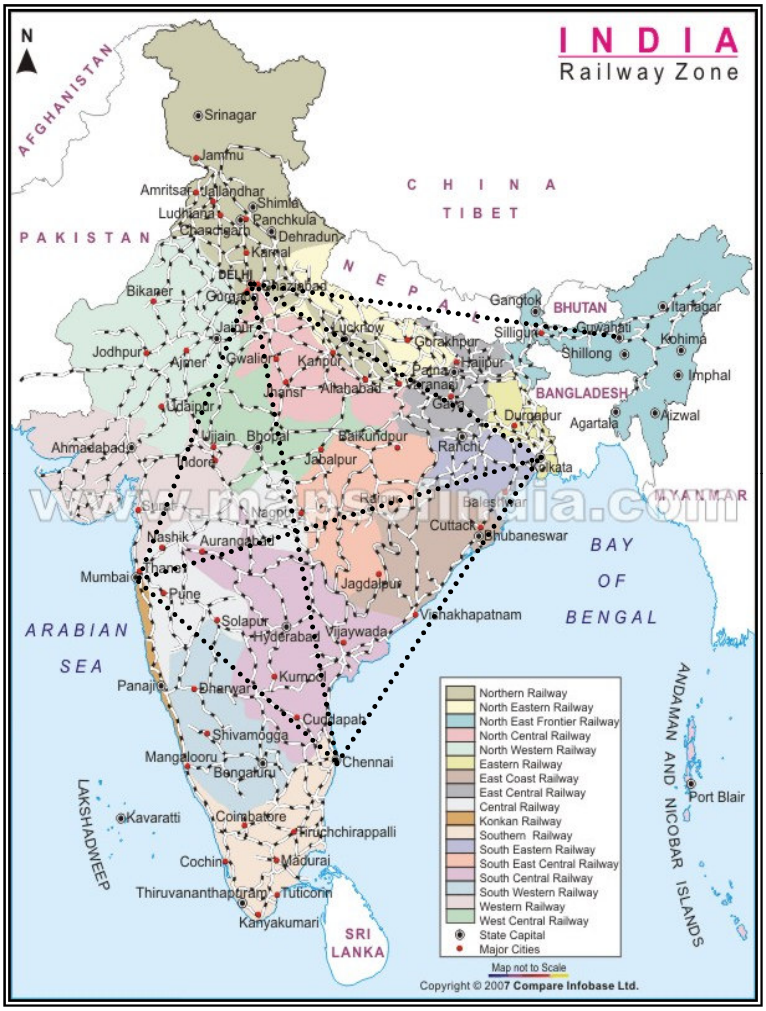
BLUE PRINT

FOR THROUGHPUT ENHANCEMENT WORKS

ON HDN ROUTES



PLANNING DIRECTORATE

RAILWAY BOARD

AUGUST 2007

Preface

Indian Railways have recorded an unprecedented incremental growth in freight traffic of 126 million tonnes in the last two years and have expectedly set an ambitious target of achieving a loading of 1100 million tonnes in the terminal year of the XI plan. The momentum must be sustained if Indian Railways has to meet the transport requirements of a booming economy like ours. However, IR faces severe capacity constraints on all its busy routes. The danger signals have been recognized and as far back as 2005-06, an exercise was undertaken to identify such high density routes where capacity augmentation would need to be undertaken on priority. The following routes were identified:

(i) Delhi-Howrah along with the alternative "B" route on Northern Railway and its extension towards Shakurbasti-Bhatinda-Suratgarh and Andal-Sainthia for the coal routes.

(ii) Mumbai-Howrah along with the link route of Bilaspur-Anuppur-Katni-Bina-Kota and Jalgaon-Surat.

(iii) Delhi-Mumbai via Kota-Ratlam including alternative route of Delhi-Rewari-Phulera-Ajmer-Chittorgarh and Gandhidham-Palanpur-Bhildi-Samdari-Jodhpur-Bhatinda and Panvel-JNPT.

(iv) Delhi-Guwahati via Moradabad –Sitapur-Bhurwal-Gonda-Gorakhpur-Chhapra-Barauni-Katihar.

(v) Delhi-Chennai via Jhansi-Bhopal-Itarsi-Nagpur-Ballarshah.

(vi) Howrah-Chennai along with alternative route via Jharsuguda-Sambalpur-Titlagarh-Vizianagram including 3rd line between Vizianagram and Kotavalasa and 4th line between Kotavalasa and Simhachalam North.

(vii) Mumbai-Chennai along with link route Guntakal-Hospet-Hubli-Vasco(iron ore circuit).

2. The aforesaid routes accounted for about 25% of IR's total route kilometers and 70% of the total freight GMT carried by it. The above mentioned 7 identified routes included all the 6 routes of Golden Quadrilateral and its Diagonals, high- density feeder/alternative routes associated with them and, additionally, the Delhi-Guwahati trunk route.

3. Subsequently, it was brought out that capacity augmentation on the following links/feeder routes would also be necessary in the context of serving major, high-

density freight traffic streams on end-to-end basis, facilitating high-speed passenger train operations on existing routes and improving rail-share in the freight business segment.

(i) Bhopal-Ujjain-Nagda (Mumbai-Howrah route)
(ii) Katni-Singrauli(Mumbai-Howrah route)
(iii) Guntakal-Vijayawada (Mumbai-Chennai)
(iv) Shakurbasti-Ambala(Delhi-Howrah route)
(v) Patratu-Garhwa Road-Sonnagar(Delhi-Howrah route)
(vi) Ajmer-Ahmedabad-Vadodara via Palanpur (Mumbai-Delhi route)

4. The integrated routes account for about 28% of the total IR route kilometers and 76% of the total freight GMT (71% of the total passenger plus freight GMT).

5. For formulating the capacity enhancement strategy and prioritizing the works on corridors other than Delhi-Howrah and Delhi-Mumbai the following concerns regarding growth patterns of major commodities like coal and steel have also been addressed. Some of the links proposed for strengthening in the current exercise will also enhance port connectivity.

Coal

6. More than 70% of the proven coal reserves are concentrated in Jharkhand, Chattisgarh and Orissa, served by the Karanpura, Korba, Ib Valley and the Talcher fields respectively. The proposed Delhi-Howrah dedicated freight corridor would address issues concerning the evacuation of coal from the Karanpura coalfields. Korba would be feeding demand centers in the States of Chattisgarh, Madhya Pradesh, Maharashtra, Gujarat, Rajasthan, Delhi, Haryana and Punjab and would, therefore, require strengthening of the associated stretches of the Howrah-Mumbai and the Delhi-Mumbai via Bhopal-Jhansi trunk routes. Similarly, coal traffic from IB Valley and Talcher (for serving demand centers locally in the States of Orissa and Chattisgarh and distantly in Andhra Pradesh, Karnataka and Tamil Nadu) would mandate capacity augmentation on the associated stretches of the Howrah-Chennai trunk route as well as alternative/link routes like Jharsuguda-Titlagarh-Vizianagram, Talcher-Cuttack-Paradeep, etc.

7. The Planning Commission has projected a demand – supply gap of about 95 million tones of coal by the terminal year of the 11th Plan. If this gap is to be fully or partially met through imports, rail connectivity to

gateway ports like Haldia (for serving demand centres in West Bengal and Jharkhand), Paradeep (for Orissa, West Bengal and Jharkhand), Visakhapatnam(for Andhra Pradesh, Orissa, Chattisgarh), Ennore (for Tamil Nadu, Karnataka and Andhra Pradesh) and ports on the Gujarat coast (for Gujarat, Maharashtra, and the hinterland of Rajasthan, Delhi, Western Up, Haryana and Punjab) would need strengthening.

Steel

8. Faced with buoyant demand, the steel industry has impressive plans for expansion of production capacity both at existing plant locations as well as through the setting up of new plants. This entails a priority for the strengthening of rail linkages between the raw material (primarily iron ore and fluxes) sources and the steel plants. Iron ore reserves are predominantly concentrated in Bailladila, Dongaposi and Bellary-Hospet areas.

9. In case of steel plants such as Bhilai, Rourkela, Bokaro and Tata Steel, the strengthening of Howrah-Mumbai trunk route, including cross-links like Bandamunda-Kiriburu, Bandamunda-Hatia-Bokarao, Dongaposi-Rajkharasawan etc and the new line between Dallirajhara-Jagdalpur assume special significance. For these steel plants, the traffic flow of fluxes from Ahiwara, Satna and Jaisalmer areas could entail the strengthening of routes such as Kota-Ruthiyai-Bina. In case of imported fluxes, the connectivity to Haldia and Paradeep ports, as in the case of imported coal, would need attention.

10. In case of Vizag Steel, its linkage with the Bailladila iron ore mines through the K-K line would need strengthening. Similarly, the issues of capacity on the Guntakal-Hospet-Goa route assume criticality in the context of (a) JSW/Tornagallu, and (b) evacuation of iron ore from Bellary-Hospet region for export in case of sustained demand beyond 2006-07. In fact, the linkages of this region would require strengthening with the ports of New Mangalore, Chennai/Ennore/Krishnapatnam as well as Kakinada/Visakhapatnam also.

11. Finally, in case of proposals or new steel plants in Daitari area fructify, the extent and modality of capacity being created on the new Daitari-Banspani and Haridaspur-Paradeep rail lines would gain significance.

Containers

12. Substantial growth in EXIM container traffic is anticipated at the Nava Sheva(JNPT) and the Gujarat Ports. Except for that which is going to originate/be consumed in the vicinity of these ports, the lion's share of the balance traffic will call into

question the adequacy of rail linkages with the northern hinterland.

13. Based on the aforesaid view of major growth areas, the following prioritization of routes for systemic capacity augmentation has been conceived.

(i) On the Mumbai-Howrah trunk route, capacity augmentation especially on Tatanagar-Jharsuguda-Nagpur-Jalgaon section and on its cross-links including Jalgaon-Surat, Bondamunda-Kiriburu, Bandamunda-Hatia-Bokara, Dongaposi-Rajkharaswan, Bilaspur-Anuppur-Katni, Katni-Singrauli.

(ii) On the Mumbai-Chennai trunk route, augmentataion of capacity especially on Wadi-Guntakal-Chennai sections, its critical cross-link viz. Vijayawada-Guntakal-Hospet-Hubli-Vasco and the linkage of Bellary-Hospet area with New Mangalore port via Rayadurg-Chitradurg(new line)-Chikjajur-Arsikere.

(iii) On the Delhi-Chennai trunk route, augmentation of capacity on saturated sections like Jhansi-Bina-Bhopal and Nagpur-Wardha-Balharsha-Kazipet and its linkage with the Mumbai-Delhi(via Kota) trunk route via Bhopal-Ujjain-Nagda and Bina-Ruthiyai-Kota.

(iv) On the Delhi-Guwahati trunk route, augmenting capacity on saturated sections like Sitapur-Bhurwal, Bhatni-Chhapra, Barauni-Kantihar-Kumedpur-Fakragram, etc.

(v) On the Howrah-Chennai trunk route, creation of requisite capacity on Barang-Khurda Road-Palasa-Vizianagram sections and its linkage with the Mumbai-Howrah route via Jharsuguda-Titlagarh-Vizianagaram, Sambalpur-Talcher-Cuttack-Paradeep, etc.

The current exercise viz., **"THE HDN BLUE PRINT"** seeks to identify critical bottlenecks and ways to redress the same. The investments suggested would yield consistent benefits towards achieving the targets for XI plan and beyond.

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Executive Summary

MR vide his note – Planning 2007/PL/25/1 dated 8-05-2007, had directed the Board to finalize a blueprint for throughput enhancement and capacity augmentation works on HDN. While directing the above, MR also mandated that all these works including freight loading terminal works on HDN are sanctioned either in the supplementary budgets or latest by the main budget for 2008-09.

Background :

The XI plan document of the Indian Railways has projected freight traffic of 1100 Million tons in the terminal year 2011-12. The commodity-wise traffic projections for the terminal year of XI Plan i.e. 2011-12 and the corresponding actuals for the terminal year of X Plan i.e. 2006-07 are shown below:

Originating tonnage (In Million tons)		
Commodity	**2006-07**	**2011-12**
Coal	310	400
Cement	65	135
Iron Ore for Export	52	75
Iron Ore for Steel Plants	62	110
POL	33	35
Fertilizer	36	50
Finished Steel	19	40
Food grains	46	60
Others incl. Containers	103	205
Total	**726**	**1110**

There could be no doubt that handling the projected traffic volume of 1100 million tons, by the terminal year of 2011-12, would strain the already over-stretched carrying capacity. Benefits of major initiatives for capacity expansions, like DFC, would be available only towards the later part of the plan. Hence it is absolutely mandatory that necessary throughput enhancement works be identified in an integrated manner using a route-wise approach, rather than a piece-meal approach, as such an integrated approach would yield maximum benefits. Hence the need for a blueprint, which would form a fountainhead for all future, works on the identified HDN routes. The objective of the blueprint is to identify such works, which would not only give the benefits during the years of the XI Plan, but also beyond.

Methodology:

The line capacity statements of all the Zonal Railways have been collated on the HDN routes and the ongoing works – both terminal and sectional works – on the routes have been analyzed in a holistic perspective to project the capacity utilization in the year 2010-11, duly taking into account the projections in growth of traffic. The critical sections, assuming that all the ongoing works would be completed by 2010, were thus identified. However it was felt that while Zonal Railways' projections of freight traffic over their railways factoring into

account the expansion of the existing plants as well as the new industries likely to come up on their railway could be reasonably accurate, same may not be completely true of the estimates of cross traffic.

In view of the above, the bottlenecks have been validated using the projections made by LRDSS. It is found that, by and large, the critical sections identified by the Planning Directorate and that of LRDSS match and in cases where there are discrepancies, the issues now stand resolved. The methodology adopted by LRDSS is at Annexure-I.

The Planning Directorate, independent of LRDSS, has undertaken a freight traffic forecast study, based on the XI Plan working group reports; independent market analyses of various firms; etc and arrived at 3 scenarios of low, medium and high level freight projections – 1000 Million tons, 1120 million tons and 1200 million tons respectively for the terminal year of the XI Plan i.e. 2011-12. The summary of the results of study of the Planning Directorate are at Annexure II.

Meetings were held with Zonal Railways and to home in on the works needed in the critical sections and the Directorate has estimated the level of investments to be required along each of the HDN routes.

The works proposed on the various HDN routes include new lines, gauge conversions, electrification, grade separators, bypass lines as well as intermediate block signaling arrangements, automatic signaling and additional loops.

Recommendations:

The number of works identified are 124 and the level of investments required is to the tune of Rs 14185 Crores. The works being proposed in case of the two DFC routes on the Eastern and Western Corridors are over and above the DFC projects, to cater to the interim as well as for the post-DFC scenario. Also the investment needs for enhanced CC including 25 ton axle load are not taken into account for the purpose of this report, as these proposals are being dealt separately.
The HDN wise level of investments is shown in the table overleaf.

All efforts have been made to make this report exhaustive; however, there would be some gaps which can be filled only through further discussion. It needs to be mentioned that on many of the Zonal Railways the charted capacities have been grossly understated and where ever possible they have been suitably revised upwards. Zonal Railways need to correct them immediately so that investment priorities are not vitiated. The report is put for discussion and decisions.

SUMMARY OF WORKS AND INVESTMENT REQUIRED FOR HIGH DENSITY NETWORKS

	HDN Identity	HDN 1		HDN 2		HDN 3		HDN 4		HDN 5		HDN 6		HDN 7		Total	
S. No.	Category	No. of Works	Cost (Rs. cr.)	No. of Works	Cost (Rs. cr.)	No. of Works	Cost (Rs. cr.)	No. of Works	Cost (Rs. cr.)	No. of Works	Cost (Rs. cr.)	No. of Works	Cost (Rs. cr.)	No. of Works	Cost (Rs. cr.)	No. of Works	Cost (Rs. cr.)
1	3rd line	-	-	8	2392	2	350	-	-	4	1750	-	-	-	-	14	4492.00
2	4th line	-	-	-	-	1	250	-	-	-	-	-	-	-	-	1	250.00
3	Crossing Stations	2	10	-	-	4	150	2	10	-	-	-	-	-	-	8	170.00
4	Additional loops	15	27	-	-	-	-	-	-	-	-	-	-	-	-	15	27.00
5	Automatic Signalling	2	230.4	3	140	1	17	-	-	3	21.2	-	-	-	-	9	408.60
6	Bye pass Lines	3	180	-	-	1	5	-	-	1	10	-	-	-	-	5	195.00
7	Doubling	2	657.72	5	2272	-	-	2	380	-	-	-	-	1	1840	10	5149.72
8	Electrification	1	121.5	1	100	-	-	1	65			-	-	-	-	3	286.50
9	Flyover	2	135	2	150	1	75	-	-	-	-	2	100	-	-	7	460.00
10	Gauge conversion	-	-	-	-	2	1313	-	-	-	-	-	-	-	-	2	1313.00
11	IBS	9	11.25	9	78.6	-	-	-	-	11	15.6	5.00	6.00	-	-	34	111.45
12	New Lines	1	500	-	-	2	210	-	-	-	-	-	-	-	-	3	710.00
13	Yard remodelling	-	-	-	-	1	17.5	-	-	-	-	-	-	1	10	2	27.50
14	Junction arrangements	-	-	-	-	1	50	-	-	-	-	-	-	-	-	1	50.00
15	Conversion from C-Class station to B-Class station	-	-	-	-	-	-	-	-	1	3	-	-	-	-	1	3.00
16	Tie	-	-	-	-	-	-	-	-	-	-	1	30	-	-	1	30.00
17	Splitting of block section	-	-	-	-	1	5	-	-	-	-	-		-	-	1	5.00
18	Regradition	-	-	1	46	-	-	-	-	-	-	-		-	-	1	46.00
19	Grade saparator	-	-	2	150	-	-	-	-	2	150	2	150	-	-	6	450.00
	Total	**37**	**1872.87**	**31**	**5328.6**	**17**	**2442.50**	**5**	**455**	**22**	**1949.8**	**10**	**286**	**2**	**1850**	**124**	**14184.77**

DETAILS OF PROPOSED WORKS - HDN WISE					
HDN Identity	**Type of work**	**Station From**	**Station To**	**Distance (Kms)**	**Cost (Rs Crore.)**
HDN 1	Additional crossing stations-2	Bhatinda	Jakhal	98	10.00
HDN 1	Additional loop- 6 stations	Bhatinda	Jakhal	98	9.00
HDN 1	Additional loops-9 stations	Rampur	Bareilly	64	18.00
HDN 1	Automatic Signalling	Juhi	Sonenagar	471	224.00
HDN 1	Automatic Signalling	Varanasi	Mughalsarai	16	6.40
HDN 1	Bye pass line	Bardhman	Katwa		80.00
HDN 1	Bye pass line	Radhanagar	Kulti		60.00
HDN 1	Bye pass line	Rajpura	Kouli		40.00
HDN 1	Doubling	Lohata	Janghai	69.24	207.72
HDN 1	Doubling	Rajpura	Bhatinda	174	450.00
HDN 1	Electrification	Ghaziabad	Moradabad	135	121.50
HDN 1	Flyover	Sitarampur			75.00
HDN 1	Flyover	Santhia			60.00
HDN 1	IBS-3	Balamau	Rahimabad	31.3	3.75
HDN 1	IBS-6	Roza	Hardoi	26.2	7.50
HDN 1	New Line	Meerut	Panipat	104	500.00
	Total				**1872.87**
HDN 2	3rd line	Kalyan	Kasara	67	167.00
HDN 2	3rd line	Manmad	Bhusaval	184	550.00
HDN 2	3rd line	Wardha	Nagpur	78	234.00
HDN 2	3rd line	Champa	Jharsuguda	150	746.00
HDN 2	3rd line	Goelkara	Sini	76	228.00
HDN 2	3rd line	Dongaposi	Pendrasali	163	252.00
HDN 2	3rd line	Kharagpur	Panskura	45	140.00
HDN 2	3rd line (patch)	Sumeria, Sagoni	Jerukheda, Ratangaon	20	75.00
HDN 2	Automatic Signalling	Gondia	Durg	135	54.00
HDN 2	Automatic Signalling	Bhilai	Urkura	29	11.00
HDN 2	Automatic Signalling	Baghora	Bina	10	75.00
HDN 2	Doubling	Chitoda	Sewagram	4	75.00
HDN 2	Doubling	Daitari	Banspani	145	685.00
HDN 2	Doubling	Bina	Kota	300	840.00
HDN 2	Doubling	GUNA	Ruthiyai	21	63.00
HDN 2	Doubling	Udhna	Jalgaon	304	609.00
HDN 2	Electrification	Gondia	Balharshah	240	100.00
HDN 2	Flyover	Sarvona			75.00
HDN 2	Flyover	Noamundi			75.00
HDN 2	Grade separator	Jalgaon			75.00
HDN 2	Grade separator	Katni			75.00
HDN 2	IBS-3	Ruthiai	Kota	164.2	3.60
HDN 2	IBS-6	Bina	Katni	264	75.00
HDN 2	Regradation	Khongsara	Khodri	23	46.00
	Total				**5328.60**

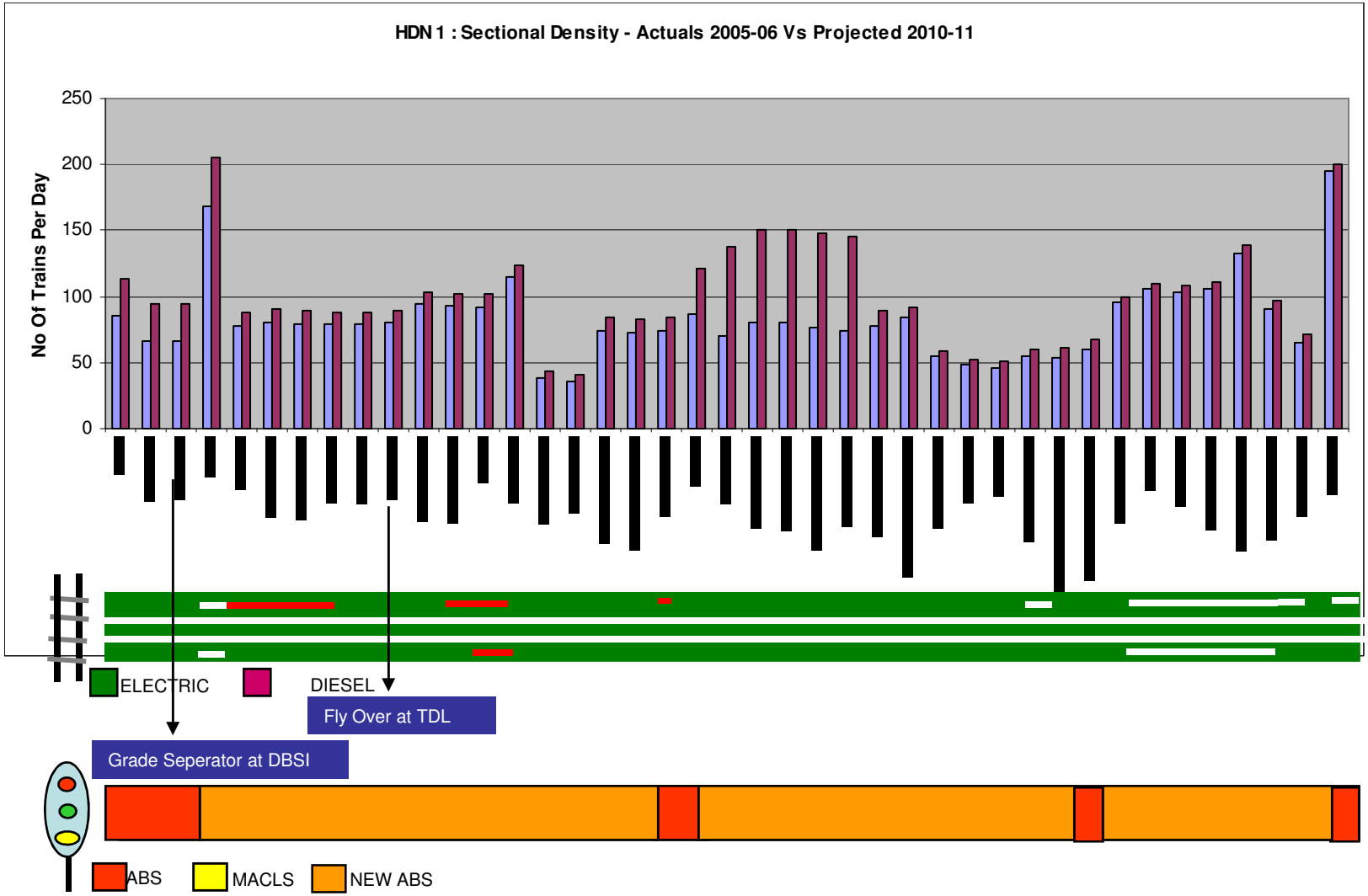
DETAILS OF PROPOSED WORKS - HDN WISE					
HDN Identity	**Type of work**	**Station From**	**Station To**	**Distance (Kms)**	**Cost (Rs Crore.)**
HDN 3	3rd line	Udhna	Bharauch	63	250.00
HDN 3	3rd line	Nadiad	Geratpur	32	100.00
HDN 3	4th line	PWL	MTJ	83.4	250.00
HDN 3	Additional crossing stations-4 (includes upgradation of interlocking & track and electrification	AWR	MTJ	123	150.00
HDN 3	Automatic Signalling	Nagda	RTM	41.35	17.00
HDN 3	Bye pass line	Kusthala	SWM		5.00
HDN 3	Flyover	Bhuteshwar			75.00
HDN 3	Gauge conversion	Bharauch	Nadiad	171	513.00
HDN 3	Gauge conversion	UDZ	Ahmedabad	342	800.00
HDN 3	Junction arrangements	MTJ			50.00
HDN 3	New Line	BH	VSI	15	60.00
HDN 3	New Line	Geratpur	Sanand	40	150.00
HDN 3	Splitting of block section	Luni	Bhagat-ki-kothi	40	5.00
HDN 3	Yard remodeling	Kota			17.50
	Total				**2442.50**
HDN 4	Additional crossing stations-2	Roza	Sitapur city	80	10.00
HDN 4	Doubling	Hajipur	Bachwara	77.5	270.00
HDN 4	Doubling	Ambari Falakata	New Mainaguri	36.5	110.00
HDN 4	Electrification	Roza	Budhwal	163	65.00
	Total				**455.00**
HDN 5	3rd line	Bina	Bhopal	136	365.00
HDN 5	3rd line	Budni	Barkhera	30	70.00
HDN 5	3rd line (patch)	Ballharshah	Raghavpuram	65	170.00
HDN 5	3rd line (remaining portion)	Ballharshah	Vjayawada	381	1145.00
HDN 5	Automatic Signalling	Budni	Itarsi	25	10.00
HDN 5	Automatic Signalling	Itarsi	Kutwansa	18	7.20
HDN 5	Automatic Signalling	Itarsi	Kiratgarh	10	4.00
HDN 5	Bye pass line	Ramagundam	Siding		10.00
HDN 5	Conversion from C class station to B class	Ityakalan			3.00
HDN 5	Grade separator	Bina			50.00
HDN 5	Grade separator	Itarsi			100.00
HDN 5	IBS-3	Bina	Itarsi	91.6	3.60
HDN 5	IBS-8	Gudur	Renigunta	85	12.00
	Total				**1949.80**
HDN 6	Flyover	Haridaspur			50.00
HDN 6	Flyover	Brundamal			50.00
HDN 6	Grade separator	VZM			75.00
HDN 6	Grade separator	Khurda Road			75.00
HDN 6	IBS-5	Kharagpur	Duvvvada		6.00
HDN 6	Tie	Sukinda	JJKR		30.00
	Total				**286.00**
HDN 7	Doubling	Hospet	Vasco	342	1840.00
HDN 7	Yard remodeling	Hospet			10.00
	Total				**1850.00**
	Grand Total				**14184.77**

HDN 1

ROUTE-WISE PLANNING ON HIGH DENSITY NETWORK

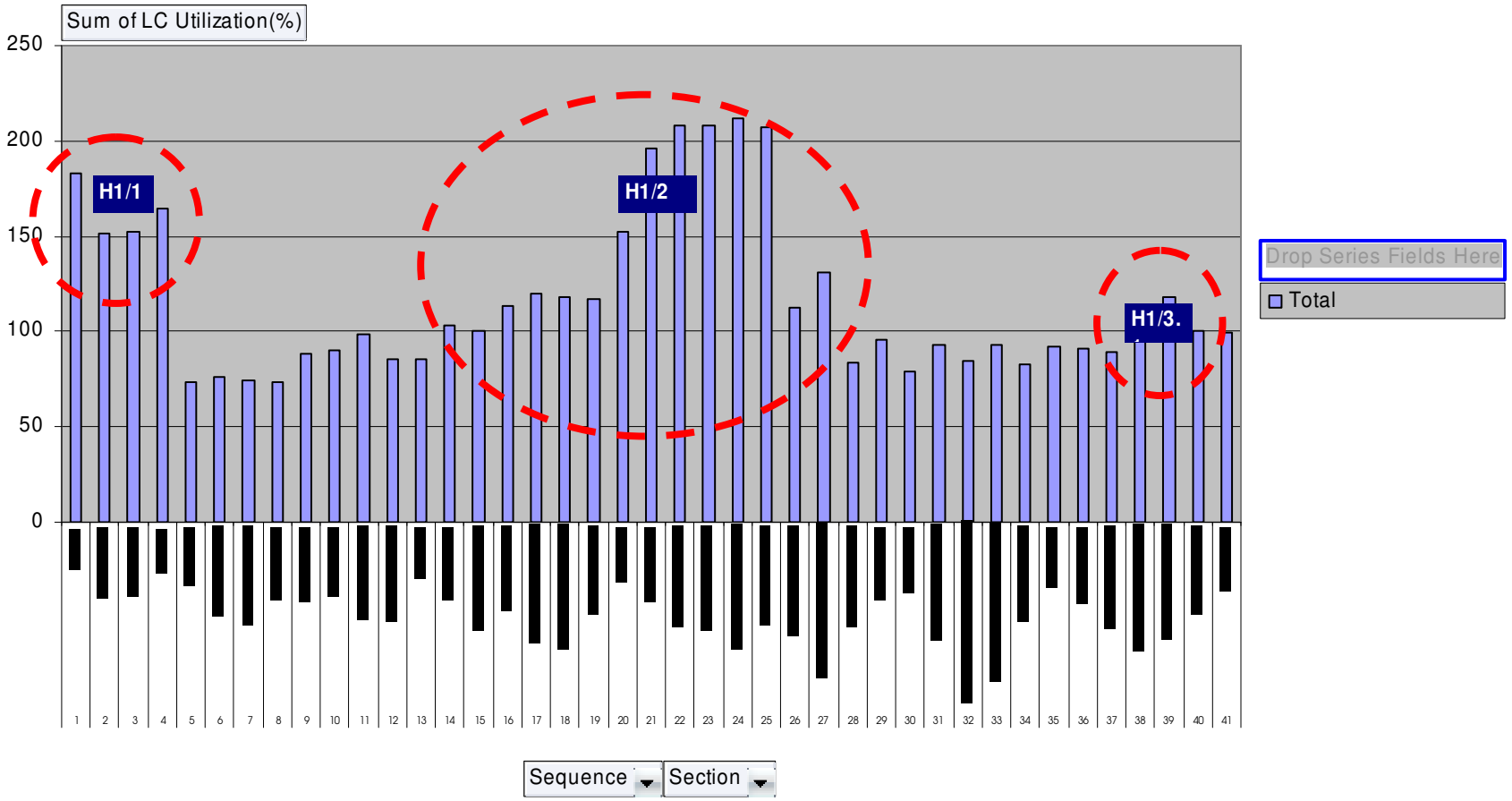
HDN-1 DELHI-HOWRAH, INCL ALT 'B' ROUTE ON NORTHERN RAILWAY AND ITS EXTN. TOWARDS SHAKURBASTI-ROHTAK-BHATINDA-SURATGARH AND ANDAL SAINTHIA FOR COAL ROUTES

															Sanctioned works in progress					
Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NR	**DLI-DSA**	3.2	2	Auto	62	71	6	8	85	**137**	114	62	**183**			Provided			Grade separator at DBSI defrozen	
NR	**DSA- A PANEL**	5.2	2	Auto	62	52	6	8	66	**107**	94	62	**151**	Critical H1/1		Provided				
NR	**A PANEL-SBB**	0.9	2	Auto	62	52	6	8	66	**106**	94	62	**152**			Provided				
NR	**SBB-GZB**	10	4	Auto	125	111	34	23	168	**135**	206	125	**165**			Provided				
NCR	GZB-DADRI	16.6	2	MACLS	58	52	25	2	78	**135**	88	120	**74**		3rd line sanctioned	Sanctioned				
NCR	DADRI-DANKAUR	17.6	2	MACLS	58	52	28	1	81	**140**	91	120	**76**		3rd line sanctioned	Sanctioned				
NCR	DANKAUR-KHURJA	28.2	2	MACLS	58	50	28	1	79	**136**	89	120	**74**		3rd line sanctioned	Sanctioned				
NCR	KHURJA-ALJN	43.3	2	MACLS	58	49	29	1	79	**135**	89	120	**74**		3rd line sanctioned	Sanctioned				
NCR	ALJN-BARHAN	68.3	2	MACLS	58	48	30	1	79	**135**	89	100	**89**			Sanctioned				
NCR	BARHAN-TDL	14.7	2	MACLS	58	49	30	1	80	**138**	90	100	**90**			Sanctioned			Flyover sanctioned at TDL	
NCR	TDL-SHIKOHABAD	36.4	2	MACLS	60	57	37	1	95	**156**	104	105	**99**			Sanctioned				
NCR	SHIKOHABAD-PNK	183.4	2	MACLS	60	56	36	1	93	**154**	103	120	**86**		3rd line Panki-Bhaupur	Sanctioned				
NCR	PNK-JUHI	7.4	2	MACLS	60	56	36	1	92	**154**	102	120	**85**		3rd & 4th line sanctioned	Sanctioned				
NCR	JUHI-KANPUR	1.4	2	MACLS	72	71	43	1	114	**158**	124	120	**103**			Sanctioned				
NCR	KANPUR-CHANDARI	3.9	2	Auto	43	38	0	0	38	**88**	43	43	**100**			Provided				
NCR	**JUHI-CHANDARI**	2	2	MACLS	36	0	35	1	36	**99**	41	36	**113**			Sanctioned				
NCR	**CHANDARI-FATEHPUR**	73.6	2	MACLS	58	38	35	1	74	**127**	84	70	**120**			Sanctioned				
NCR	**FATEHPUR-BAMHRAULI**	107.7	2	MACLS	57	37	35	1	73	**127**	83	70	**118**			Sanctioned				
NCR	**BAMHRAULI-ALD**	8.9	2	AUTO	60	37	35	3	75	**124**	85	72	**118**		3 rd line completed between Subedarganj-ALD	Provided				
NCR	**ALD-NAINI**	7.48	2	AUTO	70	52	34	2	87	**125**	122	80	**152**	Critical H1/2		Provided				
NCR	**NAINI-CHEOKI**	1.4	2	MACLS	58	37	32	1	70	**120**	137	70	**196**			Sanctioned				
NCR	**CHEOKI-MIRZAPUR**	80.8	2	MACLS	60	42	38	1	80	**134**	150	72	**209**			Sanctioned				
NCR	**MIRZAPUR-CHUNAR**	31.01	2	MACLS	60	42	38	1	80	**134**	150	72	**209**			Sanctioned				
NCR	**CHUNAR-JEONATHPUR-**	24.3	2	MACLS	58	38	38	1	76	**131**	148	70	**212**			Sanctioned				
NCR	**JEONATHPUR-MGS**	7.8	2	MACLS	58	37	37	1	74	**128**	145	70	**208**			Sanctioned				
ECR	**MGS-DEHRI-ON-SONE**	117.1	3	MACLS	73	21	53	3	77	**106**	90	80	**112**			Sanctioned				
ECR	**DEHRI-ON-SONE-SONE NAGAR**	5.7	2	MACLS	70	27	53	4	84	**120**	92	70	**131**			Sanctioned				
ECR	SONE NAGAR-GAYA	79.4	2	MACLS	59	22	29	4	55	**93**	58	70	**83**			Sanctioned				25t
ECR	GAYA-GOMOH	169.1	2	MACLS	47	21	27	0.3	49	**103**	53	55	**95**			Sanctioned				25t
ECR	GOMOH-DHN	29.2	2	MACLS	62	20	25	1	46	**75**	51	65	**79**			Sanctioned				25t
ECR	DHN-PRADHANKUNTA	9.5	2	MACLS	63	33	21	1	55	**87**	60	65	**93**			Sanctioned				
ER	PRADHANKUNTA--CHOTAAMBANA	5.5	2	MACLS	72	30	22	1	53	**79**	61	72	**85**			Sanctioned				
ER	CHOTAAMBANA-SITARAMPUR	34.4	2	AUTO	72	30	22	8	60	**88**	67	72	**93**			Provided				
ER	SITARAMPUR-ASN	8.9	4	MACLS	121	58	25	13	96	**79**	100	121	**82**							
ER	ASN-ANDAL	25.7	4	MACLS	119	58	33	16	106	**89**	110	119	**92**							25t
ER	ANDAL-KHANA	66.5	4	MACLS	118	61	28	15	104	**88**	108	118	**91**							
ER	KHANA-BARDHMAN	13.1	4	MACLS	124	74	30	2	106	**85**	111	124	**89**			Sanctioned				
ER	**BARDHMAN-SAKTIGARH**	11.5	4	MACLS	126	103	28	2	133	**106**	139	126	**110**	Critical H1/3		Sanctioned				
ER	**SAKTIGARH-DANKUNI**	68	3	MACLS	82	69	19	2	90	**110**	97	82	**118**			Sanctioned				
ER	**DANKUNI-BELUR**	8.2	2	MACLS	71	57	6	3	66	**92**	72	71	**101**			Sanctioned				
ER	BELUR-HWH	6.5	3	AUTO	202	186	6	3	195	**97**	200	202	**99**			Provided				


HDN 1 : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
250
200
150
100
50
0
ELECTRIC
DIESEL
Fly Over at TDL
Grade Seperator at DBSI
ABS
MACLS
NEW ABS

HDN Name | HDN 1

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION HI/1	2005-06 (Trains)			2010-11 (Trains)				
SECTION	CC with MB	Actual	% Utilization	CC with MB As stated	CC with MB As revised	Projected	% Utilization As stated	% Utilization As revised
DLI-DSA	62	85	137	62	120	114	184	95
DSA- A PANEL	62	66	106	62	120	94	152	78
A PANEL-SBB	62	66	106	62	120	94	152	78
SBB-GZB	125	168	134	125	240	206	165	86

Action plan

This is mainly a coaching corridor and constraints are primarily due to coaching terminals. The section has already been provided with ABS. The Charted Capacity is grossly understated & had to be revised upwards. The requirement is:

I. to divert freight traffic from entering into Delhi area and

II. enable New Delhi and Delhi stations handle a larger number of passenger trains.

The following action plan is suggested:

1. Delhi area receives a large number of goods trains from NCR at Ghaziabad point for UMB division & beyond which have to traverse in Delhi area which should be diverted via Khurja- Saharanpur. This will need a flyover at Khurja to avoid surface crossing. The DFC is passing over this section and it is suggested that DFC should take up works on priority for Khurja-Ludhiana network. The traffic will anyway move over to DFC later on.

2 .A new line from Meerut to Panipat for coal traffic to Panipat Thermal Power House(104 Kms) at a cost of Rs 500 crore.

3. The connection of Anand Vihar terminal to the SBB-GZB main line should not have any surface crossing.

4.Minimum speed of 30Kmph on all turnouts. This should reduce all problems of movement of trains at Junction stations. Already it has been targeted to complete works of 30 Kmph on A and B routes by 2009.

5.The concept of directional terminals needs rethinking. The USP of Railways is that it can deliver a person right into the heart of the city at no additional cost. Currently three directional terminals are being planned at Holambi Kalan for North bound trains, Bijwasan for Western/North Western bound trains and Anand Vihar for Eastern bound trains. The current capacity constraints in Delhi area are because of terminating and originating trains which involve cross movements on the main line and thereby reduce line capacity. This can be overcome by developing a terminal purely for maintenance of coaching rakes enabling faster clearance from Platforms at New Delhi and Delhi. Holambi Kalan can be thought of as one such terminal. All ancillary activities like loading of parcels, linen, pasting of reservation charts etc. will also be shifted. If necessary additional lines be laid from New Delhi/Delhi to Holambikalan for the purpose. A survey by a reputed consultant for studying entire Delhi area will be necessary.

CRITICAL SECTION HI/2	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
JUHI-CHANDARI	36	36	100	36	41	114
CHANDARI-FATEHPUR	58	74	128	58	84	145
FATEHPUR-BAMHRAULI	57	73	128	57	83	146
BAMHRAULI-ALD	60	75	125	60	85	142
ALD-NAINI	70	87	125	70	122	175
NAINI-CHEOKI	58	70	121	58	137	236
CHEOKI-MIRZAPUR	60	80	133	60	150	250
MIRZAPUR-CHUNAR	60	80	133	60	150	250
CHUNAR-JEONATHPUR-	58	76	131	59	148	251
JEONATHPUR-MGS	58	74	128	58	145	250
MGS-DEHRI-ON-SONE	73	77	105	73	90	123
DEHRI-ON-SONE-SONE NAGAR	70	84	120	70	92	131

Remarks

1. Flat gradient. ABS was sanctioned, but frozen.
2. The doubling of MGS-LKO route of NR is in progress which will take care of additional traffic to some exeant. Inputs on 'A' route will also be needed till Eastern DFC comes up. The input should be such to avoid going in for 3rd line investment.

Action Plan

1. Defreeze the sanctioned work of the ABS in the section. Approx. investment is Rs 224 Cr.
2. DFC should construct the MGS-Sonenagar portion on priority as beyond MGS to the north 2 double line routes are available

CRITICAL SECTION HI/3	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
BARDHMAN-SAKTIGARH	126	133	106	126	139	110
SAKTIGARH-DANKUNI	82	90	110	82	97	118
DANKUNI-BELUR	71	66	92	72	72	100

Remarks

• This is a predominantly passenger corridor, with high density of suburban traffic near Howrah area. Already 4-5 lines exist on the route and the works are sanctioned for running of 12 car EMUs.

Action Plan :

- Bypass line connecting mainline between Bardhman-Katwa branch for the thermal Plant coming up at Katwa (Rs 80 crores)

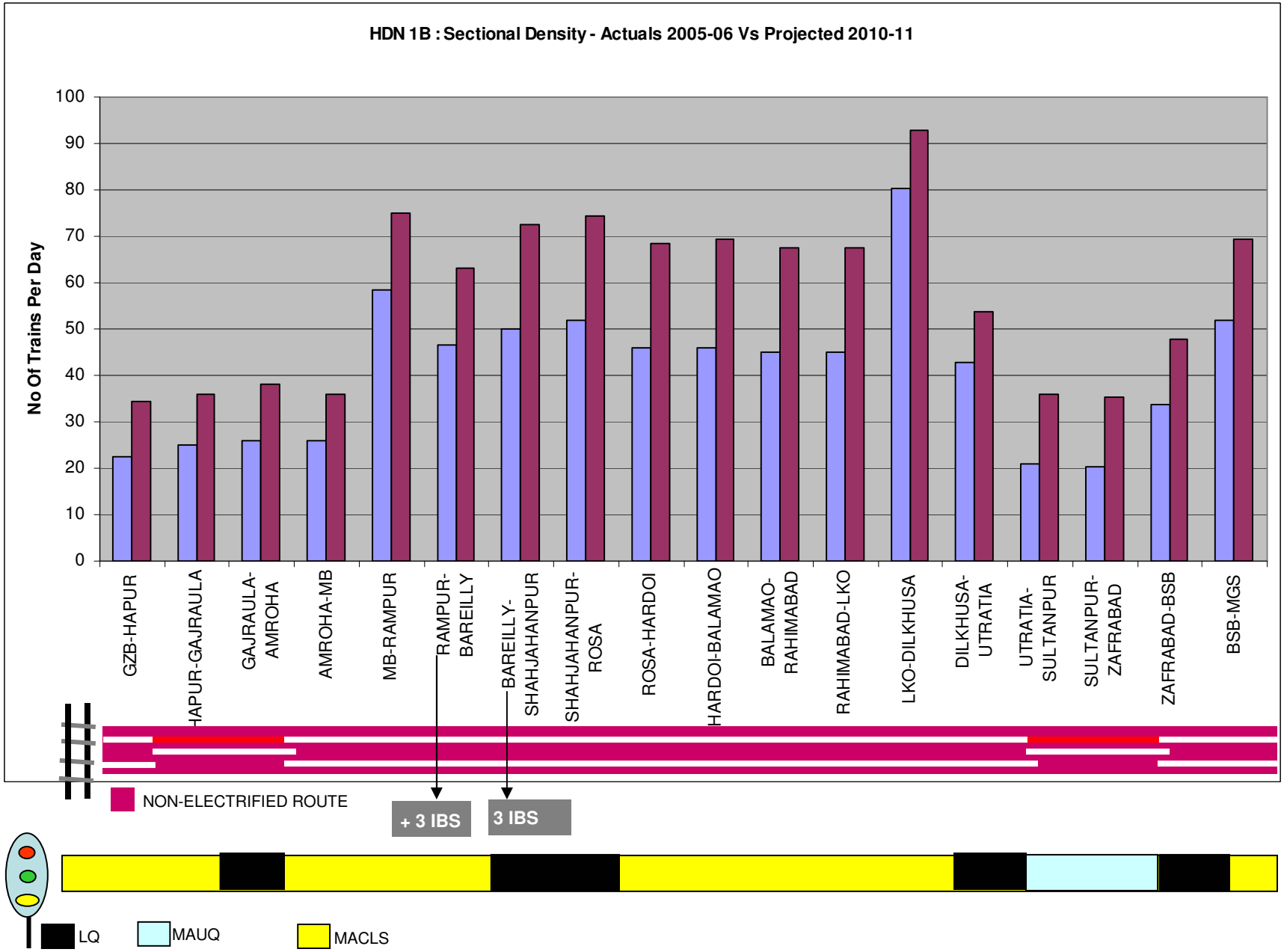
Additional works needed on the route :

- Flyover at Sitarampur to avoid surface crossing of trains for mainline towards Jhajha (Rs 75 crore).

Long Term Plan :

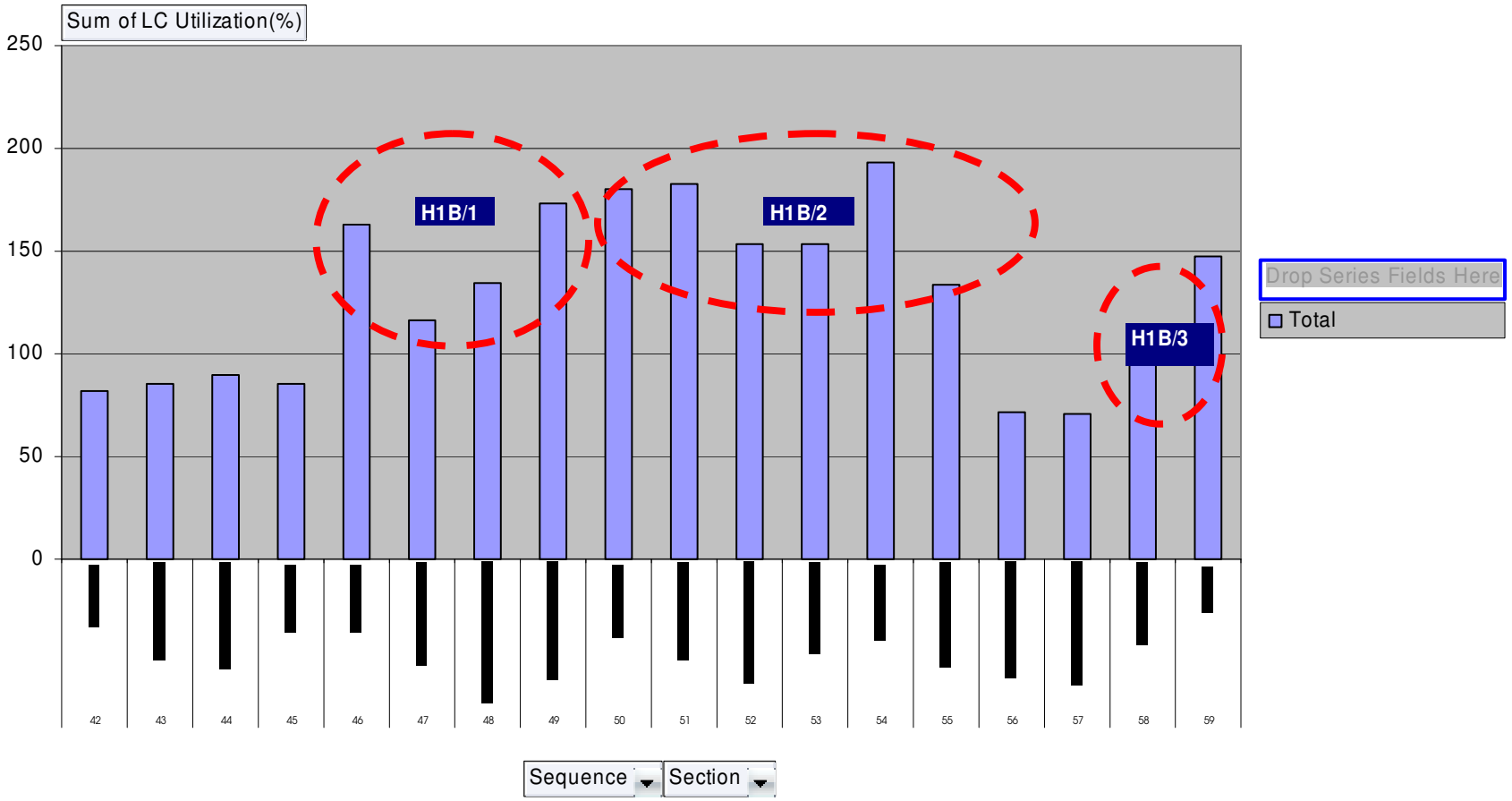
- Byepass line between Radhanagar and Kulti to deal with traffic coming from SER towards MGS avoiding reversal at Asansol/Kulti (Rs 60 crores).

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Route 1-B= ALTERNATIVE 'B' ROUTE OF NORTHERN RAILWAY S'B'																				
NR	GZB-HAPUR	37	2	MACLS	42	19	4	0	23	**54**	35	42	**82**							
NR	HAPUR-GAJRAULA	50.6	1	MACLS	14	21	3	1	25	**179**	36	42	**85**		DL sanctioned					
NR	GAJRAULA-AMROHA	22.9	1	LQ	14	22	3	1	26	**186**	38	42	**90**		DL sanctioned					
NR	AMROHA-MB	30.4	2	MACLS	42	22	3	1	26	**62**	36	42	**85**		DL sanctioned					
NR	**MB-RAMPUR**	27.4	2	MACLS	46	44	13	2	59	**127**	75	46	**163**							
NR	**RAMPUR-BAREILLY**	63.3	2	MACLS	46	32	13	2	47	**101**	63	54	**117**				3 Sanctioned			
NR	**BAREILLY-SHAHJAHANPUR**	67.2	2	LQ	46	36	13	1	50	**109**	73	54	**134**	Critical H 1 B/1			3 Sanctioned			
NR	**SHAHJAHANPUR-ROSA**	7.4	2	LQ	43	38	13	1	52	**121**	75	43	**173**							
NR	**ROSA-HARDOI**	26.2	2	CLS	38	32	12	2	46	**121**	69	38	**180**							25t
NR	**HARDOI-BALAMAO**	33.1	2	CLS	38	32	12	2	46	**121**	70	38	**183**							25t
NR	**BALAMAO-RAHIMABAD**	31.3	2	CLS	44	32	12	1	45	**102**	68	44	**153**	Critical H 1 B/2						25t
NR	**RAHIMABAD-LKO**	37.5	2	CLS	44	32	12	1	45	**102**	68	44	**153**							25t
NR	**LKO-DILKHUSA**	3.6	2	CLS	48	59	18	4	80	**167**	93	48	**193**							25t
NR	**DILKHUSA-UTRATIA**	8.6	2	LQ	40	31	10	3	43	**107**	54	40	**134**							25t
NR	UTRATIA-SULTANPUR	128	1	MAUQ	15	14	5	2	21	**139**	36	50	**72**		DL sanctioned					25t
NR	SULTANPUR-ZAFRABAD	92	1	MAUQ	15	14	5	2	20	**136**	35	50	**71**		DL sanctioned					25t
NR	**ZAFRABAD-BSB**	51.2	2	LQ	48	24	8	2	34	**70**	48	48	**100**							25t
NR	**BSB-MGS**	16.7	2	CLS	47	34	15	3	52	**110**	69	47	**148**	Critical H 1 B/3						25t
Route 1C= EXTENSION TOWARDS SSB-ROK-BTI-SOG																				
NR	SSB-ROK	69	2	CLS	47	19	22	2	43	**92**	60	47	**129**	Critical H 1 C/1						
NR	ROK-JHI	57.2	2	LQ	46	11	21	2	34	**72**	43	46	**93**							
NR	JHI-NARWANA	33.7	2	LQ	46	14	20	1	36	**78**	45	46	**99**							
NR	NARWANA-JHL	38.1	2	LQ	46	10	20	1	32	**69**	41	46	**90**							
NR	**JHL-BTI**	86.1	1	CLS	18	7	18	1	26	**143**	36	18	**198**	Critical H 1 C/2						
NWR	BTI-SOG	142.3	1	LQ	17	6	7	1	14	**81**	21	21	**100**						1.Bhirdwal- Byepass to avoid reversal for Suratgarh Thermal Powerhouse 2. BTI 'B' byepass cabin -byepass line to SSA	25t
Route 1D= ANDAL-SAINTHIA																				
ER	ANDAL-UKHRA	12.01	2	LQ	37	10	8	22	40	**119**	47	50	**93**						Kajoragram-Sonachara Byepass avoiding Andal	
ER	UKHRA-PANDABESHWAR	8.2	2	LQ	37	12	8	14	34	**92**	39	50	**77**							
ER	PANDABESHWAR-SAINTHIA	53.06	1	LQ	21	11	8	2	21	**100**	25	50	**51**		DL sanctioned along with RE from Andal-Sainthia					


HDN 1B : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
100
90
80
70
60
50
40
30
20
10
0
GZB-HAPUR
HAPUR-GAJRAULA
GAJRAULA-AMROHA
AMROHA-MB
MB-RAMPUR
RAMPUR-BAREILLY
BAREILLY-SHAHJAHANPUR
SHAHJAHANPUR-ROSA
ROSA-HARDOI
HARDOI-BALAMAO
BALAMAO-RAHIMABAD
RAHIMABAD-LKO
LKO-DILKHUSA
DILKHUSA-UTRATIA
UTRATIA-SULTANPUR
SULTANPUR-ZAFRABAD
ZAFRABAD-BSB
BSB-MGS
NON-ELECTRIFIED ROUTE
+ 3 IBS
3 IBS
LQ
MAUQ
MACLS

HDN Name | HDN 1B

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTIONS H 1 B/1, H1 B/2	2005-06 (Trains)			2010-11 (Trains)				
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB As stated	CC with MB As revised	Actual	% Utilization As stated	% Utilization As revised
MB-RAMPUR	46	61	132	46	64	75	163	117
RAMPUR-BAREILLY	46	47	102	46	64	63	136	98
BAREILLY-SHAHJAHANPUR	46	50	109	54	64	73	134	114
SHAHJAHNPUR-ROSA	43	52	121	43	64	75	173	117
ROSA-HARDOI	38	46	121	38	64	69	182	107
HARDOI-BALAMAO	38	46	121	38	64	70	183	109
BALAMAO-RAHIMABAD	44	45	102	44	64	68	155	106
RAHIMABAD-LUCKNOW	44	45	102	44	64	68	153	106
LKO-DILKHUSA	48	80	167	48	64	93	194	145
DILKHUSA-UTRATIA	40	43	108	40	64	54	135	84

Action Plan: The section is basically flat and the inputs suggested are just enough to tide over the incremental traffic till the time DFC comes through. The following works are suggested:

1. Additional loop at 9 stations between Rampur and BE to increase the holding capacity (Rs. 18 crore).

2. Provision of 6 IBS between Rosa and Hardoi (Rs 7.5 crore).

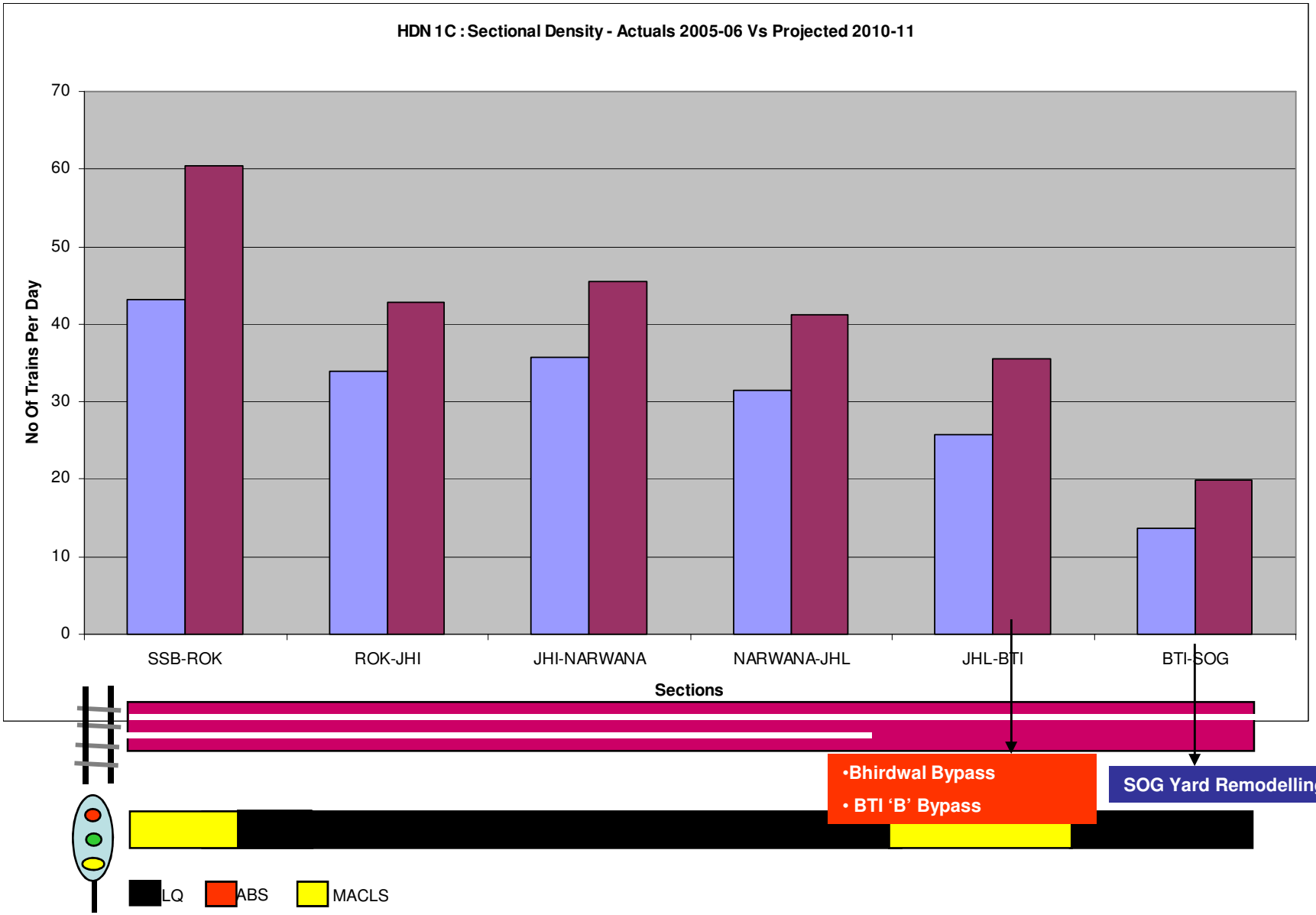
3. Provision of 3 IBS between Balamau-Rehimabad (Rs 3.75 crore).

4. In addition the GZB - MB (135 Kms) route should be electrified to provide seamless movement of trains between the ‘A’ and ‘B’ routes (Rs 121.50 crore).

CRITICAL SECTION H I B/3	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
BSB-MGS	64	52	81	64	69	108

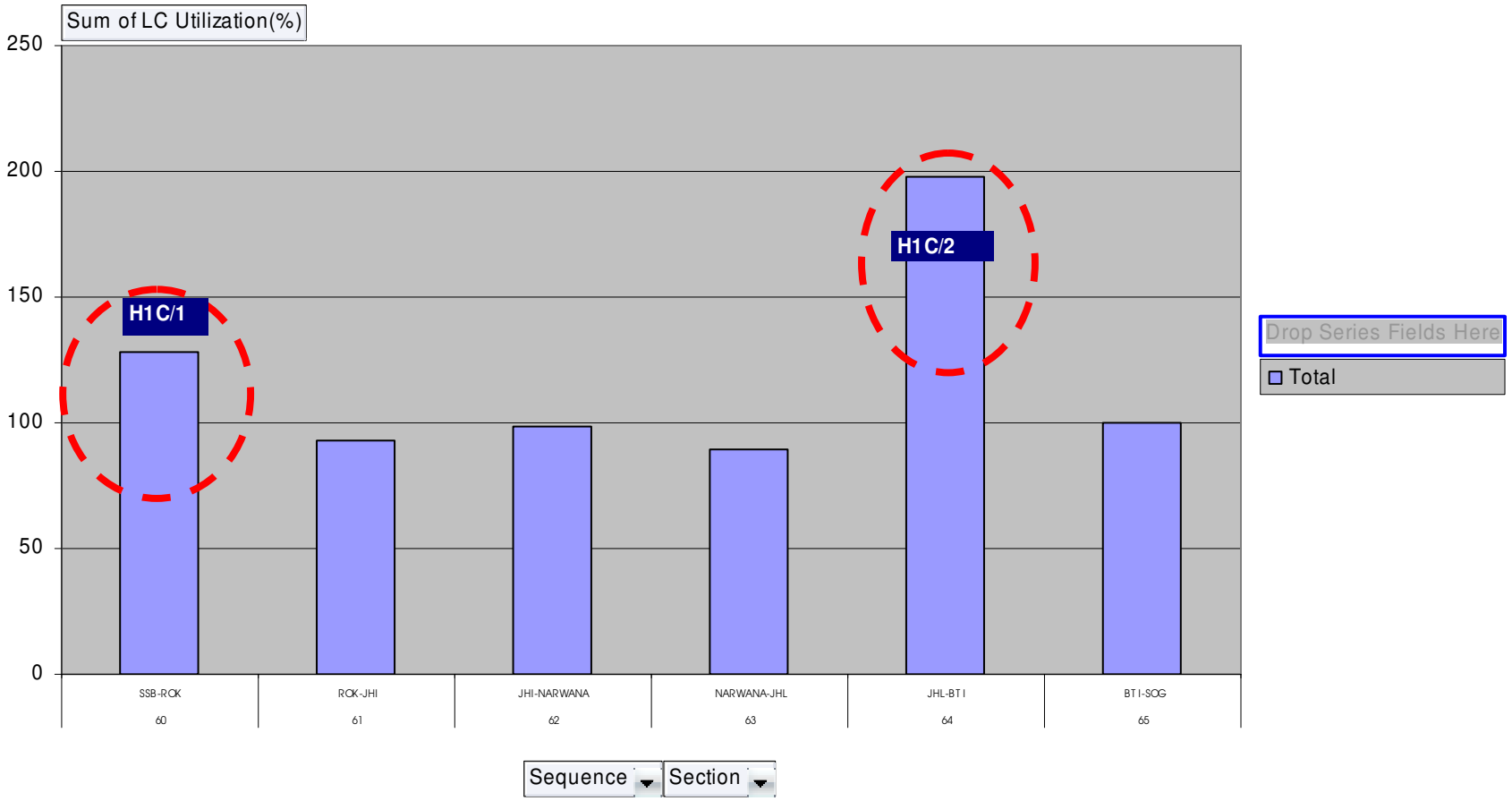
Action Plan:

- Automatic signalling between Benares and Mughal Sarai (16 kms) at an approximate cost of Rs.6.4 crores.
- In order to ease congestion at Varanasi, Lohta-Janghai section needs to be doubled as it is highly saturared (69.24 kms) at a cost of Rs. 207.72 crores.


HDN 1C : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
70
60
50
40
30
20
10
0
SSB-ROK
ROK-JHI
JHI-NARWANA
NARWANA-JHL
JHL-BTI
BTI-SOG
Sections
•Bhirdwal Bypass
• BTI 'B' Bypass
SOG Yard Remodelling
LQ
ABS
MACLS

HDN Name | HDN 1C

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION H1 C/2	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
JHL-BTI	**18**	**26**	**144**	**18**	**36**	**200**

Remarks:

- Currently single line section. However the doubling of the B route should reduce traffic coming on to this route via 'A' route and moreover once Eastern DFC comes then the traffic will move via SRE-UMB-RPJ. Relief has to be given in the interim period. The number of trains projected for 2010-11 will go down & hence doubling is not warranted.

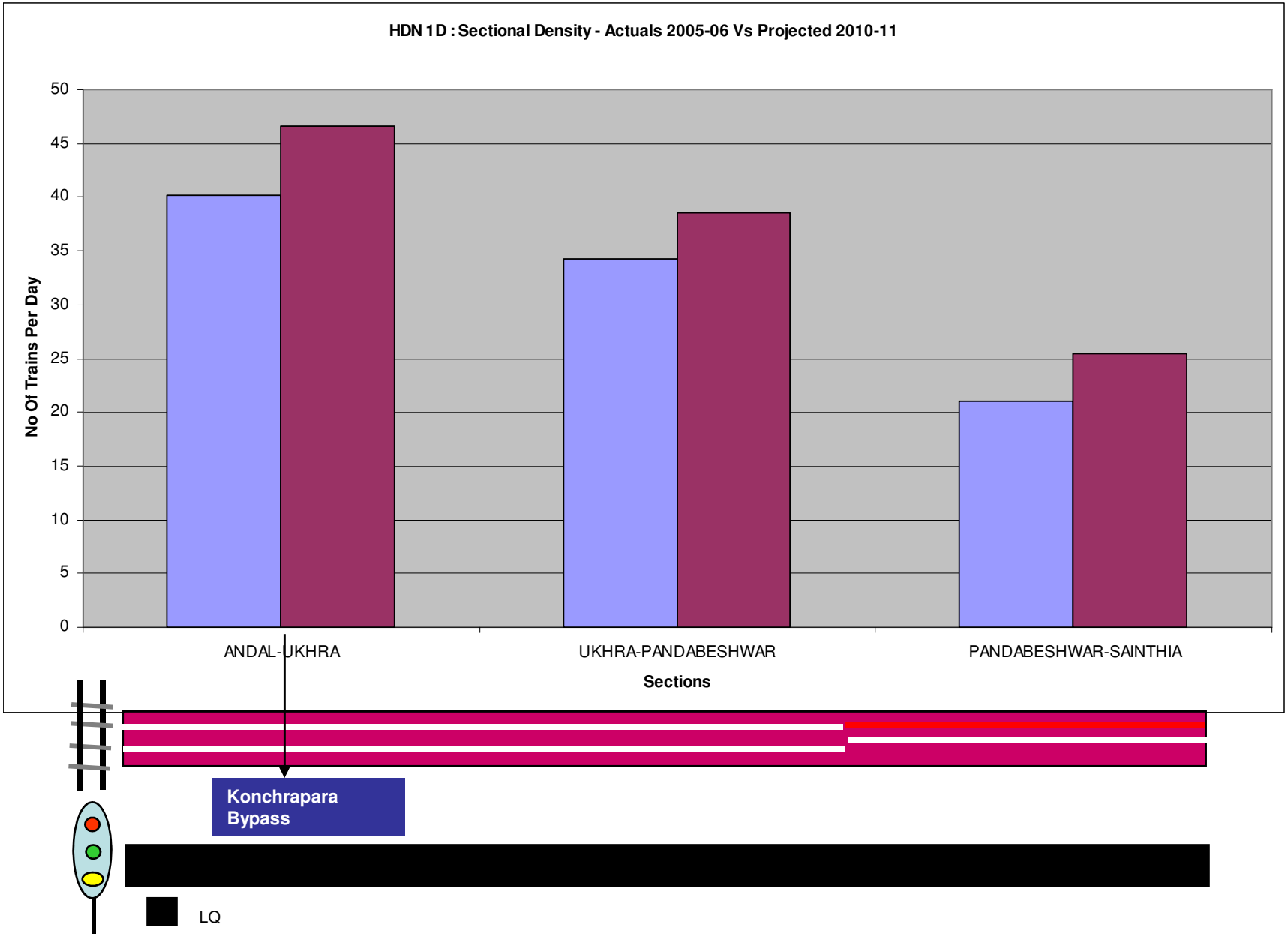
Action Plan :

I

- Two additional crossing stations between Jakhal and Bhatinda at a cost of Rs. 10 crores.
- Further six stations which are two line stations should be provided with third loop at a cost of Rs. 9 crores.

II

- DFC should take up the section between Khurja-Ludhiana as top priority.
- For handling the coal traffic of Bhatinda, Lehra Mohabbat thermal power houses, NFL Bhatinda, Cement plant at Lehra Gaga & trafiic going towards HMH, the doubling & electrification of RPJ-BTI will be necessary (Rs 174 Kms at a cost of Rs 450 crore). In the first phase RPJ-PTA (30 Kms) to be taken up. At a cost of Rs. 90 crores.
- Bye pass at Rajpura to handle the traffic from mainline to RBR at cost of Rs. 40 crores.


HDN 1D : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
50
45
40
35
30
25
20
15
10
5
0
ANDAL-UKHRA
UKHRA-PANDABESHWAR
PANDABESHWAR-SAINTHIA
Sections
Konchrapara Bypass
LQ

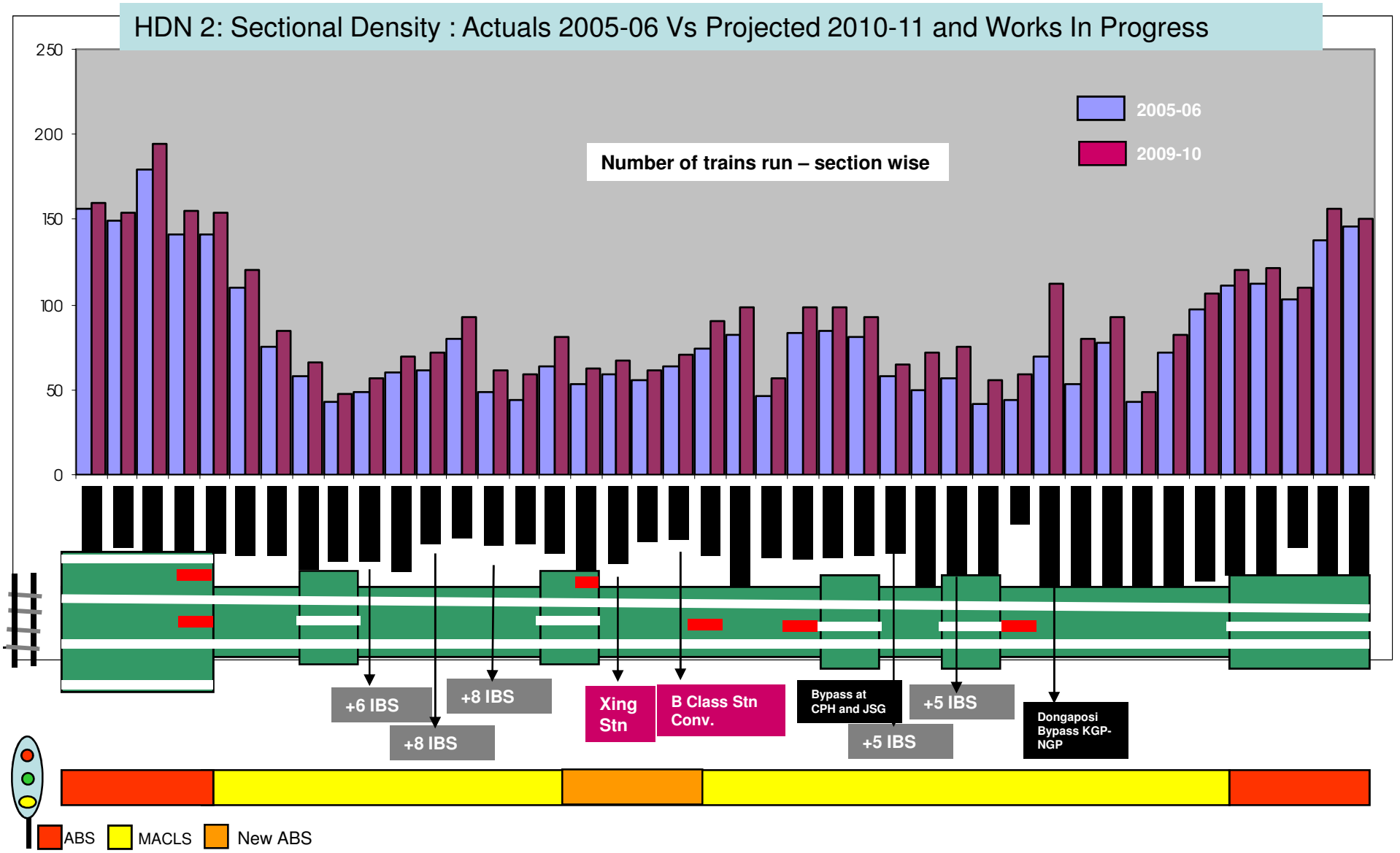
CRITICAL SECTION H1 D	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
ANDAL-UKHRA	37	40	109	50	47	94
UKHRA-PANDABESHWAR	37	34	93	50	39	78
PANDABESHWAR-SAINTHIA	21	21	100	50	25	50

Action Plan

- Construction of flyover at Sainthia to avoid surface crossing of trains from Malda end towards Andal. The station is currently dealing 25 pairs of passenegr trains and 22 goods trains (Rs 60 Cr)

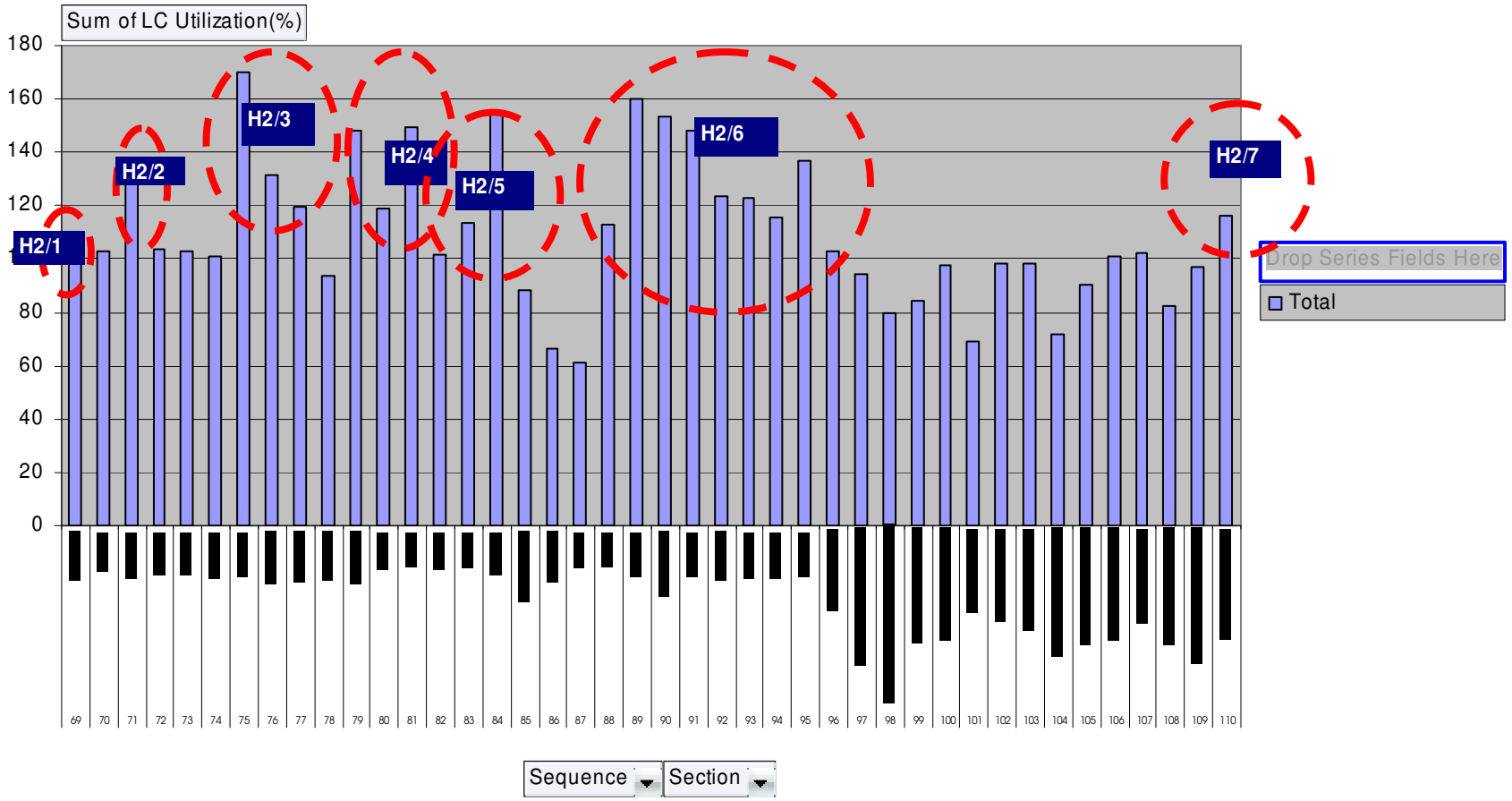
HDN 2

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
HDN 2: MUMBAI-HOWRAH ALONG WITH THE LINK ROUTE OF BILSPUR-ANNUPUR-KATNI-BINA-KOTA AND JALGAON-SURAT																				
CR	CSTM-DR	9	4	AUTO	150	132	0.3	24	156	**104**	160	150	**107**	Critical H 2/1	5th & 6th line in MUTP phase II.	Provided				
CR	DR-CLA	7	4	AUTO	150	144	0.3	5	149	**100**	154	150	**103**		5th & 6th line in MUTP phase II.	Provided				
CR	CLA-TNA	18	4	AUTO	150	162	10	7	179	**120**	194	150	**130**	Critical H 2/2	5th & 6th line in MUTP phase II.	Provided				
CR	TNA-DW	9	4	AUTO	150	123	11	7	141	**94**	155	150	**103**		6th & 6th line in MUTP phase II.	Provided				
CR	DW-KYN	11	4	AUTO	150	124	10	7	141	**94**	154	150	**103**		5th & 6th line sanctioned	Provided				
CR	KYN-TLA	11	2	AUTO	120	99	7	4	110	**92**	121	120	**101**			Provided				
CR	TLA-ASO	21	2	MACLS	49	64	7	4	75	**154**	85	50	**170**	Critical H2/3			3 provided			
CR	ASO-KSRA	35	2	MACLS	49	47	7	4	58	**119**	66	50	**132**				5 provided			
CR	KSRA-IGP	16	3	MACLS	40	32	7	4	43	**108**	48	40	**120**				Ghat section			
CR	IGP-MMR	124	2	MACLS	41	33	9	6	48	**117**	56	60	**94**				1 Provided + 6 Sanctioned			
CR	**MMR-NGN**	25	2	MACLS	47	37	16	7	60	**127**	70	47	**148**	Critical H2/4						
CR	NGN-JL	135	2	MACLS	47	37	18	6	61	**130**	71	60	**119**				8 Sanctioned			
CR	**JL-BSL**	24	2	AUTO	62	46	29	4	79	**128**	93	62	**150**			Provided				
CR	BSL-BD	219	2	MACLS	47	18	25	5	48	**103**	61	60	**101**				6 Provided + 6 Sanctioned			
CR	BD-WR	95	2	MACLS	52	18	25	1	44	**84**	59	52	**113**	Critical H2/5			3 Provided			
CR	**WR-NGP**	79	2	MACLS	52	34	27	3	64	**123**	81	52	**156**				3 Provided			
SECR	NGP-ITR-KAV	6.3	3	MACLS	48	33	18	2	53	**111**	62	70	**89**		DL sanctioned NGP-KAV	Sanctioned				25t
SECR	KAV-TMR	73.8	2	MACLS	56	34	24	1	59	**106**	67	100	**67**			Sanctioned				25t
SECR	TMR-G	49.8	2	MACLS	56	30	25	1	55	**99**	61	100	**61**			Sanctioned	1 provided			25t
SECR	**G-DUG**	134.9	2	MACLS	54	35	24	5	64	**118**	70	62	**113**				1 provided	Parmalkasa= conversion into 'B' class station		25t
SECR	DUG-BIA	13.6	2	MACLS	56	39	33	2	74	**132**	90	56	**160**		3rd line sanctioned		1 provided			25t
SECR	**BIA-KMI-SZV**	17.3	3	MACLS	64	39	39	4	82	**129**	98	64	**154**				1 provided			25t
SECR	**SZB-URK**	9.4	2	MACLS	38	0	39	7	46	**122**	56	38	**148**	Critical H2/6						25t
SECR	**URK-BYT**	58.2	2	MACLS	50	31	48	4	83	**166**	99	80	**124**		3rd line sanctioned		4 provided			25t
SECR	**BYT-BSP**	46.4	3	MACLS	64	31	49	4	84	**128**	98	80	**123**				2 provided			25t
SECR	BSP-CPH	52.5	3	MACLS	67	26	55	1	82	**122**	92	80	**116**				2 provided			25t
SECR	**CPH-JSG**	151.7	2	MACLS	50	19	36	2	57	**115**	85	62	**137**				4 Provided + 3.5 Sanctioned		1.Byepass towards Korba sanctioned at Champa 2.Byepass at JSG sanctioned	25t
SER	JSG-ROURKELA	101	2	MACLS	47	20	27	3	50	**106**	72	70	**103**				1 Sanctioned			25t
SER	ROURKELA-BONDAMUNDA	8.5	3	MACLS	56	20	32	5	57	**102**	76	80	**95**							25t
SER	BONDAMUNDA-CHAKARDHARPUR	92.9	2	MACLS	47	14	25	3	42	**87**	56	70	**80**		3rd line sanctioned MOU-GOL					25t
SER	CKP-RAJKHARSAWAN	20.3	2	MACLS	53	17	25	3	45	**83**	59	70	**84**				2 provided		Dongaposi bye-pass line connecting KGP-NGP	25t
SER	RAJKHARSAWAN-SINI	15.3	2	AUTO	115	20	45	4	69	**60**	112	115	**98**							25t
SER	SINI-GAMHARIA	16.2	2	AUTO	115	17	33	4	54	**47**	80	115	**69**							25t
SER	GAMHARIA-TATA	10.6	2	AUTO	94	32	42	4	78	**83**	93	94	**99**							25t
SER	TATA-KHARAGPUR	134	2	MACLS	45	22	20	2	43	**96**	49	50	**98**				7 provided			25t
SER	**KHARAGPUR-PANSKURA**	44.7	2	AUTO	75	52	17	3	72	**96**	82	115	**72**		3rd line sanction awaited from MOF					25t
SER	PANSKURA-MECHEDA	12.1	3	AUTO	118	77	19	2	98	**83**	107	118	**91**							
SER	MACHEDA-ULUBERIA	26.5	3	AUTO	118	89	20	3	111	**94**	120	118	**101**							
SER	ULUBERIA-ANDUL	19.7	3	AUTO	118	91	19	3	112	**95**	121	118	**102**							
SER	ANDUL-SANTRAGACHI	4.9	3	AUTO	133	91	9	3	103	**78**	110	133	**83**							
SER	SANTRAGACH-TIKIAPARA	5.6	3	AUTO	133	122	6	11	138	**104**	156	160	**97**		4th line sanctioned					
SER	TIKIAPARA-HOWRAH	2	4	AUTO	129	135	1	10	146	**113**	150	129	**116**	Critical H2/7						
	TOTAL	1966																		


HDN 2: Sectional Density : Actuals 2005-06 Vs Projected 2010-11 and Works In Progress
250
200
150
100
50
0
2005-06
2009-10
Number of trains run – section wise
+6 IBS
+8 IBS
+8 IBS
Xing Stn
B Class Stn Conv.
Bypass at CPH and JSG
+5 IBS
+5 IBS
Dongaposi Bypass KGP-NGP
ABS
MACLS
New ABS

HDN Name | HDN 2

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION H 2/3	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
KYN-TLA	**120**	**110**	**92**	**120**	**121**	**101**
TLA-ASO	**49**	**75**	**153**	**54**	**85**	**157**
ASO-KSRA	**49**	**58**	**118**	**50**	**66**	**132**

Remarks

• Suburban section CSTM-KYN will be taking care of by MUTP Phase II as and when it is sanctioned. Hence it is not included.

• The section between Kalyan and Kasara is graded. Looking into the traffic projections, a third line between KYN-Kasara is needed..

Action Plan

• 3rd line to be taken up and later on can be handed over to East-West DFC between TLA-KSRA

• Kalyan - Kasara (67 Kms) section - provision of 3rd line at a cost of Rs. 167 crores. Survey report already submitted to Board in 2003

CRITICAL SECTION H 2/4	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
MMR-NGN	**47**	**60**	**128**	**47**	**70**	**149**
NGN-JL	**47**	**61**	**130**	**60**	**71**	**118**
JL-BSL	**62**	**79**	**127.4**	**62**	**93**	**150**

Remarks

• Already double line and MACLS

• Graded section between BSL-MMR (1 In 100)

Action Plan

• A 3rd line between MMR-BSL is proposed (184 Kms) at a cost of Rs. 550 cr. (A 3rd line survey between IGP-BSL (308 Kms) has been completed in 2004-05). This 3rd line could become a part of the East-West DFC later on.

•Grade separator at Jalgaon at a cost of Rs. 75 crores.

CRITICAL SECTION H 2/5	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
WR-NGP	52	64	123	58	81	156

Remarks :

- This is a patch where traffic on the East-West route and the North-South route moves over a common section.

Action Plan:

- 3rd line between WR & NGP(78 Kms at a cost of Rs. 234 crores)
- Doubling of the single line chord between Chitoda & Sevagram and grade separator for separating East-West traffic with North-South traffic at a cost of Rs. 75 crores.

CRITICAL SECTION H 2/6	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
G-DUG	**54**	**64**	**119**	**62**	**70**	**113**

Action Plan :

• Already double line sanctioned between NGP-KAV and ABS signalling between NGP-G.
• Automatic signalling for the remaining part between G-DUG also to be sanctioned (135 kms at a cost of Rs 54 crores)
•Electrification of Gondia-Ballahrshah section (240 Kms at a cost of Rs 100 crores).

CRITICAL SECTION H 2/6	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
DUG-BIA						
BIA-KMI-SZB	**80**	**82**	**103**	**80**	**98**	**123**
SZB-URK	**64**	**46**	**72**	**64**	**56**	**88**
URK-BYT	**50**	**83**	**166**	**80**	**99**	**123**
BYT-BSP	**64**	**82**	**128**	**80**	**98**	**123**

Remarks

• The bottlenecks are in 1. BIA-KMI-SZB-URK section (26.7 Kms) and 2. URK-BSP section (104.6 Kms)

Action Plan

• ABS between BIA-KMI-SZB-URK at a cost of Rs 11 crores.
• Fly over at Sarvana at a cost of Rs. 75 crores..

Long Term Plan

• 4th line between DUG-BIA-SZB.
• 4th line between BSP-URK.

CRITICAL SECTION H 2/6	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
BSP-CPH	**67**	**82**	**122**	**80**	**92**	**115**
CPH-JSG	**50**	**57**	**114**	**63**	**80**	**126**

Action Plan :

- A survey for 3rd line between CPH-JSG (150 Kms) has been completed & the estimated cost is Rs 746 crores. This should be built to DFC standards & should become part of East-West DFC. This needs to be sanctioned immediately.
- Survey for new line from Raigarh to Mand for coal traffic should be sanctioned.

Medium Term Plan :

- 4th line between BSP-CPH.
- Flyover at Jharsuguda.

HDN 2: BONDAMUNDA-CHAKRADHARPUR-RAJKHARSWAN-SINI-TATA-KHARAGPUR

Action Plan

• The capacity is sufficient for handling traffic even after taking into account Tata steel's expansion plans at Jamshedpur. However a 3rd line from Goelkara to Sini would be needed for handling Tata's new steel plant at Saraikela served by Birbans station (76 Kms at a cost of Rs 228 Crores).

• Although not on the feeder route, doubling of Daitari-Banspani route at a cost of Rs. 685 crores.

• Flyover at Noamundi to Banspani side to avoid reversal at Dongaposi at a cost of Rs. 75 crores.

Long term Plan

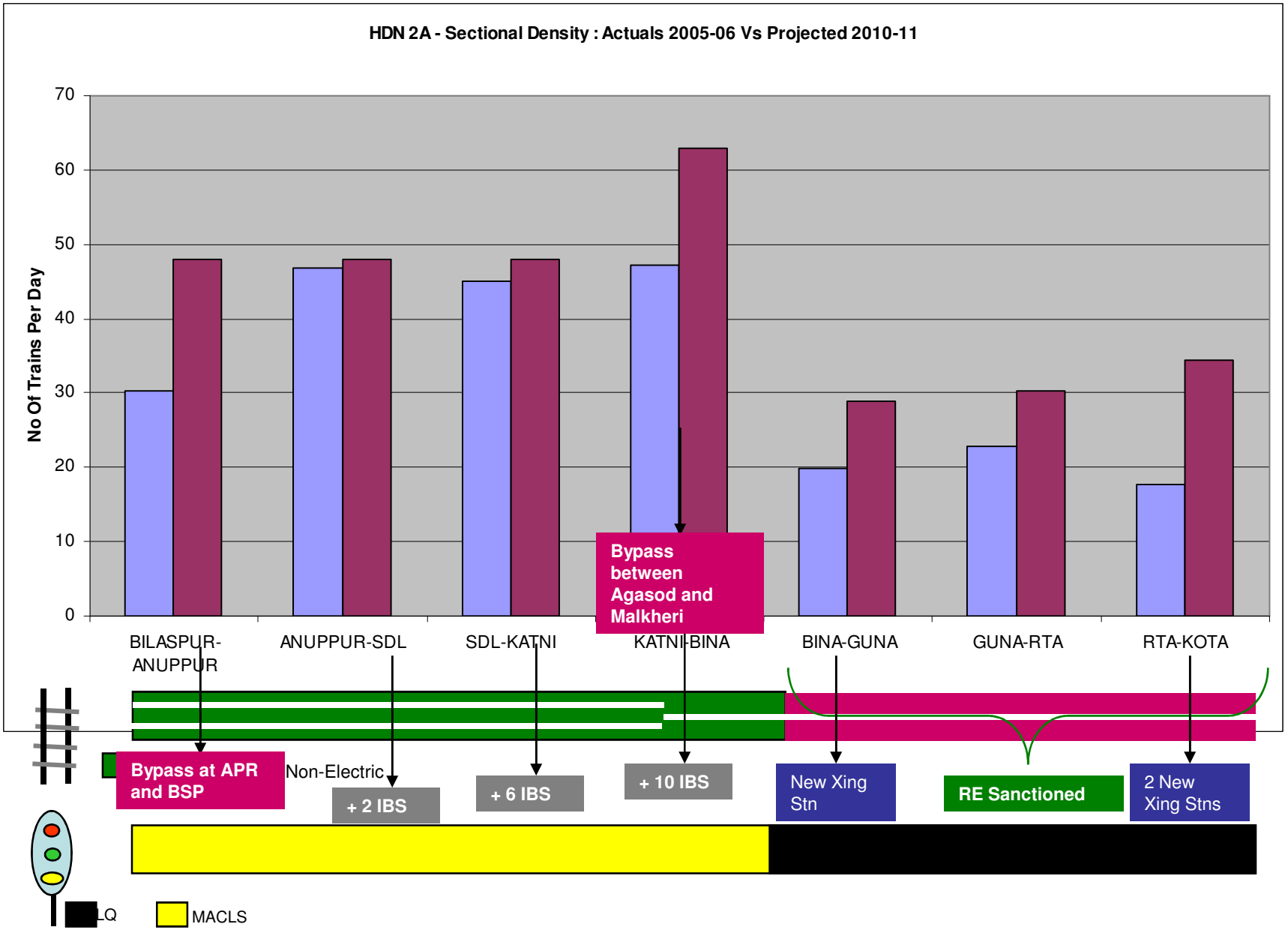
• Provision of 3rd line between Dongaposi-Pendrasali (163 Kms) at a cost of Rs. 252 crores.

CRITICAL SECTION H 2	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
KHARAGPUR-PANSKURA	75	72	96	75	82	110

Action Plan

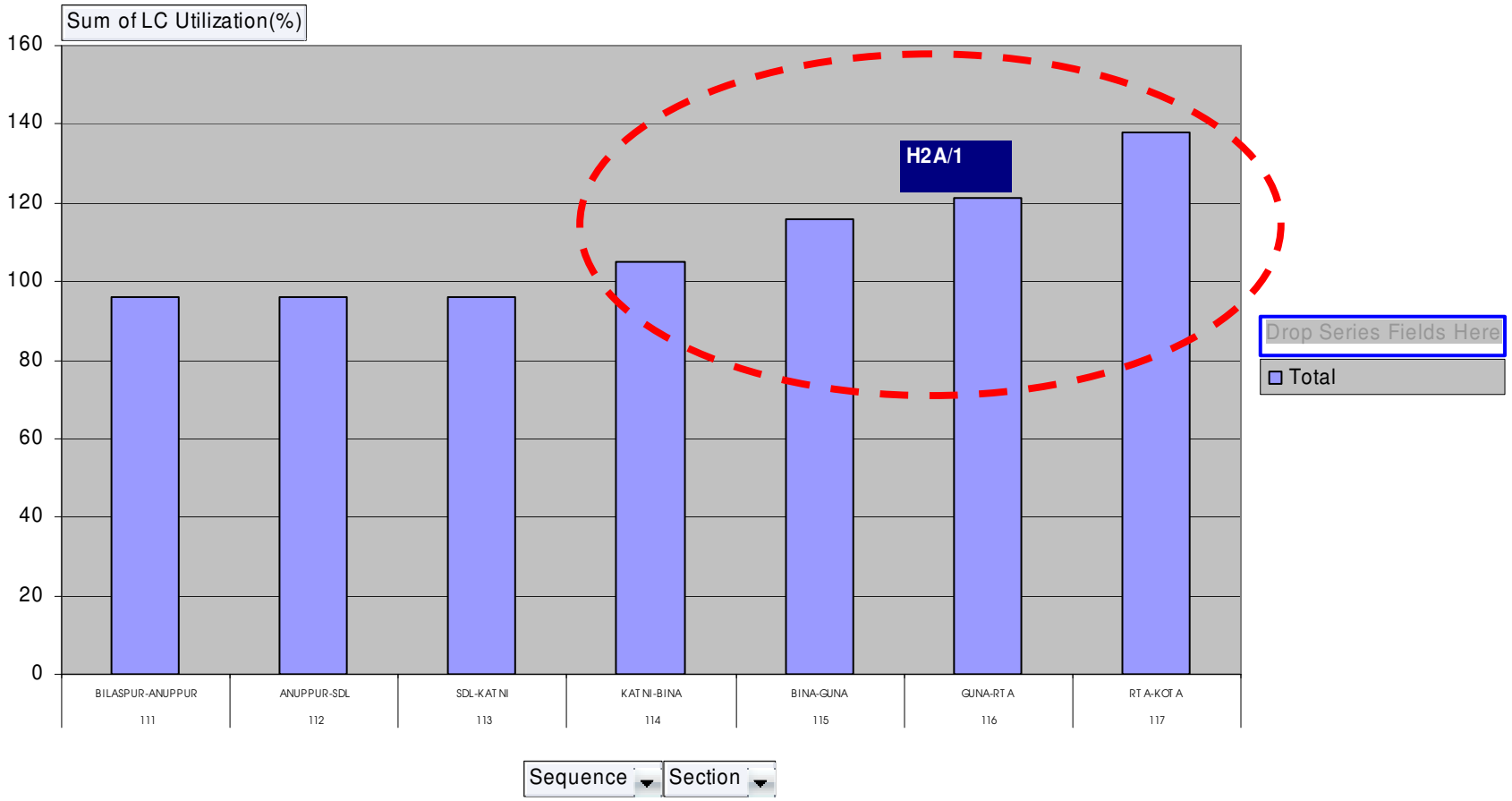
• 3rd line work between Kharagpur and Panskura (45 Kms) costing Rs 140 crores. Work is with RVNL, but awaiting MOF Clearance. The clearance to be expedited

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Route 2A=ALTERNATIVE LINK ROUTE OF BILSPUR-ANNUPUR-KATNI-BINA-KOTA																				
SECR	BILASPUR-ANUPPUR	150.9	1	MACLS	23	13	16	2	30	**131**	48	50	**96**		DL sanctioned				Byepass at APR sanctioned Byepass at BSP	
SECR	ANUPPUR-SDL	41	2	MACLS	44	14	32	1	47	**106**	48	50	**96**				2 Sanctioned			
SECR	SDL-KATNI	125.3	2	MACLS	39	12	32	1	45	**115**	48	50	**96**				6 Sanctioned			
WCR	KATNI-BINA	264	2,1	MACLS	37	16	24	7	47	**128**	63	60	**105**				10 Sanctioned		Agasod-Malkheri Bye-pass line	
WCR	**BINA-GUNA**	118.4	1	LQ	20	9	9	2	20	**100**	29	25	**116**		RE sanctioned			Bina-Guna =new crossing station		
WCR	**GUNA-RTA**	20.4	1	LQ	16	12	9	2	23	**144**	30	25	**121**	Critical H2A/1	RE sanctioned					
WCR	**RTA-KOTA**	164.2	1	LQ	13	5	10	3	18	**141**	35	25	**138**		RE sanctioned			Kota-RTA 2 new crossing stations		
Route 2B= JALGAON-SURAT																				
WR	SURAT-UDHNA	4	2	AUTO	58	61	25	2	88	**152**	108	75	**144**			Provided				
WR	**UDHNA-USD**	75.6	1	MACLS	16	11	9	2	22	**138**	27	18	**149**	Critical H2B/1						
WR	**USD-NDB**	80.6	1	MACLS	17	11	12	2	25	**145**	29	18	**163**							
WR	**NDB-JL**	150.6	1	MACLS	16	10	12	1	23	**145**	28	18	**174**							


HDN 2A - Sectional Density : Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
70
60
50
40
30
20
10
0
BILASPUR-ANUPPUR
ANUPPUR-SDL
SDL-KATNI
KATNI-BINA
BINA-GUNA
GUNA-RTA
RTA-KOTA
Bypass between Agasod and Malkheri
Bypass at APR and BSP
Non-Electric
+ 2 IBS
+ 6 IBS
+ 10 IBS
New Xing Stn
RE Sanctioned
2 New Xing Stns
LQ
MACLS

HDN Name | HDN 2A

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION H 2 A	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
BILASPUR-ANUPPUR	**23**	**30**	**130**	**50**	**48**	**96**

Remarks

• The bottleneck is the Ghat section of Khongsara-Bhawartonk-Khodri (23 Kms) at a cost of Rs. 46 crores.

Action Plan

• Survey to be done for 3rd line on Ghat section on a flatter grade.

CRITICAL SECTION H2 A/1	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
KATNI-BINA	**37**	**45**	**122**	**62**	**63**	**101**

Action Plan

• Grade separator at Katni at a cost of Rs. 75 crores.

• ABS between Baghora-Malkhedi-Bina at a cost of Rs. 75 crores.

• Splitting of Bina-Katni section into 6 more IBS at a cost of Rs. 75 crores.

• 3rd line patch between Sumreri-Jeruakheda and Sagoni-Ratangaon at a cost of Rs. 75 crores.

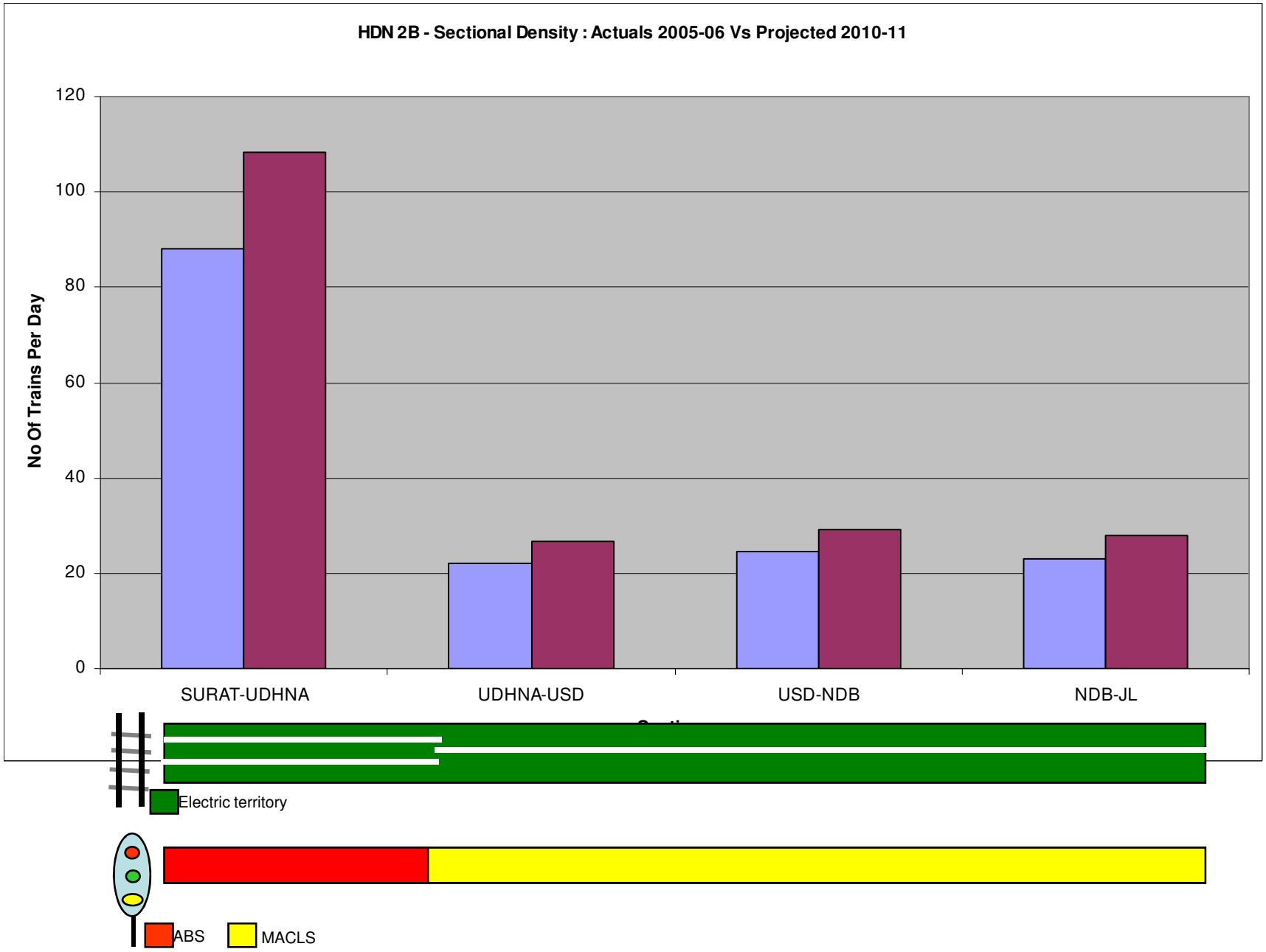
CRITICAL SECTION H 2 A/1	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
BINA-GUNA	**20**	**20**	**100**	**25**	**29**	**116**
GUNA-RTA	**16**	**23**	**144**	**25**	**30**	**120**
RTA-KOTA	**13**	**18**	**138**	**25**	**35**	**140**

Remarks:

- Most important route for coal movement into new power plants coming up in Northern and North Western India.
- Connects 2 major HDNs - HDN 2 and HDN 3. Currently single line section and sanctioned for electrification in which upgrading of signaling will come up.
- Doubling of the section is imperative.

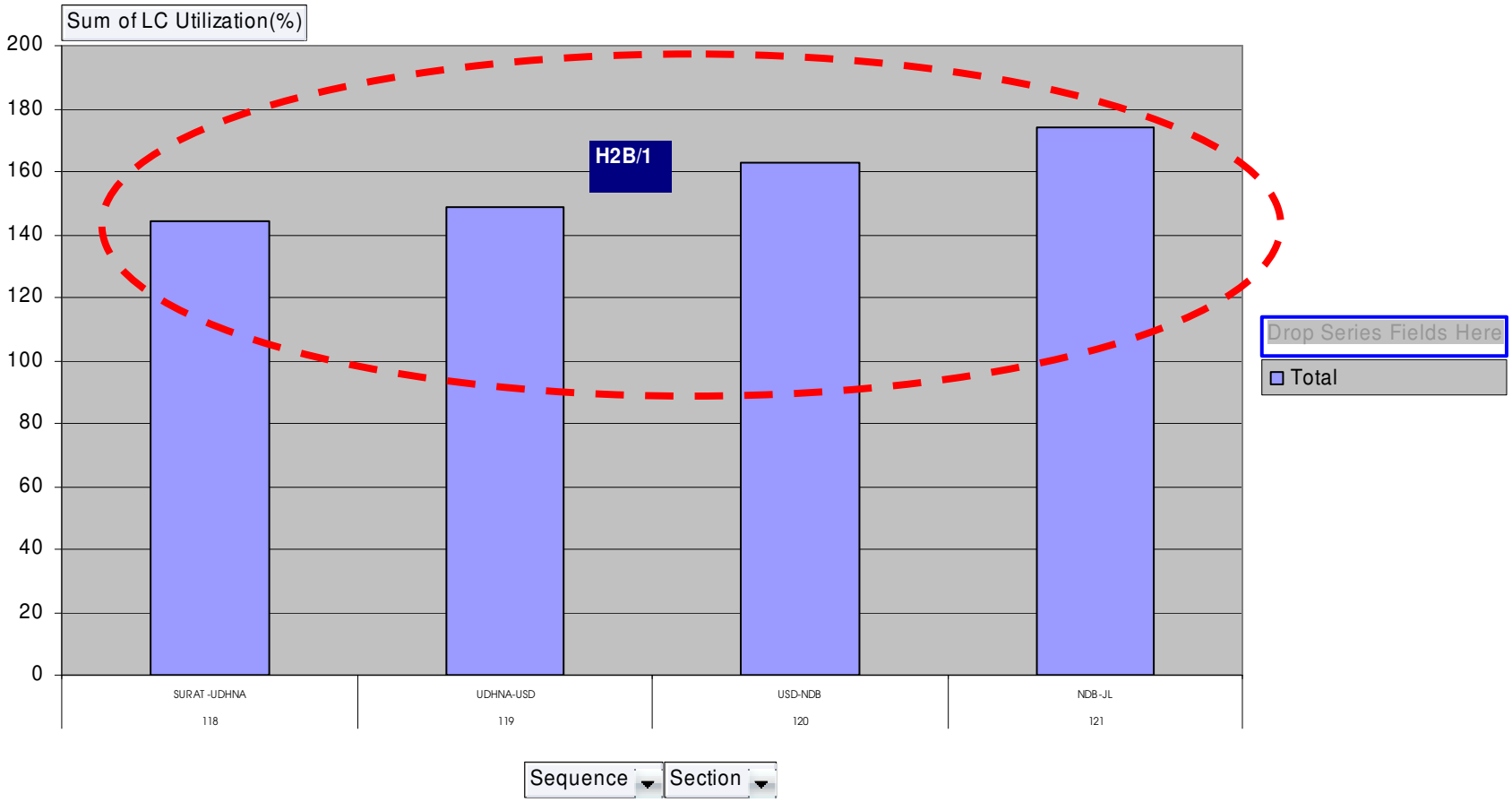
Action Plan:

- Doubling & electrification of BINA-KOTA (300 Kms at a cost of Rs 840 crore). Survey to be done.
- Section GUNA-RTA (21 Kms) at a cost of Rs. 63 crores, to be taken up on priority for doubling for which the report has already been submitted.
- In the interim, additional 3 IBS between Ruthiyai and Kota and additional holding loop at Sogaria be provided at a cost of Rs. 3.6 crore.


HDN 2B - Sectional Density : Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
120
100
80
60
40
20
0
SURAT-UDHNA
UDHNA-USD
USD-NDB
NDB-JL
Electric territory
ABS
MACLS

HDN Name | HDN 2B

Line Capacity Utilization (%) in 2010-11



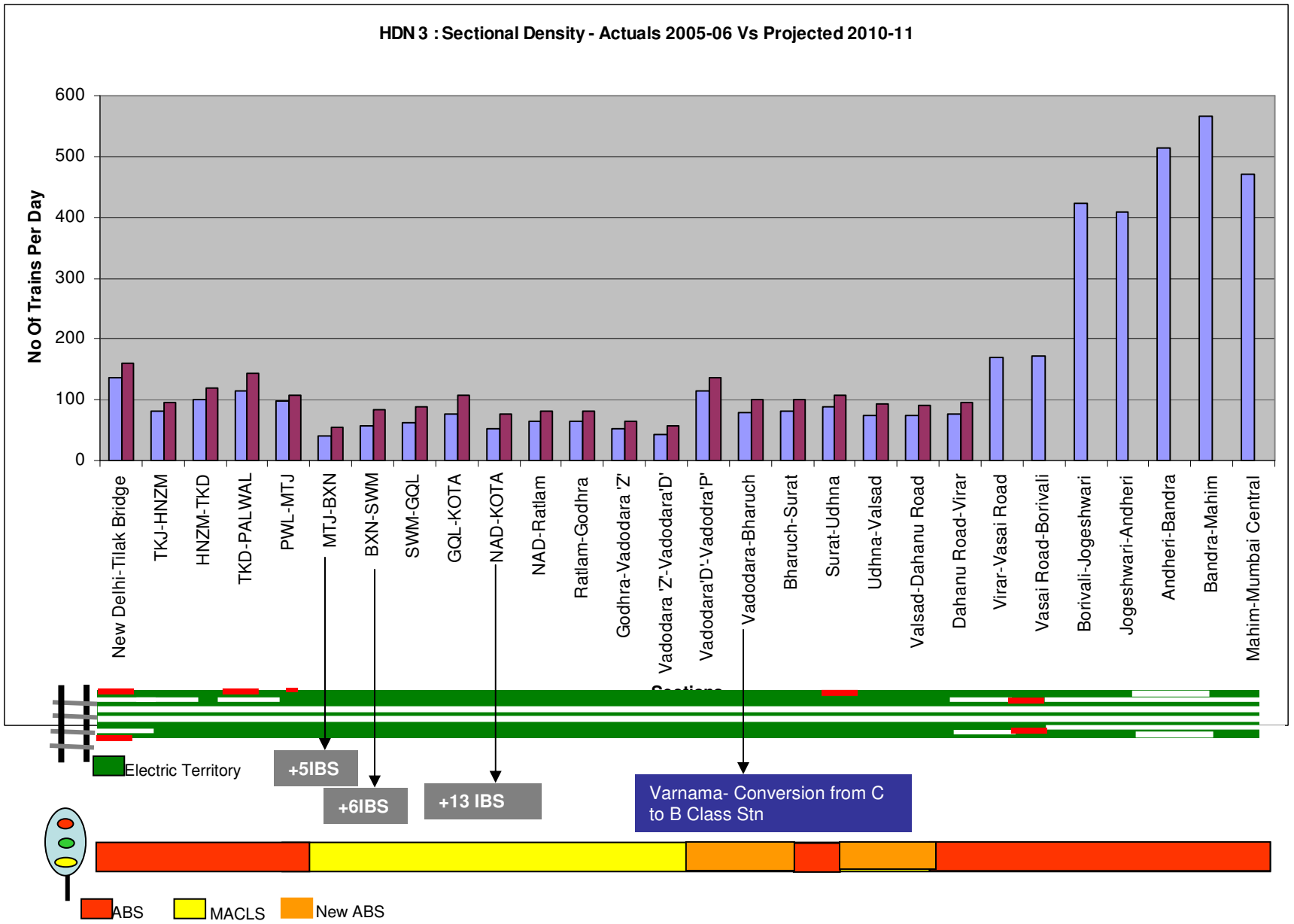
CRITICAL SECTION H 2 B/1	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
UDHNA-USD	**16**	**22**	**138**	**16**	**27**	**169**
USD-NDB	**17**	**25**	**147**	**17**	**29**	**171**
NDB-JL	**16**	**23**	**145**	**16**	**28**	**175**

Action Plan:

- The survey report for doubling of UDN-JL has been appraised. The 304 km long section is estimated to cost Rs. 609 cr. Planning Commission has given in principle approval. This should be targeted for next Supplementary Budget.

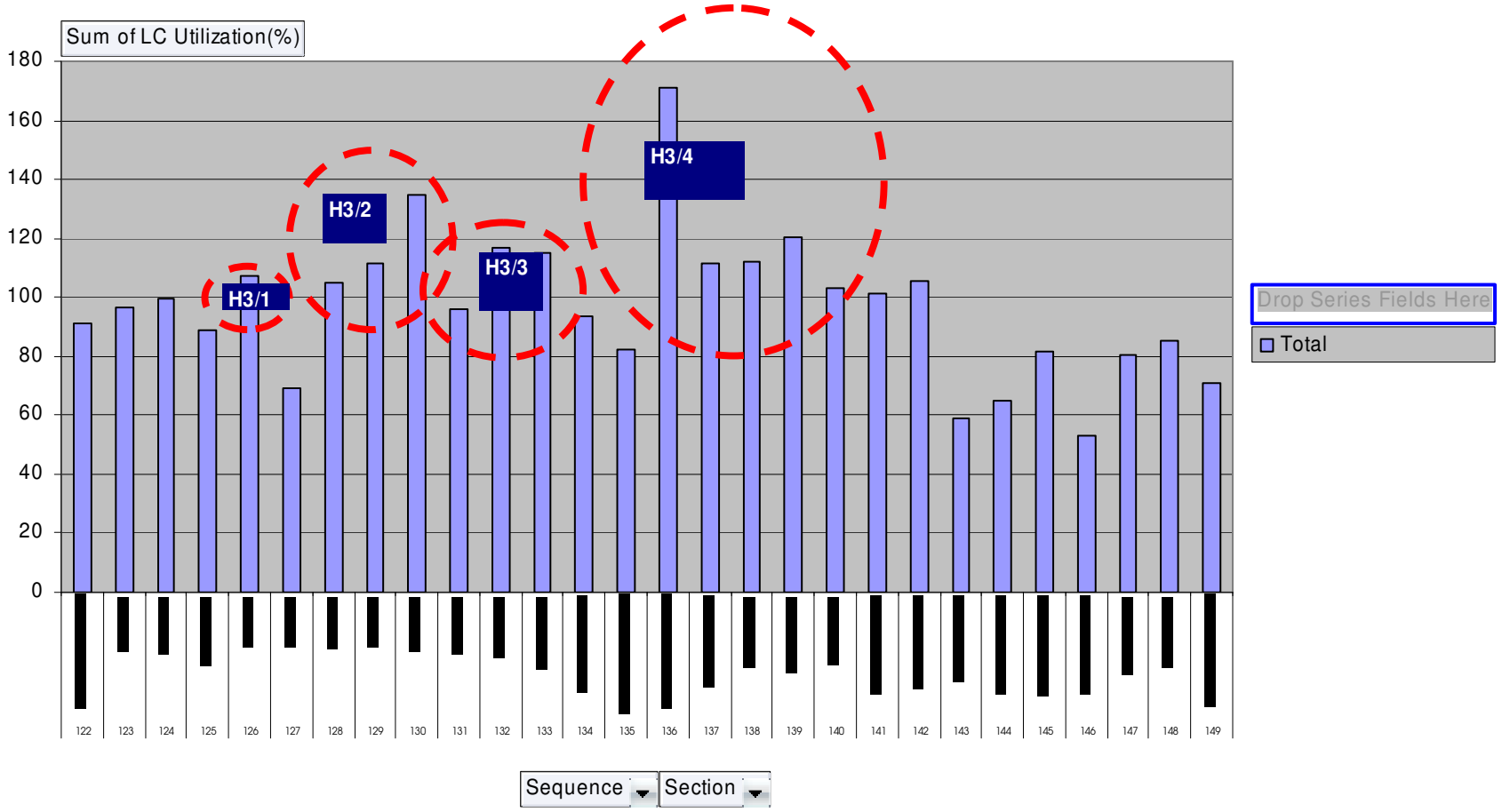
HDN 3

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
HDN-3 DELHI-MUMBAI, INCL ALT ROUTE DELHI-REWARI-RINGUS-PHULERA-AJMER-CHITTORGARH & GANDHIDHAM-PALAMPUR-BHILDI-SAMDARI-JODHPUR-BHATINDA&PANVEL-JNPT																				
NR	New Delhi-Tilak Bridge	2.9	4	AUTO	120	101	10	26	136	**114**	160	175	**91**		5&6th line	Provided				
NR	TKJ-HNZM	4.7	3	AUTO	120	54	6	21	81	**67**	97	100	**97**			Provided				
NR	**HNZM-TKD**	10.5	4	AUTO	120	64	16	20	100	**83**	120	120	**100**			Provided				
NR	TKD-PALWAL	29	3	AUTO	70	64	46	5	115	**164**	142	160	**89**		4th line sanctioned	Sanctioned				
NCR	PWL-MTJ	83.4	2	AUTO	66	49	44	4	97	**147**	107	100	**107**	Critical H3/1	PALWAL-BHUTESWAR 3RD LINE	Provided				
WCR	MTJ-BXN	75.41	2	MACLS	40	17	22	1	40	**100**	56	80	**69**				5 Sanctioned			
WCR	**BXN-SWM**	140.8	2	MACLS	40	25	31	3	58	**146**	84	80	**105**	Critical H3/2			6 Sanctioned			
WCR	**SWM-GQL**	102.2	2	MACLS	40	29	29	5	63	**157**	89	80	**111**				1 provided			
WCR	**GQL-KOTA**	5.56	2	MACLS	40	34	33	10	78	**194**	108	80	**135**							
WCR	NAD-KOTA	225	2	MACLS	40	23	25	3	52	**130**	77	80	**96**				13 Sanctioned			
WR	NAD-Ratlam	41.35	2	MACLS	46	26	35	4	66	**143**	82	70	**117**	Critical H3/3			2 provided			
WR	Ratlam-Godhra	185.2	2	MACLS	46	25	33	6	64	**140**	81	70	**115**				7 provided			
WR	Godhra-Vadodara 'Z'	67.04	2	MACLS	46	26	24	2	51	**112**	65	70	**93**							
WR	Vadodara 'Z'-Vadodara'D'	2.11	2	MACLS	46	26	16	1	44	**95**	58	70	**82**							
WR	Vadodara'D'-Vadodra'P'	4.58	2	MACLS	71	72	28	15	115	**162**	135	79	**171**	Critical H3/4						
WR	Vadodara-Bharuch	70.12	2	MACLS	54	50	27	3	80	**148**	100	90	**112**			Sanctioned		Varnama= conversion from C-class to 'B' class		
WR	Bharuch-Surat	58.94	2	MACLS	54	51	27	3	80	**149**	101	90	**112**			Sanctioned				
WR	Surat-Udhna	4.01	2	AUTO	58	61	25	2	88	**152**	108	90	**120**		Surat-Kosamba sanc. (Frozen)	Provided				
WR	Udhna-Valsad	64.55	2	MACLS	50	51	20	4	75	**150**	93	90	**103**			Sanctioned				
WR	Valsad-Dahanu Road	74.4	2	MACLS	50	49	20	4	73	**147**	91	90	**101**			Sanctioned				
WR	Dahanu Road-Virar	63.8	2	AUTO	63	55	18	4	77	**122**	95	90	**105**			Provided				
WR	Virar-Vasai Road	8.2	4	AUTO	126	149	16	4	169	**134**	149	252	**59**			Provided				
WR	Vasai Road-Borivali	17.3	2	AUTO	126	164	3	4	171	**136**	164	252	**65**			Provided				
WR	Borivali-Jogeshwari	10.46	4	AUTO	378	412	3	7	422	**132**	412	504	**82**			Provided				
WR	Jogeshwari-Andheri	1.69	4	AUTO	378	400	1	7	408	**122**	400	756	**53**			Provided				
WR	Andheri-Bandra	7.17	6	AUTO	630	506	16	7	515	**164**	506	630	**80**			Provided				
WR	Bandra-Mahim	1.73	6	AUTO	642	549	1	17	567	**113**	549	642	**86**			Provided				
WR	Mahim-Mumbai Central	8.45	4	AUTO	516	455	0	17	472	**102**	455	642	**71**			Provided				
	TOTAL	1371														Provided				


HDN 3 : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
600
500
400
300
200
100
0
New Delhi-Tilak Bridge
TKJ-HNZM
HNZM-TKD
TKD-PALWAL
PWL-MTJ
MTJ-BXN
BXN-SWM
SWM-GQL
GQL-KOTA
NAD-KOTA
NAD-Ratlam
Ratlam-Godhra
Godhra-Vadodara 'Z'
Vadodara 'Z'-Vadodara'D'
Vadodara'D'-Vadodra'P'
Vadodara-Bharuch
Bharuch-Surat
Surat-Udhna
Udhna-Valsad
Valsad-Dahanu Road
Dahanu Road-Virar
Virar-Vasai Road
Vasai Road-Borivali
Borivali-Jogeshwari
Jogeshwari-Andheri
Andheri-Bandra
Bandra-Mahim
Mahim-Mumbai Central
Electric Territory
+5IBS
+6IBS
+13 IBS
Varnama- Conversion from C to B Class Stn
ABS
MACLS
New ABS

HDN Name | HDN 3

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION H 3/1	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
PWL-MTJ	66	97	147	90	107	119

Action Plan:

• Two streams of traffic converge at Mathura, one from Kota division & other ex Agra division. Although a 3rd line has been sanctioned, a 4th line (83.4 Kms) is recommended at a cost of 250 crores appx. since this route will remain busy & investment will not go waste even after western DFC comes.

•A flyover at MTJ/Bhuteshwar to segregate the traffic to & from Alwar side is needed at a cost of Rs 75 crores).

•Junction arrangements at MTJ to connect Kasganj line with Agra & Kota routes along with MTJ yard remodeling at a cost of Rs. 50 crores.

• 4 new crossing stations between AWR-MTJ, upgradation of standard of interlocking, track and electrification up to second block station from Bhuteshwar towards Alwar at a cost of Rs. 150 crores.

CRITICAL SECTION H 3/2	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
BXN-SWM	**45**	**58**	**129**	**70**	**84**	**120**
SWM-GQL	**45**	**63**	**140**	**70**	**89**	**127**
GQL-KOTA	**45**	**78**	**173**	**60**	**108**	**180**

Remarks:

• Already Double line with MACLS

• Primary section which is critical is GQL-KOTA.

• IBS sanctioned on this route to be completed on priority.

Action Plan:

• Railway to identify sections which can be split.

• Kota yard remodeling with RRI at a cost of Rs. 17.5 crores.

•Automatic twin single line working on Chambal bridge.

• Directional loops at remaining stations.

Medium term:

• Byepass lines from Kusthala to SWM at a cost of Rs. 5 crores.

CRITICAL SECTION H 3/3	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
NAD-Ratlam	**46**	**66**	**143**	**71**	**82**	**115**

Action Plan

• ABS (41.35 Kms) of Nagda-RTM at a cost of Rs 17 crores.

CRITICAL SECTION H 3/4	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
Vadodara'D'-Vadodara 'P'	**71**	**115**	**162**	**79**	**135**	**171**
Vadodara-Bharauch	54	80	148	71	100	141
Bharauch-Surat	**54**	**80**	**148**	**71**	**111**	**142**
Surat-Udhna	**58**	**88**	**152**	**75**	**108**	**144**

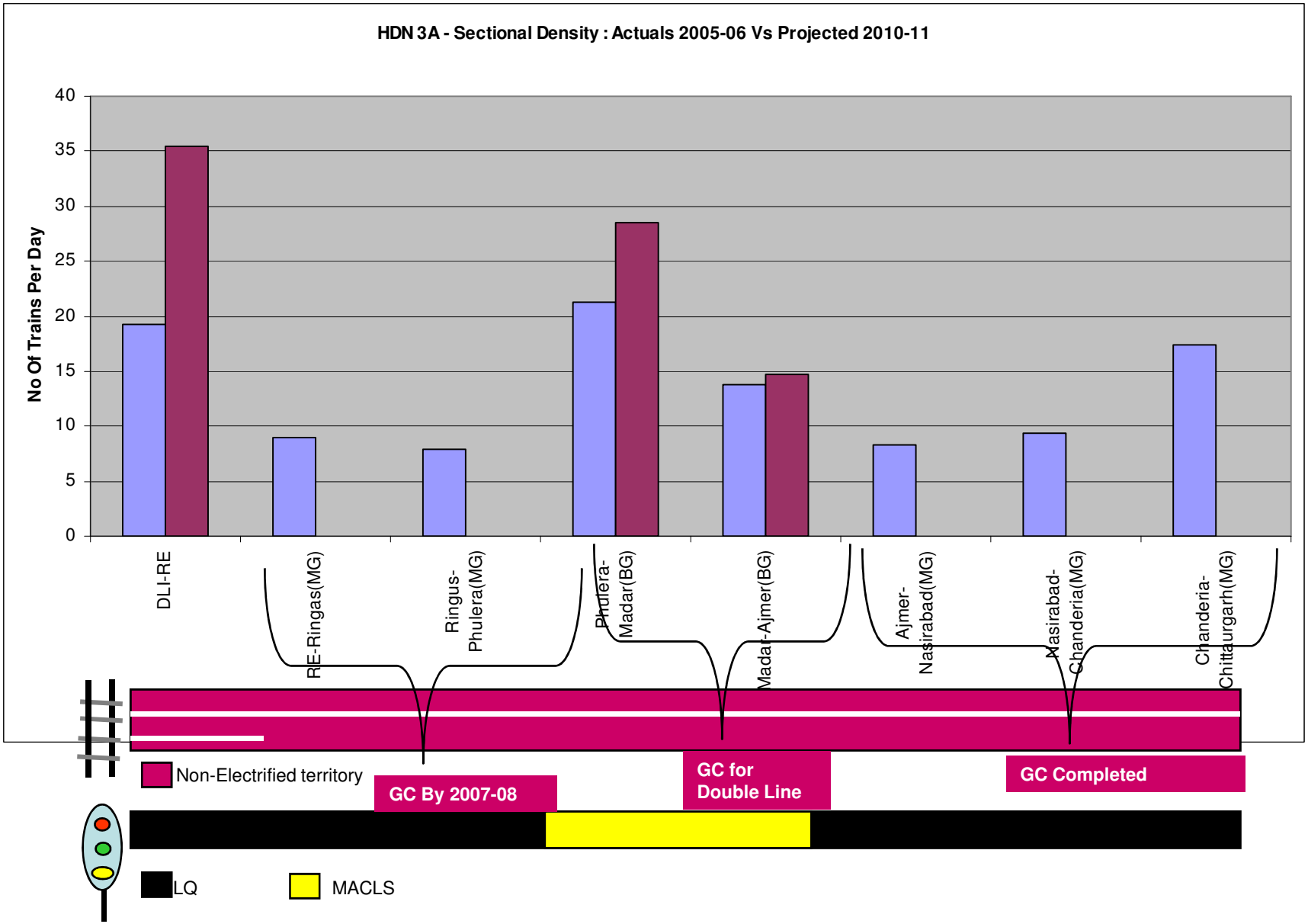
Remarks

• UDN-ST-Bharauch-BRC section is already saturated & proposed doubling of UDN-JL, gauge conversion of BH-Dahej & huge investment in Hazira area will bring additional traffic.

Action Plan

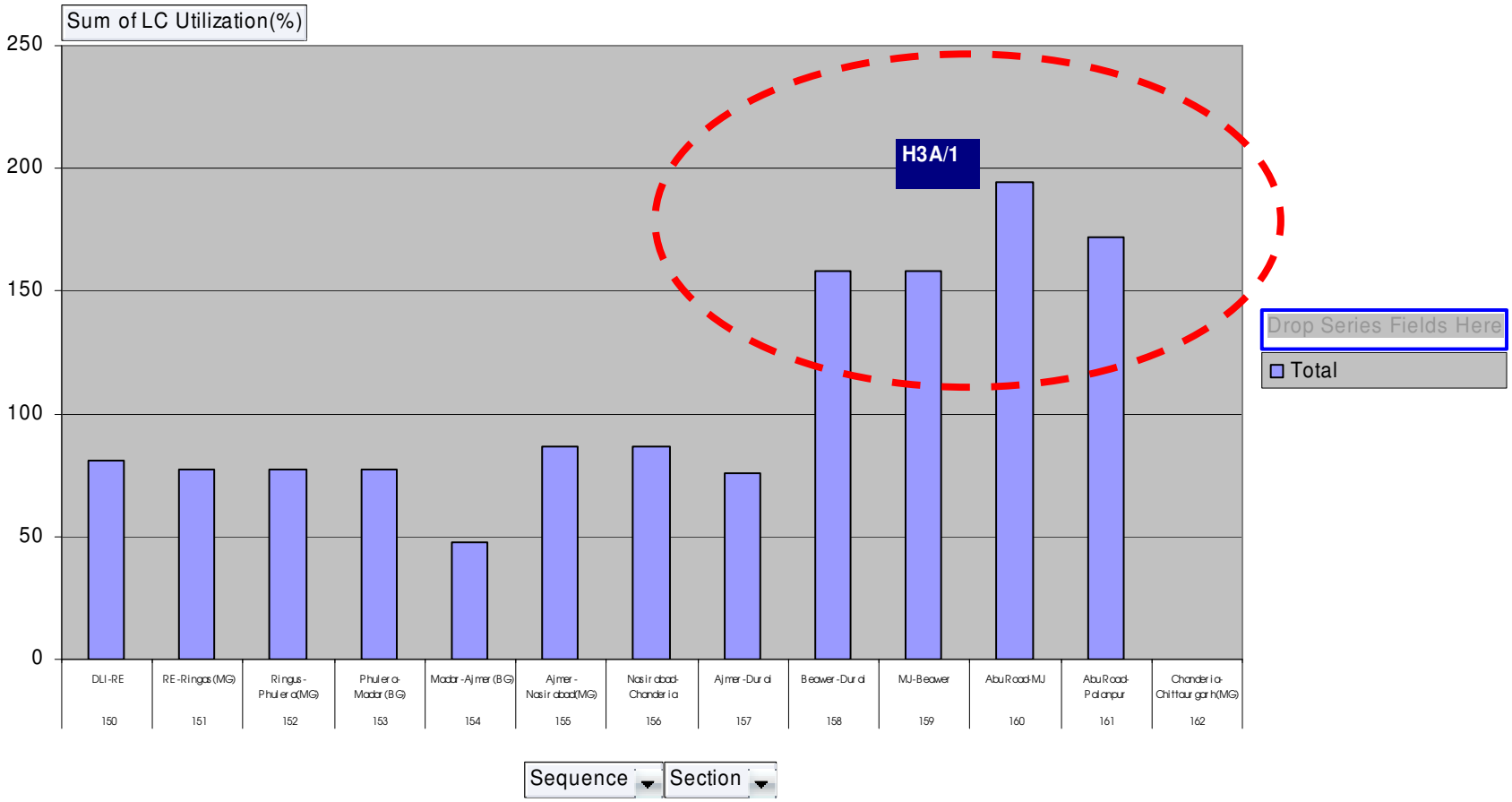
• UDN-Bharauch 3rd line with electrfication (63 Kms) at a cost of Rs 250 crores (including bridges).
• Gauge conversion of Bharauch-Samni-Jambusar-Vishwamitri (NG lines) (96 Kms), gauge conversion of Samni-Dahej (16 Kms), gauge conversion of Bhadran-Bochasan-Petlad_Nadiad (59 Kms) (total 171 Kms) at a cost of Rs 513 crores & a new line (15 Kms) at a cost of Rs. 60 crores, to connect BH-VSI line with BDRN-ND line. This will provide alternative route to ADI & Godhra avoiding Vadodara.
• 3rd line between Nadiad-Geratpur (32 Kms) at a cost of Rs 100 crores.
• New line from Geratpur to Sanand (40 Kms) avoiding ADI, at a cost of Rs 150 crores.

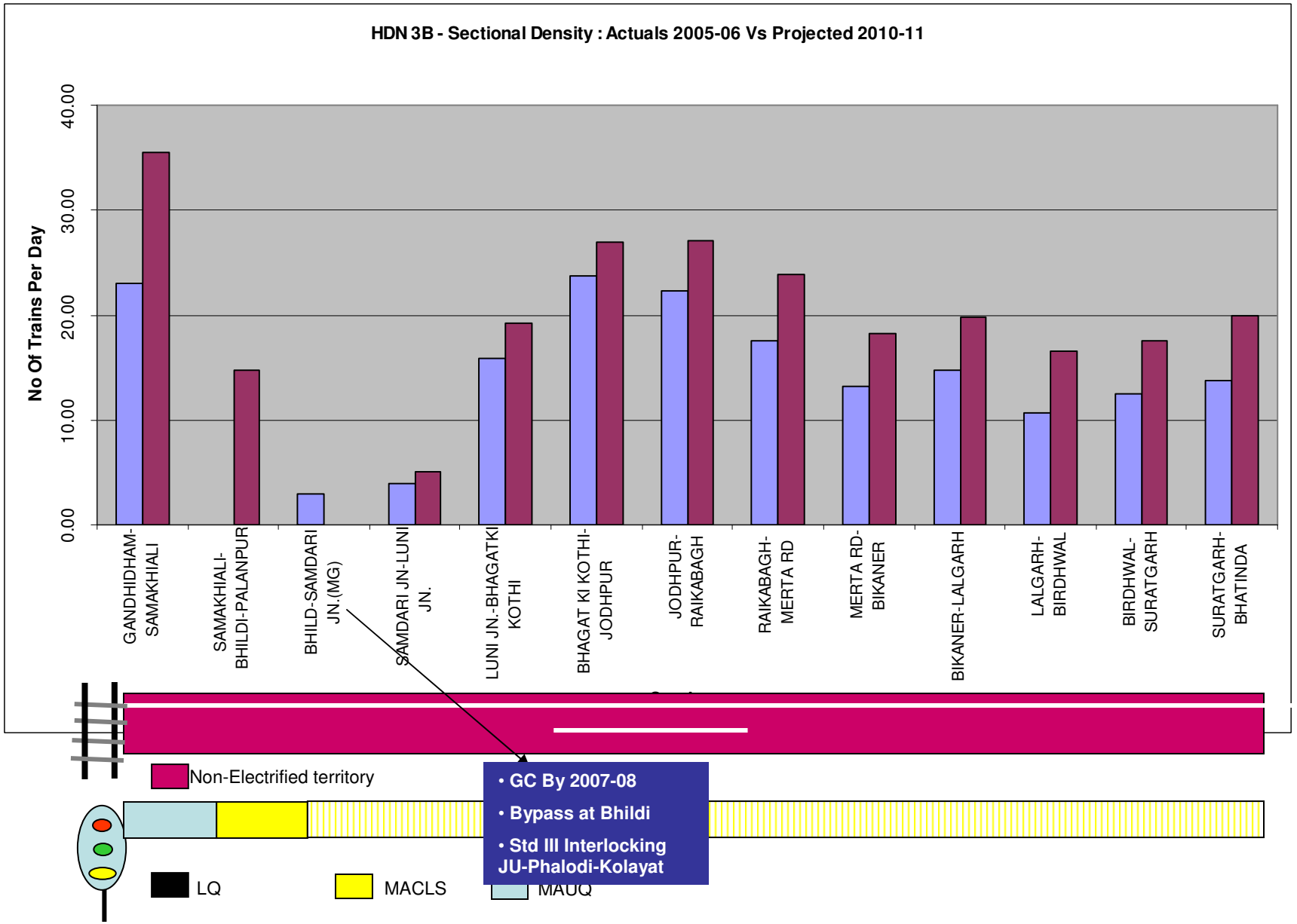
Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
3 A =ALT ROUTE DELHI-REWARI-RINGUS-PHULERA-AJMER-CHITTORGARH																				
NR	DLI-RE	77.92	2	LQ	50	15	5	0	19	**39**	36	44	**81**							
NWR	RE-Ringas(MG)	148.4	1	LQ	16	6	2	1	9	**56**	17	22	**77**		GC by 2007-08					
NWR	Ringus-Phulera(MG)	66.76	1	LQ	16	4	3	1	8	**49**	17	22	**77**		GC by 2007-08					
NWR	Phulera-Madar(BG)	73.25	1	MACLS	18	13	7	1	21	**118**	39	50	**77**		GC for DL					
NWR	Madar-Ajmer(BG)	6.2	1	MACLS	18	13	0	1	14	**76**	24	50	**48**		GC for DL					
NWR	Ajmer-Nasirabad(MG)	23.36	1	LQ	20	7	1	1	8	**42**	19	22	**86**		GC completed					
NWR	Nasirabad-Chanderia	115	1	LQ	18	6	2	1	9	**52**	19	22	**86**		GC completed					
NWR	Ajmer-Durai	7.11	1	MACLS	20	13	0.1	1	14	**71**	15	19.5	**76**							
NWR	Beawer-Durai	45.07	1	MACLS	20	13	8	2	23	**116**	29	18	**158**	Critical H3A/1						
NWR	MJ-Beawer	87.66	1	MACLS	18	12	7	1	20	**111**	29	18	**158**							
NWR	Abu Road-MJ	165.2	1	MACLS	18	17	11	2	30	**168**	35	18	**194**							
NWR	Abu Road-Palanpur	52.64	1	MACLS	20	18	10	1	28	**144**	34	20	**172**							
WR	Chanderia-Chittaurgarh(MG)	7.5	1	LQ	19	7	7	3	17	**91**					GC completed					
	TOTAL	876																		
3B=GANDHIDHAM-PALAMPUR-BHILDI-SAMDARI-JODHPUR-BHATINDA & PANVEL-JNPT																				
WR	GANDHIDHAM-SAMAKHIALI	52.98	1	MAUQ	18	7	14	2	23	**128**	36	50	**71**						GIM bye pass line	25t
WR	SAMAKHIALI-BHILDI-PALANPUR	247.7	1	MACLS	17	3	7	1	11	**65**	15	17	**86**							25t
NWR	BHILD-SAMDARI (MG)	223.4	1	MACLS	14	3	0	0	3	**21**	12	22	**55**		GC by 2007-08					
NWR	SAMDARI -LUNI	50	1	MACLS	18	4	0	0	4	**22**	17	18	**93**							
NWR	LUNI-BGKT	28.12	1	MACLS	20	12	4	0.2	16	**79**	28	20	**139**	Critical H 3B/1						
NWR	BGKT-JODHPUR	3.4	2	ABS,TOKEN	40	12	4	8	24	**59**	36	40	**89**							
NWR	JODHPUR-RAIKABAGH	2.4	2	ABS,TOKEN	40	16	3	3	22	**56**	35	40	**88**							
NWR	Rai Ka Bagh-Merta Road	101.7	1	ABS,TOKEN	19	11	6	1	18	**92**	20	23	**86**							
NWR	MERTA RD-BIKANER	172.7	1	ABS,TOKEN	16	9	4	0	13	**82**	14	23	**59**							
NWR	BIKANER-LALGARH	3.7	1	ABS,TOKEN	18	10	4	1	15	**82**	18	21	**86**							
NWR	LALGARH-BIRDHWAL	160	1	ABS,TOKEN	16	5	5	1	11	**66**	17	21	**79**							
NWR	BIRDHWAL-SOG	18	1	ABS,TOKEN	17	5	7	1	13	**74**	20	21	**95**							
NWR	SOG-BHATINDA	142.3	1	ABS,TOKEN	17	6	7	1	14	**81**	21	21	**100**							
	TOTAL	**1206**																		
3C PANVEL-JNPT																				
CR	PNVL-JSI	16	2	MACLS	18	0	13	4	17	**94**	36	36	**100**							
CR	JSI-JNPT	9	2	MACLS	10	0	13	2	14	**144**	32	36	**88**							
	TOTAL	**25**																		


HDN 3A - Sectional Density : Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
40
35
30
25
20
15
10
5
0
DLI-RE
RE-Ringas(MG)
Ringus-Phulera(MG)
Phulera-Madar(BG)
Madar-Ajmer(BG)
Ajmer-Nasirabad(MG)
Nasirabad-Chanderia(MG)
Chanderia-Chittaurgarh(MG)
Non-Electrified territory
GC By 2007-08
GC for Double Line
GC Completed
LQ
MACLS

HDN Name | HDN 3A

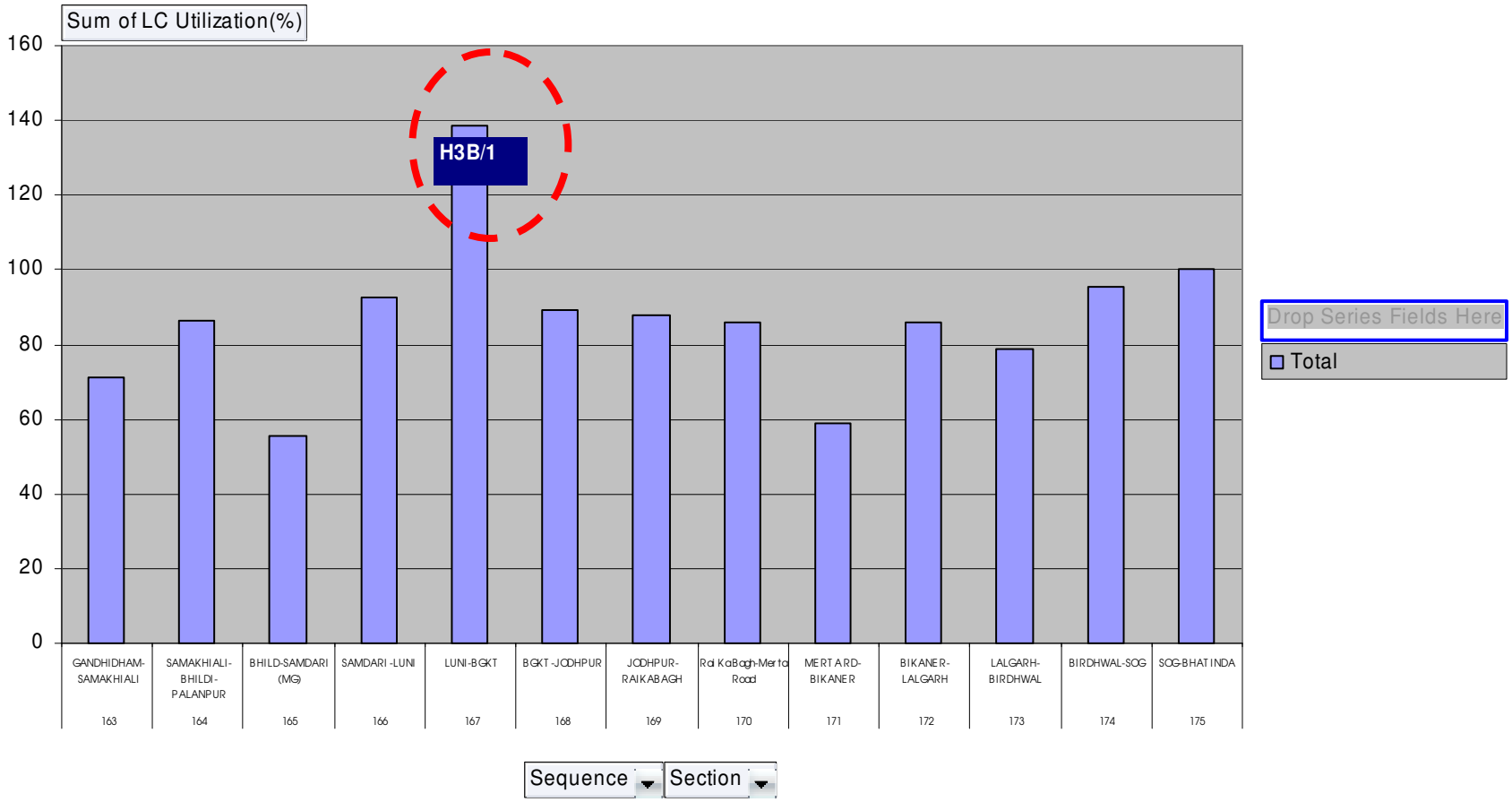
Line Capacity Utilization (%) in 2010-11

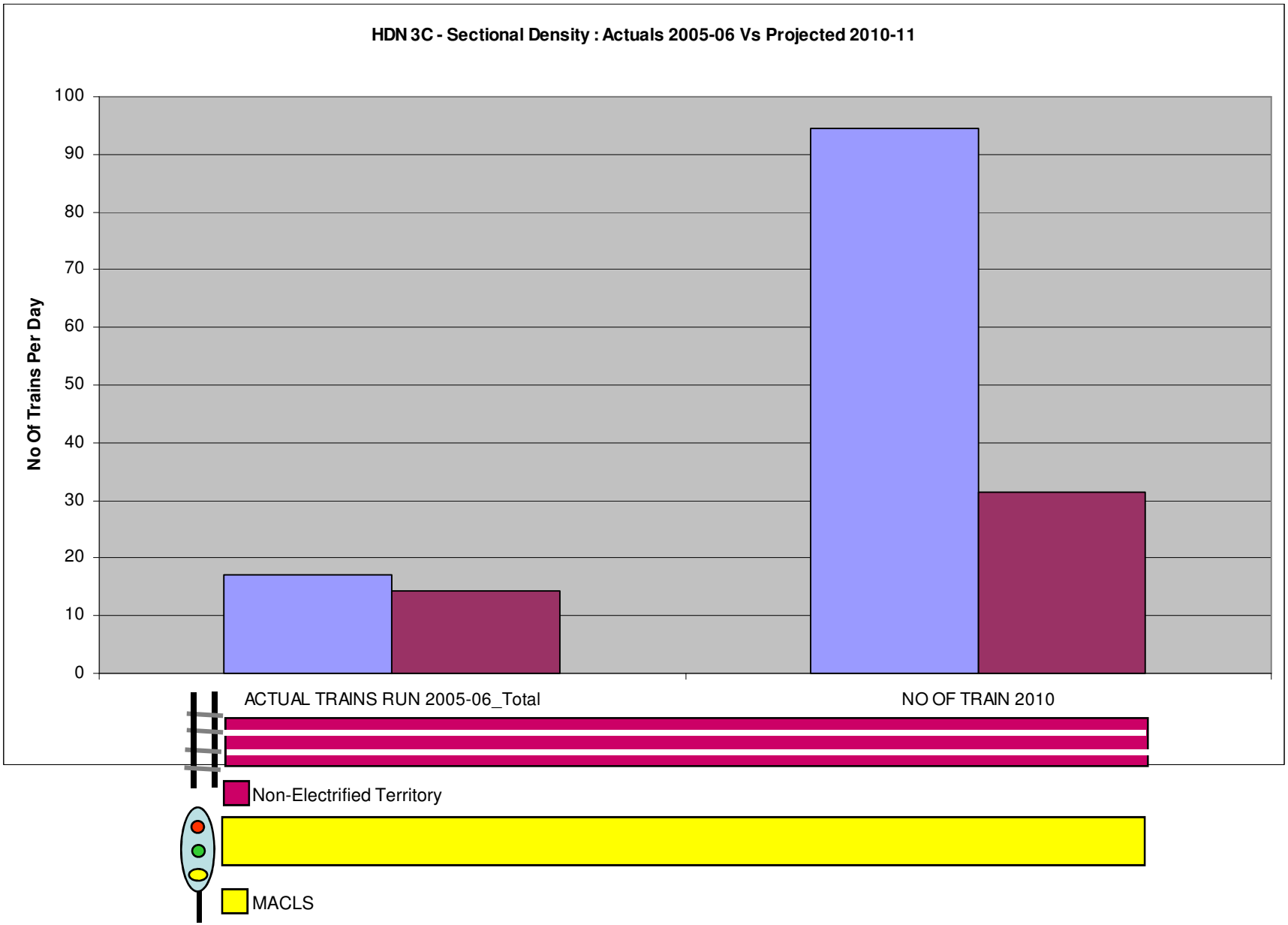



HDN 3B - Sectional Density : Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
0.00
10.00
20.00
30.00
40.00
GANDHIDHAM-SAMAKHIALI
SAMAKHIALI-BHILDI-PALANPUR
BHILD-SAMDARI JN.(MG)
SAMDARI JN-LUNI JN.
LUNI JN.-BHAGATKI KOTHI
BHAGAT KI KOTHI-JODHPUR
JODHPUR-RAIKABAGH
RAIKABAGH-MERTA RD
MERTA RD-BIKANER
BIKANER-LALGARH
LALGARH-BIRDHWAL
BIRDHWAL-SURATGARH
SURATGARH-BHATINDA
Non-Electrified territory
• GC By 2007-08
• Bypass at Bhildi
• Std III Interlocking JU-Phalodi-Kolayat
LQ
MACLS
MAUQ

HDN Name | HDN 3B

Line Capacity Utilization (%) in 2010-11




HDN 3C - Sectional Density : Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
100
90
80
70
60
50
40
30
20
10
0
ACTUAL TRAINS RUN 2005-06_Total
NO OF TRAIN 2010
Non-Electrified Territory
MACLS

CRITICAL SECTIONS H 3 A/1 & 3 B/1	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
MJ-PALANPUR	**18**	**20**	**111**	**18**	**29**	**158**
LN-BGKT	**20**	**16**	**79**	**20**	**28**	**139**

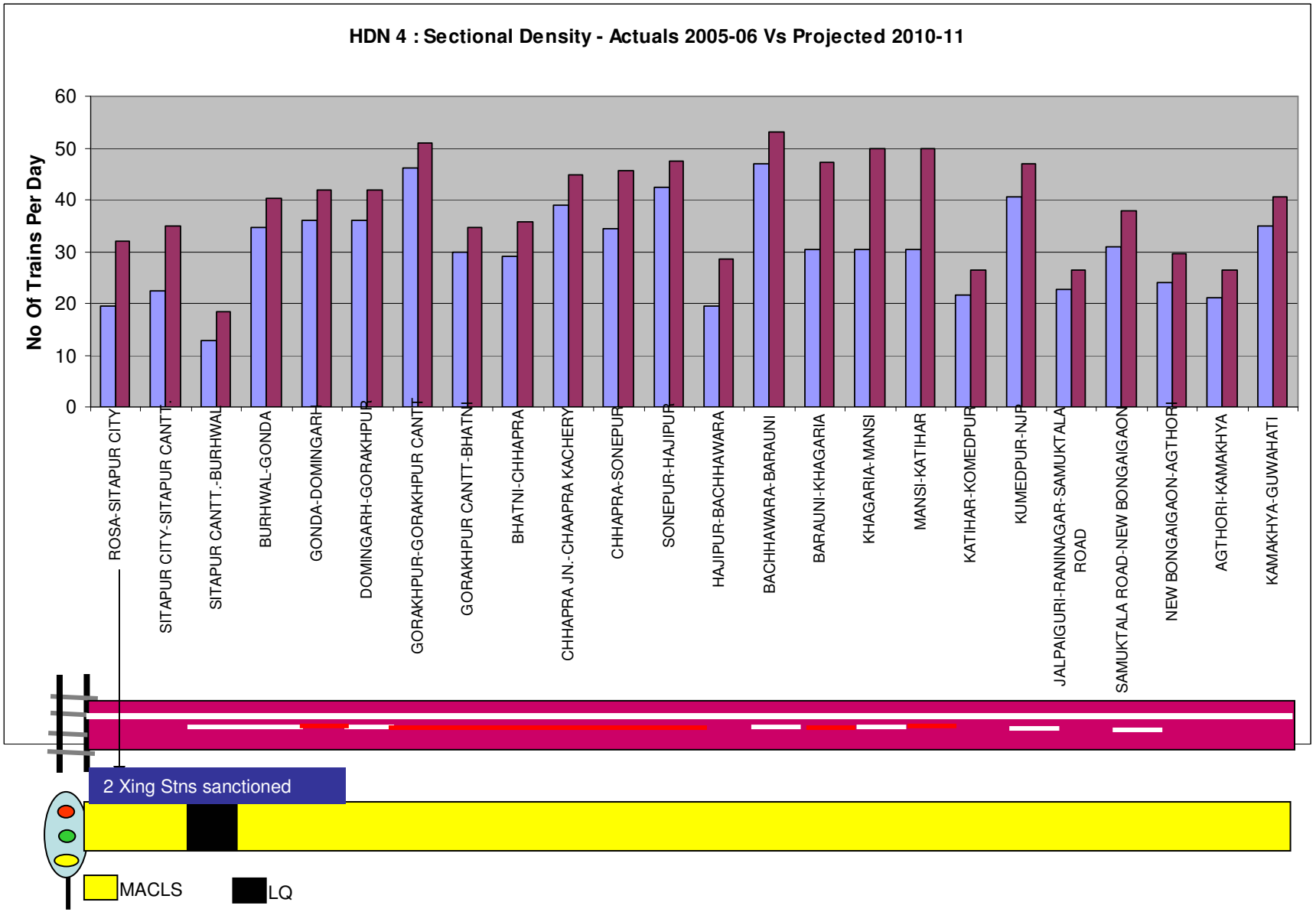
Action Plan :

- Develop alternative route by gauge conversion of UDZ-Ahmedabad MG route (342 Kms) at a cost of Rs 800 crores approximately..

- Splitting of one block section at a cost of Rs. 5 crores.

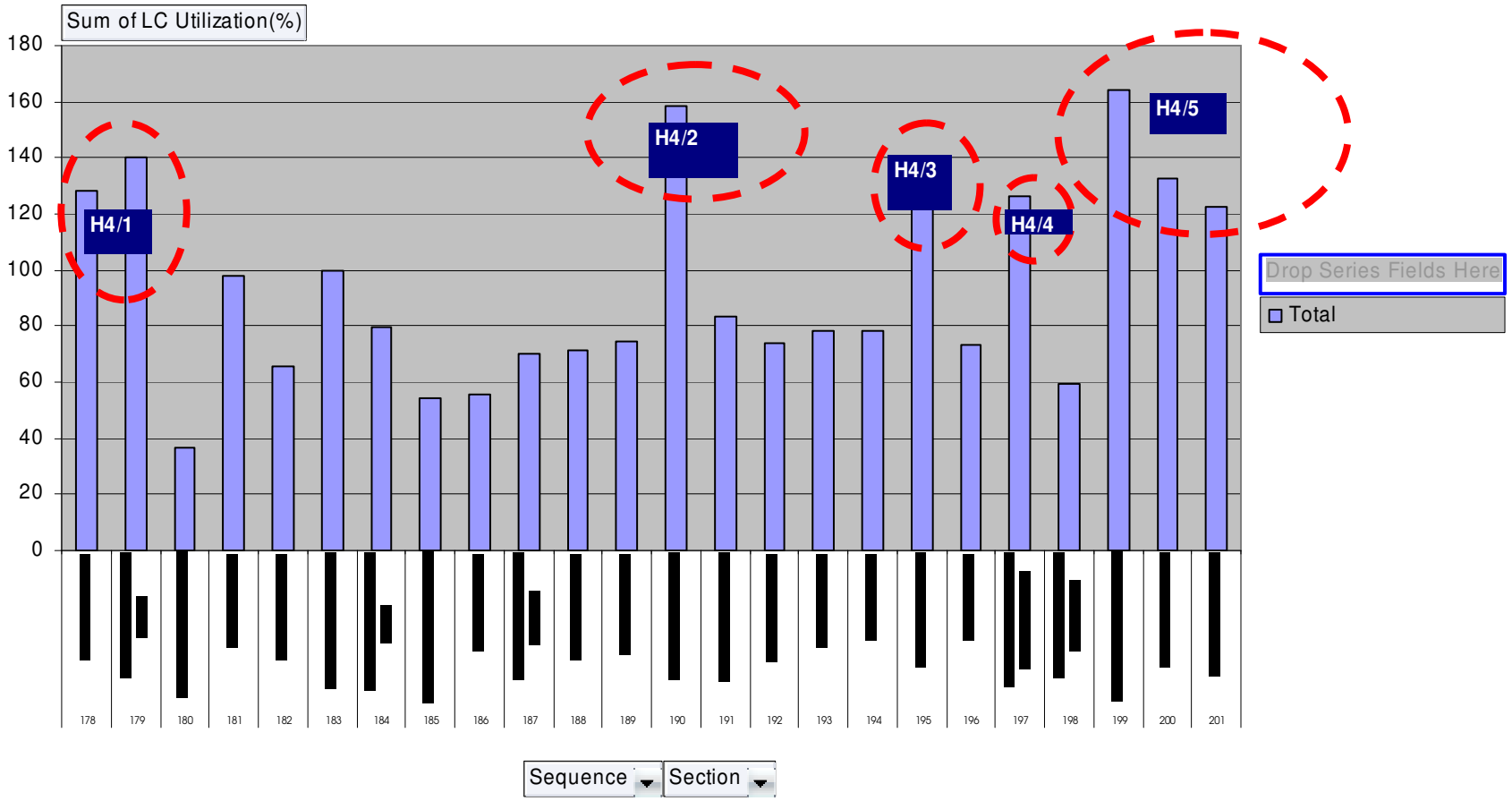
HDN 4

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
HDN 4 Delhi-Guwahati via Moradabad-Sitapur-Bhurwal-Gonda-Gorakhpur-Chappra-Barauni-Katihar																				
NR	ROSA-SITAPUR CITY	79.2	1	MACLS	9	5	13	2	20	**217**	32	25	**128**	Critical H4/1				2 crossing stations sanctioned (05-06)		
NR	SITAPUR CITY-SITAPUR CANTT.	4.4	1	MACLS	18	8	13	2	23	**125**	35	25	**140**							
NER	SITAPUR CANTT.-BURHWAL	99.7	1	LQ	16	7	6	0.3	13	**81**	18	50	**37**							
NER	BURHWAL-GONDA	51.7	2	MACLS	41	24	10	1	35	**84**	40	41	**98**							
NER	GONDA-DOMINGARH	148.7	1	MACLS	21	23	11	3	36	**171**	42	64	**65**		DL sanctioned					
NER	DOMINGARH-GORAKHPUR	4.37	2	MACLS	41	23	11	3	36	**88**	42	64	**100**		DL completed					
NER	GORAKHPUR-GORAKHPUR CANTT	3.8	1	MACLS	41	33	11	3	46	**112**	51	64	**80**		DL sanctioned					
NER	GORAKHPUR CANTT-BHATNI	66.7	1	MACLS	21	21	6	3	30	**143**	35	64	**54**		DL sanctioned	Provided				
NER	BHATNI-CHHAPRA	109.3	1	MACLS	21	20	6	3	29	**138**	36	64	**56**		DL sanctioned	Provided				
NER	CHHAPRA JN.-CHAAPRA KACHERY	2.1	1	MACLS	21	22	14	3	39	**186**	45	64	**70**		DL sanctioned	Provided				
ECR	CHHAPRA-SONEPUR	54.31	1	MACLS	24	21	12	2	35	**144**	46	64	**71**		DL completed from Chapra to 28 kms					
ECR	SONEPUR-HAJIPUR	5.5	1	MACLS	27	28	12	3	43	**157**	48	64	**74**		DL sanctioned					
ECR	HAJIPUR-BACHHAWARA	77.51	1	MACLS	18	10	8	2	20	**108**	29	18	**158**	Critical H4/2						
ECR	BACHHAWARA-BARAUNI	16.03	2	MACLS	43	30	15	2	47	**109**	53	64	**83**		DL completed					
ECR	BARAUNI-KHAGARIA	53.26	1	MACLS	20	19	10	2	31	**153**	47	64	**74**		DL Barauni-Tilrath completed					
ECR	KHAGARIA-MANSI	8.74	2	MACLS	38	19	10	2	31	**80**	50	64	**78**		DL completed					
ECR	MANSI-KATIHAR	115	1	MACLS	20	19	10	2	31	**153**	50	64	**78**		DL sanctioned					
NFR	KATIHAR-KUMEDPUR	29.5	1	MACLS	16	14	7	1	22	**134**	27	19	**139**	Critical H4/3						
NFR	KUMEDPUR-NJP	171.7	2	MACLS	41	23	17	1	41	**99**	47	64	**73**							
NFR	JALPAIGURI-RANINAGAR-SAMUKTALA ROAD	129	1	MACLS	21	14	8	0.4	23	**108**	27	21	**126**	Critical H4/4						
NFR	SAMUKTALA ROAD-NEW BONGAIGAON	96.2	2	MACLS	45	15	16	1	31	**70**	38	64	**59**							
NFR	NEW BONGAIGAON-AGTHORI	142.9	1	MACLS	18	15	7	2	24	**134**	30	18	**164**	Critical H4/5						
NFR	AGTHORI-KAMAKHYA	7.4	1	MACLS	20	15	5	1	21	**105**	27	20	**133**							
NFR	KAMAKHYA-GUWAHATI	6.4	1	MACLS	33	18	12	5	35	**106**	41	33	**123**							


HDN 4 : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
60
50
40
30
20
10
0
ROSA-SITAPUR CITY
SITAPUR CITY-SITAPUR CANTT.
SITAPUR CANTT.-BURHWAL
BURHWAL-GONDA
GONDA-DOMINGARH
DOMINGARH-GORAKHPUR
GORAKHPUR-GORAKHPUR CANTT.
GORAKHPUR CANTT-BHATNI
BHATNI-CHHAPRA
CHHAPRA JN.-CHAAPRA KACHERY
CHHAPRA-SONEPUR
SONEPUR-HAJIPUR
HAJIPUR-BACHHAWARA
BACHHAWARA-BARAUNI
BARAUNI-KHAGARIA
KHAGARIA-MANSI
MANSI-KATIHAR
KATIHAR-KOMEDPUR
KUMEDPUR-NJP
JALPAIGURI-RANINAGAR-SAMUKTALA ROAD
SAMUKTALA ROAD-NEW BONGAIGAON
NEW BONGAIGAON-AGTHORI
AGTHORI-KAMAKHYA
KAMAKHYA-GUWAHATI
2 Xing Stns sanctioned
MACLS
LQ

HDN Name | HDN 4

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION H 4/1	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
ROZA-SITAPUR CITY	**9**	**18**	**200**	**25**	**32**	**128**
SITAPUR CITY-SITAPUR CANTT.	**18**	**23**	**128**	**25**	**35**	**140**

Action Plan:

- The section between Roza and Sitapur City has long block sections.
- 2 crossing stations have been provided & 2 more are needed at a cost of Rs. 10 crores.. Since traffic to & from NF to NR moves via this route, electrification of Roza-SCC-Budhwal section (163 Kms) will provide seamless operation at a cost of Rs. 65 crores.

CRITICAL SECTION H 4/2	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
HAJIPUR-BACHHAWARA	**18**	**20**	**111**	**18**	**29**	**161**

Remarks:

- Single line section in a route where in all other stretches doubling has either been sanctioned or is in progress. Moreover in this route electrification is also being processed for sanction upto Guwahati.

Action Plan:

- Doubling of the 77.5 Kms route along with electrification at a cost of Rs 270 crores..

CRITICAL SECTION H 4/3	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
KATIHAR-KUMEDPUR	**16**	**22**	**74**	**19**	**27**	**142**

Remarks:

• Currently trains move from Katihar-Kumedpur-Barsoi-NJP. Katihar-Barsoi is under GC which will get completed in June 2007 and this woul be the shortest route.

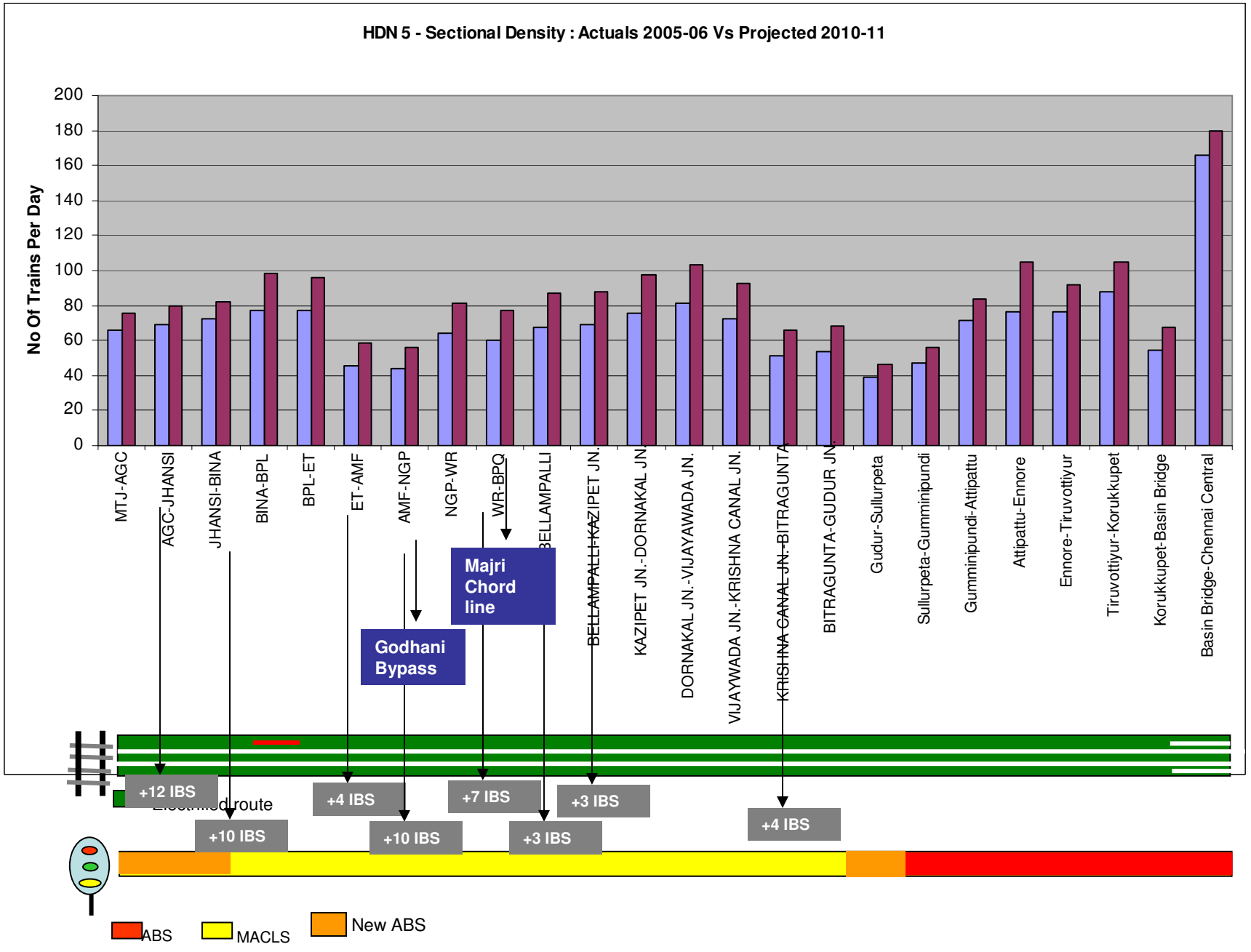
Action Plan:

• The only area where in future DL would be required will be between GHY-Jogighopa. Katihar-Barsoi is under GC, the work of which will get completed in June 2007 and this is the shortest route. Also a new line is coming up between New Mainaguri-Joghihopa. This will in effect provide a third line right upto Joghihopa. After commissioning of the new line between NMX-JPZ (261Kms), it will fulfill the provision of an alternative route rather than a 3rd line.

•Medium term plan would be doubling between Ambari Falakata and New Mainaguri (36.5 Kms) at a cost of Rs 110 crores.

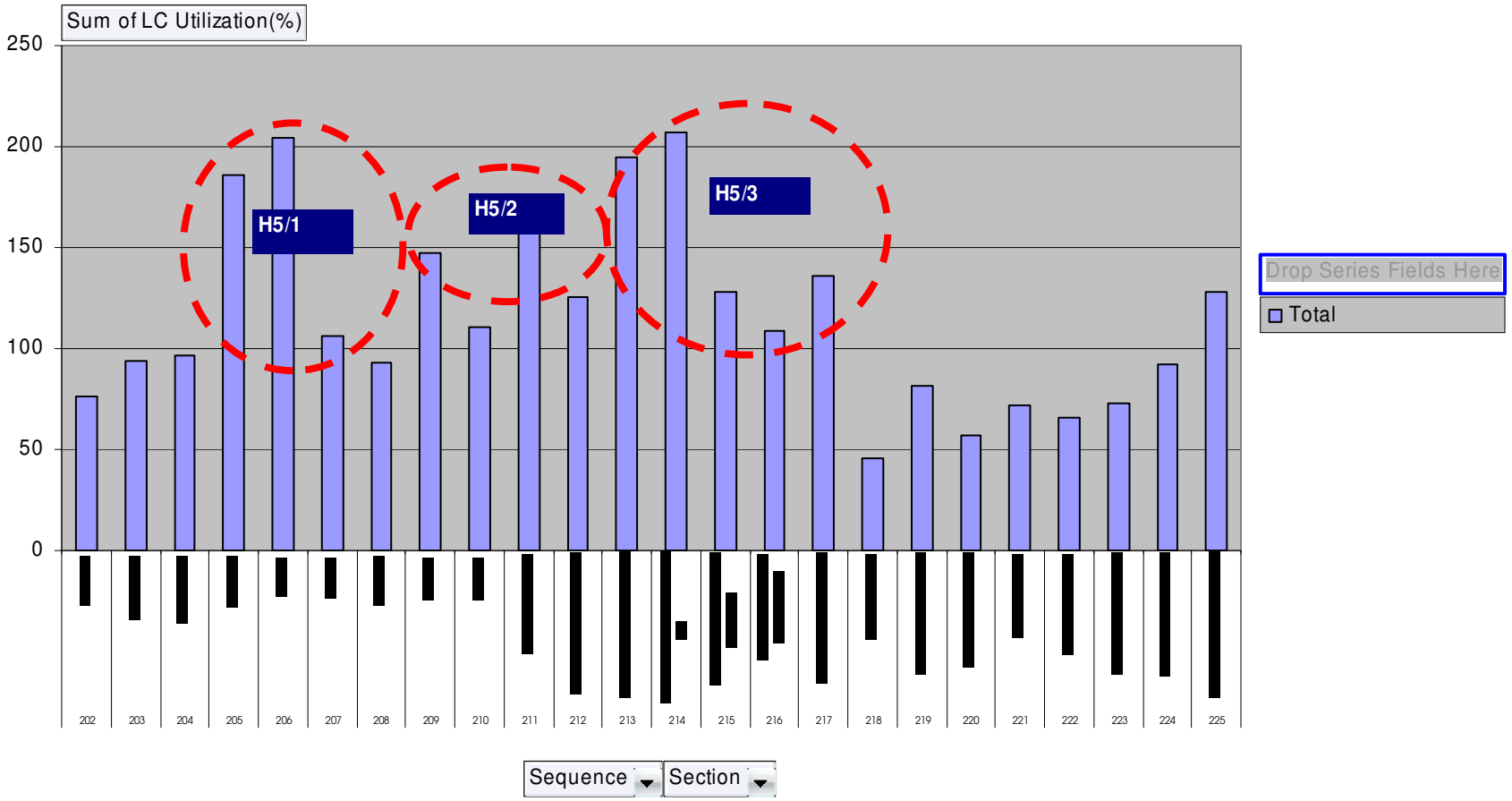
HDN 5

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
HDN 5 DELHI-CHENNAI VIA JHANSI-BINA-BHOPAL-ITARSI-NAGPUR-BALLARSHAH																				
NCR	MTJ-AGC	54.1	2	MACLS	57	34	27	5	66	**116**	76	100	**76**			Sanctioned				
NCR	AGC-JHANSI	217	2	MACLS	56	40	28	1	69	**124**	80	85	**94**			Sanctioned	12 Sanctioned			
NCR	JHANSI-BINA	153	2	MACLS	55	41	30	1	72	**131**	82	85	**97**			Sanctioned	10 Sanctioned			
WCR	BINA-BPL	138.3	2	MACLS	53	43	27	8	78	**146**	99	53	**186**	Critical H5/1			5 provided			
WCR	BPL-ET	91.6	2	MACLS	47	41	25	11	77	**164**	96	47	**204**				2 provided			
CR	ET-AMF	130	2	MACLS	34	25	20	1	46	**134**	58	55	**106**				4 Sanctioned			
CR	AMF-NGP	167	2	MACLS	35	24	18	2	44	**125**	56	60	**93**				10 Sanctioned		Godhani Byepass sanctioned	
CR	NGP-WR	79	2	MACLS	52	34	27	3	64	**123**	81	55	**147**	Critical H5/2			3 Provided			
CR	WR-BPQ	132	2	MACLS	48	22	33	5	60	**126**	77	70	**111**				1 Provided + 7 Sanctioned		Majri chord line connecting Majri - Wani	
SCR	BPQ-BELLAMPALLI	108.4	2	MACLS	36	40	25	3	68	**189**	87	50	**174**	Critical H5/3			3 Sanctioned			
SCR	BELLAMPALLI-KAZIPET JN.	125.9	2	MACLS	41	40	24	5	69	**168**	88	70	**125**				9Provided + 3 Sanctioned			
SCR	KAZIPET JN.-DORNAKAL JN.	94.4	2	MACLS	40	54	20	2	76	**191**	98	50	**195**				6 provided			
SCR	DORNAKAL JN.-VIJAYAWADA JN.	125.1	2	MACLS	42	54	25	2	81	**193**	103	50	**207**				7 provided			
SCR	VIJAYWADA JN.-KRISHNA CANAL JN.	5.5	3	AUTO	72	46	24	2	73	**101**	93	60	**128**			Provided				
SCR	KRISHNA CANAL JN.-BITRAGUNTA	215.6	2	MACLS	45	31	19	1	51	**114**	66	60	**109**				12 Provided+ 4 Sanctioned			
SCR	BITRAGUNTA-GUDUR JN.	72.2	2	MACLS	43	33	19	1	53	**124**	68	50	**136**				4 provided			
SR	Gudur-Sullurpeta	54.85	2	MACLS	43	27	11	2	39	**91**	46	100	**46**			Sanctioned				
SR	Sullurpeta-Gumminipundi	35.19	2	Auto	45	35	11	2	47	**88**	59	73	**81**			Provided				
SR	Gumminipundi-Attipattu	25.3	2	Auto	73	59	11	2	71	**98**	83	146	**57**		4th line under progress between Attipattu-Korukkpet	Provided				
SR	Attipattu-Ennore	6	2	Auto	73	59	16	2	76	**105**	105	146	**72**		5th line under progress between Attipattu-	Provided				
SR	Ennore-Tiruvottiyur	7.07	2	Auto	73	60	16	2	77	**105**	96	146	**66**		6th line under progress between Attipattu-Korukkpet	Provided				
SR	Tiruvottiyur-Korukkupet	4.88	2	Auto	73	60	21	7	88	**120**	106	146	**73**		7th line under progress between Attipattu-Korukkpet	Provided				
SR	Korukkupet-Basin Bridge	0.71	2	Auto	73	51	1	2	54	**75**	68	73	**92**			Provided				
SR	Basin Bridge-Chennai Central	2.22	4	Auto	129	157	0	9	166	**128**	188	146	**128**			Provided				


HDN 5 - Sectional Density : Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
200
180
160
140
120
100
80
60
40
20
0
MTJ-AGC
AGC-JHANSI
JHANSI-BINA
BINA-BPL
BPL-ET
ET-AMF
AMF-NGP
NGP-WR
WR-BPQ
BELLAMPALLI
BELLAMPALLI-KAZIPET JN.
KAZIPET JN.-DORNAKAL JN.
DORNAKAL JN.-VIJAYAWADA JN.
VIJAYAWADA JN.-KRISHNA CANAL JN.
KRISHNA CANAL JN.-BITRAGUNTA
BITRAGUNTA-GUDUR JN
Gudur-Sullurpeta
Sullurpeta-Gumminipundi
Gumminipundi-Attipattu
Attipattu-Ennore
Ennore-Tiruvottiyur
Tiruvottiyur-Korukkupet
Korukkupet-Basin Bridge
Basin Bridge-Chennai Central
Majri Chord line
Godhani Bypass
+12 IBS
+10 IBS
+4 IBS
+10 IBS
+7 IBS
+3 IBS
+3 IBS
+4 IBS
ABS
MACLS
New ABS

HDN Name | HDN 5

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION H 5/1	2005-06 (Trains)			2010-11 (Trains)		
SECTION	CC with MB	ACTUAL	% Utilization	CC with MB	Actual	% Utilization
BINA-BPL	53	78	147	55	99	180
BPL-ET	47	77	164	47	96	204
ET-AMF	34	45	134	55	58	106

Remarks

- 3rd line between BPL-Bina awaiting sanction of MOF
- The same traffic more or less runs through right upto ET
- Main bottleneck in the section between BPL-ET is the ghat section of Budni-Barkhera (20 Kms)

Action Plan

- Grade separator at BINA at a cost of Rs. 50 crores.
- 3rd line approval to be expedited for BPL-Bina (139 Kms) at a cost of Rs 365 crores.
- 3rd line required between Budni-Barkhera. To be processed for inclusion in Supplementary budget (30 Kms) at a cost of Rs. 70 crores.
- Additional 3 IBS between Bina and ET at a cost of Rs 3.6 crores.
- ABS between Budhni-Itarsi (25 Kms) at a cost of Rs 10 crores, between ET- Khutwansa (18 kms) at a cost of Rs 7.2 crores and between ET-Kiratgarh (10 Kms) at a cost of Rs 4 crores
- N-S grade seperator at ET at a cost of Rs. 100 crores.
- Conversion of Ityakalan C class station to B class at a cost of Rs. 3 crores

CRITICAL SECTION H 5/2	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
WR-BPQ	**48**	**60**	**125**	**70**	**77**	**110**

Action Plan:

- Survey for 3rd line (50.8 Kms) between BPQ-WR-NGP-ET, is in progress by Const., which may be kept in view while sanctioning of the survey for the 3rd and 4th line on Sewagram-Nagpur section.

CRITICAL SECTION H 5/3	2005-06 (Trains)			2010-11 (Trains)		
SECTION	**CC with MB**	**ACTUAL**	**% Utilization**	**CC with MB**	**Actual**	**% Utilization**
Ballharshah-Bellampalli	**36**	**68**	**189**	**36**	**87**	**242**
Bellampalli-Kazipet	**41**	**69**	**168**	**70**	**88**	**125**
Kazipet-Dornakal	**40**	**76**	**191**	**50**	**98**	**195**
Dornakal-Vijayawada	**42**	**81**	**193**	**50**	**103**	**207**
Vijayawada-Krishna Canal	**72**	**73**	**101**	**60**	**93**	**128**
Krishna Canal-Bitragunta	**45**	**51**	**114**	**60**	**66**	**109**
Bitragunta-Gudur	**43**	**53**	**124**	**50**	**66**	**136**

Action Plan:

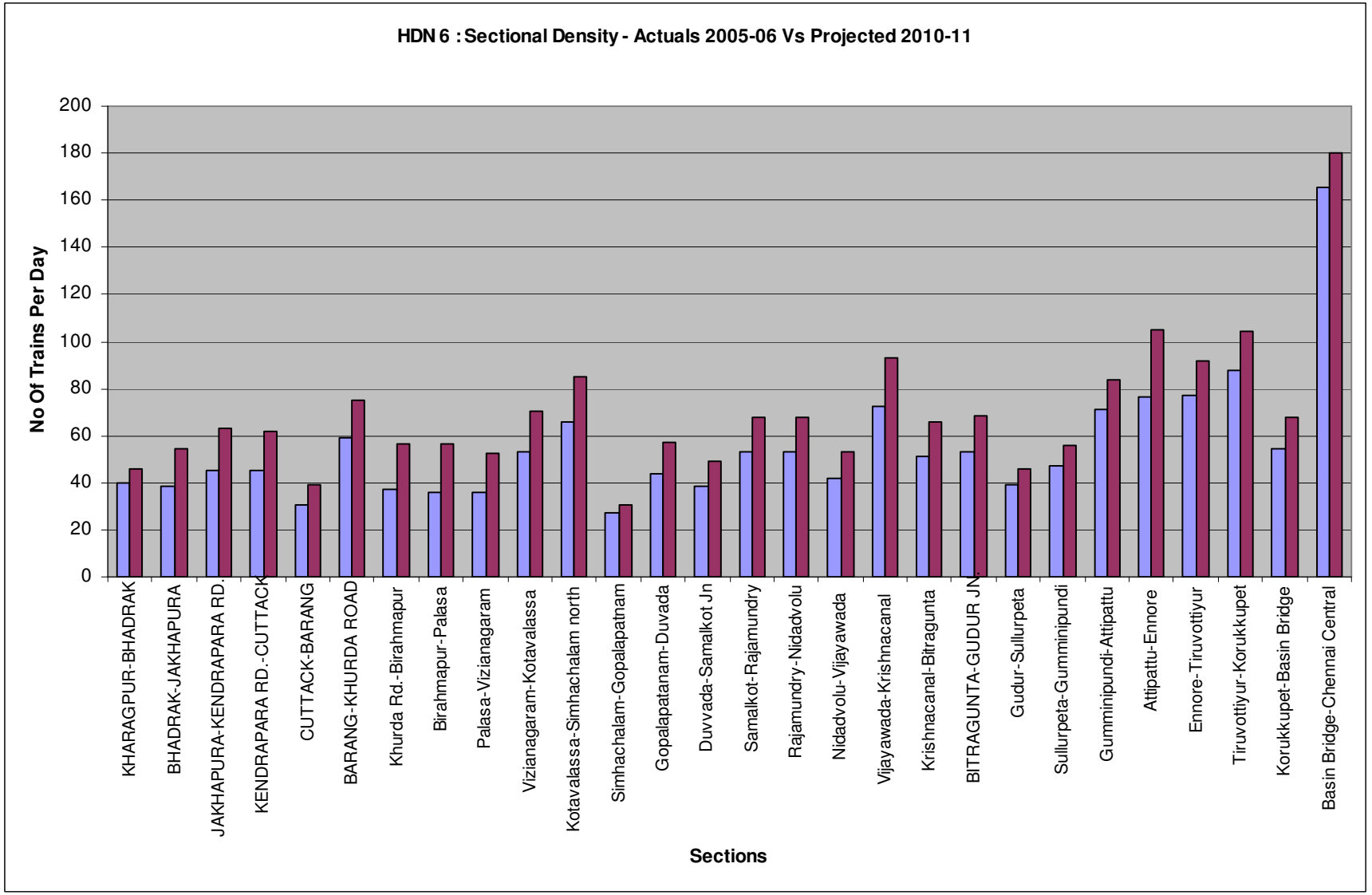
- This is a very critical portion of North-South route as well as coal route.
- Patch trippling of 37 Kms between BPQ-MAGH, Asifabad Rechni Road (14 Kms), PPT-RGPM (14 kms) on graded section at a cost of Rs 170 crores.
- Provision of a bye-pass at Ramagundam to colliery to avoid reversal at Ramagundam (Rs 10 crores).
- Interim relief can be given by providing 8 IBS' between GDR-Renigunta at a cost of Rs. 12 crores.

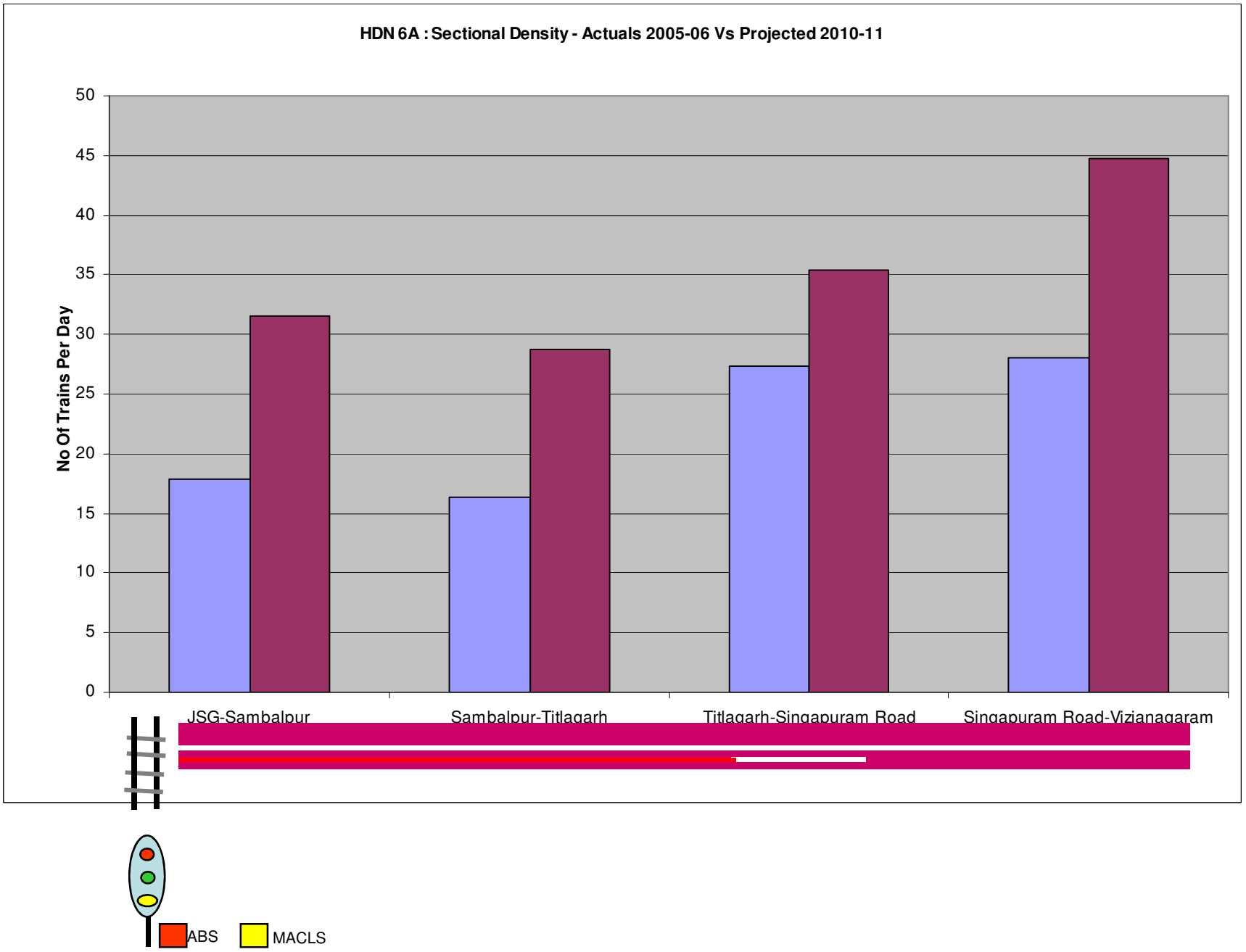
Long term Plan:

- 3rd line between Ballarshah-Kazipet (192 Kms) & Kazipet-Gudur (513 Kms) at a cost of Rs. 2000 crores.

HDN 6

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
HDN-6 Howrah-Chennai along with alternative route via Jharsuguda-Sambalpur-Titlagarh-Vizinagram including 3rd Line between Vizinagram Kotavalassa and 4th Line between Kotavalassa and Simhachalam north																				
SER	KHARAGPUR-BHADRAK	177.4	2	MACLS	36	26	11	3	40	**111**	46	50	**92**				6 Sanctioned			25t
ECOR	BHADRAK-JAKHAPURA	51.4	2	MACLS	44	25	12	2	38	**87**	54	60	**90**						flyover at Jakhapura in progress	
ECOR	JAKHAPURA-KENDRAPARA RD.	65	2	MACLS	50	26	18	2	45	**91**	63	75	**85**		NL between HDS-PRDP, 3rd line JKPR-HDS					25t
ECOR	KENDRAPARA RD.-CUTTACK	4.1	1	MACLS	34	26	18	2	45	**134**	62	60	**103**		DL sanctioned					25t
ECOR	CUTTACK-BARANG	11.5	1	MACLS	31	27	1	2	30	**98**	39	60	**66**		DL sanctioned					
ECOR	BARANG-KHURDA ROAD	35.1	2	MACLS	52	38	17	4	59	**113**	75	75	**100**		3rd line sanctioned		1 provided			
ECOR	Khurda Rd.-Birahmapur	146.8	2	MACLS	46	21	15	2	38	**81**	57	60	**95**				2 provided			
ECOR	Birahmapur-Palasa	73.9	2	MACLS	42	20	15	2	36	**86**	57	60	**95**				1 provided			
ECOR	Palasa-Vizianagaram	142.4	2	MACLS	43	20	14	2	36	**83**	52	60	**87**				4 provided			
ECOR	Vizianagaram-Kotavalassa	34.7	2	MACLS	53	26	25	3	53	**102**	70	75	**94**		3rd line sanctioned		1 provided			25t
ECOR	Kotavalassa-Simhachalam north	16.9	3	MACLS	65	27	35	4	66	**103**	85	100	**85**		4th line sanctioned					25t
ECOR	Simhachalam-Gopalapatnam	2.7	2	MACLS	56	27	0	0.2	27	**49**	30	62	**49**							25t
ECOR	Gopalapatanam-Duvada	10.4	2	MACLS	46	27	16	1	44	**95**	57									25t
SCR	Duvvada-Samalkot Jn	133.1	2	MACLS	60	24	13	2	39	**64**	49	72	**98**				1 Provided + 5 Sanctioned			
SCR	Samalkot-Rajamundry	50.2	2	MACLS	60	30	20	4	53	**89**	68	72	**94**				1 provided			25t
SCR	Rajamundry-Nidadvolu	27.34	2	MACLS	60	32	18	4	53	**89**	68	72	**94**				1 provided			25t
SCR	Nidadvolu-Vijayawada	19.72	2	MACLS	60	24	16	3	42	**69**	53	72	**74**				1 Provided+1 Sanctioned			25t
Route 6A= Alternative Route via Jharsuguda-Sambalpur-Titlagarh-Vizianagaram																				
ECOR	JSG-Sambalpur	48.7	1		21	10	6	2	18	**85**	32	36	**88**		DL sanctioned					
ECOR	Sambalpur-Titlagarh	181.5	1		16	8	7	1	16	**103**	29	50	**57**		DL sanctioned					
ECOR	Titlagarh-Singapuram Road	130.3	2,1		36	11	10	6	27	**76**	35	50	**71**		DL completed except 1 block section					
ECOR	Singapuram Road-Vizianagaram	133.5	2		40	12	14	2	28	**70**	45	45	**100**							


HDN 6 : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
200
180
160
140
120
100
80
60
40
20
0
KHARAGPUR-BHADRAK
BHADRAK-JAKHAPURA
JAKHAPURA-KENDRAPARA RD.
KENDRAPARA RD.-CUTTACK
CUTTACK-BARANG
BARANG-KHURDA ROAD
Khurda Rd.-Birahmapur
Birahmapur-Palasa
Palasa-Vizianagaram
Vizianagaram-Kotavalassa
Kotavalassa-Simhachalam north
Simhachalam-Gopalapatnam
Gopalapatanam-Duvada
Duvvada-Samalkot Jn
Samalkot-Rajamundry
Rajamundry-Nidadvolu
Nidadvolu-Vijayawada
Vijayawada-Krishnacanal
Krishnacanal-Bitragunta
BITRAGUNTA-GUDUR JN
Gudur-Sullurpeta
Sullurpeta-Gumminipundi
Gumminipundi-Attipattu
Attipattu-Ennore
Ennore-Tiruvottiyur
Tiruvottiyur-Korukkupet
Korukkupet-Basin Bridge
Basin Bridge-Chennai Central
Sections


HDN 6A : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
50
45
40
35
30
25
20
15
10
5
0
JSG-Sambalpur
Sambalpur-Titlagarh
Titlagarh-Singapuram Road
Singapuram Road-Vizianagaram
ABS
MACLS

HDN 6

A large number of works have been sanctioned on ECOR. Some additional works needed are as under:

Action Plan:

- Jakhapura is a small station having a few lines and minimal passenger traffic. There is a need to make it a halt station with all passenger amenities and make the existing station non-passenger handling yard. Platforms can be dismantled to have additional loops.

- Tie line between Sukinda and JJKR (to facilitate movement from Sukinda to Dhamra Port at a cost of Rs. 30 crores

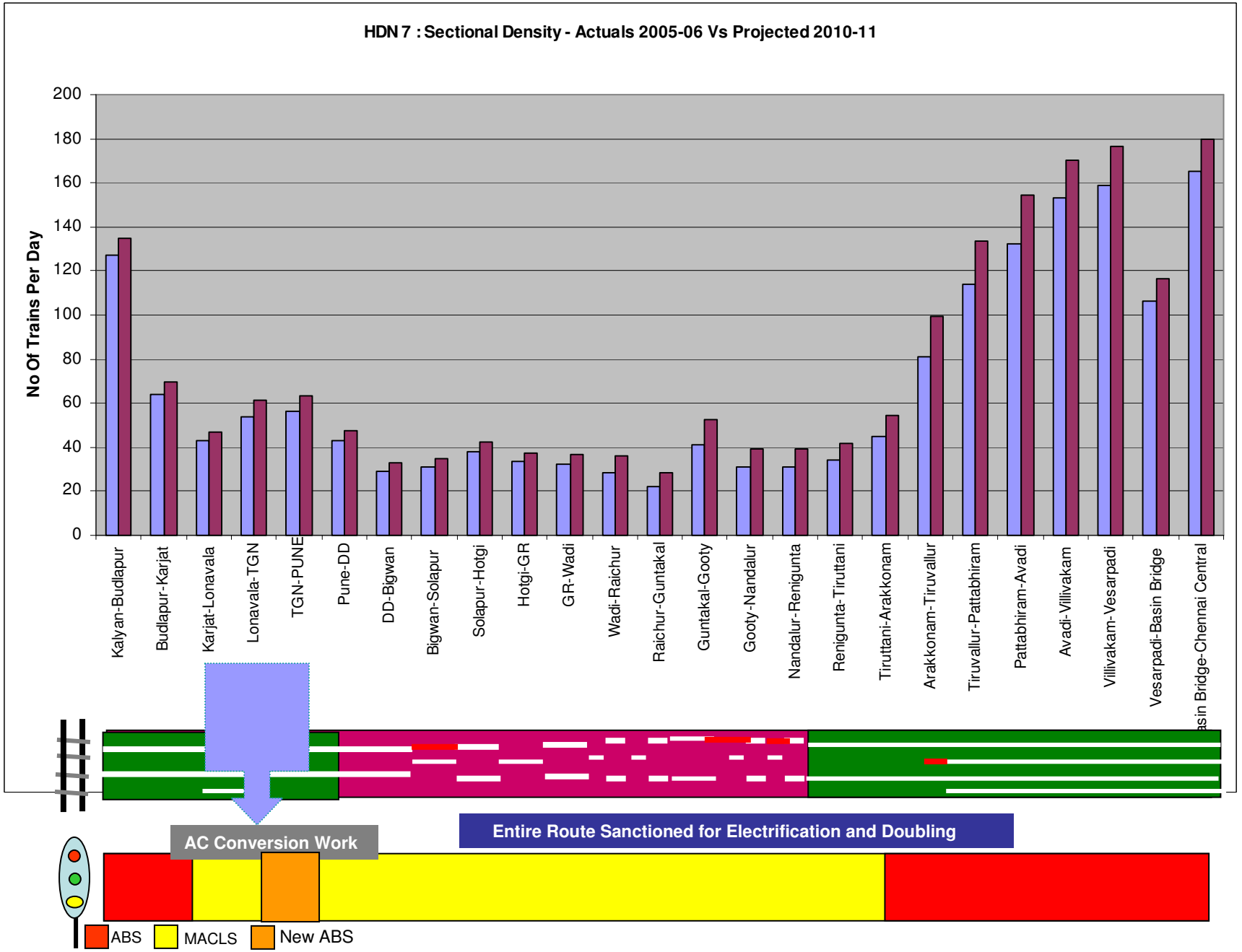
- Upgradation of the route between BHC to Jakhapura to run 25 ton Axle load

Medium Term plan:

- Flyover at Haridaspur from Paradeep Station to down line of ECOR at a cost of Rs. 50 crores.
- Flyover from Brundamal to JSG. Provision may be kept for doubling in future to convert IB with Brundamal at a cost of Rs. 50 crores.
- Survey for grade separator at VZM where JSG-TIG-VZM line meets with Kottavalasa-Palasa Main line at acost of Rs. 75 crores.
- Changing the existing 1:12 curved switches and loop lines to be made fit for 30 Kmph.
- Grade separator at Khurda Rd at a cost of Rs. 75 crores.
- 5 IBS' to be sanctioned at a cost of Rs 6 crores 1 in KGP-Bhadrak section, 3 in BBS-VZM section & 1 in VZM-DVD section respectively.

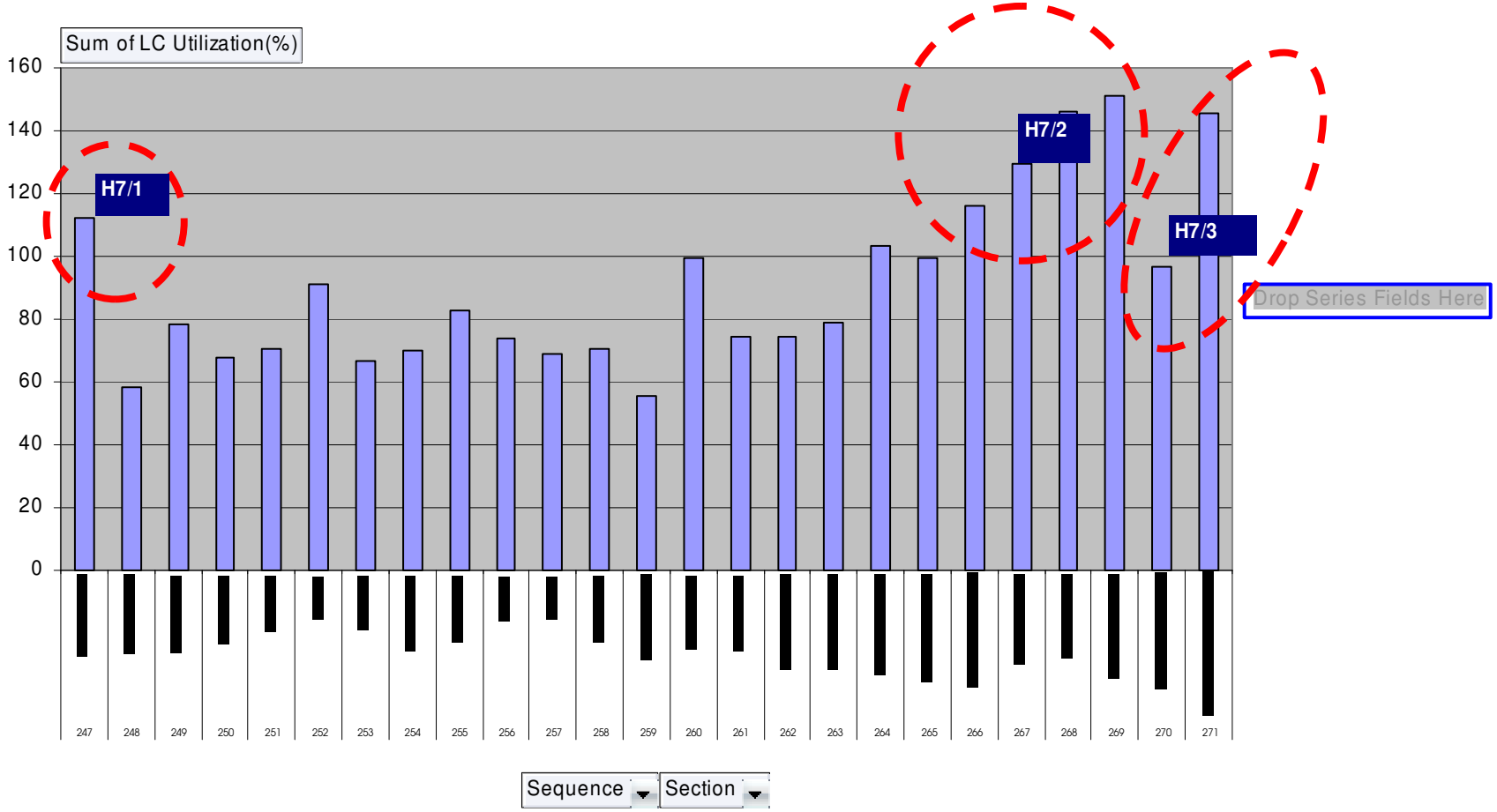
HDN 7

Rlys.	NAME OF SECTION	RKM	Lines	SIG	CC WITH MB	ACTUAL TRAINS RUN (2005-06)				Line capacity utilisation 2005-06 (%)	NO OF TRAIN 2010	CC with MB 2010-11 (No of trains)	Line capacity utilisation 2010-11 (%)	Remarks	DL/3rdline/ 4th line planned	Automatic signalling sanctioned	IBS/IBH	New Xing station	FLYOVER/BY EPASS	Track Fit for 23t/25t
						PASS.	GOODS	OTHERS	TOTAL											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
HDN-7 Mumbai-Chennai along with link route from Guntakal-Hospet-Hubli-Vasco (Iron-ore Circuit)																				
CR	Kalyan-Budlapur	14	2	AUTO	120	120	4	3	127	**106**	135	120	**112**	Critical H7/1		Provided				
CR	Budlapur-Karjat	32	2	AUTO	52	57	4	3	64	**123**	70	120	**58**			Provided				
CR	Karjat-Lonavala	28	3	MACLS	35	29	9	5	43	**123**	47	60	**78**		AC Conversion Work					
CR	Lonavala-TGN	30	2	MACLS	45	46	6	2	54	**119**	61	90	**68**			Sanctioned				
CR	TGN-PUNE	35	2	MACLS	47	49	5	2	56	**120**	64	90	**71**			Sanctiond				
CR	Pune-DD	76	2	MACLS	52	32	9	2	43	**82**	48	52	**91**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
CR	DD-Bigwan	27.68	2	MACLS	50	20	8	1	29	**59**	33	50	**66**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
CR	Bigwan-Solapur	160	1	MACLS	26	21	9	2	31	**120**	35	50	**70**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
CR	Solapur-Hotgi	15.78	2	MACLS	51	26	11	1	38	**75**	42	51	**83**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
CR	Hotgi-GR	98	1	MACLS	26	20	12	1	33	**128**	38	51	**74**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
CR	GR-Wadi	37	2	MACLS	53	21	10	1	32	**61**	37	53	**69**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
SCR	Wadi-Raichur	107.5	2,1	MACLS	32	14	12	2	28	**14**	36	51	**71**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
SCR	Raichur-Guntakal	120.8	2,1	MACLS	32	13	7	2	22	**69**	28	51	**55**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					
SCR	Guntakal-Gooty	28.55	2	MACLS	32	19	14	8	41	**129**	53	53	**99**		PUNE-GTL doubling & electrification sanctioned wherever it was single line					25t
SCR	Gooty-Nandalur	194.4	2,1	MACLS	32	10	18	3	31	**97**	39	53	**74**		DL in progress					25t
SCR	Nandalur-Renigunta	85.41	2,1	MACLS	27	10	18	3	31	**103**	39	53	**74**		DL in progress					25t
SR	Renigunta-Tiruttani	53.55	2	MACLS	42	16	16	2	34	**81**	42	53	**79**							25t
SR	Tiruttani-Arakkonam	11.31	2	MACLS	49	27	16	2	45	**92**	55	53	**103**				1 provided			25t
SR	Arakkonam-Tiruvallur	26.83	2	Auto	73	59	19	3	81	**111**	100	100	**100**		3 rd sanctioned	Provided				25t
SR	Tiruvallur-Pattabhiram	16.72	4	Auto	129	92	19	3	114	**88**	150	129	**116**			Provided				25t
SR	Pattabhiram-Avadi	3.91	4	Auto	129	110	19	3	132	**103**	167	129	**130**	Critical H7 /2		Provided				25t
SR	Avadi-Villivakam	11.61	4	Auto	129	129	19	5	153	**119**	189	129	**146**			Provided				25t
SR	Villivakam-Vesarpadi	5.8	4	Auto	129	134	19	6	159	**123**	195	129	**151**			Provided				25t
SR	Vesarpadi-Basin Bridge	1.39	4	Auto	129	105	0.4	2	107	**83**	124	129	**96**			Provided				25t
SR	Basin Bridge-Chennai Central	2.22	4	Auto	129	157	0	9	166	**128**	188	129	**145**	Critical H7/3		Provided				25t
Route-7 A= Guntakal-Hospet-Hubli-Vasco (Iron-ore)																				
SCR	Guntakal-Bellary		2	MACLS					0											25t
SWR	Bellary-Hospet	64.84	2	MACLS	17	6	14	2	21	**126**	29	50	**57**						Hospet byepass line	25t
SWR	Hospet-Gadag	85.14	1	MACLS	16	6	10	2	18	**114**	22	16	**134**							25t
SWR	Gadag-Hubli	58.08	1	MACLS	17	9	13	2	24	**139**	28	25	**111**		DL sanctioned UBL-Habsur			Kundgol-Hubli new crossing station		
SWR	Hubli-Dharwar	20.09	2	MACLS	22	13	12	1	26	**119**	32	25	**129**	Critical H7 A/1	DL sanctiond Dharwar-Kumargandvi					25t
SWR	Dharwar-Londa	70.36	1	MACLS	15	8	12	1	21	**141**	27	15	**181**							25t
SWR	Londa-Castle Rock	24.48	2	MACLS	15	3	9	3	15	**99**	20	15	**132**							25t
SWR	Castle Rock-Kulem	26.21	1	MACLS	13	2	6	4	11	**88**	14	13	**109**							25t
SWR	Kulem-Vasco	57.83	1	MACLS	15	5	6	2	13	**85**	15	15	**100**							25t


HDN 7 : Sectional Density - Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
200
180
160
140
120
100
80
60
40
20
0
Kalyan-Budlapur
Budlapur-Karjat
Karjat-Lonavala
Lonavala-TGN
TGN-PUNE
Pune-DD
DD-Bigwan
Bigwan-Solapur
Solapur-Hotgi
Hotgi-GR
GR-Wadi
Wadi-Raichur
Raichur-Guntakal
Guntakal-Gooty
Gooty-Nandalur
Nandalur-Renigunta
Renigunta-Tiruttani
Tiruttani-Arakkonam
Arakkonam-Tiruvallur
Tiruvallur-Pattabhiram
Pattabhiram-Avadi
Avadi-Villivakam
Villivakam-Vesarpadi
Vesarpadi-Basin Bridge
asin Bridge-Chennai Central
AC Conversion Work
Entire Route Sanctioned for Electrification and Doubling
ABS
MACLS
New ABS

HDN Name | HDN 7

Line Capacity Utilization (%) in 2010-11



CRITICAL SECTION H 7/1	2005-06 (Trains)			2010-11 (Trains)		
Section	**CC with MB**	**Actual**	**% Utilisation**	**CC with MB**	**Actual**	**% Utilisation**
Kalyan-Badlapur	**120**	**127**	**106**	**120**	**135**	**113**

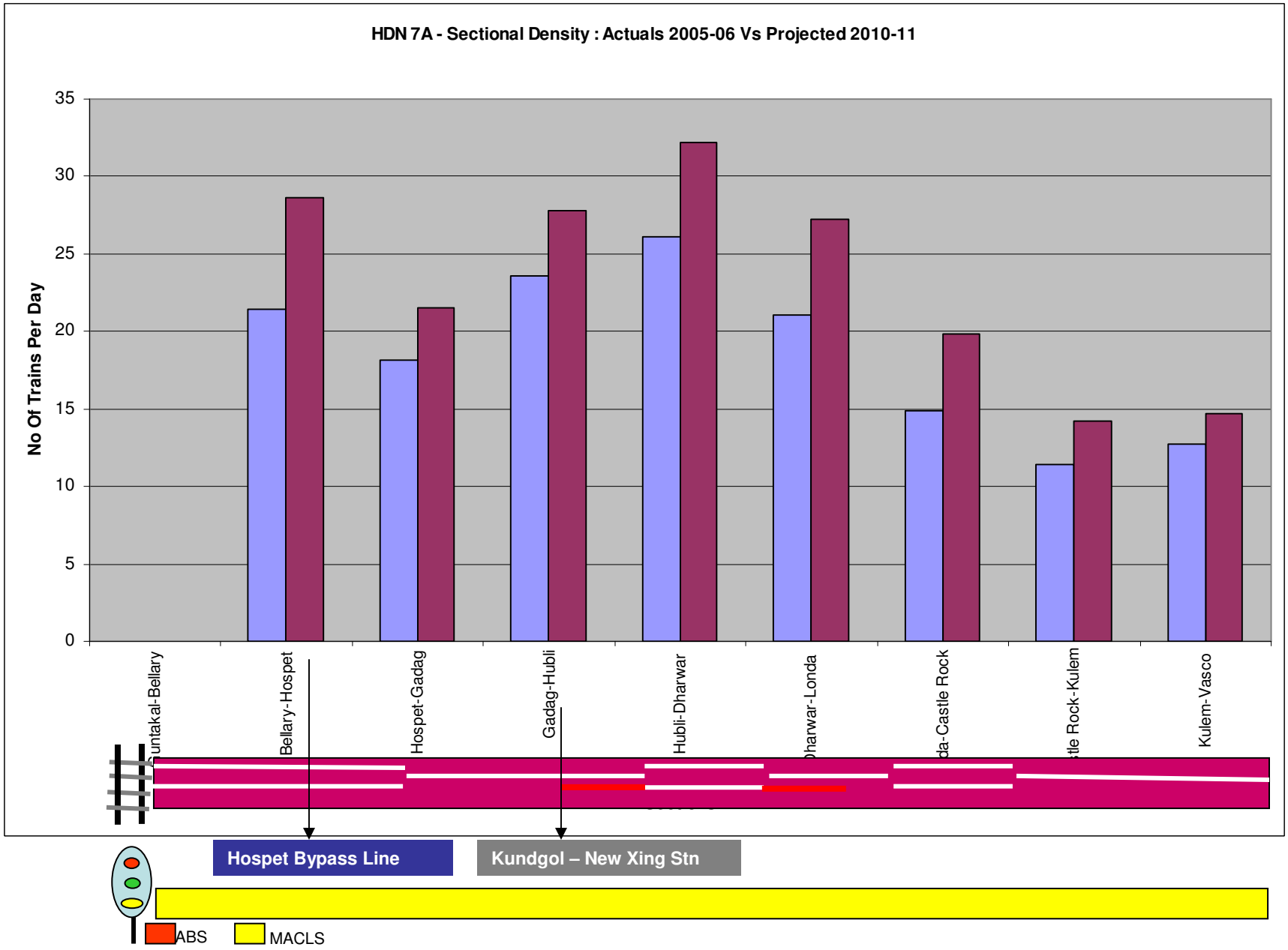
Action Plan:

•This being suburban section, Central Railway to plan for increasing number of coaches and optimization to increase capacity.

CRITICAL SECTION H 7/2	2005-06 (Trains)			2010-11 (Trains)		
Section	**CC with MB**	**Actual**	**% Utilisation**	**CC with MB**	**Actual**	**% Utilisation**
Trivallur-Pattabhiraman	**129**	**114**	**88**	**129**	**150**	**116**
Pattabhiraman-Avadi	**129**	**132**	**103**	**129**	**167**	**130**
Avadi-Vilivakkam	**129**	**153**	**119**	**129**	**189**	**146**
Vilivakkam-Vesarpadi	**129**	**159**	**123**	**129**	**195**	**151**

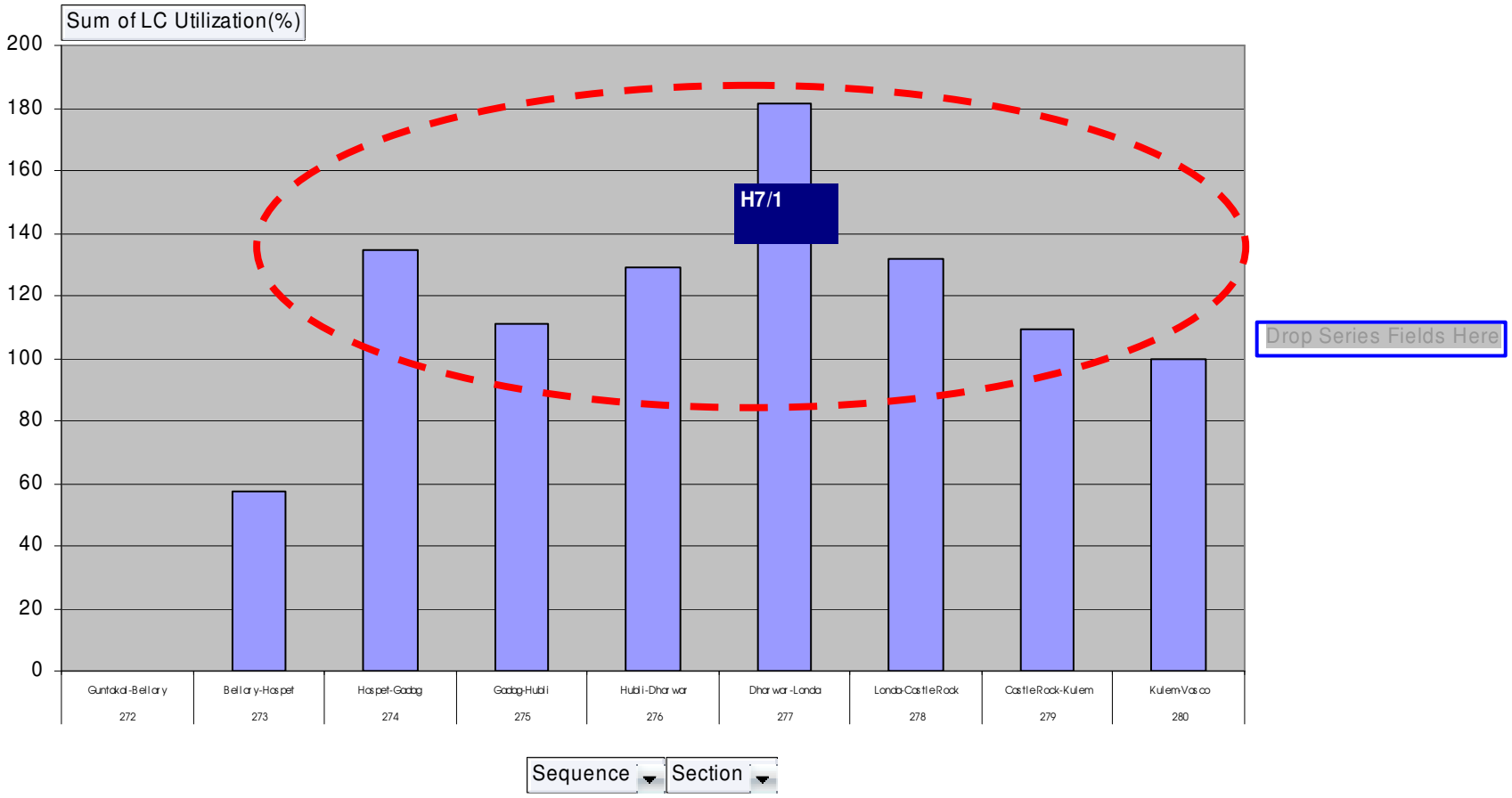
Action Plan:

• The charted capacities on a quadruple automatic section is extremely low. Instead of asking for more lines Southern Railway should conduct studies for reducing the headway and optimizing the services and thereby increasing the services.


HDN 7A - Sectional Density : Actuals 2005-06 Vs Projected 2010-11
No Of Trains Per Day
35
30
25
20
15
10
5
0
untakal-Bellary
Bellary-Hospet
Hospet-Gadag
Gadag-Hubli
Hubli-Dharwar
Dharwar-Londa
da-Castle Rock
tle Rock-Kulem
Kulem-Vasco
Hospet Bypass Line
Kundgol – New Xing Stn
ABS
MACLS

HDN Name | HDN 7A

Line Capacity Utilization (%) in 2010-11



ANNEXURES

Annexure I

LRDSS has obtained the future OD flows by factoring up the base year traffic of 2005-06, except in the case of coal, iron ore and fertilizer. In case of coal, the growth rates were selectively applied on specific ODs based on the expansion plans of the powerhouses. New ODs were also added based on information regarding proposed new steel plants and expansion plans of existing plants. As regards iron ore for exports the following projections were made:

- Completion of Daitari-Banspani line would result in an additional 5 Million tons of iron ore traffic to Paradeep, which is currently moving by road to Paradeep and Haldia.

- Closure of mining in Kudremukh is expected to lead to movement of about 6 Million tons of iron ore from Bellary and Hospet to Mangalore by rail.

- Another 2 Million tons of iron ore movement from Bellary – Hospet area to Goa Port is expected to shift from road to rail with increase in capacity in that area.

In case of fertilizer, it is assumed that imports would increase by about 6 Million tons. The assumed increase of 6 Million tons was distributed across the ports. Assuming a similar share of the total and then to destinations based on their existing shares. The growth factors assumed for each commodity are as below:

Originating tonnage (In Million tons)		
Commodity	**2006-07**	**2011-12**
Coal	310	400
Cement	65	135
Iron Ore for Export	52	75
Iron Ore for Steel Plants	62	110
POL	33	35
Fertilizer	36	50
Finished Steel	19	40
Food grains	46	60
Others incl. Containers	103	205
Total	**726**	**1110**

LIST OF XI PLAN PROJECT (PROVISIONAL)

Annexure 1.11

S.No.	Name of TPS	State	Capacity (MW)	Coal Req. Million Tonnes during 2011-12	Year of Commissioning	Remarks
1	Badarpur	Delhi	2x490=980	5.0	2009-11	
2	Chotu Ram (Y-Nagar)	Haryana	2x300=600	3.0	2007-08	
3	Hissar*	Haryana	2x250+ 1x500=1500	5.0	2009-12	
4	Jhajjar TPS	Haryana	3X500=1500	7.5	2009-11	
5	Parichha Ext.	U.P.	2x250=500	2.5	2009-10	
6	Harduaganj Ext.	U.P.	2x250=500	2.5	2009-10	
7	Dadri Ext.*		2x490=980	4.9	2010-10	
8	Chola, Bulandshar	U.P.	1x500=500	2.5	2010-11	
	Total			**32.9**		
	CCL Area (Pit head)					
9	Barh	Bihar	3x660=1980	9.9	2008-11	
10	Barh-Ext.	Bihar	2x660=1320	3.2	2011-12	
11	Nabinagar	Bihar	4x250=1000	5.0	2010-12	
12	North Karanpura	Jharkhand	2x660=1320	3.2	2011-12	
	Total			**21.3**		
	BCCL Area					
13	Bokaro Repl.	Jharkhand	2x250=500	2.5	2009-11	
14	Chandrapur (DVC)	Jharkhand	2x250=500	2.5	2007-08	
15	Durgapur Steel	Jharkhand	2x500=1000	5.0	2010-12	
16	Raghunathpur	Jharkhand	2x500=1000	2.4	2011-12	
	Total			**12.4**		

	BCCL Area (Pit head)					
17	Maithon RB	Jharkhand	2x500=1000	5.0	2009-11	
18	Kodarma	Jharkhand	2x500=1000	5.0	2010-11	
19	Meija Ext.*	Jharkhand	2x500=1000	5.0	2009-11	
	Total			**15.0**		
	ECL					
20	Barkeshwar U-5	W.Bengal	1x210=210	1.1	2007-08	
21	Barkeshwar Ext.*	W.Bengal	1x500=500	1.2	2011-12	
22	Sagardigi Ext.*	W.Bengal	2x500=1000	3.7	2010-12	
23	Santaldih Ext.	W.Bengal	1x250=250	1.2	2009-10	
24	Budge Budge Ext.	W.Bengal	1x250=250	1.2	2009-10	Block to be allocated
	Total			**8.4**		
	ECL Area (Pit head)					
25	Farakka stage III	W.Bengal	1x500=500	2.5	2009-10	
	SECL					
26	Suratgarh Ext.	Rajasthan	1x250=250	1.3	2009-10	
27	Chabra	Rajasthan	2x250=500	2.5	2009-10	
28	Kota U-7	Rajasthan	1x195=195	1.0	2009-10	
29	Amarkantak	M.P.	1x210=210	1.1	2007-08	
	Total			**5.9**		
	SECL (Pit head)					
30	Sipat-1	Chattisgarh	3x660=1980	9.9	2007-09	
31	Bhilai JV	Chattisgarh	2x250=500	2.5	2007-08	
32	Korba West Ext.	Chattisgarh	2x300=600	3.0	2009-10	
33	Korba-III	Chattisgarh	1x500=500	2.5	2009-10	
34	Malwa	M.P.	2x500=1000	5.0	2011-12	
35	Raigarh Ph-II	Chattisgarh	3x250=750	3.8	2007-08	Coal Block
36	Pathadi (Lanco) U-1	Chattisgarh	1x300=300	1.5	2008-09	
37	Pathadi (Lanco)	Chattisgarh	2x300=600	3.0	2010-11	Coal Block
	Total			**31.2**		

	MCL					
38	Vijayawada Extn	A.P.	1x500=500	2.5	2008-09	
39	Krishnapatnam*	A.P.	1x800=800	4.0	2011-12	
40	Raichur U-8	Karnataka	1x250=250	1.3	2008-09	
41	Bellary Extn	Karnataka	1x500=500	2.5	2009-10	Coal Block
42	Khaparkheda Ext	Maharashtra	1x500=500	2.5	2009-10	
43	Parli Ext U-2	Maharashtra	1x250=250	1.3	2009-10	
44	Paras Ext U-2	Maharashtra	1x250=250	1.3	2009-10	
45	Koradi Repl.	Maharashtra	1x500=500	2.5	2010-11	
46	Bhusawal Ext*	Maharashtra	2x500=1000	5.0	2010-11	
47	Simhadri Ext*	A.P.	2x500=1000	5.0	2010-12	
48	Ennore JV*	Tamil Nadu	2x500=1000	3.7	2010-12	
49	Tuticorin Jn	Tamil Nadu	2x500=1000	3.7	2010-12	
50	Mettur Extn*	Tamil Nadu	2x250=500	2.5	2010-11	
51	North Chennai Extn*	Tamil Nadu	2x250=500	1.2	2011-12	
52	DPL Extn	W.Bengal	1x300=300	3.3	2009-10	Block to be allocated
53	DPL Extn Ph-II	W.Bengal	1x500=500	2.5	2010-11	Block to be allocated
54	Integrated Project Daripal	Orissa	1x800=800	4.0	2011-12	Coal Block
	Total			**30.9**		
	MCL (Pit head)					
55	Kothagudem Stage V	A.P.	1x500=500	2.5	2009-10	
	SCCL					
56	Bhopalapalli	A.P.	1x500=500	2.5	2008-09	
	NCL (Pit head)					
57	Anpara C	U.P.	2x500=1000	5.0	2010-12	
	NEC					
58	Bongaigon	Assam	3x250=750	3.8	2010-12	
	Total			**3.8**		

Summary of Traffic Projections

(All figures are in Million Tons)

	2005-06	2011-12(Projections)		
		Low	Medium	High
Minerals	432.5	606	630	660
Manufactured Goods	166.51	287	360	390
Agricultural Products	46.26	56.5	60.5	66
Containers	20.65	50	70	85
Military Traffic	0.31	0.5	0.5	0.5
Total	666.23	**1000**	**1120**	**1200**

Minerals - Summary of Traffic Projections

(All figures are in Million Tons)

	2005-06	2011-12(Projections)		
		Low	Medium	High
Coal	294	375	380	390
Iron Ore	110	190	200	210
Limestone	8.9	21	26	30
Dolomite	2.86	8	12	18
Gypsum	2.77	5	5	5
Other Ores	3.5	7	7	7
Total	432	**606**	**630**	**660**

Manufactured Goods - Summary of Traffic Projections - I

(All figures are in Million Tons)

	2005-06	2011-12(Projections)		
		Low	**Medium**	**High**
Cement	**61**	115	150	165
POL/LPG	**35**	40	45	45
Fertilizers	**34**	50	51	51
Iron and Steel	**17.3**	40	60	75
Salt	**4.51**	6	10	10
Sugar	**2.75**	5	7	7
DOC	**2.41**	5	**5.5**	**5.5**
Iron and Steel Slag	**2.25**	5	**5.5**	**5.5**
Coke	**2.1**	10	**12**	**12**

Manufactured Goods - Summary of Traffic Projections - II

(All figures are in Million Tons)

	2005-06	2011-12(Projections)		
		Low	**Medium**	**High**
Pig Iron	**0.89**	3	4	4
Edible Oil	**0.78**	4	5	5
Motor Vechicles	**0.44**	2	2.5	2.5
Others	**0.5**	2	2.5	2.5
Total	**167**	287	360	390

Agricultural Products - Summary of Traffic Projections - I

(All figures are in Million Tons)

	2005-06	2011-12(Projections)		
		Low	Medium	High
Foodgrains	35.18	40	42	44
Pulses	4.96	5	6	7
Oilcakes and Seeds	1.96	4	4.25	4.75
Timber	1.46	2	2.5	4.5
Fruits and Vegetables	1.17	2	2.5	2.5
Jute	0.45	0.5	0.75	0.75
Sugar Cane	0.3	0.5	0.5	0.5
Others	1.2	2	2	2
TOTAL	46.26	**56**	**60.5**	**66**

Containers - Summary of Traffic Projections

(All figures are in Million Tons)

	2005-06	2011-12(Projections)		
		Low	Medium	High
International Containers	15.5	40	55	65
Domestic Containers	5.1	10	15	20
Total	20.65	**50**	**70**	**85**

Military Traffic - Summary of Traffic Projections

(All figures are in Million Tons)

	2005-06	2011-12(Projections)		
		Low	Medium	High
Total	0.31	**0.5**	**0.5**	**0.5**

Coal - Summary of Traffic Projections

(All figures are in Million Tons)

	2011-12(Projections)		
	Low	**Medium**	**High**
For Power Houses	253	260	270
For Cement Plants	25	30	40
For Steel Plants	56	56	56
For Others	25	25	25
For Ports	6	6	6
For Washeries	10	10	10
Total	**375**	**387**	**407**

Iron Ore - Summary of Traffic Projections

(All figures are in Million Tons)

	2011-12(Projections)		
	Low	**Medium**	**High**
Steel Plants	150	160	170
Exports	40	40	40
TOTAL	**190**	**200**	**210**

	Steel Production	**Iron Ore Req.**
2004-05	34.8	50
2005-06	45	78
2011-12	**115**	**197**

Cement - Summary of Traffic Projections

(All figures are in Million Tons)

	2011-12(Projections)		
	Production	**Rail Share (%)**	**Rail Traffic**
2006-07	156	42%	65
2007-08	172	42%	72
2008-09	186	43%	80
2009-10	207	44%	90
2010-11	229	44%	100
2011-12	251	45%	115

Fertilizer - Summary of Traffic Projections

(All figures are in Million Tons)

	2011-12(Projections)		
	Production	**Rail Share (%)**	**Rail Traffic**
2007-08	42.4	75	31.8
2008-09	44.15	77	34
2009-10	45.9	79	36.3
2010-11	47.6	81	38.6
2011-12	49.3	83	40.9

RMSP (As currently defined)

(Includes Steel Plants at Bhilai,Rourkela,Durgapur,TISCO,IISCO,Bhadravati,Bokaro,RINL,JVSL and NINL)

(All figures are in Million Tons)

	2005-06	2006-07	2007-08 (Target)	2011-12	
				Low	Medium
Crude Steel production for majors	22.2	26.06	-	44.28	49.82
Iron Ore	43.3	45.49	-	76.16	85.68
Limestone	4.46	4.9	-	8.86	9.96
Dolomite	2.81	2.95	-	2.96	3.33
Total	**51.35**	**53.33**	**57**	**87.98**	**98.97**

Finished Steel Projections – All Plants

(All figures are in Million Tons)

	2005-06	2006-07	2007-08 (Target)	2011-12	
				Low	Medium
Crude Steel	41.24	45.88	50.37	80.23	90.26
Finished Steel	39.19	43.6	46.7	77.4	87.08
Rail movement	17.75	20.31	23	55	61.9
Rail Coefficient(%)	**45.29%**	**46.58%**	**49.25%**	**70%**	**70%**

Crude Steel Production - Projections

(All figures are in Million Tons)

	2005-06	2006-07	2011-12	
			Low	Medium
SAIL	13.47	14.36	22.18	24.95
RINL	3.5	3.7	7.6	8.55
TSL	4.73	5.0	9.0	10.125
JVSL	2.3	3.0	5.5	6.18
Total (Majors)	22.2	26.06	44.28	49.82
Total (All)	**41.24**	**45.88**	**80.23**	**90.26**

Overall Raw Material requirement – Actuals and Projections

(All figures are in Million Tons)

	2005-06	2006-07	2007-08 (Target)	2011-12	
				Low	Medium
Crude Steel Production	41.24	45.88	50.37	**80.23**	**90.26**
Iron Ore	68.77	87.16	-	**138**	**155.3**
Limestone	8.92	9.09	-	**16.05**	**18.06**
Dolomite	3.06	3.12	-	**5.38**	**6.053**
Total	**80.75**	**99.3**	**-**	**159.4**	**179.33**

Capacity Expansion Plans

(All figures are in Million Tons)

	2006-07 : Current	**2011-12 :Final Capacity**	**Remarks**
TSL(Tata Steel Ltd)	4.73	10.12	Brownfield-2.5; Greenfield in Orissa; Jharkhand and Chattisgarh – 2.9 in Phase 1
SAIL	14.36	24.95	Brownfield
RINL	3.7	8.55	Brownfield
JVSL	3.0	6.18	Brownfield
Essar	2.4	11	Brownfield – 1.6 at Hazira; Greenfield in Orissa and Jharkhand – 8;
Ispat	2.0	7.6	Brownfield – 1.6; Greenfield in Orissa -4;
EAF	12.0	15	All Greenfield and scattered
Others	3.42	6	All Greenfield and scattered
Mittal Steels		10	Greenfield in Orissa/Chattisgarh
POSCO		3.6	Greenfield in Orissa
Bhushan Steels		4	Greenfield in Orissa
JSPL		8	Greenfield in Jharkhand
Total	**45.82**	**115**	