

TRAFFIC IMPACT ASSESSMENT REPORT

FOR

TRANSPORT OF COAL BY ROAD

2x520 MW COAL BASED THERMAL POWER PLANT

of



M/s Hinduja National Power Corporation Ltd,
Visakhapatnam, Andhra Pradesh

August, 2016,

PROJECT PROPONENT	ENVIRONMENT CONSULTANT
Hinduja National Power Corporation Ltd, Visakhapatnam	B.S. ENVI-TECH PVT LTD Secunderabad – 500 017

Introduction

M/s Hinduja National Power Corporation Ltd (HNPCL) has established the 2x520 MW coal based power plant at Pavalavasa, Parawada Mandal, Visakhapatnam District in the State of Andhra Pradesh **Visakhapatnam**. The proposed project site has Latitude: 20° 28' 11" N to 20° 28' 56" N and Longitude: 85° 44' 43" E to 85° 45' 11" E. The nearest major city is Visakhapatnam which is at an aerial distance of 14 km from the project site. The plant received the Environmental Clearance from MOEF in the year 1996. The power plant has been constructed and commissioned as given below:

- Unit I - March 2016
- Unit II – June 2016

Background

HNPCL has signed a fuel supply agreement with Mahanadi Coal Fields to supply about 46.24 lakh tons of coal. The estimated coal requirement for the project is as given below:

Raw Material	Quantity	Source	Mode of Transport
Indigenous Coal	46.24 lakh tons / annum	Talcher Coalfield	Rail

Source: EIA report

HNPCL Coal Handling System

The company has signed the **Fuel Supply Agreement (FSA)** with **Mahanadi Coalfields Ltd (MCL)**. Coal from Talcher coalfields, which is at a distance of 600 Km will be transported to the HNPCL plant at Vizag by the Indian Railways using its existing Railway System. Already a dedicated railway line of about 20 km connecting Jaggayyapalem to NTPC Simhadri plant Railway siding is in operation servicing the plant requirements of NTPC. The Railway line to HNPCL for a distance of 5 km is under progress.

HNPCL has already implemented the coal handling system consisting of rail unloading system with back-up road unloading facility, coal stockyard, and fill system having the following major components:

- Coal unloading system
- Coal stocking/reclaiming system
- Coal dust control system
- Coal handling ancillary systems

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The coal will be unloaded into two track hoppers by a merry-go-round system. A truck unloading system is also in place and also will make use of the same hopper. A 1500 T/h conveying system will then take the coal from the rail unloading hopper to the stockyard where a stacker/reclaimer will stock out the coal as required. Two stacker reclaimers have been provided.

Status of HNPCL Railway Siding

The NTPC Simhadri power plant has a dedicated Railway line from Jaggayapalem. The distance from Jaggayapalem to Dasarpetta Railway crossing is about 20 km. From Dasarpetta Railway crossing to NTPC Simhadri plant is about 4.4 km. This railway line is now operational and catering to the requirement of NTPC. It is now proposed by HNPCL to lay the dedicated railway line from Dasarpetta Railway crossing to HNPCL plant covering a distance of 4.8 km. The land belonging to HNPCL is available for laying the railway siding adjacent to the by-pass road. The following is the progress of the railway work:

- **40% of Civil work has been completed**
- **15% of Permanent Way works completed**
- **Contract awarded for Overhead Electric traction work**
- **Contract awarded for Signalling and Telecom work**

It is expected that the works will be completed in about two year's time.

HNPCL has obtained the permission from the East Coast Railway to unload 2 rakes a day in NTPC Simhadri railway siding.

HNPCL has also obtained the permission from NTPC Simhadri for movement of about 4 rakes per day on an average from Jaggayapalem to Duvvada section and also for HNPCL siding taking off from NTPC siding at Duvvada to HNPCL plant premises.

Present proposal

The present proposal is to seek permission of Ministry of Environment, Forest and Climate Change (MOEFCC) to transport the coal by road from Bayyavaram Railway siding and the Kantakapally Railway siding apart from the NTPC railway siding for a period of three years until the private railway siding of HNPCL is commissioned. This report presents the traffic impact assessment due to transportation of coal by road.

Transport of Coal by Road

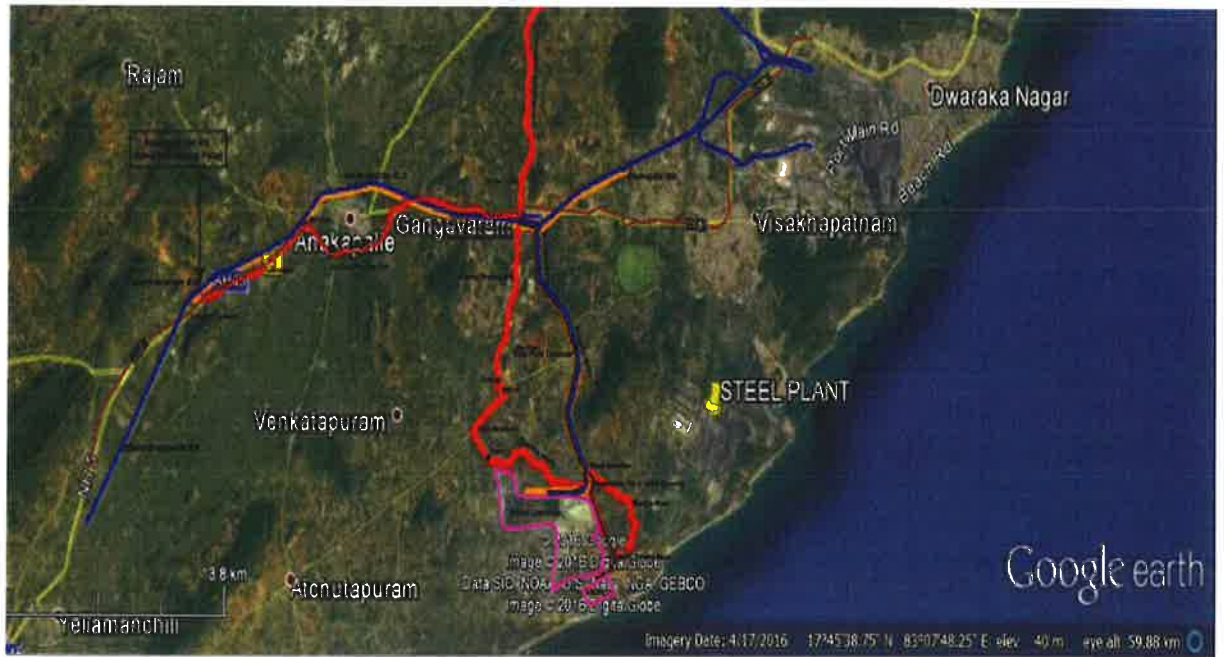
There are two Railway sidings namely Bayyavaram and Kantakapally. Railways have permitted HNPCL to unload the coal at the railway sidings (based on traffic density) and transport the same by means of covered trucks to the plant.

Apart from this HNPCL had approached NTPC Simhadri to utilise their existing Railway siding to unload the coal and transport the same to the plant. The details of the same are presented in the following table.

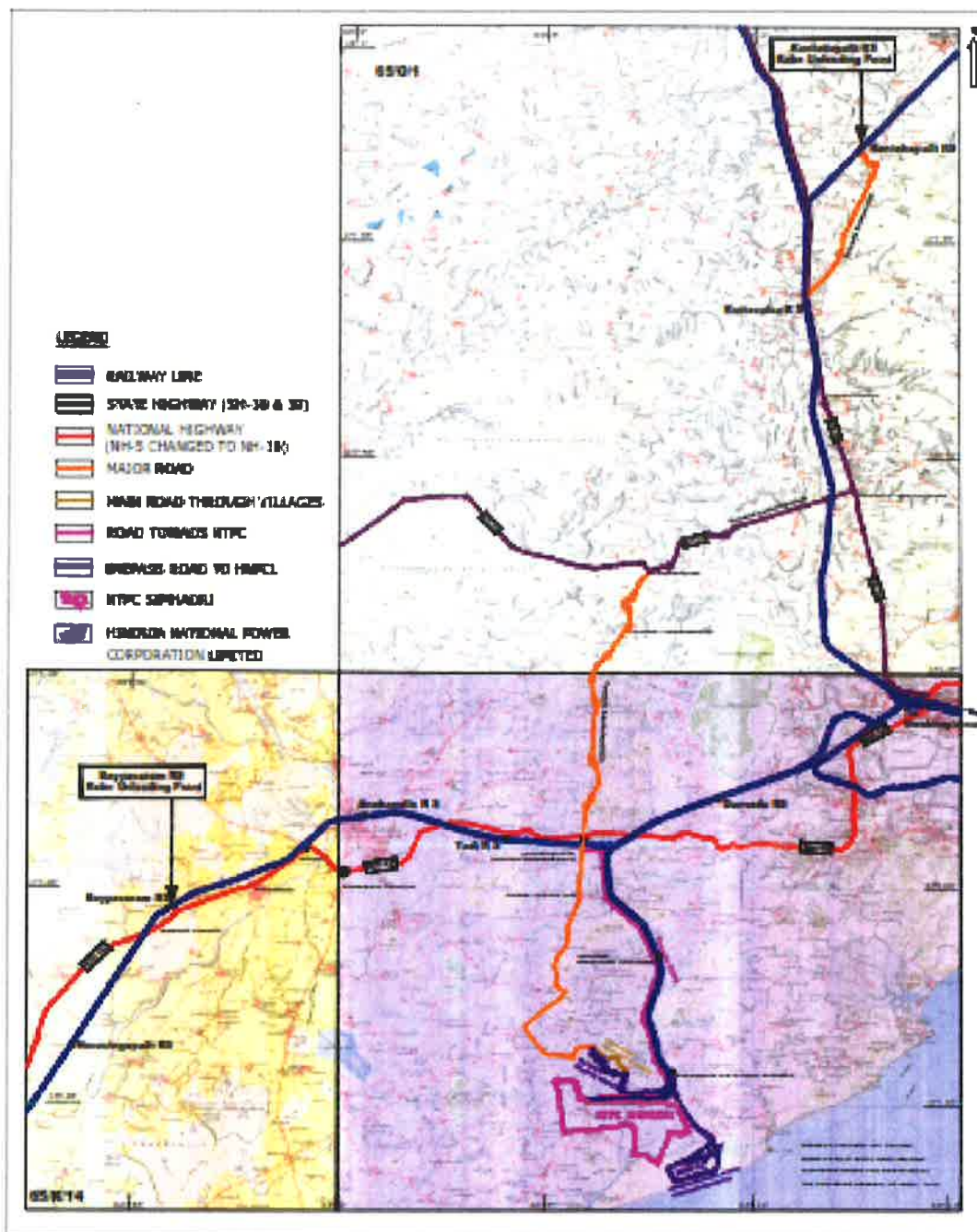
PLACE	RAKES/ MONTH	TONS/ RAKE	TONS / MONTH	TONS/ YEAR	NO OF TRUCKS/ DAY	ROAD DISTANCE
KANTAKAPALLY RLY SIDING	20	4000	80000	9,60,000	60 - 80	63 KM
BAYYAVARAM RLY SDNG	30	4000	1,20,000	14,40,000	120 - 200	45 KM
NTPC SIMHADRI RLY SIDING (Proposed)	40	4000	1,60,000	19,20,000	180	8.5 KM
TOTAL				43,20,000		

HNPCL had constructed a dedicated road of 5 km length bypassing the villages of Swayambhupuram and Kalpaka. This road is being constructed at an estimated cost of Twenty Crores. The proposed railway line from Dasarpeta Rly crossing will be adjacent to this road. It is proposed to use this road for transport of coal by road from the NTPC Simhadri Railway siding. Hence the traffic impact study has been limited to movement of coal by road from Bayyavaram and Kantakapally railway sidings respectively. The alignment of the HNPCL railway siding is shown in the following map.

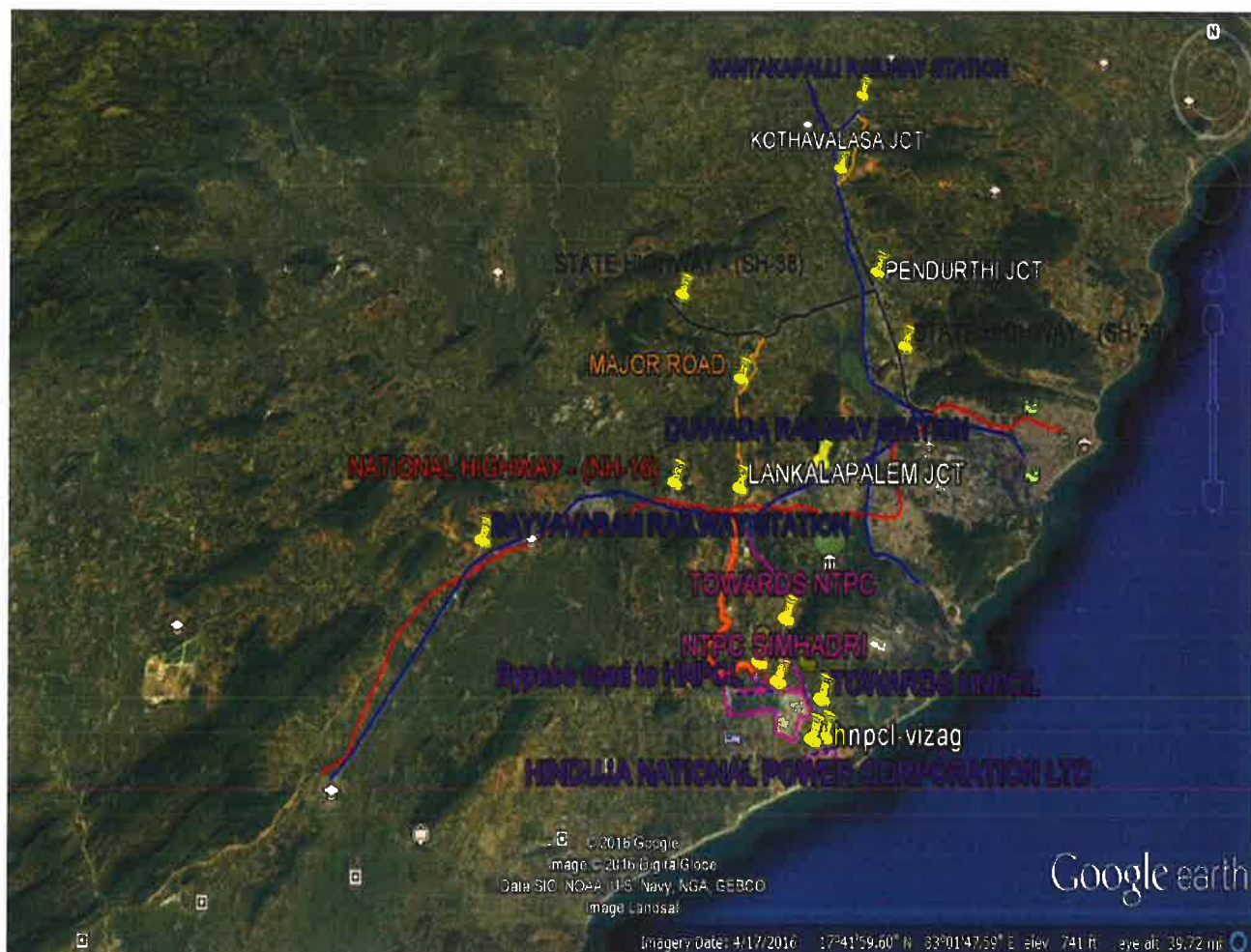
Map showing the alignment of the proposed railway line from Dasarpeta Rly crossing to the HNPCL plant site



The SOI topographic map showing the Railway sidings, Road network, Rail Network and the HNPCL Power Plants.



Google Earth imagery showing the location of Railway sidings, road network, railway network and the HNPCL power plant



About Traffic Impact Study

The traffic impact studies have been carried out to understand the adequacy of road, the impact when the loaded or unloaded trucks are moving along NH and SH before taking the material to HNPCL from two railways siding yards namely, Bayyavaram and Kantakapally. Both of these connectivities will have Lankelapalam as a common location where trucks will move towards left to reach Bayyavaram from HNPCL along NH-5 whereas for Kantakapally the trucks will move straight using SH-38 and SH-38. The Lankelapalam junction photo is indicated below.



Lankelapalam junction

Road Connectivity

HNPCL (Hinduja National Power Corporation Limited) which generate power and augment the requirement and demand in the power sector mainly based on fossil fuel that is basically coal. The coal will have to be transported to HNPCL plant which is located 45 Km from Bayyavaram railway siding yard and 63 Km from Kantakapally railway siding yard. For Bayyavaram railway siding yard about 21 Km distance will have to be covered along NH-5, whereas for Kantakapally there is no need to traverse along NH-5. But it has to move along two State Highways namely, SH-38 and SH-39. However, from HNPCL plant, vehicles will have to move via Lankelapalam junction to reach both the railway siding yards.

NH-5 is well connected which is a straight aligned road from Visakhapatnam to Rajahmundry. The surface condition of the pavement is very good and has (2+2) lanes

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with a wide median of 5 m. The median is well maintained with grass turfing and 1.5 m height plants to prevent the glare due to head light.

To a little distance on either side of Lankelapalam, it is a built up area and the speed of the vehicles are considerably low. The pavement is well marked with adequate sign boards to guide the drivers.

The unloaded trucks from the plant will have to use this stretch of NH-5 for about 21 Km to reach Bayyavaram railway siding and there is no direct access to Bayyavaram railway siding road from NH-5. These trucks will have to move further about 300 m and take U-turn safely later to join Bayyavaram railway siding road which is 1.2 Km from NH-5.

After loading the coal, the trucks will traverse again 1.2 Km to reach NH-5 and move towards Lankelapalam junction (21 Km) and take right turn towards HNPCL. From Lankelapalam junction, HNPCL plant is located at 31.8 Km.

Similarly, the unloaded trucks from HNPCL will reach first to Lankelapalam junction and move straight towards SH-38. Later take left turn towards SH-39 to reach Kantakapally railway siding. This siding measure 39 Km from Lankelapalam junction. Both SH-38 and SH-39 are of 2 lanes roads and have adequate shoulder on either side. The pavement surface condition of both the roads is good except the lane marking which is faded out. These have got few sign boards for drivers to follow.

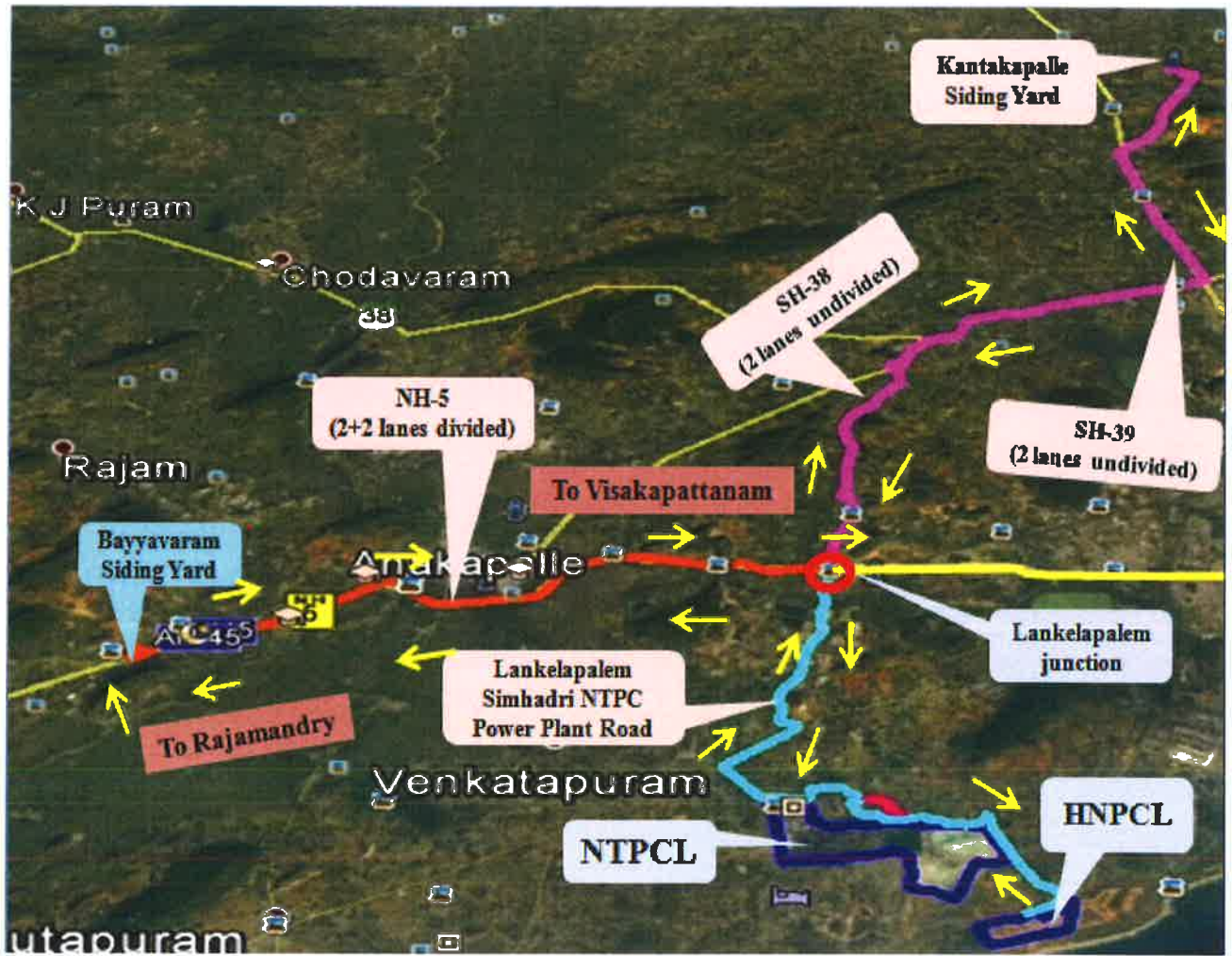


Fig: Aerial view of HNPCL, Bayyavaram and Kantakapally railway siding

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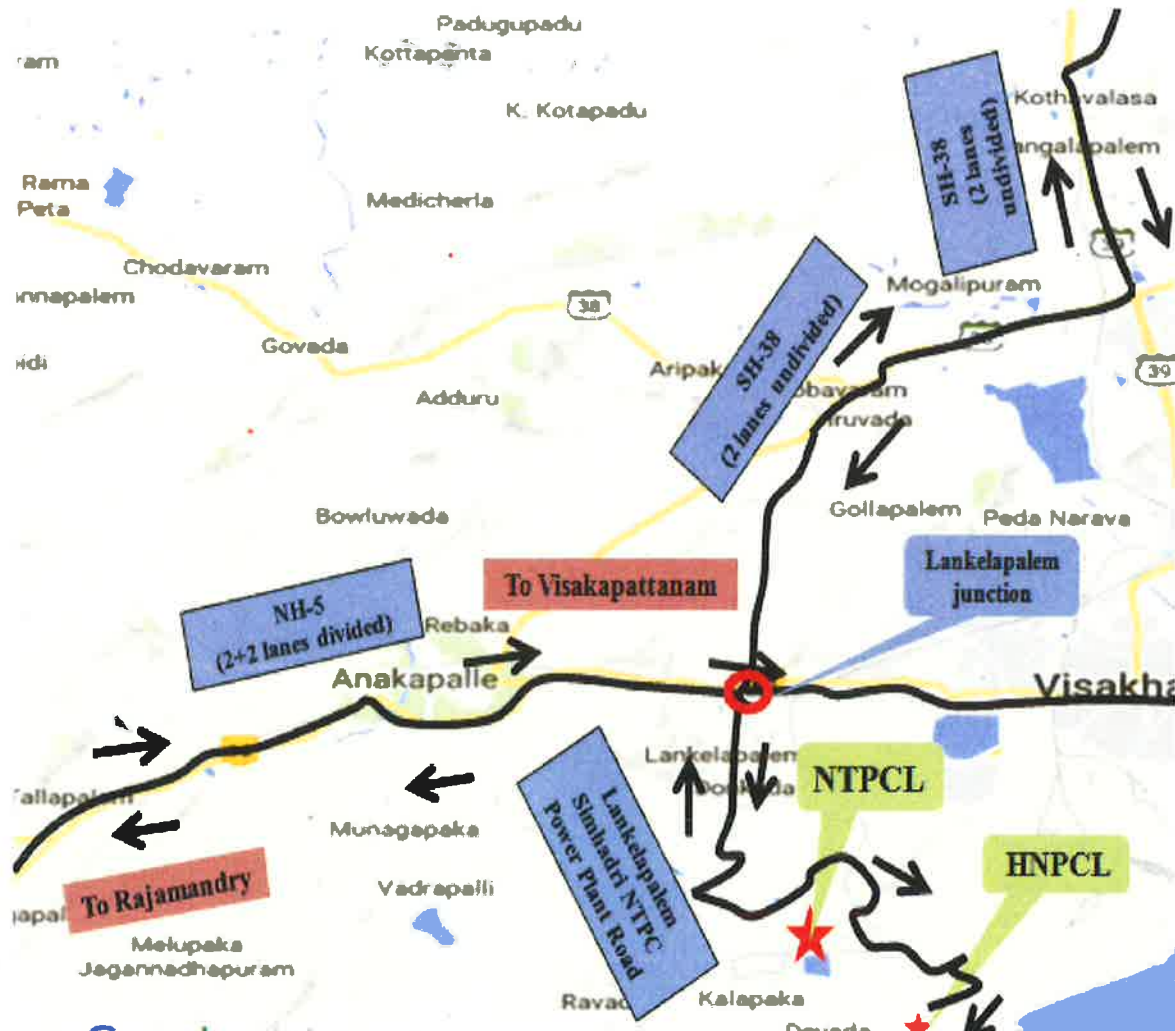


Fig: Location plan of HNPCL, Bayyavaram and Kantakapally railway siding

Existing Road Geometry Scenario, photos and speed spectrum of study roads

The road geometric scenario of the study roads is mentioned below.

1. NH-5 – 24 m Right of Way, (7+7) m Carriage Way, 5 m median, 2.5 m shoulder on either side of the road.
2. SH-39 – 15 m Right of Way, 8 m Carriage Way, 3.5 m shoulder on either side of the road.
3. SH-38 – 15 m Right of Way, 8 m Carriage Way, 3 m shoulder on one side and 4 m on another side of the road.
4. Lankelapalem road – 15 m Right of Way, 7 m Carriage Way, 4 m shoulder on either side of the road.

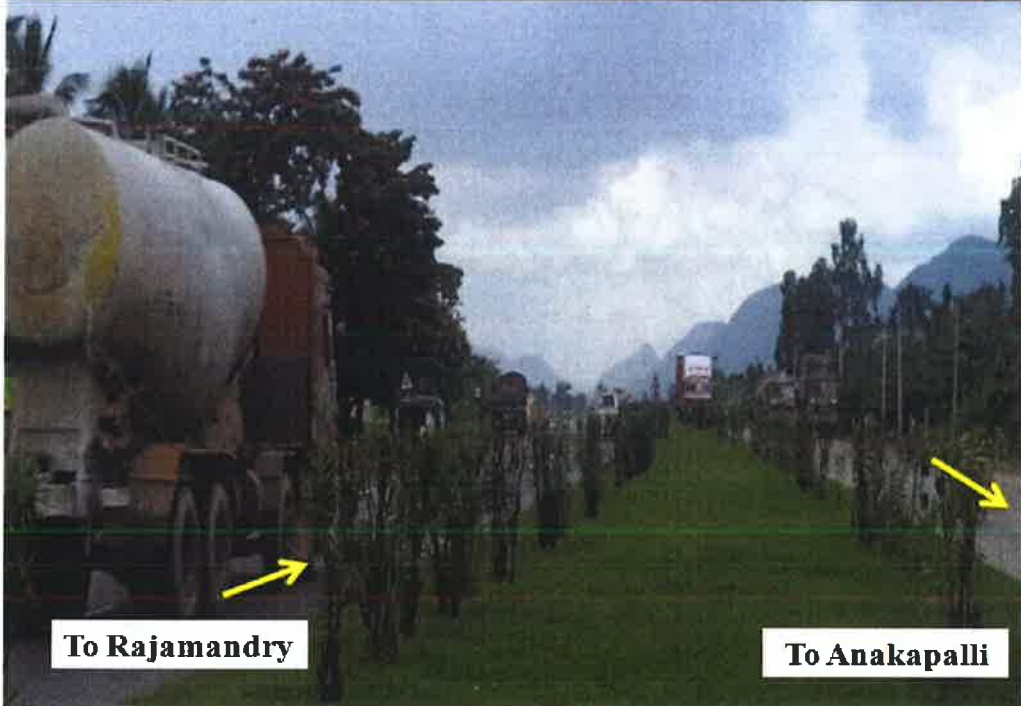
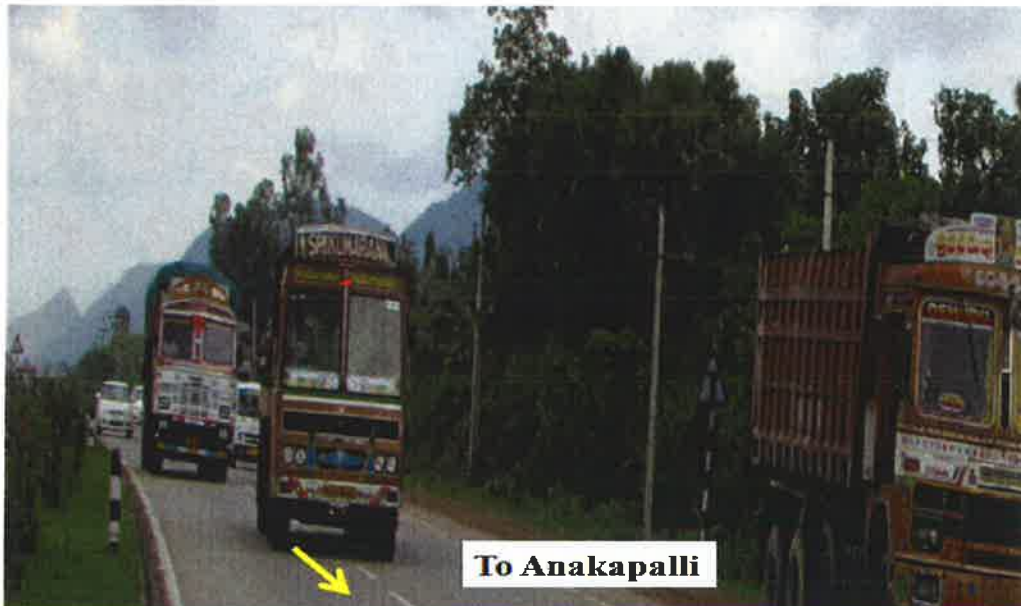
Table: Existing Road Geometry Scenario of study roads

Road	ROW (m)	Surface Condition	Street lights	Drainage	Road		Remarks
	CW (m)				Marking	Signs	
	Lanes						
NH-5 (2+2 lanes divided)	24	Good	A	A	A	A	
	7+7						
	2+2						
SH-39 (2 lanes undivided)	15	Good	NA	A	A	A but not adequate	Adequate sign boards shall be installed.
	8						
	2						
SH-38 (2 lanes undivided)	15	Good	NA	A	A	A but not adequate	Adequate sign boards shall be installed.
	8						
	2						
Lankelapalem (2 lanes undivided)	15	Good	NA	A	A	A but not adequate	Adequate sign boards shall be installed.
	7						
	2						

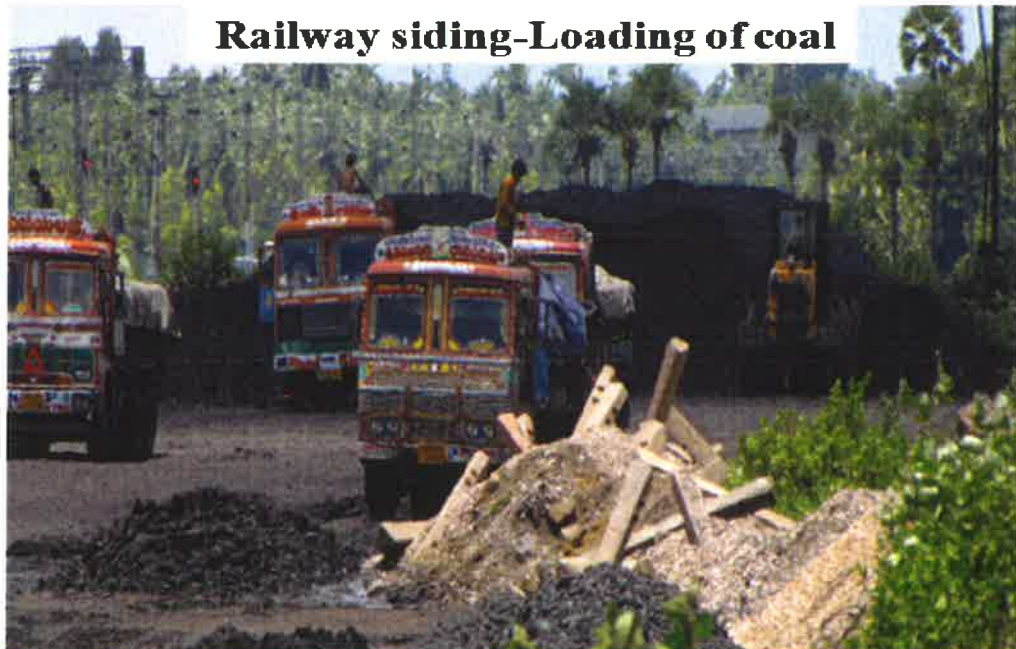
Note: A-Available, NA-Not Available, ROW-Right of Way, CW-Carriage Way.

Photos of study roads

Photos of NH-5 near Bayyavaram Railway Siding



Photos of Kantakapally railway siding yard



Photos of SH-39



Photos of SH-38



Speed spectrum for the study roads (Kmph)**Table: Speed Spectrum of study roads**

Road	Towards	2 Wh		3 Wh		4 Wh (C,J,V)		Buses/ Lorries		Trucks	
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
NH-5 (2+2 lanes divided)	Rajahmundry	59	26	32	20	78	38	22	16	30	21
	Anakapalli	63	30	35	16	72	46	24	14	25	14
SH-39 (2 lanes undivided)		41	24	25	15	42	23	23	19	23	15
SH-38 (2 lanes undivided)		43	29	22	18	46	24	28	17	26	18
Lankelapalam (2 lanes undivided)		38	21	26	18	45	28	27	14	26	20

Traffic Volume Studies

Traffic volume being one of the important basic parameter which affects the planning, design of road infrastructure, the vehicular volume will have to be obtained for the road area preferably at mid-block of a road, hour-wise. Classified traffic volume count is made based on the reconnaissance for traffic flow at the location, 6.00 am up to 12.00 mid night peak and off peak as the traffic between 12.00 mid night to 6.00 AM constitutes about 8 % of the total generated traffic which is negligible. Hence there is no need to measure night traffic and also planning and design is based on the peak traffic largely.

The traffic volume study is carried out for NH-5 (NH-16) for Bayyavaram railway siding. For Kantakapally railway siding, SH-38, SH-39 and Lankelapalam road traffic studies are made. Each classified vehicular volume covering 2-wh, 3-wh (Autos), 4-wh (Car, Jeep, Van), Buses / Lorries, Multi Axle Vehicles (MAVs) are considered for studies.

The vehicular volume / hour was taken for every 15 min interval and consolidated value for each hour is indicated in the table. The figures in the brackets indicate the Passenger Car Units (PCUs).

To understand the congestion, it is very important to obtain the Volume- Capacity ratio based on IRC criteria.

The Passenger Car Units and Capacity for NH-5 is taken based on IRC: SP:84-2014 assuming the comfortable LoS of "C" and for SH-38, SH-39 and Lankelapalam road Passenger Car Units and Capacity are taken based on IRC 64:1990 and the values are tabulated for all the study roads and the details are presented below.

Table: Recommended PCU's Factor for Various type of Vehicles on Highways as per IRC:SP:84-2014 (From Table-2.9, Pg.no-28)

2.18 Capacity of Four-Lane Highway

For the purpose of augmentation of the facilities and up-gradation of the Project Highway, the design service volume for different terrain conditions and level of service shall be as specified in Table 2.9.

Table 2.9 Design Service Volume for Four-Lane Highways in PCU Per Day

Terrain	Design Service Volume in PCU Per Day	
	Level of Service 'B'	Level of Service 'C'
Plain and Rolling	40,000	60,000
Mountainous and Steep	20,000	30,000

Table: Recommended PCU's Factor for Various type of Vehicles on Highways as per IRC-64-1990 (From Table-1, Pg.no-10)

S. No.	Vehicle Type	Equivalency Factor
Fast Vehicles		
1.	Motor Cycle or Scooter	0.50
2.	Passenger Car, Pick-up Van or Auto-rickshaw	1.00
3.	Agricultural Tractor, Light Commercial Vehicle	1.50
4.	Truck or Bus	3.00
5.	Truck-trailer, Agricultural Tractor-trailer	4.50
Slow Vehicles		
6.	Cycle	0.50
7.	Cycle-rickshaw	2.00
8.	Hand Cart	3.00
9.	Horse-drawn vehicle	4.00
10.	Bullock Cart*	8.00 ✓

* For smaller bullock-carts, a value of 6 will be appropriate.

Table: Recommended Design Service Volume / Capacity for two lane road as per IRC-64-1990 (From Table-4, Pg.no-12)

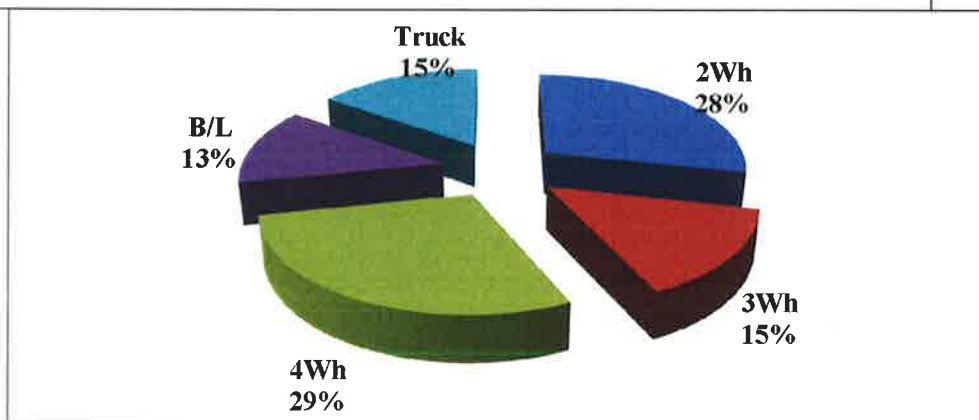
S.N.	Terrain	Curvature (Degrees per Kilometre)	Design Service Volume in PCU/day
1.	Plain	Low (0-50)	15,000
		High (above 51)	12,500
2.	Rolling	Low (0-100)	11,000
		High (above 101)	10,000
3.	Hilly	Low (0-200)	7,000
		High (above 201)	5,000

Real time traffic scenario along study roads**Real time traffic scenario along NH-5 towards Rajahmundry (2+2 lanes divided)****Table: Real time traffic scenario along NH-5 towards Rajahmundry (2+2 lanes divided)**

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	102(51)	57(57)	106(106)	29(87)	37(111)	331(412)
7.00-8.00	118(59)	65(65)	118(118)	33(99)	44(132)	378(473)
8.00-9.00	129(65)	73(73)	126(126)	47(141)	53(159)	428(564)
9:00-10:00	120(60)	81(81)	153(153)	50(150)	67(201)	471(645)
10:00-11:00	147(74)	76(76)	148(148)	67(201)	79(237)	517(736)
11.00-12.00	142(71)	69(69)	139(139)	62(186)	83(249)	495(714)

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12.00-1.00 pm	121(61)	56(56)	112(112)	73(219)	64(192)	426(640)
1.00-2.00	98(49)	62(62)	98(98)	51(153)	60(180)	369(542)
2.00-3.00	86(43)	57(57)	86(86)	64(192)	58(174)	351(552)
3.00-4.00	73(37)	44(44)	78(78)	41(123)	51(153)	287(435)
4:00-5:00	61(31)	39(39)	66(66)	27(81)	42(126)	235(343)
5:00-6:00	52(26)	31(31)	58(58)	38(114)	33(99)	212(328)
6:00-7:00	69(35)	22(22)	43(43)	70(210)	46(138)	250(448)
7:00-8:00	47(24)	35(35)	55(55)	45(135)	37(111)	219(360)
8.00-9.00	55(28)	27(27)	49(49)	36(108)	29(87)	196(299)
9.00-10.00	42(21)	33(33)	57(57)	25(75)	17(51)	174(237)
10.00-11.00	35(18)	18(18)	36(36)	18(54)	22(66)	129(192)
11.00pm-12.00am	29(15)	12(12)	27(27)	15(45)	18(54)	101(153)
Total						5569(8068)



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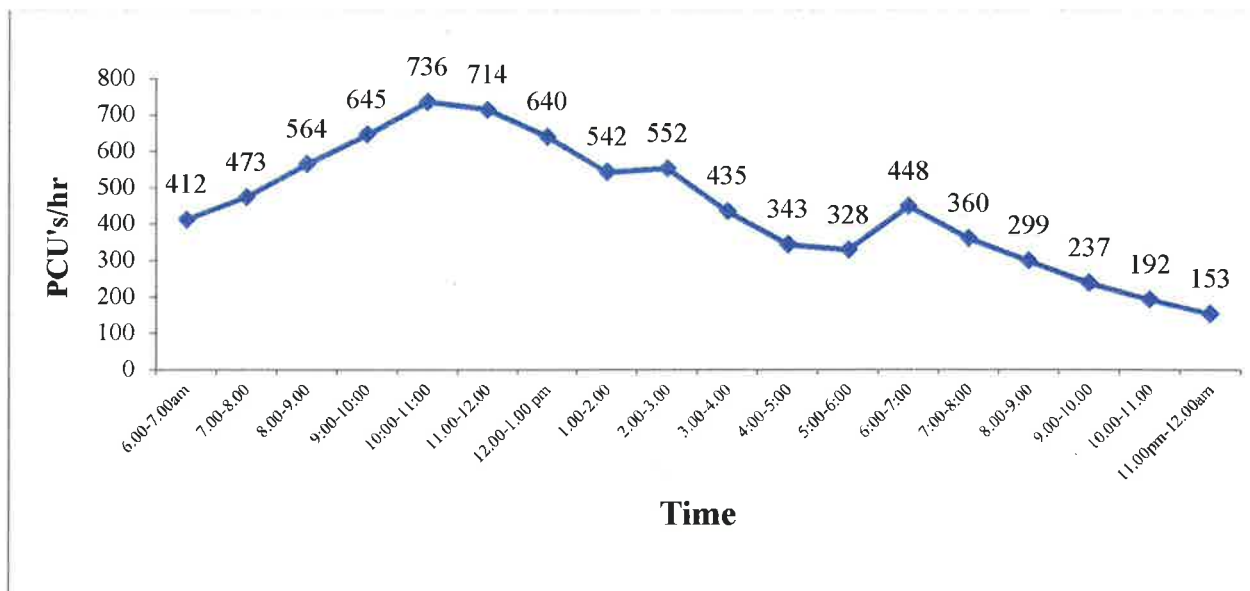


Fig: Vehicle Composition and Traffic flow distribution along NH-5 towards Rajahmundry (2+2 lanes divided)

Real time traffic scenario along NH-5 towards Anakapalli (2+2 lanes divided)

Table: Real time traffic scenario along NH-5 towards Anakapalli (2+2 lanes divided)

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	52(26)	19(19)	21(21)	18(54)	23(69)	133(189)
7.00-8.00	45(23)	24(24)	29(29)	23(69)	18(54)	139(199)
8.00-9.00	59(30)	39(39)	36(36)	30(90)	27(81)	191(276)
9:00-10:00	63(32)	48(48)	45(45)	55(165)	35(105)	246(395)
10:00-11:00	77(39)	32(32)	52(52)	42(126)	72(216)	275(465)
11.00-12.00	89(45)	53(53)	76(76)	22(66)	54(162)	294(402)
12.00-1.00 pm	71(36)	49(49)	63(63)	25(75)	46(138)	254(361)
1.00-2.00	98(49)	57(57)	83(83)	35(105)	31(93)	304(387)
2.00-3.00	84(42)	69(69)	92(92)	28(84)	38(114)	311(401)
3.00-4.00	93(47)	43(43)	107(107)	33(99)	49(147)	325(443)
4:00-5:00	102(51)	59(59)	112(112)	46(138)	36(108)	355(468)
5:00-6:00	114(57)	73(73)	126(126)	39(117)	42(126)	394(499)

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6:00-7:00	159(80)	98(98)	142(142)	43(129)	59(177)	501(626)
7:00-8:00	163(82)	91(91)	172(172)	59(177)	69(207)	554(729)
8:00-9:00	171(86)	86(86)	156(156)	62(186)	62(186)	537(700)
9:00-10:00	142(71)	78(78)	135(135)	56(168)	55(165)	466(617)
10:00-11:00	131(66)	71(71)	98(98)	48(144)	42(126)	390(505)
11:00pm-12:00am	126(63)	64(64)	86(86)	34(102)	51(153)	361(468)
Total						6030(8125)

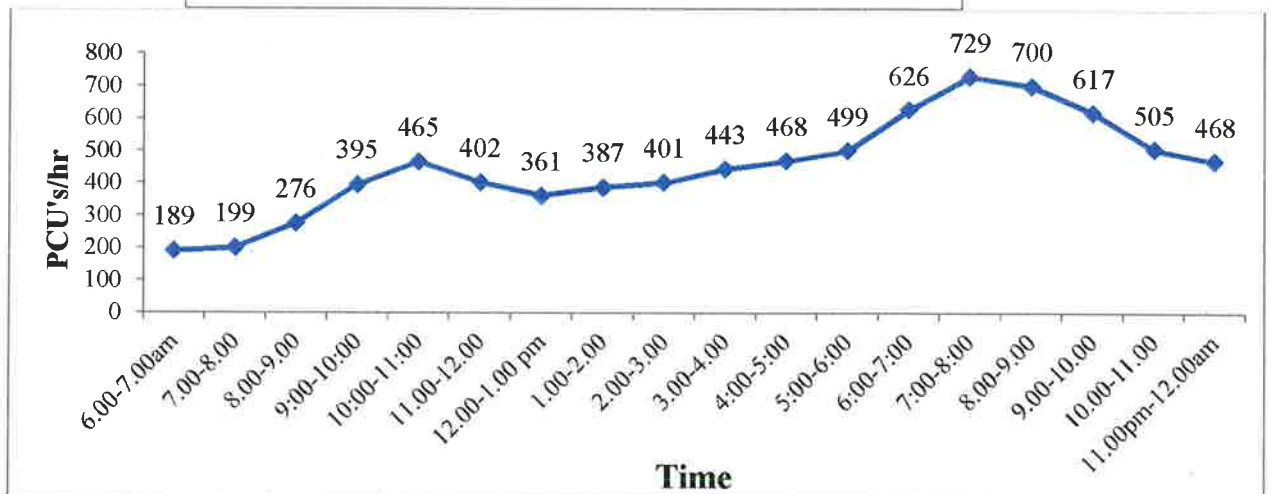
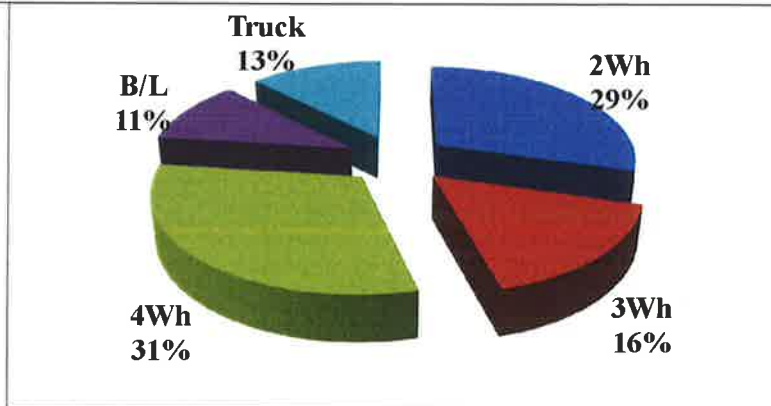


Fig: Vehicle Composition and Traffic flow distribution along NH-5 towards Anakapalli (2+2 lanes divided)

Real time traffic scenario along SH-39 (2 lanes undivided)**Table: Real time traffic scenario along SH-39 (2 lanes undivided)**

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	74(37)	39(39)	41(41)	22(66)	21(63)	197(246)
7.00-8.00	86(43)	74(74)	56(56)	42(126)	33(99)	291(398)
8.00-9.00	167(84)	89(89)	68(68)	77(231)	61(183)	462(655)
9:00-10:00	302(151)	161(161)	142(142)	91(273)	68(204)	764(931)
10:00-11:00	284(142)	123(123)	133(133)	88(264)	59(177)	687(839)
11.00-12.00	212(106)	110(110)	93(93)	71(213)	76(228)	562(750)
12.00-1.00 pm	196(98)	94(94)	87(87)	60(180)	89(267)	526(726)
1.00-2.00	141(71)	78(78)	58(58)	48(144)	71(213)	396(564)
2.00-3.00	173(87)	66(66)	42(42)	30(90)	65(195)	376(480)
3.00-4.00	206(103)	52(52)	65(65)	51(153)	57(171)	431(544)
4:00-5:00	224(112)	46(46)	72(72)	67(201)	43(129)	452(560)
5:00-6:00	241(121)	98(98)	107(107)	98(294)	54(162)	598(782)
6:00-7:00	325(163)	101(101)	96(96)	82(246)	69(207)	673(813)
7:00-8:00	318(159)	112(112)	113(113)	108(324)	75(225)	726(933)
8.00-9.00	297(149)	134(134)	126(126)	112(336)	86(258)	755(1003)
9.00-10.00	154(77)	96(96)	80(80)	559(165)	50(150)	435(568)
10.00-11.00	132(66)	83(83)	75(75)	32(96)	38(114)	360(434)
11.00pm-12.00am	98(49)	61(61)	63(63)	26(78)	27(81)	275(332)
Total						8966(11555)
V/C						0.77

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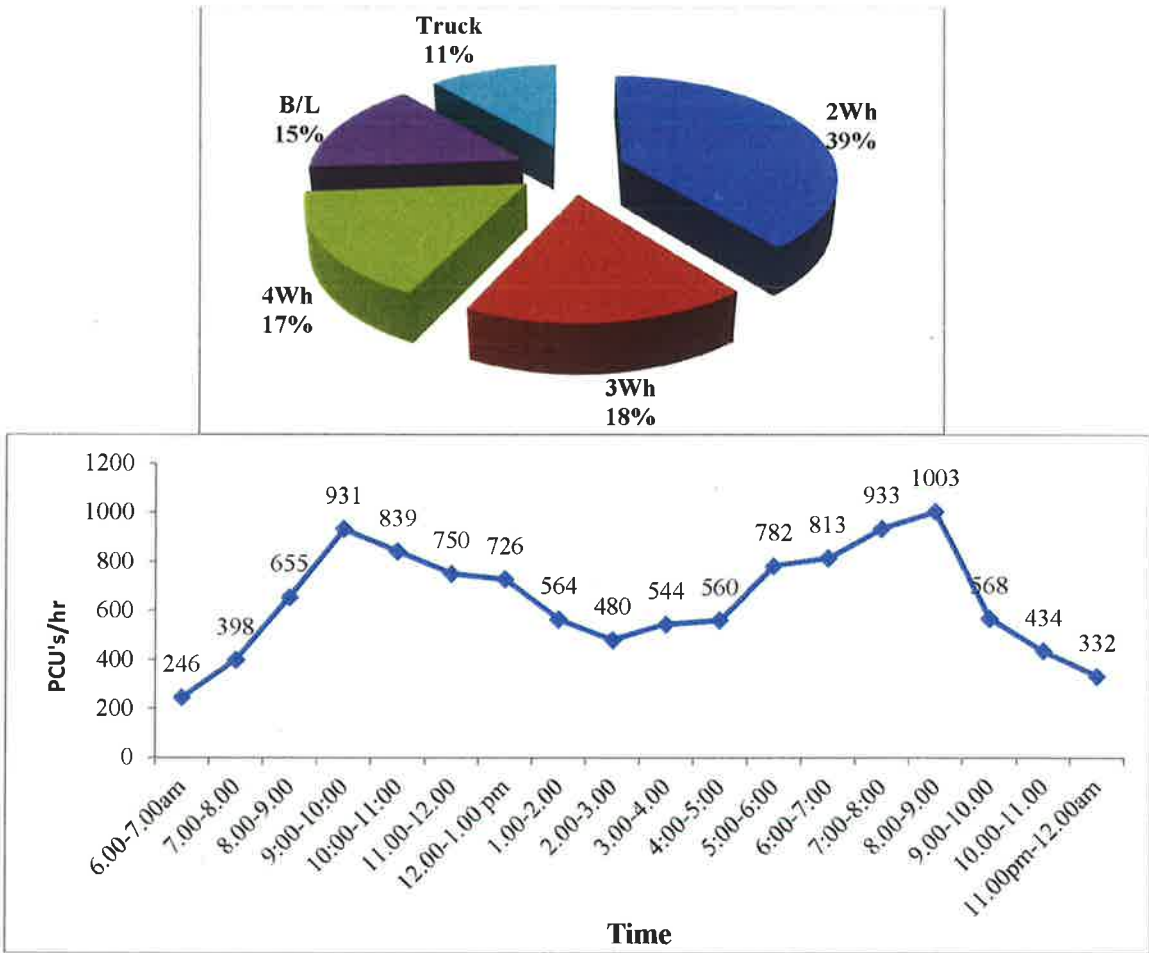


Fig: Vehicle Composition and Traffic flow distribution along SH-39 (2 lanes undivided)

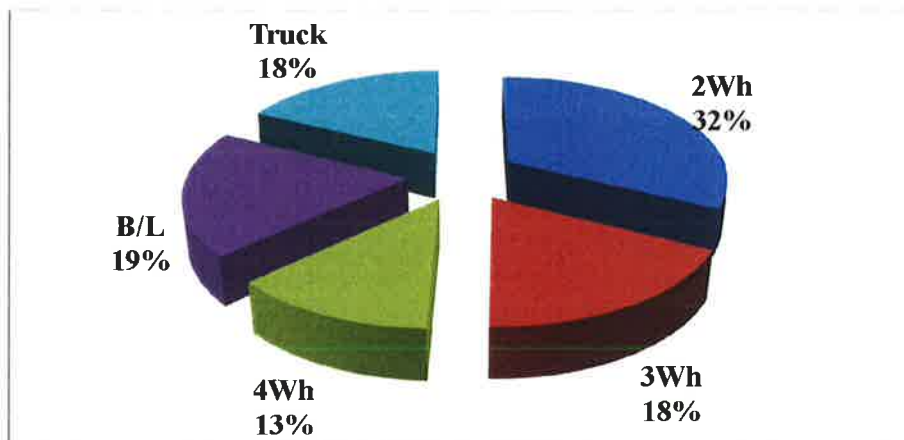
Real time traffic scenario along SH-38 (2 lanes undivided)

Table: Real time traffic scenario along SH-38 (2 lanes undivided)

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	92(46)	68(68)	57(57)	49(147)	24(72)	290(390)
7.00-8.00	112(56)	79(79)	65(65)	61(183)	32(96)	349(479)
8.00-9.00	171(86)	82(82)	71(71)	79(237)	41(123)	444(599)
9.00-10.00	160(80)	102(102)	112(112)	72(216)	49(147)	495(657)
10.00-11.00	213(107)	121(121)	98(98)	60(180)	52(156)	544(662)

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11.00-12.00	179(90)	98(98)	87(87)	68(204)	61(183)	493(662)
12.00-1.00 pm	105(53)	86(86)	78(78)	29(87)	76(228)	374(532)
1.00-2.00	119(60)	76(76)	61(61)	34(102)	89(267)	379(566)
2.00-3.00	126(63)	69(69)	53(53)	46(138)	81(243)	375(566)
3.00-4.00	159(80)	91(91)	49(49)	51(153)	68(204)	418(577)
4:00-5:00	183(92)	77(77)	57(57)	63(189)	59(177)	439(592)
5:00-6:00	132(66)	90(90)	69(69)	70(210)	68(204)	429(639)
6:00-7:00	144(72)	97(97)	84(84)	86(258)	71(213)	482(724)
7:00-8:00	202(101)	112(112)	78(78)	121(363)	107(363)	622(981)
8.00-9.00	153(77)	95(95)	64(64)	59(177)	64(192)	435(605)
9.00-10.00	108(54)	84(84)	59(59)	108(324)	79(237)	438(758)
10.00-11.00	98(49)	72(72)	45(45)	66(198)	43(129)	324(493)
11.00pm-12.00am	84(42)	61(61)	38(38)	74(222)	39(117)	296(480)
Total						7626(10958)
V/C						0.73



2x 520 MW Coal based Thermal Power Plant, Visakhapatnam

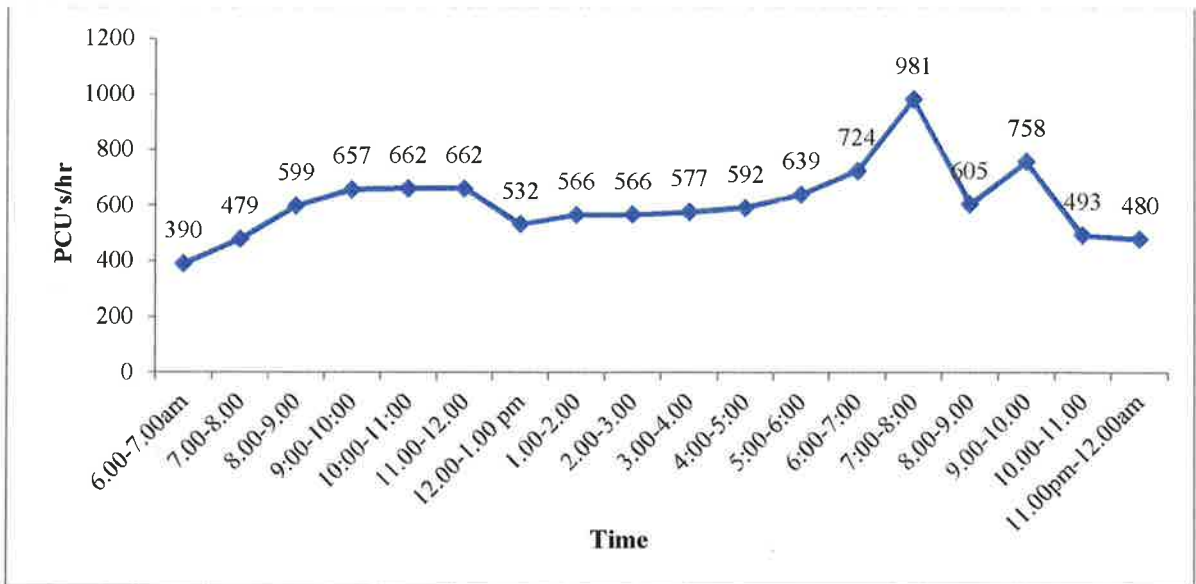


Fig: Vehicle Composition and Traffic flow distribution along SH-38 (2 lanes undivided)

Real time traffic scenario along Lankelapalam road (2 lanes undivided)

Table: Real time traffic scenario along Lankelapalam road (2 lanes undivided)

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	251(126)	38(38)	15(15)	14(42)	8(24)	326(245)
7.00-8.00	243(122)	42(42)	26(26)	19(57)	11(33)	341(280)
8.00-9.00	313(157)	58(58)	63(63)	21(63)	14(42)	444(358)
9:00-10:00	425(213)	62(62)	44(44)	32(96)	21(63)	584(478)
10:00-11:00	376(188)	51(51)	57(57)	25(75)	18(54)	527(425)
11.00-12.00	349(175)	32(32)	36(36)	36(108)	24(72)	477(423)
12.00-1.00 pm	368(184)	48(48)	30(30)	23(69)	13(39)	482(370)
1.00-2.00	342(171)	36(36)	27(27)	39(117)	19(57)	463(408)
2.00-3.00	336(168)	44(44)	21(21)	17(51)	16(48)	434(332)
3.00-4.00	328(164)	29(29)	18(18)	20(60)	26(78)	421(349)
4:00-5:00	309(155)	34(34)	25(25)	15(45)	20(60)	403(319)

2x 520 MW Coal based Thermal Power Plant, Visakhapatnam

5:00-6:00	396(198)	56(56)	41(41)	18(54)	10(30)	521(379)
6:00-7:00	415(208)	35(35)	52(52)	29(87)	17(51)	548(433)
7:00-8:00	405(203)	68(68)	35(35)	31(93)	27(81)	566(480)
8.00-9.00	327(164)	24(24)	54(54)	38(114)	15(45)	458(401)
9.00-10.00	249(125)	18(18)	31(31)	22(66)	12(36)	332(276)
10.00-11.00	183(92)	13(13)	24(24)	18(54)	24(72)	262(255)
11.00pm-12.00am	82(41)	10(10)	21(21)	14(42)	22(66)	149(180)
Total						7738(6386)
V/C						0.43

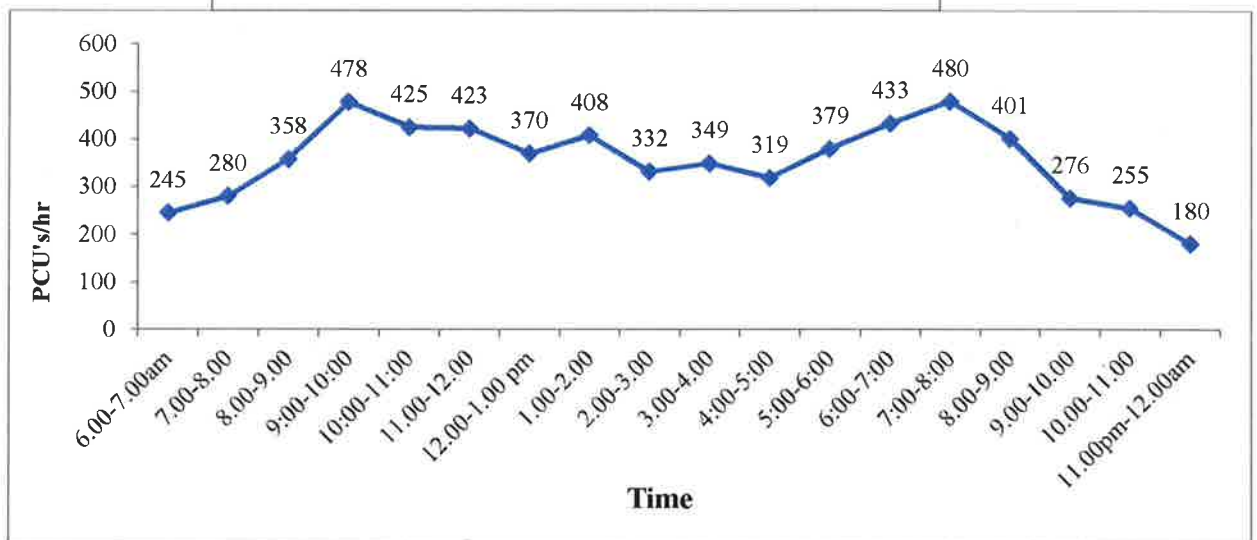
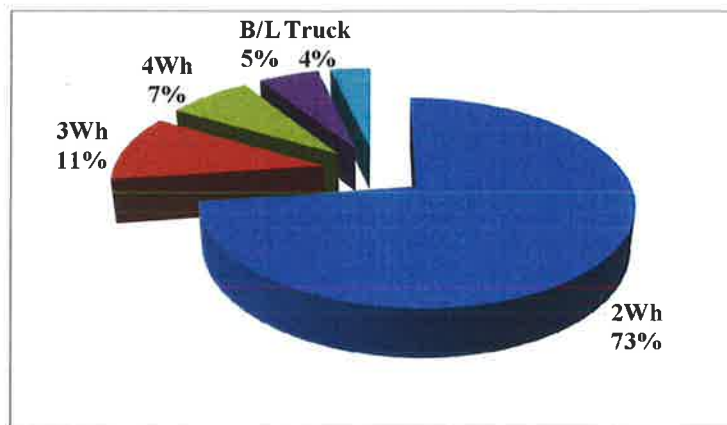


Fig: Vehicle Composition and Traffic flow distribution along Lankelapalam road

Existing Traffic Scenario for Study roads

Table: Existing Traffic Scenario for Study roads

Road	Towards	V	C	Existing V/C Ratio	LOS
NH-5 (2+2 lanes divided)	Rajahmundry	16189	60000	0.27	B
	Anakapalli				
SH-39 (2 lanes undivided)		11555	15000	0.77	D
SH-38 (2 lanes undivided)		10958	15000	0.73	D
Lankelapalam (2 lanes undivided)		6386	15000	0.43	C

Table: V/C, Level of Service and Performance as per IRC

V/C	LOS	Performance
0.0 - 0.2	A	Excellent
0.2 - 0.4	B	Very Good
0.4 - 0.6	C	Good
0.6 - 0.8	D	Fair/Average
0.8 - 1.0	E	Poor
1.0 & Above	F	Very Poor

V= Volume in PCU's/hr & C= Capacity in PCU's/hr LOS = Level of Service

Traffic distribution Logistics

The traffic flow logistics for both the railway siding yards is indicated below.

Table: Details of trucks generated from both the railway siding yards

Place	Rakes/ Month	Tons/Rake	Tons / Month	Tons/Yr	No Of Trucks/Day	Road Distance
Kantakapally Railway Siding	20	4000	80000	9,60,000	60 - 80	63 Km
Bayyavaram Railway Siding	30	4000	1,20,000	14,40,000	90 - 100	45 Km
TOTAL	50		2,00,000	24,00,000		

Number of trucks generated from Kantakapally railway siding

- 20 Rakes per month i.e., 0.66 Rake / day
- 1 Rake = 4000 Tons
- Capacity of each Truck = 15 Tons
- Therefore, the total number of Trucks required = 176 Trucks
- Considering 3 trips per truck then the no of Trucks = 60 to 80 Trucks

Number of trucks generated from Bayyavaram railway siding

- 30 Rakes / month i.e., 1 Rake / day
- Therefore, the total number of Trucks required = 266 Trucks
- Considering 3 trips per truck then the no of Trucks = 90 to 100 Trucks

It is planned to run the trucks for 12 hours and remaining hours will be used for loading and unloading. Therefore, distributing the trucks generated from each railway siding for 12 hours, the impact on the existing traffic is obtained.

Therefore, for SH-38 & SH-39 and Lankelapalam road, **7 trucks /hr** be added which are loaded from Kantakapally railway siding yard between 6.00 am to 6.00 pm. **Also 8 trucks/hr** is added to NH-5 which is loaded from Bayyavaram railway siding yard between 6.00 am to 6.00 pm.

Since the number of trucks added per hour is less in number, it does not have any adverse impact on the study roads.

Traffic scenario of the study roads after adding the trucks carrying coal

Traffic scenario along NH-5 towards Rajahmundry (2+2 lanes divided) after adding the trucks carrying Coal

Table: Traffic scenario along NH-5 towards Rajahmundry (2+2 lanes divided) after adding the trucks carrying Coal

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	102(51)	57(57)	106(106)	29(87)	37+8=45(135)	339(436)
7.00-8.00	118(59)	65(65)	118(118)	33(99)	44+8=52(156)	386(497)
8.00-9.00	129(65)	73(73)	126(126)	47(141)	53+8=61(183)	436(588)
9.00-10.00	120(60)	81(81)	153(153)	50(150)	67+8=75(225)	479(669)
10.00-11.00	147(74)	76(76)	148(148)	67(201)	79+8=87(261)	525(760)
11.00-12.00	142(71)	69(69)	139(139)	62(186)	83+8=91(273)	503(738)
12.00-1.00 pm	121(61)	56(56)	112(112)	73(219)	64+8=72(216)	434(664)
1.00-2.00	98(49)	62(62)	98(98)	51(153)	60+8=68(204)	377(566)
2.00-3.00	86(43)	57(57)	86(86)	64(192)	58+8=66(198)	359(576)
3.00-4.00	73(37)	44(44)	78(78)	41(123)	51+8=59(177)	295(459)
4.00-5.00	61(31)	39(39)	66(66)	27(81)	42+8=50(150)	243(367)
5.00-6.00	52(26)	31(31)	58(58)	38(114)	33+8=41(123)	220(352)
6.00-7.00	69(35)	22(22)	43(43)	70(210)	46+8=54(162)	258(472)
7.00-8.00	47(24)	35(35)	55(55)	45(135)	37+8=45(135)	227(384)
8.00-9.00	55(28)	27(27)	49(49)	36(108)	29+8=37(111)	204(323)
9.00-10.00	42(21)	33(33)	57(57)	25(75)	17+8=25(75)	182(261)
10.00-11.00	35(18)	18(18)	36(36)	18(54)	22+8=30(90)	137(216)
11.00pm-12.00am	29(15)	12(12)	27(27)	15(45)	18+8=26(78)	109(177)
Total						5713(8500)

Traffic scenario along NH-5 towards Anakapalli after adding the trucks carrying Coal (2+2 lanes divided)

Table: Traffic scenario along NH-5 towards Anakapalli (2+2 lanes divided) after adding the trucks carrying Coal

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	52(26)	19(19)	21(21)	18(54)	23+8=31(93)	141(213)
7.00-8.00	45(23)	24(24)	29(29)	23(69)	18+8=26(78)	147(223)
8.00-9.00	59(30)	39(39)	36(36)	30(90)	27+8=35(105)	199(300)
9:00-10:00	63(32)	48(48)	45(45)	55(165)	35+8=43(129)	254(419)
10:00-11:00	77(39)	32(32)	52(52)	42(126)	72+8=80(240)	283(489)
11.00-12.00	89(45)	53(53)	76(76)	22(66)	54+8=62(186)	302(426)
12.00-1.00 pm	71(36)	49(49)	63(63)	25(75)	46+8=54(162)	262(385)
1.00-2.00	98(49)	57(57)	83(83)	35(105)	31+8=39(117)	312(411)
2.00-3.00	84(42)	69(69)	92(92)	28(84)	38+8=46(138)	319(425)
3.00-4.00	93(47)	43(43)	107(107)	33(99)	49+8=57(171)	333(467)
4:00-5:00	102(51)	59(59)	112(112)	46(138)	36+8=44(132)	363(492)
5:00-6:00	114(57)	73(73)	126(126)	39(117)	42+8=50(150)	402(523)
6:00-7:00	159(80)	98(98)	142(142)	43(129)	59+8=67(201)	509(650)
7:00-8:00	163(82)	91(91)	172(172)	59(177)	69+8=77(231)	562(753)
8.00-9.00	171(86)	86(86)	156(156)	62(186)	62+8=70(210)	545(724)
9.00-10.00	142(71)	78(78)	135(135)	56(168)	55+8=63(189)	474(641)
10.00-11.00	131(66)	71(71)	98(98)	48(144)	42+8=50(150)	398(529)
11.00pm-12.00am	126(63)	64(64)	86(86)	34(102)	51+8=59(177)	369(492)
Total						6174(8557)

Traffic scenario along SH-39 (2 lanes undivided) after adding the trucks carrying Coal

Table: Traffic scenario along SH-39 (2 lanes undivided) after adding the trucks carrying Coal
e

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	74(37)	39(39)	41(41)	22(66)	21+7=28(84)	204(267)
7.00-8.00	86(43)	74(74)	56(56)	42(126)	33+7=40(120)	298(419)
8.00-9.00	167(84)	89(89)	68(68)	77(231)	61+7=68(204)	469(676)
9.00-10.00	302(151)	161(161)	142(142)	91(273)	68+7=75(225)	771(952)
10.00-11.00	284(142)	123(123)	133(133)	88(264)	59+7=66(198)	694(860)
11.00-12.00	212(106)	110(110)	93(93)	71(213)	76+7=83(249)	569(771)
12.00-1.00 pm	196(98)	94(94)	87(87)	60(180)	89+7=96(288)	533(747)
1.00-2.00	141(71)	78(78)	58(58)	48(144)	71+7=78(234)	403(585)
2.00-3.00	173(87)	66(66)	42(42)	30(90)	65+7=72(216)	383(501)
3.00-4.00	206(103)	52(52)	65(65)	51(153)	57+7=64(192)	438(565)
4.00-5.00	224(112)	46(46)	72(72)	67(201)	43+7=50(150)	459(581)
5.00-6.00	241(121)	98(98)	107(107)	98(294)	54+7=61(183)	605(803)
6.00-7.00	325(163)	101(101)	96(96)	82(246)	69+7=76(228)	680(834)
7.00-8.00	318(159)	112(112)	113(113)	108(324)	75+7=82(246)	733(954)
8.00-9.00	297(149)	134(134)	126(126)	112(336)	86+7=93(279)	762(1024)
9.00-10.00	154(77)	96(96)	80(80)	559(165)	50+7=57(171)	442(589)
10.00-11.00	132(66)	83(83)	75(75)	32(96)	38+7=45(135)	367(455)
11.00pm-12.00am	98(49)	61(61)	63(63)	26(78)	27+7=34(102)	282(353)
Total						9092(11933)
V/C						0.80

Real time traffic scenario along SH-38 (2 lanes undivided) after adding the trucks carrying Coal

**Table: Traffic scenario along SH-38
(2 lanes undivided) after adding the trucks carrying Coal**

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	92(46)	68(68)	57(57)	49(147)	24+7=31(93)	297(411)
7.00-8.00	112(56)	79(79)	65(65)	61(183)	32+7=39(117)	356(500)
8.00-9.00	171(86)	82(82)	71(71)	79(237)	41+7=48(144)	451(620)
9:00-10:00	160(80)	102(102)	112(112)	72(216)	49+7=56(168)	502(678)
10:00-11:00	213(107)	121(121)	98(98)	60(180)	52+7=59(177)	551(683)
11.00-12.00	179(90)	98(98)	87(87)	68(204)	61+7=68(204)	500(683)
12.00-1.00 pm	105(53)	86(86)	78(78)	29(87)	76+7=83(249)	381(553)
1.00-2.00	119(60)	76(76)	61(61)	34(102)	89+7=96(288)	386(587)
2.00-3.00	126(63)	69(69)	53(53)	46(138)	81+7=88(264)	382(587)
3.00-4.00	159(80)	91(91)	49(49)	51(153)	68+7=75(225)	425(598)
4:00-5:00	183(92)	77(77)	57(57)	63(189)	59+7=66(198)	446(613)
5:00-6:00	132(66)	90(90)	69(69)	70(210)	68+7=75(225)	436(660)
6:00-7:00	144(72)	97(97)	84(84)	86(258)	71+7=78(234)	489(745)
7:00-8:00	202(101)	112(112)	78(78)	121(363)	109+7=116(348)	629(1002)
8.00-9.00	153(77)	95(95)	64(64)	59(177)	64+7=71(213)	442(626)
9.00-10.00	108(54)	84(84)	59(59)	108(324)	79+7=86(258)	445(779)
10.00-11.00	98(49)	72(72)	45(45)	66(198)	43+7=50(150)	331(514)
11.00pm-12.00am	84(42)	61(61)	38(38)	74(222)	39+7=46(138)	303(501)
Total						7752(11336)
V/C						0.76

Traffic scenario along Lankelapalam (2 lanes undivided) after adding the trucks carrying Coal

**Table: Real time traffic scenario along Lankelapalam
(2 lanes undivided) after adding the trucks carrying Coal**

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6.00am-7.00am	251(126)	38(38)	15(15)	14(42)	8+7=15(45)	333(266)
7.00-8.00	243(122)	42(42)	26(26)	19(57)	11+7=18(54)	348(301)
8.00-9.00	313(157)	58(58)	63(63)	21(63)	14+7=21(63)	451(379)
9:00-10:00	425(213)	62(62)	44(44)	32(96)	21+7=28(+84)	591(499)
10:00-11:00	376(188)	51(51)	57(57)	25(75)	18+7=25(75)	534(446)
11.00-12.00	349(175)	32(32)	36(36)	36(108)	24+7=31(93)	484(444)
12.00-1.00 pm	368(184)	48(48)	30(30)	23(69)	13+7=20(60)	489(391)
1.00-2.00	342(171)	36(36)	27(27)	39(117)	19+7=26(78)	470(429)
2.00-3.00	336(168)	44(44)	21(21)	17(51)	16+7=23(69)	441(353)
3.00-4.00	328(164)	29(29)	18(18)	20(60)	26+7=33(99)	428(370)
4:00-5:00	309(155)	34(34)	25(25)	15(45)	20+7=27(81)	410(340)
5:00-6:00	396(198)	56(56)	41(41)	18(54)	10+7=17(51)	528(400)
6:00-7:00	415(208)	35(35)	52(52)	29(87)	17+7=24(72)	555(454)
7:00-8:00	405(203)	68(68)	35(35)	31(93)	27+7=34(102)	573(501)
8.00-9.00	327(164)	24(24)	54(54)	38(114)	15+7=22(66)	465(422)
9.00-10.00	249(125)	18(18)	31(31)	22(66)	12+7=19(57)	339(297)
10.00-11.00	183(92)	13(13)	24(24)	18(54)	24+7=31(93)	269(276)
11.00pm-12.00am	82(41)	10(10)	21(21)	14(42)	22+7=29(87)	156(201)
Total						7864(6764)
V/C						0.45

Traffic Scenario of study roads after adding the trucks generated carrying Coal

Table: Traffic Scenario of study roads after adding the trucks generated carrying Coal

Road	Towards	V	C	Existing V/C Ratio	LOS
NH-5 (2+2 lanes divided)	Rajahmundry	17057	60000	0.28	C
	Anakapalli				
SH-39 (2 lanes undivided)		11933	15000	0.80	D
SH-38 (2 lanes undivided)		11336	15000	0.76	D
Lankelapalam (2 lanes undivided)		6764	15000	0.45	C

From the above data, it is clearly brought out and concluded that there is no adverse impact on the study roads as the loaded and unloaded trucks added are very less in number.

Structural and Non Structural Interventions

Structural Measures:

- Rubber humps will be introduced for the outgoing vehicles at the exit, not more than 3m from the gate.

Non-Structural Measures:

- Merging of vehicles will be performed only to left traffic from the exit gates, this ensures safety.
- To establish smooth entry & exit of vehicles, bell mouth shape geometry is provided at the merging locations. This ensures smooth transition for merging of vehicles.
- All gates are manned with efficient security who can guide the entry and exit of vehicles.
- All precautionary measures are ensured for the safety of laborers while working at loading and unloading yards.
- Amber blinker lights will be used at the gate to caution vehicles which are moving out. Sign boards will also to be installed to this effect.
- Adequate sign & guide posts for traffic as per IRC (Indian Roads Congress) or ITE (Institute of Transportation Engineers USA) to be installed along study roads.
- Road marking, STOP lines etc., must be clearly painted so as to guide the drivers along study roads.

Conclusion

It may be observed that the movement of coal by trucks will not impact the traffic movement on the highway significantly. The coal carrying trucks will be covered with tarpaulins to minimise the fugitive dust emission. Wetting of coal at the railway siding will be done to minimise the fugitive dust emission. Once the railway siding and the railway line is ready then the movement of coal by road will be stopped. HNPCL will implement necessary dust suppression systems near the railway siding and in the power plant.

Request:

HNPCL requests the Ministry to permit temporary movement of coal by road for a period of 3 years till the completion of railway siding and railway line to the power plant.

ANNEXURES



Ref: 01/CCFT/

To
The Director,
Hinduja National Power Corporation Ltd
Hinduja House
171, Dr Anne Besant Road
Worli
Mumbai -400018

Sub: Permission for use of NTPC Simhadri railway track by HNPCL.
Ref: Your Letter Of 20.06.2014

Dear Sir,

It is to inform that NTPC management has accorded the permission for movement of HNPCL coal rake (up to 4 rakes per day on an average) on NTPC Simhadri railway siding from Jaggayyasetem - Duvvadda section, from km 0.00 to Km 19.

Also, NTPC has no objection for HNPCL's Siding taking off from NTPC siding at change after km 19 approx. and for HNPCL to construct the proposed junction station & Exchange yard, necessary for this purpose.

In order to permit above movement by NTPC Simhadri, you are requested to confirm the acceptance for agreement with NTPC Simhadri, towards meeting all the requirements including commercial terms and conditions.

Thanking You,


(S K Gyania)
AGM (FT)



N.K. Jayasingh
Sr. Transportation Manager (Planning)

पूर्व तट रेलवे/East Coast Railway
Rail Sadan, Ground Floor, South Block,
Chandrasekharpur, Bhubaneswar-751017,
Tel. Fax No. (0674) 2301383/2300217

No. COM/Plg./HNPCL/354

Date: 30/07/2014.

To
Shri P.K. Pradhan, Vice President (Coal),
M/s Hinduja National Power Corporation Ltd.,
Hinduja House, 171, Dr. A.B. Road, Worli,
MUMBAI - 400 018.
Fax: 022 - 24960747

Dear Sir,

Sub: Submission of co-user permission of M/s NTPC.
Ref: (i) Your letter No. HNPCL/ECOR2014/30, dated 28/07/2014.
(ii) This office letter of even No. dtd. 25/07/2014.

In reference to your request received vide letter under reference (i) above, it is to inform you that, this Railway has already communicated regarding the Phase-I proposal vide letter of even No. dated 25/07/2014 (Ref-ii above). In connection with your proposal of unloading coal to the tune of 2 rakes a day in the R&D yard of M/s NTPC/SML, as an interim measure, this Railway has no objection for the same subject to compliance of the following:-

- 1) Submission of NOC by NTPC/SML for such unloading in its R&D yard.
- 2) Necessary co-user permission is to be obtained from the Railways.

Thanking you,

Yours sincerely,


(N.K. Jayasingh) 30/7/14

Sr. Transportation Manager (Planning)
East Coast Railway, Bhubaneswar

Copy to: 1. Sr. DOM/WAT for information please.
2. AGM (FT), NTPC Bhavan, Scope Complex, 7 Institutional Area,
Lodi Road, New Delhi - 110 003 (Fax No : 011-24383478) for
information and necessary action as per the letter No. 01/CCFT/,
dated, 17.7.14 to the Director, M/s HNPCL