of coaches during 2010-15 was around 87 *per cent.* The total holding of EMU coaches had witnessed an overall year on year increase during the review period on all the Zonal Railways except WR. Further, total holding as on 1st April 2014 (1195) had declined when compared to the holding on 1st April 2011 (1281) on WR. As a result of this, sufficient number of new services could not be introduced, as the overall increase in new services was only 7.5 *per cent* during the same period.

Railway Board in their reply (April 2016) stated that efforts are being made by Zonal Railways to reduce ineffective percentage of EMU stock. The reply is not tenable in view of percentage usage of EMU stock remained the almost the same during the 2010-11 to 2014-15.

Further comparison of coach holding with the number of train services run in the Zonal Railways revealed that the ratio of train services to coach holding on 1st April 2010 was in decreasing trend except on SCR and SER when compared with the corresponding ratio on 1st April 2015 as indicated in the table 13.

[9] ***CR, ER, SCR, SER, SR, WR and Metro Rail, Kolkata***

Table No. 13: Ratio of availability of suburban train services to coach holding

Zonal Railways	Coach holding	Services	Ratio of services to coach holding	Coach holding	Services	Ratio of services to coach holding
	As on 1st April 2010			As on 1st April 2015		
1	*2*	*3*	*4*	*5*	*6*	*7*
CR	1538	1446	0.94	1798	1519	0.84
ER	1452	1196	0.82	1928	1336	0.69
SCR	60	54	0.90	96	96	1
SER	280	79	0.28	347	175	0.50
SR	701	554	0.79	820	564	0.69
WR	1074	1180	1.09	1187	1279	1.08
MR, Kolkata	144	213	1.47	248	268	1.08

Source: Records maintained in the respective Zonal Railways

Further, it was observed that the ineffective percentage of EMU coaches in terms of 9 car rakes was more than the permissible percentage of 11.5 *per cent* fixed (March 2004) by the Railway Board. It was more than 12 *per cent* during the period 2010-11 to 2012-13 on CR while it was under permissible limit on WR except in 2010-11. On ER, it was 13.64 *per cent* in 2010-11, 13.35 *per cent* in 2012-13 and 12.12 *per cent* in 2013-14. This was attributed to mixed holding of 9 car, 10 car and 12 car rakes. On Metro Railway, Kolkata the ineffective percentage of coaches in terms of 8 car rake was 10 *per cent*, for the year 2010-11, 21.74 *per cent* for the year 2011-12, 33.33 *per cent* for the year 2012-13, 22.22 *per cent* for 2013-14 and 22.22 *per cent* for the year 2014-15 which was attributed to over-aged coaches.

The ineffective percentage of EMU coaches indicate that Ministry of Railways failed in ensuring optimum utilization of the available stock and ensuring availability of train services.

2.5.2 Delay in commissioning of coaches

Every year, Zonal Railways project their requirements for rolling stock based on which allotments are made. After allotment and receipt of Mainline Electric Multiple Unit/Diesel Electric Multiple Unit coaches by zones, the same are sent to car shed/maintenance depots for testing of equipment, conducting trial runs. Simultaneously, Operating Department plans and notifies the schedule for introduction of services. Though no time limit was prescribed by the Railway Board for pre-testing before induction of trains/coaches, a time limit of 30 days from the date of their receipt was assessed as adequate by audit for pre-testing and commissioning of new coaches. On many occasions, delays were noticed due to reasons such as receipt of coaches with defects requiring rectification. New EMU rakes received from Production Units are required to be put into service as early as possible.

Details of new EMU rakes received and their commissioning/put into service on Zonal Railways was as shown in Table No. 14:-

Table No. 14: Delay in commissioning of EMU coaches during 2010-15

Zonal Railways	Number of new coaches received	Number of coaches delayed for commissioning	Delay in commissioning in number of days (after allowing 30 days)	Number of Coach days lost	Loss of potential earning capacity (₹ in crore)
1	*2*	*3*	*4*	*5*	*6*
CR	156	12	3 days	36	0.03
ER	645	285	1-627 days	22524	18.20
SCR	36	0	0	0	0
SER	32	05	26-94 days	255	0.76
SR	54	44	4-126 days	2108	1.21
WR	492	324	7-488 days	12156	11.14
MR, Kolkata	104	72	1-114 days	1912	0.95
TOTAL	1519	742	1- 627 days	38991	32.29

Source: Records maintained in the respective Zonal Railways

From the table above, it would be seen that there were considerable delay in commissioning of EMU coaches in ER and WR which led to loss of coach-days and consequential loss of earning capacity amounting to ₹ 32.29 crore. Railway Board had not specified any time limit for commissioning of rakes. The reasons for the delay were as follows:

i. Due to modification of modular Traction Fittings (TF) fixing arrangement by firm which required redesigning and approval by Research Development & Standards Organization (delay occurred for 627 days), development of stabling facilities of 12 car (delay up to 340 days) and Grab handle replacement by firm (delay up to 306 days) (ER).

ii. Delay in Commissioner of Railway Safety approval for Bombardier make rakes (WR).

Railway Board in their reply (April 2016) stated that sometimes commissioning of rakes get delayed because of Inspection Report issues including sanction of additional staff etc. Further the Board stated that pre-dispatch quality checks has been strengthened by Production Units and this will reduce time taken in commissioning of new rakes. The reply is not tenable as there is no prescribed time period within which a new rake should be commissioned. Hence, there is no standard against which time taken for commissioning can be measured.

2.5.3 Periodical Overhaul (POH)

Railway Board fixes the POH target for Electric Multiple Unit (EMU) coaches every year under the 'POH programme' for workshops. POH of EMU coaches is being carried out at nine workshops, one each on CR, SCR, SER, WR and Metro Railway, Kolkata and two each on ER and SR. EMU coaches are given POH at an interval of 18 months on CR, ER, SCR,

SER, SR and WR and 36 months or 3 lakh km. whichever is earlier on Metro Railway, Kolkata. As shown in Table No. 15.

Table No. 15:- Periodical Overhaul Capacity of workshop and Actual Out-turn

Zonal Railways	Particulars	2010-11	2011-12	2012-13	2013-14	2014-15
1	*2*	*3*	*4*	*5*	*6*	*7*
CR	POH Capacity	624	624	624	624	624
	Targets/Requirements	714	658	780	995	948
	POH done	700	711	877	936	948
ER	POH Capacity	1080	1080	1080	1080	1080
	Targets/Requirements	993	1008	1073	1207	1332
	POH done	993	1008	1073	1207	1332
SCR	POH Capacity	--	--	--	--	--
	Targets/Requirements	--	--	--	--	--
	POH done	37	37	70	52	66
SER	POH Capacity	272	270	288	290	294
	Targets/Requirements	216	225	225	336	315
	POH done	200	199	233	254	282
SR	POH Capacity	453	489	459	453	459
	Targets/Requirements	453	489	459	468	462
	POH done	453	489	459	450	459
WR	POH Capacity	660	660	660	660	660
	Targets/Requirements	596	476	710	720	720
	POH done	592	461	725	693	716
Metro Railway, Kolkata	POH Capacity	48	48	48	48	48
	Targets/Requirements	48	72	48	24	24
	POH done	40	48	48	24	24

Source: Records maintained in respective Divisions of the concerned Zonal Railways.

From the table above, it would be seen that the number of coaches overhauled was more than the installed capacity in WR, ER, SCR and CR. Though, the actual out-turn of POH of coaches per annum was more than the capacity of the workshops, it was less than the requirement on WR in 2012-13, on CR in 2010-11 and SR in 2013-14 and 2014-15. Further, on ER the actual out-turn of POH of coaches was less than the capacity of the workshop during 2010-11 to 2012-13 and it was more than the capacity in 2013-14 and 2014-15.

2.5.4 Detention of EMU coaches beyond permissible limit in workshops/car sheds

As per Railway Board's directives[10] (August 2008), all POH activities for an EMU coach are to be completed within a period of 12-16 days and 25 days for coaches running on Metro

[10] ***Railway Board's letter no. 95/Elec(G)/181/9/EMU Dated 28/08/2008 regarding maintenance schedules for AC/DC Rakes***

Rail, Kolkata. Detention of EMU coaches beyond permissible time for POH on CR, SER, ER, SCR, SR, WR and Metro Railway, Kolkata during 2010-15 was as shown in Table 16:

Table No. 16:- Detention of EMU coaches beyond permissible limit

Zonal Railways	Number of coaches POH made	Number of coaches detained beyond permissible time	Detention periods ranging between	Number of coach days lost.	Potential loss of earning capacity. (₹ in crore.)
1	*2*	*3*	*4*	*5*	*6*
CR	4172	1917	1 to 27 days	9048	8.17
ER	5613	4398	5 to 91 days	96340	72.41
SCR	262	0	0	0	0
SER	1168	772	2 to 39 days	2901	2.63
SR	2310	380	1 to 76 days	2194	1.56
WR	3187	1320	1 to 33 days	4155	9.62
MR, Kolkata	184	184	1 to 90 day	5896	12.17
TOTAL	**16896**	**8971**	**1-91 days**	**120534**	**106.56**

Source: MCDOs/PCDOs.

Review of records to ascertain compliance of the orders in this regard revealed that in seven Zonal Railways, EMU/Metro coaches were detained in workshops beyond the permissible period. This had resulted in non- availability of coaches for service for period ranging between 1 to 91days and loss of earning capacity ₹ 106.56 crore during the period of review.

2.5.5 Failure within 100 days of Periodical Overhaul (POH)

Monitoring of the quality of POH activities is essential to ensure that all deficiencies in the coaches are attended to before the coach is put into service. Review of records, however, revealed that out of 16896 coaches which underwent POH during 2010-15, 5160 coaches reported sick within 100 days of POH. It was observed that 1529 coaches (29.63 *per cent*) failed within 10 days of their POH which included 566 coaches (37 *per cent*) in WR alone as detailed below.

Table No. 17-Details of coaches marked sick within 100 days of POH

Zonal Railways	Number of coaches given POH	Number of coaches sick within 100 days of POH	Number of coaches failed/ mark sick within 10 days of POH
1	*2*	*3*	*4*
CR	4172	1462	392
ER	5613	1940	527
SCR	262	0	0
SER	1168	148	44
SR	2310	0	0
WR	3187	1610	566
MR, Kolkata	184	0	0
Total	**16896**	**5160**	**1529**

Source: Records maintained in workshops of the concerned Zonal Railways

Failure of coaches within 100 days of POH revealed that POH carried out in workshops on CR, ER and WR was not upto the mark due to poor workmanship. This fact was also reinforced by the complaints (CR-200, ER-150 and WR-566) lodged by passengers regarding defective, deficient facilities/ amenities during journey in suburban trains and passenger feedback obtained in this regard. Further, Ministry of Railways in its Action Taken Note (December 2006) to the Audit Para 2.2 of C&AG, Report No.9 of 2001 had stated that to arrest the trend of coaches being rendered defective within 100 days of POH, line trials would be conducted immediately after turnout from workshop. However, the extent of failure (31 *per cent*) within 100 days of POH indicated that the steps taken by the Indian Railway administration were not adequate.

2.5.6 Electrical Multiple Unit (EMU) Coaches overdue for condemnation

As per Paragraph 219 of Indian Railway Finance Code Volume I and Railway Board's guidelines (May 2006), the codal life of EMU coaches is 25 years. Scrutiny of records revealed that there were no over aged EMU coaches running as on 31st March 2015 in SCR, SER, SR and WR. In the remaining three Zonal Railways, 243 coaches (138 Motor coaches and 105 trailer coaches) equivalent to about 20 rakes of 12 coaches each had outlived their codal life till March 2015. Age-wise break up of over aged EMU coaches is indicated in the table below:-

Table No. 18: Number of over-aged coaches

Age of coaches	CR	ER	MR, Kolkata	TOTAL
1	*2*	*3*	*4*	*5*
More than 25 years but less than 30 years	128	32	48	208
More than 30 years	32	3	0	35
TOTAL	**160**	**35**	**48**	**243**

Source: Records maintained in concerned Zonal Railways

Out of 243 over aged coaches still in service, 160 were being used on CR (65.84 *per cent*), 35 on ER (14.40 *per cent*) and 48 on Metro Railway, Kolkata (19.75 *per cent*). As on 31st March 2015, 35 coaches (CR- 32 and ER-3) aged over 30 years were in use.

2.6 Infrastructure Augmentation

2.6.1 Status of work taken up in suburban section

Timely execution of passenger amenities and capacity augmentation works are essential for smooth operation of suburban services. In the absence of separate allotment of funds for suburban section, status of execution of works[11] such as Traffic facility works, Road safety works-Level crossings, Track renewal works and passenger amenities works carried out on the suburban sections of seven Zonal Railways during 2010-15 was reviewed.

[11] ***Plan Heads 16 – Traffic facility works, 29-Road safety works-Level crossing, 30-ROB/RUB, 31-Track renewal works, 53-passenger amenities work and 64-other specific works for improvement/ enhancement***

It was observed that there were 743 works in progress as on 31/03/2015 on five Zonal Railways (CR, ER, SR, WR and Metro Railway, Kolkata). Review of progress of 204 selected works undertaken during 2010-15 revealed time overrun ranging between 1month and 69 months in respect of 106 works and cost overrun of ₹ 56.21 crore in respect of 51 works such as Traffic facility works, Road safety works-level crossings, Road over bridge (ROB)/ Road under bridge (RUB), Track renewal works and other Passenger amenities works as detailed below:

Table No.19: Cost and Time overrun

Zonal Railways	No. of Works test checked	No. of works involving Time over run	Time over-run in months	No. of works involving Cost over run	Cost over-run (₹ in crore)
1	*2*	*3*	*4*	*5*	*6*
CR	43	26	1-69	13	31.79
ER	48	18	2-54	10	7.68
SCR	02	02	15-19	02	2.78
SER	41	29	03-45	17	3.89
SR	35	02	12-14	02	0
WR	21	21	03-22	04	7.29
MR, Kolkata	14	08	15-19	03	2.78
TOTAL	**204**	**106**		**51**	**56.21**

Source: Records of the O/o Sr. DEN of the respective years in concerned zones

Review of the status of works in CR revealed that out of 43 works undertaken on Mumbai suburban, there was time over run in respect of 26 works ranging from one month to 69 months as compared to the original target date of completion. In six works, though the completion period was over, these works remained incomplete. In 13 works, there was cost over-run ranging between ₹2.87 lakh (108.70 *per cent*) to ₹23.81 crore (191.07 *per cent*) as compared to the initial estimated cost.

Thus, the Ministry of Railways failed to provide adequate funds for execution of works on suburban section to bring about improvement in infrastructure and better passenger amenities.

2.6.2 Training to staff dealing with suburban passengers (Customer Care Centre)

Since the Railway staff at ticket counters is the primary contact for a passenger availing Railway services, Ministry of Railways was questioned about the training imparted to these frontline staff. In their reply to the Standing Committee on Railways (2012-13) Fifteenth Lok Sabha, 19th Report, Ministry of Railways informed that all staff handling ticket booking windows at Unreserved Ticketing System and Passenger Reservation System had been imparted technical training. Professional training relating to commercial rules is also imparted to the staff at the time of induction. In addition, front line staff is also imparted customer care training at Customer Care Institute, Kishanganj, Delhi besides the Zonal Training Centre.

Review of records revealed that only 483 booking staff (Passenger Reservation System and Unreserved Ticketing System) i.e. only 6.35 *per cent* of 7601 staff on roll in suburban section of Zonal Railways had been imparted training during the review period. The remaining 7118 staff members are still to be sent for customer care training. On SCR, SER, SR and Metro Railway, Kolkata training had not been imparted to any of the booking staff on Roll as on 31st March 2015.

2.6.3 Procurement and utilization of Simulators for training of running staff (Motor man/Guard)

Six numbers of Simulators for Electric Multiple Units (EMU) were planned for procurement under Plan Head –Machine and Plant/capital with the time frame 2009-10 as per Corporate Safety Plan 2003-2013 for training of drivers to equip them with better capability and reflexes.

Review of records revealed that simulator was yet to be procured by any Zonal Railway. However, one Simulator at an anticipated cost of ₹8.75 crore was planned for procurement during 2009-10 on WR. The process for procurement was initiated by COFMOW, New Delhi in November 2011, tender finalized and work order issued in June 2014. In the absence of Simulators various training courses were conducted for Motormen and Guards at Zonal Electrical Training Centre, Mahalaxmi involving Refresher course for 635 motormen and special training to 187 Guards for Siemens rakes during the period 2010-11 to 2013-14.

No EMU simulator has been procured so far (August 2015) for suburban sections of Zonal Railways. As a result, the aim of equipping the Motormen/Guards with better capability and reflexes as envisaged in Corporate Safety Plan 2003-13 could not be achieved.