

# **WILDLIFE CONSERVATION AND MANAGEMENT PLAN FOR**



**EXCHANGE YARD (INTERMEDIATE CROSSING STATION) WITHIN  
THE FOREST LAND PROPOSED FOR THE DIVERSION FOR  
LAYING OF THE RAILWAY LINE FROM VISHNUPURAM RAILWAY  
STATION TO (5X800MW) YADADRI THERMAL POWER STATION,  
VEERLAPALEM (V), DAMECHERLA (M), NALGONDA DIST. AND  
LAYING OF RAW WATER PIPELINE**

**INSIDE**

**RAJAGUUTA RF AND ADIVIDEVULAPALLI RF BLOCKS,  
NALGONDA DIVISION**



**TELANGANA STATE POWER GENERATION CORPORATION LTD  
VIDYUT SOUDHA, HYDERABAD, TELANGANA STATE**

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## **CONTENTS**

| <b>S.No</b>             | <b>TITLE</b>   | <b>PAGE No.</b> |
|-------------------------|--|-----------------|
| <b>Acknowledgements</b> |  |                 |
| <b>1</b>                | <b>Preamble</b>  | <b>1</b>        |
| <b>2</b>                | <b>YTPS Coal and Water Supply Activities</b>                                     | <b>2</b>        |
| <b>3</b>                | <b>Study Area</b>  | <b>5</b>        |
| <b>3.1</b>              | <b>Rajagutta Reserve Forest</b>  | <b>5</b>        |
| <b>3.2</b>              | <b>Adavidevulapalli Reserve Forest</b>   | <b>6</b>        |
| <b>4</b>                | <b>Study Objectives</b>  | <b>8</b>        |
| <b>5</b>                | <b>Study Approach and Methods</b>  | <b>9</b>        |
| <b>5.1</b>              | <b>Vegetation Methodology</b>  | <b>9</b>        |
| <b>5.2</b>              | <b>Methodology for Faunal and Wild Animals</b>                                   | <b>9</b>        |
| <b>5.3</b>              | <b>Assessment of Land Use Land Cover patterns in and around proposed project</b> | <b>10</b>       |
| <b>5.4</b>              | <b>Discussions with local communities</b>  | <b>11</b>       |
| <b>5.5</b>              | <b>Analysis of field data</b>  | <b>12</b>       |
| <b>6</b>                | <b>Study Observations and Findings</b>   | <b>13</b>       |
| <b>6.1</b>              | <b>Ecology and Biodiversity</b>  | <b>13</b>       |
| <b>6.2</b>              | <b>Flora</b>   | <b>13</b>       |
| <b>6.3</b>              | <b>Fauna</b>   | <b>16</b>       |
| <b>7</b>                | <b>Impacts of the Project Activities</b>   | <b>19</b>       |
| <b>7.1</b>              | <b>Impacts of the Railway Exchange Yard on Rajagutta RF</b>                      | <b>19</b>       |
| <b>7.2</b>              | <b>Impacts of Laying Water Pipeline in Adavidevulapalli RF</b>                   | <b>20</b>       |
| <b>8</b>                | <b>Proposed Mitigation Plan for the Impacts Identified</b>                       | <b>21</b>       |
| <b>9</b>                | <b>Plantation work</b>   | <b>24</b>       |
| <b>9.1</b>              | <b>Selection of species for green belt</b>                                       | <b>24</b>       |
| <b>10</b>               | <b>Budgetary provision</b>   | <b>26</b>       |
| <b>Figures</b>          |  |                 |
| <b>Figure 1</b>         | <b>Proposed Railway line crossing Rajagutta RF</b>                               | <b>5</b>        |
| <b>Figure 2</b>         | <b>LULC map of the Rajagutta RF</b>  | <b>6</b>        |
| <b>Figure 3</b>         | <b>Proposed water pipeline crossing Adavidevulapalli RF</b>                      | <b>7</b>        |
| <b>Figure 4</b>         | <b>Vegetation in the Rajagutta RF</b>  | <b>7</b>        |
| <b>Figure 5</b>         | <b>Line transect method</b>  | <b>10</b>       |
| <b>Figure 6</b>         | <b>Random walk method</b>  | <b>10</b>       |
| <b>Figure 7</b>         | <b>Discussion with TSGENCO officials during field visit</b>                      | <b>11</b>       |
| <b>Tables</b>           |  |                 |
| <b>Table 1</b>          | <b>Flora enumerated in the both railway line and raw water pipeline</b>          | <b>14</b>       |
| <b>Table 2</b>          | <b>Fauna encountered in the both Reserved Forests</b>                            | <b>17</b>       |
| <b>Table 3</b>          | <b>List of plant species recommended for Greenbelt</b>                           | <b>25</b>       |

|                      |   |           |
|----------------------|---|-----------|
|                      | <b>development</b>  |           |
| <b>Table 4</b>       | <b>The proposed budget for intervention for intervention by project authorities</b> | <b>26</b> |
| <b>Table 5</b>       | <b>The proposed budget for intervention by Forest Department</b>                    | <b>26</b> |
| <b>Annexure</b>      |   |           |
| <b>Annexure I</b>    | <b>YTPS Environmental clearance</b>   |           |
| <b>Annexure II</b>   | <b>Railway line Final Layout</b>  |           |
| <b>Annexure III</b>  | <b>DGSP Surveyed Forest Map (railway Line)</b>                                      |           |
| <b>Annexure VI</b>   | <b>Key plan for Proposed Exchange Yard in forest area</b>                           |           |
| <b>Annexure V</b>    | <b>RITES Justification</b>  |           |
| <b>Annexure VI</b>   | <b>Cross Section of Railway line bank</b>   |           |
| <b>Annexure VII</b>  | <b>Pipeline Layout</b>  |           |
| <b>Annexure VIII</b> | <b>DGPS Surveyed Forest Map (Pipeline)</b>  |           |
| <b>Annexure IX</b>   | <b>L Section Railway line corridor in forest area</b>                               |           |
| <b>Annexure X</b>    | <b>Proposed Wildlife Underpasses at Exchange Yard in Rajagutta RF</b>               |           |



## 1. PREAMBLE:

Telangana state Power Generation Corporation Limited (TSGENCO) is constructing (5X800MW) Super Critical coal based Thermal Power station at Veerlapalem (village), Dameracherla (mandal), Nalgonda District. Prior Environmental Clearance for the project was issued by the MoEF&CC, GOI (Vide Letter No. J-13012/18/2015-IA-I (T) dated 29.06.2017) (Annexure I) and the Consent for Establishment was obtained from TSPCB (vide Letter No. 10/TSPCB/CEF/RO-NLG/HO/2017, dated 25.07.2017).

The project has TWO major lifeline systems, which utilize the land that is not within the project site boundaries. These lifeline systems are for (1) Coal transportation from Singareni Collieries mines to the YTPS by a Railway corridor; and (2) for drawl of Water from river Krishna and supply through an underground pipeline to YTPS. These two systems require the diversion of forest lands (12.6203 Ha for Rail Corridor; and 0.5747 Ha for the Water pipeline system) for which an application for diversion of **Forest land** is submitted vide online proposal No. FP/TG/RAIL/I48038/2021, dated 05.10.2021 and MoEF&CC,GOI has directed to submit **Wildlife Mitigation Plan** keeping in view of the fragmentation of forest habitat by the proposed railway corridor.

TSGENCO has entrusted the work to M/S SV Enviro labs & Consultants, Visakhapatnam, a NABET Accredited Environmental Consultant to coordinate and develop Wildlife Mitigation Plan for the YTPS project, on the lines and terms suggested by the MoEF&CC, GOI. Accepting the work, M/S SV Enviro labs & Consultants, Visakhapatnam in collaboration with Dr. K. Kameswara Rao, former Professor and Head of the Environmental Sciences department of Andhra University, and former member of the AP State (Combined AP) Wildlife Advisory Board, studied the forests related to the project for preparing the mitigation plan for the approval of the TS Forest department and the State Chief Wildlife Warden. The two activities and their mitigation plans are presented separately, while the ecological baseline of the forests was presented combining both the reserve forests, as they did not vary in much as they belong to the same zone and forest division and supported almost same types of species.

## **2. YTPS COAL AND WATER SUPPLY ACTIVITIES:**

The two lifeline systems that supply coal and water to the YTPS activities require dedicated supply systems for accessing the required coal and fresh water for the project use and these have to be accessed from areas other than the project area. The coal supply is from the north-eastern side of the project area while water has to be drawn from the southern side. These two activities are briefly described below:

### **ACTIVITY 1: RAILWAY CORRIDOR BETWEEN VISHNUPRAM RS AND YTPS:**

The project was given Prior Environmental Clearance (PEC) with the *Specific Conditions* that

*(A. iii) the coal transportation shall be done through RAIL only from SCCL mines; and*

*(A.iv) there shall not be any displacement during land acquisition for railway corridor.*

M/s. South Central Railways have approved the proposal of TSGENCO to develop the railway corridor from Vishnupuram railway station on Bibinagar-Nadikudi main line of South-Central Railway (Annexure II). Hence, it is proposed to construct B.G Railway line from Vishnupuram railway station (as serving station) to (5x800MW) YTPS, Veerlapalem (V), Dameracherla (M), Nalgonda District to receive the coal rakes.

M/S RITES Limited, Secunderabad have surveyed the route for the above said railway corridor. After analysing three *Alternative routes*, M/S RITES prepared the feasibility report for the said railway corridor for the TSGENCO project YTPS. M/S. South Central Railways, Secunderabad have already accorded approval to the feasibility study report for the above railway siding vide Letter No.T.143/GNT/496, Dated.25.09.2019 and Detailed Project Report approved vide letter No. GNT/T.143/YTPS/RDPR/Approval/2021/11/a, Dt.24.11.2021.

The proposed railway corridor of the YTPS, has a route length of 10.69 km from Vishnupuram railway station to the YTPS plant yard. Of the total length, about 1.3 km of route is passing through Rajagattu Reserve Forest block, Dameracherla (M), Nalgonda Dist and for the length of 1.3 km, an area of 12.6203 ha is required (Annexure III).

Although the length of Siding from take-off station to Marshalling Yard is about 10.69 Km and there was no feasibility to hold the YTPS Coal traffic at take-off station Vishnupuram. Thus, creating an ***intermediate crossing station/Exchange Yard*** (Annexure IV) on the lead line/siding line at the most feasible (geographically/technical/ operational) location has become vital in order to regulate/handle uninterrupted, continuous coal rakes movement of 14-15 rakes incoming and outgoing i.e., total 30 rakes/day to the In-plant Yard for supply of 14 MTPA coal quantity. Therefore, the rail corridor shall have an intermediate crossing station/Exchange yard.

Exchange yard (Intermediate Crossing station) is to be constructed in straight alignment as far as possible with level/flatter gradient of 1 in 1200 and up to steepest gradient of 1 in 400 in economical land width as per Railway norms and also on curvature of not more than 2 degree (i.e., 875mts radius) under unavoidable circumstances. Under the safety norms, the site for constructing the Exchange Yard should meet the following three basic norms:

1. There should not be any entry curves sharper than 4 degree (i.e., radius of 450 mts) to the approaching yard design.
2. There should not be any reverse curve alignment on either side of the yard as per Railway visibility norms of Rail traffic.
3. Curvature of not more than 2 degrees (i.e. 875 m radius)

The only geotechnically feasible site, along the 10.69 km route length of the railway corridor, for constructing the Intermediate Station/Exchange Yard, was found in the area where the line passes through the Rajagutta Reserve forest lands, as it is the only location that is meeting with all the three basic norms. (RITES report – Annexure V).

For the provision of this yard design and for 7 full length Clear Standing Room (CSR) of each line 750 m along with track ladder design length as well as traffic safety devices such as over shoot line etc., there must be 1300 m to 1600 m length with a bare minimum width of 100 m and was planned at the location where the height of bank is less than 6.00 m (Annexure IV) and through terrain where there is gentle slope transversely and cross section attached as Annexure VI.

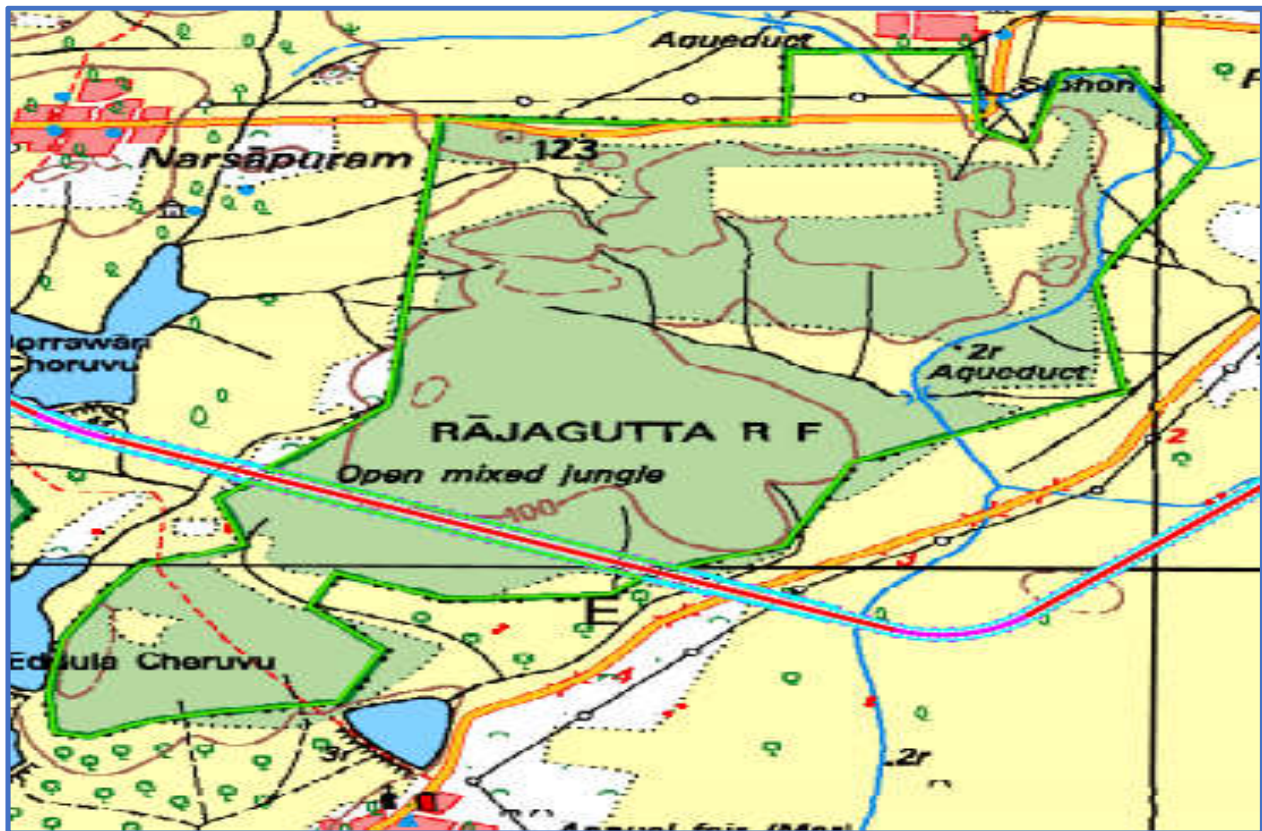
**ACTIVITY 2: LAYING OF UNDERGROUND RAW WATER PIPELINE**  
**FROM KRISHNA RIVER TO YTPS:**

The TSGENCO has obtained prior environmental clearance for laying of raw water pipeline from Krishna River. Accordingly it is proposed for laying an underground pipeline of about 20 km length from U/S of Tail pond of Nagarjuna Sagar dam on Krishna river to YTPS plant to draw 120 Cusecs (3.784 TMC) of water required for synchronization of above project (Annexure VII). The total land required for the 20 km long pipeline and for construction of Raw water Intake structure at the bank of the river Krishna is 32.94 ha. A small part (an extent of 0.5747 Ha for length of 0.43 km ) of the land required for raw water pipe line is falling in the forest land under Adividevulapally Reserve Forest block in Adividevulapally (M), Nalgonda Dist. (Annexure VIII). The construction works of Raw water intake & pipeline were awarded to M/s NCC Limited, Hyderabad and these works are in progress in all along the route, with the exception of 0.43 km part in the forest area.

### 3. STUDY AREA:

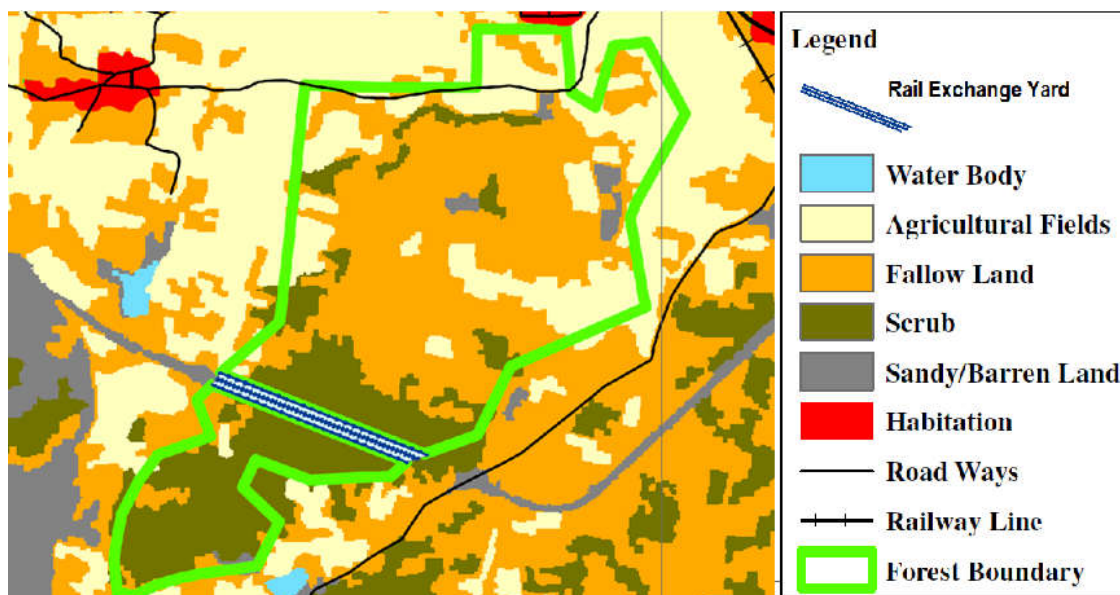
#### 3. 1. Rajagutta Reserve Forest:

The Rajagutta Reserved Forest (16°42'4.03"N Latitude 79°35'48.40"E Longitude and 16°43'46.87"N Latitude 79°37'26.98"E Longitude) is in Veerlapalem Village, Dameracherla Mandal of Nalgonda District of Telangana State, and has a spread of 479.4253 ha. It is abutting the Northeastern boundary of the YTPS project site (Fig. 1).



**Fig 1. Proposed Railway line of 1.3 km length crossing Rajagutta RF**

The terrain of the forest is undulating, with sandy and gravelly soils, and the altitudinal range varied from 100 to 120 m above MSL. Some small habitations and villages exist in a scattered way around the reserve forest, and some parts of the area is presently being used for grazing the small cattle and some parts of the area is under unauthorized cultivation.



**Fig. 2. LULC map of the Rajagutta RF**

The Land Use map of the Rajagutta Reserve forest area (Fig. 2) show that the area presently is not supporting any significant tree cover and only a scrub jungle is existing in the southern region. More than 40% of the area has become *Fallow*, while the scrub jungle accounts for 30% and the remaining 30% is under agriculture.

### **3.2. Adividevulapalli Reserve Forest:**

The Adividevulapalli Reserve Forest (16°37'37.32"N Latitude 79°28'20.92"E Longitude and 16°38'43.19"N Latitude 79°31'11.52"E Longitude) is located in Adividevulapalli Village, Adavidevulapalli Mandal of Nalgonda District of Telangana State, and has a spread of 1140 ha (Fig 3).

The terrain of the forest is relatively plain compared to Rajagutta reserve forest, with sandy soils, and the altitudinal range varied narrowly from 90 to 100 m msl. Some small agricultural villages exist around the reserve forest, and some parts of the area is presently being used for grazing the small cattle and some parts of the area is under unauthorized cultivation as was also the case in Rajagutta reserve forest.



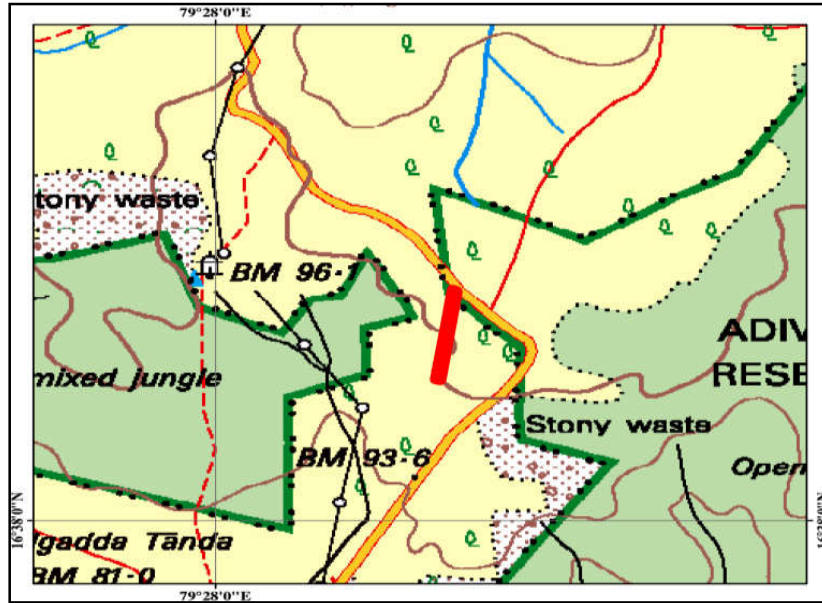


Fig 3. Proposed water pipeline length of 0.43 km crossing Adividevulapalli RF



Fig 4. Vegetation in the Rajagutta RF

#### **4. STUDY OBJECTIVES:**

- To assess and ascertain existing flora and fauna in the Reserved Forest
- Evaluate the impacts of the proposed Railway line passing through the Rajagutta Reserved Forest on the habitat integrity and on the movement of the wild animals, and
- Propose mitigation measures, including both structural features and management actions to address likely impacts on habitat connectivity and movement of wild animals across the road.



## **5. STUDY APPROACH AND METHODS:**

To achieve the above objectives of the project, the following methods were used:

- Review of existing literature: Very meagre information is available on the ecology and biodiversity of the specific forests of the study area. However, some information is available at the district level, which was reviewed and compared with the study area baseline data submitted to the MoEF&CC for the project appraisal. The available reports of Telangana Forest Department Nalgonda were also perused to look at the history of the area as well as population trends of wild animals.
- In-house discussion among the SV Enviro Ecology & Biodiversity group and worked out the methodology of field surveys and other details of field visits.
- Field Surveys: Two field visits were undertaken to Rajagutta RF and Adividevulapalli RFs from 14<sup>th</sup> to 16<sup>th</sup> April 2023. These visits were utilized for understanding the situation of the area, carrying out field surveys and for initiating an engagement with the communities and other stakeholders.

### **5.1. Vegetation Methodology:**

A comprehensive list of the plant species of the study area was made based on the plant species collected during study period by the survey teams. The species were further separated in to trees and shrubs (perennials), herbaceous species, medicinal and aquatic plants. These plants were identified with the help of Flora of Andhra Pradesh (Pullaiah et al 1997) and eFloras (2014). A detailed study of the entire block area was undertaken. The different methods adopted were as follows:

- Compilation of secondary data with respect to the study area from published literature Forest Department and Government agencies;
- Generation of primary data by undertaking systematic ecological studies in the area;
- Discussion with local people so as to elicit information about local plants, animals and their uses; and

### **5.2. Methodology for Faunal and Wild Animals:**

A combination of the methods were used to understand the presence of fauna in the study area of both the reserve forests. Firstly, the Baseline data reported in the EIA report

was considered, as it was made in the area of 10 km radius from the project boundaries and covered the Rajagutta Reserve forest and Adividevulapalli Reserve forest. Secondly, we have collected information from the state forest department and the Wildlife wing; in the third step interacted with the locals conducting focal group discussions with the farmers, herdsman, academics, and the senior citizens living in the villages nearby. With all this information, rapid field surveys were made using standard methods to validating the presence of the faunal groups by direct and indirect evidences.



**Fig 5. Line transect method**



**Fig 6. Random walk method**

### **5.3. Assessment of Land Use Land Cover patterns in and around proposed project**

The following methodology adopted to achieve the objectives of the present study  
Procurement of Satellite images.

- Collection of source data of Survey of India (SOI) toposheets. These are the main inputs for the preparation of essential layers.
- Atmospheric and Radiometric corrections of Satellite data by using nearest neighbourhood resampling technique
- Preparation of basic themes like layout map, transport & settlement map and contour map from the source data. Then updating of layout map, transport map and drainage map from the satellite image by visual interpretation
- Performing image analysis in ArcGIS and Extraction of whole satellite image into study area, processing and producing various maps such as LULC, Contour Maps, Digital Elevation Maps, Drainage Maps
- Preliminary quality check and necessary corrections are carried out for all the maps.

#### 5.4. Discussions with local communities

To determine the views of the different communities of this landscape with respect to the forthcoming railway line likely impacts of the wildlife conservation in the reserve forest discussion were held. A meeting was held with community representatives and stakeholders on 14<sup>th</sup> April 2023. In this discussion, TSGENCO officials, TS Forest Department and other field staff, officers of M/s. RITES Limited, Secunderabad also participated. The objective of this discussion was to understand the perception of the communities about the area and the proposed railway line and raw water pipeline projects. This discussion also helped us to apprise the participant about our own fieldwork and the provisions of the Government of India, which need to be complied for undertaking the railway line and raw water pipeline projects in the reserve forest. After detailed discussions, many important consensuses regarding the mitigation strategies of the railway line and raw water pipeline projects as well as for the future management of the reserve forest could be arrived at.



**Fig 7. Discussion with TSGENCO officials during field visit**

### **5.5. Analysis of field data**

The data obtained from the field were analysed using existing data. The primary data obtained from the survey were analysed in association with the available secondary data with the Forest Department. Based on the analysis of data, decisions of the meeting with officers of TSGENCO and forest department, Telangana and the final report of this study was prepared.

## 6. STUDY OBSERVATIONS AND FINDINGS:

Although both the forest blocks are different, they are two different patches of the same agroecological zone and has a similar history of the degradation history and impacts of the human activities. The type of ecosystem, ecological community, habitats and the species composition are more or less similar. Therefore, the findings were described commonly for both the forests.

### 6.1. Ecology and Biodiversity:

The current state of both the Rajagutta and Adividevulapalli Reserve Forests can be considered as severely degraded with a long history of selective removals, grazing, encroachments by the subsistence farmers. The forests were recorded as “*Open Mixed Jungle*” in the Survey of India Topo Maps. However, considering the terrain and vegetation composition it can be considered as *Tropical Dry Thorny Scrub*. Tree density and cover are very scarce and insignificant. Presence of different xerophytic plants indicate the semi-arid environment of the forest.

### 6.2. Flora:

The general terrain of the site is rolling with stony exposures, supporting rock out crops. The flora of Rajagutta and The major tree species found in the area that is 100 m width and 1.3 km length. Common tree species are *Grewia tiliaefolia*, *Azadirachta inidca*, *Albizia amara*, *Acacia Arabica*, *Acacia sundra*, *Wrightia tinctoria*, *Cleistanthus collinus*, *Mundelia sericea*, and *Dichrostachys cinerea* and *Morinda pubescens*. The area has 30-40% shrub cover with bushes. The major species occurring are shrubs in the study area. The grass cover is sparse as there is heavy intensity of grazing by cattle on the ground vegetation. It was observed that common weeds of *Cassia tora*, *Sida* sps are occurring. Constant grazing has resulted in the loss of soil fertility. The regeneration status in the area is far below appreciable levels due to forest fire and heavy biotic pressures on the area. A list of plant species representing trees, shrubs, and herbs in the following table. Plant species were recorded during floristic survey in the study area. The names of the family and the local names (wherever possible) also given in Table 1.

**Table 1. Flora enumerated in the both railway line and raw water pipeline**

| S.No. | Botanical Name                 | Family           | Vernacular Name | Habit   |
|-------|--------------------------------|------------------|-----------------|---------|
|       | <b>Trees</b>                   |                  |                 |         |
| 1     | <i>Acacia arabica</i>          | Mimosaceae       | Nalla tumma     | Tree    |
| 2     | <i>Acacia leucophloea</i>      | Mimosaceae       | Tella tumma     | Tree    |
| 3     | <i>Acacia sundra</i>           | Mimosaceae       | Sundra          | Tree    |
| 4     | <i>Alangium salvifolium</i>    | Alangiaceae      | Udugu           | Tree    |
| 5     | <i>Albizia amara</i>           | Mimosaceae       | Narlingi        | Tree    |
| 6     | <i>Azadirachta indica</i>      | Meliaceae        | Vepa            | Tree    |
| 7     | <i>Borassus flabellifer</i>    | Arecaceae        | Taati           | Tree    |
| 8     | <i>Canthium dicoccum</i>       | Rubiaceae        | Nalla Balusu    | Tree    |
| 9     | <i>Cassia fistula</i>          | Caesalpiniaceae  | Rela            | Tree    |
| 10    | <i>Morinda pubescens</i>       | Rubiaceae        | Thogaru         | Tree    |
| 11    | <i>Phoenix sylvestris</i>      | Arecaceae        | Eetha           | Tree    |
| 12    | <i>Pongamia pinnata</i>        | Fabaceae         | Kanuga          | Tree    |
| 13    | <i>Ziziphus mauritiana</i>     | Rhamnaceae       | Regu            | Tree    |
|       | <b>Shrubs</b>                  |                  |                 |         |
| 14    | <i>Abutilon indicum</i>        | Malvaceae        | Thuturabenda    | Shrub   |
| 15    | <i>Acacia caesia</i>           | Mimosaceae       | Korintha        | Shrub   |
| 16    | <i>Alhagi maurorum</i>         | Fabaceae         | Tella jinyagi   | Shrub   |
| 17    | <i>Benkara malabarica</i>      | Rubiaceae        | Pedda manga     | Shrub   |
| 18    | <i>Breynia vitis-idea</i>      | Euphorbiaceae    | Nalla purugudu  | Shrub   |
| 19    | <i>Canthium parviflorum</i>    | Rubiaceae        | Balusu          | Shrub   |
| 20    | <i>Capparis divaricata</i>     | Capparidaceae    | Budareni        | Shrub   |
| 21    | <i>Capparis sepiaria</i>       | Capparidaceae    | Nalla uppi      | Shrub   |
| 22    | <i>Carissa spinarum</i>        | Apocyanaceae     | Vaka            | Shrub   |
| 23    | <i>Cassia auriculata</i>       | Caesalpiniaceae  | Thangedu        | Shrub   |
| 24    | <i>Catunaregum spinosa</i>     | Rubiaceae        | Manga           | Shrub   |
| 25    | <i>Euphorbia caducifolia</i>   | Euphorbiaceae    | Brahma jemudu   | Shrub   |
| 26    | <i>Flacourtia indica</i>       | Flacourtiaceae   | Ramanchi        | Shrub   |
| 27    | <i>Flueggea virosa</i>         | Euphorbiaceae    | Purugudu        | Shrub   |
| 28    | <i>Grewia tenax</i>            | Tiliaceae        | Kaladi          | Shrub   |
| 29    | <i>Gymnosporia spinosa</i>     | Celastraceae     | Tandarsi        | Shrub   |
| 30    | <i>Helicteris isora</i>        | Sterculiaceae    | Nulitada        | Shrub   |
| 31    | <i>Maytenus emarginata</i>     | Celastraceae     | Danti           | Shrub   |
| 32    | <i>Mimosa hamata</i>           | Mimosaceae       | Undrakampa      | Shrub   |
| 33    | <i>Mimosa rubicaulis</i>       | Mimosaceae       | Korintha        | Shrub   |
| 34    | <i>Phyllanthus reticulatus</i> | Euphorbiaceae    | Pulasari        | Shrub   |
| 35    | <i>Tamilnadia uliginosa</i>    | Rubiaceae        | Adavi manga     | Shrub   |
| 36    | <i>Ziziphua xylopyrus</i>      | Rhamnaceae       | Gachakaya       | Shrub   |
|       | <b>Climbers</b>                |                  |                 |         |
| 37    | <i>Aristolochia bracteata</i>  | Aristolochiaceae | Gadidagadapaku  | Climber |

|    |                                  |                 |                 |         |
|----|----------------------------------|-----------------|-----------------|---------|
| 38 | <i>Cardiospermum helicacabum</i> | Sapindaceae     | Buddakakara     | Climber |
| 39 | <i>Cayratia trifolia</i>         | Vitaceae        | Kanupu tiga     | Climber |
| 40 | <i>Celastrus paniculatus</i>     | Celastraceae    | Manertiga       | Climber |
| 41 | <i>Cissampelos pareira</i>       | Menispermaceae  | Chiruboddi      | Climber |
| 42 | <i>Cissus quadrangularis</i>     | Vitaceae        | Nalleru         | Climber |
| 43 | <i>Cissus trifoliata</i>         | Vitaceae        | Kanuputiga      | Climber |
|    | <b>Herbs</b>                     |                 |                 |         |
| 44 | <i>Acanthospermum hispidum</i>   | Asteraceae      | Palleru         | Herb    |
| 45 | <i>Achyranthes aspera</i>        | Amaranthaceae   | Uttareni        | Herb    |
| 46 | <i>Aerva lanata</i>              | Amaranthaceae   | Pindidonda      | Herb    |
| 47 | <i>Agave americana</i>           | Agavaceae       | Kithanara       | Herb    |
| 48 | <i>Alteranantthera pungens</i>   | Amaranthaceae   |                 | Herb    |
| 49 | <i>Alternanthera sessilis</i>    | Amaranthaceae   | Ponna gantikura | Herb    |
| 50 | <i>Ammania baccifera</i>         | Lythraceae      |                 | Herb    |
| 51 | <i>Bergia capensis</i>           | Elatinaceae     |                 | Herb    |
| 52 | <i>Biophytum sensitivum</i>      | Oxalidaceae     | Pulichinta      | Herb    |
| 53 | <i>Brachiaria ramosa</i>         | Poaceae         | Edurugaddi      | Grass   |
| 54 | <i>Caesulia axillaris</i>        | Asteraceae      | Erragobbi       | Herb    |
| 55 | <i>Cassia absus</i>              | Caesalpiniaceae | Chanupalavitulu | Herb    |
| 56 | <i>Cassia occidentalis</i>       | Caesalpiniaceae | Kasinda         | Herb    |
| 57 | <i>Cassia tora</i>               | Caesalpiniaceae | Tantem          | Herb    |
| 58 | <i>Celosia argentea</i>          | Amaranthaceae   | Gurumu          | Herb    |
| 59 | <i>Chamaesyce hirta</i>          | Euphorbiaceae   |                 | Herb    |
| 60 | <i>Chamaesyce thymifolia</i>     | Euphorbiaceae   |                 | Herb    |
| 61 | <i>Chloris barbata</i>           | Poaceae         | Uppugaddi       | Grass   |
| 62 | <i>Chloris montana</i>           | Poaceae         |                 | Grass   |
| 63 | <i>Chloris villosa</i>           | Poaceae         |                 | Grass   |
| 64 | <i>Chrozophora rotleri</i>       | Euphorbiaceae   | Erra miriyam    | Herb    |
| 65 | <i>Corchorus tridens</i>         | Tiliaceae       |                 | Herb    |
| 66 | <i>Cyanotis axillaris</i>        | Commelinaceae   | Kodi kalu       | Herb    |
| 67 | <i>Cynodon dactylon</i>          | Poaceae         | Gariki          | Grass   |
| 68 | <i>Desmodium pulchellum</i>      | Fabaceae        | Deyyapu mokka   | Herb    |
| 69 | <i>Dinerba retroflexa</i>        | Poaceae         |                 | Grass   |
| 70 | <i>Echinochloa crusgalli</i>     | Poaceae         |                 | Grass   |
| 71 | <i>Echinochloa procera</i>       | Poaceae         |                 | Grass   |
| 72 | <i>Eclipta alba</i>              | Asteraceae      | Guntagalagara   | Herb    |
| 73 | <i>Goniogyna hirta</i>           | Fabaceae        |                 | Herb    |
| 74 | <i>Hedyotis puberula</i>         | Rubiaceae       | Chiruveru       | Herb    |
| 75 | <i>Indigofera linifolia</i>      | Fabaceae        | Gudlaku         | Herb    |
| 76 | <i>Indigofera linnaei</i>        | Fabaceae        | Yerra palleru   | Herb    |
| 77 | <i>Melochia corchorifolia</i>    | Tiliaceae       | Ganugapindikura | Herb    |

|    |                                    |                  |               |       |
|----|------------------------------------|------------------|---------------|-------|
| 78 | <i>Paspalum distichum</i>          | Poaceae          |               | Grass |
| 79 | <i>Pavonia zeylanica</i>           | Malvaceae        | Peramutti     | Herb  |
| 80 | <i>Phyllanthus amarus</i>          | Euphorbiaceae    | Nela usiri    | Herb  |
| 81 | <i>Phyllanthus maderaspatensis</i> | Euphorbiaceae    | Nallausirika  | Herb  |
| 82 | <i>Physalis minima</i>             | Solanaceae       | Kupanti       | Herb  |
| 83 | <i>Sida cordifolia</i>             | Malvaceae        | Suvarnamu     | Herb  |
| 84 | <i>Sida rhombifolia</i>            | Malvaceae        |               | Herb  |
| 85 | <i>Sopubia delphinifolia</i>       | Scrophulariaceae |               | Herb  |
| 86 | <i>Sphaeranthus inidcus</i>        | Asteraceae       | Boddatarapu   | Herb  |
| 87 | <i>Tephrosia procumbens</i>        | Fabaceae         | Vempali       | Herb  |
| 88 | <i>Tephrosia villosa</i>           | Fabaceae         | Nuguvempali   | Herb  |
| 89 | <i>Tragus roxburghii</i>           | Poaceae          |               | Herb  |
| 90 | <i>Urochloa panicoides</i>         | Poaceae          |               | Grass |
| 91 | <i>Xanthium strumarium</i>         | Asteraceae       | Marulumatangi | Herb  |

The project area is largely a degraded ecosystem due to high human pressure, large-scale removal of fodder and timber species for preparation of agricultural fields, etc. As per Red Data Book of India, no rare and endangered species are reported from the project area (Nayar and Sastry, 1987, 1988 & 1990). Since most of forest pockets or forest stands are already converted for agricultural practices in the Rajagutta RF and Adividevulapalli RF areas, there is no possibility of these threatened species to be found in the dry and degraded areas of the proposed project.

### 6.3. Fauna

Major part of the Both RFs dominated with farm practices and scrub forests. The species inhabit this area are well adapted to scrub forests and grasslands. However, it was reported that small mammals such as Hare (*Lepus nigricolis*), and Mongoose (*Herpestes edwardsii*) occur very common in the reserve forest areas.

Presence of a total of 42 species could be confirmed to inhabit this area from primary and secondary sources. Hyaena found in the inner part of forest areas. The species of Herpestidae (Mongoose) are very common species of the region. They inhabit all types of habitats like forests, scrubs, settlements and agricultural fields. Common Indian Hare is also reported from the area. It is widely distributed species and occupies scrubs and grasses. The details of fauna reported in the Table 2.



**Table 2. Fauna encountered in the both Reserved Forests**

| S.No.           | Scientific name               | Common Name            | Vernacular name | IUCN Status | IWPA 1972 Schedule |
|-----------------|-------------------------------|------------------------|-----------------|-------------|--------------------|
| <b>Mammals</b>  |                               |                        |                 |             |                    |
| 1               | <i>Herpestes edwardsii</i>    | Common Mongoose        | Mungisa         | LC          | Schedule II        |
| 2               | <i>Funambulus palmarum</i>    | Three striped squirrel | Udutha          | LC          | Schedule IV        |
| 3               | <i>Mus booduga</i>            | Indian Field Rat       | Yeluka          | LC          | Schedule V         |
| 4               | <i>Bandicota benghalensis</i> | Lesser Bandicoot       | Pandikokku      | LC          | Schedule IV        |
| 5               | <i>Lepus nigricollis</i>      | Indian Hare            | Kundelu         | LC          | Schedule IV        |
| 6               | <i>Canis aureus</i>           | Jackal                 | Nakka           | LC          | Schedule II        |
| 7               | <i>Hyaena hyaena</i>          | Striped Heyana         | Dummalagondi    | NT          | Schedule III       |
| <b>Aves</b>     |                               |                        |                 |             |                    |
| 8               | <i>Egretta garzetta</i>       | Little Egret           | Karchi eagle    | LC          | Schedule IV        |
| 9               | <i>Milvus migrans</i>         | Black kite             | Black kite      | LC          | Schedule IV        |
| 10              | <i>Columbia livia</i>         | Blue Rock Pigeon       | Kabuther        | LC          | Schedule IV        |
| 11              | <i>Streptopelia decactao</i>  | Ring Dove              | Kapothamu       | LC          | Schedule IV        |
| 12              | <i>Streptopelia chinensis</i> | Spooted Dove           | Kapothamu       | LC          | Schedule IV        |
| 13              | <i>Psittacula krameri</i>     | Rose ringed parakeet   | Ramachiluka     | LC          | Schedule IV        |
| 14              | <i>Eudynamis scolopacea</i>   | Asian Koel             | Kokila          | LC          | Schedule IV        |
| 15              | <i>Apus affinis</i>           | House swift            | Babila          | LC          | Schedule IV        |
| 16              | <i>Merops orientale</i>       | Green Bee-eater        |                 | LC          | Schedule IV        |
| 17              | <i>Coracias benghalensis</i>  | Indian Roller          | Palapitta       | LC          | Schedule IV        |
| 18              | <i>Acridotheres tristis</i>   | Common Myna            | Goruvanka       | LC          | Schedule IV        |
| 19              | <i>Corvus splendens</i>       | Common Crow            | Kaaki           | LC          | Schedule IV        |
| 20              | <i>Dicrurus macrocercus</i>   | Black Drongo           | Chemda kaki     | LC          | Schedule IV        |
| 21              | <i>Pycnonotus cafer</i>       | Red-vented Bulbul      | Pigilipitta     | LC          | Schedule IV        |
| 22              | <i>Passer domesticus</i>      | House Sparrow          | Pichuka         | LC          | Schedule IV        |
| 23              | <i>Ploceus philippinus</i>    | Common Weaver Bird     | Baya            | LC          | Schedule IV        |
| 24              | <i>Lonchura striata</i>       | Spotted Munia          | Tetai           | LC          | Schedule IV        |
| 25              | <i>Saxicoloides fulicata</i>  | Indian Robun           | Kalchuri        | LC          | Schedule IV        |
| <b>Reptiles</b> |                               |                        |                 |             |                    |
| 26              | <i>Ptyas mucosus</i>          | Rat snake              | Jerripothu      | LC          | Schedule II        |
| 27              | <i>Bungarus calculus</i>      | Krait                  | Katlapamu       | LC          | Schedule IV        |
| 28              | <i>Naja naja</i>              | Common Cobra           | Nagupamu        | LC          | Schedule II        |

|                    |                                     |                      |               |    |             |
|--------------------|-------------------------------------|----------------------|---------------|----|-------------|
| 29                 | <i>Vipera russeli</i>               | Russell's viper      | Rakthapinjari | LC | Schedule IV |
| 30                 | <i>Hemidactylus brookii</i>         | Brooke's House Gecko | Balli         | LC | Schedule IV |
| 31                 | <i>Mabuya carinata</i>              | Common skink         | Palabindhi    | LC | Schedule IV |
| 32                 | <i>Calotes versicolor</i>           | Garden Lizard        | Tonda         | LC | Schedule IV |
| 33                 | <i>Varanus benghalensis</i>         | Monitor Lizard       | Udumu         | LC | Schedule I  |
| <b>Butterflies</b> |                                     |                      |               |    |             |
| 34                 | <i>Castalius rosimon</i>            | Common Pierrot       |               | LC | Schedule IV |
| 35                 | <i>Torucus nara</i>                 | Rounded Pierrot      |               | LC | Schedule IV |
| 36                 | <i>catochrysops strabo strabo</i>   | Foget-me-not         |               | LC | Schedule IV |
| 37                 | <i>Chilades lajus lajus</i>         | Indian Lime Blue     |               | LC | Schedule IV |
| 38                 | <i>Phalanta phalantha phalantha</i> | Common Leopard       |               | LC | Schedule IV |
| 39                 | <i>Danaus chrysippus chrysippus</i> | Pain tiger           |               | LC | Schedule IV |
| 40                 | <i>Euploea core core</i>            | Common crow          |               | LC | Schedule IV |
| 41                 | <i>Junonia almana almana</i>        | Peacock pansy        |               | LC | Schedule IV |
| 42                 | <i>Junonia hierta hierta</i>        | Yellow pansy         |               | LC | Schedule IV |

The faunal species mentioned under various groups are widely distributed in Indian subcontinent especially in Deccan Plateau. However, *Varanus benghalensis* is the only Schedule I species found in the study area along with two species each of mammals and snakes are in Schedule II. Considering the faunal composition, these two forest blocks are inhabited mostly by boreal and arboreal inhabiting animals. No major wildlife animals are existing, mainly because of lack of minimal tree cover and greater human activities. As there will no major wild animals there will not be much impact.

## 7. IMPACTS OF THE PROJECT ACTIVITIES:

The two major project activities, (1) developing a railway corridor with Exchange Yard in the Rajagutta reserve forest; and (2) Laying of Water pipeline in the Adividevulapalli reserve forest, may likely impact adversely on the ecology and the wildlife species if adequate mitigation measures are not taken. Therefore, the impacts of these activities are identified with special reference to their importance and magnitude.

### 7.1 Impacts of the Railway Exchange Yard on Rajagutta RF:

Rajagutta RF has a total extent of 479 ha, the 1.3 km long rail corridor which involves Exchange yard (intermediate Crossing Station), station building & Goompties etc., will occupy an area of 12.6023 ha and a 100 m width of yard will be built at a height of 6 m from the reference level. Thus, the primary impact of this corridor is ***Fragmentation of the forest habitat [Impact 1]*** and this results in the formation of Northern bit of 382.207 ha and a Southern bit of 84.598 ha. This may be affecting the free movement of wildlife between the northern and southern bits, if proper care is not taken.

The railway corridor may most likely affect the ***free flow of the drainage system [Impact 2]*** in the area.

***Death of wild animals on the railway tracks [Impact 3]*** are commonly reported in the recent times, and in the present case also the chances of such killings cannot be ruled out.

The activities in the rail exchange yard and the movement of the rakes cause ***Noise Pollution***, while the illumination during the night times may adversely affect the nocturnal species **[Impact 4]**.

The fill material used to build the rail corridor may most likely bring in ***alien/invasive species [Impact 5]*** and often these species may adversely impact the native species and biodiversity.

For laying the bund for the rail corridor, ***Clearing of Vegetation*** is necessary **[Impact 6]** in an area of 12.6023 ha.

Dust pollution related to construction and maintenance, during construction laying of tracks and erecting buildings, bridges and other infrastructure, and in the operational phase (e.g. running of trains, maintenance of tracks, etc. are inevitable leading to casualty of burrowing animals like reptiles, hares, and mongoose etc. of animals at the project site, [Impact 7].

## 7.2 Impacts of Laying Water Pipeline in Adividevulapalli RF:

All the impacts caused by the laying of underground pipeline are of short term and occur only during the construction stage of the project. After the pipeline is established, the land can be restored to the actual state. However, for laying the pipeline, the vegetation need to be cleared to an extent of 0.5747 ha [Impact 8].

The impacts magnitude on different components of biodiversity and ecosystem services are presented below:

| #                         | Affected           | IMPACTS MAGNITUDE |    |    |    |    |    |    |    |
|---------------------------|--------------------|-------------------|----|----|----|----|----|----|----|
|                           |                    | I1                | I2 | I3 | I4 | I5 | I6 | I7 | I8 |
| 1                         | Plant species      |                   |    |    |    |    |    |    |    |
| 2                         | Plant Biomass      |                   |    |    |    |    |    |    |    |
| 3                         | Mammals            |                   |    |    |    |    |    |    |    |
| 4                         | Aves               |                   |    |    |    |    |    |    |    |
| 5                         | Reptiles           |                   |    |    |    |    |    |    |    |
| 6                         | Butterflies        |                   |    |    |    |    |    |    |    |
| 7                         | Ecosystem services |                   |    |    |    |    |    |    |    |
| Key for Impacts Magnitude |                    |                   |    |    |    |    |    |    |    |
|                           |                    |                   |    |    |    |    |    |    |    |

## 8 PROPOSED MITIGATION PLAN FOR THE IMPACTS IDENTIFIED:

The mitigation plan for the forests and wildlife was prepared in consultation with the State Forest department, native communities of the nearby villages and the RITES and YTPS. The mitigation broad scheme is presented below:

| Impact No. | Impact Nature                                      | Proposed Mitigation Measures  |
|------------|--|---|
| 1          | <i>Fragmentation of the forest habitat.</i>        | Construction of four Underpasses along the rail corridor as given below: (Annexure IX and X )<br>1. Two Nos of size - 5x3m<br>2. Two Nos of size - 3x3.0m   |
| 2          | <i>Free flow of the drainage system</i>            | Wherever the natural drainage flow is existing between the northern and southern parts of the forest, the construction should ensure free water flow.   |
| 3          | <i>Death of wild animals on the railway tracks</i> | The rail corridor should be fenced to a suitable height all along the 2.5 km length on both sides of the railway line corridor (extended to 600 m on both sides of the corridor) to ensure wild animals or local cattle are protected.  |
| 4          | <i>Noise Pollution</i>                             | Comply with rail norms for noise pollution and also a 10 m width belt afforestation need to be developed with native species on in the forest on the either sides of the corridor. So, enough vegetation along a railway track is required to achieve such reductions. It would be ideal to create noise buffers using a diversity of tree species, with a range of foliage shapes and sizes: a combination of shrubs and trees may be necessary to achieve this effect. Evergreen species that could provide a year-round buffer would be desirable. |

|   |  |  |
|---|--|--|
|   | <b><i>Night Illumination Pollution</i></b>                     | To the maximum possible extent, illumination should be designed to avoid light dispersion towards the forest sides. Further, illumination need to be avoided during the no activity times and no activity areas. Installation of solar lights throughout the length of 2.5 km passing through Reserved Forest and additional length railway line at regular interval on both sides of the railway track.   |
| 5 | <b><i>Alien/invasive species</i></b>                           | Filling material to be used for construction of the rail corridor must be obtained from the YTPS project area or from the surrounding areas of the forests.<br><br>Plantation and afforestation shall be done only with the native species and in consultation with the state forest department.   |
| 6 | <b><i>Clearing of Vegetation</i></b>                           | <ul style="list-style-type: none"> <li>• Wherever possible, adopt methods of rehabilitation of aged trees in the fallow areas of the same forest;</li> <li>• Encourage afforestation activities with the participation of local communities.</li> </ul>  |
| 7 | <b><i>Dust pollution during construction and operation</i></b> | <ul style="list-style-type: none"> <li>• The construction phase within the forest area should be quick, with minimum disturbance.</li> <li>• Preference will be given to local people in employment during construction period. No outside or camp labour will be preferred for non-technical job.</li> <li>• Any movement of animal across the railway track will not be disturbed. After construction work natural regeneration will be allowed and plantation activity will be taken up so the impact will gradually reduce.</li> <li>• Water sprinkling will be done regularly, where</li> </ul> |

|  |  |  |
|--|--|--|
|  |  | <p>necessary, during construction to arrest the dust.</p> <ul style="list-style-type: none"> <li>• Coal racks should be covered with tarpaulin during transportation.</li> <li>• Orientation for Contractors and employees to be conducted that should include awareness of environmental protection measures for wildlife and wildlife habitat.</li> <li>• Regular contact with the Forest Department should be maintained to monitor wildlife movement when the work starts.</li> <li>• Greenbelt will be developed in the forested areas along railway line corridor which acts as physical barrier to dust and noise pollution.</li> </ul> |
|--|--|--|

## **9. PLANTATION WORK:**

A 10m wide green belt is proposed on both sides of the railway line corridor in the reserved forest area. Further, avenue plantation will be undertaken besides the project. Extensive afforestation at project area will be undertaken which will not only act as lung space in the area but will also improve aesthetics. Multi-layered plantation comprising of medium height trees (3 to 5m) and shrubs (1.5m height) are proposed for the green belt. The following methodology will be adopted during designing of greenbelt development:

- The spacing between tree species will be maintained for tree species with high canopy and 2m × 2m (4 sq.m).
- Apart from the tree species suggested under greenbelt, shrubs, herbs, and grasses will also be raised. In addition, climbers/creepers will be planted along the corridor to enhance its insulation capacity.
- The general spacement shall be followed as per the space available type of species, duly maintaining sufficient spacing between the tree species to facilitate effective height of greenbelt.
- Pits will be dug as per the seedling bag size (Normal pit size for tree species is 45cm × 45cm × 45cm) 2 to 3 months before planting season.
- Indigenous species seedlings grow in polythene bags of one to one and half year old having 3 to 4 feet height, sturdy and erect stem will be planted.

### **9.1 Selection of species for green belt**

Development of the green belt is one of the most sensitive issues and shall be done with due care. Selection of proper locally grown species in addition to checking of their growth rate, quality, thickness of canopy cover, etc. shall be duly done as it helps in abatement of fugitive noise, reduce the pollution level, thus making the place worth dwelling for the diversified species flora. The plant species suitable for green belt development need to be selected based on the following criteria.

- Native plant species will be preferred
- Fast growing plants will be planted
- Plants having thick canopy cover will be used
- Preferably perennial and evergreen species will be selected
- Plants having large leaf area index will be considered
- Plants should have optimum penetrability, deep rooted and wind resistant



- Plants should be tolerance to air pollution
- Ability to withstand conditions like inundation and drought
- Sustainable green cover with minimal maintenance

While making choice of plant species for cultivation in green belts, weightage has to be given to the natural factor of bio-climate. It is also presumed that the selected plants will be grown as per normal horticultural or forestry practices.

Trees are important sinks for air pollutants. Trees absorb noise and by enhancing the green cover, improve the ecology and aesthetics and affect the local micrometeorology. Trees also have major long-term impacts on soil quality and the ground water table. By using suitable plant species, green belts can be developed in strategic zones to provide protection from emitted and noise. In view of this, the list of species to be planted in the green belt area is illustrated below.

**Table 3. List of plant species recommended for Greenbelt development**

| S. No. | Botanical name  | Common name    | As per CPCB Manual |
|--------|---|----------------|--------------------|
| 1      | <i>Albizia lebbbeck</i> (L.) Benth.                   | Dirisena       | A29                |
| 2      | <i>Neolamarckia cadamba</i> (Roxb.) Bosser            | Kadambam       | A40                |
| 3      | <i>Azadirachta indica</i> A.Juss.                     | Vepa           | A44                |
| 4      | <i>Bauhinia purpurea</i> L.                           | Kanchanamu     | B7                 |
| 5      | <i>Cassia fistula</i> L.                              | Rela           | C7                 |
| 6      | <i>Senna siamea</i> (Lam.) H.S.Irwin & Barneby        | Seema thangedu | C11                |
| 7      | <i>Diospyros sylvatica</i> Roxb.                      | Gaatha         | -                  |
| 8      | <i>Phyllanthus emblica</i> L.                         | Usiri          | E1                 |
| 9      | <i>Ficus benghalensis</i> L.                          | Marri          | F1                 |
| 10     | <i>Ficus religiosa</i> L.                             | Raavi          | F7                 |
| 11     | <i>Ficus benjamina</i> L.                             | Pedda juvvi    | F2                 |
| 12     | <i>Ficus racemosa</i> L.                              | Medi           | F5                 |
| 13     | <i>Gmelina arborea</i> Roxb.                          | Gummadi Teku   | -                  |
| 14     | <i>Holoptelea integrifolia</i> Planch.                | Nemali adugu   | H5                 |
| 15     | <i>Madhuca longifolia</i> (J.Koenig ex L.) J.F.Macbr. | Ippa           | M2                 |
| 16     | <i>Mimusops elengi</i> L.                             | Pogada         | M10                |
| 17     | <i>Morinda pubescens</i> Sm.                          | Thogaru        | -                  |
| 18     | <i>Pongamia pinnata</i> (L.) Pierre                   | Kanuga         | -                  |
| 19     | <i>Sapindus emarginatus</i> Vahl                      | Kunkudu        |                    |
| 20     | <i>Syzygium cumini</i> (L.) Skeels                    | Neredu         | S20                |
| 21     | <i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.  | Tellamaddi     | T6                 |

## 10. BUDGETARY PROVISION:

**Table 4. The proposed budget for intervention /by project authorities**

| S.No.               | Particulars  | Unit | Total amount Rs/-<br>(In Lakhs) |
|---------------------|--|------|---------------------------------|
| 1                   | Wildlife Underpasses for wildlife movement               | 4    | 500.0                           |
| 2                   | Installation of solar lamps on both side of railway line | 100  | 5.0                             |
| 3                   | Fencing on both sides along 2.5 km railway line corridor |      | 25.0                            |
| 4                   | Preparation of wildlife management plan                  | --   | 1.0                             |
| 5                   | Greenbelt development and maintenance                    | --   | 10.0/annum                      |
| 6                   | 6 Monthly Biological Monitoring and Compliances          | ---  | 2.0/annum                       |
| <b>Total Amount</b> |  |      | <b>543.0</b>                    |

**Table 5. The proposed budget for intervention by Forest Department**

| S.No.        | Particulars  | Capital cost Rs/-<br>(In Lakhs) | Recurring cost Rs/-<br>(In Lakhs)/per annum |
|--------------|--|---------------------------------|---|
| 1            | Habitat enrichment with plantation of bamboo or fruit bearing species or fuel and fodder plantation      | 20.0                            | 10.0  |
| 2            | Renovation and maintenance of water holes and old ponds  | 3.0                             | 2.0   |
| 3            | Soil and moisture conservation measures  | 3.0                             | 2.0   |
| 4            | Fire line cutting and controlled burning along forest area   | 2.0                             | 1.0   |
| 5            | Eco-development work in the Reserved Forest  | 5.0                             | --  |
| 6            | Local level scientific study of population, monitoring and habitat used by Vertebrates and invertebrates | 5.0                             | 0.5   |
| 7            | Awareness, training programme, printing of brochures and folders, board and signages                     | 3.0                             | --  |
| <b>Total</b> |  | <b>41.0</b>                     | <b>15.5</b>                                 |



**J-13012/18/2015-IA.I (T)**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**

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Dated: 29.06.2017

To

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 Telangana State.

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**Sub: 5x800 MW Super Critical Coal based Yadadri Thermal Power Station at Veerlapalem Village, Dameracherla Mandal, Nalgonda District, Telangana State by M/s Telangana State Power Generation Corporation (TSGENCO) Ltd. - reg. Environmental Clearance.**

Sir,

This has reference to your online application dated 25.6.2016 and the additional documents submitted vide letters dated 21.7.2016, 8.10.2016 and 1.4.2017 w.r.t the aforesaid project.

2. It has been noted that Terms of Reference has been issued for the above mentioned project on 2.11.2015 and 16.2.2016 for preparation of EIA/EMP studies and carrying out Public Consultation. It has been inter-alia noted that the proposal is for setting up of establishing 5x800 MW (4000 MW) Super Critical Thermal Power Project at Veerlapalem Village, Damercherla Mandal, Nalgonda Dist., Telangana State.
3. The proposed project is located near Nalgonda is which is at a 50 km NW. Nearest railway station is Vishnupuram at 4km, Nearest Airport is Hyderabad- 120 km. NH-9 is at 45 km N and SH-2 is at 7 km South. Nagarujana Sagar Tiger Reserve (Amrabad Tiger Reserve) is at 14.03 km SW, Inter-state boundary of Telangana and Andhra Pradesh is at 0.8 km SE. Tungapahad Vagu (Water body) is passing through the proposed project. Krishna and Musi rivers are at 0.5 km SE and 7.4 km E from the proposed project. Veerlapalem Reserved Forest (RF) is within the proposed location. Rajagutta RF-0.3 km E, Daida RF -1.2 km SE, Adividevulapalli RF-4.7 km SW, Oshipalem RF - 4 km NW and Dilawarpur RF-2.9 km N from the proposed project. There are no national parks/wildlife sanctuaries/any other protected areas/ESA/ESZs within 10 km radius of the proposed project. Authenticated map showing the distance between Amrabad Tiger Reserved and the project location which is at 14.03 km has been provided by the PCCF (WL), Telangana Forest Department vide their letter dated 5.5.2016.
4. Total land requirement for the proposed project is 2800 acres which is as per CEA norms of 0.7 acres/MW. Out of total land requirement, 2095.28 acres is the forestland falling under Veerlapalem Forest Block. Remaining 704.12 acres consists of Patta Land, Government Land, Udafa patta land and D-patta land in Veerappagudem and Veerlapalem villages, Damercherla Mandal, Nalgonda Dist., Telangana State which partly under cultivation. The Stage-II Forest Clearance has been accorded for diversion of forest land vide Ministry's letter No.8-07/201-FC dated 7.7.2015. The non-forest land has already been acquired.

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5. The proposed project is based on Super-critical boiler technology which uses the pulverised coal of boiler of once-through and does not require a drum to separate steam from water. The proposed project will have five 800 MW super critical units. Steam parameters are: i) Pressure: 247 kg/cm<sup>2</sup> (a), ii) Main steam temperature: 565 °C and iii) Reheat Steam Temperature: 593 °C. The project will use blend coal having ratio of 50% indigenous coal and 50% imported coal or 100% imported coal with LDO as start up fuel and Heavy Fuel Oil (HFO) for flame stabilisation. The coal requirement for blending coal (50% imported coal and 50% domestic coal) 3,9657.6 TPD (12.25 MTPA @ 85% PLF) and the coal requirement for 100% imported coal is 35,587.2 TPD (11.02 MTPA @ 85% PLF). Domestic coal characteristics are i) Fixed Carbon: 33%, ii) Volatile Matter: 27%, Moisture: 10%, Ash content: 30%, Calorific value: 4,530 kcal/kg and sulphur content: 0.42%. Imported coal characteristics are i) Fixed Carbon: 42.94%, ii) Volatile Matter: 28.92%, Moisture: 13.14%, Ash content: 15%, Calorific value: 5,700 kcal/kg and sulphur content: 0.8%. Ash and Sulphur contents in the blended fuel shall be not exceed 22.5% and 0.61%, respectively. Domestic coal will be sourced from mines of Singareni Collieries Company Ltd. using rail network. MoU has been signed between M/s SCCL and M/s TSGENCO to supply 7 MTPA of G9 and above grades of domestic coal/WG-G9 grade coal. Another MoU has been signed between M/s MSTC Limited and M/s TSGENCO to supply imported coal of 7 MTPA which will be sourced from Indonesia/Australia/South Africa, etc. The imported coal shall be supplied from Kakinada/Krishnapatnam port or any other nearest port in India. Necessary permissions have been obtained for utilising port facilities at Kakinada/Krishnapatnam/Vishakhapatnam. The railway line is proposed from Vishnupuram Railway station on Bibinagar-Nadikudi Main line of South Central Railway. The distance between Vishnupuram Railway station to proposed project is about 8 km. The power will be evacuated through 400 kV double circuit Quad Core Moose Conductor to the Choutuppal/Dindi/Maheshwaram/Jangaon interconnecting substations.

6. Water requirement for the proposed project is 10,000 m<sup>3</sup>/hr (2.4 Lakhs m<sup>3</sup> per day/97.8 cusec/3.10 TMC per year) considering the COC of 5.0 and complying with the new norm of 2.5 m<sup>3</sup>/MWh. The water requirement will be met from River Krishna. Govt. of Telangana, Irrigation and CAD Department vide their letter dated 30.1.2015 allocated 208 cusecs of water (6.6 TMC/year) from Krishna River. Intake structure shall be installed including pumping station near Madachelu area at the upstream side of confluence point of Tungapahad Vagu and Krishna River. The distance between intake well to raw water reservoir is approximately 6 km. A pipeline will be laid for transporting the water from Krishna River. Flow at Pondugala in Krishna river is 25.72 million m<sup>3</sup>/month and wadenapalli is 27.8 million m<sup>3</sup>/month. Proposed water requirement is 7.21 million m<sup>3</sup>/month. Water withdrawal percentage is <30% of minimum in lean season flows. Tungapahad Vagu (stream) for length of 3.9 km is passing through the project area which eventually joins Krishna river. The project activities will not interfere with flow of Tungapahad vagu since there is no extraction of water or discharge. No diversion of this stream is proposed. Plant layout is designed to keep a minimum distance of 500 m buffer between ash pond and Tungapadu Vagu to prevent contamination, if any.

7. Baseline data has been collected during December, 2015-February, 2016 by M/s Bhagavathi Ana Labs Pvt. Ltd. Additional baseline data was collected for one month during October, 2016 for one month by M/s B.S. Envi-Tech (P) Ltd. The predominant wind direction is SE during study period. AAQ monitoring has been carried out at 10 locations. Results indicated that the values of different air quality parameters such as PM<sub>10</sub>: 31.9-66.4 µg/m<sup>3</sup>, PM<sub>2.5</sub>: 11.6-31.6 µg/m<sup>3</sup>, SO<sub>2</sub>: 8.3-24.6 µg/m<sup>3</sup>, NO<sub>x</sub>: 10.3-28.1 µg/m<sup>3</sup>, CO: 1-1.8 mg/m<sup>3</sup> and Hg: < 0.1 ng/m<sup>3</sup>. AAQ is within the NAAQ Standards. A total of ten groundwater samples have been analysed in the study area. pH ranges between 6.9-7.38 and Total Hardness varies between 328-591 mg/l and is well within limit of 600 mg/l. Chlorides ranges between 68-362 mg/l.



Fluoride ranges between 1.03-1.32 mg/l which is above the acceptable limits. Ground water samples are in compliance with the Drinking water standard of IS:10500 except for Fluoride content. Surface water samples were analysed from ten locations. The results indicated that the values such as pH: 7.92-8.10; DO: and BOD is not monitored. TDS: 408-702 mg/l, Total Hardness: 177-323 mg/l; Chlorides: 60-118 mg/l, Sulphates: 54-133 mg/l. E-coli: 116-230 CfU/100 ml. Noise levels are in the range of 41.2-50.3 dBA for daytime and 30.2-47.5 dBA for nighttime. Soil quality in the project area is as pH: 7.79, TOC: 0.59%, Chloride: 60 mg/kg. Soil in the project area consists of Sandy loam (80%), Silt (9%) and Clay 11%. Soil in the study area is as pH: 6.95-8.05, TOC: 0.28-0.92%, Chloride: 35-126 mg/l. Soil in the study area consists of Sandy loam (45-89%), Silt (5-23%) and Clay (6-32%). There are four schedule-I species i.e Indian Peafowl, Indian Python, Monitor Lizard and Indian Softshell Turtle are present in the study area. However these Schedule-I species are not falling in the endangered category.

8. Cumulative air quality impact is predicted for the proposed power plant, proposed power plant, of KGPUL, Proposed cement plant and limestone mine of Myhome cements and existing industries such as India cements ltd, Parasakti cements, Penna cements, Deccan cements, Andhra cements (comprising cement plant, captive power plant and captive limestone mine). The maximum incremental ground level concentration is predicted for PM is in the range of 6.83-13.99  $\mu\text{g}/\text{m}^3$ ,  $\text{SO}_2$ : 18.1-37.76  $\mu\text{g}/\text{m}^3$ ,  $\text{NO}_x$ : 19.76-30.38  $\mu\text{g}/\text{m}^3$ . One single flue and two Bi-flu Stacks with height of 275 m will be erected for dispersion of pollutants as per CPCB guidelines. ESP (99.9% efficiency) for Particulate Matter removal, Flue Gas Desulphurisation System for removal of Sulphur, Selective Catalytic Reduction System for  $\text{NO}_x$  removal shall be installed to meet the emission norms vide Ministry's Notification dated 7.12.2015. Gypsum production is 25-30 TPH per unit (Total units: 5). Dust suppression system (water spraying, bag filters at transfer points, atomized water sprinkling system at crusher) at coal handling points, ETP and STP are the major pollution control measures proposed to be provided in the plant.

9. Quantity of Flyash and bottom ash generation is 2.2 MTPA and 0.56 MTPA, respectively. Dry flyash from the plant will be transported to ash storage silos through pneumatic system. Five flyash silos are proposed for storing dry flyash. All silos will be provided with bag filters for control of dust. Flyash will be provided to the nearby cement plants for utilisation. Unutilised flyash and bottom ash will be conveyed to ash pond with lean slurry system. Ash disposal area of 400 acres with height of 15 m ash dyke is proposed at 2.28 km away from this proposed power plant. Piezometers will be installed around the ashdyke to monitor the groundwater. HDPE liner with 1,000 microns will be laid in the ash dyke to have zero permeability. Colony will be constructed within the project site for the employees of the power plant in 80 acres. The colony includes quarters for 2,000 employees, hostel, guest house, community center, health center, recreational facilities, etc.

10. Hazard identification and Risk assessment has been carried out for the storages of hazardous chemicals such as Hydraulic Oil, LDO, HFO, Hydrogen storage, HCL,  $\text{H}_2\text{SO}_4$  storage, Ammonia and Chlorine tonners, etc. Control and mitigation measures have been proposed.

11. Project will displace about 173 families residing in the proposed project area in two isolated pockets of habitation i.e. Modugulakunta Tanda and Kapura Tanda. R&R has been initiated and Rs. 16.0 crores have been earmarked for land acquisition, providing basic amenities, constructing Govt. Buildings, religious structures and providing grave yard, etc. Project Affected families are 413 as 704.12 acres of Patta land, Govt. land, Udafa patta land and D-patta land has been acquired. PAF will get one time payment for Rs.5 lakhs per each family under annuity. Total amount of this payment is Rs. 29.20 crores. In case one time payment is not being taken by any project oustees, employment can be provided to one person in the family not less than



the minimum wages in the total employment of the project. Total financial benefits of PDFs and PAFs proposed by the Project Administrator & Joint Collector, Nalgonda will be paid directly to the concerned bank accounts after approval from the Government.

12. Greenbelt is proposed to be developed in 1,352 acres which will include restoration of forest area of 1,049 acres and development of green belt in non-forest area of 303 acres. The company will take up additional plantation in the Reserved Forests that demarcates the project boundary on the South.

13. Public hearing was conducted by Telangana State Pollution Control Board (TSPCB) on 31.5.2016 at Pylon Area in the premises of proposed site of 5x800 MW Coal based Yadadri Thermal Power Station, Veerlapalem (V), Damarcherla (M), Nalgonda Dist. An action plan has been prepared for addressing the issues raised by the public. Telangana State Pollution Control Board (TSPCB) has uploaded the revised EIA/EMP report on 1.2.2017 on their website for three weeks for obtaining public comments.

14. Estimated project cost is Rs.25,099.42 Crores. An additional budget of Rs.0.9 crore/MW will be incurred to comply with new emission norms of MoEF&CC Notified vide OM dated 7.12.2015. Budget of Rs. 5597 crores (Capital) and Rs. 430 Crores/annum (Recurring) have been earmarked for environmental protection measures. Budget allocated for CSR activities is Rs 100.40 crores which is approximately 0.4% of the total cost of the project. Employment generation during construction period is 150 (direct employment) & 5000 (indirect employment) and operation period is 2,000 (direct employment) & 2,000 (indirect employment).

15. The proposal was appraised by Re-constituted EAC (Thermal) in its 59<sup>th</sup>, 60<sup>th</sup>, 63<sup>rd</sup>, 1<sup>st</sup> and 5<sup>th</sup> meetings held during 14<sup>th</sup>-15<sup>th</sup> July, 2016, 27<sup>th</sup> July, 2016, 29<sup>th</sup>-30<sup>th</sup> August, 2016, 28<sup>th</sup> December, 2016 and 26<sup>th</sup> April, 2017. In acceptance of the recommendations of the Re-constituted EAC (Thermal Power) in its meeting held on 26.4.2017 and in view of the information, clarifications, documents submitted by you, **the Ministry hereby accords the Environmental Clearance** to the above project under the provisions of EIA Notification dated September 14, 2006 and subsequent amendments therein subject to compliance of the following Specific and General conditions.

**A. Specific Conditions:**

- (i) M/s SCCL shall supply coal having ash content not more than 30%.
- (ii) The incremental GLC values shall not exceed the standards as prescribed vide O.M. dated 07.12.2015.
- (iii) The coal transportation shall be done through rail only from SCCL Mines.
- (iv) There shall not be any displacement during land acquisition for railway corridor.
- (v) There shall not be abstraction of any groundwater during construction period.
- (vi) The Thermal Power Plant (TPP) will maintain thermal efficiency as per the Technical Standards notified by CEA.
- (vii) As per the Revised Tariff Policy notified by Ministry of Power vide dated 28.01.2016, project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality/ local bodies/ similar organization located within 50 km radius of the proposed power project to minimize the water drawl from River Krishna.
- (viii) Compliance of EC conditions, E(P) Act, 1986, Rules and MoEF&CC Notifications issued time to time shall be achieved by a qualified environment officer to be nominated by the Project Head of the Company who shall be responsible for implementation and necessary compliance.
- (ix) Cycle of Concentration (COC) of atleast 6.5 shall be achieved by setting up of RO for treating cooling tower blow-down water.



- (x) MoEF&CC Notification S.O. 3305(E) dated 7.12.2015 shall be implemented with respect to specific water consumption, zero liquid discharge and revised emission standards. The PM, SO<sub>2</sub>, NO<sub>x</sub> and Hg emissions shall not exceed 30 mg/Nm<sup>3</sup>, 100 mg/Nm<sup>3</sup>, 100 mg/Nm<sup>3</sup> and 0.03 mg/Nm<sup>3</sup> respectively. The specific water consumption shall not exceed 2.5 m<sup>3</sup>/MWh and zero wastewater discharge shall be achieved.
- (xi) MoEF&CC Notification G.S.R 02(E) dated 2.1.2014 regarding use of raw or blended or beneficiated or washed coal with ash content not exceeding 34% shall be complied with, as applicable.
- (xii) MoEF&CC Notifications on flyash utilization S.O. 763(E) dated 14.09.1999, S.O. 979(E) dated 27.08.2003, S.O. 2804(E) dated 3.11.2009, S.O. 254(E) dated 25.01.2016 and subsequent amendments shall be complied with.
- (xiii) Separate Environmental Clearance may be obtained for the proposed Township as applicable under EIA Notification 2006.
- (xiv) A minimum e-flow in the lean season is to be ensured at the downstream of water drawl point i.e. near Madachelu of Veerlapalem village of the Krishna river for sustaining the ecology of the river stretches. In this regards, a written commitment is to be submitted by pp.
- (xv) Analysis of mercury (Hg) in the coal be re-done once again by using modern technique and submitted.
- (xvi) Transportation of imported/domestic coal will be made from the port/SCCL mines of Kothagudem area through rail route with tarpaulin covered wagons only.
- (xvii) In case any STPs are located within 50 km distance from the proposed Project then the treated water from the STPs shall be used in the plant.
- (xviii) A 100 m width on either side of Vagu flowing through the plant site to be earmarked to raise greenbelt.
- (xix) Plantation should be raised at the rate of 2,500 saplings per hectre. The tree species should be of local variety having hardened and broad leaves types. Plantation be preferred by using 2 years old seedlings than new seedlings for better survival of plantation.
- (xx) Alternate technology may be explored for utilization of fly ash such as road making, etc. by using geo-polymer based technology. Firm MoU may be made with the Cement Manufacturers for utilization of Fly Ash.
- (xxi) Provision of impervious liner/HDPE lining has been made in the ash pond to prevent any leaching. However, groundwater analysis shall be carried out at the upstream / downstream of the fly ash pond by creating a network with the existing wells and installing new piezometers and report be submitted that no leaching is taking place due to fly ash dumping.
- (xxii) Skill mapping of the Project Affected People (PAF) be carried out on a long-term basis for their livelihood generation. A report is to be submitted within 3 months to the Ministry from the date of issuance of environmental clearance.
- (xxiii) Modern methods of agriculture organic forming, compost/vermiculture making and utilization, drip/direct to root irrigation) to be promoted in and around the Project area.
- (xxiv) While implementing CSR, the following shall be adopted:
  - a. Proper skill based training/long term livelihood revenue generation be created for enabling women empowerment.
  - b. Computer facilities may be provided in the school along with a trained computer teacher to inculcate computer skill among the youths.
  - c. Water supply provisions shall be made for all the bio-toilets under Swachh Bharat Abhiyan.
  - d. Preventive health programme may be preferred than the curative health programme such as nutrition development of small children in and around the project.





- (xxv) Vision document specifying prospective plan for the site shall be formulated and submitted to the Regional Office of the Ministry within **six months**.
- (xxvi) Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation including actual generation of solar power shall be submitted along with half yearly monitoring report.
- (xxvii) A long term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute and results thereof analyzed every two year and reported along with monitoring reports. Thereafter mechanism for an in-built continuous monitoring for radio activity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.
- (xxviii) Online continuous monitoring system for stack emission, ambient air and effluent shall be installed.
- (xxix) High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 30 mg/Nm<sup>3</sup> or as would be notified by the Ministry, whichever is stringent. Adequate dust extraction system such as cyclones/bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided along with an environment friendly sludge disposal system.
- (xxx) Adequate dust extraction system such as cyclones/ bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.
- (xxxi) Monitoring of surface water quantity and quality shall also be regularly conducted and records maintained. The monitored data shall be submitted to the Ministry regularly. Further, monitoring points shall be located between the plant and drainage in the direction of flow of ground water and records maintained. Monitoring for heavy metals in ground water shall also be undertaken and results/findings submitted along with half yearly monitoring report.
- (xxxii) A well designed rain water harvesting system shall be put in place within six months, which shall comprise of rain water collection from the built up and open area in the plant premises and detailed record kept of the quantity of water harvested every year and its use.
- (xxxiii) No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant including *Tungapahadu stream*.
- (xxxiv) Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.
- (xxxv) Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash. No ash shall be disposed off in low lying area.
- (xxxvi) No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media such that no leachate shall take place at any point of time. In case, the option of mine void filling is to be adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and adequate clay lining shall be ascertained by the State Pollution Control Board and implementation done in close co-ordination with the State Pollution Control Board.
- (xxxvii) Fugitive emission of fly ash (dry or wet) shall be controlled such that no agricultural or non-agricultural land is affected. Damage to any land shall be mitigated and suitable compensation provided in consultation with the local Panchayat.



- (xxxviii) Green Belt consisting of three tiers of plantations of native species all around plant and at least 50 m width shall be raised. Wherever 50 m width is not feasible a 20 m width shall be raised and adequate justification shall be submitted to the Ministry. Tree density shall not be less than 2500 per ha with survival rate not less than 80 %.
- (xxxix) Green belt shall also be developed around the Ash Pond over and above the Green Belt around the plant boundary.
- (xl) The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.
- (xli) CSR schemes identified based on need based assessment shall be implemented in consultation with the village Panchayat and the District Administration starting from the development of project itself. As part of CSR prior identification of local employable youth and eventual employment in the project after imparting relevant training shall be also undertaken. Company shall provide separate budget for community development activities and income generating programmes.
- (xlii) For proper and periodic monitoring of CSR activities, a CSR committee or a Social Audit committee or a suitable credible external agency shall be appointed. CSR activities shall also be evaluated by an independent external agency. This evaluation shall be both concurrent and final.

**B) General Conditions:**

- (i) The treated effluents conforming to the prescribed standards only shall be re-circulated and reused within the plant. Arrangements shall be made that effluents and storm water do not get mixed.
- (ii) A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt/plantation.
- (iii) Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.
- (iv) Storage facilities for auxiliary liquid fuel such as LDO/ HFO/LSHS shall be made in the plant area in consultation with Department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.
- (v) First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.
- (vi) Noise levels emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 85 dB(A) from source. For people working in the high noise area, requisite personal protective equipment like earplugs/ear muffs etc. shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric record and for treatment for any hearing loss including shifting to non noisy/less noisy areas.
- (vii) Regular monitoring of ambient air ground level concentration of SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>2.5</sub> & PM<sub>10</sub> and Hg shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional



- Office of this Ministry. The data shall also be put on the website of the company.
- (viii) Utilization of 100% Fly Ash generated shall be made from 4<sup>th</sup> year of operation. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.
  - (ix) Provision shall be made for the housing of construction labour (as applicable) within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
  - (x) The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the State Pollution Control Board/Committee and may also be seen at the Website of MoEF&CC at <http://envfor.nic.in>.
  - (xi) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, urban local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.
  - (xii) The proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM (PM<sub>2.5</sub> & PM<sub>10</sub>), SO<sub>2</sub>, NO<sub>x</sub> (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.
  - (xiii) The environment statement for each financial year ending 31<sup>st</sup> March in Form V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.
  - (xiv) **The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to MoEF&CC, its Regional Office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environmental clearance conditions on their website and update the same periodically and simultaneously send the same by e-mail to the Regional Office, MoEF&CC.**
  - (xv) The progress of the project shall be submitted to CEA on six monthly basis.
  - (xvi) Regional Office of the MoEF&CC will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring. Project proponent will up-load the compliance status in their website and up-date the same from time to time at least six monthly basis. **Criteria pollutants levels including NO<sub>x</sub> (from stack & ambient air) shall be displayed at the main gate of the power plant.**
  - (xvii) Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break-up. These cost shall be included as part of the project cost. The funds earmarked for the environment



protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.

(xviii) The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.

(xix) Full cooperation shall be extended to the Scientists/Officers from the Ministry / Regional Office of the Ministry / CPCB/ SPCB who would be monitoring the compliance of environmental status.

C) An as built or as completed report on EMP to be submitted stating the scope/extent of work envisaged in the EIA along with estimated cost vis-à-vis the actual completed works and cost incurred. A certificate/completion certificate accordingly, shall have to be submitted before commissioning of the TPP.

16. The Ministry reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.

17. The environmental clearance accorded **shall be valid for a period of 7 years** from the date of issue of this letter to start operations by the power plant.

18. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

19. In case of any deviation or alteration in the project proposed including coal transportation system from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the condition(s) imposed and to add additional environmental protection measures required, if any.

20. The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.

21. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

Yours faithfully,

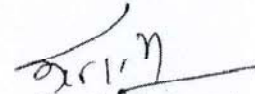


(Dr. S. Kerketta)  
Director

Copy to:

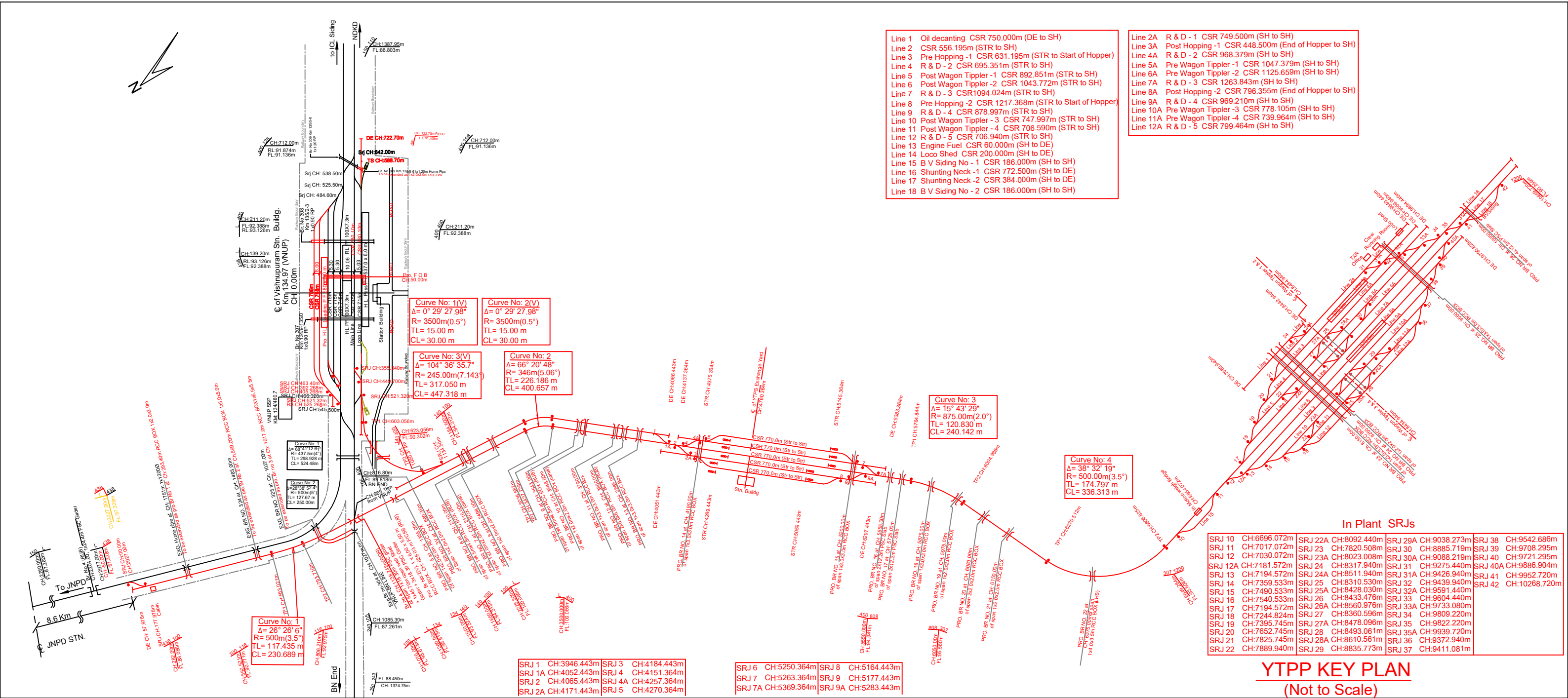
1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
3. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
4. The Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forests and Climate Change, Regional Office (SEZ), Ist and IInd Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai- 600034.

5. The Principal Secretary, Department of Environment, Forests, Science and Technology, Govt. of Telanangana, Telangana Secretariat, Tank Bund, Basheer Bagh, Near NTR Gardens, Hyderabad, Telangana-500022.
6. The Chairman, Telangana State Pollution Control Board, Paryavaran Bhawan, A-3, Industrial Estate, Sanathnagar, Hyderabad-500018.
7. The District Collector, Nalgonda District, Govt. of Telangana, Nalgonda-508001, Telangana.
8. Guard file/Monitoring file.
9. Website of MoEF&CC.

  
(Dr. S. Kerketta)  
Director



Annexure II



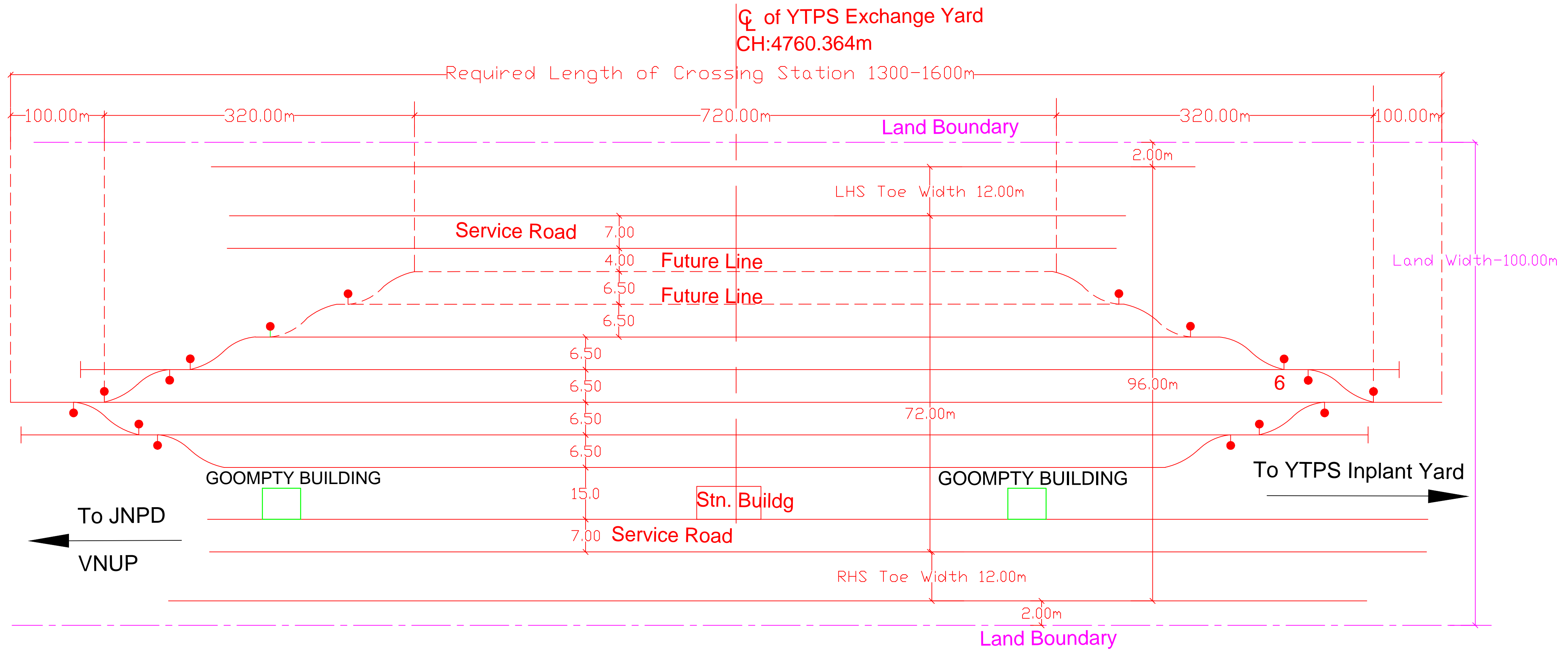
Layout showing the Railway line from Vishnupuram Railway Station to YTPS







# Proposed Exchanged Yard in Forest Area



No. RITES/SC/TSGENCO/YTPS/2021-22/323

Dt. 28.03.2022

The Chief Engineer/Construction  
Yadadri Thermal Power Station,  
Veerlapalem(V), Dameracherla (M),  
Nalgonda District.  
Telangana-

Dear sir,

**Sub:-** TSGENCO-YTPS(5X800 MW)-Diversion proposal of 12.6203 Ha. for the construction of Railway Line in Compt No. 40 Rajagutta RF block, in favor of YTPS, Veerlapalem-**Submission of Factual justification report for processing of proposals for acquisition of Forest Land- reg**

**Ref:-** 1. Your Lr. No. SE/Civil/CC-II/YTPS (5x800MW)/F. RITES/D.No. 393/2021-22, Dt. 18.02.2022  
2. DFO's letter No. RC No.4286/2019/S5 (I), Dt:29.01.2022

With reference to your above letter at ref.1, the following **FACTUAL JUSTIFICATION FOR ALIGNMENT OF THE PROJECT THROUGH FOREST LAND** is submitted for further processing of the proposals for the acquisition of Forest Land

TSGENCO, the state power generation company of Telangana is setting up greenfield Yadadri Thermal Power Station (YTPS) in Veerapalem Village of Damarcharla Mandal, Miryalguda Division, Nalgonda District of Telangana. The proposed capacity of the project is 4000 MW (5 x 800 MW).

RITES has been engaged as Project Management Consultant for Survey and Detailed Project Report (DPR) vide TSGENCO's Purchase Order No. (i) CCDO55/ CE/ Civil/ Th/ SE/ TCD-I/YTPS/F.RITES-Damercherla/D.No.254 /2015. Dt. 22.08.2015 and PO No. (ii) CCD-0022/ CE/ Civil/ T/ SE/ TCD-I/EE/TCD-I/F.YTPS PMC/D.No.57/ 2020.Dt. 30.05.2020 for Private Railway Infrastructure project to get coal transport from Singareni Collieries Company Limited group of Mines i.e.from Rudrampur, Sathupally and other areas. The movement of the Coal is planned through the Indian Railway Network connecting the railway stations Manuguru, Dornakal, Motumari and through branch line from Janpahad Goods railway station and also from the ports situated at Krishnapatnam/Visakhapatnam/Kakinada etc., via Nadikudi - Bibi Nagar Section; The serving station for the proposed Rail infrastructure is Vishnupuram (Class-B).

The transportation of the requirement of a huge quantity of coal i.e., 15 MTPA (14-15 rakes/day) shall be met through Railway Corridor only which will also minimize the adverse effect on the environment and Eco-system.

क्षेत्रीय परियोजना कार्यालय: मलानी एक्सल, # 10-3-150, 151/1, प्रथम तल, सेंट जॉन्स रोड, ईस्ट मारेडपल्ली, सिकंदराबाद 500026, तेलंगाना (भारत) 28/3/20  
REGIONAL PROJECT OFFICE : Malani Excel, # 10-3-150, 151/1, First Floor, St John's Road, East Marredpally, SECUNDERABAD-500 026, Telangana State, (INDIA).  
Tel. : 040-27818397, 27841499, Ph : 040-40021963, Fax : 040-27813894, Email : secbadpo@rites.com

निगमित कार्यालय: राइट्स भवन नं. 1, सेक्टर- 29, गुडगाँव - 122 001 (भारत) Corporate Office: RITES Bhavan, No. 1, Sector-29, Gurgaon-122 001 (INDIA)

पंजीकृत कार्यालय: स्कोप मीनार, लक्ष्मी नगर, दिल्ली - 110 092 (भारत) Registered Office: SCOPE Minar, Laxmi Nagar, Delhi-110 092 (INDIA)

दूरभाष (Tel.): (0124) 2571666, फैक्स (Fax): (0124) 2571660, ई-मेल (E-mail) : info@rites.com, वेबसाइट (Website): www.rites.com

CIN NO: L74899DL1974GOI007227



A detailed survey on route finalization was carried out by M/s RITES for the said Rail Corridor from Vishnupuram Serving Station as a Rail Head station based on the reconnaissance/ preliminary/detailed location survey keeping in view the economics, technical, operational, geographical requirements and the most vital aspect of rail traffic safety norms. The most feasible and suitable alignment was selected and South Central Railway authorities have also approved the same after thorough scrutiny in terms of technical & operational points of the project vide **SCR letter No. GNT/T.143/YTPS/RDPR Approval/2021/11/a, Dt:24.11.2021** (copy enclosed) and planning to sustain the Rail Infrastructure for augmentation of proposed Thermal Power Station as well as Rail Corridor in the coming 50 years or more.

Though the length of Siding from the take-off station to Marshalling Yard is about 10.64 KM and there was no feasibility to hold the YTPS Coal traffic at take-off station VNUP, there is a need of creating an intermediate crossing station on the lead line/siding line at the most feasible location, in terms of geography/technicality/operations in order to regulate/handle uninterrupted, continuous coal rakes movement of 14-15 rakes incoming and outgoing i.e., total 30 rakes/day to the In-plant Yard.


For this Intermediate station, the design was done for 5 lines presently. Provision shall also be needed for further 2 more lines to handle the bunching of Coal rakes as well as future increase potential.

For the provision of this yard design and for 7 full-length clear standing room of each line 750mts along with track ladder design length as well as traffic safety devices such as overshoot line etc., there must be **1300m to 1600m length** with a bare minimum width of 100mts and was planned at the location where the height of bank is less than 6.0mtr and through terrain where there is gentle slope transversely.

The following **basic design criteria** were strictly followed:

1. Station is to be constructed in straight alignment as far as possible with level/flatter gradient of 1 in 1200 and up to the steepest gradient of 1 in 400 in economical land width as per Railway norms and also on the curvature of not more than 2 degrees (i.e., 875mts radius) under unavoidable circumstances.
2. There should not be any entry curves sharper than 4 degrees (i.e., radius of 450 mts) to the approaching yard design.
3. There should not be any reverse curve alignment on either side of the yard as per Railway visibility norms of Rail traffic.

In view of the above, RITES has adopted 1 in 400 gradients to minimize the bank height to less than 6 mt. and bare minimum land width i.e., 100mts. The proposed alignment through forest area is the only feasible area and is fulfilling the above basic criteria and as such South Central Railway authorities have approved the same.

  
28/3/2022



The sketch depicting the alignment through the forest area for a bare minimum length of 1200mt and width of 100mt is enclosed herewith for perusal as Annexure-I which is self-explanatory.

However, RITES has noted the DFO's site visit observations that "why the alignment was not proposing through the forest corridor where the minimum length of forest is involved" vide their letter No. RC No.4286/2019/S5 (I), Dt:29.01.2022.

Accordingly, RITES once again reviewed the backdrop survey design for minimizing the forest land extent and studied two other options avoiding forest land.

A pictorial sketch on Google Maps is also enclosed for two options shown in cyan color and blue color. The following constraints are noted in the new caes.

**CASE-1 (In Cyan colour):**

1. only 600 mts stretch straight length is available for yard design against the minimum length of 1000mt., which is insufficient and cannot be extended towards state highway due to habitations etc.,
2. Further, on either side of the approach of the straight line, 8-degree curvature is accommodating. But as per procedure in vogue i.e., visibility norms, there should be less than 2-degree curves on either side of the approach of the straight length to accommodate full station/yard length requirement of 1000mt., which is not permitted.

**CASE-2 (In Blue colour):**

1. Though about 900mts to 1000mts length of forest land is available, the yard is to be kept on a 1.5-degree curvature followed by 8 degrees sharper curve which is also not ideal condition an operational and safety point of view.
2. This alignment is crossing existing state highway with about a 60-degree skew angle which cant be allowed by Road authorities thus keeping in view of their future widening etc., Also, this is not allowed by Railways as the skew angle limit should be less than 30 degrees.

Moreover, there is a remarkable difference in ground levels between the approved alignment in the forest area and the proposed alignment in the above two cases. Normally siding/rail line embankment up to a maximum height of 6m is recommended. In the alignment suggested by the DFO, about 15 - **20mts embankment is required to match** with the gradients design between the serving station and implant yard which necessitate a **land width of 160mtr of forest land** instead of 100mt. Thus proposing /creating a station yard on such a high bank of about 15-20mts is not advisable due to operational, maintenance, road accessibility as well as safety norms.

Hence, there is no scope for connecting the alignment through the observed shorter width as explained above in two cases.

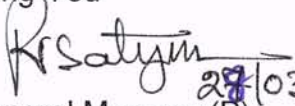
*Pr Satyagun*  
28/3/2021

At the end, looking into the above constraints, the proposed alignment is the only one to fulfill all the criteria which are most suitable and justified. South Central Railway has also approved the same considering all the parameters.

Every care is taken to design the alignment in such a way that it passes through such a portion of the forest, where the density of the forest is very thin, thus involving the minimum number of felling of trees. Also, the alignment is designed in such a way that it does not affect any village habitations falling near the Rail-route.

Encl:- As above

Thanking You

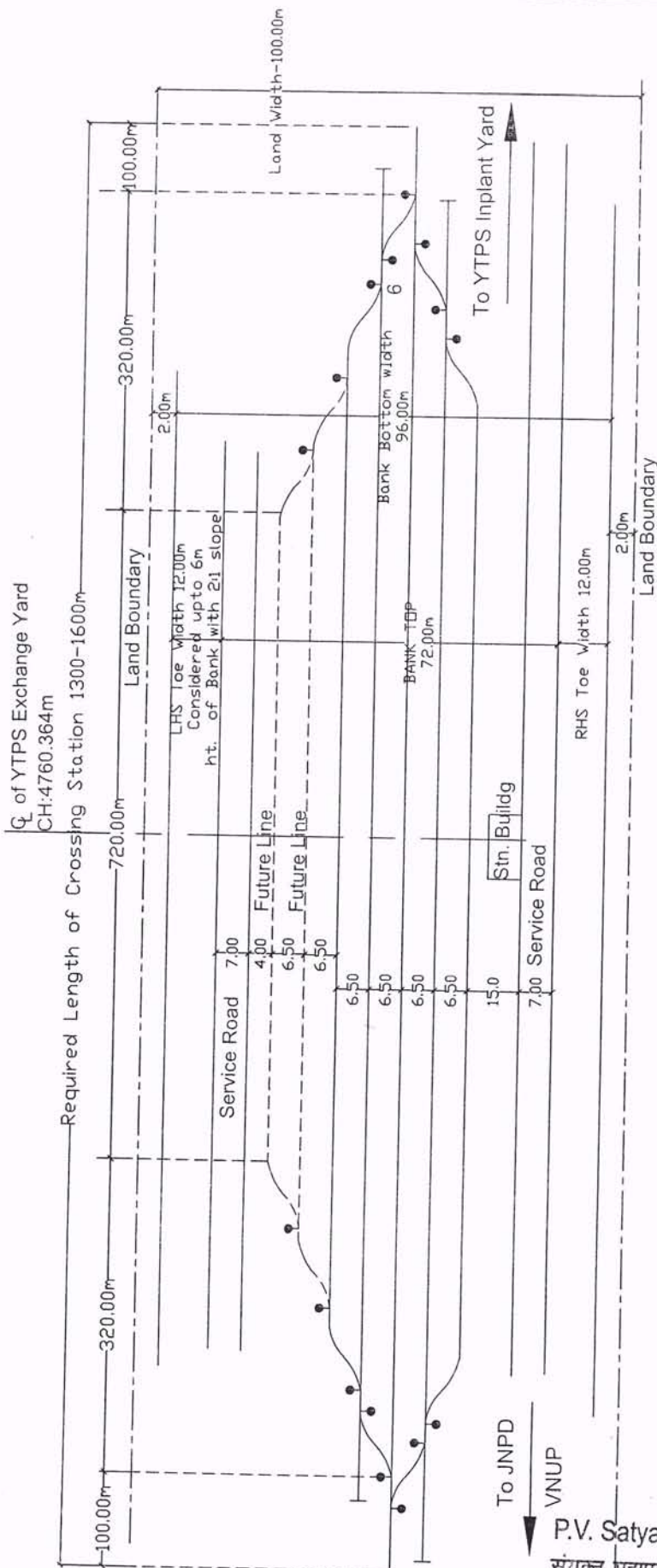
 28/03/2022

For General Manager(P)  
RITES/Secunderabad

Copy to:- 1. CE/Civil/thermal/Hyderabad for information  
✓ 2. SE/Civil/CC-I/YTPS for information  
3. SE/Civil/CD-I/CC-II/YTPS for information  
4. EE/CD-I/CC-I/YTPS for information  
5. EE/Civil-YTPS/TSGENCO/HQ for information

# ANNEXURE-I

## Proposed Yard in Forest Area

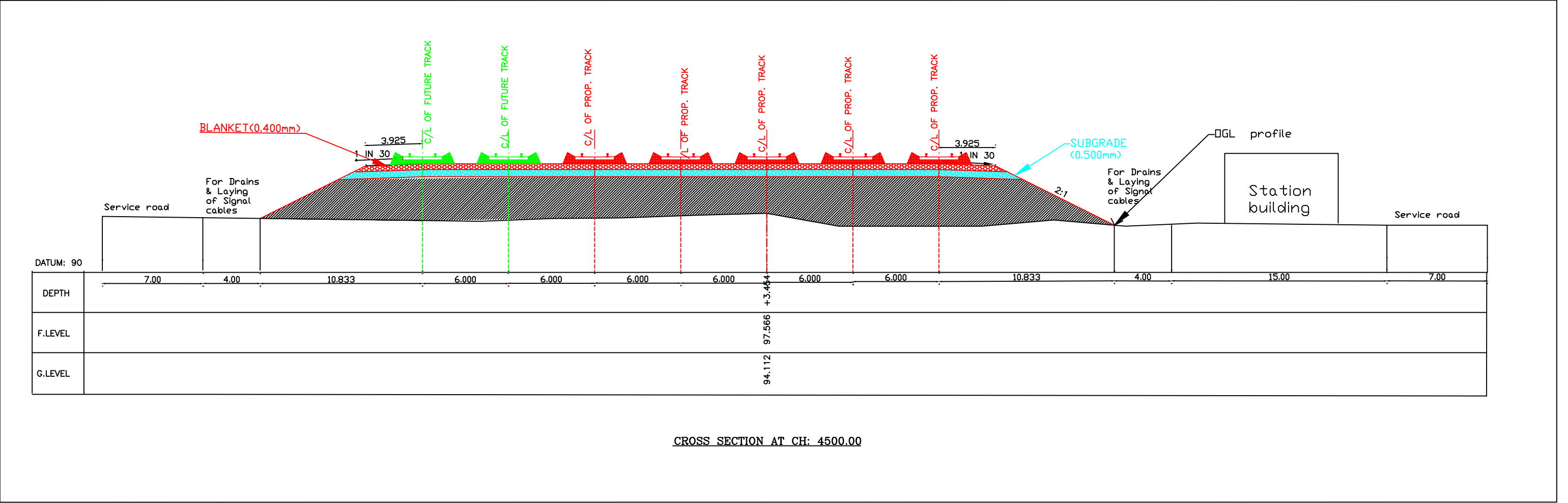


*P.V. Satyanarayana*

P.V. Satyanarayana/पि. वी. सत्यनारायणा  
संयुक्त महाप्रबंधक/Joint General Manager  
राइट्स लिमिटेड/RITES Limited  
क्षेत्रीय परियोजना कार्यालय/Regional Project Office

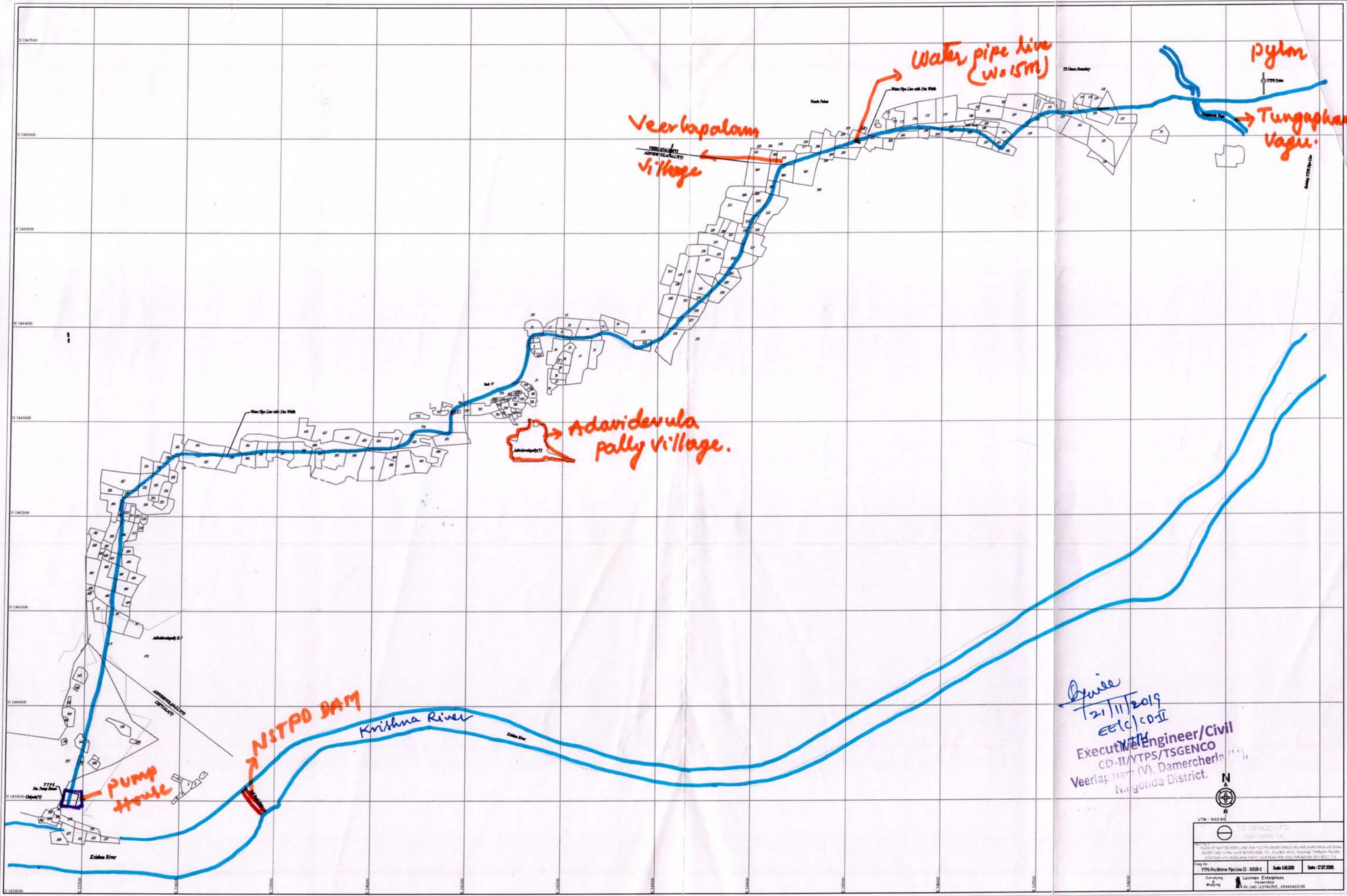


Annexure VI



Layout showing alignment of Raw water Pipeline from Nagarjuna Sagar tail pond dam to YTPS

Annexure VII



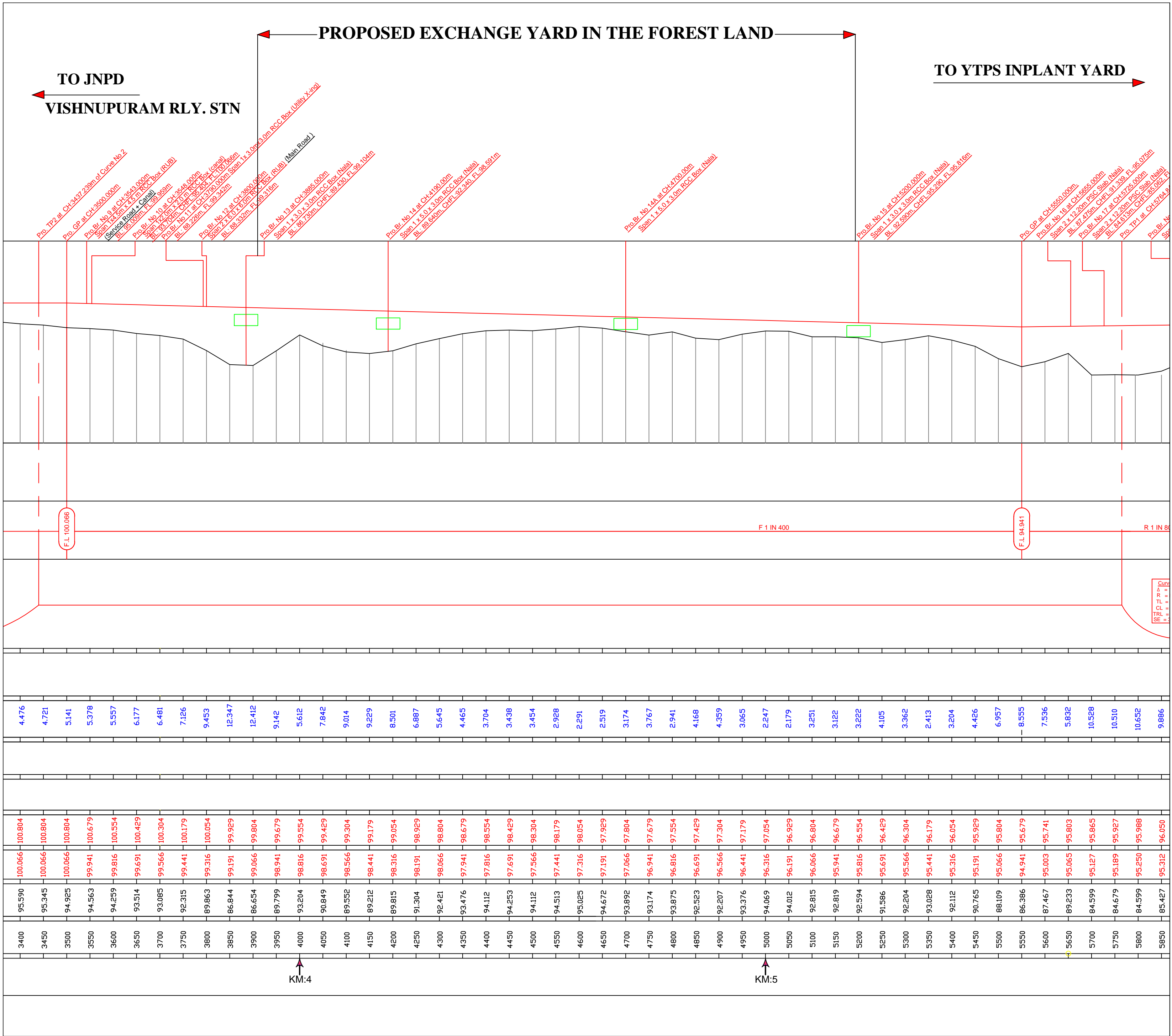




*10.2.2020*  
District Forest Officer,  
NALGONDA

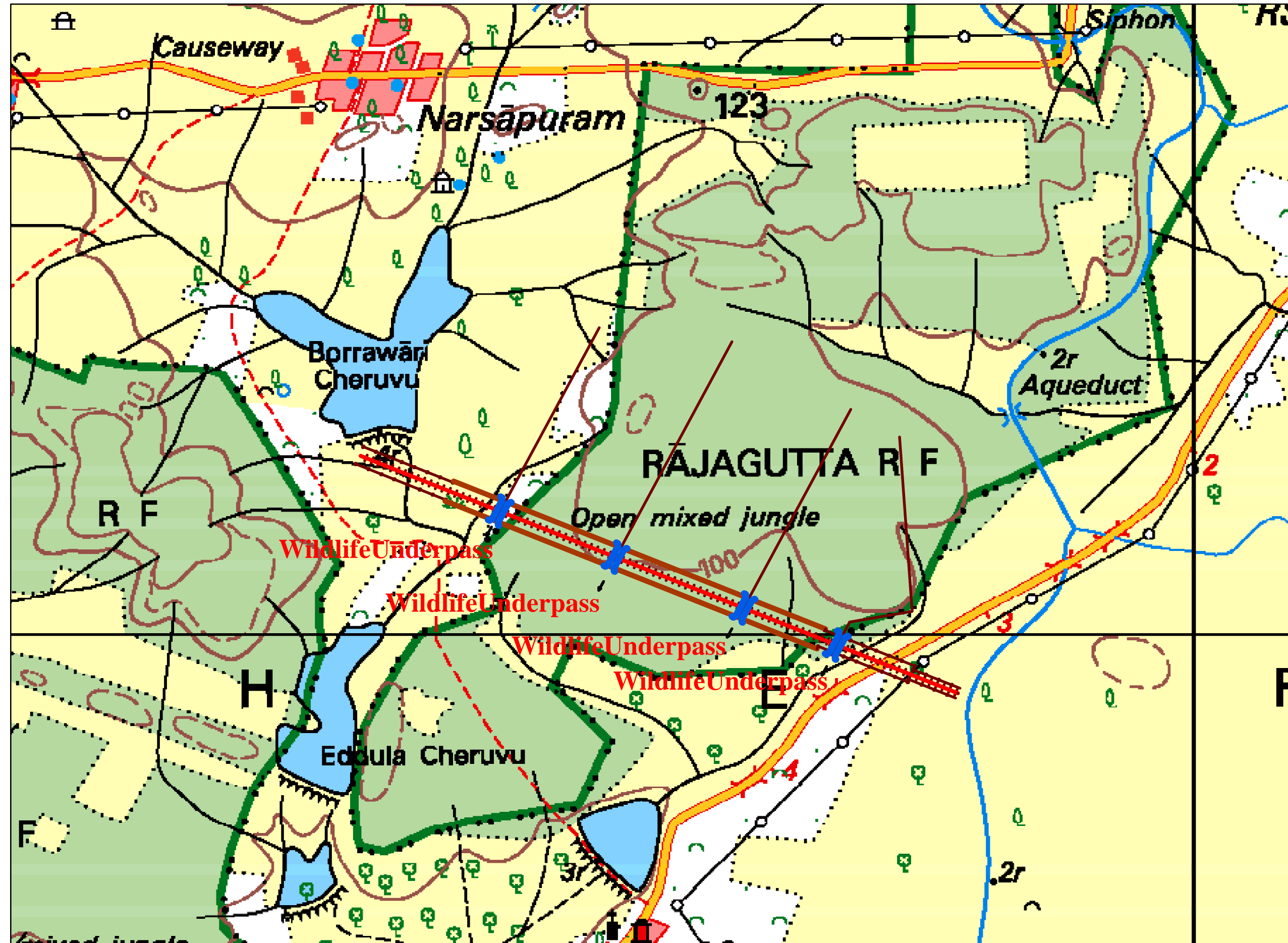
Chief Engineer/Civil/Thermal  
TSGENCO, Vajra Soudha,  
HYDERABAD - 500 022

## Annexure IX



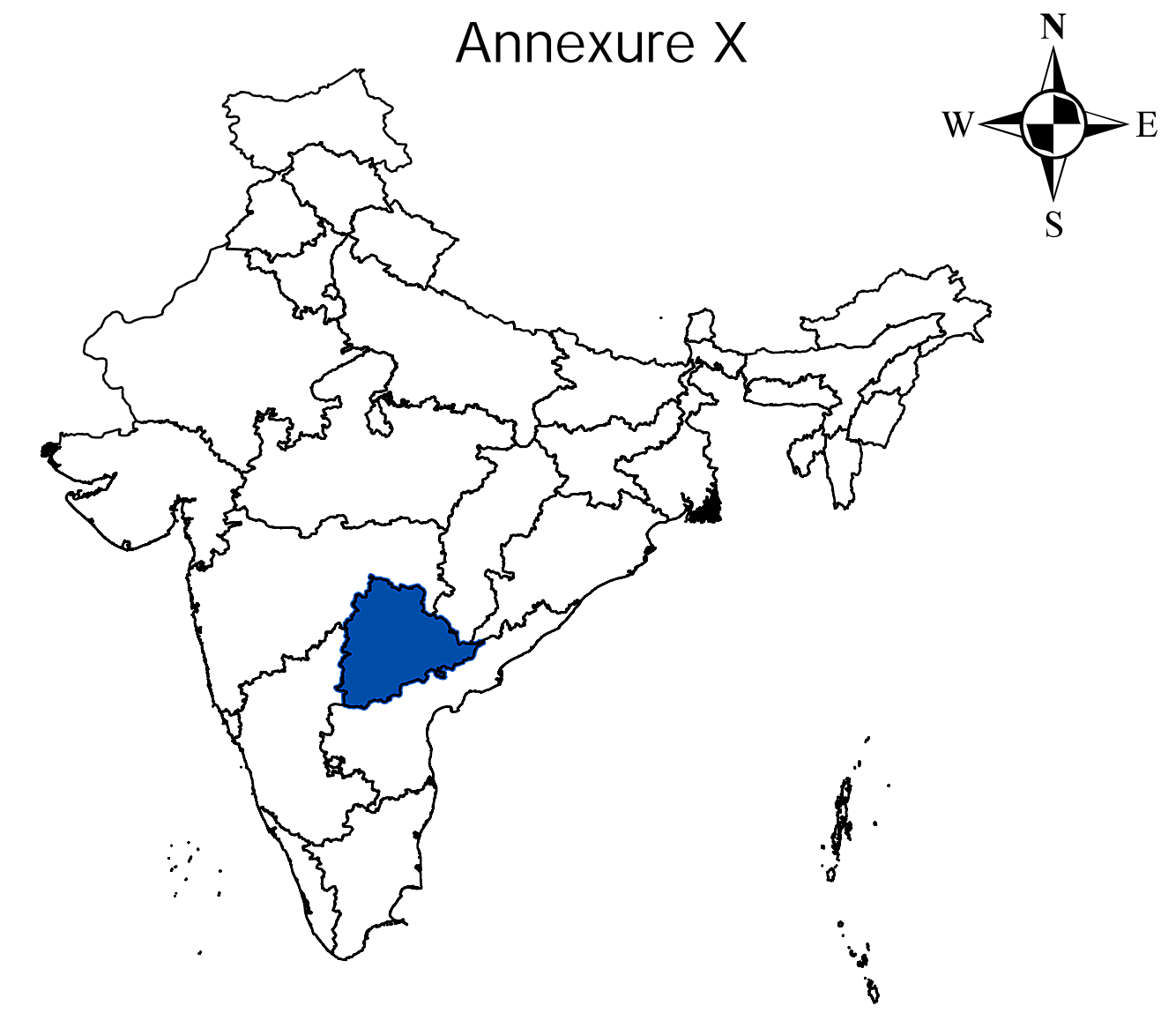


# TopoMap showing Proposed Wildlife Underpassages at Exchange Yard located in Rajagutta R.F in Dameracherla (M) Nalgonda Division

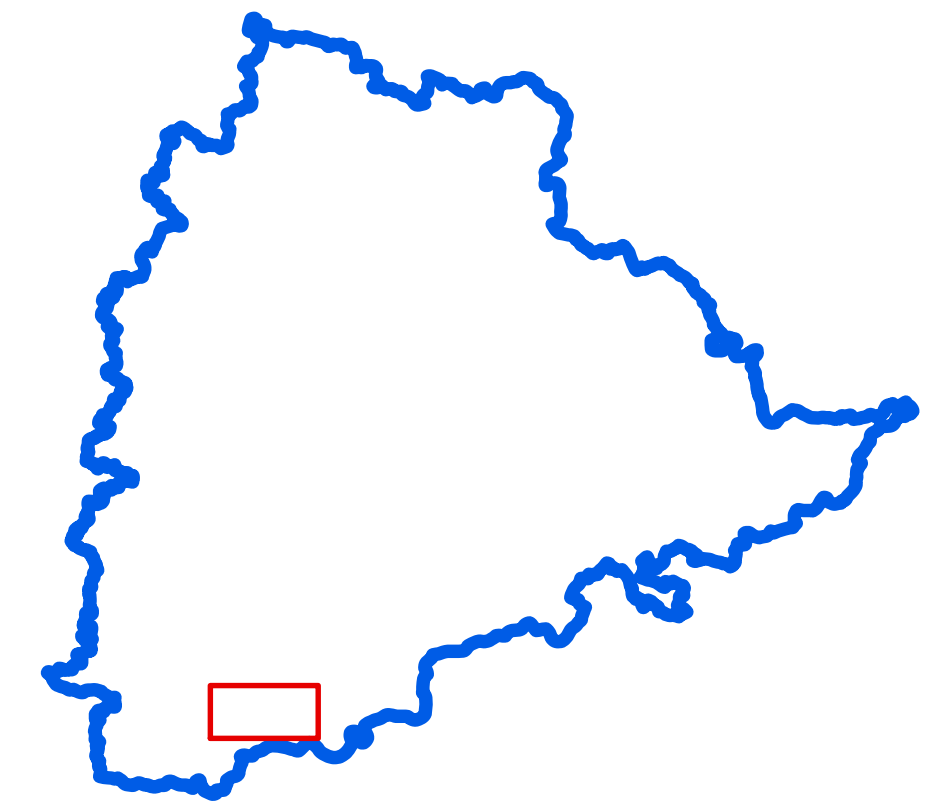


INDIA

Annexure X



Project Location : TELANGANA



0 87.5 175 350 525 700 Kilometers

Prepared By



**SV Enviro Labs & Consultants**

Environmental Engineers & Consultants in Pollution Control  
Enviro House, B1, Block - 'B', IDA, Auto Nagar,  
Andhra Pradesh, Visakhapatnam