

**Government of India  
Ministry of Railways  
Railway Board**

No. 2010/PL/9/10

New Delhi, dated 4th April, 2011

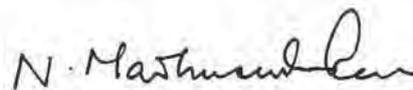
The General Managers  
All Zonal Railways, CORE Allahabad.

**Sub: Blue print for Railway Electrification**

In the Vision 2020 document, issued by Ministry of Railways in December 2009, it has been stated that by the year 2020, 33000 kms of route would be electrified, i.e. an additional electrification of 14000 kms in 10 years (item 3 on page (iii-iv) of the document). In pursuance of the same, a Blue Print for Railway Electrification has been prepared. It contains the list of routes that will be taken up for electrification in future. A copy of the Blue Print is enclosed. As on 31.3.2010, the shelf of RE projects was 4425 route kms. The Blue Print has identified about 6000 routes kms to begin with. The remaining 3500 kms or so will be identified in due course. It may be noted that some of the projects that have been identified in the Blue Print have already been sanctioned. The implementation plan for the Blue Print is given in Annexure III of the document. It is envisaged that at the beginning of every year the shelf of RE projects shall be 5000 Rkms.

As regards the execution of the implementation plan, every year zonal railways would be advised of the routes that will be considered for sanctioning in that year's Works Programme. On receipt of the same, Zonal Railways should take all necessary action to send the proposal well in time so that the same could be processed for inclusion in the budget. Sanctioning of the electrification projects will be as per the usual practice.

The Blue Print issues with the approval of the Board (MT/CRB).



(N. Madhusudan Rao)

**Executive Director (Planning)**

DA: As above

Copy to: As per list attached

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- 15.MD, RVNL, August Kranti Bhavan, Plot No.25, 1<sup>st</sup> floor, Bhikaji Cama Place, New Delhi.
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**Vision 2020**  
*-A Blueprint for Railway Electrification  
Programme*



**Planning Directorate  
Ministry of Railways  
(Railway Board)  
April 2011**

# **Vision 2020-A Blue Print for Railway**

## **Electrification Programme**

**1.0 Background:** Hon'ble MR in her statement in the Vision 2020 document has laid a very strong emphasis on capacity creation, a key element of which includes electrification of rail lines. Item 3 on page (iv) of Vision 2020 Document mentions that 33,000 kms of route would be electrified, i.e. additional electrification of 14,000 kms in 10 years needing an investment of about Rs. 12,600 crores over the next ten years.

As on 31.03.2010, 20059 kms of the total route kms was electrified i.e., about 31.33% of the total route kilometres. In terms of the total track kilometers the figure is higher at 44.40% indicating that electrification has been done predominantly on double line and busier sections of the IR network.

As on 31.03.2010 the balance of RE works left over, are 4425 kms . The details of the same are in Annexure 1. The execution of these works is likely to go beyond 2015.

In order that a systematic approach for electrification is followed, a blue print has become necessary.

**2.0 Guidelines for Identification of routes for electrification:** The primary objective of adopting electric traction in the past was to achieve higher acceleration which is very essential for suburban rail systems. However, with the electrification of Raj Kharswan-Dongaposi section of South Eastern Railway in 1960 which was a trail blazer, electrification gradually spread to coal/mineral carrying high density routes. A look at the current status of electrification on the IR would reveal that electrification has been predominantly on the busy routes. Presently, the entire high density network, viz. the Golden Quadrilateral and the Diagonals are either electrified or works have been sanctioned for electrification. The suburban sections of Delhi, Kolkata, Mumbai, Chennai and Hyderabad are also electrified. Major important link routes like Kota-Bina, Udhna-Jalgaon, AgraCantt-Bayana, Bhopal-Nagda are also electrified.

In this Blue Print, the focus is to take up those routes which already have substantial traffic or which on the basis of future growth projections are likely to become quite busy.

The broad guidelines followed are as under:

- i. Routes which are already double lines and have substantial amount of traffic
- ii. Routes on which doubling have been taken up or are under consideration for doubling
- iii. Routes which form alternate routes giving relief to congested main line sections even if they are single line sections
- iv. Routes which have become missing links and whose electrification would provide seamless operations
- v. Routes which are feeder routes to DFC

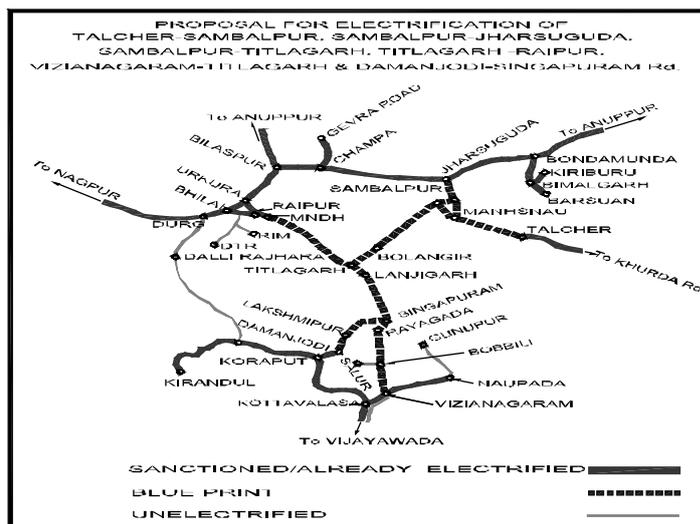
**3.0 Identified Routes:** The routes that have been identified for electrification are as under

SN	Name of sections	RKMs
1	Talcher-Sambalpur, Sambalpur-Jharsuguda, Sambalpur-Titlagarh, Titlagarh-Raipur, Vizianagaram-Titlagarh and Damanjodi- Singapuram Road	1007
2	Alwar-Rewari-Manheru-Hissar- Jakhal	297
3	Rosa-Sitapur Cantt- Burhwal	181
4	Kandla-Gandhidham-Bhildi-Palanpur	313
	Ahmedabad-Palanpur-Phulera-Ringus-Rewari-Delhi and Phulera-Jaipur-Bandikui-Alwar	1083
5	Hospet-Guntakal and Tornagallu-Ranjitpura section	138
6	Nallapadu-Guntakal including Pendakallu-Gooty section	426
7	Rajpura-Lehra Muhabbat	152
8	Zafrabad-Akbarpur-Tanda	101
9	Udhampur-Srinagar-Baramulla	292
10	Katni -Singrauli -Garhwa Road including Karaila Road-Shakti Nagar	479
11	Manpur-Tiliaya-Kiul	117
12	Vijayawada-Gudivada-Bhimavaram-Nidadavolu & Gudivada-Machilipatnam and Bhimavaram-Narsapur	221
13	Pakur-New Farakka- Malda Town-Kumedpur	128
14	Naini-Manikpur-Katni-Itarsi	605
15	Lalitpur-Satna-Rewa-Singrauli	541
	<b>TOTAL</b>	<b>6081</b>

A brief justification of the same is given in the following paras. With 4425 kms of pending works and identification of 6081 kms, the total comes to 10506 kms. The balance 3494 kms will be identified in due course.

**Project wise details**

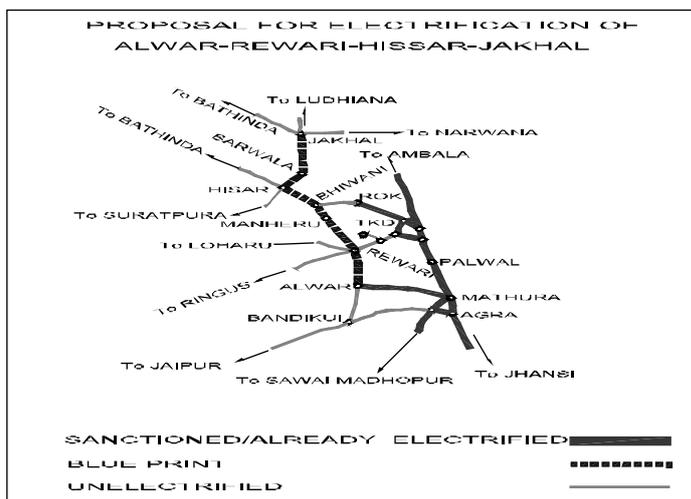
**3.1 Talcher-Sambalpur, Sambalpur-Jharsuguda, Sambalpur-Titlagarh, Titlagarh-Raipur, Vizianagaram-Titlagarh and Damanjodi- Singapuram Road (1007 RKMs):** Talcher area has been identified by the Ministry of Coal as one of the major growth area for coal production. In addition a number of private blocks are also being developed in that area. About 100 MT of incremental traffic of coal alone is expected and it is likely that this is a conservative estimate. Doubling of Talcher-Sambalpur, Sambalpur-Jharsuguda, Sambalpur-Titlagarh, and Titlagarh-Raipur has been sanctioned and the works are in progress. JSG-SBP-Titlagarh-Raipur route will provide an alternate route to the heavily congested JSG-Raipur section of the Howrah –Mumbai HDN route. Further, Vishakapatnam area has one of the most important ports on the east coast and with Gangavaram Port also having begun operations, these ports are also expected to meet the requirements of imported coal to the industries in Chattisgarh area.



Once the above routes are taken for electrification, the Singapuram road-Damanjodi section will be an island section in the whole area. Therefore while it will

form a part of the blue-print it shall have a lower priority and will be taken up for implementation later.

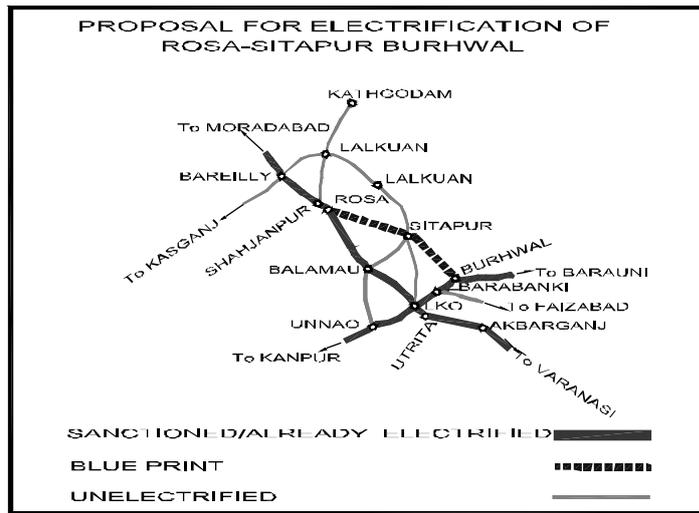
### 3.2 Alwar-Rewari-Manheru-Hissar-Jakhal section ( 297 RKM):



Two major thermal power plants have been set up at Sudharana and Jhajjar stations (out of which Jhajjar has been commissioned being a Commonwealth Games project) on the Rewari- Hissar section of NWR and one thermal power plant is coming up at Barwala on the Hissar- Jakhhal section of Northern Railway. Coal for these power plants from SEC Railway will move via Mathura-Alwar- Rewari-Hissar – Barwala section and the traffic will be atleast 15-16 rakes on an average per day. Mathura-Alwar electrification has been sanctioned in the Supplementary Budget. To ensure seamless movement it is essential that the entire route is electrified. The doubling of Alwar –Rewari section is nearing completion and Rewari-Hissar section has also been identified for doubling so that the coal traffic meant for the thermal plants can move smoothly. It is felt that the section between Barwala and Jakhhal is also taken up for RE so that in case of any abnormal situation, south bound traffic moving on BTI-SSB section can be diverted via Jakhhal and Rewari to Mathura.

### 3.3 Rosa-Sitapur Cantt- Burhwal (181 RKM): Saharanpur-Mughalsarai and Barabanki-Burwhal-Gorakhpur sections have already been taken up for

electrification. However the Rosa-Sitapur Cantt- Burhwal section of 181kms is a missing link. Freight traffic of Northern Railway destined for NF railway moves via Rosa-Sitapur Cantt- Burhwal. In case this route is not electrified, traffic is likely to flow on the all electric route via LKO-BBK which is already very congested.

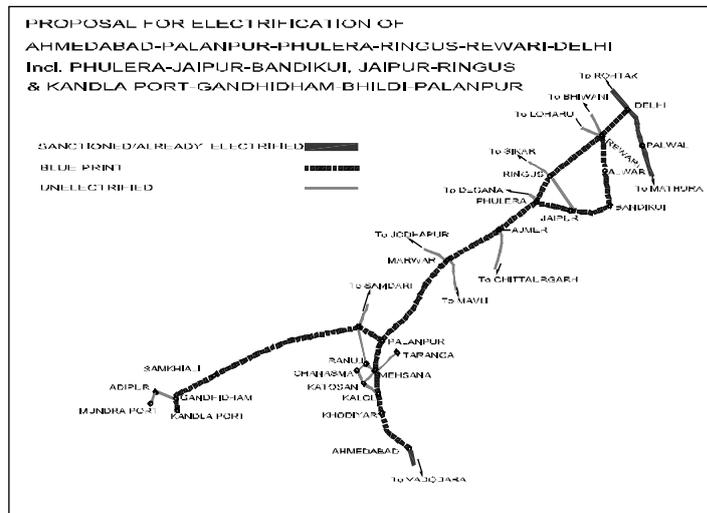


A number of traffic facility works including crossing stations have already been sanctioned on the Rosa-Sitapur Cantt- Burhwal section to augment the line capacity.

### **3.4 Kandla-Gandhidham-Bhildi-Palanpur and Ahmedabad-Palanpur-Phulera-Ringus-Rewari-Delhi, and Phulera-Jaipur-Bandikui-Alwar (1396 RKM):**

Kandla Port and Mundra Port are the two most important ports on the western coast which are closest to the northern hinterland. They also happen to be the fastest growing ports of the country. This route will be a feeder route for DFC and therefore electrification of this route along with doubling will be useful so that traffic to and from DFC is seamless. The parameters for electrification on this route will be on the same lines as DFC so that movement is unhindered.

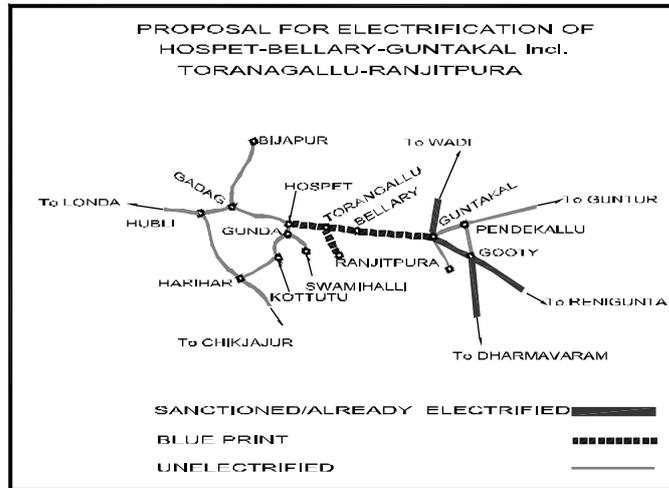
Ahmedabad-Delhi route is one of the most congested sections on IR. It is an alternative to the main line route via Baroda. The demand for both freight and passenger services is quite intense.



IR has decided to double this route and on majority of the route doubling has already been sanctioned. Delhi-Ajmer-Palanpur - Ahmedabad happens to be a major passenger corridor with a large number of demands for trains to and from Ajmer and Ahmedabad. Phulera-Ringus-Rewari is an important bypass and alternative route to Rewari-Jaipur-Phulera for traffic to and from Delhi.

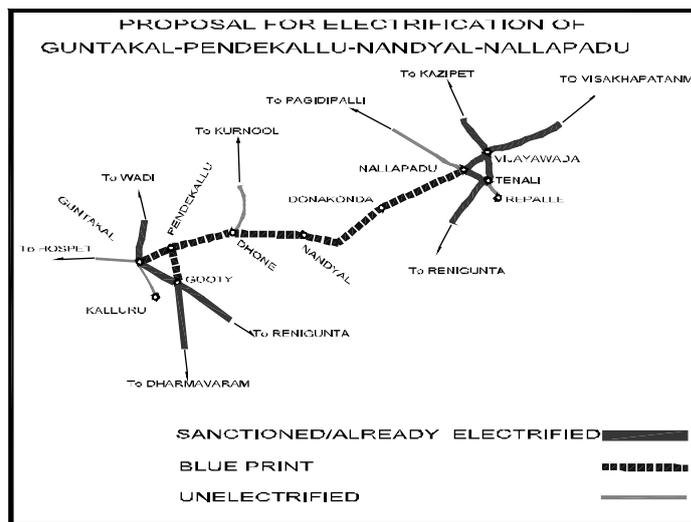
### 3.5 Hospet-Guntakal and Tornagallu-Ranjitpura section (138 RKMs)

Bellary-Hospet section is emerging as a major steel hub. Doubling of this route has already been done. As on date in this section about 9 MTPA of steel is produced. In addition to this about 45 Million Tons of iron ore is also mined, part of which is being consumed by the domestic steel industry. The steel production is also likely to go up with JSW plant at Tornagallu likely to expand its capacity further. Bellary-Hospet section gets connectivity with South Central, Central and Southern Railways through Bellary-Guntakal and Wadi-Guntakal-Renigunta sections. With the electrification of Renigunta-Wadi section in progress, Bellary-Hospet section is likely to receive trains from Guntakal mainly worked by electrical locomotives. Therefore electrification will allow smooth flow of trains. The section has a lot of iron ore movement received from the Tornagallu-Ranjitpura section. Doubling of this section has been sanctioned. The RE of the Tornagallu-Ranjitpura section would be essential for seamless operations.



### 3.6 Nallapadu-Guntakal section including Pendakallu-Gooty section (426 RKM)

Nallapadu-Guntakal section connects the Howrah-Chennai HDN with the Chennai-Mumbai HDN routes of the GQ both of which are electrified. The section is heavily graded. Goods trains meant for Krishnapatnam and Kakinada Ports are moved via this route. In return the coal for thermal plants like Muddanuru move via this route.

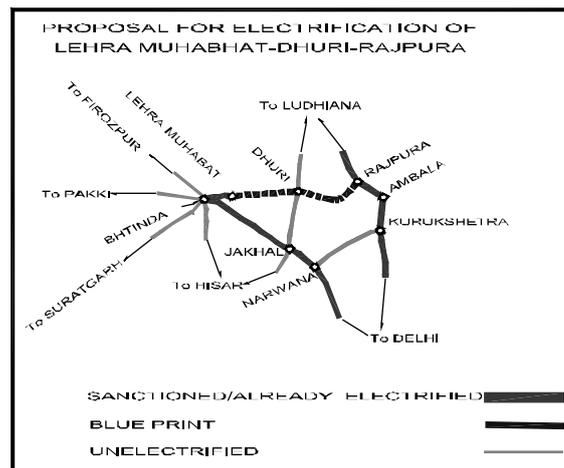


Electrification will permit deployment of locos of higher horsepower without sacrificing any trailing loads. Currently traction change is a major problem whether

done at Nallapadu or at Guntakal both of which are not equipped for the same. Electrification will help in smooth and seamless movement of trains in the section and eliminate detention to stock.

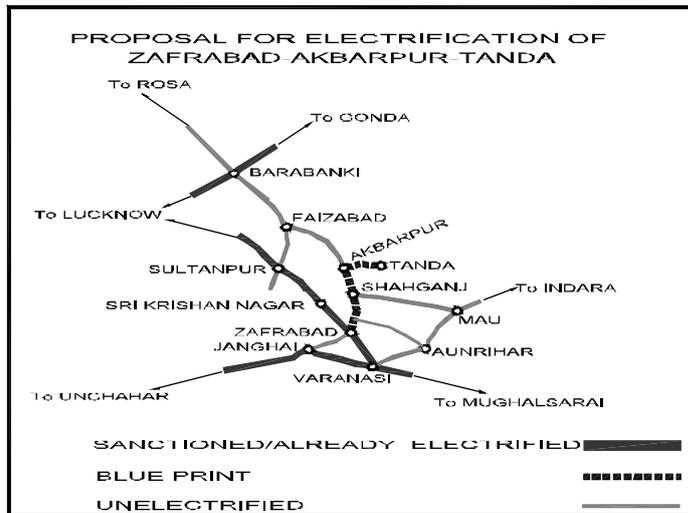
### 3.7 Rajpura-Lehra Muhabbat section (152 RKMs)

Rajpura-Bhatinda section popularly known as RBR section connects Bhatinda with 'B' route at Rajpura. A major reason for electrification of this route will be that once DFC comes up, coal to two thermal stations viz., Guru Hargovind Thermal Power Station at Lehra Muhabbat section & Guru Nanak Dev Thermal Power Station at Bathinda will move via Eastern DFC and then move on RBR via Rajpura. However the doubling and electrification of this section should match the timelines of the Eastern DFC.



### 3.8 Zafrabad-Akbarpur-Tanda section (101 RKMs)

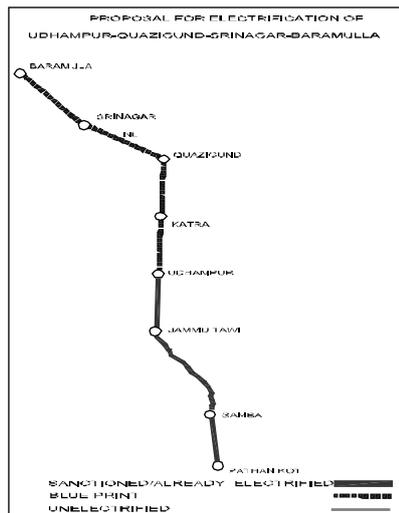
Zafrabad-Akbarpur-Tanda is also a feeder route to Eastern DFC. Once the ongoing electrification of Utratia-Sultanpur-Zafrabad-Mughalsarai sections is completed, this section serving Tanda Thermal Power Plant should also be taken on electric traction so that traction change at Mughalsarai is avoided. It has been given to understand that NTPC are expanding this plant and the number of coal rakes shall go up.



However the expansion plan is still on paper and will come in the later part of XII plan. Therefore this section can be taken for processing after two to three years.

### 3.9 Udhampur-Srinagar-Baramulla (292 RKMs):

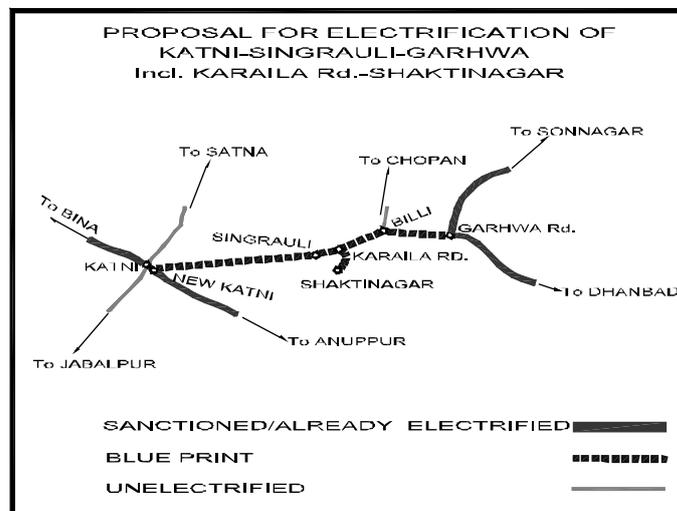
Board have agreed for electrification of this route as a special case due to the nature of the terrain as well as the fact that the line passes through tunnels for a considerable part of the route. The entire section from Udhampur to Baramulla has steep gradients for long continuous stretches and that renders this route ideal for operations with electric traction.



In tunnels, the environment can deteriorate during detention of trains or unusual occurrences. With the use of electric locos, no problems of exhaust from diesel engines affecting passengers and staff will arise normally as well as in difficult times.

### 3.10 Katni -Singrauli -Garhwa Road including Karaila Road-Shakti Nagar Section (479 RKM):

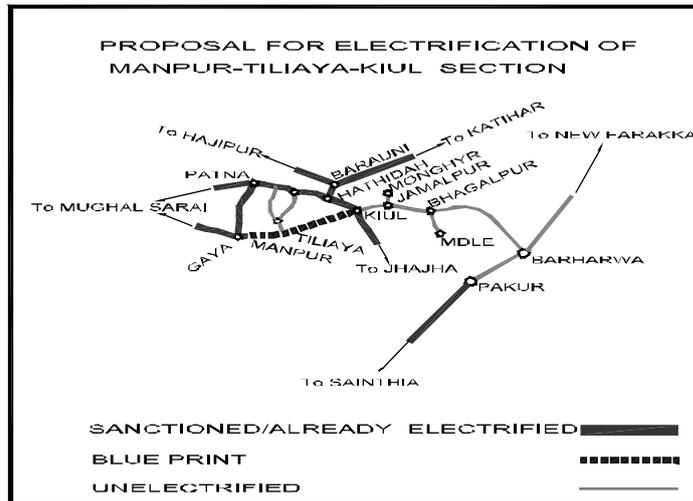
The NCL area is one of the few coal fields to have potential for coal traffic in future. The CIC section from Gomoh-Barakakhana-Garhwa Road is already electrified and so also is the Garhwa Road-Sonnagar section. By electrification of the Garhwa Road-Singrauli section it shall be possible to move traffic bound for Western and Northern parts of India seamlessly through Katni onwards to Kota and Mathura where electrification has already been sanctioned or is already electrified. It will also help to move Jumbo empties released in NFR/ECR to loading points on WR via Katni-Bina-Kota route. Incidentally existing single line of Kota-Bina route is also being electrified and doubling with electrification has also been sanctioned.



### 3.11 Manpur-Tiliaya-Kiul Section (117 RKM)

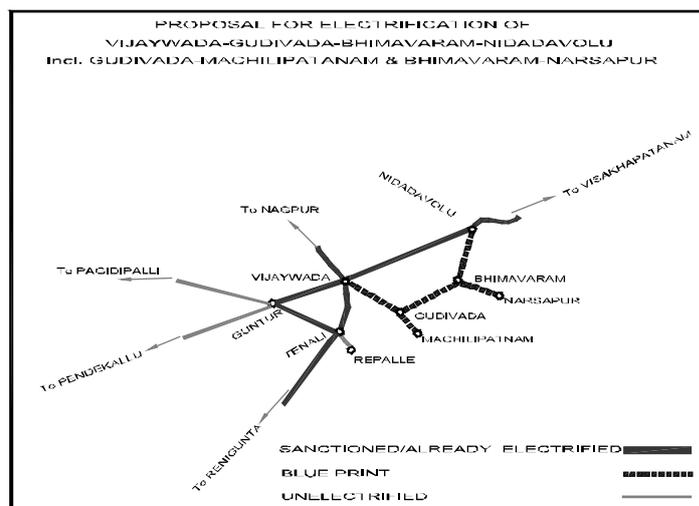
Kiul –Gaya section already runs about 32 pairs of trains each way and is congested. Doubling and electrification of this route along with upgradation of this section which will allow CC+8 axle load trains to move on this route. Electrification of this section will provide an alternative route. This will act as a feeder route to Eastern DFC as well as provide an alternative route to Northbound traffic. Moreover it will

segregate traffic from Pakur to move to up country destinations without moving via Pakur-Gomoh-Dhanbad where traffic levels are already saturated.



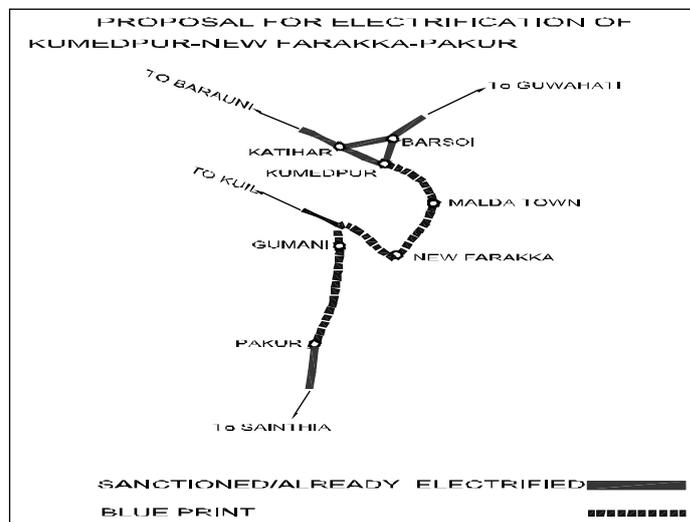
**3.12 Vijaywada-Gudivada-Bhimavaram-Nidadavolu & Gudivada-Machilipatnam and Bhimavaram-Narsapur section (221 RKMs):**

This doubling and electrification of this section has already been sanctioned. The route provides an alternative route between Nidadavolu-Vijaywada. Further Machilipatnam port is also being developed. Therefore electrification will permit seamless movement of traffic from this port to the rest of the country.



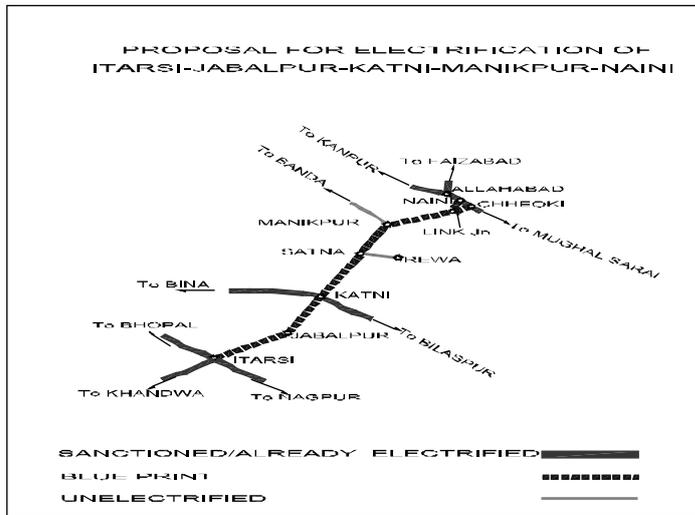
### 3.13 Pakur– New Farakka-Malda Town-Kumedpur (128 RKMs)

Gorakhpur –Guwahati is a sanctioned electrification work for and work is in progress and will be completed by 2013. Similarly Sainthia to Pakur is also a sanctioned work and is targeted for completion by 2015. By electrifying Pakur-Kumedpura seamless operation will be possible from Guwahati – Howrah. This will enable NFR also to freely move rakes to either direction i.e ECR or ER. It will also enable stone traffic to move seamlessly from Eastern Railway to terminals on ECR and NER. It will also enable seamless flow of jumbo empties from NFR to loading points on ER, SER, SECR & ECR.



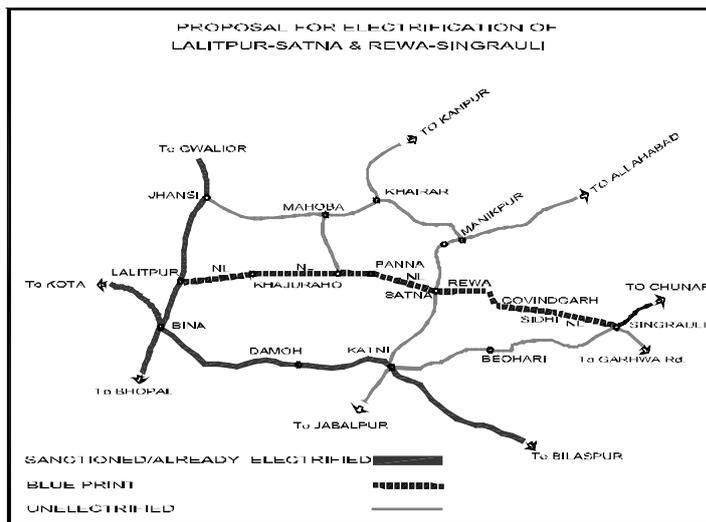
### 3.14 Naini-Manikpur-Katni-Jabalpur-Itarsi (605 RKMs)

Electrification of this double line route will help in seamless movement of traffic from Allahabad to Itarsi. The traffic on the Manikpur-Satna-Katni ranges between 50 to 60 trains each way while on the Katni-Itarsi section it is in the range of about 40 trains each way. The traffic on the route being substantial electrification of the route is going to give substantial savings on the fuel front. It will also mean that Jumbo empties being generated on NFR, ECR and NER can move seamlessly across Allahabad/Mughalsarai to loading points on WCR.



### 3.15 Lalitpur-Satna-Rewa-Singrauli (541 RKM)

This is a new line under construction and will give an alternative route for coal traffic from the Singrauli area to Northern India which is presently moved via the 'A' route i.e., the MGS-GZB section. Infact this will be a parallel and alternative route to the 'A' route and will reduce congestion on the heavily congested 'A' route. This will also help to feed power houses of UPSEB and NFR coming up at Karchana etc.



**4.0** A schematic diagram of the proposed works on the IR map is enclosed as Annexure II.

**5.0** Implementation of Blue Print :

- The projects in the BluePrint will be processed for sanction as per the laid down procedure
- At the beginning of every year, Planning, Traffic Transportation and RE Directorates will identify RE projects for the next year's works programme and inform the zonal railways who will then send the proposals to Board.
- At the beginning of each financial year, the shelf will be 5000kms.
- The blue print implementation plan is enclosed as Annexure-III.

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## ONGOING RAILWAY ELECTRIFICATION WORKS

SN	Name of Project / Year of Inclusion/PB/OB Page No./Item No.OF 2010-11	RKM	Balance RKM as on 01.04.10
<b>A.</b>	<b>WORK IN PROGRESS</b>		
SR	Ernakulam-Trivandrum incl.TVC-Kanniyakumari (99-00) (IIB-23.2.1/9)	429	87
NR	Moradabad-Lucknow-Utratia (05-06)IIB-23.2.1/15)	338	81
NR	Khurja-Meerut-Saharanpur (96-97) incl. GZB-MTC (IIB-23.2.1/6)	254	142
NR	Utratia-Sultanpur-Mughalsarai (06-07)(IIB-23.2.1/22)	288	123
SCR	Lingampalli- Wadi (06-07) (IIB-23.2.1/18)	161	52
WR	Ujjain -Indore & Dewas -Maksi (06-07)(IIB-23.2.1/21)	115	27
NR	Shakurbasti -Rohtak (07-08) (IIB-23.2.1/26)	60	3
NR	Jalandhar-Jammu Tawi (275 kms) incl. Jammu Tawi-Udhampur as phase I of Jalandhar-Jammu Tawi-Baramula (07-08) (IIB-17.2.1/24)	275	176
NE/EC	Barabanki-Gonda-Gorakhpur-Barauni incl.Siwan-Thawe (07-08) (IIB-23.2.1/23)	757	399
NCR	Jhansi -Kanpur incl. Ait -Konch & KanpurAnwarganj -Kalyanpur (IIB-23.2.1/23)	240	240
EC/NF	Barauni-Katihar - Guwahati incl.Katihar-Barsoi (IIB-23.2.1/27)	836	836
SR	Madurai-Tuticorin-Nagarcoil (08-09)(IIB-23.2.1/29)	262	262
NR	Varanasi-Janghai-Unchahar including Phaphamao-Priyag-ALD (08-09)(IIB-23.2.1/30)	207	207
SECR	Gondia- Ballarshah	250	250
NR	Ghaziabad-Moradabad	140	140
SR	Shoranur-Mangalore-Penambur	328	328
NR	Rohtak-Bhatinda-Lehra Muhabat	252	252
ER	Pandabeshwar-Sainthia-Pakur incl. Khana-Sainthia	205	205
SCR	Renigunta- Guntakal (92-93) (IIB-23.2.1/2)	308	179
CR	Daund - Manmad (10-11) (IIB-23.2.3/35)	255	255
ECoR	Angul-Sukinda	99	99
ECoR	Haridaspur-Paradeep	82	82
	<b>TOTAL</b>	<b>6141</b>	<b>4425</b>

## Vision 2020 Blue Print For Railway Electrification

### REFERENCES:-

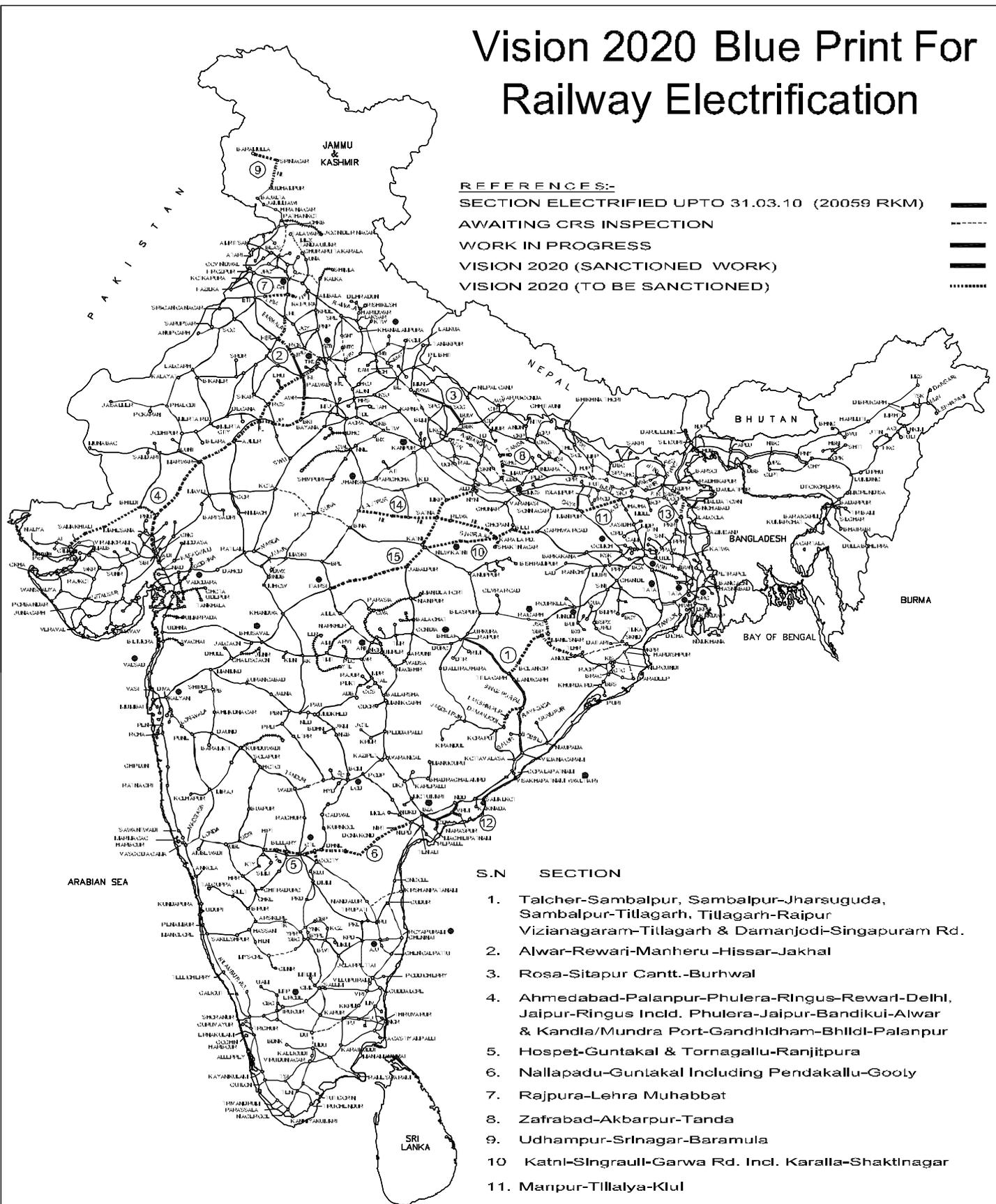
SECTION ELECTRIFIED UPTO 31.03.10 (20059 RKM) 

AWAITING CRS INSPECTION 

WORK IN PROGRESS 

VISION 2020 (SANCTIONED WORK) 

VISION 2020 (TO BE SANCTIONED) 



### S.N SECTION

1. Talcher-Sambalpur, Sambalpur-Jharsuguda, Sambalpur-Tillagarh, Tillagarh-Raipur Vizianagaram-Tillagarh & Damanjodi-Singapuram Rd.
2. Alwar-Rewari-Manheru -Hissar-Jakhal
3. Rosa-Sitapur Cantt.-Burhwal
4. Ahmedabad-Palanpur-Phulera-Ringus-Rewari-Delhi, Jaipur-Ringus Incd. Phulera-Jaipur-Bandikui-Alwar & Kandla/Mundra Port-Gandhidham-Bhildi-Palanpur
5. Hospet-Guntakal & Tornagallu-Ranjitpura
6. Nallapadu-Guniakal Including Pendakallu-Gooly
7. Rajpura-Lehra Muhabbat
8. Zafrabad-Akbarpur-Tanda
9. Udhampur-Srinagar-Baramula
10. Katni-Singrauli-Garwa Rd. Incl. Karalla-Shaktinagar
11. Manpur-Tillalya-Klul
12. Vijaywada-Gudivada-Bhimavaram-Nidadavolu & Gudivada-Machilipatnam & Bhimavaram-Narsapur
13. Pakur-New Farakka-Malda Town-Kumedpur
14. Lalitpur-Satna-Rewa-Singrauli
15. Naini-Manikpur-Katni-Itarsi

● ELECTRIC LOCO SHED

## Blue Print Implementation Plan

Year	Shelf as on/likely	Shelf in Kms/likely	Target in Kms	Likely achievement in Kms	Cumulative achievement	Left over in Kms	New sanctions / Required sanctions in Kms	Balance left from Blue Print of 6081 kms	Details of new sanctions (in kms)	Total of left over + new sanctions in Kms
(A)	(B)	(C)	(D)	(E)		(F)=(C-E)	(G)		(H)	(I)=F+G
2010-11	31.03.2010	4425	1000	1000	1000	3425	1447	5061	From the Blue Print: Vizianagaram-Raipur-466, Rosa-Burhwal-182, Alwar-Rewari-82, Rewari-Manheru-69, Vijayawada-Gudivada-Bhimavaram-Nidadavolu, Gudivada-Machilipatnam-221. Other than Blue Print: MTJ-Alwar-121, Yelehanka-Gooty-306	4872
2011-12	31.03.2011	4872	1000	1000	2000	3872	1128	3933		5000
2012-13	31.03.2012	5000	1500	1500	3500	3500	1500	2433		5000
2013-14	31.03.2013	5000	1500	1500	5000	3500	1500	933		5000
2014-15	31.03.2014	5000	1500	1500	6500	3500	1500	New projects of 3494 kms to be identified for sanctioning		5000
2015-16	31.03.2015	5000	1500	1500	8000	3500	1500			5000
2016-17	31.03.2016	5000	1500	1500	9500	3500	1000			4500
2017-18	31.03.2017	4500	1500	1500	11000	3000				
2018-19	31.03.2018	0	1500	1500	12500					
2019-20	31.03.2019	0	1500	1500	14000					
			<b>14000</b>	<b>14000</b>	<b>14000</b>		<b>9575</b>			
<b>Shelf as on 31.03.10=</b>										<b>4425</b>
<b>Total additional sanctions required=14000-4425=</b>										<b>9575</b>
<b>Existing proposed blue print =</b>										<b>6081</b>
<b>Balance sanctions needed for completing Vision 2020 target</b>										<b>3494</b>

**Note:**

RE projects normally take 3 years for completion after sanctions, hence, all sanctions should be in place by 2016-17, to complete the works by 2019-20 as per VISION 2020 document.