TELANGANA STATE POWER GENERATION CORPORATION LIMITED
(A Government of Telangana State undertaking)

To,

The Member Secretary (Thermal Power)
3rd Floor, Vayu Bhavan
Indira Paryavaran Bhavan,
Ministry of Environment, Forests & Climate change
Jor Bagh Road, Aliganj,
New Delhi - 110003.

Lr. No. CE/C/Thermal/SE/C/TCD-I/EE-I /F. BTPS Coal Transport/D.No. 29 /19,
Dt. 10..05.2019

Dear Sir,

Sub: TSGENCO - Environmental Clearance accorded for 1080 MW (4 X 270 MW) Coal Based Bhadradri Thermal Power Station (BTPS) at villages Ramanujavaram, Eddulabayyaram & Seetharampuram, Mandals Manuguru & Pinapaka, District Bhadradri Kothagudem, Telangana State - Issue of Amendment to Environmental Clearance for temporary transportation of Coal by Road till the Railway siding of the project is commissioned - Requested - Reg.

Ref 1. Environmental Clearance letter No. J-13012/02/2015-IA.I(T), dated 15.03.2017 of MoEF & CC, GoI, New Delhi.

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Telangana State Power Generation Corporation Limited (TSGENCO) is pleased to inform the Ministry that TSGENCO is implementing the 1080 MW (4x270MW) Bhadradhri Thermal Power Station (BTPS) at villages Ramanujavaram, Eddulabayyaram & Seetharampuram, Mandals Manuguru & Pinapaka, District Bhadradri Kothagudem, Telangana State. The first unit is scheduled to be commissioned in the month of June, 2019 and the balance three units by end of December, 2019.

The dedicated railway siding of BTPS has not yet been commissioned due to delay in land acquisition process and transfer of the same to BTPS. A detailed note on the above aspects is herewith enclosed.

Contd.... 2

In this connection, the Ministry is requested to grant temporary permission to transport the coal by road from M/s. Singareni Collieries Company Limited (SCCL) mines till the dedicated railway siding of BTPS is commissioned for a period of three (3) years.

The following documents are herewith enclosed:

a) Updated Form 1
b) Note on delay for implementing the Railway line
c) Traffic assessment Study
d) Note on Ambient Air quality

TSGENCO requests the Ministry to kindly consider the representation and grant the necessary amendments to the Environmental Clearance and oblige.

Thanking you,

Yours faithfully,

For M/s. TSGENCO

10/5/2019

Chief Engineer/Civil/Thermal

Encl: As above

FORM 1

(Updated)

AMENDMENT TO ENVIRONMENTAL CLEARANCE
FOR
TRANSPORTATION OF COAL BY ROAD

of

1080 MW (4 x 270 MW) COAL BASED BHADRADRI THERMAL POWER STATION (BTPS)

At

Villages Ramanujavaram, Eddulabayyaram & Seetharampuram, Mandals Manuguru & Pinapaka,
District Bhadradri Kothagudem,
Telangana State

Submitted to

Ministry of Environment, Forests & Climate Change,
Government of India

BY

TELANGANA STATE POWER GENERATION CORPORATION LTD

(TSGENCO – A Government of Telangana State Undertaking)

MAY - 2019

PROJECT PROPONENT
TELANGANA STATE POWER GENERATION CORPORATION LTD **(TSGENCO – A Government of Telangana State Undertaking)** **Vidyut Soudha, Hyderabad** **Telangana**

Form – I
(Updated)
(As Per New Notification of MoEF&CC dated 1-12-2009 vide SO 3067 (E))

BASIC INFORMATION		
S. No	**Item**	**Details**
1	Name of the Project/s	**1080 MW (4X270 MW) Coal Based Bhadradri Thermal Power Station** at Villages Ramanujavaram, Eddulabayyaram & Seetharampuram, Mandals Manuguru & Pinapaka, District Bhadradri Kothagudem, Telangana State by **Telangana State Power Generation Company Ltd.**
2	S. No. in the schedule	1(d) Category (A) Thermal Power Project
3	Proposed capacity/ area/ length/ tonnage to be handled/ command area/ lease area/ number of wells to be drilled	The capacity of the proposed Bhadradri Thermal Power Station is 1080 MW (4x270 MW) which is under construction. The first unit of the above project will be synchronized in the month of June, 2019 and the other three (3) units by the end of December, 2019. The coal requirement for the project is about 4.20 MTPA and will be met from Manuguru group of Open cast mines/Prakasham Khani Open cast mines of M/s. SCCL. ***The present proposal is for amendment to the Environmental Clearance granted by MoEF & CC, GoI permitting temporary transport of coal by road till the railway line/siding is completed.***
4	New/expansion/ modernization	Not Applicable. Environment Clearance for the above project was obtained from MoEF&CC, GOI, New Delhi vide letter No. J-13012/02/2015-IA.I(T), dated 15.03.2017 (Enclosed as Exhibit-I). ***The present proposal is for amendment to the Environmental Clearance granted by MoEF & CC, GoI permitting temporary transport of coal by road till the railway line/siding is***

		completed.
5	Existing capacity/ Area etc.	Not Applicable
6	Category of Project i.e 'A' or 'B'	Category 'A'
7	Does it attract the general condition? If yes please specify.	No
8	Does it attract the specific condition? If yes please specify.	No
9	Location	Geographical Co-ordinates Latitude 18^0 01' 26.59" N Longitude – 80^0 43' 48" E Altitude – MSL (+)72.859 m The Key map and 10 km radius from project boundary is enclosed as **Exhibit – 1 & 2**
	Plot/ Survey/ Khasra No	Toposheet No. E44I12 & E44I16 Govt. Lands & assigned lands: Sy. No (Ramanujavaram village) - 853, 1084, 1131 & 1081, (Edullabayyaram village) - 670 & (Seetharamapuram village) - 47. Patta lands: Sy.No (Ramanujavaram village) - 1070 to 1117,129 to 130 & (Edullabayyaram village) - 640 to 668.
	Village	Ramanujavaram, Eddulabayyaram & Seetharamapuram
	Tehsil	Manuguru and Pinapaka
	District	Bhadradri Kothagudem Dist (Erstwhile Khammam Dist)
	State	Telangana
10	Nearest railway station/ airport along with distance in Kms.	Railway Station: Manuguru (15 km, SSE) Airport: Rajahmundry (AP) – 154 km, SE; Vijayawada (AP) – 165 km, S; and Hyderabad Airport (Telangana) – 257 km, SW
11	Nearest town, city, district headquarters along with distance in kms.	Bhadrachalam (40 Km), District Head Quarters : Kothagudam (65 Km) – South East.

12	Village panchayaths, Zilla parishad, Municipal Corporation, Local body (Complete postal addresses with telephone nos. to be given)	Village Panchayats: Ramanujavaram, Eddulabayyaram & Seetharamapuram Zilla Parishad : Kothagudem
13	Name of the applicant	**Telangana State Power Generation Corporation Limited**
14	Registered address	Chief Engineer/Civil/Thermal, Room No. 251/A, 'A' Block, TSGENCO, Vidyut Soudha, Hyderabad - 500 082
15	Address for correspondence	**Chief Engineer/Civil/Thermal,** Room No. 251/A, 'A' Block, TSGENCO, Vidyut Soudha, Hyderabad - 500 082
	Name	T. Narayana
	Designation (Owner /Partner/ CEO)	Chief Engineer/Civil/Thermal
	Address	Chief Engineer/Civil/Thermal, Room No. 251/A, 'A' Block, TSGENCO, Vidyut Soudha, Hyderabad - 500 082
	Pincode	500 082
	E- mail	ce.cth@tsgenco.co.in
	Telephone	040-23499407
16	Details of Alternative sites examined, if any location of these sites should be shown on a topo sheet.	Not Applicable. Since the Environment Clearance for the project was obtained from MoEF&CC, GOI, New Delhi vide letter No. J-13012/02/2015-IA.I(T), dated 15.03.2017 and the construction works of power plant are under progress. The proposal is for amendment of EC for transporting coal by road.
17	Interlinked projects	Not Applicable.
18	Whether separate application of interlinked project has been submitted?	Not Applicable.
19	If yes, date of submission	Not Applicable.
20	If no, reason	Not Applicable.

21	Whether the proposal involves approval/ clearance under: if yes, details of the same and their status to be given. (a) The Forest (Conservation)Act, 1980 (b) The Wild Life (Protection)Act, 1972 (c) The CRZ Notification, 1991	Not Applicable
22	Whether there is any Government Order/ Policy relevant/ relating to the site?	Land for the proposed project was allotted by Government of Telangana vide ➢ Memo No.8352/Assn.I(1)/2014-1 dated 07-11-2014; & ➢ Memo.No.8352/Assn.I (1)/2014-2 dated 07-11-2014.
23	Forest land involved (hectares)	The proposed railway line will require an additional land to an extent of Ac. 171.19 Gts comprising Assigned land/Patta land of Ac. 107.09 Gts and Forest land of Ac. 64.10 Gts. Also, about 7.94 Acres of land is required for water intake structure and for the right of way for laying the water pipeline from River Godavari. The land comprises Assigned/Patta land of 6.53 Acres and Forest land of 1.41 Acres. Hence the total Forest land involved is about 65.66 Acres.
24	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the court (b) Case No (c) Orders/ directions of the court, if any and its relevance with the proposed project.	Yes. The details of pending cases are given in **Exhibit-3**
25	Excepted Cost of Project (Lakhs)	Rs. 8536.98 Crores.

(I) Activity			
1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (Topography, land use, changes in water bodies, etc.)			
S.No	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities /rates, wherever possible) with source of information data**
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	**No**	The power plant & its auxiliaries, Ash pond, township, etc., are under construction stage. But, the proposed amendment (coal transportation by road) shall not result in change in land use, as no major infrastructure is required to carry out loading, unloading activities for trucks. Existing roads/ National Highway will be used for movement of trucks for transportation of coal by road.
1.2	Clearance of existing land, vegetation and buildings?	**No**	Not applicable, since the construction works of power plant are under progress. The present proposal is for amendment to the Environmental Clearance for temporary permission to transport coal by road from M/s. SCCL mines located at Manguru till completion of the railway line.
1.3	Creation of new land uses?	**No**	Not applicable.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	**No**	Not applicable as the power plant has been under construction. The present proposal is for temporary permission to transport coal by road till the railway line is implemented.
1.5	Construction works?	**Yes**	The construction works of power plant are under progress. The present proposal is for amendment to the Environmental Clearance of the project for temporary permission to transport coal by road from M/s.

			SCCL mines located at Manuguru till completion of the railway line.
1.6	Demolition works?	**No**	Not applicable.
1.7	Temporary sites used for construction works or housing of construction workers?	**Yes**	Temporary site has been allocated for labor colony for the construction workers of the above power plant. Temporary facilities such as restrooms, drinking water, parking etc. for drivers are provided.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	**Yes**	The construction works of power plant are under progress. The present proposal is for amendment to the Environmental Clearance of the project for temporary permission to transport coal by road till completion of the railway line.
1.9	Underground works including mining or tunneling?	**No**	Not applicable.
1.10	Reclamation works?	**No**	Not applicable.
1.11	Dredging?	**No**	Not applicable.
1.12	Offshore structures?	**No**	Not applicable.
1.13	Production and manufacturing processes?	**No**	The proposed activity for amendment in EC does not involve any production or manufacturing process. The use of coal as the fuel in Bhadradri Thermal Power Station has already been accorded in EC. Only change in mode of transportation of coal by road is envisaged till completion of the railway line.
1.14	Facilities for storage of goods or materials?	**Yes**	Designated area is being utilized for storage of construction material during construction phase. During operational phase about 165.44 acres of land will be used for storage of coal, HFO and HSD

1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	**Yes**	Fly ash and bottom ash are the main solid wastes generated from the plant. A suitable ash pond is under construction for disposing unutilized ash. The present proposal is for temporary permission to transport coal by road till the railway line is implemented. or Solid Waste: 100% dry ash handling systems are proposed for collection in dry form in storage facilities (Silo) and will be supplied to cement and brick industries or end users and balance unutilized ash will be disposed to ash pond. Liquid Effluents: The effluent like DM regeneration, cooling tower blow down, boiler blow down, washing waste water will be collected in the central monitoring basin and treated in Industrial waste water treatment plant (ETP). The treated waste water will be used in CHP and ash handling and for dust suppression etc. Domestic sewage will be suitably treated in STP and the treated waste water will be used for greenbelt development.
1.16	Facilities for long term housing of operational workers?	**Yes**	A full-fledged colony is planned and developed to house the staff and operational workers.
1.17	New road, rail or sea traffic during construction or operation?	**Yes**	New railway line will be laid for transporting of coal from Manuguru Railway Station and to the power plant and connecting the Railway siding of the SCCL mines.

1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	**Yes**	New railway line will be laid for transporting of coal from Manuguru Railway Station and to the power plant and connecting the Railway siding of the SCCL mines.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	**No**	No changes in existing road network envisaged.
1.20	New or diverted transmission lines or pipelines?	**Yes**	132 kV Transmission line passing within the proposed ash pond area has been diverted. New EHV power transmission lines and water pipelines are envisaged to be created.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	**No**	Not envisaged.
1.22	Stream crossings?	**Yes**	The stream passing through the proposed ash pond area will be suitably diverted with suitable protection measures as per approval of Irrigation department.
1.23	Abstraction or transfers of from ground or surface waters?	**Yes**	Required water for the proposed power plant will be met from Godavari river through MS pipeline.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	**Yes**	The stream passing through the proposed ash pond area will be suitably diverted with suitable protection measures as per approval of Irrigation department.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	**No**	The present proposal is for amendment to the Environmental Clearance of the project for temporary permission to transport coal by road till completion of the railway line.
1.26	Long-term dismantling or decommissioning or restoration	**No**	Not Applicable.

	works?		
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	**No**	Not Applicable.
1.28	Influx of people to an area in either temporarily or permanently?	**No**	Not Applicable
1.29	Introduction of alien species?	**No**	Not Applicable
1.30	Loss of native species or genetic diversity?	**No**	Native species are used for greenbelt development.
1.31	Any other actions?	**No**	Not Applicable

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):			
S. No.	**Information/checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities /rates, wherever possible) with source of information data**
2.1	Land especially undeveloped or agricultural land (ha)	**No**	The present proposal is for amendment to the Environmental Clearance of the project for temporary permission to transport coal by existing road till completion of the railway line. The proposed railway line will require an additional land to an extent of Ac. 171.19 Gts comprising Assigned land/Patta land of Ac. 107.09 Gts and Forest land of Ac. 64.10 Gts. Also, about 7.94 Acres of land is required for water intake structure and for the right of way for laying the water pipeline from River Godavari. The land comprises Assigned/Patta land of 6.53 Acres and Forest land of 1.41 Acres. Hence the total Forest land involved is about 65.66 Acres.
2.2	Water (expected source & competing users) unit: KLD	**Yes**	Water requirement of 3,291 cum/hr (78984 KLD) for the proposed power plant will be met from Godavari river. The water requirement for drinking, restroom, washing vehicles etc. for drivers involved in coal

			transportation activity will be met from the water allocated for the above project from Telangana State Government.
2.3	Minerals (MT)	**Yes**	Indigenous coal of 13102.42 Tonnes per Day will be sourced from Manuguru group of open cast mines/Prakasham khani open cast mines of M/s. SCCL.
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)	**Yes**	The following construction material is required for the power plant construction. **Sand**: 3,00,000 Cum (Approx.) from sand reaches at Mogallapally and Veerapuram villages. **Aggregates**: 4,00,000 Cum (Approx.) Quarry at Thogudem **Steel:** From prime producers **Cement:** From manufacturers.
2.5	Forests and timber (source – MT)	**No**	Not Applicable.
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	**Yes**	Indigenous coal of 13102.42 Tonnes per Day will be sourced from Manuguru group of open cast mines/Prakasham khani open cast mines of M/s. SCCL. Energy – 1080 MW generated and supplied to grid after accounting for auxiliary power consumption.
2.7	Any other natural resources (use appropriate standard units)	Yes	Limestone: 21.0 MT/Hr or 15,120 MT/month.

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.			
S. No.	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities/ rates, wherever possible) with source of information data**
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	**No**	Not Applicable. The present proposal is for amendment to the Environmental Clearance of the project for temporary permission to transport coal by existing road till completion of the railway line.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	**No**	Not Applicable
3.3	Affect the welfare of people e.g. by changing living conditions?	**Yes**	Proposed power project will lead to the upliftment of socio-economic conditions of the population within the vicinity and will lead to positive impact
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	**No**	Not Applicable
3.5	Any other causes	**Yes**	The coal transport by road will be stopped once the construction of Railway line is completed and put into service.

4. Production of solid wastes during construction or operation or decommissioning (MT/month)			
S. No.	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities/ rates, wherever possible) with source of information data**
4.1	Spoil, overburden or mine wastes	**No**	Not Applicable. The present proposal is for amendment to the Environmental Clearance of the project for temporary permission to transport coal by existing road till completion of the railway line.
4.2	Municipal waste (domestic and or commercial wastes)	**No**	Not applicable.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	**Yes**	Used oil: 20 kl/year Used batteries : 20 numbers Chlorine tonners : two numbers
4.4	Other industrial process wastes	**No**	Not Applicable.
4.5	Surplus product	**No**	Not Applicable.
4.6	Sewage sludge or other sludge from effluent treatment	**Yes**	The sludge is used as manure in horticulture
4.7	Construction or demolition wastes	**No**	Not Applicable.
4.8	Redundant machinery or equipment	**No**	Not Applicable.
4.9	Contaminated soils or other materials	**No**	Not Applicable.
4.10	Agricultural wastes	**No**	Not Applicable.
4.11	Other solid wastes	**No**	Not Applicable.

5. Release of pollutants / hazardous, toxic or noxious substances to air (Kg/hr)			
S. No.	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities/ rates, wherever possible) with source of information data**
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	**Yes**	Emissions due to combustion of diesel in trucks are anticipated. Vehicular Emissions due to movement of coal by trucks. However, the change in mode of coal transportation by road is a temporary arrangement only till the railway line for the project gets completed. Moreover, maintenance of trucks shall be done on regular basis. In every six months vehicle shall be sent for pollution under control certificate from concern department. Vehicle having PUC certificate will only be used for transportation.
5.2	Emissions from production processes	**Yes**	Generation of PM_{10}, $PM_{2.5}$, SO_2, NO_x due to burning of coal in the boiler.
5.3	Emissions from materials handling including storage or transport	**Yes**	Fugitive dust due to handling of coal. However, the coal will be wetted and covered with tarpaulin to minimize the fugitive dust emission during transportation.
5.4	Emissions from construction activities including plant and equipment	**Yes**	Sprinkling of water is being carried out on daily basis to control fugitive dust emission at site.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	**No**	Not Applicable.
5.6	Emissions from incineration of waste	**No**	Not Applicable.
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	**No**	Not Applicable.

5.8	Emissions from any other sources	**No**	Not Applicable.

6. Generation of Noise and Vibration, and Emissions of Light and Heat:			
S. No.	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities/ rates, wherever possible) with source of information data**
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	**No**	Not Applicable.
6.2	From industrial or similar processes	**No**	Not Applicable.
6.3	From construction or demolition	**Yes**	Noise due to operation of equipment will be there. However, this is limited to construction period only. The construction people are provided with Personal Protection Equipment (PPE)
6.4	From blasting or piling	**No**	Not Applicable.
6.5	From construction or operational traffic	**Yes**	Noise, vibration & heat get generated in course of operation of vehicles or equipment. These will be maintained within acceptable limits.
6.6	From lighting or cooling systems	**No**	Not Applicable.
6.7	From any other sources	**No**	Not Applicable.

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:			
S. No.	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
7.1	From handling, storage, use or spillage of hazardous materials	**No**	Not Applicable.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	**Yes**	Temporary toilets connected to septic tank followed by soak pit has been implemented at construction site.

7.3	By deposition of pollutants emitted to air into the land or into water	**No**	Not Applicable.
7.4	From any other sources	**No**	Not Applicable.
7.5	Is there a risk of longterm buildup of pollutants in the environment from these sources?	**No**	Not Applicable.

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment			
S. No.	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	**Yes**	The coal will be stocked in the designated stockyard with all equipment/ facilities to avoid any fire or spillage.
8.2	From any other causes	**No**	Not Applicable
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc.)?	**Yes**	Not applicable. The present proposal is for amendment to the Environmental Clearance of the project for temporary permission to transport coal by existing road till completion of the railway line. However, the project site is not susceptible landslides or cloud bursts. The HFL of River Godavari (+) 63.50 m above MSL and the power plant is constructed at a Finished grade level varying from 67.0 m to 72.0 m above msl to avoid any impacts due to flooding. Further, the project site falls in Earthquake Zone–III of India. It is a lesser seismic prone zone. However, adequate care has already been taken during design and construction of the project to avoid any disaster like earthquake.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality			
S. No.	**Information/Checklist confirmation**	**Yes /No**	**Details thereof (with approximate quantities/ rates, wherever possible) with source of information data**
9.1	Lead to development of supporting utilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.)	**Yes**	The project provides secondary employment opportunities/ services.
	✓ Housing development	**No**	Not Applicable.
	✓ Extractive industries	**No**	Not Applicable.
	✓ Supply industries	**No**	Not Applicable.
	✓ Other	**No**	Not Applicable.
9.2	Lead to after-use of the site, which could have an impact on the environment	**No**	Not Applicable.
9.3	Set a precedent for later developments	**No**	Not Applicable.
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	**No**	Not Applicable.

(II) Environmental Sensitivity			
S. No.	**Areas**	**Name/ Identity**	**Aerial distance (within 15 km.) Proposed project location boundary**
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil	-
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	**Rivers/Water Bodies** Godavari River Perantala Cheruvu Peddavagu Talperu river	 0.8 km, E 2.0 km, S 1.2 km, N 8.3 km, E
		Forest Blocks Cherla RF Subbampet RF Kondayyagudem RF Kalavanagaram RF Janapet RF near Gaddigudem village RF near Venkatraopeta, Kinnersani wildlife sanctuary	 8.2 km, NE 6.7 km, NE 1.8 km, S 7.9 km, W 5.5 km, WNW 4.6 km, NNW 10.8 km, SW
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Nil	--
4	Inland, coastal, marine or underground waters	Inland, Godavari River	0.8 km, E
5	State, National boundaries	Nil	
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil	-
7	Defence installations	Nil	

8	Densely populated or built-up area	Manuguru	10 km, SSE
9	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*	Nil	
10	Areas containing important, high quality or scarce resources *(ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)*	**Forest Blocks** Cherla RF Subbampet RF Kondayyagudem RF Kalavanagaram RF Janapet RF near Gaddigudem village RF near Venkatraopeta, Kinnersani wildlife sanctuary	 8.2 km, NE 6.7 km, NE 1.8 km, S 7.9 km, W 5.5 km, WNW 4.6 km, NNW 10.8 km, SW
11	Areas already subjected to pollution or environmental damage. *(those where existing legal environmental standards are exceeded)*	None	Not Applicable
12	Areas susceptible to natural hazard which could cause the project to present environmental problems *(earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)*	Nil.	-

I hereby give an undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project be rejected and clearance given, if any, to the project will be revoked at our risk and cost.

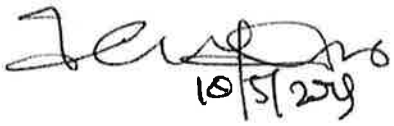
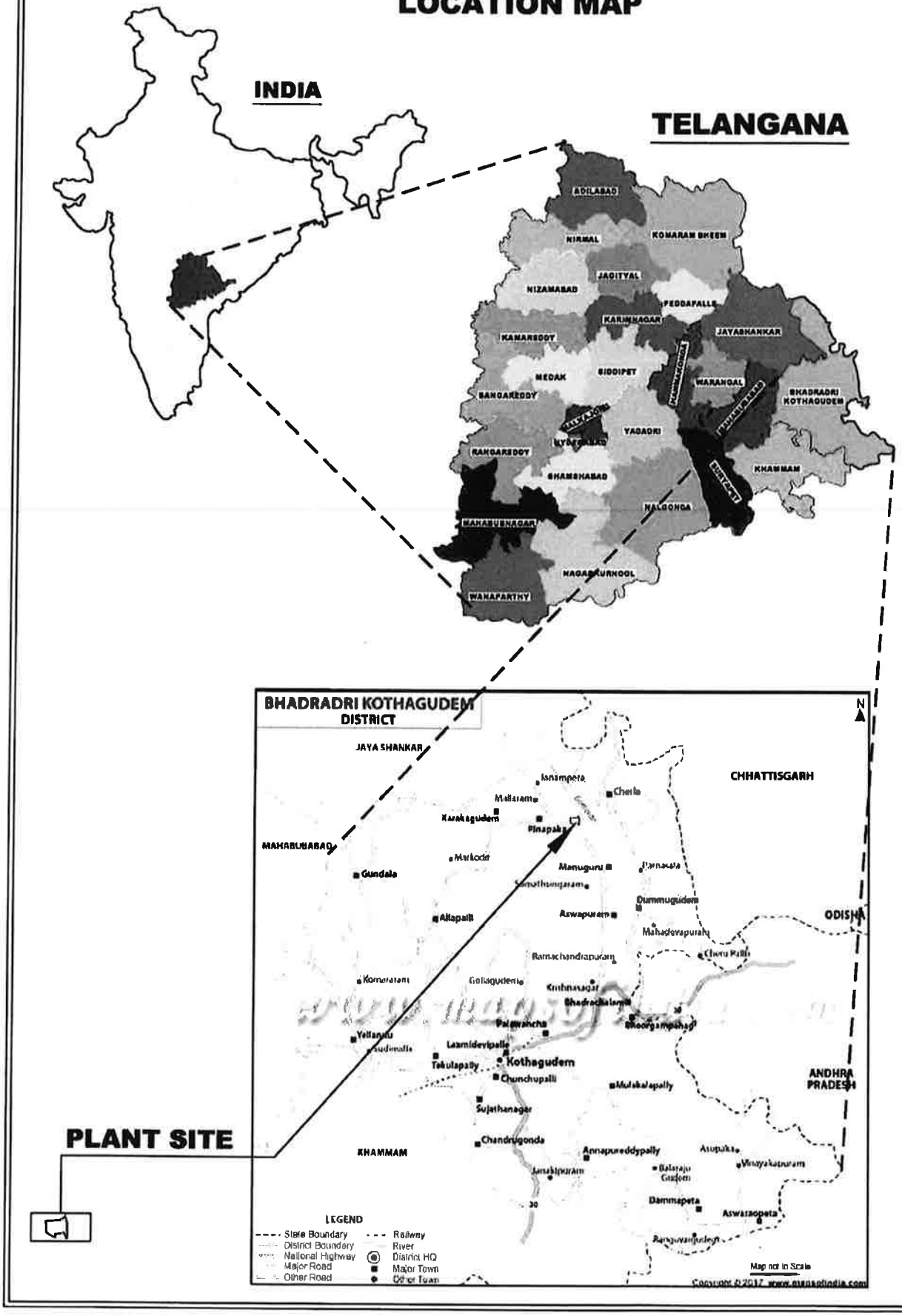
Date: 10.05.2019	 10/5/2019
Place: Hyderabad	(T. Narayana) Chief Engineer/Civil/Thermal TSGENCO, Vidyut Soudha Hyderabad 500082
	Signature of the Applicant ***With name and full address*** ***(Project Proponent / Authorized Signatory)***

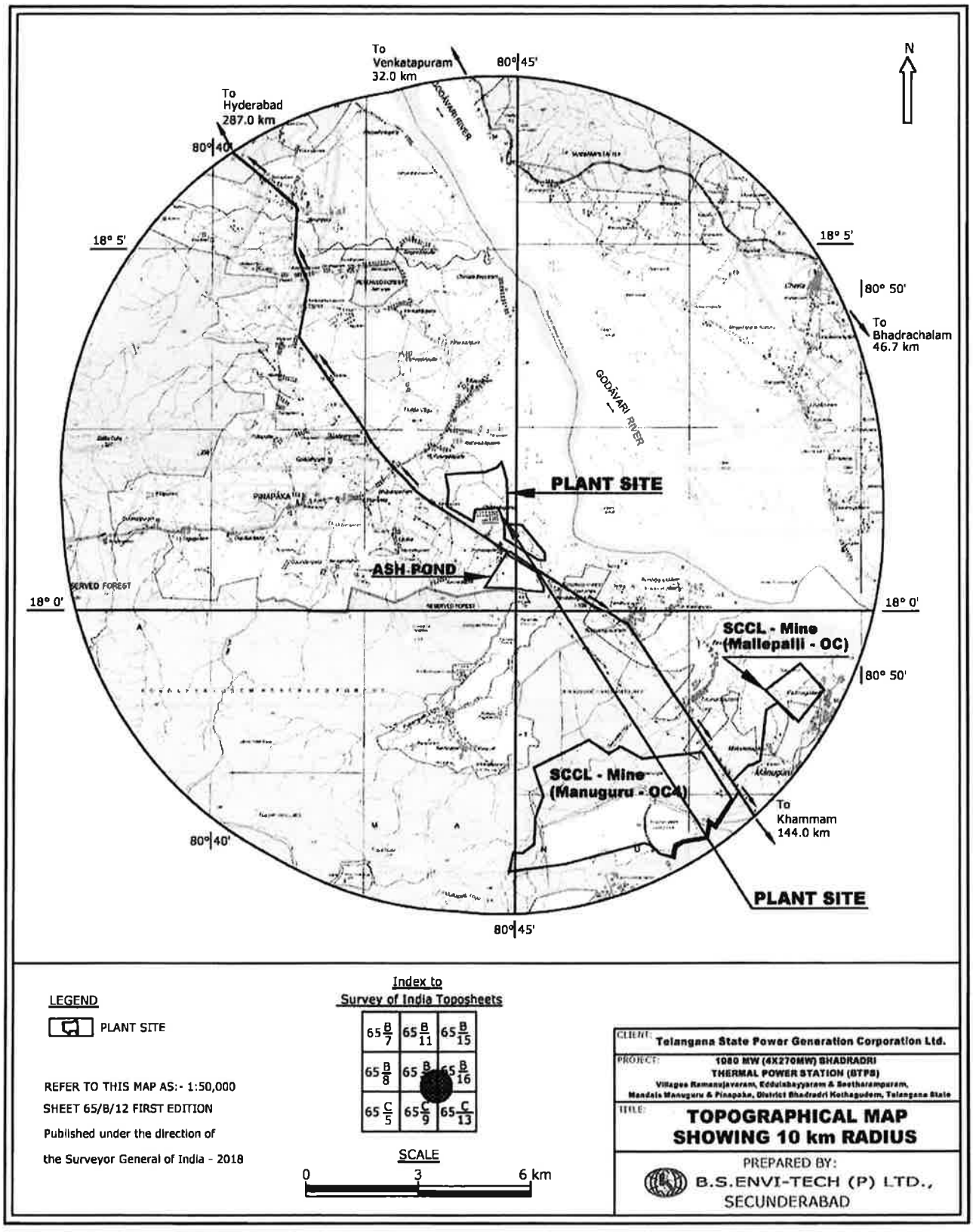
EXHIBIT - 1

LOCATION MAP



PLANT SITE

EXHIBIT - 2



LEGEND

PLANT SITE

REFER TO THIS MAP AS:- 1:50,000

SHEET 65/B/12 FIRST EDITION

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SCALE

0 3 6 km

CLIENT: Telangana State Power Generation Corporation Ltd.

PROJECT: 1080 MW (4X270MW) BHADRADRI THERMAL POWER STATION (BTPS)
Villages Ramanujavaram, Edulabayyaram & Seetharampuram, Mandals Manuguru & Pinapaka, District Bhadradri Kothagudem, Telangana State

TITLE: **TOPOGRAPHICAL MAP SHOWING 10 km RADIUS**

PREPARED BY:
B.S.ENVI-TECH (P) LTD.,
SECUNDERABAD

EXHIBIT – 3

PROJECT: 1080 MW (4x270) MW Bhadradri Thermal Power Station, Manuguru (M), Bhadradri,KothagudemDist

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The following are the list of pending Cases related to Bhadradri Thermal Power Station, Manuguru,

1. Appeal No. 41 of 2017 was filed by M/s. Human Rights Forum represented by Sri. S. Jeevan Kumar, Hyderabad and three others in the Hon'ble National Green Tribunal (SZ), Chennai.

2. Appeal No. 71 of 2017 was filed by M/s. SAMATA , through its Executive Director, R. Ravi, Visakhapatnam Dist (A.P) before Hon'ble NGT, Southern zone, Chennai.

3. The following writ petitions namely:

   5072/2019, 4992/2019, 4984/2019, 5024/2019, 2843/2017, 11087/2017, 13271/2017, 13438/2017, 2832/2017, 9752/2017, 3008/2017, 3089/2017, 43219/2016, 9668/2017, 40249/2016, 13344/16, 13344/2017, 303/2017, 43229/2016, 18195/2017 have been filed by some of the Land Losers, and is pending in the High Court, Hyderabad. These are mainly related to the payment of Land compensation. All the cases are between Land Losers and Revenue Department. TSGENCO has deposited an amount of Rs. 69.00 crores with the District Collector towards payment of compensation and R & R. TSGENCO has filed an implead petition in High Court and will abide by the decision of the Court.

ADDITIONAL INFORMATION

Exhibit-4	***NOTE ON DELAY IN CONSTRUCTION OF RAILWAY LINE***
Exhibit-5	***TRAFFIC IMPACT ASSESSMENT STUDY***
Exhibit-6	***NOTE ON IMPACT ON AIR QUALITY***

EXHIBIT – 4

NOTE ON DELAY IN CONSTRUCTION OF RAILWAY LINE

1080 MW (4X270 MW) COAL BASED BHADRADRI THERMAL POWER STATION (BTPS)

BHADRADRI KOTHAGUDEM,

TELANGANA STATE

PROJECT PROPONENT

TELANGANA STATE POWER GENERATION CORPORATION LTD,

VIDYUT SOUDHA, HYDERABAD

TELANGANA

EXHIBIT - 4

PROPONENT : Telangana State Power Generation Corporation Limited (TSGENCO)

PROJECT : 1080 MW (4X270 MW) BHADRADRI THERMAL POWER STATION, Manuguru (M) Bhadradri Kothagudem District, Telangana State.

SUBJECT : NOTE ON DELAY IN CONSTRUCTION OF DEDICATED RAILWAY LINE

- Telangana State Power Generation Corporation Limited (TSGENCO) has proposed to establish (4 x 270 MW) Bhadradri Thermal Power Station at Manuguru (M), Bhadradri Kothagudem District with a project cost of Rs. 7290.60 Crores. Accordingly, the Environment Clearance for the above project was obtained from MoEF&CC, GOI, New Delhi vide letter No. J-13012/02/2015-IA.I(T), dated 15.03.2017.

- The project construction works were awarded to M/s. BHEL for an amount of Rs. 5044.00 Crores and the works are in full swing. It is proposed to synchronize the unit 1 by end of June 2019 and other three units by end of December, 2019.

- As per the Environmental clearance granted by MoEF & CC, GoI, the coal transportation for the above project shall be done through rail route only. Accordingly, it has been proposed to construct railway line from Manuguru railway station to the above project.

- M/s. SCCL has proposed to supply required coal of 4.20 MTPA for the above project from Manuguru group of mines and Prakasham Khani Open cast mines located in Manuguru, Bhadradri Kothagudem Dist. at 20.00 km from Bhadradri Thermal Power Station.

- In this connection, TSGENCO has engaged the services of M/s. RITES Ltd, Secunderabad for preparation of Detailed Project Report for feasibility of railway marshalling yard with suitable connecting railway track from Manuguru railway station to the above plant vide P.O. No. CC-0012/CE/C/Th/SE/TCD-I/KTPSD/F. Maunuguru/D. No. 302/2014, dt. 03.12.2014 for an amount of Rs. 1.50 Crores.

- M/s. RITES Ltd, Secunderabad have submitted the feasibility report to M/s. South Central Railways, Secunderabad for laying the railway line from Manuguru railway station to the above project in the month of December 2017 along with alignment drawing for railway line which is running parallel to Manuguru to Eturu Nagaram highway.

- The total length of railway line from Manuguru Railway station to the above plant is 20.25 km.

- M/s. South Central Railway, Secunderabad have accorded in principle approval for the feasibility report on 05.11.2018 vide letter No. T.143/C/207, dated. 05.11.2018. The detailed Project Report was submitted to M/s. South Central Railways, Secunderabad in the month of January 2019. M/s. South Central Railways, Secunderabad also accorded In-principle approval to the Detailed Project report vide letter No. C.490/SC/TSGENCO/BTPS/MUGR/2019, dated. 15.03.2019.

- As per the alignment of the of the proposed railway line from Manuguru Railway Station to Bhadradri Thermal power station for a length 20.25 km, the extent of land required to be acquired is Ac. 171.19 Gts as given below.

(a) Forest land	-	Ac. 64.10 Gts
(b) Assigned /Patta land	-	Ac 107.09 Gts
Total	-	**Ac 171.19 Gts**

- Application for diversion of Ac. 64.10 Gts (25.8435 Ha) of forest land in favour of TSGENCO for construction of railway line was submitted to the Principal Chief Conservator of Forests vide Lr. No. ED/C/Thermal/SE/C/TCD-II/BTPS/F.Forest/D.No.127/18, Dt. 23.07.2018.

- But, the PCCF, Hyderabad has returned the proposal to the Conservator of Forests, Kothagudem requesting to identify the Non-forest CA land to an extent of 26.00 Ha and resubmit the proposal for further processing of the same vide Lr. No. 6727/2018/FCA-3/PS, dt. 17.12.2018. The Revenue department is being pursued for identifying the Non-forest CA land to an extent of 26.00 Ha. Identification of Non-Forest CA-Land to an extent of 26 Ha is under process.

- The requisition for acquisition/alienation of Patta/assigned land to an extent of Acres 107.215 Gts was filed with the Sub Collector/Bhadrachalam, Bhadradri Kothagudem District on 11.04.2018 vide Lr. No. CE/Elec/Construction/ BTPS (4x270MW)/F.No.My/D.No.21/18, Dt. 11.04.2018.

- Enjoyment survey of the patta/assigned lands by Revenue department is also completed on 18.04.2019 and submission of Preliminary Notification (PN) proposals by the Sub Collector/ Bhadrachalam is under process.

- The acquisition of both forest land and patta/assigned lands is getting delayed due to State Legislative Assembly elections during November 2018 to December 2018 and Parliament elections during March, 2019 to May, 2019 and other issues of the Revenue department.

- Thus, the diversion of forest land in favor of TSGENCO from Forest department and transfer of assigned/patta lands from Revenue Department may take another 5 to 6 months. After obtaining the final clearance from forest department for diversion of

the above forest land and transfer of assigned/patta lands by Revenue department to TSGENCO, the construction of railway line from Manuguru railway station to BTPS plant and marshalling yard in BTPS may take about 2 to 2 ½ years. Hence, the total time period required for completion of railway line will be about 3 years.

- In view of the delay in construction of connecting railway line from Manuguru railway station to BTPS plant due to the aforesaid reasons and ensuing synchronization of unit 1 in the month of June, 2019 and other three units by end of 2019, it is proposed to transport the coal by road temporarily from Manuguru group of open cast mines/Prakasham Khani open cast mines of M/s. SCCL which are located in Manuguru at a distance of about 18 to 20 Km from the above project till completion of railway line which may take about three (3) years.

- The chronology of the various activities carried out till date for construction of railway line from Manuguru Railway Station to Bhadradri Thermal Power Station as follows.

S. No.	Description	Date
1	Purchase order placed on M/s. RITES Limited, Secunderabad for preparation of Detailed Project Report for feasibility of railway marshalling yard with suitable railway track from Manuguru railway station to the above plant vide P.O. No. CC-0012/CE/C/Th/SE/TCD-I/KTPSD/F. Maunuguru/ D. No. 302/2014, dt. 03.12.2014 for an amount of Rs. 1.50 Crores.	03.12.2014
2	Environment Clearance for the above project was granted by MoEF&CC, GOI, New Delhi letter No. J-13012/02/2015-IA.I(T), dated 15.03.2017.	15.03.2017
3	Submission of feasibility report to M/s. South Central Railways by M/s. RITES Limited, Secunderabad.	December, 2017
4	Requisition for acquisition/alienation of Patta/Assigned land to an extent of Acres 107.09 Gts was filed with the Sub Collector/Bhadrachalam, Bhadradri Kothagudem District.	11.04.2018
5	Application submitted to the Principal Chief Conservator of Forests, Hyderabad for diversion of Ac. 64.10 Gts (25.8435 Ha) of forest land in favor of TSGENCO for construction of railway line.	23.07.2018
6	M/s. South Central Railways have accorded In-principle approval for the feasibility report	05.11.2018
7	PCCF, Hyderabad has returned the proposal to the Conservator of Forests, Kothagudem requesting to identify the Non-forest CA land to an extent of 26.00 Ha.	17.12.2018
8	Detailed Project Report was submitted to M/s. South	January 2019.

	Central Railways in the month of January 2019.	
9	In-principle approval of DPR was accorded by M/s. South Central Railways, Secunderabad.	15.03.2019

The project is a priority project of Govt. of Telangana for providing power to the farmers and lift irrigation sector. Hence the commissioning of the project is utmost important. Thus, temporary permission to transport coal by existing road till the railway line is implemented, is essential.

MoEF & CC, GoI is requested to permit temporary transport of coal by road in view of the delay occurred in construction of connecting railway line from Manuguru railway station to BTPS plant due to the above reasons and for ensuring the synchronization of unit 1 in the month of June, 2019 and other three units by end of 2019 as scheduled.

TSGENCO requests MoEF & CC, GoI, New Delhi to kindly issue an amendment to the Environmental clearance granted for the above project to transport the coal by road temporarily from Manuguru group of open cast mines/Prakasham Khani open cast mines of M/s. SCCL which are located at a distance of about 18 to 20 km from the above project for a period of three (3) years.

Chief Engineer/Civil/Thermal
TSGENCO, Vidyut Soudha,
Hyderabad - 500082

EXHIBIT – 5

TRAFFIC IMPACT ASSESSMENT STUDY

1080 MW (4X270 MW) COAL BASED BHADRADRI THERMAL POWER STATION (BTPS)

BHADRADRI KOTHAGUDEM,

TELANGANA STATE

PROJECT PROPONENT

TELANGANA STATE POWER GENERATION CORPORATION LTD,

VIDYUT SOUDHA, HYDERABAD

TELANGANA

1 Introduction

Telangana State Government has mandated to Telangana State Power Generation Corporation Limited (TSGENCO) for adding capacity of 6000 MW to meet ever growing power demand for industrial, agriculture, domestic and other sectors in the newly formed Telangana state.

As a part of the above, Telangana State Power Generation Corporation Limited (TSGENCO) has proposed to establish 1080 MW (4x270 MW) Bhadradri Thermal Power Station at Villages Ramanujavaram, Eddulabayyaram & Seetharampuram, Mandals Manuguru & Pinapaka of Bhadradri Kothagudem District with a project cost of Rs. 7290.60 Crores. The Environment Clearance for the above project was accorded by MoEF&CC, GOI, New Delhi vide letter No. J-13012/02/2015-IA.I(T), dated 15.03.2017. Necessary other clearances were also obtained from various departments in the State and Central Governments for the above project.

The project construction works were awarded to M/s. BHEL for an amount of Rs. 5044.00 Crores and the works are in full swing. It is proposed to synchronize the unit 1 by end of June, 2019 and other three units by end of December, 2019.

The coal requirement for the above project is 13102.42 Tonnes per Day (i.e. 4.20 MTPA) of G9/G10 grade which will be sourced from M/s. SCCL coal mines. The coal linkage is granted by Ministry of Coal, GoI vide letter No. File No.23014 /1/2018 – CLD, dated.15.02.2018.

As per the Environmental clearance granted by MoEF & CC, GoI, the coal transportation for the above project shall be done through rail route only. Accordingly, it has been proposed to construct railway line from Manuguru railway station to the above project.

The construction of connecting railway line from Manuguru railway station to BTPS plant is getting delayed due to the delay in acquiring required Patta/Assigned/Forest lands to an extent of Ac.171.00 for the railway line.

As it is proposed for synchronization of unit 1 in the month of June, 2019 and other three units by end of 2019 as scheduled, TSGENCO proposed to obtain an amendment to the Environmental clearance granted by MoEF & CC, GoI, New Delhi for the above project to transport the coal by road temporarily from Manuguru group

of open cast mines/Prakasham Khani open cast mines of M/s. SCCL which are located at a distance of about 20 km from the above project.

In this regard, the coal has to be brought from the nearest SCCL mines and three important sources are identified for the raw material that is from source OC, OC-2 and OC-4 the coal requirement being 13102.42 MT /day during peak load and brought from Manuguru source as well as Mallepalli locations with the quantities based on production from these sources coal is planned to bring from road till another option or alternate is established. The Manuguru location is about 18 Km to the plant and Mallepalli is about 16.5 Km to the plant this is brought by road to the distance about 9.7 kms and by trucks.

This demands the study of the existing traffic along the road and the impact when the trucks start moving on the road. The main Manuguru –Hyderabad highway measures 24 m RoW (Right of Way) with 2-lanes CW (Carriage Way) of 9m and presently not much traffic is moving. It is also proposed to have (2+2) lanes Manuguru – Hyderabad road is a total width of 24m and upgrade these state highway to NH-65 which joins to Eturnagaram to Chhattisgarh.

The existing main gate is presently used for construction workers and after completing the construction the gates still remains for the use of employees where as a new gate is proposed and recommended to carry a raw material –Coal from the mines directly to the plant conveyerinlet which is about 450m the main idea being to provide two separate gates, one for employees and another for carrying materials.The detailed studies, analysis and inference drawn to understand the impact when the plant is in fully operational in a scientific and rational way based on IRC (Indian Roads Congress) codes, provision and any improvements required is also suggested for the road like lighting ,drainage, construction of foot path at the entry and exit points,road markings, high mast light etc.

2 Road Connectivity

Bhadradri Thermal Power Plant is located along **Manuguru- Hyderabad Highway.** Manuguru- Hyderabad Highwayis having 24 m RoW, 9 m Carriage way 2-lanes undivided which connects to Hyderabad on one side and Bhadrachalam on another side. The surface condition of this road is fairly good, street lights are available, 7.5 m shoulder on either side of the road. All types of vehicles will move along the road being a highway in addition to local traffic.Road marking is faded out, which must be painted and adequate numbers of road studs must be installed for good visibility during night time. Adequate numbers of sign boards must be installed for Manuguru- Hyderabad Highway like Speed limit, NO overtaking, Direction sign boards, etc…

2.1 Aerial view of Bhadradri Thermal Power Plant

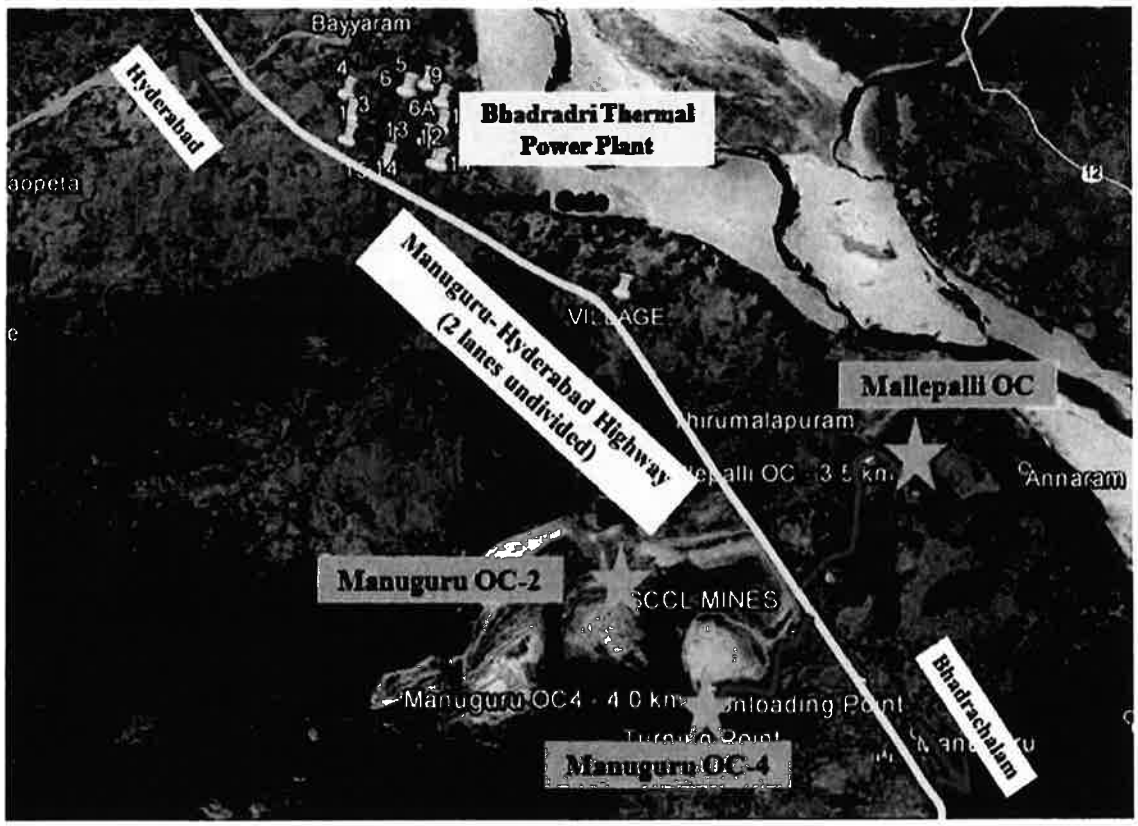


Plate: 2.1: Aerial view of Bhadradri Thermal Plant

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

Table: 3.1 Existing Road Geometric Scenario

Road	RoW (m) / CW (m) / Lanes	Surface Condition	Street lights	Drainage	Road		Remarks
					Marking	Signs	
Manuguru-Hyderabad Highway (2-lanes undivided)	24 / 9 / 2	Good	A	A	NA	A but not adequate	Road Markings and adequate sign boards shall be installed. On either side wide shoulders exist which can be used for four lanes.

Note: **A** – Available , **NA** – Not Available, RoW – Right of Way , CW – Carriage Way

3.1 Photos of study roads

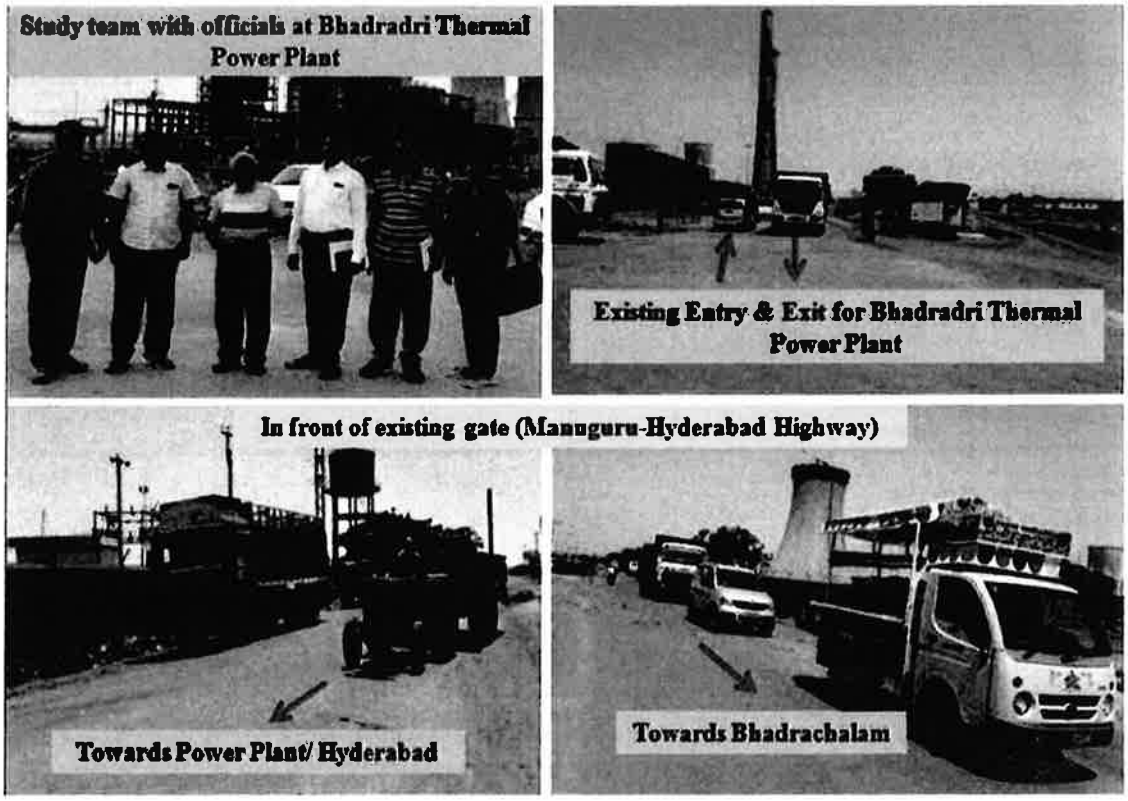


Plate: 3.1 Bhadradri power plant and near existing entry

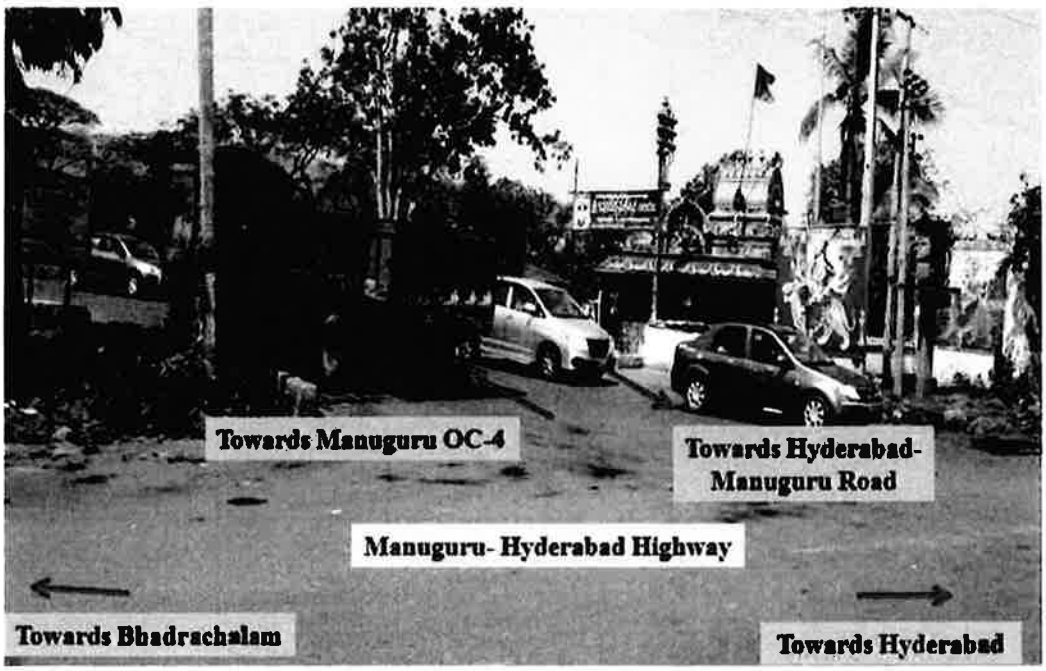
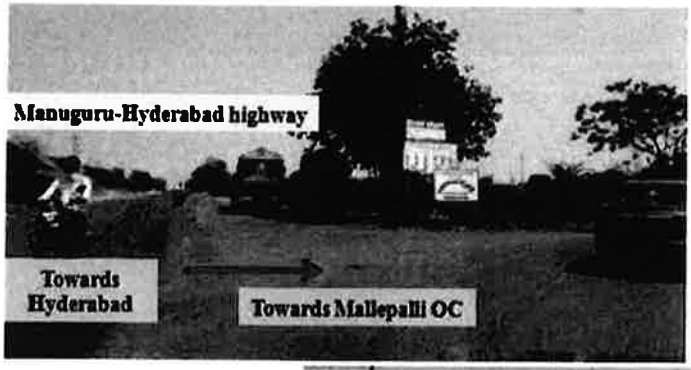


Plate: 3.2Photo of junction along Manuguru OC-4



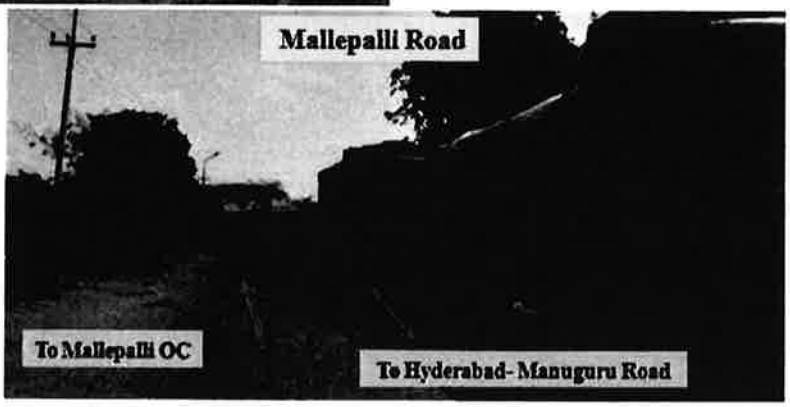


Plate: 3.3Photos towards Mallepalli OC

Proposed Gate will be nearest to conveyors carrying materials. It will be 0.5 km from the main road.
This can save lot of detours and can prevent the merging with regular vehicles from the main gate.

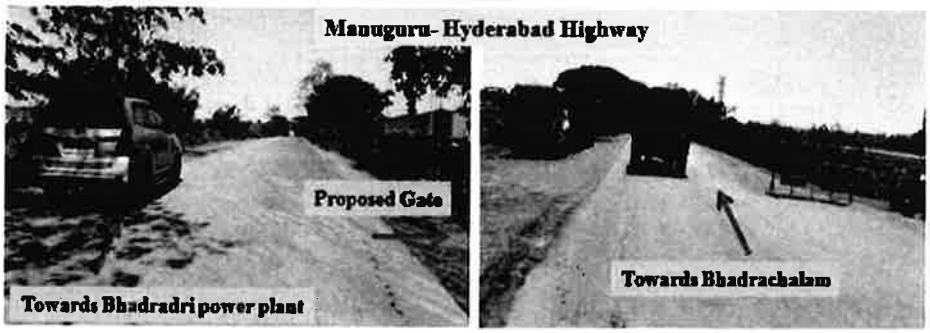


Plate: 3.4 Photos infront of proposed gate

Table: 3.2 Speed spectrums for the study roads (kmph)

Road	2 Wh		3 Wh		4 Wh (C,J,V)		B/L		Trucks	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Manuguru-Hyderabad Highway(2 lanes undivided)	43	29	22	18	52	32	28	17	26	18

Note: The measured speed of various classified vehicles are within the limits of Highways (NH and SH) and hence safety is ensured.

Higher the speed indicates lower volume of traffic and vehicles can use adequate free spaces to move at faster speeds.

4Traffic Volume Studies

Classified traffic volume count has been carried out based on the reconnaissance for traffic flow at the locations identified.Traffic volume count was carried out from 6:00 am to 6:00 am covering peak and off peak period. For Manuguru- **Hyderabad Highway** (2 lanes undivided). Along which the entire coal carrying trucks will move to the plant from mines. All type of vehicles including 2-wheeler (bikes), 3-wheelers (Autos), 4-wheeler (Car, Jeep, Van), Buses / Lorries, Multi Axle Vehicles (MAVs) are counted for study road.

The vehicular volume / hour are counted for every 15 min interval as per IRC norms and consolidated for each hour. To understand the congestion, it is very important to obtain the Volume - Capacity ratio based on IRC criteria.

4.1Recommended 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

Fig 4.1: Recommended PCU's Factor for Various type of Vehicles on Highways as per IRC-64-1990 (From Table-1, Pg.no-10)

4.2Recommended 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

Fig 4.2: Recommended PCU's Factor for Various type of Vehicles on Highways as per IRC-64-1990 (From Table-1, Pg.no-10)

4.3Real time traffic scenario along study roads

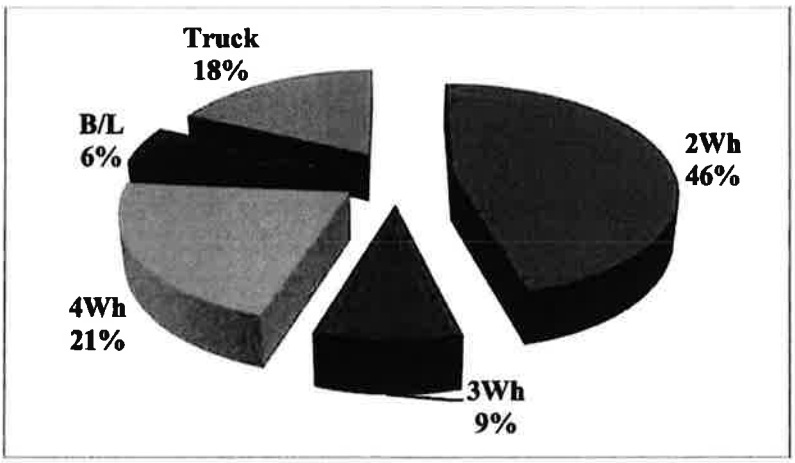
4.3.1 Real time traffic scenario along Manuguru- Hyderabad Highway (2-lanes undivided)

Table: 4.1Real time traffic scenario along Manuguru- Hyderabad Highway (2-lanes undivided)

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6:00 am-7:00 am	18(9)	3(3)	24(24)	11(33)	50(150)	106(219)
7:00-8:00	29(15)	18(180	32(32)	13(39)	52(156)	144(260)
8:00-9:00	49(25)	21(21)	45(45)	15(45)	54(162)	184(298)
9:00-10:00	86(43)	28(28)	51(51)	17(51)	58(174)	240(347)
10:00-11:00	**154(77)**	**30(30)**	**72(72)**	**19(57)**	**60(180)**	**335(416)**
11:00-12:00	137(69)	27(27)	68(68)	16(48)	57(171)	305(383)

12:00-1:00 pm	93(47)	25(25)	48(48)	13(39)	54(162)	233(321)
1:00-2:00	104(52)	22(22)	30(30)	11(33)	59(177)	226(314)
2:00-3:00	87(44)	19(19)	24(24)	9(27)	46(138)	185(252)
3:00-4:00	115(58)	17(17)	34(34)	8(24)	45(135)	219(268)
4:00-5:00	98(49)	18(18)	45(45)	7(21)	48(144)	216(277)
5:00-6:00	163(82)	20(20)	53(53)	6(18)	51(153)	293(326)
6:00-7:00	120(60)	22(22)	59(59)	8(24)	50(150)	259(315)
7:00-8:00	73(37)	19(19)	60(60)	9(27)	51(153)	212(296)
8:00-9:00	46(23)	17(17)	35(35)	7(21)	49(147)	154(243)
9:00-10:00	30(15)	5(5)	24(24)	8(24)	47(141)	114(209)
10:00-11:00	21(11)	3(3)	10(10)	7(21)	50(150)	91(195)
11:00pm-12:00am	1(1)	0(0)	0(0)	2(4)	32(96)	35(103)
12:00-1:00	0(0)	0(0)	0(0)	0(0)	27(81)	27(81)
1:00-2:00	0(0)	0(0)	0(0)	0(0)	22(66)	22(66)
2:00-3:00	0(0)	0(0)	0(0)	0(0)	29(87)	29(87)
3:00-4:00	0(0)	0(0)	0(0)	0(0)	32(96)	33(97)
4:00-5:00	0(0)	0(0)	2(2)	1(1)	43(129)	46(134)
5:00-6:00	0(0)	0(0)	5(5)	2(2)	49(147)	56(158)
Total						**3764(5660)**

Note: The highest peak observed is 5660 PCU's/hr as per IRC-106:1990 during 10:00 am to 11:00 am.



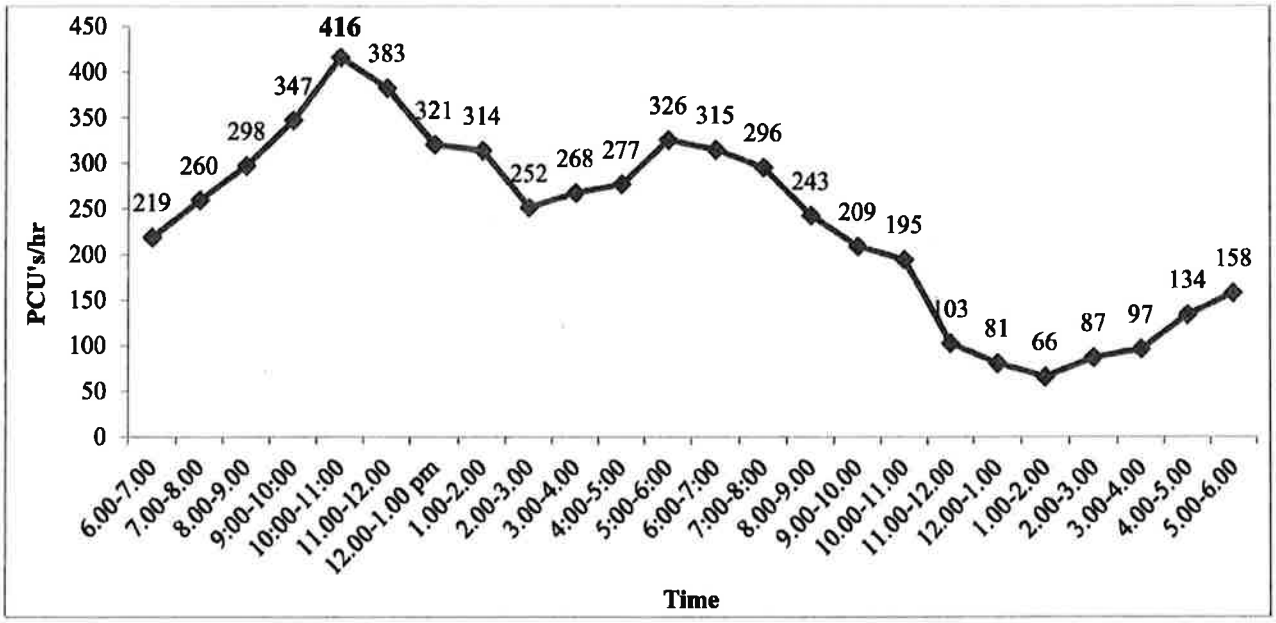


Fig 4.3: Vehicle Composition and Traffic flow distribution along Manuguru- Hyderabad Highway (2-lanes undivided)

4.3.2 Real time Traffic Scenario for Study road

Table:4.2: Real time Traffic Scenario for Study road

Road	Volume, PCUs/day	Capacity, PCUs/day (as per IRC)	Existing V/C	LOS
Manuguru- Hyderabad Highway (2 Lanes undivided)	5660	15000	0.34	

Table 4.3: Table for Level of Service and Performance

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
1.0and Above	F	Very Poor

V= Volume in PCU's/day andC= Capacity in PCU's/day, LOS = Level of Service

5. Traffic scenario along the Manuguru- Hyderabad Highway after adding the trucks generated to Bhadradri Thermal Power Plant

5.1 Truck Transportation requirement

The addition does not make any significant change for traffic movement at any given time. Vehicles carrying coal will be well covered to prevent any spillage. Vehicles hired for coal will be in good condition and conforms to noise and air emission standards. Vehicles will operate only during non peak hours.

5.2 Total Requirement of Coal from the units

It is estimated that the coal requirement for all the four units is 13,100 MT per day which is brought from **OC-4, OC-2 and OC mines of Singareni Collieries'** is proposed to use 20 tons capacity trucks and hence number of trucks required will be **655 trucks/ day.**

An average considering 24 hours continuous supply (loading and unloading of coal o the trucks to the conveyers within the plant will be 655/24= **28 trucks/ hour.**

These trucks will have to use the total distance of 16.5 km to 18 km.

The present proposal is for temporary transport of coal by Road from the Manuguru mines to the Plant till the dedicated railway line is commissioned. The plant will be commissioned through phases and the requirement is also based on the phases. However, the maximum load of coal required for the complete operation of the plant is considered for the impact.

Employee's township is also made available from BHEL within the campus. Being a highway there is likelihood the road also getting widenedin the future and presently this data is not available.

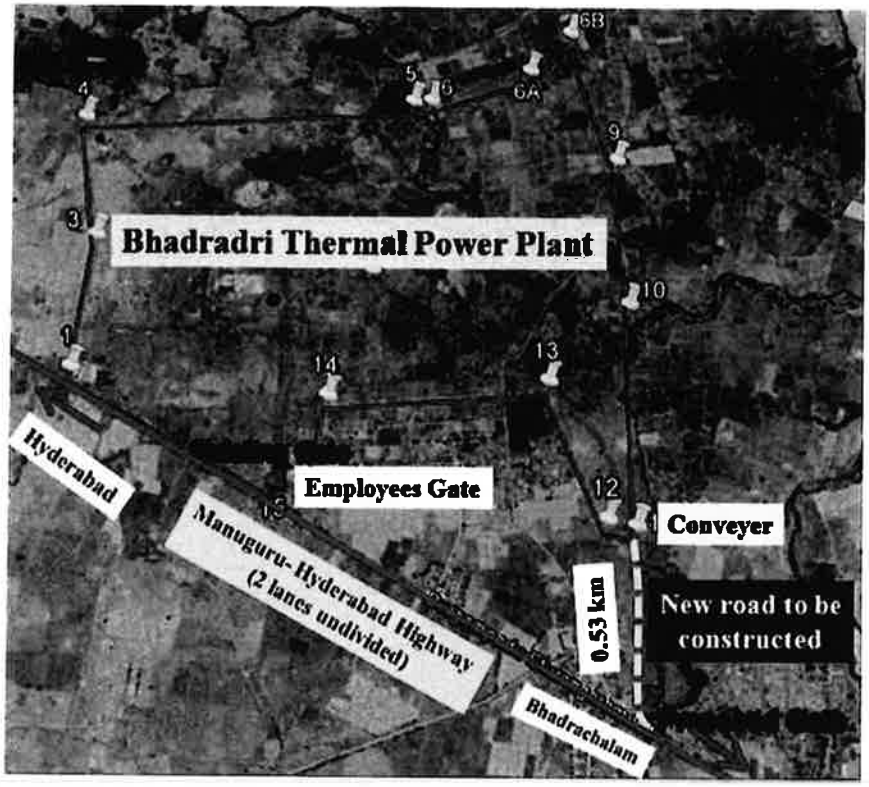


Plate: 5.1: Proposedmaterial gate for Bhadradri Thermal Plant

5.3 Real time traffic scenario along Manuguru- Hyderabad Highway (2-lanes undivided) after adding the trucks carrying coal

Table 5.1: Real time traffic scenario along Manuguru- Hyderabad Highway (2-lanesundivided) after adding the trucks carrying coal

Time	2Wh	3Wh	4Wh	B/L	Truck	Total
6:00 am-7:00 am	18(9)	3(3)	24(24)	11(33)	50+28=78 (234)	134 (303)
7:00-8:00	29(15)	18(180	32(32)	13(39)	52+28=80 (240)	172 (344)
8:00-9:00	49(25)	21(21)	45(45)	15(45)	54+28=82 (246)	212 (382)
9:00-10:00	86(43)	28(28)	51(51)	17(51)	58+28=86 (258)	268 (431)
10:00-11:00	**154(77)**	**30(30)**	**72(72)**	**19(57)**	**60+28=88 (264)**	**363 (500)**
11:00-12:00	137(69)	27(27)	68(68)	16(48)	57+28=85 (255)	333 (467)
12:00-1:00 pm	93(47)	25(25)	48(48)	13(39)	54+28=82 (246)	261 (405)
1:00-2:00	104(52)	22(22)	30(30)	11(33)	59+28=87 (261)	254 (398)

2:00-3:00	87(44)	19(19)	24(24)	9(27)	46+28=74 (222)	213 (336)
3:00-4:00	115(58)	17(17)	34(34)	8(24)	45+28=73 (219)	247 (352)
4:00-5:00	98(49)	18(18)	45(45)	7(21)	48+28=76 (228)	244 (361)
5:00-6:00	163(82)	20(20)	53(53)	6(18)	51+28=79 (237)	321 (410)
6:00-7:00	120(60)	22(22)	59(59)	8(24)	50+28=78 (234)	287 (399)
7:00-8:00	73(37)	19(19)	60(60)	9(27)	51+28=79 (237)	240 (380)
8:00-9:00	46(23)	17(17)	35(35)	7(21)	49+28=77 (231)	182 (327)
9:00-10:00	30(15)	5(5)	24(24)	8(24)	47+28=75 (225)	142 (293)
10:00-11:00	21(11)	3(3)	10(10)	7(21)	50+28=78 (234)	119 (279)
11:00pm-12:00am	1(1)	0(0)	0(0)	2(4)	32+28=60 (180)	63 (187)
12:00-1:00	0(0)	0(0)	0(0)	0(0)	27+28=55 (165)	55 (165)
1:00-2:00	0(0)	0(0)	0(0)	0(0)	22+28=50 (150)	50 (150)
2:00-3:00	0(0)	0(0)	0(0)	0(0)	29+28=57 (171)	57 (171)
3:00-4:00	0(0)	0(0)	0(0)	0(0)	32+28=60 (180)	61 (181)
4:00-5:00	0(0)	0(0)	2(2)	1(1)	43+28=71 (213)	74 (218)
5:00-6:00	0(0)	0(0)	5(5)	2(2)	49+28=77 (231)	84 (242)
Total						**4436 (7676)**

Note: The highest peak observed is 7676 PCU's/hr as per IRC-106:1990 during 10:00 am to 11:00 am.

An average **28 Trucks** per hour will be carrying the coal to the above power plant. However, it could be more or less per hour.

5.4 Modified V/C and LOS for the study road

Table: 5.2: Traffic Scenario of study roads after adding the trucks generated carrying Coal

Road	Volume, PCUs/day	Capacity, PCUs/day(as per IRC)	Modified V/C	LOS
Manuguru- Hyderabad Highway (2 lanes undivided)	7676	15000	**0.51**	

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.

The LOS will shift from B to LOS C. This is limited till the dedicated railway line/ siding is completed.

5.5After Road widening for the study road

Table: 5.3: Traffic Scenario of study roads after Widening

Road	Volume, PCUs/day	Capacity PCUs/day (as per IRC)	Modified V/C	LOS
Manuguru- Hyderabad Highway (2+2 lanes divided)	7676	30000	**0.26**	**B**

When the road is widened to in 24 m with a median, shoulder etc., and the capacity will be enhanced to double that is from 15000 PCU's/day to 30000 PCU's/day.

5.6Consolidated table for the study road

Table: 5.4: Consolidated V/C and level of service for changed scenarios

Road	Existing Traffic		After adding trucks		After road widening	
	V/C	LOS	V/C	LOS	V/C	LOS
Manuguru- Hyderabad Highway	0.34		0.51	C	0.26	

5.7Traffic management measures and Interventions

1. High raised Pedestrian crossing must be constructed in front of the main employees gate for the safety.

Plate: 5.2: Typical picture of High raised pedestrian crossing

2. 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.

3. 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.

4. Adequate sign (High way ahead drive slowly, Speed thrills but kills, Merge to the left lane only and Pedestrians are crossing the road drive carefully) & guide posts for traffic as per IRC (Indian Roads Congress) or ITE (Institute of Transportation Engineers USA) to be installed along study roads.

5. All gates are manned with efficient security who can guide the entry and exit of vehicles.
6. All precautionary measures are ensured for the safety of laborers while working at loading and unloading yards.
7. High mast light at the entrance must be installed.
8. Road marking, STOP lines etc must be clearly painted so as to guide the drivers along study roads.
9. Necessary number of speed breakers as per IRC 99, along with adequate road signs shall be implemented for the Tirumalapuram, Ramanujavaram, Sambayagudem and Dhamakkapalle.
10. To counter the glare effect, a minimum of 1.2 m height plantation must be grown along the median.
11. The median opening must be made available one in front of the main gate and another one in front of the material handling gate.
12. High and power full laminating source at these two gates.
13. Effective and efficient security must man both the gates round the clock.

****

EXHIBIT – 6

NOTE ON IMPACT ON AIR QUALITY

1080 MW (4X270 MW) COAL BASED BHADRADRI THERMAL POWER STATION (BTPS)

BHADRADRI KOTHAGUDEM,

TELANGANA STATE

PROJECT PROPONENT

TELANGANA STATE POWER GENERATION CORPORATION LTD,

VIDYUT SOUDHA, HYDERABAD

TELANGANA

AIR QUALITY MODELING

CLIENT : **TELANGANA STATE POWER GENERATION CORPORATION LTD**

PROJECT : **1080 MW (4 X 270 MW) BHADRADRI THERMAL POWER STATION**

LOCATION : **RAMANUJAVARAM, VILLAGE, MANUGURU MANDAL, BHADRADRI DISTRICT, KOTHAGUDEM, TELANGANA**

SUBJECT : **AIR QUALITY MODELING FOR ESTIMATION OF IMPACT DUE TO COAL TRANSPORT BY ROAD BY TRUCKS**

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

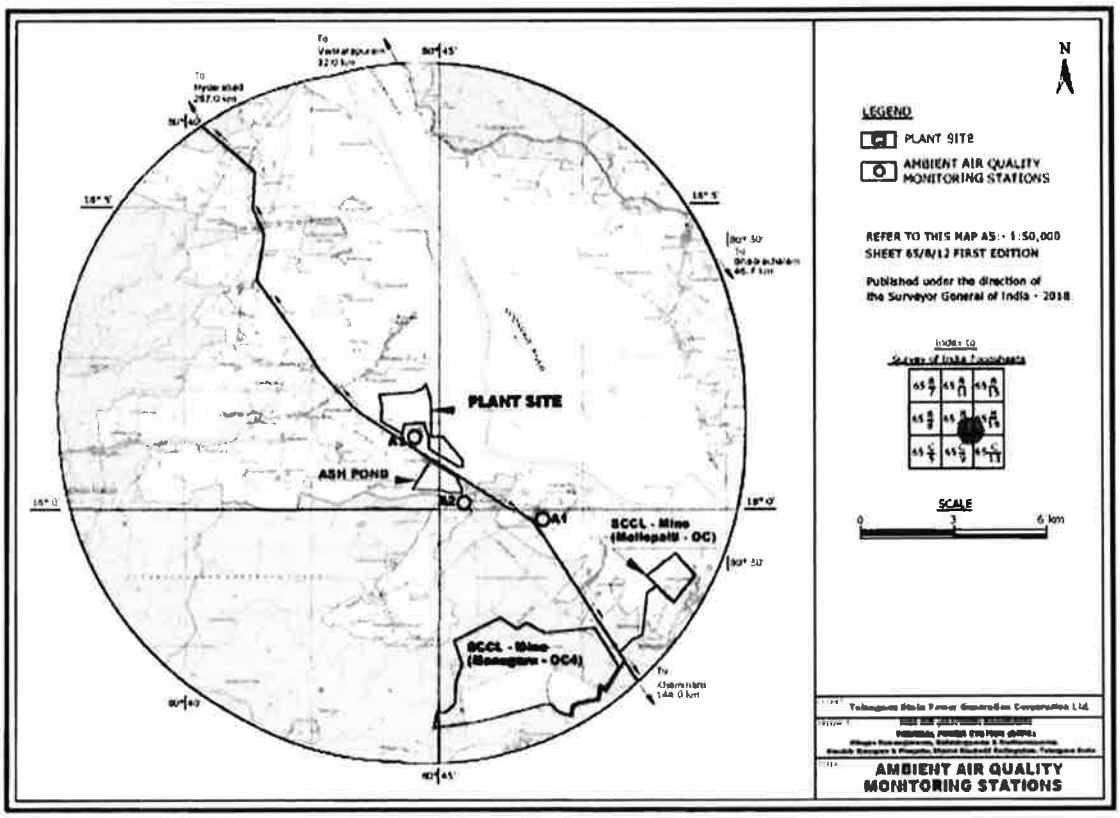
TSGENCO will be transporting 13000 TPD of coal on the road connecting Bhadradri Thermal Power plant and Manuguru mines which is of 9.4 km lead length till the railway siding is operational. As part of the traffic impact assessment study on ambient air quality, baseline ambient air quality data has been collected, impacts of vehicular movement has been assessed and EMP measures have been recommended. The subject report presents the details of the same.

2.0 BASELINE AMBIENT AIR QUALITY

Ambient air quality has been monitored near the villages located near to the road connecting Bhadradri Thermal Power Plant and Manuguru Mines.

Monitoring has been carriedout for two days (one day/week) for PM_{10}, $PM_{2.5}$, SO_2, NO_2 and CO

The locations of the ambient air quality monitoring stations are shown below:



The Ambient air quality data monitored is given below:

AMBIENT AIR QUALITY DATA

Client : **Telangana State Power Generation Corporation Ltd**
Project : **1080 MW (4 x 270 MW) Bhadradri Thermal power Station**
Period : **March, 2019**

Code : **A-1**
Station : **Ramnujavaram**

Date of sampling	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (ppm)
Test Method	**IS 5182 Part-23**	**BSET/SOP/AA-02**	**IS 5182 Part-2**	**IS 5182 Part-6**	**BSET/SOP/AA-09**
04/03/2019	50.2	20.4	8.5	12.4	<1
11/03/2019	45.6	21.2	8.7	11.0	<1

Code : **A-2**
Station : **Sambayagudem**

Date of sampling	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (ppm)
Test Method	**IS 5182 Part-23**	**BSET/SOP/AA-02**	**IS 5182 Part-2**	**IS 5182 Part-6**	**BSET/SOP/AA-09**
04/03/2019	49.1	21.3	8.9	11.3	<1
11/03/2019	39.6	17.3	10.6	12.6	<1

Code : **A-3**
Station : **Chikkudugunta**

Date of sampling	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (ppm)
Test Method	**IS 5182 Part-23**	**BSET/SOP/AA-02**	**IS 5182 Part-2**	**IS 5182 Part-6**	**BSET/SOP/AA-09**
04/03/2019	38.9	15.6	10.2	13.5	<1
11/03/2019	44.6	18.3	11.0	14.8	<1

3.0 IMPACT ON AIR QUALITY DUE TO VEHICULAR MOVEMENT

Air Quality modeling has been carried out for estimation of impact due to vehicular truck movement carrying 13000 TPD of coal from Manuguru mines to the Thermal Power Plant over a lead length of 9.4 km

Model employed is US EPA recommended AERMOD version 9.1.5

Pollutants considered along with duration considered are given below:

TABLE 1 – POLLUTANTS CONSIDERED

	Carbon Monoxide (CO)	**Hydro carbon**	**Oxides of Nitrogen**	**Particulate Matter**
	ug/m^3			
Duration	8 hourly basis	24-hourly basis	24-hourly basis	24-hourly basis

3.1 EMISSION DETAILS – VEHICULAR TRAFFIC

Air quality modeling for **Carbon Monoxide (CO), Hydro carbon, Oxides of Nitrogen and Particulate Matter** to study the impact of vehicular traffic.

The emissions are quantified based on the following

a. Peak traffic (PCU/HR)
b. Type of Fuel (Diesel)
c. Length of the road
    - Road Connecting Power plant Site – Mine site – 9.4 km
d. Emission factor (CPCB emission standard)

The emission quantified based on the above are given below:

TABLE 2 - EMISSION DETAILS FROM VEHICULAR TRAFFIC TRANSPORTING COAL FROM MINE TO THERMAL POWER PLANT

Quantity, tpd	13000
Capacity of each Truck	20
Total number of Truck/hr due to coal movement	28
Lead length per trip, km	18.8 (two way)
Total Vehicle km travelled per hour	526
*CO emission rate	1.5 gm/kmhr
Total CO emission	0.21 gm/sec
*NOx emission rate	3.5 gm/kmhr
Total NOx emission	0.51 gm/sec
*HC emission rate	0.96 gm/kmhr
Total HC emission	0.14 gm/sec
*PM emission rate	0.02 gm/kmhr
Total PM emission	0.003 gm/sec

*CPCB emission standard – Heavy Duty Vehicles

3.2 QUANTITATIVE ESTIMATION OF IMPACTS ON AIR ENVIRONMENT

An attempt has been made to predict the incremental ground level concentrations of air pollutants due to emissions Vehicular Traffic. The mathematical model used for predictions of impacts in the present study is EPA approved "AERMOD" model which is designed for point sources, line sources, and area sources

The predicted ground level concentrations computed, is plotted as isopleths using the **SURFER – 8** package of Golden Software.

3.3 METEOROLOGICAL DATA

The available meteorological data recorded during Summer season 2017 (Source on hourly basis for wind speed, wind direction and temperature was used as per the guidelines of IMD and MoEFCC, for application of AERMOD model. Stability classes computed are based on guidelines issued by CPCB on modeling. Mixing heights, representative of the region, have been taken from the available published literature.

3.4 MATHEMATICAL MODEL EMPLOYED – AERMOD

AERMOD Model (USEPA Recommended) with the following options has been employed to predict the ground level concentrations due to emissions from Vehicular Traffic.

1. Areas being rural, rural dispersion parameters are considered.
2. Predictions have been carried out to estimate concentration values over radial distance of 10 km .
3. The terrain of 10 km radial extent is considered as flat.
4. Emission rates from line sources (vehicular traffic) was considered as constant during the entire period.
5. The ground level concentrations computed were as is basis without any consideration of decay coefficient.
6. Calm winds recorded during the study period were also taken into consideration.
7. Meteorological data as per guidelines of IMD and MoEFCC were processed for the Summer Season – 2017.

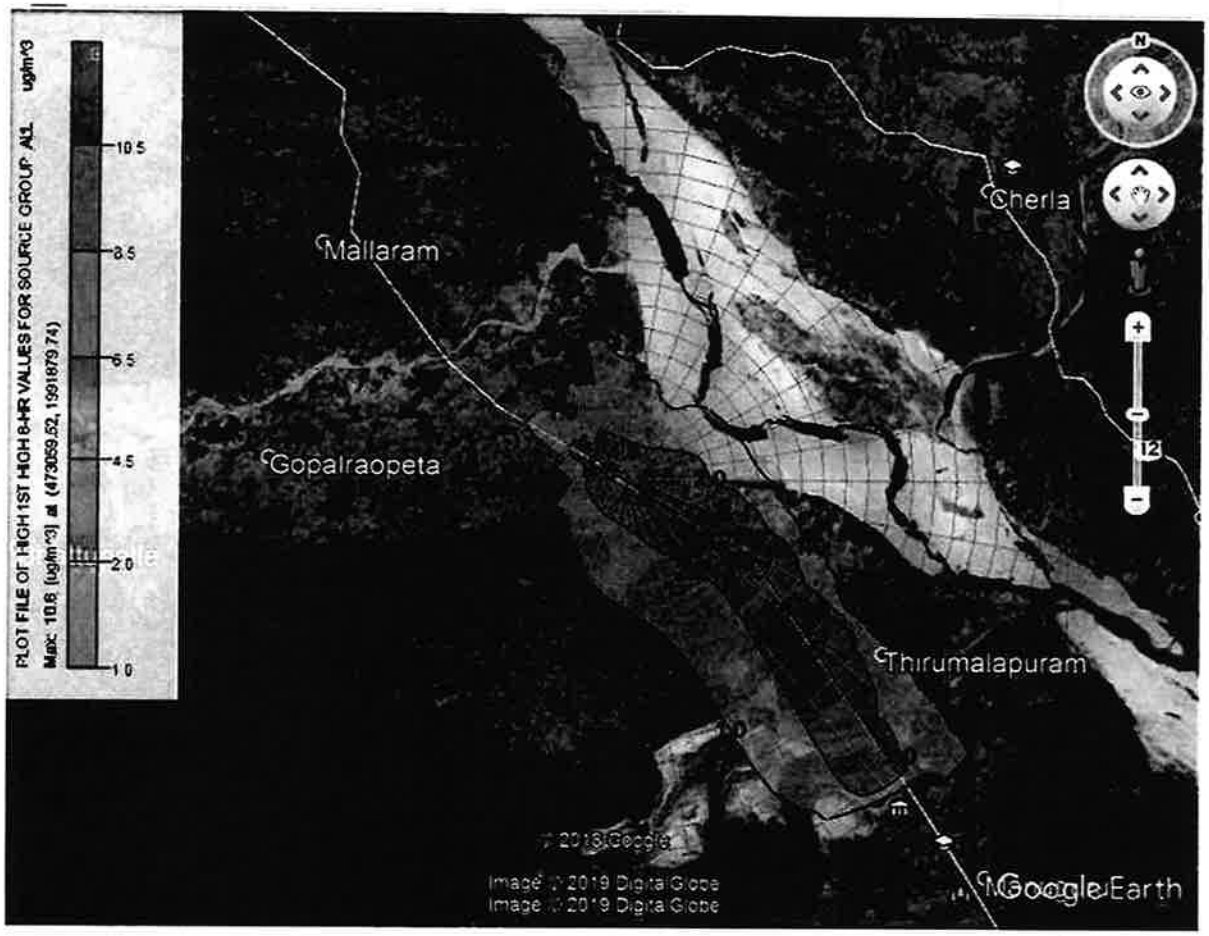
3.5 GROUND LEVEL CONCENTRATIONS DUE TO VEHICULAR TRAFFIC

Maximum Incremental ground level concentrations due to emissions from Vehicular Traffic are given below:

TABLE 3 - MAXIMUM GROUND LEVEL CONCENTRATIONS (µg/m³) DUE TO VEHICULAR TRAFFIC ON ROAD CONNECTING POWER PLANT TO MANUGURU MINES

	Carbon Monoxide (CO)	**Hydro carbon (HC)**	**Oxides of Nitrogen (NOx)**	**Particulate Matter (PM)**
	µg/m³			
	8 hourly basis	24-hourly basis	24-hourly basis	24-hourly basis
Vehicular Traffic due to coal movement with 28 trucks/hr	10.9	3.05	11.1	0.06
Isopleth enclosed	**Fig – 1**	**Fig – 2**	**Fig – 3**	**Fig – 4**

Isopleths showing distribution of ground level concentrations of **Carbon Monoxide (CO), Hydro carbon, Oxides of Nitrogen and Particulate Matter** are shown in **Fig – 1 to Fig – 4**



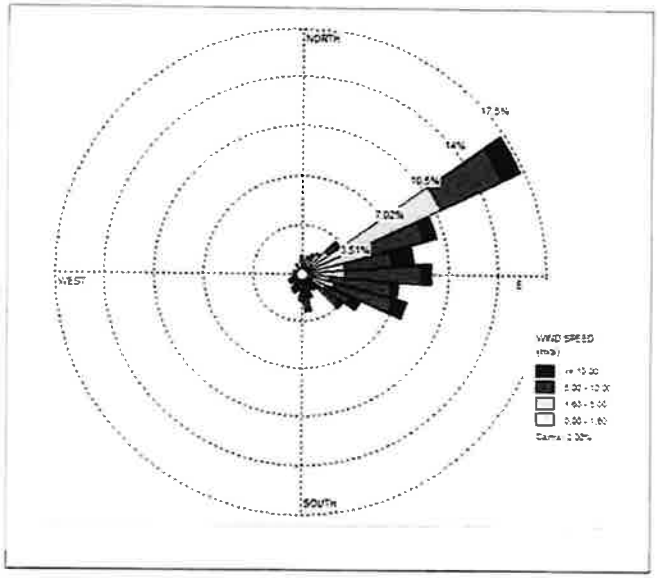


FIG - 1

ISOPLETH SHOWING GROUNDLEVEL CONCENTRATIONS OF CARBON MONOXIDE DUE TO VEHICULAR MOVEMENT TRANSPORTING COAL FROM MANUGURU MINES TO BHADRADRI THERMAL POWER PLANT AT THE RATE OF 28 TRUCKS/HR ON ROAD WITH LEAD LENGTH OF 9.4 KM (SUMMER SEASON)

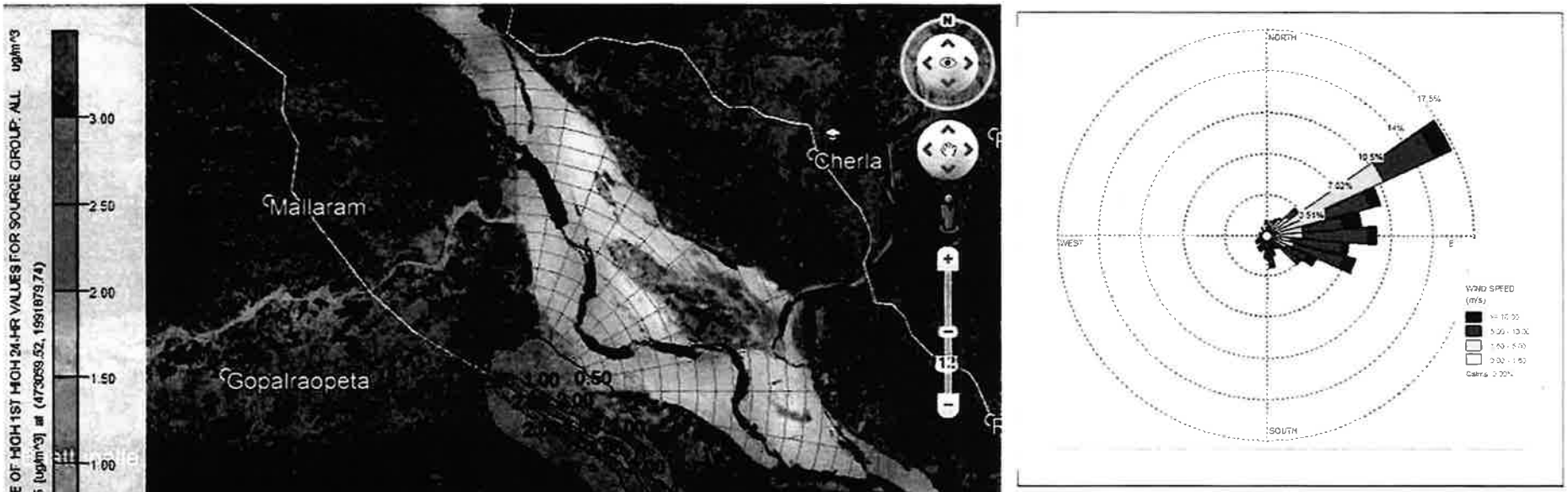
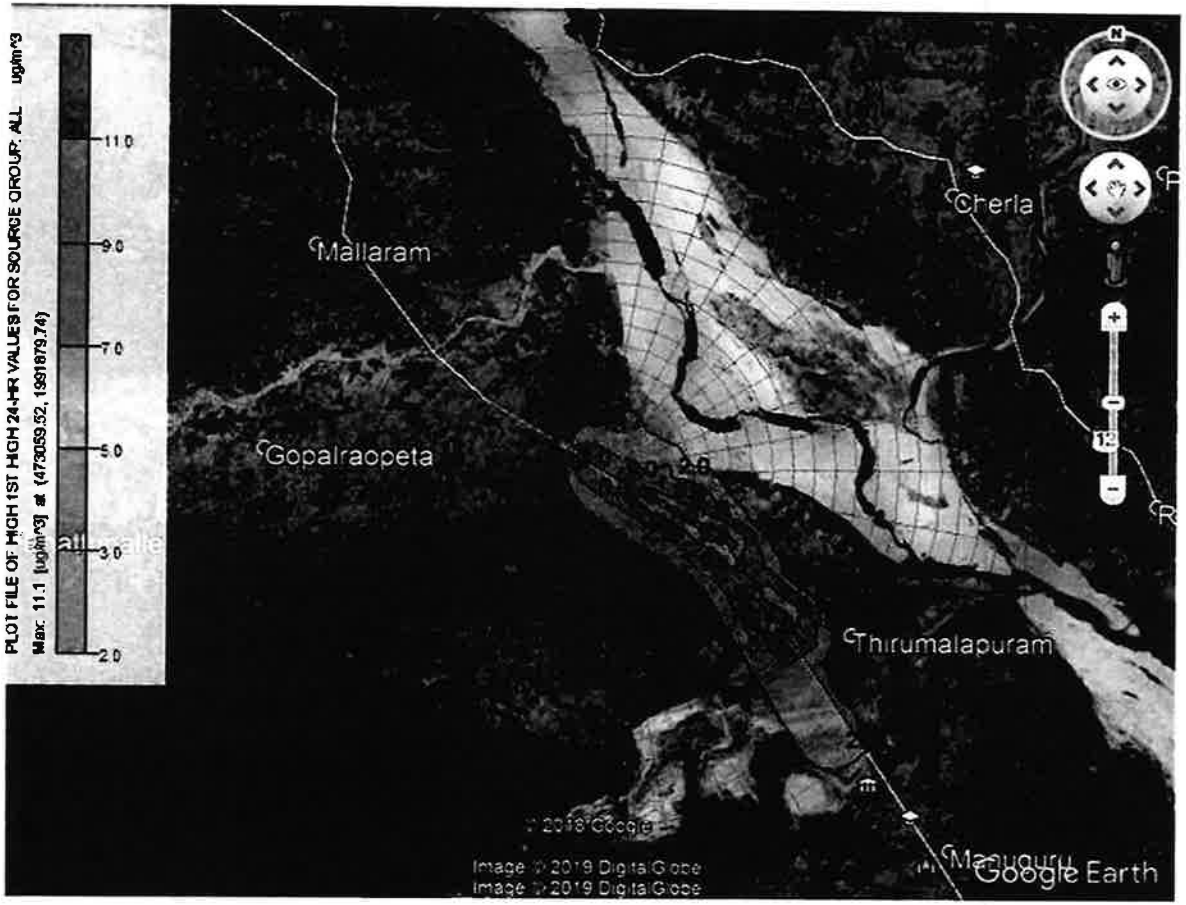


FIG - 2

ISOPLETH SHOWING GROUNDLEVEL CONCENTRATIONS OF HYDROCARBON DUE TO VEHICULAR MOVEMENT TRANSPORTING COAL FROM MANUGURU MINES TO BHADRADRI THERMAL POWER PLANT AT THE RATE OF 28 TRUCKS/HR ON ROAD WITH LEAD LENGTH OF 9.4 KM

(SUMMER SEASON)



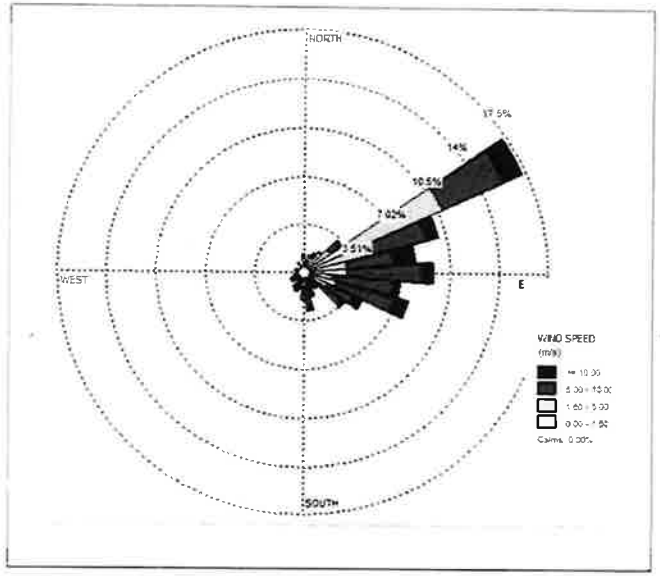
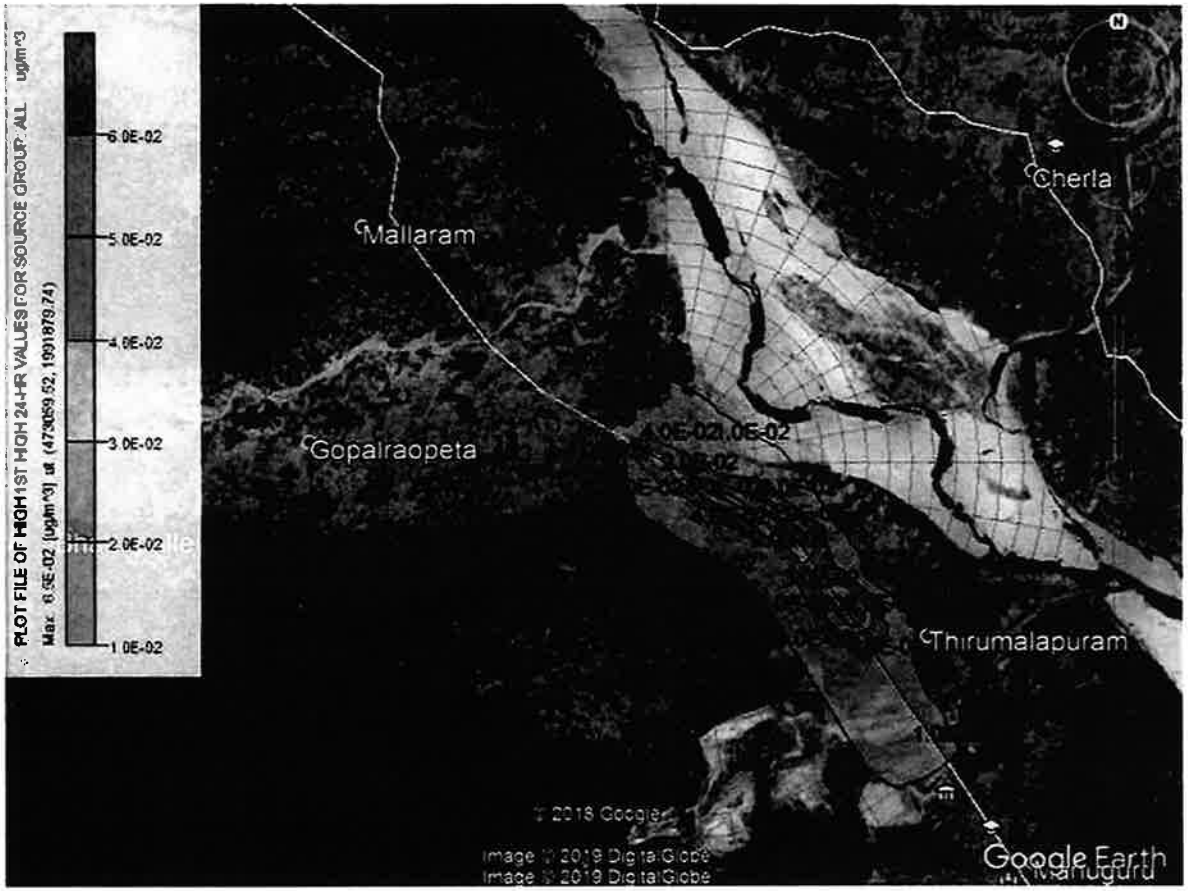


FIG - 3

ISOPLETH SHOWING GROUNDLEVEL CONCENTRATIONS OF NO_X DUE TO VEHICULAR MOVEMENT TRANSPORTING COAL FROM MANUGURU MINES TO BHADRADRI THERMAL POWER PLANT AT THE RATE OF 28 TRUCKS/HR ON ROAD WITH LEAD LENGTH OF 9.4 KM (SUMMER SEASON]



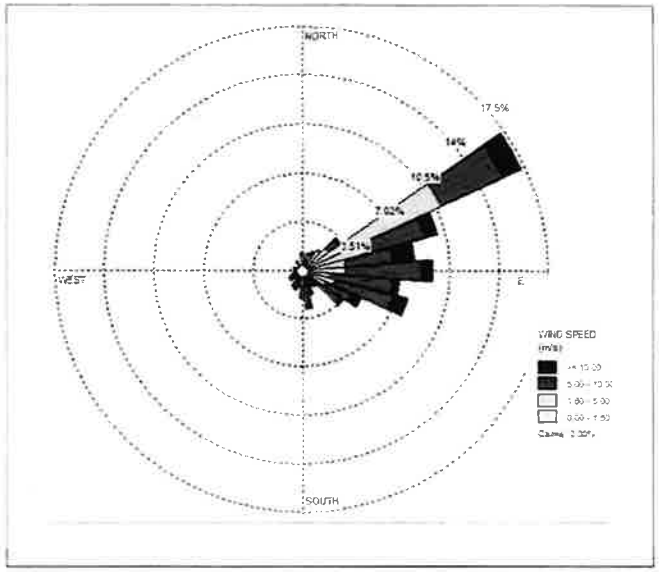


FIG - 4

ISOPLETH SHOWING GROUNDLEVEL CONCENTRATIONS OF PARTICULATE MATTER DUE TO VEHICULAR MOVEMENT TRANSPORTING COAL FROM MANUGURU MINES TO BHADRADRI THERMAL POWER PLANT AT THE RATE OF 28 TRUCKS/HR ON ROAD WITH LEAD LENGTH OF 9.4 KM (SUMMER SEASON)

4.0 ENVIRONMENTAL MANAGEMENT MEASURES

TSGENCO will take up the following EMP measures during the period of coal transport by road on the connecting Power Plant and Manuguru Mines.

a. Closed trucks will be employed for transport of Coal

b. Trucks Pollution Under Control (PUC) will be employed

c. Plantation of locals species to be taken up along the road on either side will be done

d. Monitoring on coal carrying trucks to ensure compliances such as covering of trucks by tarpaulin, spillage on roads, avenue plantation etc.

5.0 AMBIENT AIR QUALITY MONITORING

Ambient air quality will be monitored at following villages which arc located along the transport route on regular basis during the period of Road Transport

TABLE 4 - AAQ MONITORING STATIONS

AAQ Monitoring Locations	**MONITORING STATIONS**	
	A1	Main gate of Power plant
	A2	Ramnujavaram village
	A3	Sambayagudem village
	A4	Chikkudugunta village
Monitoring Frequency	Twice a week	
Parameter of monitoring	PM_{10}, $PM_{2.5}$, SO_2, NOx & CO	

6.0 BUDGET FOR ENVIRONMENTAL MANAGEMENT MEASURES

An amount of Rs. 2,50,000 /- as capital cost and Rs. 8,40,000 / - per annum under recurring cost will be incurred during the period of coal transport by road

TABLE 5 - BUDGET FOR ENVIRONMENTAL MANAGEMENT MEASURES

	Capital cost (Rs.)	**Recurring cost /annum (Rs)**
Ambient Air Quality Monitoring at 3 villages	-	8,00,000 /-
Plantation (2 rows at 50 m gap on either side of the road)	2,50,000	40000 /-
Total	**2,50,000**	**8,40,000 /-**

* * *