



Initial Environment Examination

Project Number: 47100-004
May 2017

IND: Madhya Pradesh Power Transmission and Distribution System Improvement Project

Submitted by

Madhya Pradesh Power Transmission Co. Ltd., Government of Madhya Pradesh

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Asian Development Bank



MADHYA PRADESH POWER TRANSMISSION CO.LTD.

(A wholly owned Govt. of Madhya Pradesh Undertaking)

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No.04-01/PMU/ADB/ 2015

Dated 6 MAY 2017

To,

The Country Director,
INRM, Asian Development Bank,
4, San Martin Marg, Chanakyapuri,
New Delhi-110021



Sub: Submission of IEE Report towards ADB Loan No. 3066-IND (Main & Saving).

Ref: In respect of Order No. 04-01/TR-09/14/PMU/06682-7 dt.22-09-2015 placed on M/s XIDAS, Jabalpur.

Dear Sirs,

This has a reference to the above cited matter, in this regard the Initial Environmental Examination (IEE) Report submitted by our consultants M/s XIDAS, is enclosed with this letter for your kind perusal please.

Thanking you,

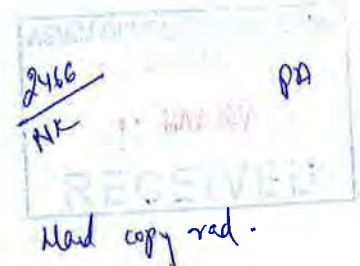
Encl: As above

Yours faithfully,

CHIEF ENGINEER (PROCUREMENT)

Copy to:

✓ Mr. J. Banerjee, Senior Project Officer (Energy), INRM Asian Development Bank,
4, San Martin Chanakyapuri, New Delhi-110021- For information please.



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May 2017

**IND: Madhya Pradesh Power Transmission and Distribution
System Improvement Project**

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Loan no. 3066 IND

**Prepared by, Government of Madhya Pradesh through MP Transco
Madhya Pradesh, India**

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ABBREVIATIONS

ADB	–	Asian Development Bank
CEA	–	Central Electricity Authority, Ministry of Power, GoI
DC	–	Double Circuit
DPR	–	Detailed Project Report
EA	–	Executing Agency
EHV	–	Extra High Voltage
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
EMoP	–	Environmental Monitoring Plan
GoMP	–	Government of Madhya Pradesh
GoI	–	Government of India
MPPTCL	–	Madhya Pradesh Power Transmission Company Limited
MPPCB	–	Madhya Pradesh Pollution Control Board

GRM	–	Grievance Redress Mechanism
HVDS	–	High-Voltage Distribution System
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination
IMD	–	India Metrological Department
MoEF	–	Ministry of Environment and Forests
MOP	–	Ministry of Power
MSL	–	Mean Sea Level
PGCIL	–	Power Grid Corporation of India Limited
PLF	–	Plant Load Factor
PMU	–	Project Management Unit
RE	–	Rural Electrification
RP	–	Resettlement Plan
ROW	–	Right of Way
SF6	–	Sulphur Hexafluoride
XIDAS	–	Xavier Institute of Development Action and Studies

WEIGHTS AND MEASURES

sq.mm.	–	square millimeter
ha	–	(hectares) Unit of area -10,000 square meter = 2.47105 Acres
km	–	(Kilometers) 1,000 meters
kV	–	kilovolt (1,000 volts)
kW	–	kilowatt (1,000 watts)
kWh	–	kilowatt-hour
MW	–	Mega Watt
MU	–	Million Units
MVA	–	Megavolt Ampere

EXECUTIVE SUMMARY

1.0 INTRODUCTION

1. To improve the quality and reliability of service in the power transmission and distribution system networks, the Government of Madhya Pradesh (GoMP) has taken initiatives to invest in the power sector with funding from development partners like the Asian Development Bank (ADB). The investment involves expansion, upgrading and reconfiguration of the existing power transmission networks. An IEE report for TRANSCOM was submitted for ADB's approval in September, 2013. However, during the course of commencement of the works, there were route alignment changes in some transmission lines, further some new lines were also added to the same project and some were dropped as they were no longer necessary. In case of substations also, two substations were dropped from the original scope of work. In light of these changes, the IEE report needs to be updated to reflect route alignment changes and also to incorporate the new subprojects.

2.0 Policy, Legal and Administrative Framework

2. The Safeguard Policy Statement 2009 (SPS 2009) of ADB sets out the requirements for environmental safeguard that applies to all ADB-financed projects. Under the SPS 2009, the project is classified as B on environment requiring the preparation of an initial environmental examination (IEE). Following the requirements of SPS 2009, this draft IEE is prepared covering the components of the proposed project on power transmission and distribution system improvement.
3. The Ministry of Environment and Forests (MoEF), GoI, in its notification in September 2006, has exempted transmission projects from environmental clearances due to the non-polluting nature of its activities. However, forest clearances under the Forest Conservation Act 1980 will be necessary in the event that transmission line passes through forest areas.

3.0 DESCRIPTION OF PROJECT

4. The outputs for the transmission system improvement component include augmentation of substation capacity and line lengths across all the voltage levels (132 kV, 220 kV, 400 kV). For the 220 kV and 400 kV voltage levels, the focus is to upgrade the transformer capacity at the existing substations. For the 132 kV transmission network, the target is to create more substations to feed the distribution network while improving the overall quality and reliability of supply.
5. About 1,800 circuit-km of transmission line was proposed to be constructed under the original project. A total of 32 substations (or 12.5% of the existing substations) comprising two 400 kV, four 220 kV and twenty six 132 kV substations were proposed to be constructed. However, additions of new project components have resulted in a route length of 1880.285 kms and a total of 75 Transmission Lines and 56 substations (including additional transformers and associated feeder bays).

4.0 Description of Environment

6. The project and subprojects of MP Transco are located in various geographic locations across MP, which lies between latitude 21°6' and 26°54'N and longitude 74°

and 82°47'E. MP covers a geographical area of 308,245 square km (km²) or about 9.38% of the total area of India. MP is land-locked and surrounded by Uttar Pradesh, Chhattisgarh, Andhra Pradesh, Maharashtra, Gujarat and Rajasthan. MP is traversed by the Vindhya, Satpura and Maikal hill ranges running east-west.

7. Most of MP has an elevation of between 305 to 610 meters above mean sea level. Low-lying areas are in the narrow Narmada valley in the central southern parts. In general, MP stretches across a geographically elevated position.¹ The area is part of peninsular plateau consisting of sedimentary and metamorphic rocks and is structurally part of the peninsular block. Environmental attributes of transmission lines and substation locations are also discussed.

5.0 Anticipated Environmental Impacts and Mitigation Measures

8. The selection of the subprojects included in the power transmission system improvement was guided by 25 criterion question checklist with an overall objective of avoiding potential significant adverse environmental impacts and land acquisition. Transmission line subprojects traverse mainly agricultural land planted to soybean, rice, corn, vegetables and other cash crops. Five transmission lines are passing through forest areas and relevant forest clearances have either been applied for or work permission has been obtained. Remaining subprojects are not located within the areas declared as forest by MoEF, cultural and archaeological sites considered of national importance, and the nine national parks and 25 wildlife sanctuaries in Madhya Pradesh.
9. The subprojects are not expected to cause significant adverse environmental impacts but may cause temporary impacts during construction such as increased noise and dust level that may cause inconvenience to local people, accumulation of scrap materials/debris, increased presence of workers at substation construction sites which can be readily mitigated by good construction engineering practices and proper planning. An environmental management plan was prepared as part of the report.

6.0 Analysis of Alternatives

10. The subprojects were selected following criteria and appropriate survey methods with the objectives of avoiding the potential significant adverse environmental impacts and land acquisition. Transmission line routes traverse primarily agricultural lands planted to soybean, rice, corn, vegetables and other cash crop. Five transmission lines are passing through forest areas and relevant forest clearances have either been applied for or work permission has been obtained. Forest involvement is minimum in such cases. Remaining subprojects are not located within the areas declared as forest by MoEF, cultural and archaeological sites considered of national importance, and the 9 national parks and 25 wildlife sanctuaries in Madhya Pradesh.

7.0 Information Disclosure

11. Initial consultations were done during the site visits held on July 23-26, 2013. Consultations with project stakeholders in varying degrees will continue throughout the life of the project. Concerns of local people were common and they include: (i)

¹ The Department of Land Resources, GoI.

http://dolr.nic.in/dolr/downloads/spsp/Madhya%20Pradesh_SPSP.pdf. (Accessed 3 March, 2016)

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load shedding and lack of reliable and stable supply of power affecting their produce and livelihood, and (ii) timely compensation to farmers affected during construction of substations, erection of the transmission towers, and stringing of the conductors. Local people are aware of the proposed project and are generally supportive due to expected long-term benefit of reliable and stable supply of power.

12. This IEE report will be posted on the ADB website as required by SPS 2009 and Public Communications Policy 2011. A project factsheet or a frequently asked questions flyer in Hindi will be made available at the EAs field offices. Aside from this public disclosure requirement, the Right to Information Act 2005 of GoI also provides for additional obligation for the EAs to provide information about the project.

8.0 Grievance Redress Mechanism

13. A grievance redress mechanism will be established by the PMU in each EA to deal with complaint(s) from affected persons (APs) during implementation. APs can seek redress of their grievance at three levels: (i) the PMU at each EA, (ii) the grievance redress committee (GRC), and (iii) the appropriate courts of law. GRC is set up by the PMU in each EA as soon as the project commences and will function as such from construction to operation. The PMU in each EA will ensure the representation of women on the members of GRC which will consist of representatives from the local Panchayat Head, a District Revenue Commissioner, representative from the EPC Contractor(s) only during construction phase, designated staff of EA on safeguards, Manager/Director of EA, and a witness of the complainant/affected person.

9.0 Environmental Management Plan

14. An environmental management plan is prepared with this report.

10.0 Conclusion and Recommendations

15. None of the subprojects are expected to cause significant adverse environmental impacts during construction and also during operation. However, vegetation and land clearing within the right of way and the substation sites will be required which can be easily mitigated by proper planning, consultation, and best practices in construction engineering.
16. Overall, local people are aware of the proposed project and are generally supportive due to expected long-term benefit of reliable and stable supply of power as well as employment opportunities resulting from the project. Consultations will continue throughout the life of the project. A grievance redress mechanism will be set up by the PMU in each EA to properly address complaints and issues that may arise from affected persons during implementation.
17. This draft IEE will be publicly disclosed at the ADB website as required by SPS 2009 and Public Communications Policy 2011. A project brief and/or factsheet will be prepared in Hindi and made available to the public at the PMU-field offices of each EA. The reliability and stability of power supply resulting from the project is expected to improve the quality of life and the pace of economic development in Madhya Pradesh.

1.0 INTRODUCTION

1. To improve the quality and reliability of service in the power transmission and distribution system networks, the Government of Madhya Pradesh (GoMP) has taken initiatives to invest in the power sector with funding from development partners like the Asian Development Bank (ADB). The investment involves expansion, upgrading and reconfiguration of the existing power transmission networks.

1.1 Overview of the Project

2. The peak availability in the MP power sector was 9,692 megawatt (MW) while the estimated unrestricted peak demand was 10,308 MW resulting in an unmet demand of 616 MW in fiscal year (FY) 2012. Expansion of the distribution system with new power connections to households, increased consumption from existing customers, and the rapid economic growth of the state⁴ are expected to rapidly increase the demand for electricity. Demand for electricity grew at about 13.42% per annum during FY 2010-2012 and is predicted to grow over 11% per annum between FY2013-2017. By 2017 transmission and distribution system should deliver about 7000 MW of additional power to the customers. An estimated 20% demand supply gap may result by FY 2017 if the transmission and distribution (T&D) capacity is not enhanced. Therefore, the proposed investments in T&D aim removing the existing bottlenecks and expansion of the T&D capacity to meet the growing demand.
3. Over the last 10 years, the transmission system has witnessed appreciable improvement with the Government and ADB's support and now its capacity is adequate to meet the current requirements. The transmission company has already been able to bring down the transmission losses from 7.93% in FY 2003 to 3.30% in FY 2013 while the system availability is 99.44% as against the target of 98%. Further reduction in transmission system losses to around 3% and maintaining the current standards of reliability would mean investment for the transmission system strengthening in the state. The transmission company has prepared a detailed investment plan based on the technical studies and which has been approved by the state electricity regulatory commission. According to the approved transmission plan, around \$1,474 million is required for the 5 year period from FY 2013 to FY 2017. This includes construction of 10,667 circuit-km of transmission lines and additional capacity of 19,698 MVA for the extra-high voltage (EHV) substations. Of the total, MP Transco already invested \$574 million and Japan International Cooperation Agency (JICA) provided a loan of \$200 million. The proposed project undertakes about \$350 million worth investments identified in the five year transmission development plan.
4. An IEE report for TRANSCOM was submitted for ADB's approval in September, 2013. However, during the course of commencement of the works, there were route alignment changes in some transmission lines, further some new lines were also added to the same project and some were dropped² as they were no longer necessary.

² 132KV Pithampur (220KV)-Pithampur-III (132KV) DCDS Line and LILO one circuit of Mandideep-Hoshangabad 132KV line at Tamot were proposed as part of the original project but were not included in IEE report, 2013. However, both lines were covered in the original RP. The lines have been dropped now as they were no longer required.

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In case of substations also, two substations were dropped³ from the original scope of work. In light of these changes, the IEE report needs to be updated to reflect route alignment changes and also to incorporate the new subprojects. Table 1.0 shows various changes in the subprojects since the submission of the IEE report, September, 2013.

1.1.1 Impact and Outcome

5. The impact of the project would be adequate and reliable power supply for sustainable growth of power sector of MP. The project outcomes would be increased capacity and improved operational efficiency in electricity transmission in MP.

1.1.2 Outputs

6. The outputs for the project include augmentation of substation capacity and line lengths across all the voltage levels (132 kV, 220 kV, 400 kV). For the 220 kV and 400 kV voltage levels, the focus is to upgrade the transformer capacity at the existing substations. For the 132 kV transmission network, the target is to create more substations to feed the distribution network while improving the overall quality and reliability of supply. A total of 75 transmission lines covering 1,880.285 kms are proposed to be constructed under the project. A total of 56 substations and additional transformers are proposed to be constructed. The total capacity addition under the project would be about 4,000 MVA which is 25% of the targeted substation capacity addition by MP Transco during the period of FY 2013-2017. This would result in an increase in the transmission substation capacity from 37,000 MVA in 2013 to 41,000 MVA by 2020.
7. MP Transco will be the executing agency (EA) and at the same time, implementing agencies. A project management unit (PMU) will be set up in the executing agency / implementing agency.

1.2 The Need for an Initial Environmental Examination

1.2.1 National Requirements

8. The Government of India (GoI) considers power transmission projects as environment-friendly compared to other power development projects since they do not generate and dispose of hazardous waste to land air and water, thus, they are not included within the realm of the Environment Protection Act 1986. In September 2006, the Ministry of Environment and Forests (MoEF) has issued a notification exempting power transmission projects from environmental clearances due to its non-polluting nature⁴. Therefore, no environmental clearances for the proposed project will be required from the MoEF or from the Madhya Pradesh State Pollution Control Board (MPPCB).
9. However, under the Forest Conservation Act 1980, if power transmission projects will traverse or affect land classified as forest by GoI, forest clearance has to be obtained from the relevant authorities to prevent deforestation and degradation. The MP state government cannot de-classify any forest land or authorize its use to any non-forest

³ Pithampur-III 132/33KV 63MVA+132KV FB(2) substation and Tamot 132KV/33KV 40MVA+132KV FB(2) substation have also been dropped as they were no longer deemed necessary.

⁴ Notification in the Gazette of India, Extra-ordinary part II and section 3, subsection II, 14 September 2006

purpose without the approval of the Central government. Given this stringent requirement, avoidance of land designated as forest as far as possible by GoI has been included as one of the main criteria for site selection in power transmission projects.

1.2.2 Requirements of Asian Development Bank

10. The Safeguard Policy Statement 2009 (SPS 2009) of ADB sets out the requirements for environmental safeguard that applies to all ADB-financed projects⁵. Under SPS 2009, projects that require financing from ADB are screened and categorized based on their potential environmental impacts. This project is classified by ADB as Category B on environment requiring the preparation of an initial environmental examination (IEE). Following the requirements of SPS 2009, this updated IEE is prepared covering the components of the proposed project and changes since the submission of the previous IEE report of September, 2013.

1.2.3 Objectives of the IEE

11. The objectives in undertaking an IEE are:
 - (i) to assess the environmental impacts – positive and negative associated with the proposed project;
 - (ii) to identify the corresponding mitigation and/or enhancement measures for the environmental impacts; and,
 - (iii) to ensure that all statutory requirements for the project such as applicable rules and regulations, clearances required (if any), etc. have been considered to ensure compliance.

1.2.4 Scope and Methodology

12. The scope of the IEE covers the general environmental profile of MP, an assessment of the potential environmental impacts on physical, ecological, economic, and social and cultural resources within the project's influence area during design and/or pre-construction, construction, and operation stages. An environmental management plan and an environmental monitoring plan are integral part of the IEE. The IEE followed a number of steps:
 - (i) Conduct field visits to collect primary or secondary data relevant to the project area to establish the baseline environmental condition;
 - (ii) Assess the potential impacts on environmental attributes due to the location, design, construction and operation of the Project through field investigations and data analysis;
 - (iii) Explore opportunities for environmental enhancement and identify measures;
 - (iv) Prepare an environment management plan (EMP) outlining the measures for mitigating the impacts identified including the institutional arrangements;
 - (v) Identify critical environmental parameters required to be monitored subsequent to the implementation of the Project and prepare an environmental monitoring plan;
 - (vi) Compare the environmental safeguard requirements of GoI, GoMP and ADB, and identify measures to bridge the gap, if any;
 - (vii) Carry out consultation with affected stakeholders, local administrative bodies to identify perception of the Project, introduce project components and anticipated

⁵ Asian Development Bank Safeguard Policy Statement (SPS 2009), <http://www.adb.org/documents/safeguard-policy-statement>. (Accessed 25 February, 2016)

- impacts; and,
- (viii) Disclose the draft IEE at ADB website and prepare project brief and/or FAQs in local language to be made publicly available at the offices of MP Transco.
13. Field visits were carried out in the months of March, October and December 2016 to conduct ocular inspection and to assess the existing condition of the physical and biological environment of selected subproject sites, consult with local people that may be potentially affected by the subprojects, coordinate with MP Transco, and local authorities, and to collect secondary data.

1.3 Structure of the Report

14. In line with SPS 2009, the IEE report has the following contents:
- *Executive Summary* This section briefly describes the critical facts, significant findings, and recommended actions.
 - *Introduction (Section 1.0)* Describes the overview of the project, environmental requirements, objectives and scope of the study, approach and methodology.
 - *Policy, Legal, and Administrative Framework (Section 2.0)* Discusses the national and local legal and institutional framework within which the environmental assessment is carried out. It also identifies project-relevant international environmental agreements to which the GoI is a party or signatory, and other requirements relevant to the proposed project such as no objection certificate, consent/permission from concerned departments and/or organizations, as applicable.
 - *Description of the Environment (Section 3.0)* Describes the relevant physical, biological, and socioeconomic conditions within Madhya Pradesh as the subprojects covered in the proposed project are spread all over the state
 - *Project Description (Section 4.0)* Provides an overview of the proposed project; its objectives and major components including maps showing the project's location
 - *Analysis of Alternatives (Section 5.0)* Examines the alternatives to proposed project sites to ensure avoidance of significant adverse environmental impacts
 - *Anticipated Environmental Impacts and Mitigation Measures (Section 6.0)* Provides an assessment of the associated environmental impacts and corresponding mitigation measures. The environmental impacts and mitigation measures including the environmental monitoring are summarized in the environmental management plan and environmental monitoring plan.
 - *Information Disclosure, Consultation, and Participation (Section 7.0)* Describes the process of engaging stakeholders and information disclosure. This section summarizes the comments and concerns of affected persons.
 - *Grievance Redress Mechanism (Section 8.0)* This section describes the grievance redress framework and setting out the time frame and mechanisms for resolving potential complaints and/or issues from affected persons.
 - *Environmental Management Plan (Section 9.0)* Describes the set of mitigation and management measures to be taken for each identified environmental impact during project design, construction and operation. This section also includes monitoring and reporting procedure as well as institutional implementation arrangements.
 - *Conclusion and Recommendation (Section 10.0)*

2.0 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 ADB Safeguard Policy Statement 2009

15. ADB requires the consideration of environmental issues in all aspects of its operations, and the requirements for environmental assessment are described in its Safeguard Policy Statement 2009 (SPS 2009)⁶. This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, and loans involving financial intermediaries, and private sector loans.
16. Screening and Categorization. The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact are assigned to one of the following four categories:
 - (i) Category A. Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.
 - (ii) Category B. Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
 - (iii) Category C. Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
 - (iv) Category FI. Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all Projects will result in insignificant impacts.
17. Environmental Management Plan. An EMP that addresses the potential impacts and risks identified by the environmental assessment shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the Project's impact and risks.
18. Public Disclosure. The IEE will be put in an accessible place (e.g., local government offices, libraries, community centers, etc.), and a summary translated into Hindi for the project- affected people and other stakeholders. ADB will post the following safeguard documents on its website so affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation.

2.2 Applicable National and State Legislation

19. The implementation of the project and subprojects will be governed by the GoI and GoMP⁷ environmental acts, rules, regulations, and standards. These regulations impose restrictions on activities to minimize and/or mitigate likely impacts on the

⁶ ADB, Safeguard Policy Statement, June 2009, para.50, p.19.

⁷ Madhya Pradesh Pollution Control Board. http://www.mppcb.nic.in/environment_legislation.htm. (Accessed 28 February 2016)

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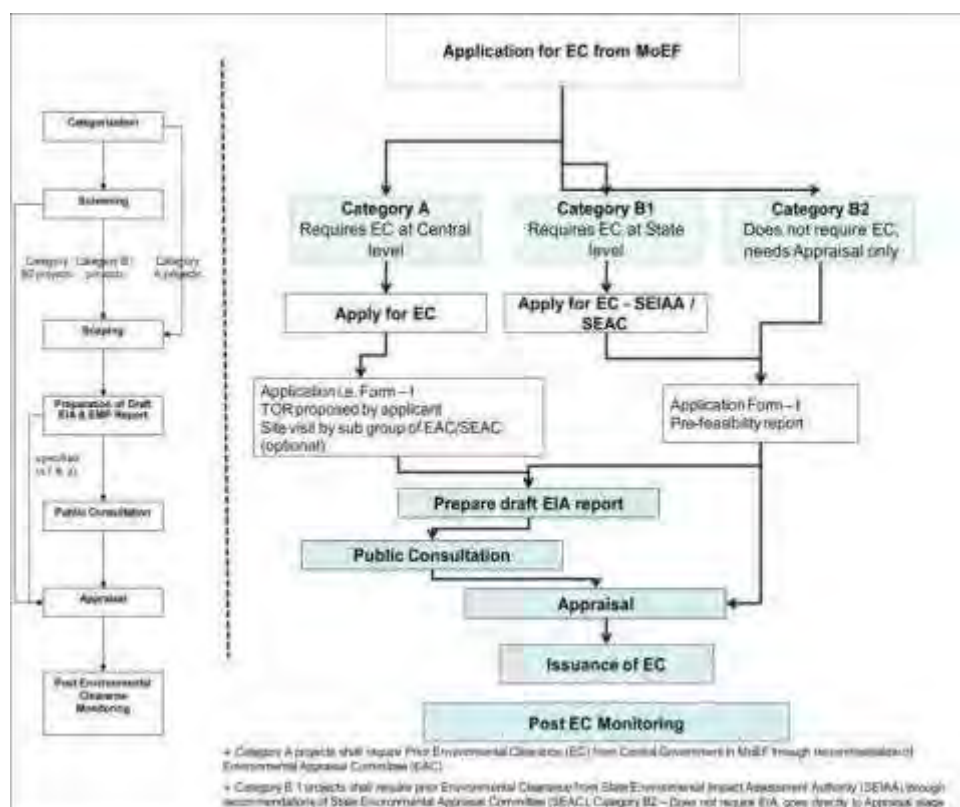
environment. It is the responsibility of the project executing and implementing agencies to ensure subprojects are consistent with the policy, legal and administrative framework across all hierarchy - national, state municipal and local.

20. Some of the applicable national and state acts/rules applicable to this project are as follows and details given below. Compliance with legislations (acts/rules) is mandatory at all stages of project implementation.
- (i) The Hazardous Wastes (Management and Handling) Amendment Rules, 2003.
 - (ii) Batteries (Management and Handling) Rules, 2001.
 - (iii) Ozone Depleting Substances (Regulation and Control) Rules, 2000.
 - (iv) The Environment (Protection) Act, 1986, amended 1991 and including Rules/Notification issued under this Act.
 - (v) The Biodiversity Act, 2002.

2.3 National and State Environmental Assessment Requirements

21. As per GoI's Environment Impact Assessment (EIA) Notification 2006, power transmission (and distribution) projects are not listed as environmental sensitive projects and hence no environmental clearance is required from MP State Pollution Control Board (MPSPCB)⁸ or the Ministry of Environment and Forests (MoEF)⁹. Clearance from MP Forest Department is required only in cases where subproject is constructed on forestland or requires cutting of forest trees. Figure 2.1 shows the process of obtaining an environmental clearance in India.

Figure 2.1: Environmental Clearance Process in India



⁸ Ibid 6

⁹ Notification in the Gazette of India, Extra-ordinary part II and section 3, subsection II, 14 September, 2006.

22. The MoEF, GoI, vide its Notification Nos. S.O. 1533 dated September 14, 2006, reengineered the EIA process in India, also decentralized some powers, and made provision to constitute the State Level Environment Impact Assessment Authority (SEIAA) and the State Level Expert Appraisal Committee (SEAC) for performing functions under the said Notification.
23. In MP, the central Government constituted the State Level Environment Impact Assessment Authority (SEIAA) in the pursuance of the GoI notification on 1533(1) dated 14 September 2006. The SEIAA, MP bases its decision on the recommendations of the State Level Expert Appraisal Committee (SEAC) also constituted for MP as per the order.¹⁰
24. Table 2.1 discusses the permissions/clearances required for the Project.

Table 2.1 Permissions/Clearances Required for the Project

S.N o.	Clearances	Acts/Rules/Notifications/Guidelines	Concerned Agency	Responsibility
1.	Environmental Clearance	<p>EIA Notification (2006; 2009) sets screening criteria to classify new and expansion projects based on potential environmental impacts..</p> <p>The category determines the level of environmental assessment.</p> <p>As per the Indian regulations, the environment impact assessment (EIA) is mandatory for eight types of project activities including mining, power generation, primary processing, materials production and processing, specific manufacturing and services sectors, infrastructure and construction. Under each category, the threshold limits are specified when it is mandatory to conduct an EIA.</p> <p>Power transmission (and distribution) projects are not listed as environmental sensitive projects. Environmental assessment will be carried out as per category of project..</p>	MoEF, SEIAA	MPPTCL

¹⁰ Madhya Pradesh State Environment Impact Assessment Authority.
http://mpseiaa.nic.in/mpseiaa_aboutus.html. (Accessed 1 March, 2016)
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S.No.	Clearances	Acts/Rules/Notifications/Guidelines	Concerned Agency	Responsibility
2.	Permission for felling of trees	Forest Conservation Act (1980) Procedural Guidelines developed by the Department of Environment GoMP, under the orders of the Hon'ble High Court; Tree removal will be guided as per state government rules.	Madhya Pradesh Forest Department, District Level Committee constituted by the State Govt.	MPPTCL and Contractor
3.	Consent to operate Hot mix plant, Crushers, Batching Plant	Air (Prevention and Control of Pollution) Act 1981	Madhya Pradesh Pollution Control Board	Contractor
4.	Authorization for Disposal of Hazardous Waste	Hazardous Waste (Management and Handling) Rules 1989	Madhya Pradesh Pollution Control Board	Contractor
5.	Consent for Disposal of Sewage from Labour camps	Water (Prevention and Control of Pollution) Act 1974	Madhya Pradesh Pollution Control Board	Contractor
6.	Pollution Under Control Certificate	Central Motor and Vehicle Act 1988	Department of Transport, Govt. of Madhya Pradesh	Contractor
7.	Employing Labour/workers	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.	District Labour Commissioner	Contractor

2.4 Applicable International Environmental Agreements

25. International conventions such as the International Union for Conservation of Nature and Natural Resources (IUCN), Convention on Migratory Species (CMS), Convention on Wetlands of International Importance (Ramsar Convention), Convention on Biological Diversity (CBD), and Stockholm Convention on Persistent Organic Pollutants (POPs) are applicable for selection and screening of subprojects under restricted and /or sensitive areas.
26. For the subprojects, (i) animals and plant species found in the subproject sites are not included in the IUCN Red List; (ii) will not alter bird migration; (iii) sites are not within or adjacent to wetlands, protected or forest areas; and (iv) does not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.
27. Subprojects may be subject to Stockholm Convention on Persistent Organic Pollutants (POPs) as per Article 3 and Annex A of the Convention and shall subscribe to the provisions set forth under the Convention.

2.5 Other Applicable Laws and Policies

28. According to the Child Labor Act¹¹ adolescents between the ages of 14 to 18 years, if employed, shall not be engaged in hazardous working conditions. The national and state laws cover the occupational health and safety of employees working only in factories and mines. However, the Indian Constitution stipulates provisions to ensure that the health and well-being of all employees are protected and the state has the duty to ensure protection. The project will ensure compliance to applicable core labour standards of ADB-ILO during design and implementation.¹²

¹¹ The Ministry of Labor and Employment, Notification October 2006.<http://www.childlineindia.org.in/pdf/Amendment-2006-Child-Labour-Act.pdf>. (Accessed 2 March, 2016)

¹² Asian Development Bank and International Labor Organization. Core Labor Standards. October 2006

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3.0 Description of the Project

29. Madhya Pradesh Power Transmission Corporation Limited (MP Transco) is the sole power transmission company in the second largest state of India with a network of power transmission system ranging from 400 kV, 220 kV and 132 kV spread all over MP.
30. With the existing capacity, MP Transco has successfully supplied the maximum demand of 9,484 MW in 2012. However, the peak availability of the power sector in MP was 9,692 MW while the estimated unrestricted peak demand was 10,308 MW, resulting in an unmet demand of 616 MW in FY 2012. MP Transco is currently executing power transmission expansion and strengthening works expected to be completed by end of 2013 to evacuate power from the 1200 MW Shri Singanji (Malwa) Thermal Power Station and 500 MW Satpura Thermal Power Station Extension funded by Japan International Cooperation Agency (JICA) and the Power Finance Corporation Limited.
31. Aside from this, the GoMP has signed a Memorandum of Undertaking with several IPPs to develop power plants in Madhya Pradesh for the next five years. Thus, there will be substantial supply of power for the rural areas, residential and commercial users in the urban areas which would require enhancement of transmission capacity network.

3.1.1 Objectives and Benefits

32. The subprojects included in transmission system improvement are consistent with the 12th Five-Year Plan of MP Transco approved by the State of Madhya Pradesh and the Madhya Pradesh Electricity Regulatory Commission (MPERC).
33. The main objective is to create an infrastructure to evacuate power generated from the implementation of the IPPs and to meet the steadily growing demand for power in the urban and rural areas. Part A subprojects will also allow the transmission and supply of additional power needed by the three distribution companies without overloading the existing 400 kV, 220 kV, and 132 kV transmission lines and extra-high voltage transformers.
34. With the identified subprojects, the MP Transco will be able to meet the various parameters defined in the Grid Code issued by MPERC, and will reduce the overloading of 220 kV, 132 kV and 33 kV system. The technology of the works associated with the subprojects is proven to be the best and no difficulty is anticipated during project implementation.
35. Overall, it is expected that the completion of the transmission system improvement will provide a continuous, more stable and reliable power transmission capacity networks that is likely to contribute to poverty alleviation through the use of available electricity for agricultural production, tourism, industrialization, business, education, commercial activities, health, and other employment-generation activities.

3.1.2 Location and Components

36. The outputs for the transmission system improvement component include augmentation of substation capacity and line lengths across all the voltage levels (132

kV, 220 kV, 400 kV). For the 220 kV and 400 kV voltage levels, the focus is to upgrade the transformer capacity at the existing substations. For the 132 kV transmission network, the target is to create more substations to feed the distribution network while improving the overall quality and reliability of supply.

37. About 1,800 circuit-km of transmission line was proposed to be constructed under the original project. A total of 32 substations (or 12.5% of the existing substations) comprising two 400 kV, four 220 kV and twenty six 132 kV substations were proposed to be constructed. However, additions of new project components have resulted in a route length of 1880.285 kms and a total of 75 Transmission Lines and 56 substations (including additional transformers and associated feeder bays). Table 3.1 shows comparison of transmission lines and table 3.2 shows comparison of substations (including additional transformers and associated feeder bays) with the previous project as listed in IEE report, 2013. In addition, table 3.1 and 3.2 also show deviations in route alignment, project location/site and length. The new projects which were not covered as part of the original IEE, 2013 have been depicted as ‘New’¹³. Figure 3.1 presents the project implementation schedule.

Figure 3.1: Project Implementation Schedule

Activities	2013		2014				2015				2016				2017				2018			
	Q3	Q4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Preparation of Bidding Documents																						
Bidding and Contract Signing																						
Implementation and Commissioning																						

¹³ Route alignment of LILO of Satna - Maihar 132kV line at Satna-II 132kV S/s is not yet finalized and the IEE report will be further updated after finalization of route alignment.

Table 3.1: Details of Transmission Lines (MPPTCL-Loan 3066-IND)

S. No	Name of Line Works	Previous Length in Km. As per ADB approved IEE Report in Sep. 2013	Revised Route Length in Km.	Project Status	Remarks
Jabalpur					
1	LILO of 400kv seoni to Bhilai S/C line at Balaghat/Kirnapur (D/C) (BHEL Noida)	5	3	Yet to start	No change in alignment.
2	LILO of 132kV Balaghat- Seoni/ Katangi line at Waraseoni 132kV S/s (2XD/C) (M/S. B. S. Ltd.)	20	4.7	Yet to start	No change in alignment.
3	LILO of both circuit of 132kV Balaghat-Bhanegaon Line at Blaghat/Kirnapur 400kV S/s (2XD/C) (M/S. B. S. Ltd.)	18	1.79	Yet to start	No change in alignment.
4	LILO of 132 Tikamgarh-Bijawar line for Bada Malehra (Satna Div.)	2 Previously Budhera Bada Malhera 132kV	1.14	Yet to start	Alignment changed
5	Second circuit of Tikamgarh- Budhera 132kV DCSS Line (M/S. B. S. Ltd.)	45	32.218	C	No change in alignment.
6	Narsinghpur 220- Devnagar 132kV DCSS Line (M/S. B. S. Ltd.)	30	24.43	UC	No change in alignment.
7	Karakbel- Belkheda 132kV DCSS line (M/S. B. S. Ltd.)	20	24.445	UC	Alignment changed
8	Narsinghpur 220KV Karakbel 132KV DCS line (M/S. B. S. Ltd.)	50	26.62	UC	Alignment changed
9	Panagar 220-Patan 132kV DCSS line (M/S. B. S. Ltd.)	40	22.749	UC	Alignment changed
10	Chhindwara 220- Saori 132kV DCSS line (KPTL Ltd.)		31.6	Yet to start	NEW subproject
11	Chichli 220- Palohabada 132kV DCSS line (KPTL Ltd.)		12	Yet to start	NEW subproject
12	132kv DCSS line from Damoh 220kv to Patera 132 kv substation (KPTL Ltd.)		35	Yet to start	NEW subproject
13	Second circuit of 132kV Tap Line from Balaghat-Katangi (M/S. B. S. Ltd.)	40	36.17	C	No change in alignment.
Satna					
14	Second circuit 132kV of chhatarpur-Khajuraho line (M/S B.S. Ltd.)	34	34	C	No change in alignment.
15	LILO of second ckt of Bansagar-Satna 220kV line at Kotar 220kV S/s (M/S Vikran Engineering Pvt. Ltd.)		5.693	UC	NEW subproject
16	LILO of Satna - Maihar 132kV line at Satna-II 132kV S/s ¹⁴ (M/S Vikran Engineering Pvt. Ltd.)		20	Yet to start	NEW subproject
17	LILO of second ckt of Birsinghpur - Amarkantak 220kV line at Shahdol		5.6	UC	NEW subproject

¹⁴ Route alignment of LILO of Satna - Maihar 132kV line at Satna-II 132kV S/s is not yet finalized and the IEE report will be further updated after finalization of route alignment.

S. No	Name of Line Works	Previous Length in Km. As per ADB approved IEE Report in Sep. 2013	Revised Route Length in Km.	Project Status	Remarks
	220kV s/s (M/S Vikran Engineering Pvt. Ltd.)				
18	Birsinghpur 220-shahdol 132kV DCSS line (M/S Vikran Engineering Pvt. Ltd.)		45	UC	NEW subproject
Indore					
19	LILO of one circuit of Ashta 400-Dewas 220 kv D/C line at Chapda 220kv S/s (D/C) (M/S B.S. Ltd.)	35	32.782	UC	No change in alignment.
20	Pithampur 400 - Depalpur 220kv DCSS line (M/S B.S. Ltd.)	35	35.583	UC	No change in alignment.
21	Dewas 220- Agrod 132kv DCSS line (M/S B.S. Ltd.)	30	19.355	UC	No change in alignment.
22	Dhar 220 - Teesgaon 132kv DCSS line (M/S B.S. Ltd.)	20	15.35	UC	No change in alignment.
23	LILO of both Circuit of 400 kv Nagda-Rajgarh line at Badnawar (2 x D/C) (M/S BHEL NOIDA)	10	8.163	Yet to start	No change in alignment.
24	Second Circuit of Kukshi Alirajpur 132kv line (M/S B.S. Ltd.)	42	35.82	C	No change in alignment.
Barwaha					
25	LILO of 132 Khargone Bikayan line at 132 Kv sub-station Bistan (M/S. B.S. Ltd.)	35 Previously Talakpura-Bistan 132kv DCSS line	18.197	Yet to start	Alignment Changed
26	LILO of 132kv Chegaon Nepanagar line at Pandhana (M/S. B.S. Ltd.)	30 Previously Chegaon 220-Pandhana 132kv DCSS line	1.895	Yet to start	Alignment Changed
27	LILO Manawar - Kukshi DCSS line at Singhana (D/C) (M/S. B.S. Ltd.)	20	3.11	C	No change in alignment.
28	LILO of 132Kv Khargone -Julwaniya line at 132Kv S/S Talakpura (M/S. B.S. Ltd.)	30 Previously it was Julwaniya 400 Talakpura 132 kv DCSS line	1.9	C	Alignment changed
29	Julwaniya 400- Kukshi 220kv line (D/C) (M/S. B.S. Ltd.)	80	62.9	UC	No change in alignment.
30	Malwa TPS- Chhanera 220kV DCDS Line (KPTL Ltd.)		50	Yet to start	NEW subproject
31	Chhegaon 220- Singot 132kV DCDS Line (KPTL Ltd.)		58	Yet to start	NEW subproject
32	Chhanera 220- Khirkiya 132kV DCDS Line (KPTL Ltd.)		30.421	UC	NEW subproject

S. No	Name of Line Works	Previous Length in Km. As per ADB approved IEE Report in Sep. 2013	Revised Route Length in Km.	Project Status	Remarks
Bhopal					
33	Bairagarh 220 - Intkhedi 132kv DCDS line (M/S. B.S. Ltd.)	15	9.05	UC	No change in alignment.
34	Second circuit of Bairagarh – Shyampur (M/S. B.S. Ltd.)	20	21.44	C	No change in alignment.
35	Second circuit of Gairatganj - Vidisha 220 132kv line (M/S. B.S. Ltd.)	56	48.27	C	No change in alignment.
36	Shujalpur- Narsingharh 220kv DCSS line (Initially charged on 132kv) (M/S. B.S. Ltd.)	58	44.575	UC	No change in alignment.
37	LILO of one circuit of Bhopal - Hosangabad 220kv D/C line at Adampur 220kv S/s (D/C) (M/S. B.S. Ltd.)	5	2.868	Yet to start	No change in alignment.
38	Udaipura -Silvani 132kv DCSS line	25	25.8	UC	No change in alignment.
39	LILO of Vidisha- Bairasiya Line at Salamatpur 132 KV S/s	25	0.162	UC	Alignment changed
40	Mugaliyachhaap 220- Bikisganj 132kV DCDS line		11.4	Yet to start	NEW subproject
41	132kv Rajgarh (Biaora) –Khujner/ Sindaota Line		28	Yet to start	NEW subproject
42	LILO of one ckt of Vidisha Gairatganj at Raisen 132kV S/s (M/S. Punj Loyd)		18.221	Yet to start	NEW subproject
Itarsi					
43	Second circuit of Betul 220 Gudgaon 132kv line (M/S. B.S. Ltd.)	57	57	C	No change in alignment.
44	Chichli 220- Udaipura 132kv DCDS line (220kv line charged at 132kv) (M/S. B.S. Ltd.)	58	47.56	UC	No change in alignment.
45	Betul400 (PGCIL)- Betul 220kV DCDS line (Punj Loyd Ltd.)		1.88	UC	NEW subproject
46	Betul 220- Bisnoor/Masod 132kV DCSS line (Punj Loyd Ltd.)		34.5	Yet to start	NEW subproject
Ujjain					
47	Badnagar 220- Chhayan 132kv DCSS line (M/S. B.S. Ltd.)	35	28.26	UC	No change in alignment.
48	LILO of Badnagar -Ratlam 220kv D/C line at Badnagar 400kv S/s (2xD/C) (M/S. B.S. Ltd.)	20	23.4	UC	No change in alignment.
49	LILO of both ckt of Gandhisagar - Suwasra/Garoth 132kV line at Bhanpura 220kV S/s (M/S. Kalptaru Power Trans. Ltd.)		30	Yet to start	NEW subproject

S. No	Name of Line Works	Previous Length in Km. As per ADB approved IEE Report in Sep. 2013	Revised Route Length in Km.	Project Status	Remarks
50	LILO of both ckt of Badod-Suwasra / Garoth 132kV line at Suwasra 220kV S/s (M/S. Kalptaru Power Trans. Ltd.)		3	Yet to start	NEW subproject
Ratlam					
51	LILO of 132kv Badod - Garoth line at Shyamgarh (D/C) (M/S. B. S. Ltd.)	25	3	Yet to start	No change in alignment.
52	LILO of Ratlam - Meghnagar 132kv S/c line at Petlawad DCDS (D/C) (M/S. B. S. Ltd.)	20	7.4	UC	No change in alignment.
53	LILO of second ckt of Badod - Kota/Madok 220kV line at Bhanpura 220kV S/s (M/S. Kalptaru Power Trans. Ltd.)		.5	Yet to start	NEW subproject
54	LILO of both ckt of Badod-Kota/Modak 220kV line at Suwasra 220kV S/s (2XD/C) (M/S. Kalptaru Power Trans. Ltd.)		14	Yet to start	NEW subproject
55	LILO of second ckt of Nagda-Neemuch 220kV line at Daloda 220kV S/s (M/S. Kalptaru Power Trans. Ltd.)		12.2	Yet to start	NEW subproject
56	LILO of Nagda 220-Ratadiya 132kV line at Unhel (M/S. Kalptaru Power Trans. Ltd.)		2	UC	NEW subproject
57	LILO of one ckt of Neemuch 220-Mandsaur 132kV line at Budha 132kvS/s (M/S. Kalptaru Power Trans. Ltd.)		24	Yet to start	NEW subproject
Gwalior					
58	LILO of 132 KV Gwalior- Dabra/ Karera Line at Chinaur		13.68	UC	Alignment changed
59	Datiya220- Bhandar 132kV DCSS Line (M/S. Bajaj)	35	34.038	C	No change in alignment.
60	Mehgaon 220-Pratappura 132kV DCSS line (M/S. Bajaj)	30	29.74	C	No change in alignment.
61	Sabalgarh 220- Kellaras 132kV DCSS Line (M/S. Bajaj)	25	19.636	UC	No change in alignment.
62	Malanpur 220- Gohad 132kV DCDS Line (M/S. Bajaj)	22	14.5	C	No change in alignment.
63	220 KV DCDS Morena 400 KV (CWRTL Adani) – Sabalgarh DCDS Line	80 Previously Malanpur Sabalgarh	92	UC	NEW subproject Alignment changed
64	Bhonra-Kapasi 132 kv DCSS line (M/S. L&T)		50	Yet to start	NEW subproject
65	Kolaras-Mada 132kV DCSS line (M/S. L&T)		18.366	UC	NEW subproject
66	132kv DCDS Guna 220-Bhonra line		25	Yet to	NEW

S. No	Name of Line Works	Previous Length in Km. As per ADB approved IEE Report in Sep. 2013	Revised Route Length in Km.	Project Status	Remarks
	(M/S. L&T)			start	subproject
67	LILO of one circuit of Malanpur-Mehgaon line at 400 KV S/s (CWRTL Adani) Morena	20 Previously Morena 400 (PGCIL) 220 kv DCDS line	8	Yet to start	NEW subproject
68	2nd circuit of Shivpuri 220- Kolaras 132kV DCSS line (M/S. L&T)		35	Yet to start	NEW subproject
69	2nd ckt of Malanpur- Morar 132kV line (M/S. L&T)		29	Yet to start	NEW subproject
Bina					
70	Khurai- Khimlasa 132kV DCSS line (M/S. B.S. Ltd.)	20	20.937	Yet to start	Alignment changed
71	LILO of Mungaoli Traction Feeder to Mungaoli (D/C) (M/S. Bajaj)	10	8.32	C	No change in alignment.
72	Ashoknagar 220-Kothiya 132kV DCSS Line (M/S. Bajaj)	35	30	C	No change in alignment.
73	Sagar220- Rehli 132kV DCSS line		40	Yet to start	NEW subproject
74	2nd ckt of Sagar 220-Sagar 132kV (I/C)		9	Yet to start	NEW subproject
75	Stringing of 3rd conductor from Bina220 to Mungaoli (M/S. Bajaj)	35	31.3	C	No change in alignment.
Previous length in kms: 1800 Present length in kms: 1880.285					

*Note: UC-Under Construction and C: Completed

** 132KV Pithampur (220KV)-Pithampur-III (132KV) DCDS Line and LILO one circuit of Mandideep-Hoshangabad 132KV line at Tamot were proposed as part of the original project but were not included in IEE report, 2013. However, both lines were covered in the original RP. The lines have been dropped now as they were no longer required.

Table 3.2: Details of Substations and Feeder Bays

S. No	Substation Name	Capacity and associated Feeder Bays	Project Status	Remarks
Jabalpur				
1	Balaghat/Kirnapur 400/132kv (BHEL Noida)	(2 x 100+40MVA) +400kv FB(2) +132kv FB(4)	UC	Covered in IEE report Sep. 2013
2	Waraseoni 132kV (M/S. B. S. Ltd.)	40MVA+132kV FB(2)	UC	Covered in IEE report Sep. 2013
3	Bada Malehra 132/33kV	40 MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
4	Deonagar 132/33kV (M/S. B. S. Ltd.)	40 MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
5	Belkheda 132/33kV (M/S. B. S. Ltd.)	40MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
6	Karakbel 132/33kV (M/S. B. S. Ltd.)	40MVA+132kV FB(2)	UC	Covered in IEE report Sep. 2013
7	Saori 132/33kV S/s (KPTL Ltd.)	(1X50) MVA; 132kV FB(1)	UC	New subproject

S. No	Substation Name	Capacity and associated Feeder Bays	Project Status	Remarks
8	Palohabada 132/33kV S/s (KPTL Ltd.) ¹⁵	(1X50) MVA; 132kV FB(1)	Yet to start	New subproject
9	Patera 132/33kV S/s (KPTL Ltd.)	(1X50) MVA; 132kV FB(1)	UC	New subproject
Satna				
10	Additional Transformer at Sidhi 220 (2nd) (M/S B.S. Ltd.)	+160 MVA	C	Covered in IEE report Sep. 2013
11	Additional Transformer at Kotar 220 (2nd) (M/S B.S. Ltd.)	+160 MVA	UC	Covered in IEE report Sep. 2013
12	Additional Transformer at Chhatarpur (2nd) (M/S B.S. Ltd.)	+160 MVA	UC	Covered in IEE report Sep. 2013
13	Satna-II 132/33kV S/s (M/S Vikran Engineering Pvt. Ltd.) ¹⁶	(2X50) MVA; 132kV FB(2)	Yet to start	New subproject
14	Shahdol 220/132kV S/s (Upgradation) (M/S Vikran Engineering Pvt. Ltd.)	(1X60) MVA; 220kV FB(2)+132kV FB(1)	UC	New subproject
Indore				
15	Badnawar 400/220kv	(2x315MVA) + 400kv FB (4) + 220kv FB (4) +125MVAR bus Reactor	UC	Covered in IEE report Sep. 2013
16	Upgradation of Chapda 132kv S/S to 220kv	(1x160MVA) + 220kv FB(2)	UC	Covered in IEE report Sep. 2013
17	Upgradation of Depalpur 132kv S/s to 220kv	(1x160MVA) + 220kv FB (1)	UC	Covered in IEE report Sep. 2013
18	Agrod 132/33kV	40MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
Barwaha				
19	400/220kv additional transformer at Chhegaon 400kv S/S	1x315 MVA	UC	Covered in IEE report Sep. 2013
20	Teesgaon 132/33kV	40MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
21	Bistan 132/33 kV	40 MVA+ 132kV FB(1)	UC	Covered in IEE report Sep. 2013
22	Pandhana 132/33kV	40MVA+132kV FB(2)	C	Covered in IEE report Sep. 2013
23	Singhana 132/33kV	40MVA+132kV FB(2)	C	Covered in IEE report Sep. 2013
24	Talakpura 132/33kV	40MVA+132kV FB(1)	C	Covered in IEE report Sep. 2013
25	Kukshi 220/132kv	160 MVA + 220kv FB(2) +132kv FB(1)	UC	Covered in IEE report Sep. 2013
26	Chhanera 220/132kV S/s	(2X160+1X50) MVA 220kV FB(2)+132kV FB(3)	UC	New subproject
27	Singot 132/33kV S/s	(1X50)MVA; 132kV FB(1)	UC	New subproject
Bhopal				
28	Salamatpur 132kv/33kv (M/S. B.S. Ltd.)	40 MVA +132kv FB(1)	UC	Covered in IEE report Sep. 2013
29	Intkhedi 132kv /33kv (M/S. B.S. Ltd.)	63 MVA +132kv FB(2)	UC	Covered in IEE report Sep. 2013
30	400/220kv additional transformer at Bhopal 400kv S/S	1x315 MVA	UC	Covered in IEE report Sep. 2013

¹⁵ Land allotment for substation Palohabada is not yet final and the IEE report will be updated once land allotment is final for this substation.

¹⁶ Land allotment for substation Satna II is not yet final and the IEE report will be updated once land allotment is final for this substation.

S. No	Substation Name	Capacity and associated Feeder Bays	Project Status	Remarks
	(BHEL, NOIDA)			
31	Additional Transformer at Mandideep 220 (2nd) (M/S. B.S. Ltd.)	+160 MVA	C	Covered in IEE report Sep. 2013
32	Narsingharh 132/33kv (M/S. B.S. Ltd.)	40MVA +132kv FB(1)	UC	Covered in IEE report Sep. 2013
33	Adampur 220/33kv (M/S. B.S. Ltd.)	2x50MVA + 220kv FB(2)	UC	Covered in IEE report Sep. 2013
34	Bilkisganj 132/33kV S/s	(1X50) MVA; 132kV FB(1)	UC	New subproject
35	Khujner/sindaota132/33kV	(1X50) MVA; 132kV FB(1)	UC	New subproject
Itarsi				
36	Additional Transformer at Betul 220 (2nd)	+160 MVA	UC	Covered in IEE report Sep. 2013
37	Silvani 132kv /33kv	40 MVA +132kv FB(1)	UC	Covered in IEE report Sep. 2013
38	Udaipura 132/33kv	40MVA + 132kv FB(2)	UC	Covered in IEE report Sep. 2013
39	Bisnoor/Masod 132/33kV	(1X50) MVA; 132kV FB(1)	UC	New subproject
Ujjain				
40	Chhayan 132/33kV	40MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
41	400kv Bus Reactor at Nagda 400kv S/S	1X125 MVAR	C	Covered in IEE report Sep. 2013
42	Shyamgarh 132/33kV (M/S. B.S. Ltd.)	40MVA+132kV FB(2)	UC	Covered in IEE report Sep. 2013
Gwalior				
43	Chinaur 132/33kV	40MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
44	Bhander 132/33kV	63MVA+132kV FB(2)	C	Covered in IEE report Sep. 2013
45	Pratappura 132/33kV	40MVA+132kV FB(1)	C	Covered in IEE report Sep. 2013
46	Kelaras 132/33kV	63MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
47	Gohad 132/33kV	63MVA+132kV FB(2)	C	Covered in IEE report Sep. 2013
48	Kapasi/ Paranth 132/33kv (M/S. L&T)	(1X50) MVA; 132kV FB(1)	UC	New subproject
49	Mada 132/33kV S/s (M/S. L&T) ¹⁷	(1X50) MVA; 132kV FB(1)	Yet to start	New subproject
Bina				
50	Khimlasa 132/33kV (M/S. B.S. Ltd.)	40MVA+132kV FB(1)	UC	Covered in IEE report Sep. 2013
51	Mungaoli 132/33kV (M/S. Bajaj)	63MVA+132kV FB(2)	C	Covered in IEE report Sep. 2013
52	Kothiya 132/33kV (M/S. Bajaj)	40MVA+132kV FB(1)	C	Covered in IEE report Sep. 2013
53	Rehli 132/33kV S/s	(1X50) MVA; 132kV FB(1)	UC	New subproject
Ratlam				
54	Suwasra 220/132kV S/s (M/S. Kalptaru Power Trans. Ltd.)	(2X160+1X50) MVA 220kV FB(4)+132kV FB(4)	UC	New subproject

¹⁷ Land allotment for substation Mada is not yet final and the IEE report will be updated once land allotment is final for this substation.

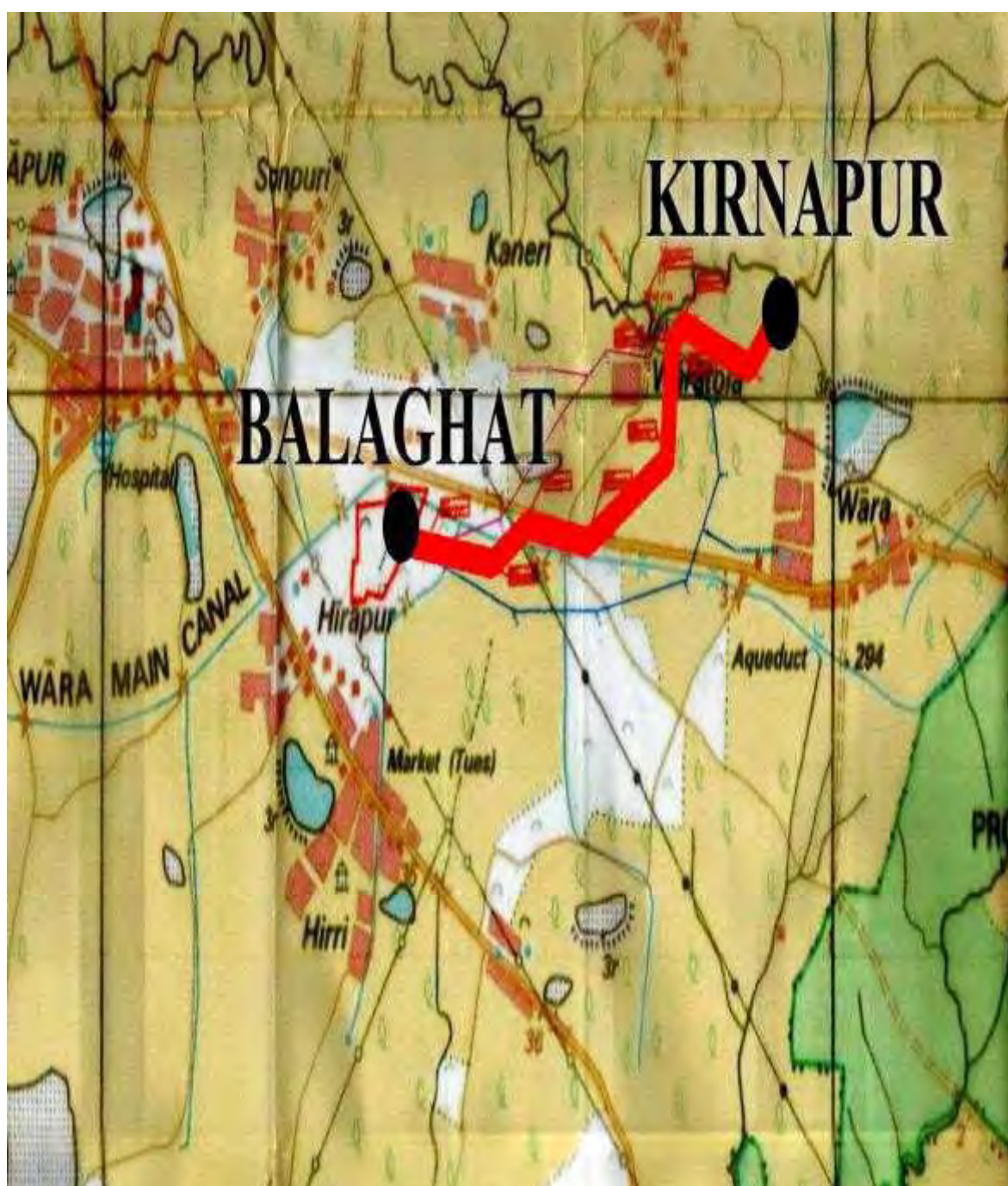
S. No	Substation Name	Capacity and associated Feeder Bays	Project Status	Remarks
55	Unhel 132/33kV S/s (M/S. Kalptaru Power Trans. Ltd.)	(1X50) MVA; 132kV FB(2)	UC	New subproject
56	Budha 132/33kV S/s (M/S. Kalptaru Power Trans. Ltd.)	(1X50) MVA; 132kV FB(2)	UC	New subproject

*Note: UC-Under Construction and C: Completed

** Pithampur-III 132/33KV 63MVA+132KV FB(2) substation and Tamot 132KV/33KV 40MVA+132KV FB(2) substation have also been dropped as they were no longer deemed necessary.

38. The total capacity addition under the project would be about 4,000 Mega Volt Amperes (MVA) which is 25% of the targeted substation capacity addition by MP Transco during FY 2013-2017. This would result in an increase in the transmission substation capacity from 37,000 MVA in 2013 to 41,000 MVA by 2020. Figure 3.2 to Figure 3.75 shows the Transmission lines route alignments. Figure 3.76 shows location of substations in the state.

Figure 3.2: LILO of 400kv Seoni to Bhilai line at Balaghat/ Kirnapur



39. The line LILO of 400kv seoni to Bhilai S/C line at Balaghat/Kirnapur was proposed with three alternatives, with route lengths of 5, 7 and 6.5 kms. There is a canal which was avoided and a water reservoir of importance which finally resulted in a reduced route length of 3 kms from the earlier finalized route length of 5 kms. This option resulted in avoiding large settlements and environmentally critical areas and was thus finalized. 124 farmers have been affected due to tree loss and a total compensation of Rs. 34,18,758 has been paid till now.

Figure 3.3: LILO of 132kv Balaghat-Seoni/Katangi line at Waraseoni 132kv S/s



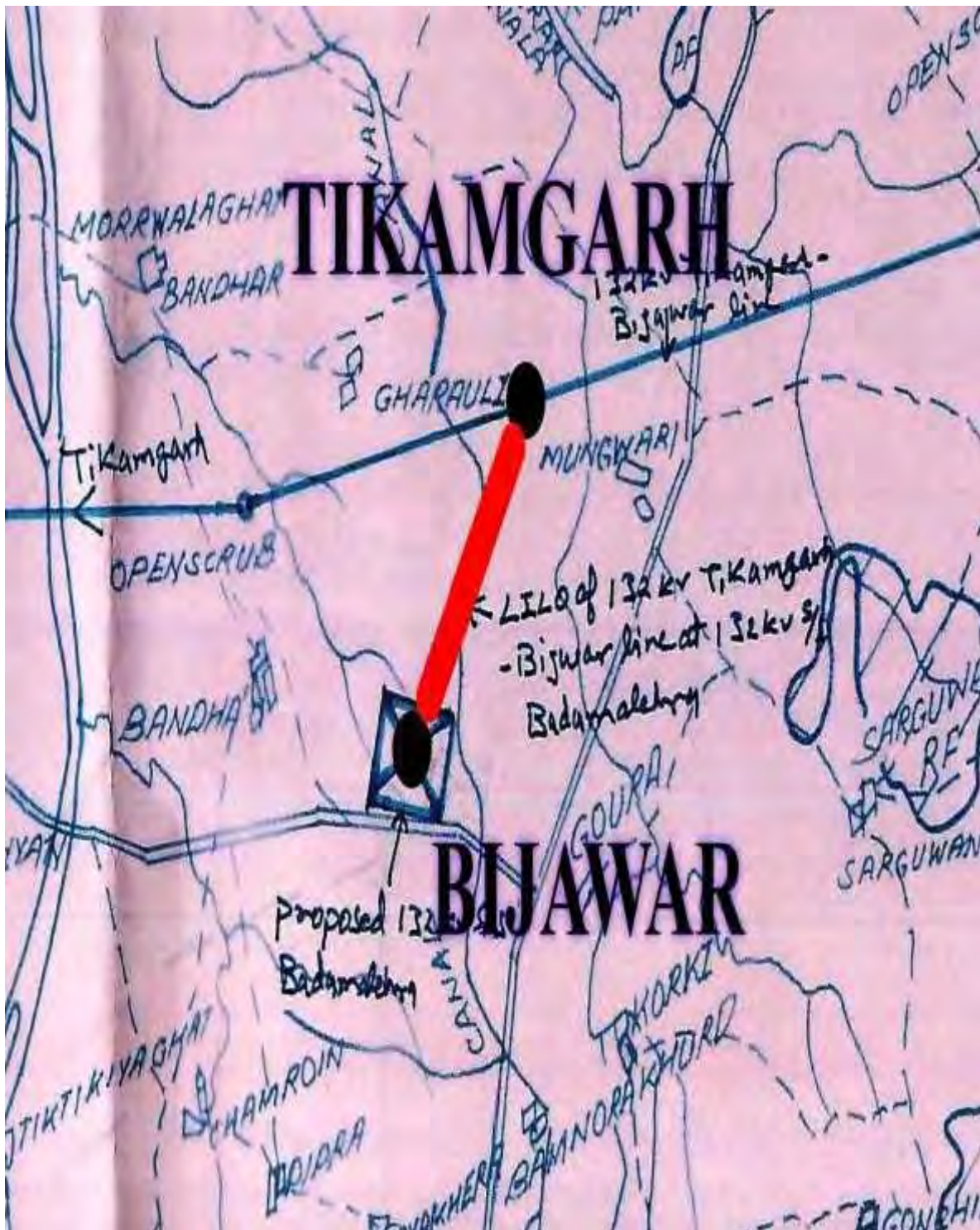
40. The line LILO of 132kV Balaghat- Seoni/ Katangi line at Waraseoni 132kV S/s (2XD/C) was finalized with a route length of 20 kms but there is a protected forest in the nearby area, many small nallahs and few natural reservoirs. To avoid the forest and to prevent crossing multiple riparian bodies, the route length was reduced to 4 kms which resulted in avoiding the forest and also resulted in just one river crossing. This option was finalized due to minimum disturbance to critical environmental areas and nil forest coverage alongwith avoiding large settlements.

Figure 3.4: LILO of both circuit of 132kv Balaghat Bhanegaon line at Balaghat/Kirnapur 400 kv S/s



41. The line LILO of both circuit of 132kV Balaghat-Bhanegaon Line at Balaghat/Kirnapur 400kV S/s (2XD/C) was finalized with a route length of 18 kms. There is a protected forest in the nearby region and the line would have traversed through the region. There is also a main Wara canal which had to be avoided. Therefore, the route length was revised to 1.79 kms to avoid protected forest and the canal to ensure minimum design and implementation issues. This final option with route length of 1.9 kms was finalized due to minimum disturbance to critical environmental areas and nil forest coverage alongwith avoiding large settlements.

Figure 3.5: LILO of 132kv Tikamgarh- Bijawar line for Bada Malehra



42. The line LILO of 132 Tikamgarh-Bijawar line for Bada Malehra was finalized with a route length of 2 kms. It is a LILO line with short route length and no major critical environmentally sensitive regions are in its RoW. However, during design implementation, the route length was revised to 2 kms due to land availability of proposed substation. The revised route length of 2 kms also does not affect any major critical environmentally sensitive regions and avoids large settlements and forest completely.

Figure 3.6: Second circuit of Tikamgarh-Budhera 132kv DCSS line



43. The line Second circuit of Tikamgarh- Budhera 132kV DCSS Line involves second circuit stringing works only on the line previously constructed. Alignment has been changed from earlier Budhera Bada Malhera to Tikamgarh-Bijawar line in order to avoid protected forests. However, the line was proposed with three options with route lengths of 33, 35 and 45 kms. All three options avoided protected forest of Jinagarh and Baraghat. However, the final route length of 32. 218 resulted in avoiding river crossings and also resulted in reduction of number of road crossings from 8 to 6. This final route length was thus selected as it avoids large settlements, protected forests and major riparian areas altogether. 64 farmers have been affected due to tree loss and a total of Rs. 22,06,200 has been paid till now.

Figure 3.7: Narsinghpur 220-Deonagar 132kv DCSS line



44. The line Narsinghpur 220- Devnagar 132kV DCSS Line was proposed with three alternatives with route lengths of 37.7, 35.9, and 37.9. The third option passes through Badhaur reserve forest and protected forests too which would have resulted in total forest affected would be about 15.83%. The final route length chosen was 37.7 which was further reduced to 24.43. This final route alignment avoids large settlements, avoids forest altogether and poses minimum disturbance to critically sensitive environmental regions such as large river bodies, reservoirs and wildlife rich habitats.

Figure 3.8: Karakbel- Belkheda 132kv DCDS Line



45. The line Karakbel- Belkheda 132kV DCSS line was proposed with a route length of 20 kms. However, the final route length selected led to an increase in length and final length is 24.445 kms. This final route length resulted in avoidance of line passing through Devari reserve forest and also avoids large settlements and critical environmental areas.

Figure 3.9: Narsinghpur 220kv Karakbel 132kv DCSS line



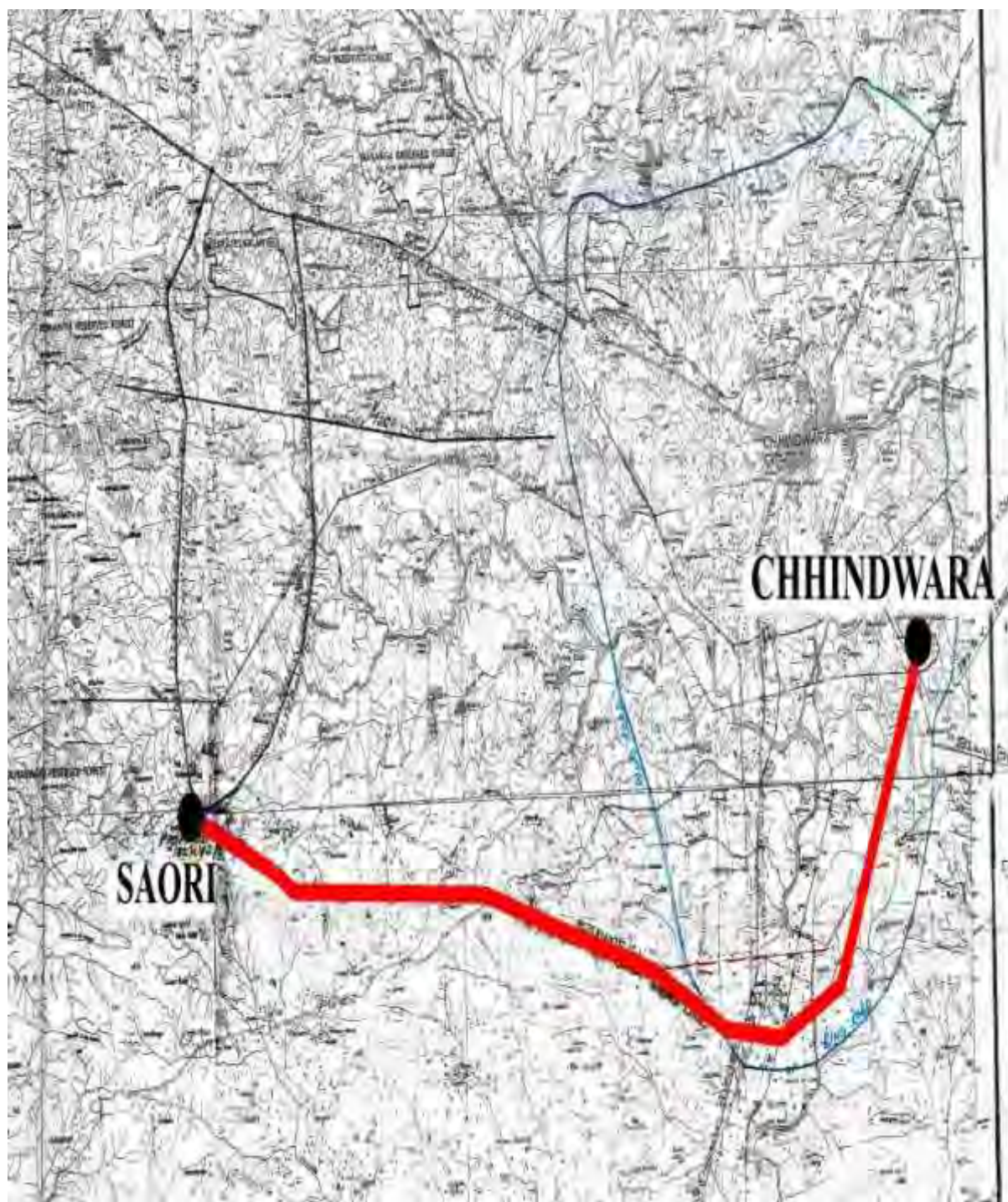
46. The line Narsinghpur 220KV Karakbel 132KV DCS line was proposed with three alternatives, 26.7, 26.9 and 33.8 kms. However, the final route length where construction activity will be undertaken is 26.62 kms. All three alternatives have avoided Bhadaur reserve forest which is located in the vicinity. Alternate one was selected and finalized with a route length of 26.62 kms which avoided reserve forest, large settlements and critical sensitive environmental areas.

Figure 3.10: Panagar 220kv Patan 132kv DCSS line



47. The line Panagar 220-Patan 132kV DCSS line was proposed with three alternatives with route lengths of 40, 23.2 and 26.2. However, to avoid Silpura reserve forest and multiple transmission line crossings, the finalized route length is 22.749. The final alternative resulted in avoiding the reserve forest and large settlements.

Figure 3.11: Chhindwara 220kv Saori 132kv DCSS line



48. The line Chhindwara 220- Saori 132kV DCSS was proposed with a route length of 31.6 kms. This route was finalized as it avoided reserve forests such as Komaniya reserve forest located in the vicinity. The final route alignment avoids reserve forests, large settlements and critical sensitive environmental areas.

Figure 3.12: Chichli 220kv Palohabada 132kv DCSS line



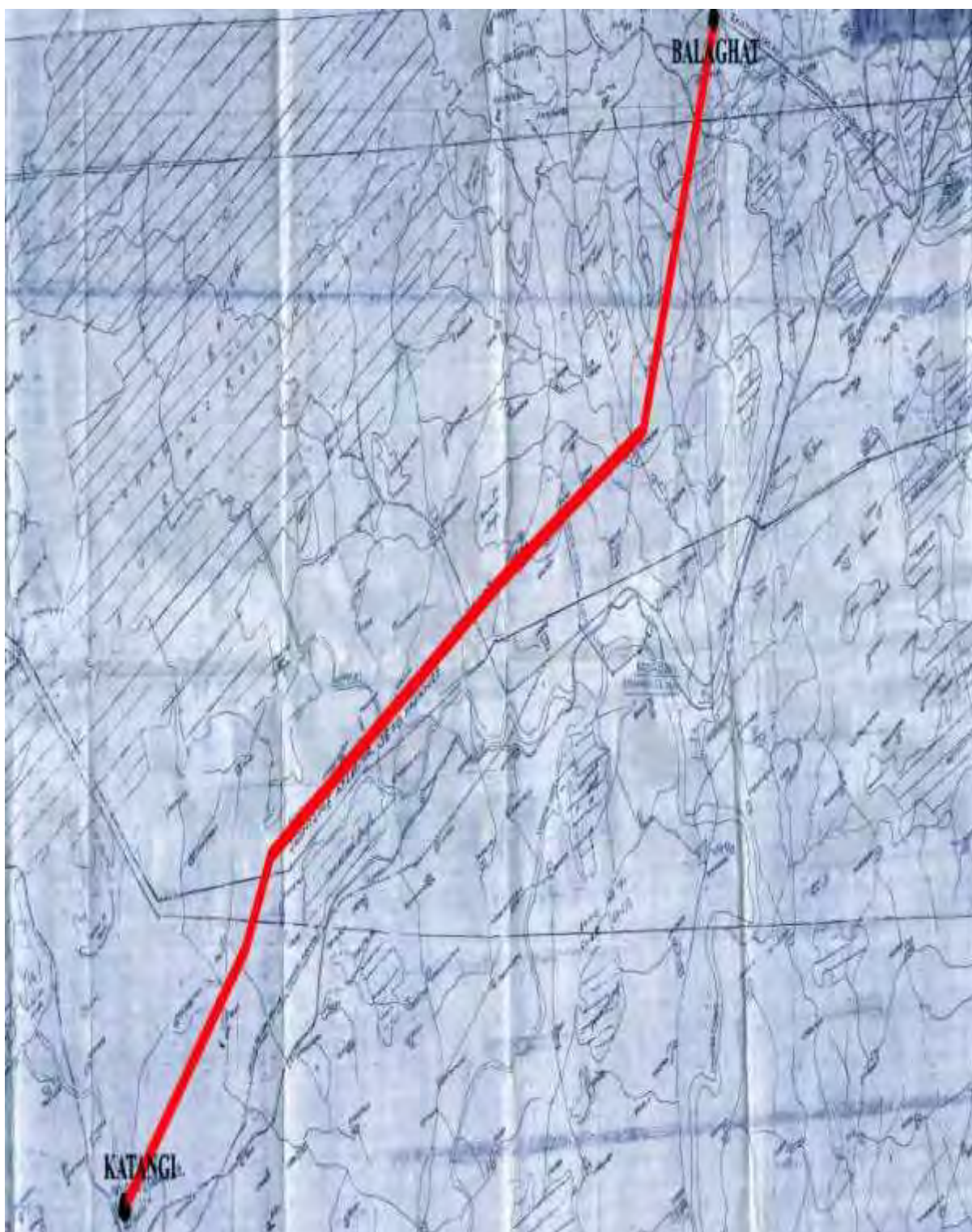
49. The line Chichli 220- Palohabada 132kv DCSS line was proposed with three alternatives with route lengths of 21.186, 22.39 and 22.42. To avoid NTPC plant located in the vicinity and large water bodies that frequent the region, the final option resulted in a revised route length of 12 kms. This final route alignment avoids major settlements and critical sensitive environmenta areas.

Figure 3.13: 132kv DCSS line from Damoh 220kv to Patera 132kv substation



50. The line 132kv DCSS line from Damoh 220kv to Patera 132 kv substation was proposed with three alternative route alignments with lengths 38.186, 44.467 and 40.821. The two alternative routes with route lengths 44.467 and 40.821 were rejected as the line would have to pass through Khamkhera reserve forest. The finalized route length was further revised to 35 kms to establish adequate distance from reserve forest and critical environmental areas.

Figure 3.14: Second Circuit of 132kv Tap line from Balaghat-Katangi



51. The line Second circuit of 132kV Tap Line from Balaghat-Katangi had a route length of 40 kms. The line was later revised to 36.7 kms to avoid several reserve forests and protected forests that lie in the vicinity of the proposed route. The final route length avoids reserve and protected forests altogether. Further, the line also avoids large settlements and critical sensitive environmental areas.

Figure 3.15: Second Circuit 132kv of Chhatarpur-Khajuraho line



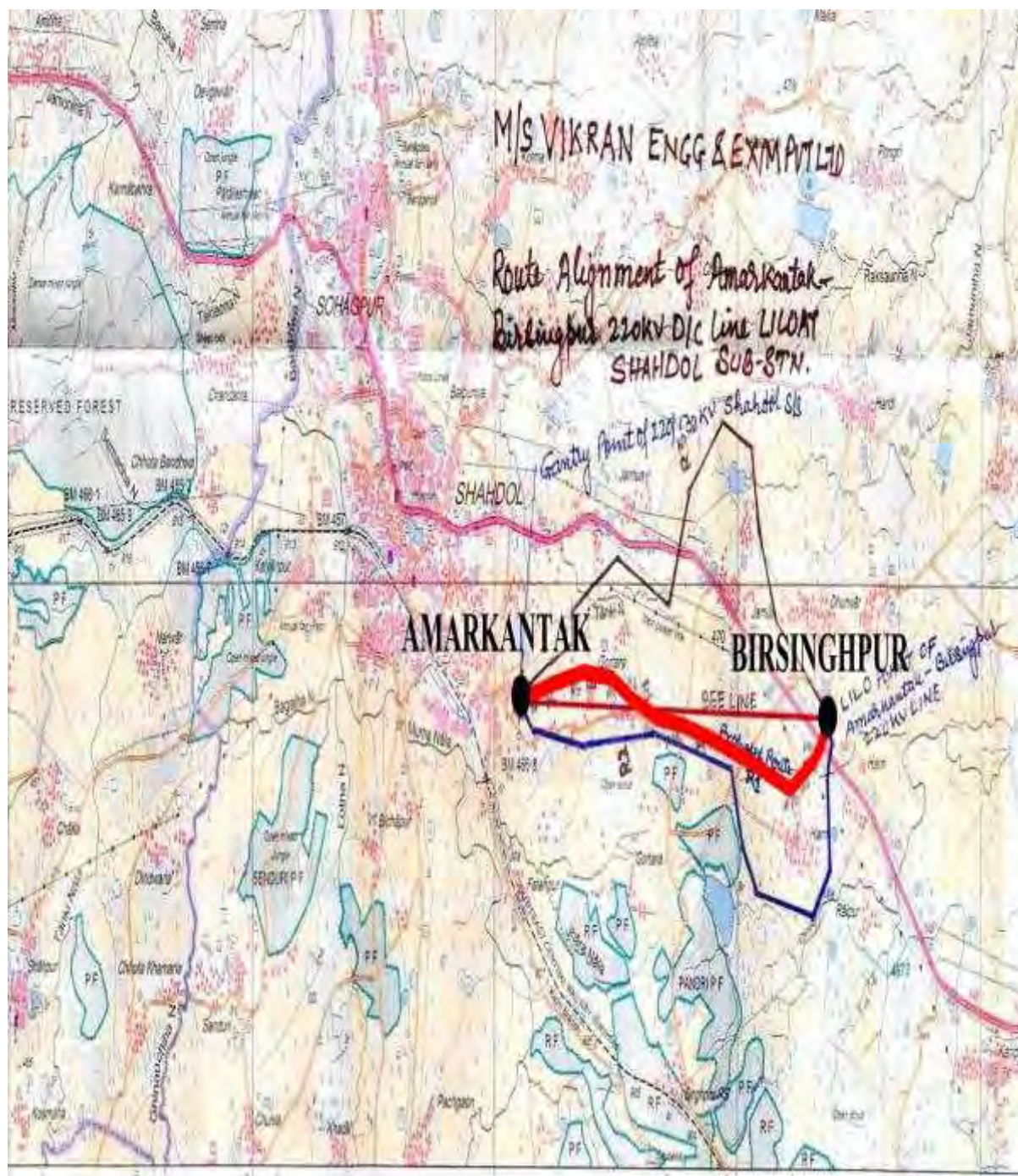
52. The line Second circuit 132kV of chhatarpur- Khajuraho line was proposed with a route length of 34 kms. This final route length avoids Rajnagar reserve forest and other protected forests in the vicinity. It also avoids large settlements and critical sensitive environmental areas.

Figure 3.16: LILO of Second Circuit of Bansagar Satna 220kv line at Kotar 220kv S/s



53. The line LILO of second ckt of Bansagar-Satna 220kV line at Kotar 220kV S/s was proposed with three alternatives of 5.693, 3.25 and 3.5 kms. However, the final revised estimate is 4.778 kms that avoids large settlements, rivers, and other critical sensitive environmental areas.

Figure 3.17: LILO of second circuit of Birsinghpur-Amarkantak 220kv line at Shahdol 220kv S/s



54. LILO of second ckt of Birsinghpur - Amarkantak 220kV line at Shahdol 220kV s/s was proposed with two alternatives of 7.9 and 8.3 kms in length. The amarkantak region comprises of dense forests and a number of protected forest patches also lie in the vicinity of the proposed routes. Therefore, to avoid entry into protected forests and religious important sites, the line was further revised to a length of 5.6 kms. This final route alignment avoids large settlements, forests and religious important sites altogether. It also avoids rivers, and other critical sensitive environmental areas.

Figure 3.18: Birsinghpur 220-shahdol 132kV DCSS line



55. The line Birsinghpur 220-shahdol 132kV DCSS line was proposed with three alternatives with route lengths of 43, 50 and 40 kms. The route alignment of the line lies in Sohagpur reserve forest and forest clearance has been applied for. The revised route length is 45 kms and is chosen to avoid Johilla river and also a canal that is under construction from the river Johilla. The three alternatives had forest involvement of 9.08%, 5.18% and 7.59%. The final route was selected keeping in mind the avoidance of Johilla river and the proposed canal and has resulted in forest involvement of 6.74%. However, the final route alignment avoids large settlements and other critical sensitive environmental areas. A total of 8.202 hectares of forest land will be involved and total number of 1635 trees will be felled. Forest clearance has been applied for and first stage approval has been received. Working permission has also been received.

Figure 3.19: LILO of one circuit of Ashta 400-Dewas 220 kV D/C line at Chapda 220kv S/s (D/C)



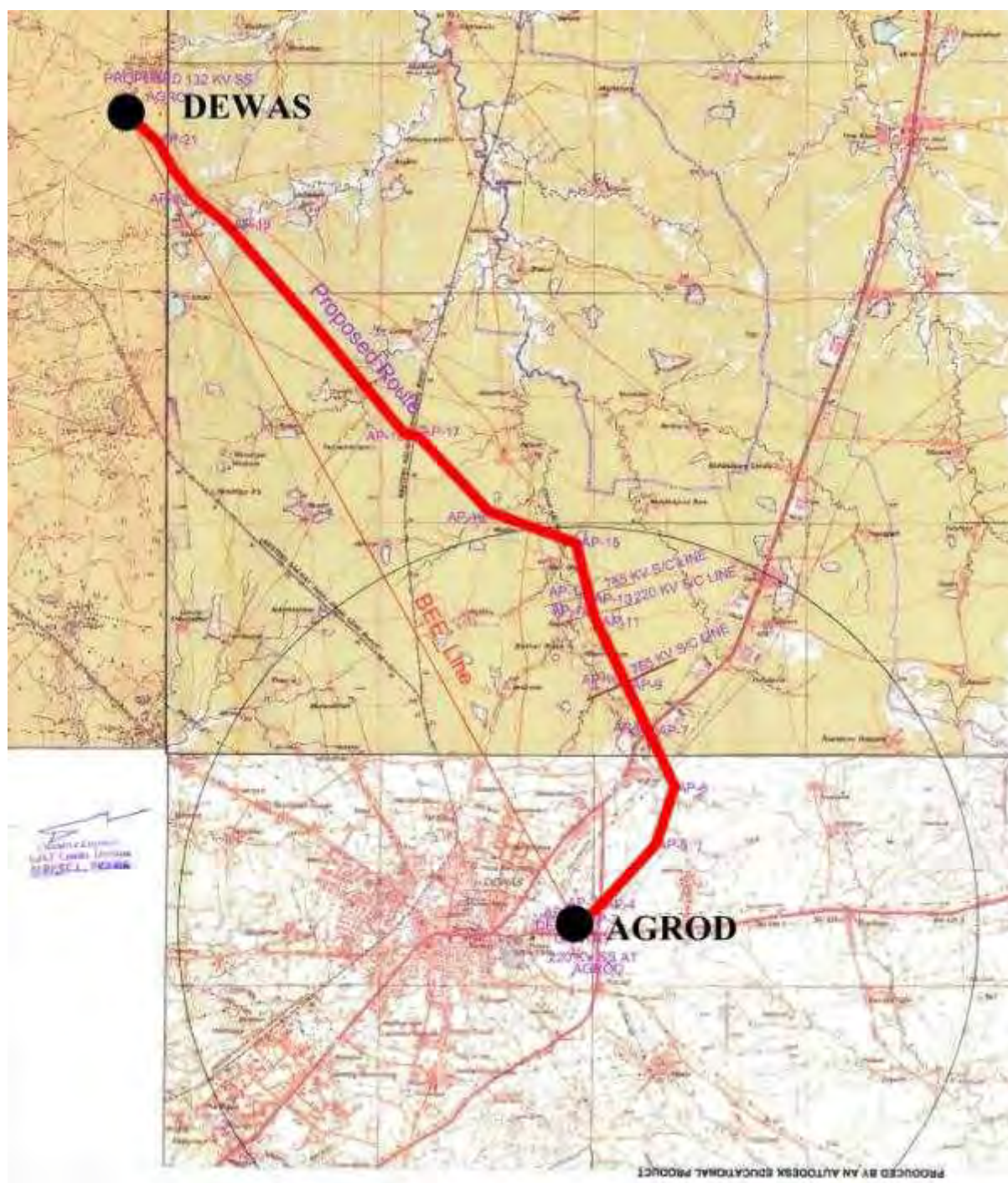
56. The line LILO of one circuit of Ashta 400-Dewas 220 kv D/C line at Chapda 220kv S/s was proposed with route length of 35 kms. To avoid entry into reserve forests such as Jalodiya, Rater and Churlai and multiple river crossings, the line was revised to a route length of 32.782 kms. The final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.20: Pithampur 400 - Depalpur 220kv DCSS line



57. The line Pithampur 400 - Depalpur 220kv DCSS line was proposed with a route length of 35 kms. The line was further revised to 35.583 to avoid few large settlements located in the vicinity. The final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.21: Dewas 220- Agrod 132kv DCSS line



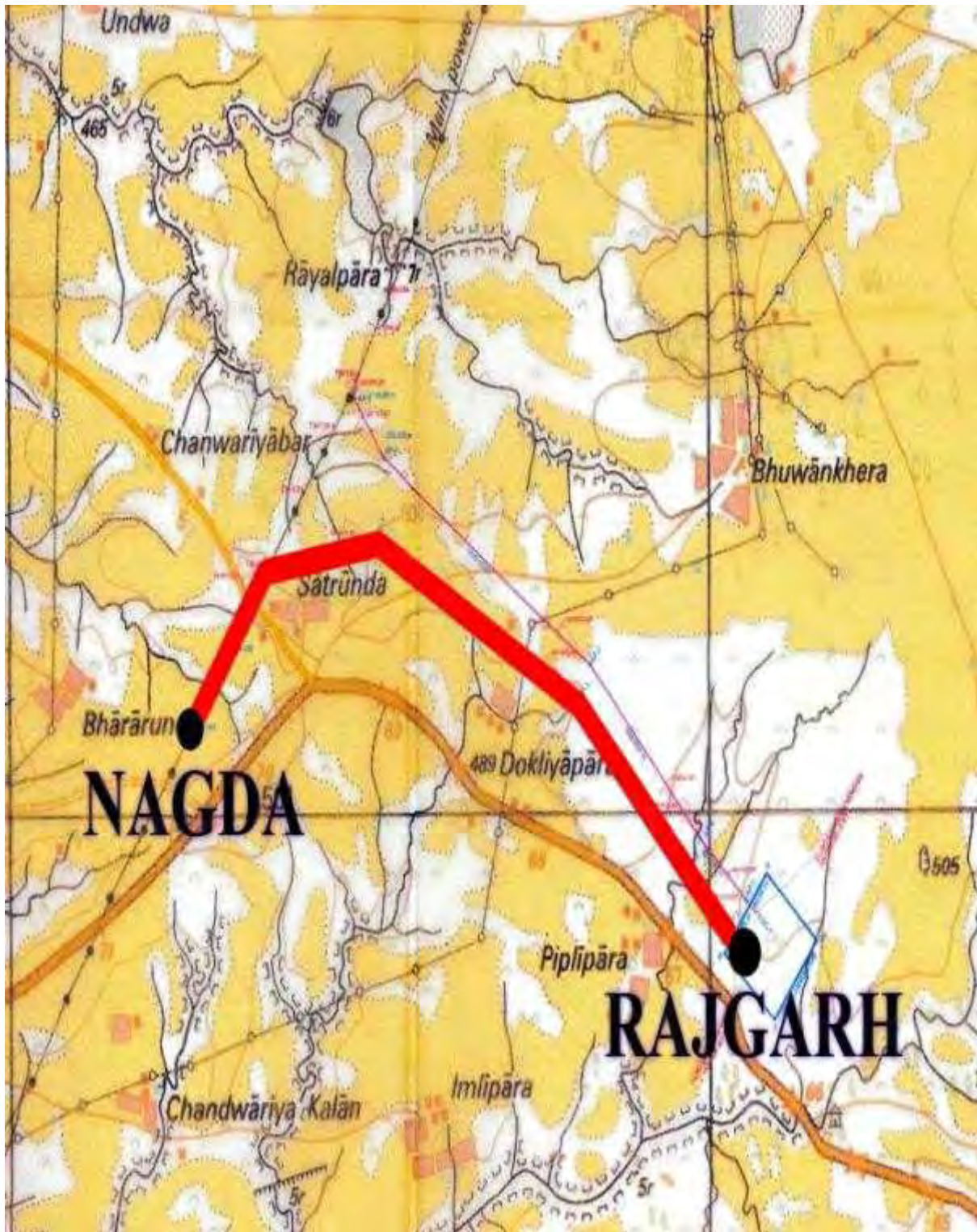
58. The line Dewas 220- Agrod 132kv DCSS line was proposed with a route length of 30 kms. The region is heavily populated and to avoid large settlements, the revised route alignment is 19.355 kms. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas. 3 farmers have been affected due to tree loss and a total of Rs. 16,000 has been paid till now.

Figure 3.22: Dhar 220 - Teesgaon 132kv DCSS line



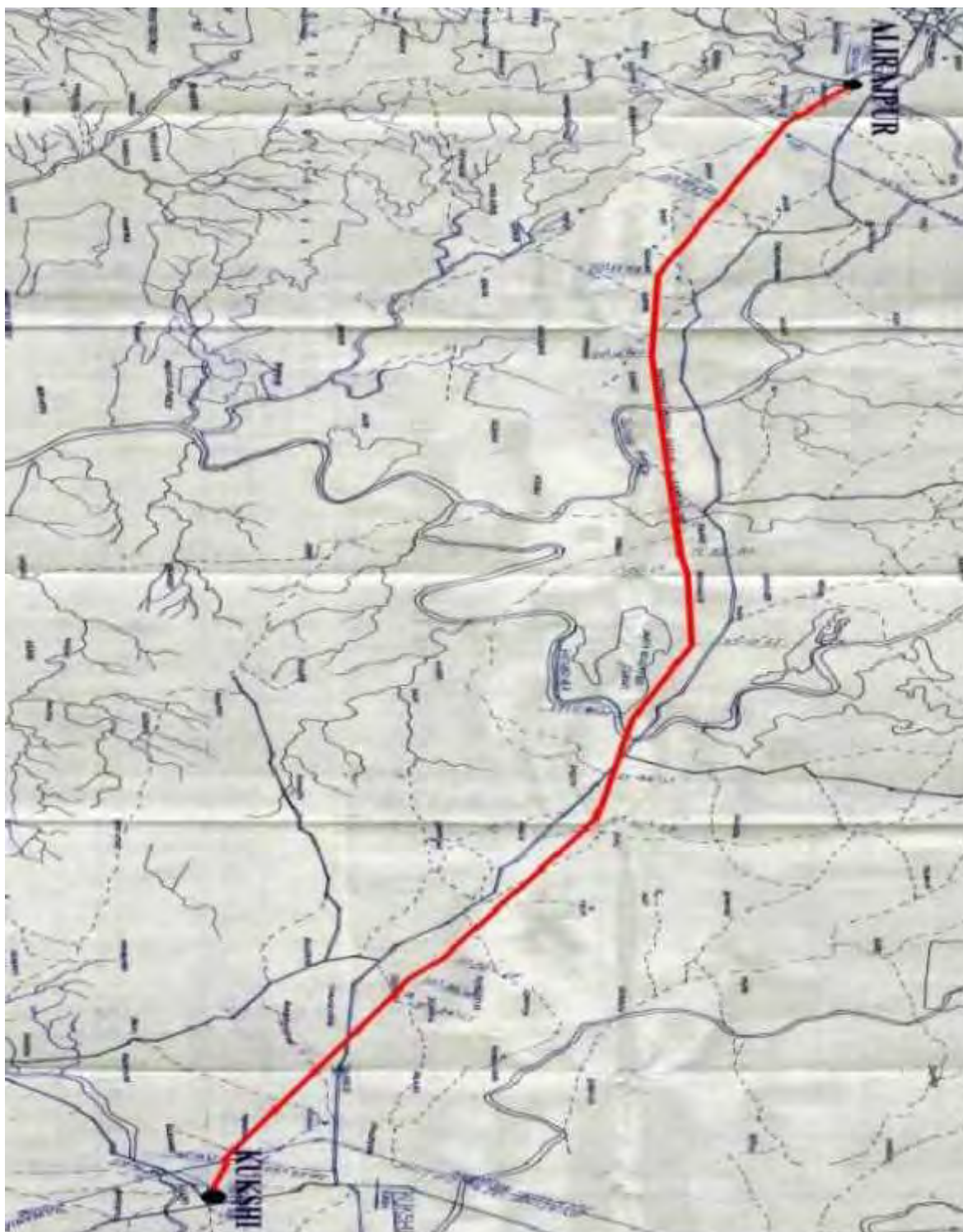
59. The line Dhar 220 - Teesgaon 132kv DCSS line was proposed with three alternatives of route lengths 20, 21.9 and 20.8 kms. Final route length of 20 was further revised to 15.35 kms to avoid large settlements. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.23: LILO of both Circuit of 400 kv Nagda-Rajgarh line at Badnawar (2 x D/C)



60. The line LILO of both Circuit of 400 kv Nagda-Rajgarh line at Badnawar (2 x D/C) was proposed with route length of 10 kms which was further revised to 8.163 kms in order to avoid large settlements in Dokliyapara and Satrunda. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.24: Second Circuit of Kukshi Alirajpur 132kv line



61. The line Second Circuit of Kukshi Alirajpur 132kv line was proposed with a route length of 42 kms further revised to a final route alignment of 35.82 kms in order to avoid reserve forest of Phata and protected forest of Rordha. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas. 125 farmers have been affected due to tree loss and a total of Rs. 37,40,301 has been paid till now.

Figure 3.25: LILO of 132 Khargone Bikayan line at 132 Kv substation Bistan



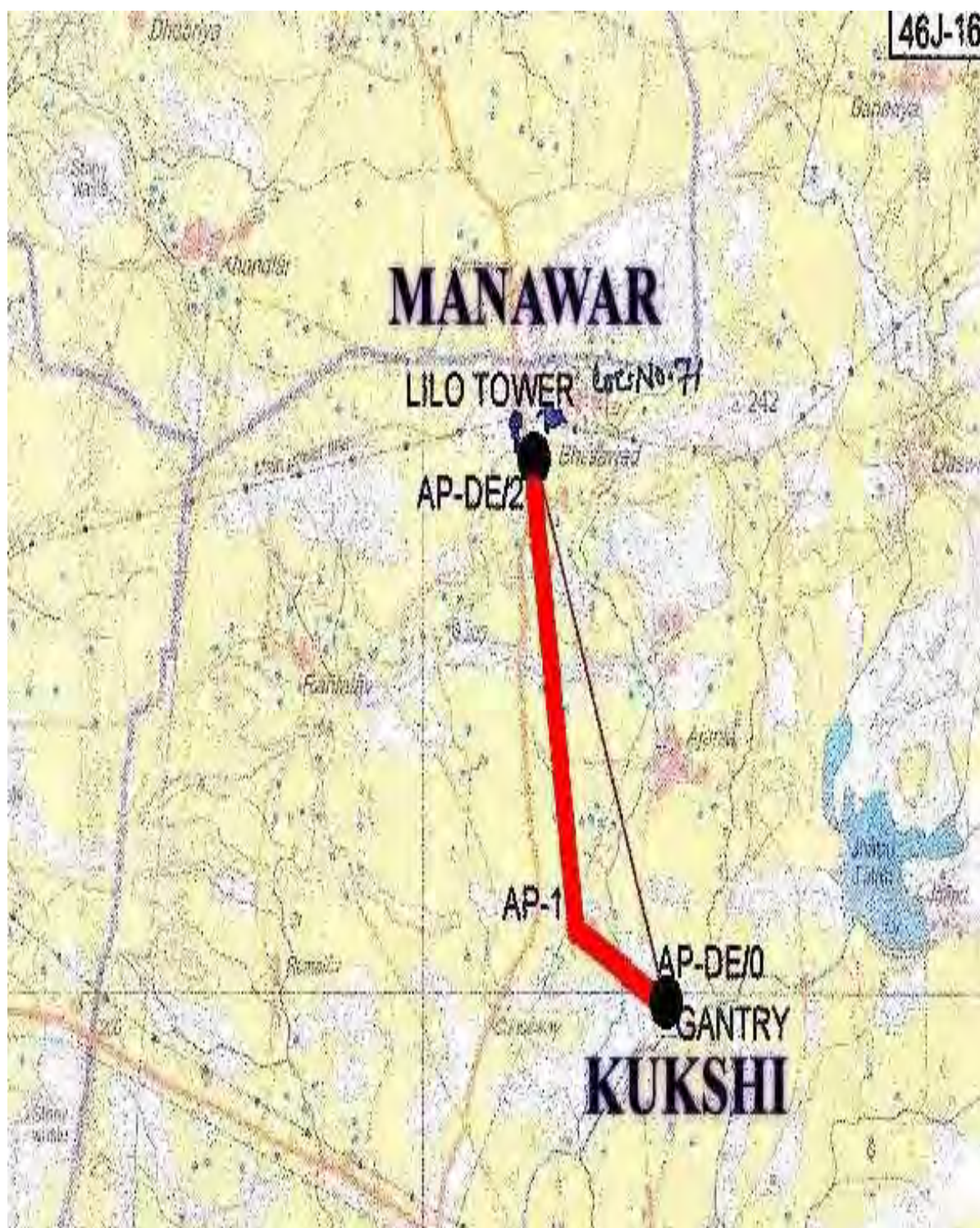
62. The line LILO of 132 Khargone Bikayan line at 132 Kv sub-station Bistan was proposed with a route length of 35 kms further revised to 18.197 kms to avoid open mixed jungle in Brahamanpuri. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.26: LILO of 132kv Chegaon Nepanagar line at Pandhana



63. The line LILO of 132kv Chegaon Nepanagar line at Pandhana was proposed with a route length of 1.825 kms. However, in order to avoid Abna river and large settlements, the revised route alignment had slightly increased to 1.895 kms. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.27: LILO Manawar - Kukshi DCSS line at Singhana (D/C)



64. The line LILO Manawar - Kukshi DCSS line at Singhana was proposed with a route length of 20 kms initially. However, the revised route length is 3.11 kms in order to maintain a buffer zone from mixed jungle which is a critical and sensitive environmental region. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.28: LILO of 132Kv Khargone -Julwaniya line at 132Kv S/S Talakpura



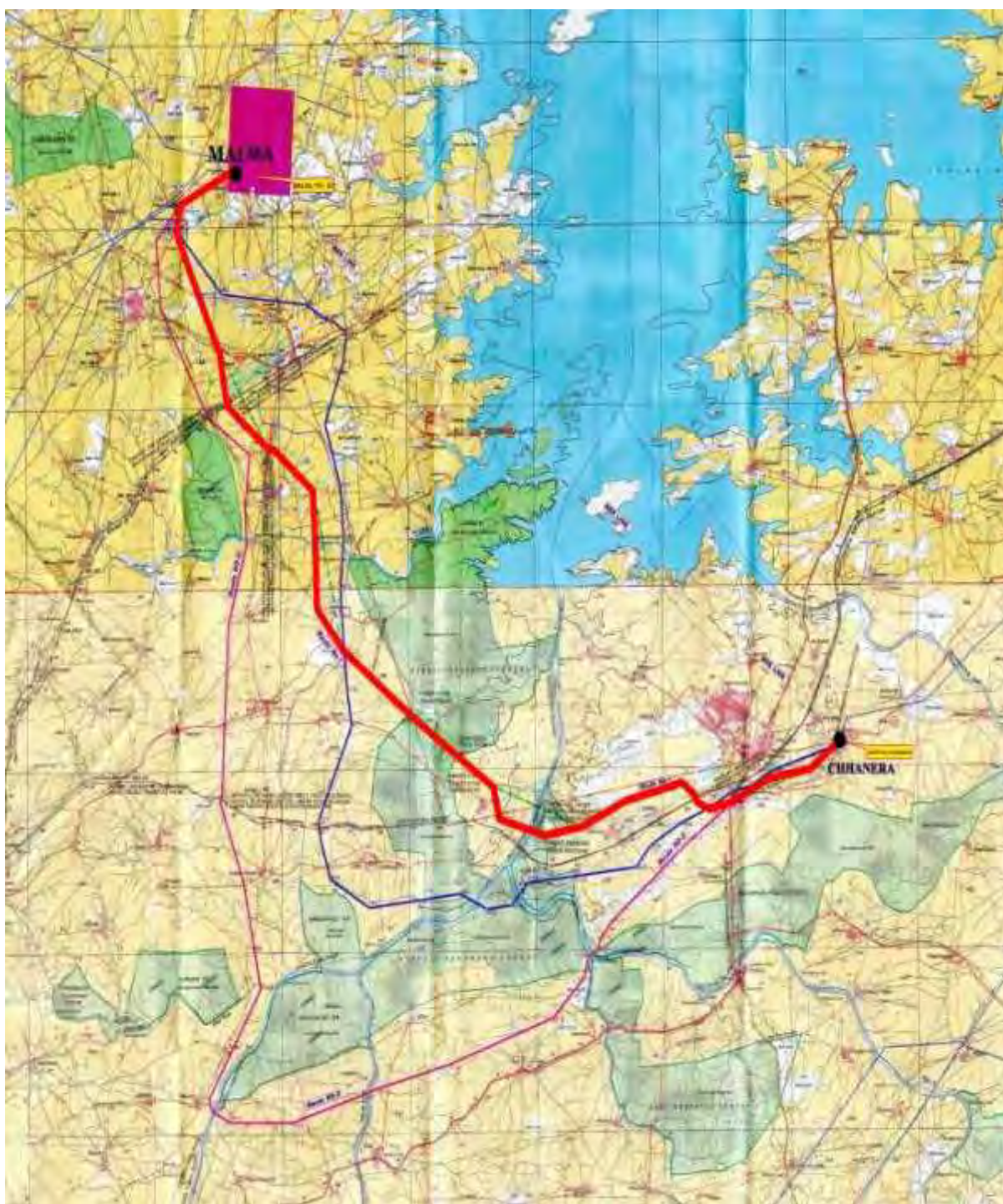
65. The line LILO of 132Kv Khargone -Julwaniya line at 132Kv S/S Talakpura was proposed with a route length of 30 kms further revised to 1.9 kms to avoid reserve forest. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.29: Julwaniya 400- Kukshi 220kv line (D/C)



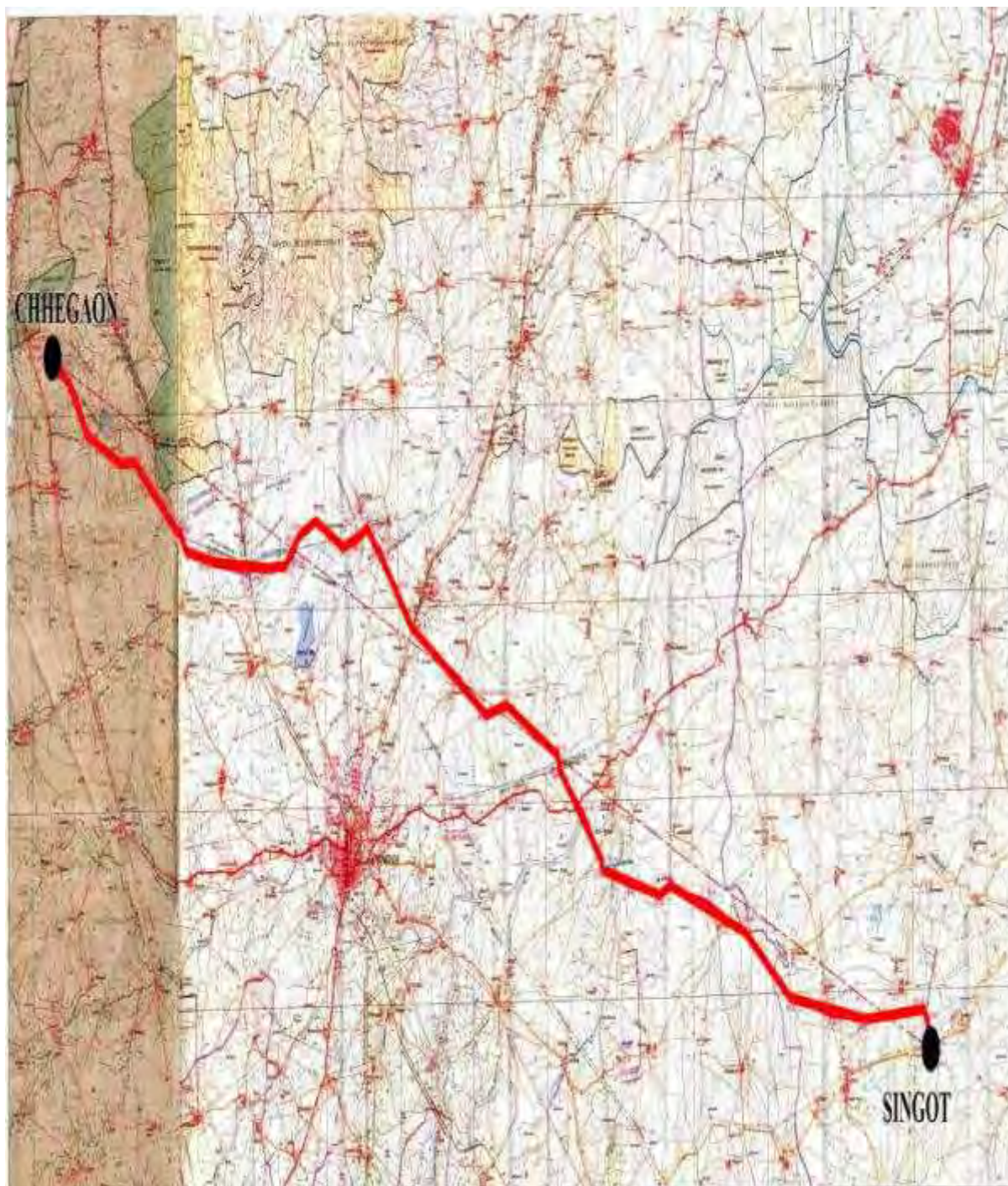
66. The line Julwaniya 400- Kukshi 220kv line (D/C) was proposed with a route length of 80kms. However, to avoid open mixed jungle and large water bodies in the vicinity, the route length was further revised to 62 kms. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.30: Malwa TPS- Chhanera 220kV DCDS Line



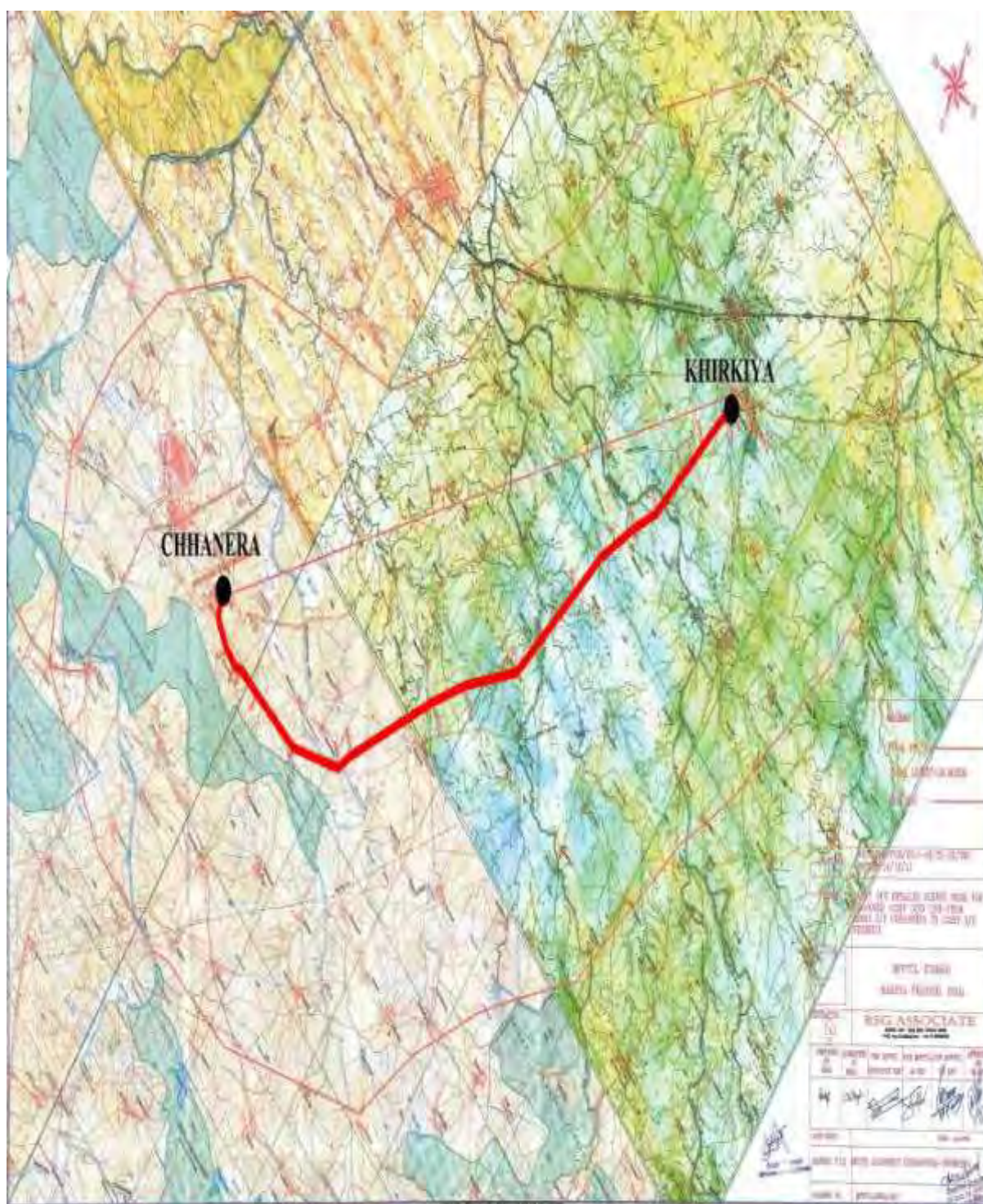
67. The line Malwa TPS- Chhanera 220kV DCDS was proposed with two alternatives with route lengths of 54.5 and 46.3 kms. However, both alternatives had forest involvement of 7.34% and 19.44% respectively. To avoid the Singaji reserve forest, the revised estimate is 50kms. This final route alignment avoids reserve forests and large settlements and other critical sensitive environmental areas.

Figure 3.31: Chhegaon 220- Singot 132kV DCDS Line



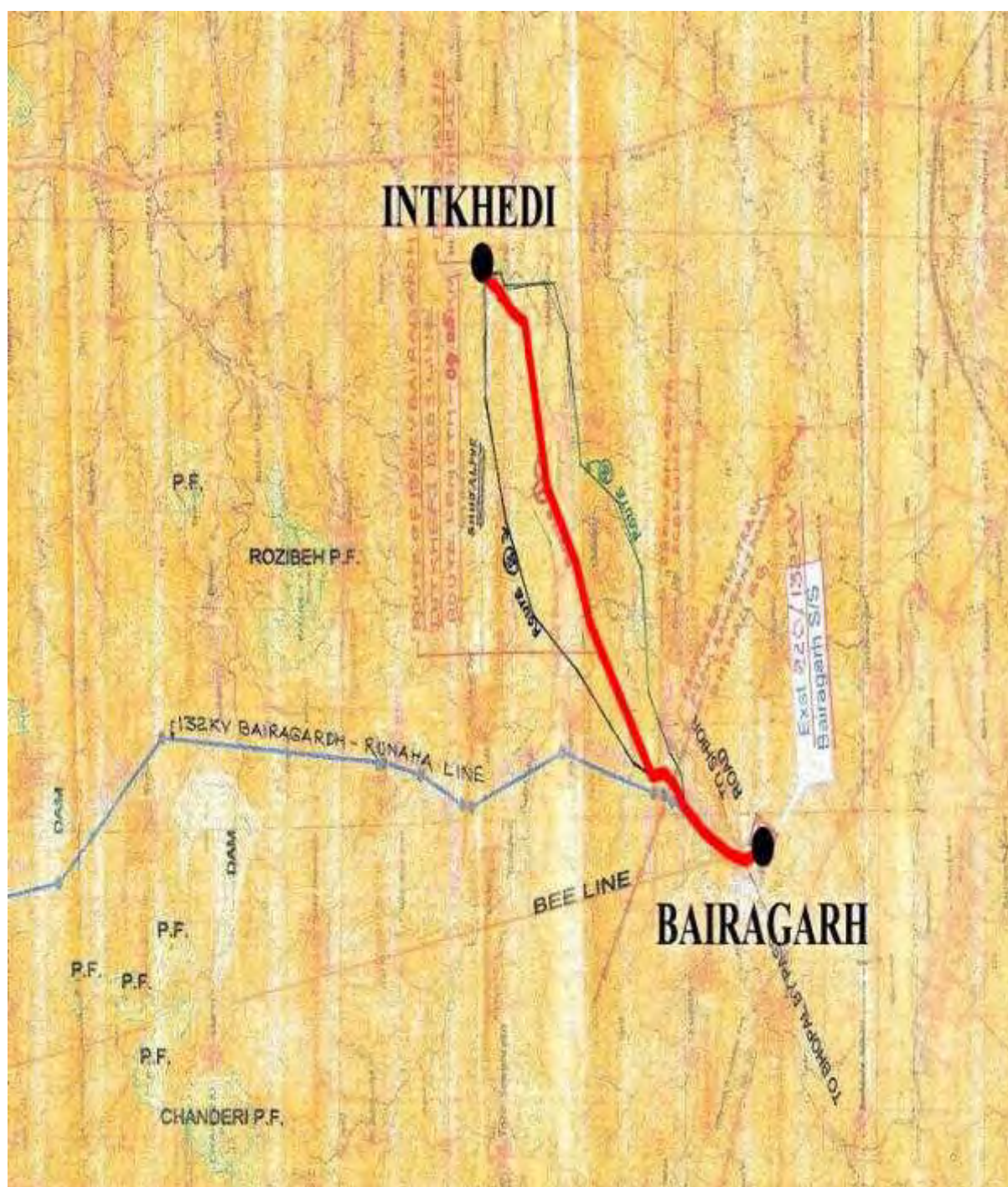
68. The line Chhegaon 220- Singot 132kV DCDS was proposed with three alternatives of 57.8, 59.58 and 59.98 kms. All three alternatives avoided the reserves forests of Baheriya, Kirgaon, Kaveri and Kurwara. However, the final route selected of 57.8 was further revised to 30.421 in order to maintain sufficient buffer distance from core region of reserve forests. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.32: Chhanera 220- Khirkiya 132kV DCDS Line



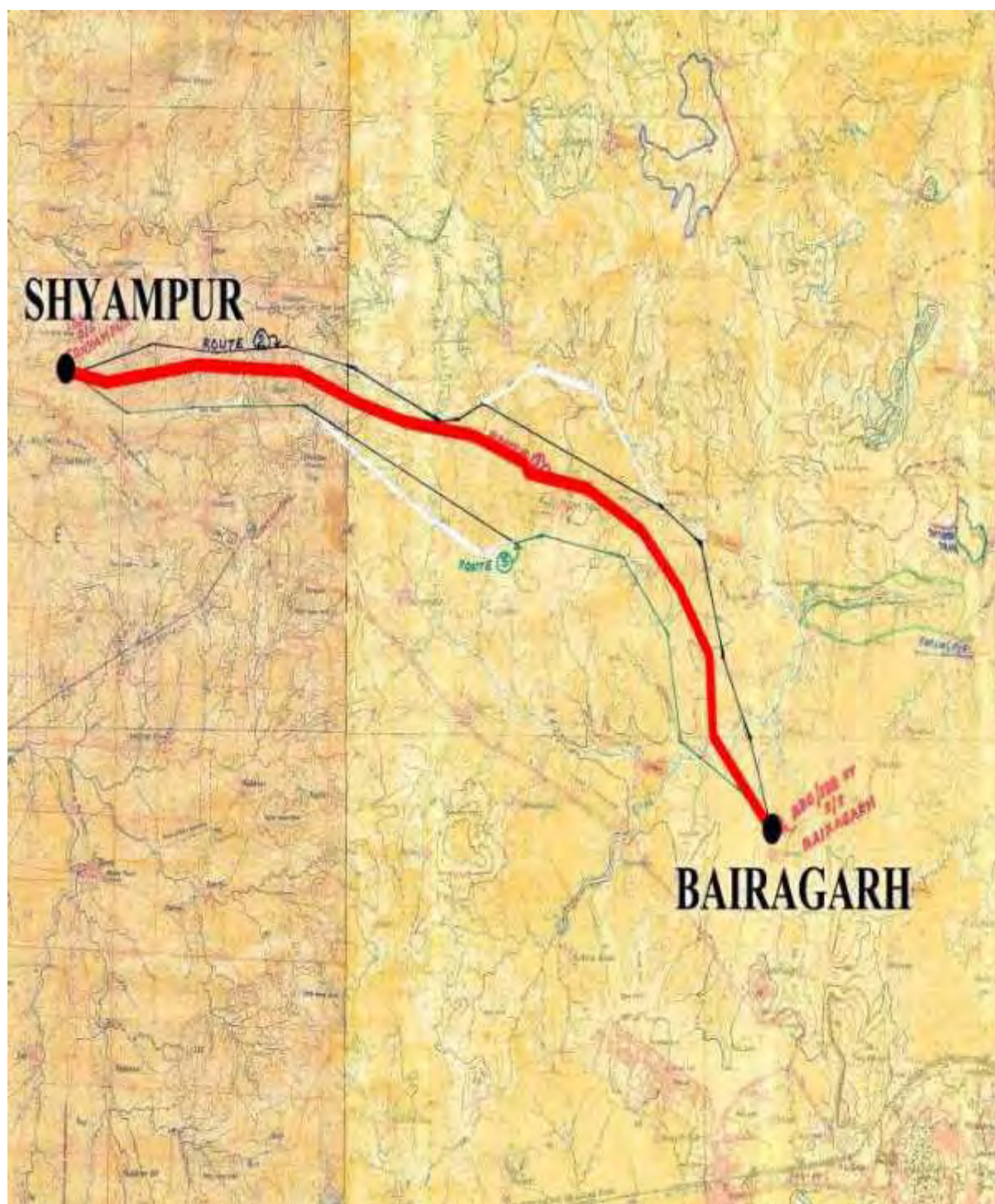
69. The line Chhanera 220- Khirkiya 132kV DCDS was finalized with a route length of 29.962 kms. However, the route was further revised to 30.421 kms in order to maintain sufficient buffer distance from reserve forests of Pratapura and Kadwalya. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.33: Bairagarh 220 - Intkhedi 132kv DCDS line



70. The line Bairagarh 220 - Intkhedi 132kv DCDS was proposed with three alternatives with route lengths of 9.05, 10.10 and 10.50 kms. However, the two route lengths of 10.10 and 10.50 kms were too close to a dam and protected forest of Rozibeh. The final route alignment of 9.05 was further revised to 15 kms in order to maintain sufficient buffer distance from protected forests of Chanderi, Rozibeh and Bagonia. It also ensured that the line was distanced from the dam located in the region. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.34: Second circuit of Bairagarh – Shyampur



71. The line Second circuit of Bairagarh – Shyampur was proposed with three alternatives of 19.091, 20.50, and 20.80. The final route selected was 19.091 or alternative one as it had shortest distance. However, in order to maintain sufficient buffer distance from reserve forests of Chanderi and Kotra Chopra, the route length was revised to 21.44kms. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.35: Second circuit of Gairatganj - Vidisha 220 132kv line



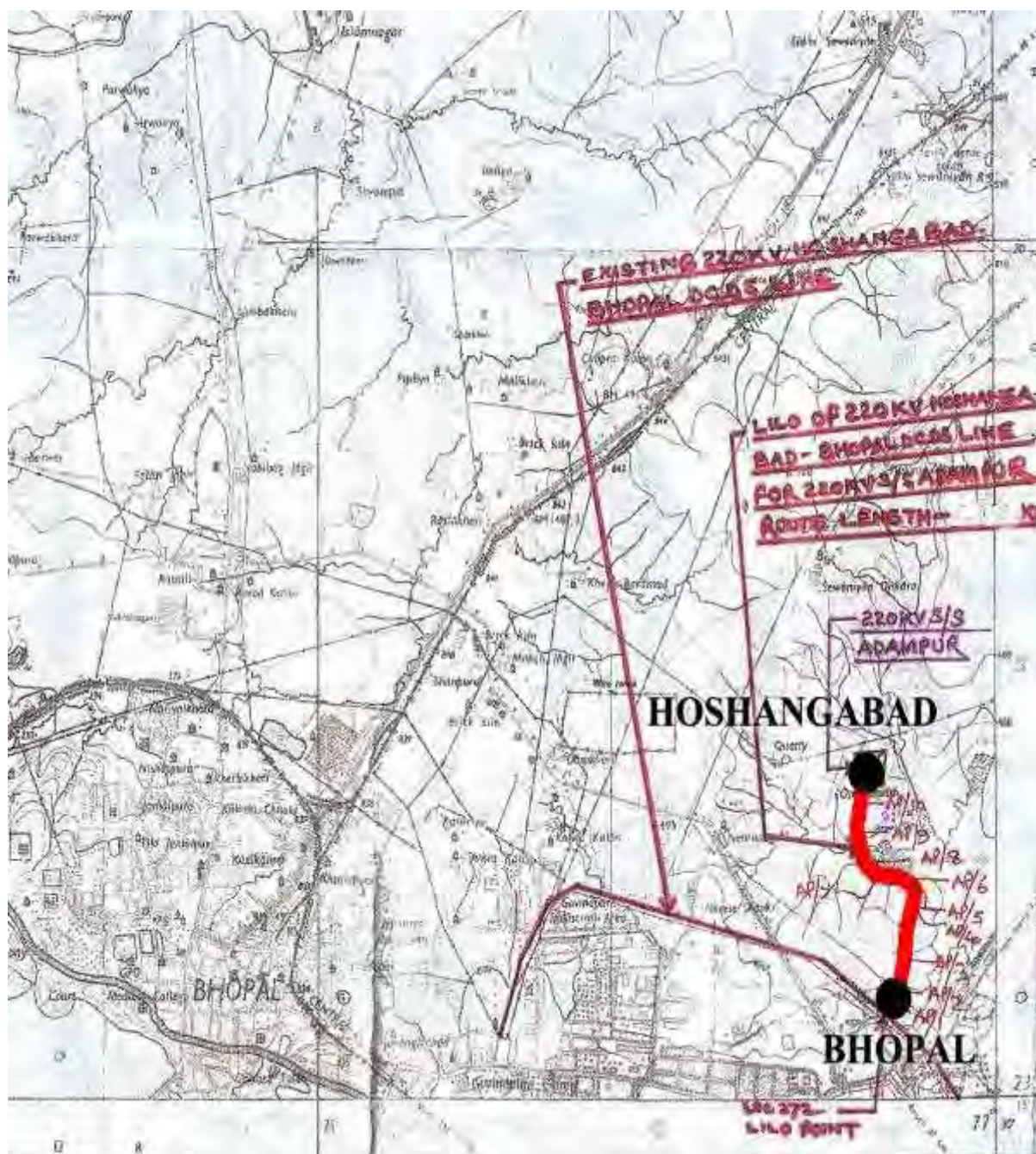
72. The line Second circuit of Gairatganj - Vidisha 220 132kv was proposed with three alternatives of route lengths 48.27, 48 and 50 kms. The three alternatives had forest involvement of 11.19%, 12% and 12.5% respectively. Alternate one was selected with minimum forest involvement in order to avoid large settlements. This final route length has minimum reserve forest involvement of 14.5 hectares. Forest clearance has been received.

Figure 3.36: Shujalpur- Narsinghgarh 220kv DCSS line



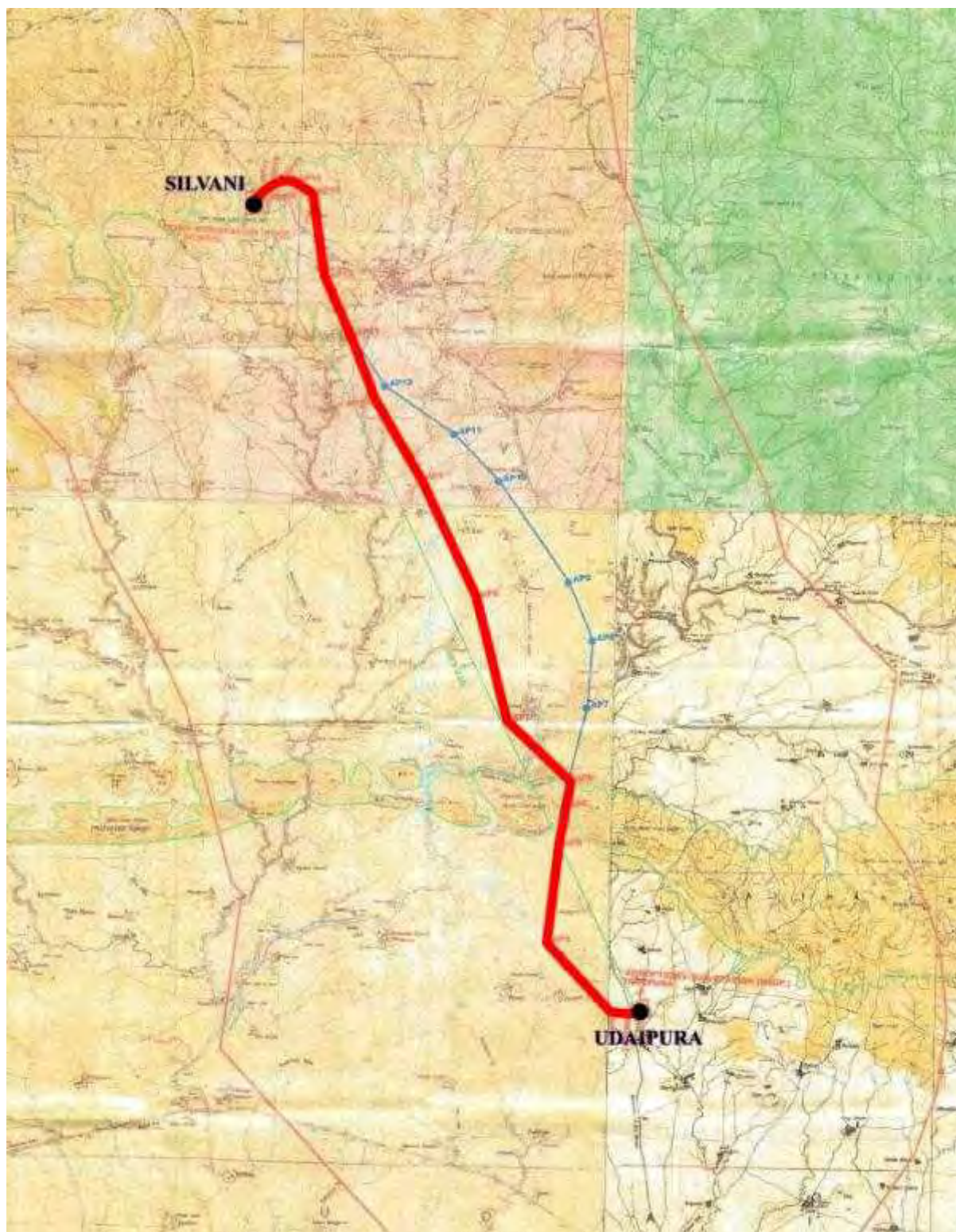
73. The line Shujalpur- Narsinghgarh 220kv DCSS line was proposed with three alternatives with route lengths of 50, 55.70 and 53.10. The shortest route length was selected with length of 50 kms but was later revised to 44.575. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.37: LILO of one circuit of Bhopal - Hosangabad 220kv D/C line at Adampur 220kv S/s (D/C)



74. The line LILO of one circuit of Bhopal - Hosangabad 220kv D/C line at Adampur was initially proposed with a route length of five kms. The route length was further revised to 2.868 kms in order to avoid large settlements. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.38: Udaipura -Silvani 132kv DCSS line



75. The line Udaipura -Silvani 132kv DCSS was proposed with a route length of 25 kms. However, in order to maintain sufficient buffer distance from Jaithar reserved forest, the route was further revised to 25.8 kms. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

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Figure 3.40: Mugaliyachhaap 220- Bikisganj 132kV DCDS line



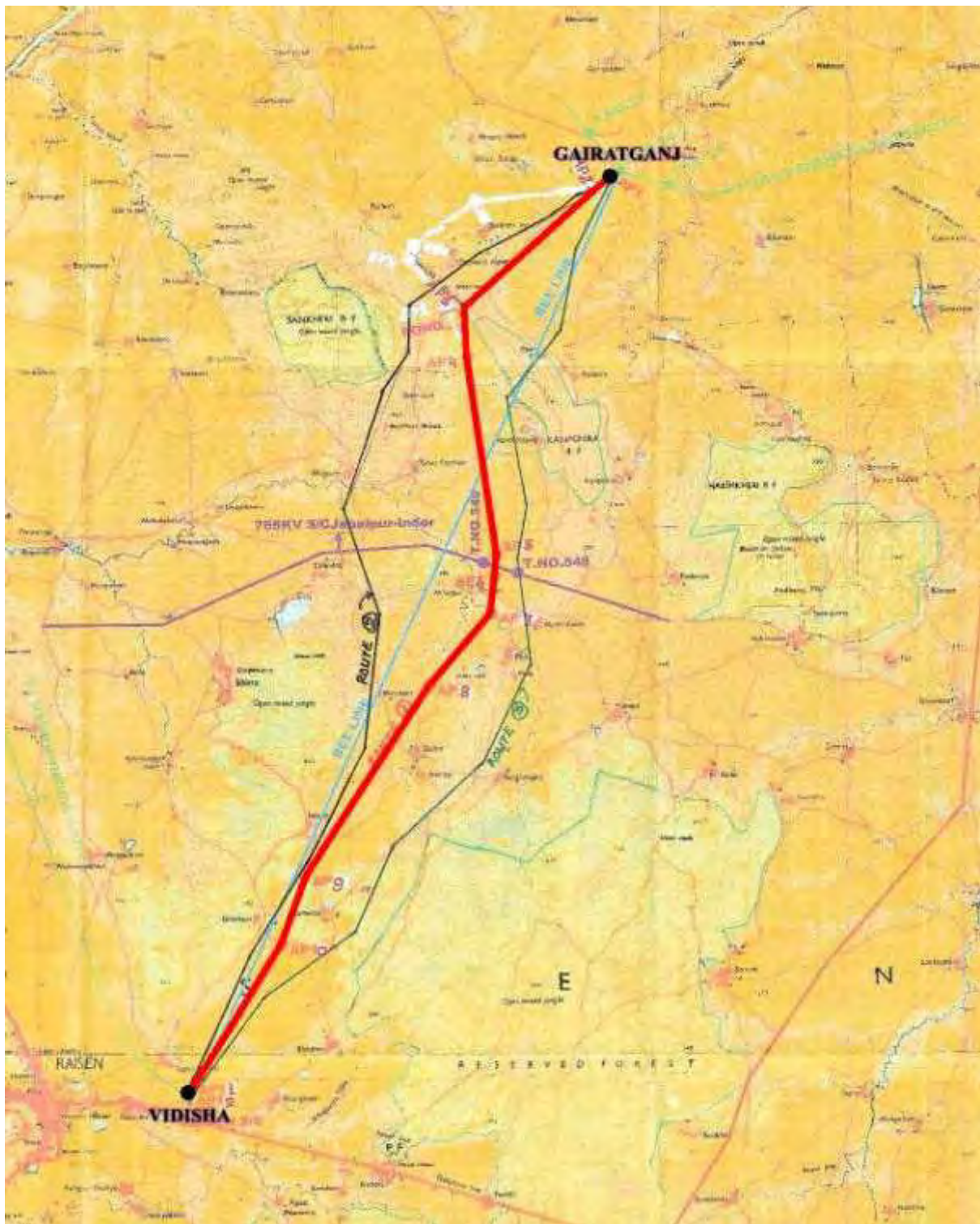
77. The line Mugaliyachhaap 220- Bikisganj 132kV DCDS was proposed with three alternatives of 11.212, 14.20 and 13.75 kms. The line was further revised to 11.4 kms in order to maintain sufficient distance from reserved forests located in Bhopal and Sehere ranges. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.41: 132kv Rajgarh (B) 220-Khujner DCSS + FCFS



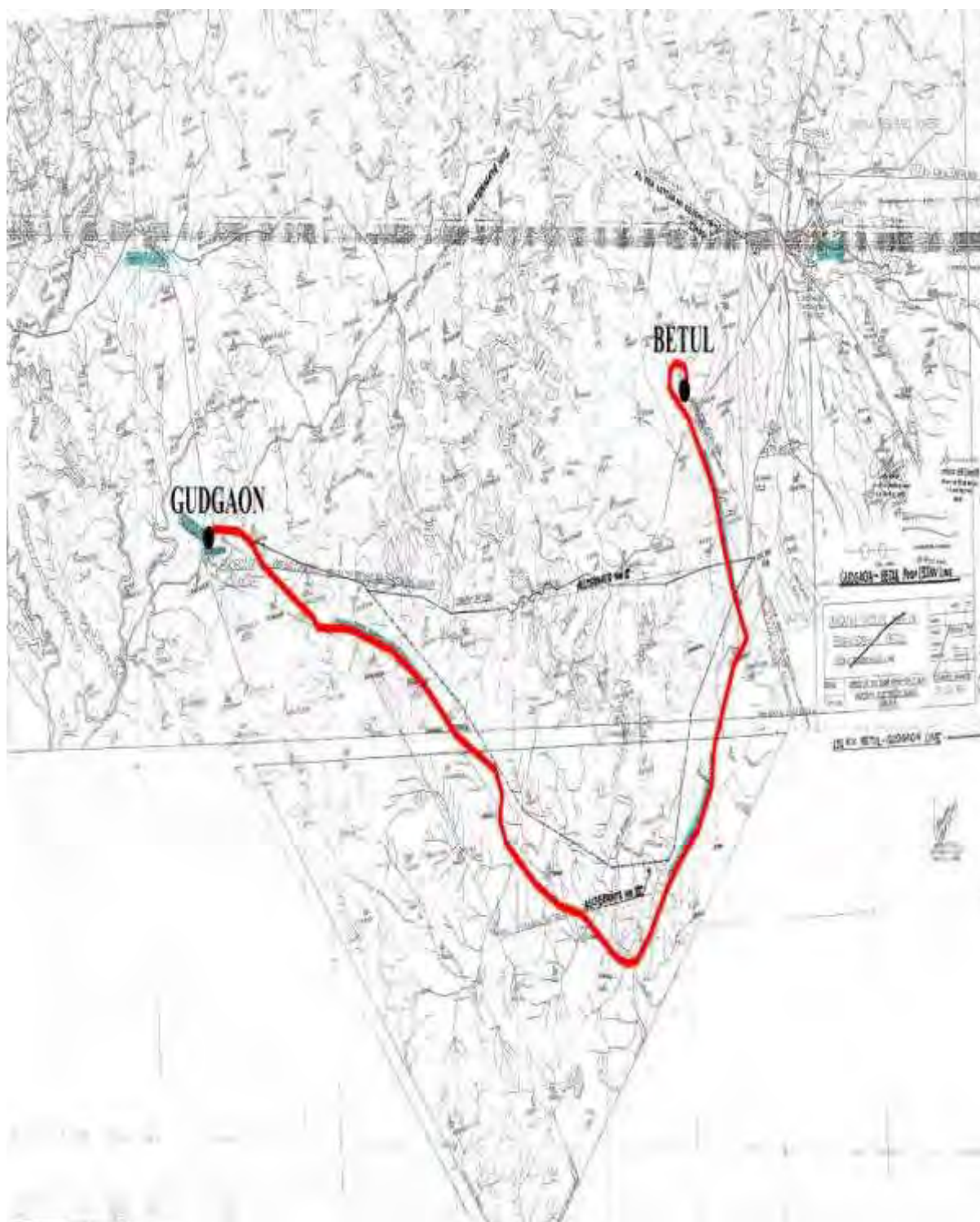
78. The line 132kv Rajgarh (Biaora) –Khujner/ Sindaota was proposed with three alternatives with route lengths of 27.948, 29.30, and 31.25 kms. Alternative three was very close to reserve forest of Rajgarh and Patar and was thus rejected. The first alternative with route length of 27.948 was revised to 28 kms in order to maintain sufficient buffer distance from reserve forests. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.42: LILO of one ckt of Vidisha Gairatganj at Raisen 132kV S/s



79. The line LILO of one ckt of Vidisha Gairatganj at Raisen 132kV S/s was proposed with three alternatives with route lengths of 18.221, 19.10 and 19.60 kms. The third alternative had a forest involvement of 3.82% of Kanphora range and was therefore rejected. The first alternative with route length of 18.221 kms was finalized as it avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.43: Second circuit of Betul 220 Gudgaon 132kv line



80. The line Second circuit of Betul 220 Gudgaon 132kv line has a route length of 57 kms. No alternatives were proposed for the line as the main route suggested avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.44: Chichli 220- Udaipura 132kv DCDS line



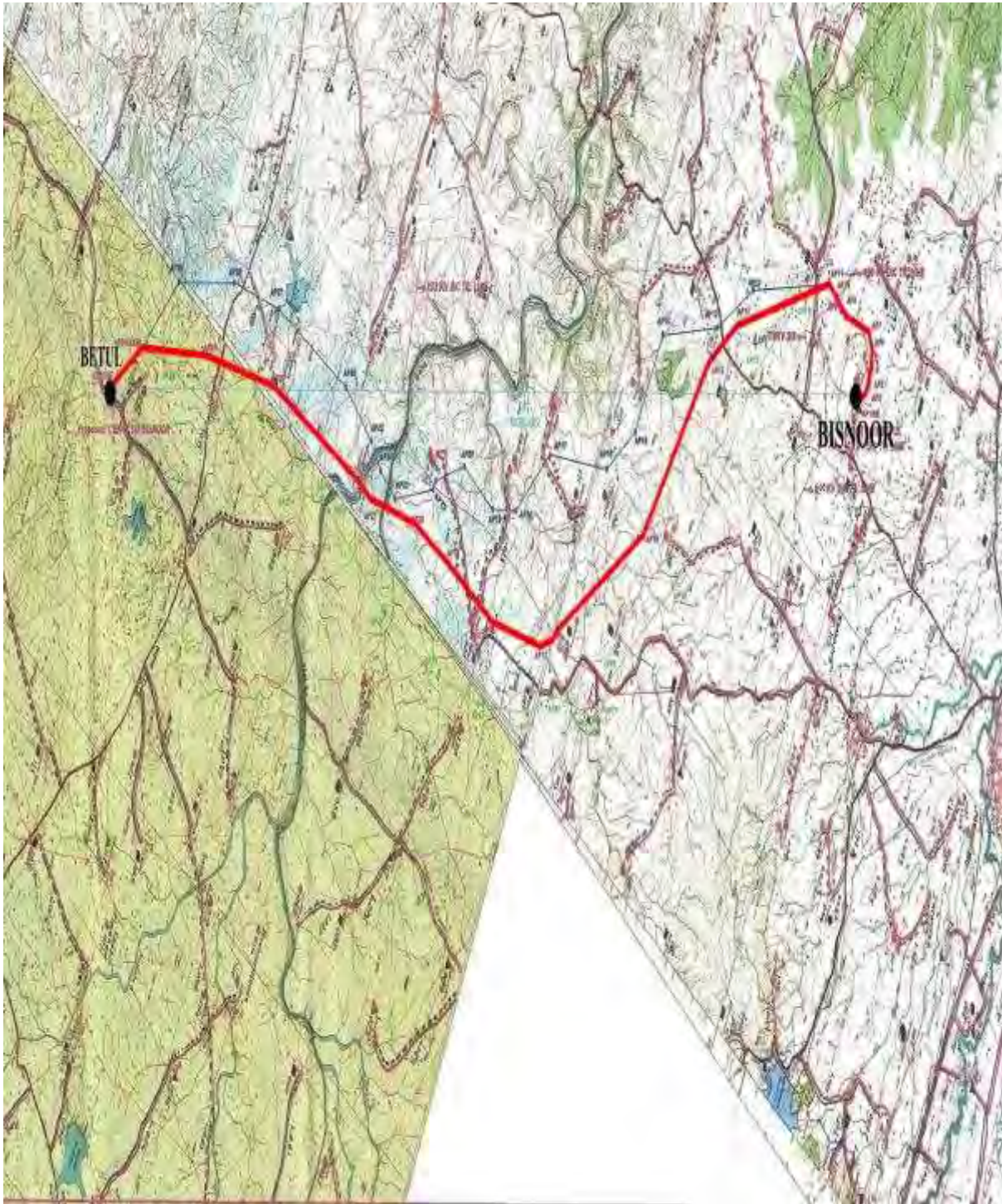
81. The line Chichli 220- Udaipura 132kv DCDS line was proposed with two alternatives of route lengths 47.56 and 58 kms. Final route length of 58 kms was selected as it avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.45: Betul400 (PGCIL)- Betul 220kV DCDS line



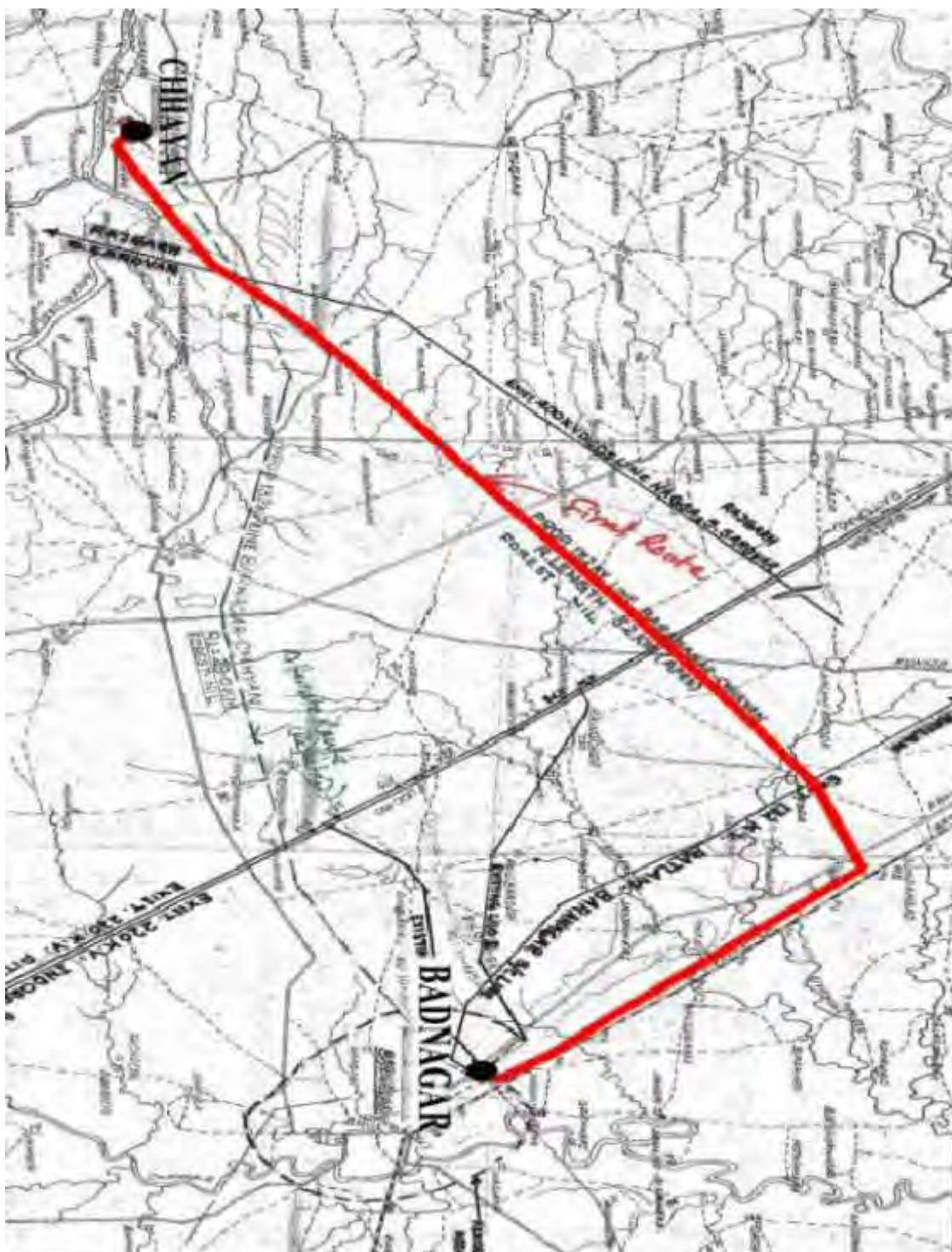
82. The line Betul400 (PGCIL)- Betul 220kV DCDS line was proposed with a route length of 1.88 kms. No alternatives were proposed for the line as the main route suggested is shortest route, avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.46: Betul 220- Bisnoor/Masod 132kV DCSS line



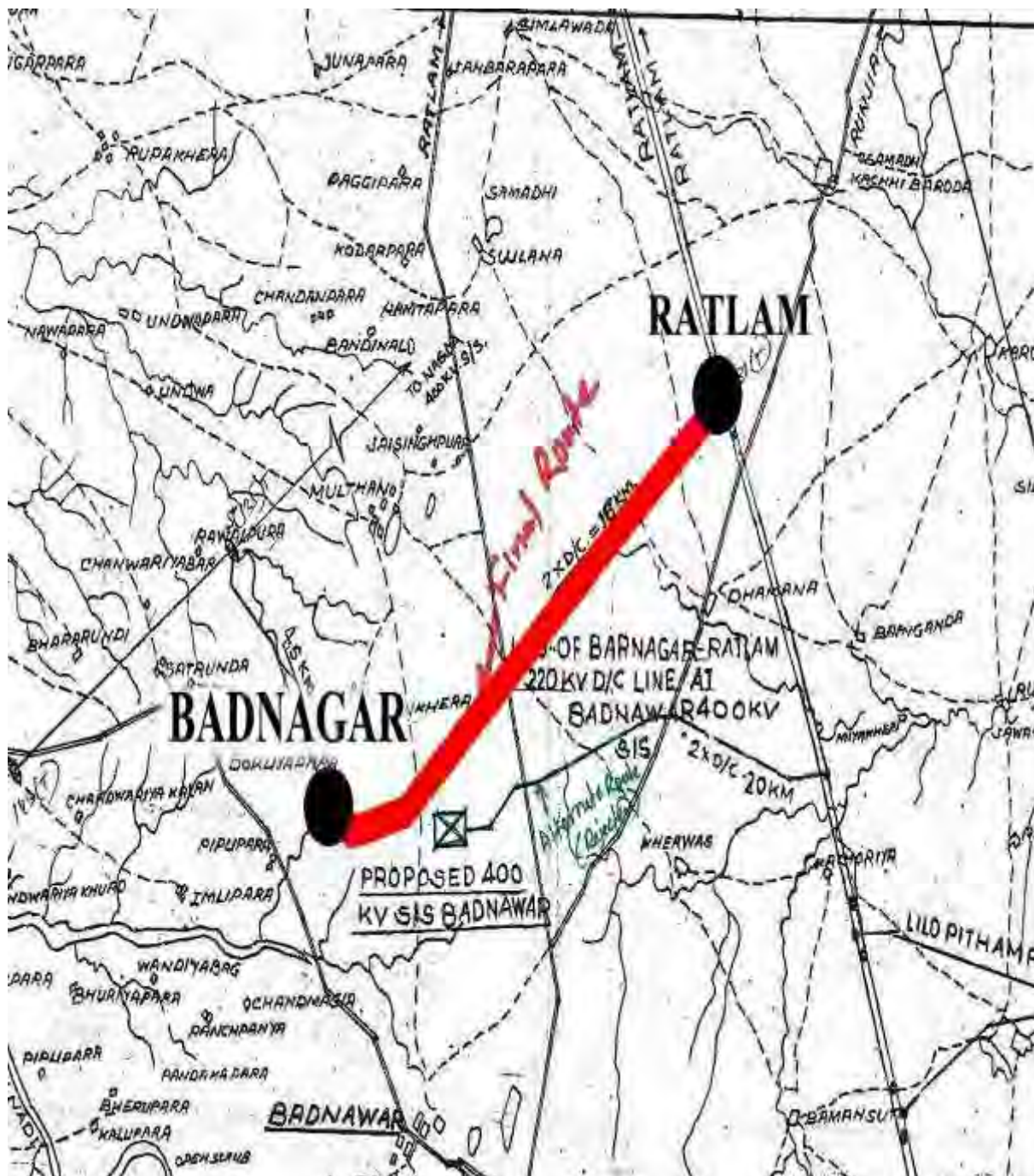
83. The line Betul 220- Bisnoor/Masod 132kV DCSS line was proposed with two alternatives of 34.5 and 37.2 kms. Alternative one was selected as final as it is the shortest route, avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.47: Badnagar 220- Chhayani 132kv DCSS line



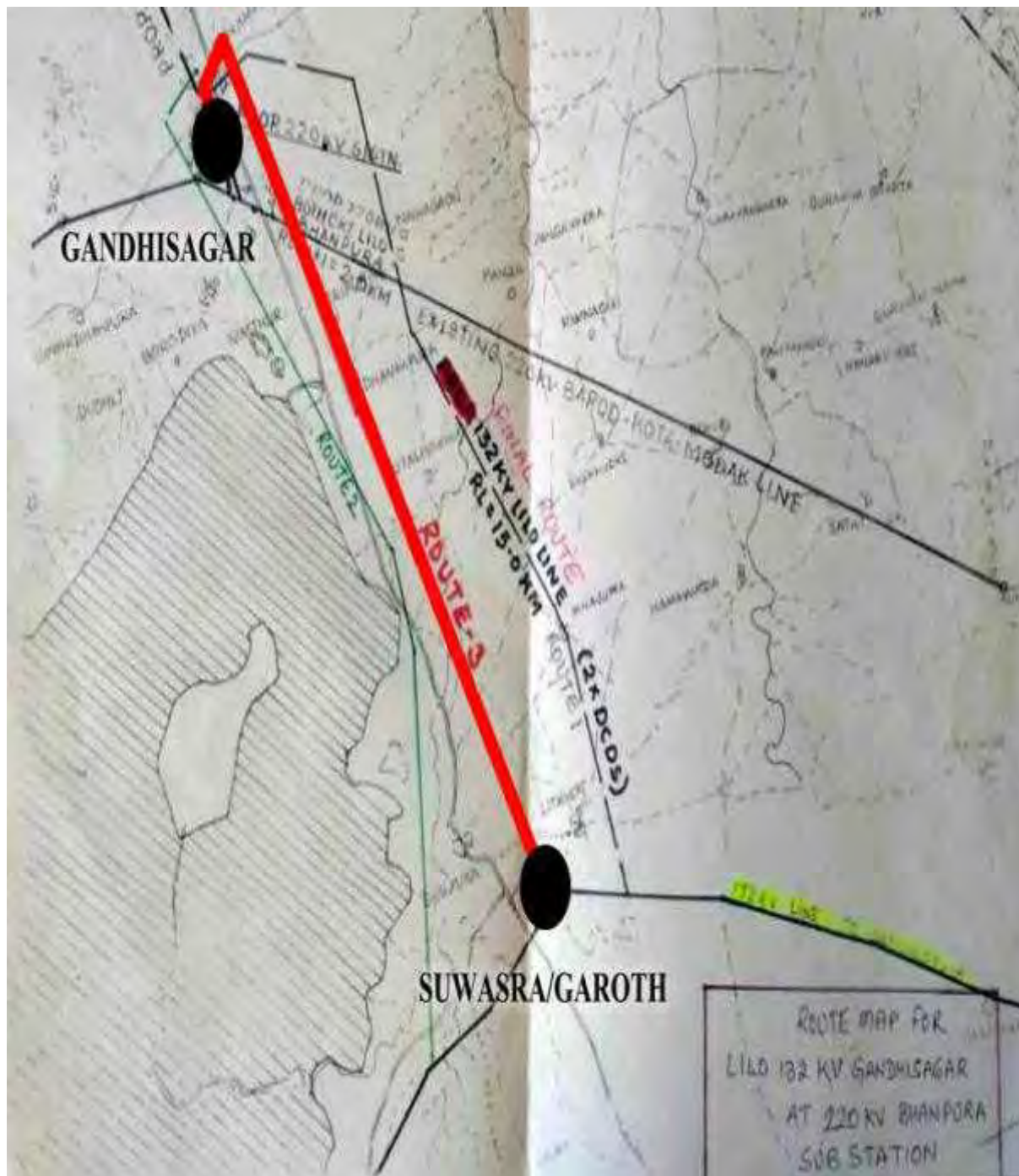
84. The line Badnagar 220- Chhayani 132kv DCSS line was proposed with two alternatives with route lengths 32 and 28 kms. Alternate one with route length was selected and later revised to 28.26 as it avoided large settlements and maintained buffer distance from Bageri river. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.48: LILO of Badnagar -Ratlam 220kv D/C line at Badnagar 400kv S/s (2xD/C)



85. The line LILO of Badnagar -Ratlam 220kv D/C line at Badnagar 400kv S/s was proposed with two route alignments of 20 and 16 kms. The final route length was later revised to 23.4 kms in order to maintain buffer distance from Bageri river. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.49: LILO of both ckt of Gandhisagar - Suwasra/Garoth 132kV line at Bhanpura 220kV S/s



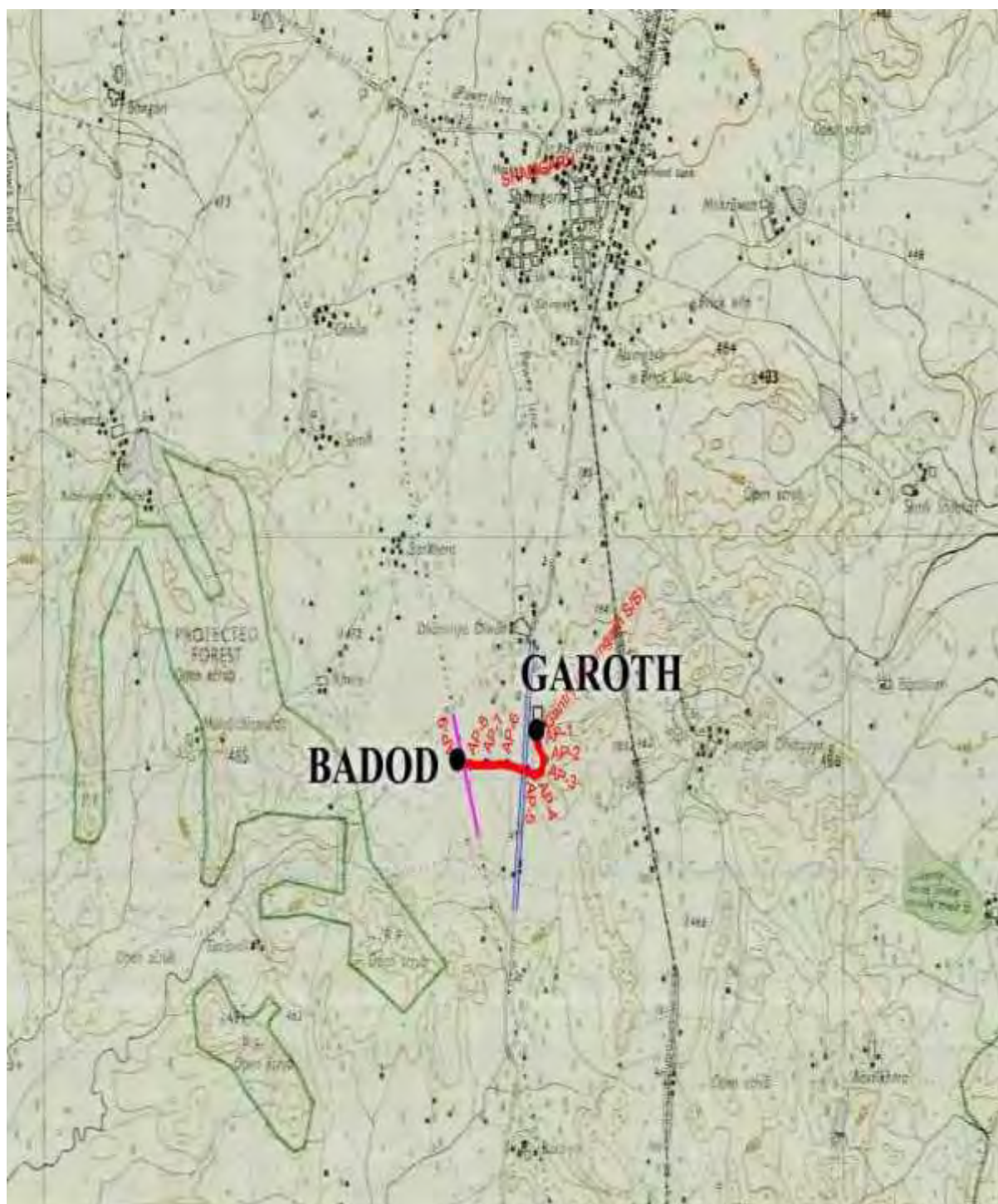
86. The line LILO of both ckt of Gandhisagar - Suwasra/Garoth 132kV line at Bhanpura 220kV S/s was proposed with three alternatives of route lengths 15, 15.9 and 16.2 kms. The length was further revised to 30 kms in order to maintain sufficient buffer distance from reserved forest of Bhanpura range. The new and revised route length of 30 kms avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.50: LILO of both ckt of Badod-Suwasra / Garoth 132kV line at Suwasra 220kV S/s



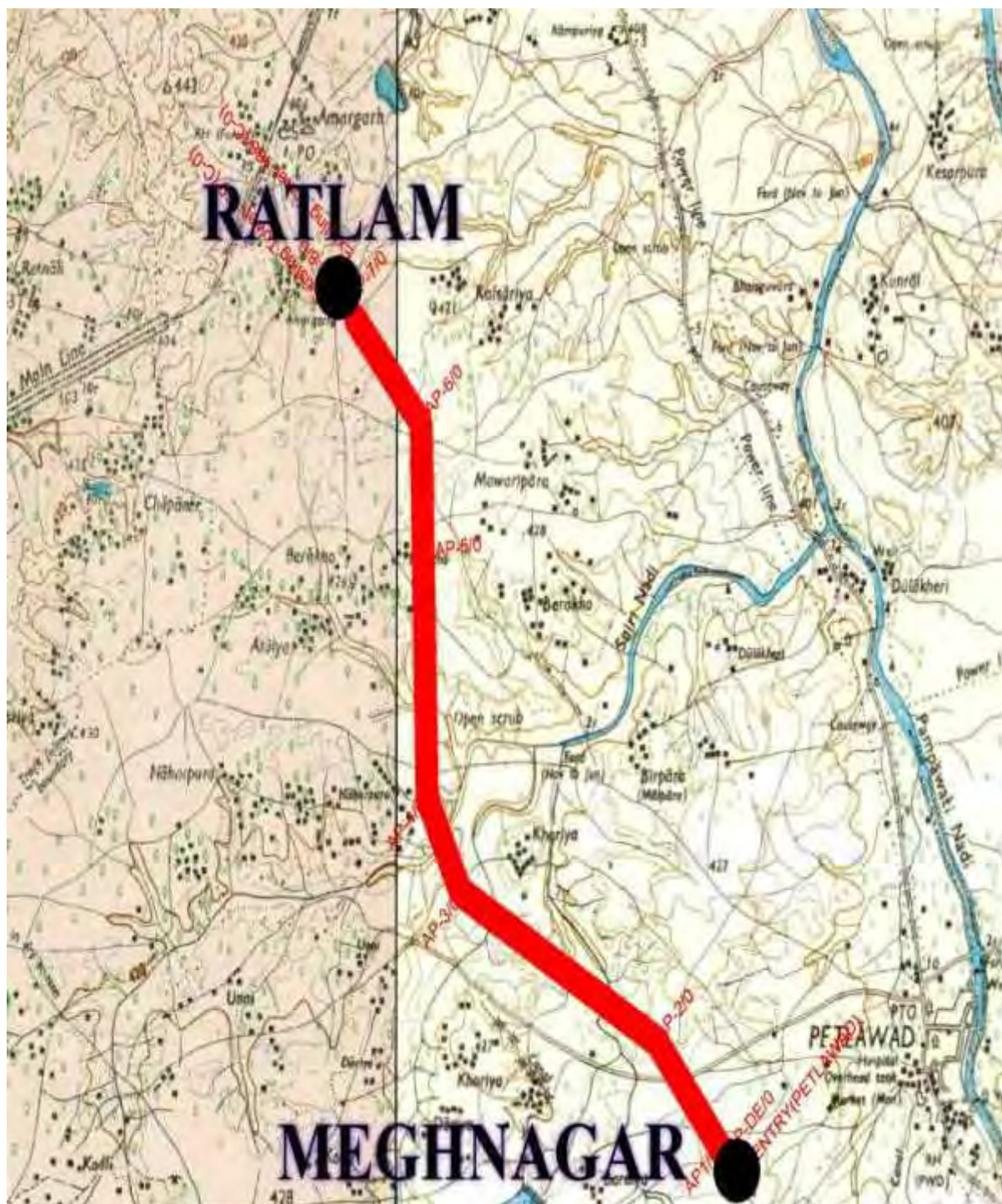
87. The line LILO of both ckt of Badod-Suwasra / Garoth 132kV line at Suwasra 220kV S/s was proposed with three alternatives of route lengths 1.2, 1.381 and 1.719 kms. The route length was further revised to 3 kms in order to maintain sufficient buffer distance from reserved forest and to avoid large settlements. The new and revised route length of 3 kms avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.51: LILO of 132kv Badod - Garoth line at Shyamgarh (D/C)



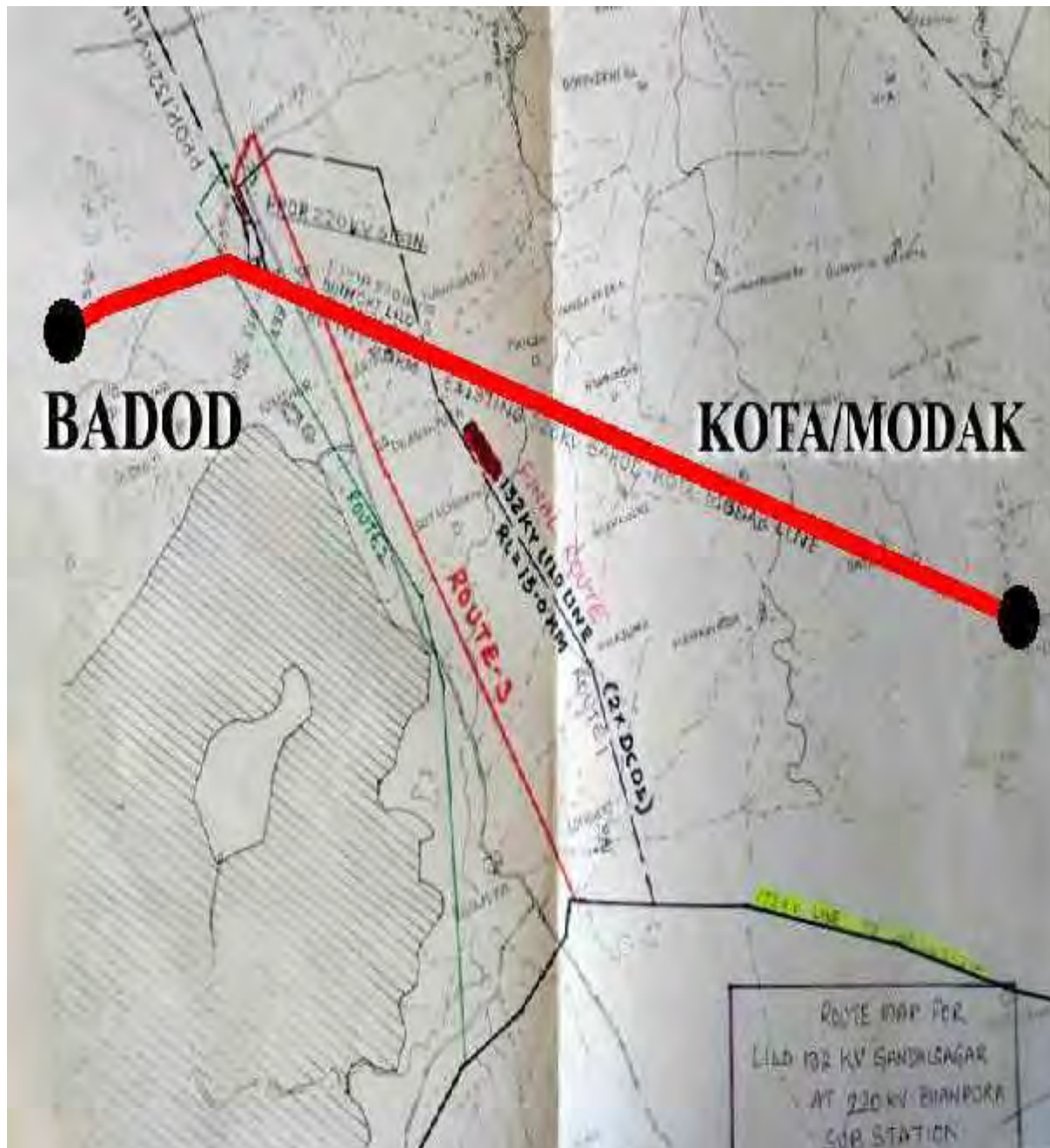
88. The line LILO of 132kv Badod - Garoth line at Shyamgarh (D/C) was proposed with a route length of 25 kms initially. However, since there are many protected reserve forests, the line was revised to a route length of 3 kms. The new and revised route length of 3 kms avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.52: LILO of Ratlam-Meghnagar 132kv S/c line at Petlawad DCDS (D/C)



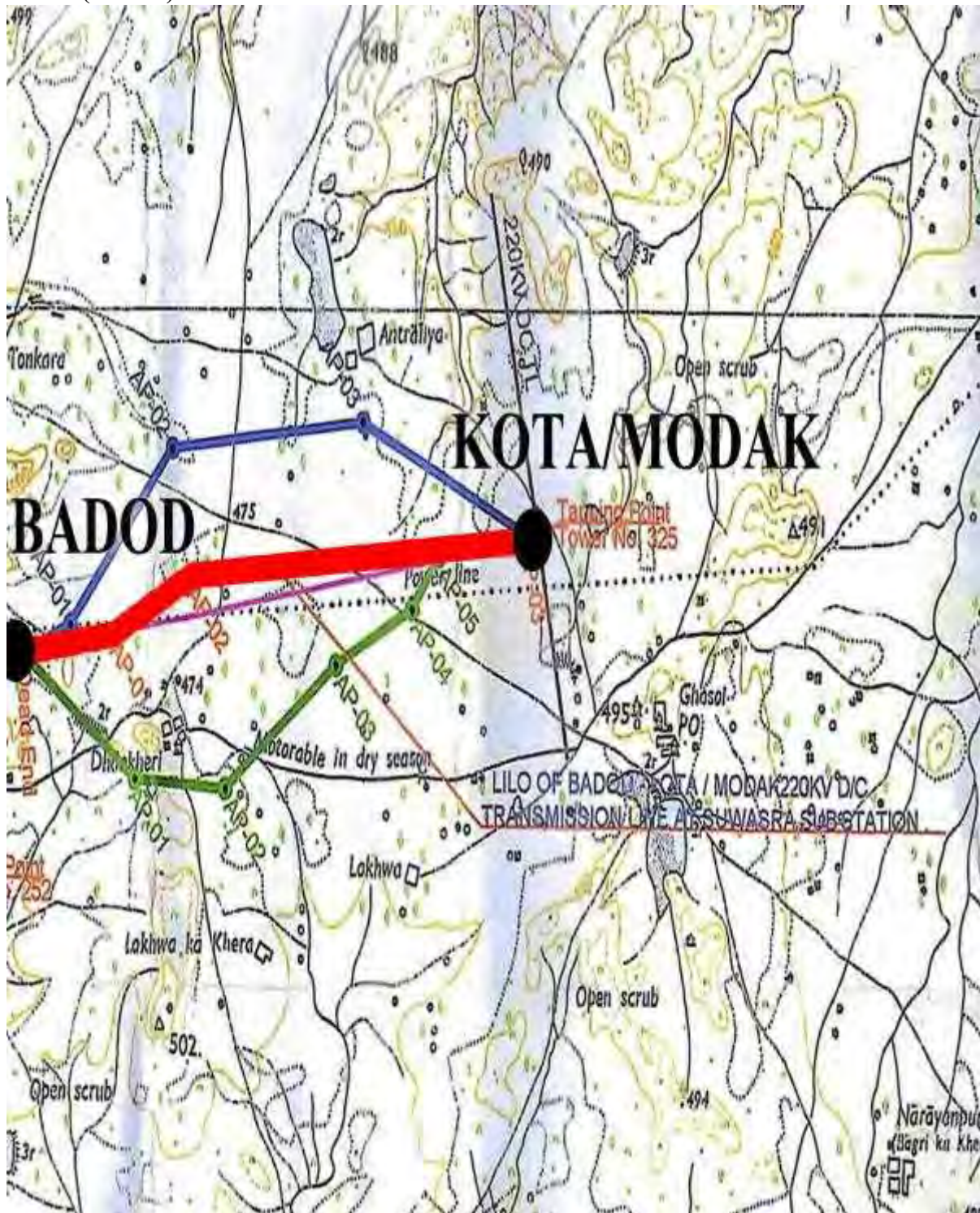
89. The line LILO of Ratlam - Meghnagar 132kv S/c line at Petlawad DCDS (D/C) was proposed initially with a route length of 20 kms but was later revised to 7.4 kms in order to maintain sufficient buffer distance from Kotnai Dhwarapara reserve forest. The new and revised route length of 7.4 kms avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.53: LILO of second ckt of Badod - Kota/Madok 220kV line at Bhanpura 220kV S/s



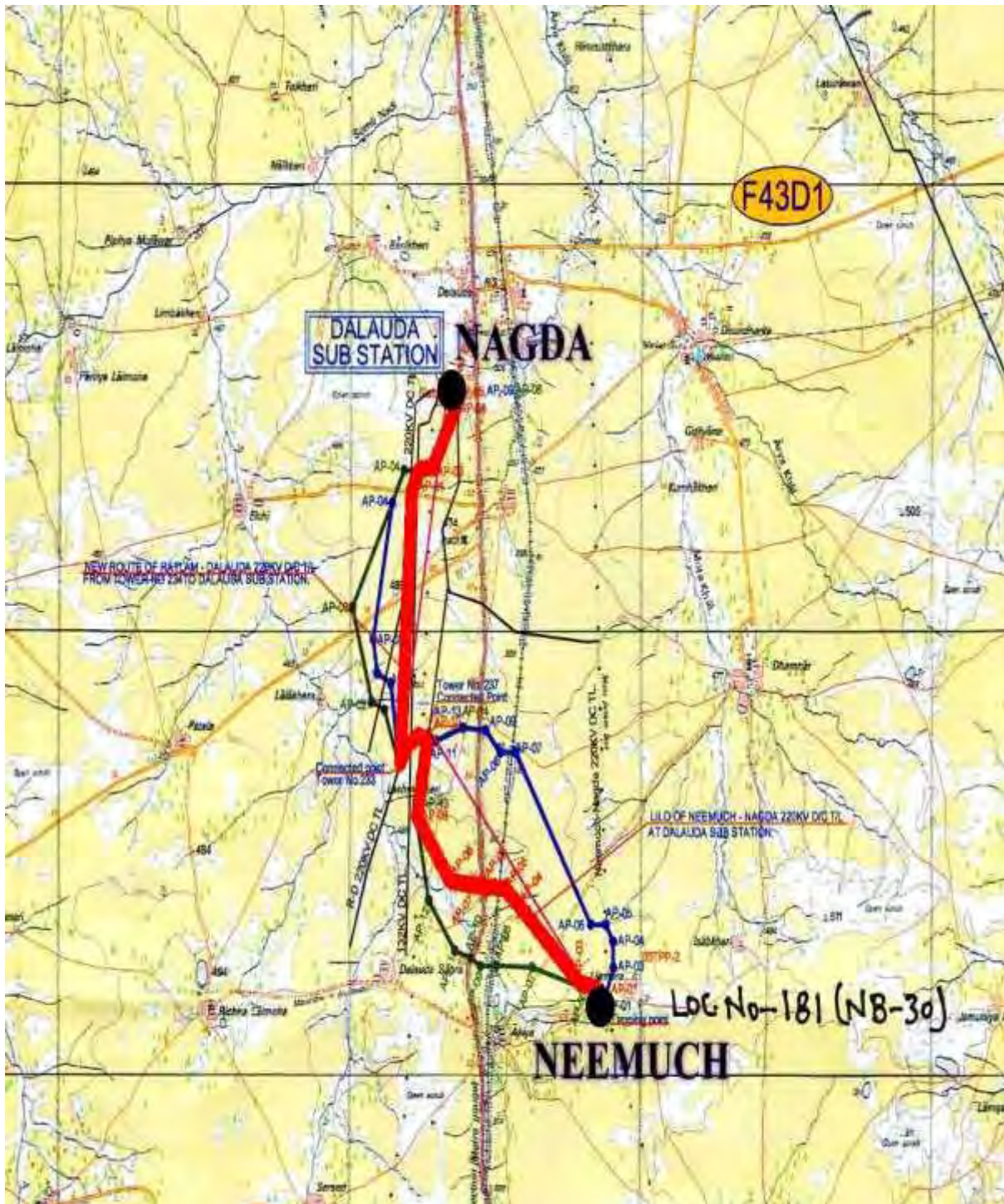
90. The line LILO of second ckt of Badod - Kota/Madok 220kV line at Bhanpura 220kV S/s was proposed with a route length of 2 kms which was later revised to 0.5 kms in order to maintain sufficient buffer distance from reserve forests. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.54: LILO of both ckt of Badod- Kota/Modak 220kV line at Suwasra 220kV S/s (2XD/C)



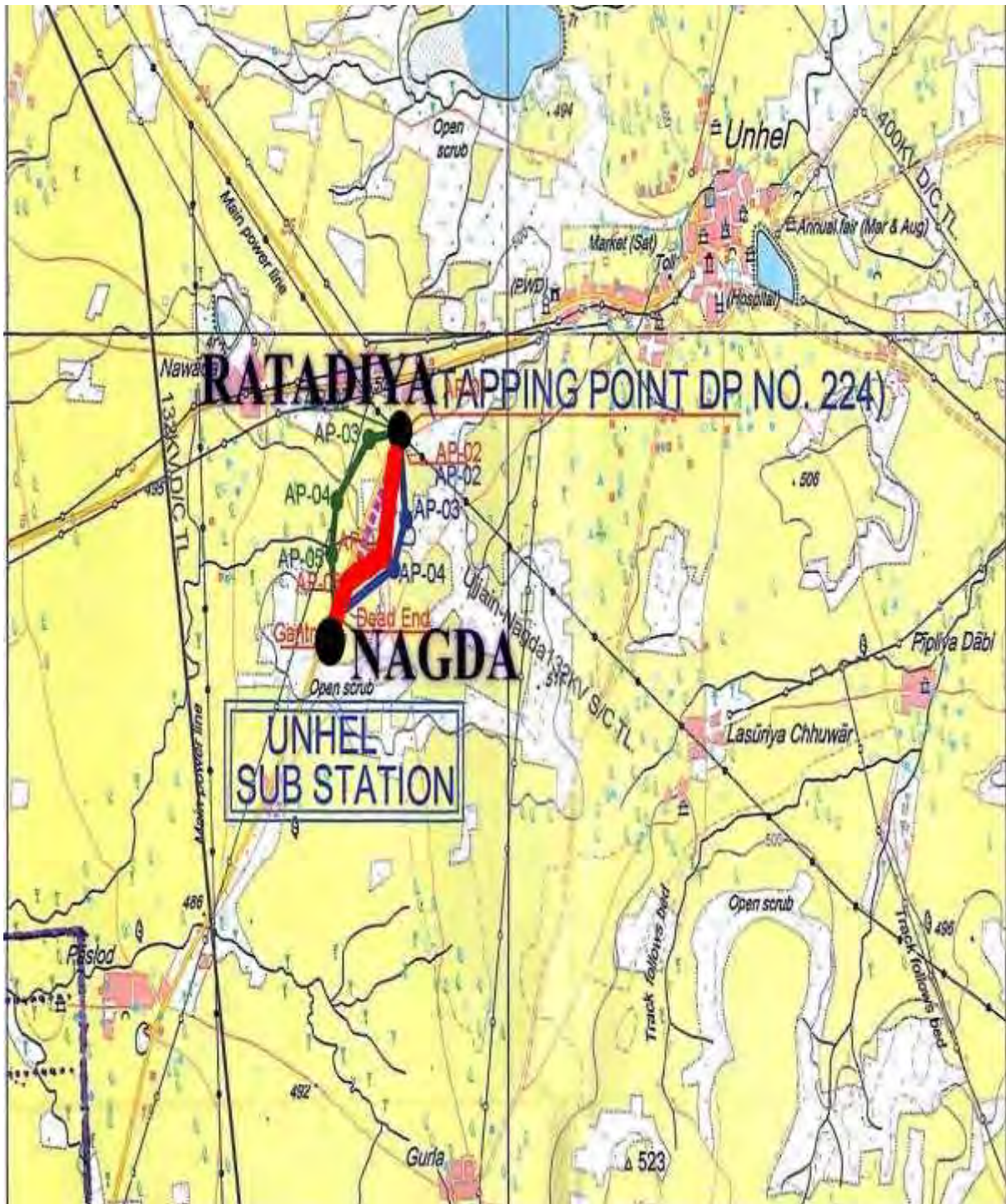
91. The line LILO of both ckt of Badod- Kota/Modak 220kV line at Suwasra 220kV S/s (2XD/C) was proposed with three alternatives of route lengths 4.103, 4.544 and 4.586. The route length was further revised to 14 kms in order to maintain sufficient buffer distance from large settlements and reserve forests. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.55: LILO of second ckt of Nagda- Neemuch 220kV line at Daloda 220kV S/s



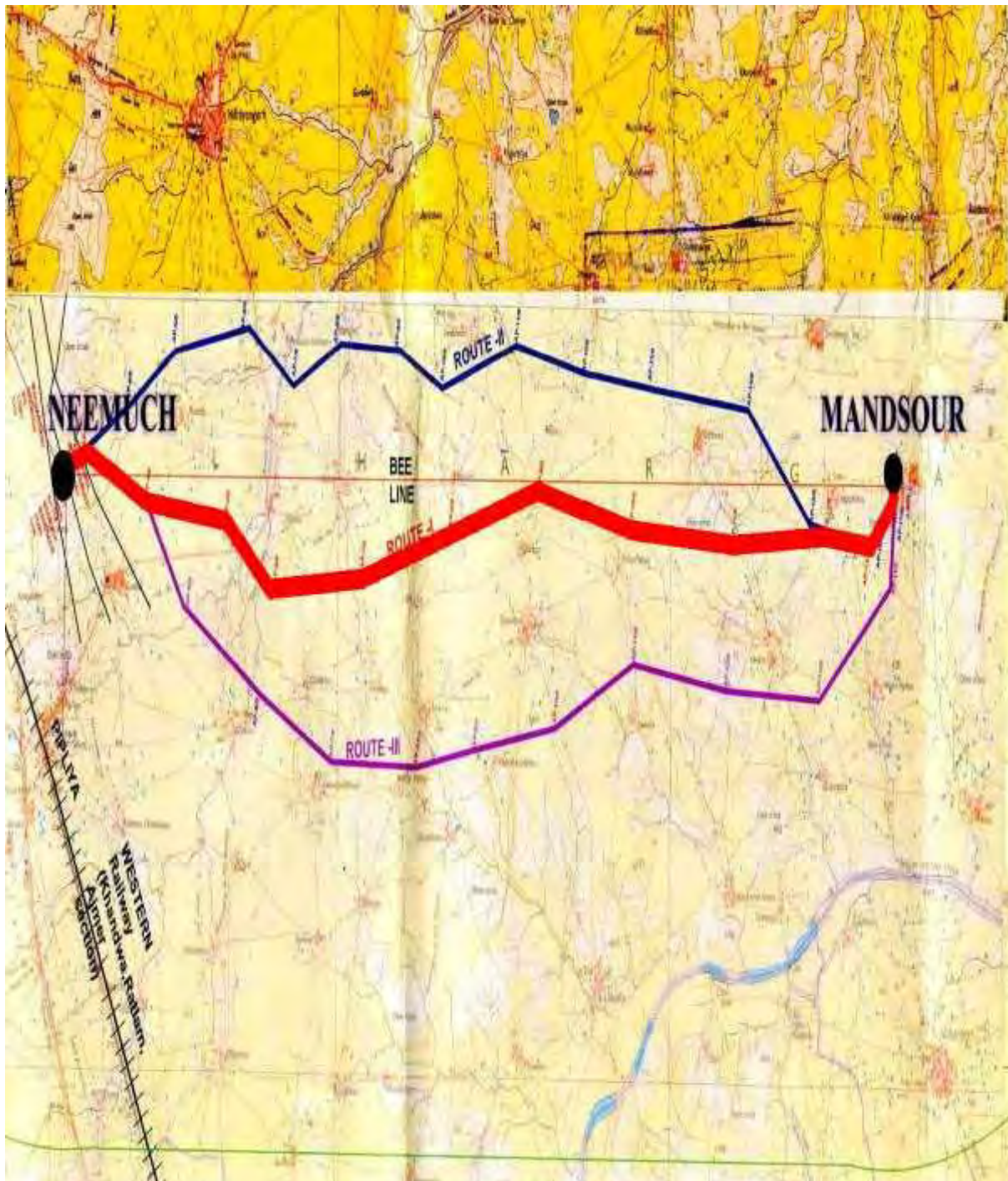
92. The line LILO of second ckt of Nagda- Neemuch 220kV line at Daloda 220kV S/s was proposed with three alternatives of route lengths 4.599, 4.714 and 4.943. The first alternative route length selected as further revised to 12.2 kms in order to avoid large settlements and cluster of transmission lines already constructed. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.56: LILO of Nagda 220-Ratadiya 132kV line at Unhel



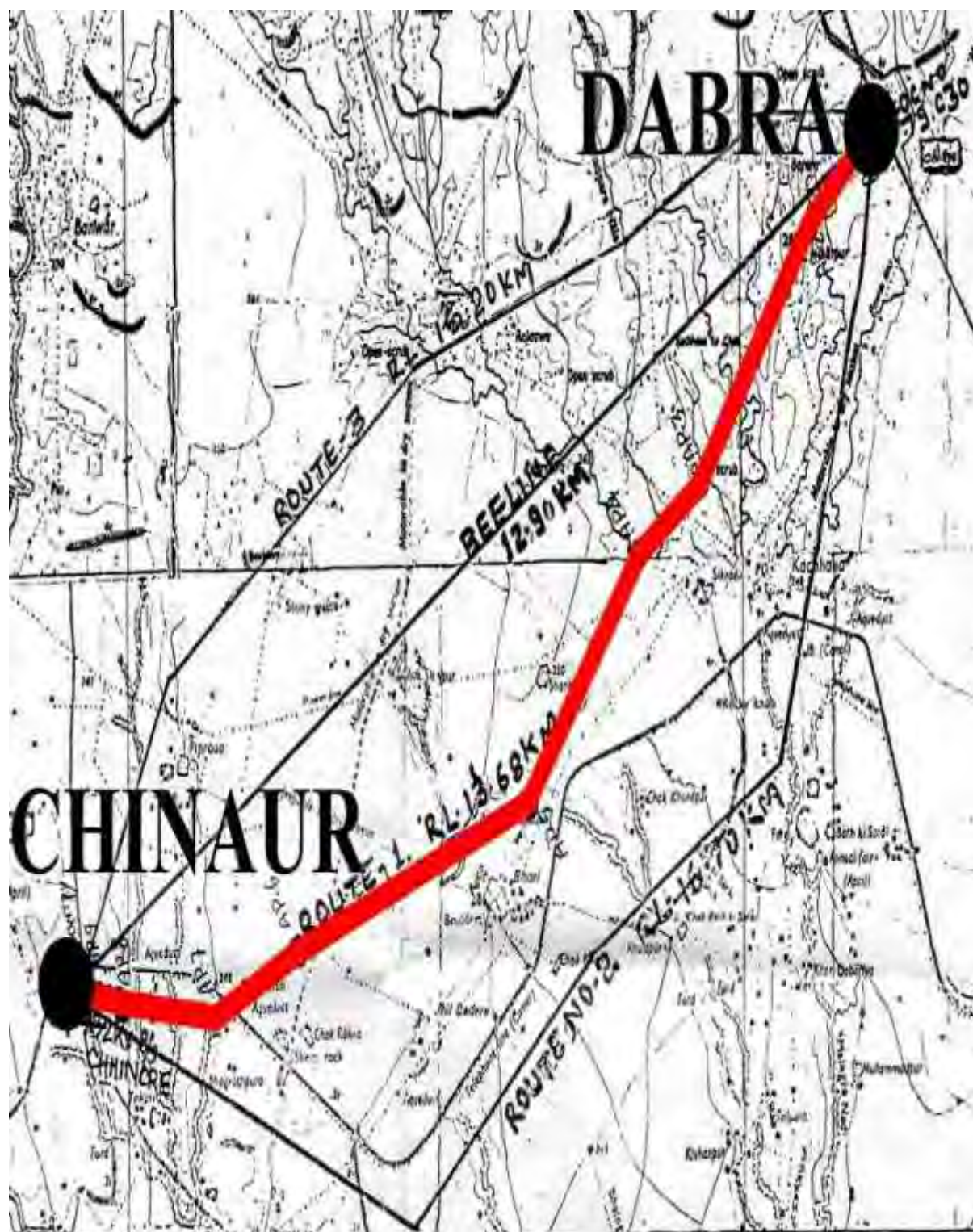
93. The line LILO of Nagda 220-Ratadiya 132kV line at Unhel was proposed with three alternatives with route lengths 1.331, 1.392 and 1.414. The final route length selected was the first alternative further revised to a route length of 2 kms in order to avoid large water bodies. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.57: LILO of one ckt of Neemuch 220-Mandsaur 132kV line at Budha 132kvS/s



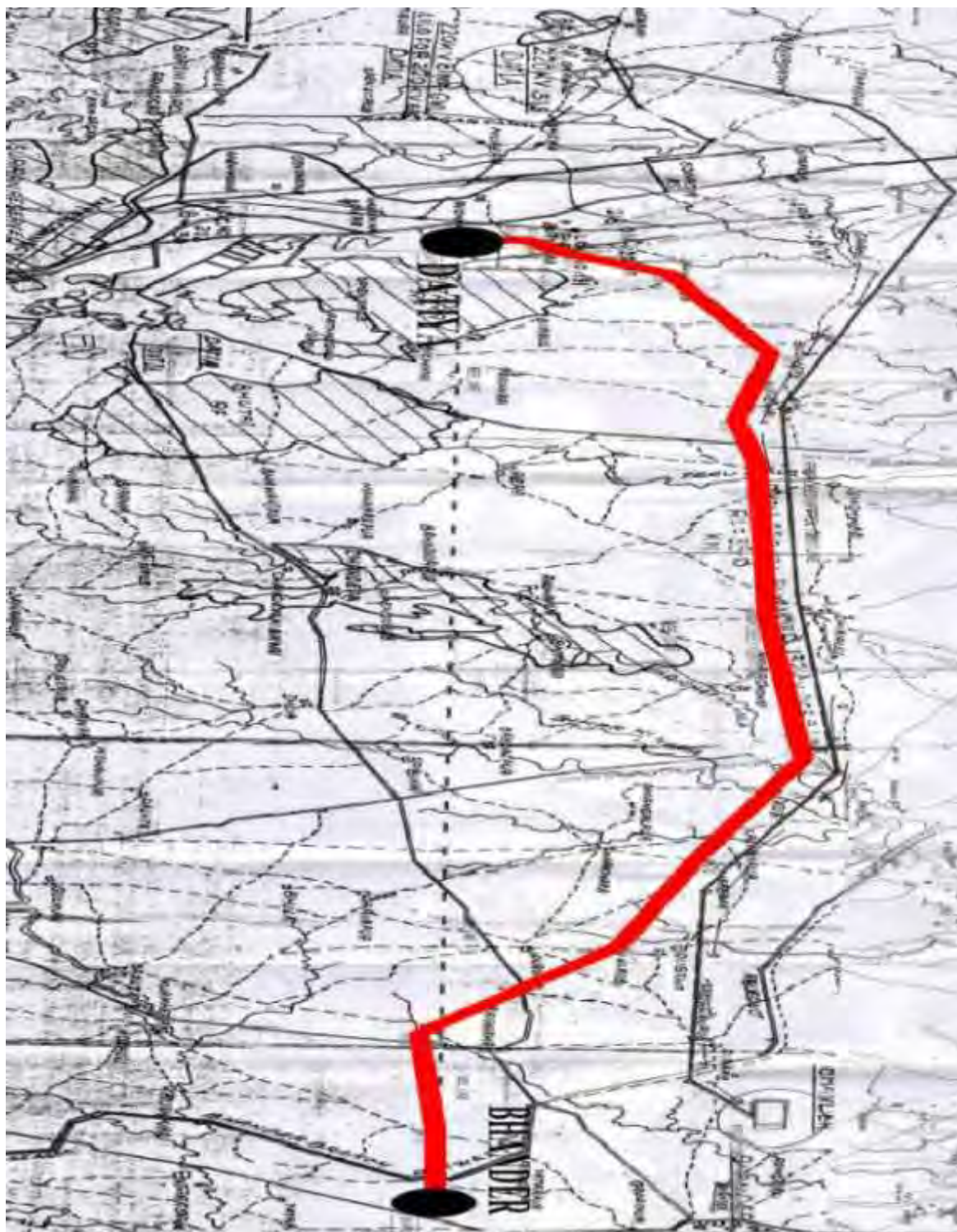
94. The line LILO of one ckt of Neemuch 220-Mandsaur 132kV line at Budha 132kvS/s was proposed with three alternative of route lengths 22.1, 22.976 and 24.041. The revised alternative was finalized with a route length of 24 kms as it avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.58: Dabra- Chinaur 132kV DCSS Line



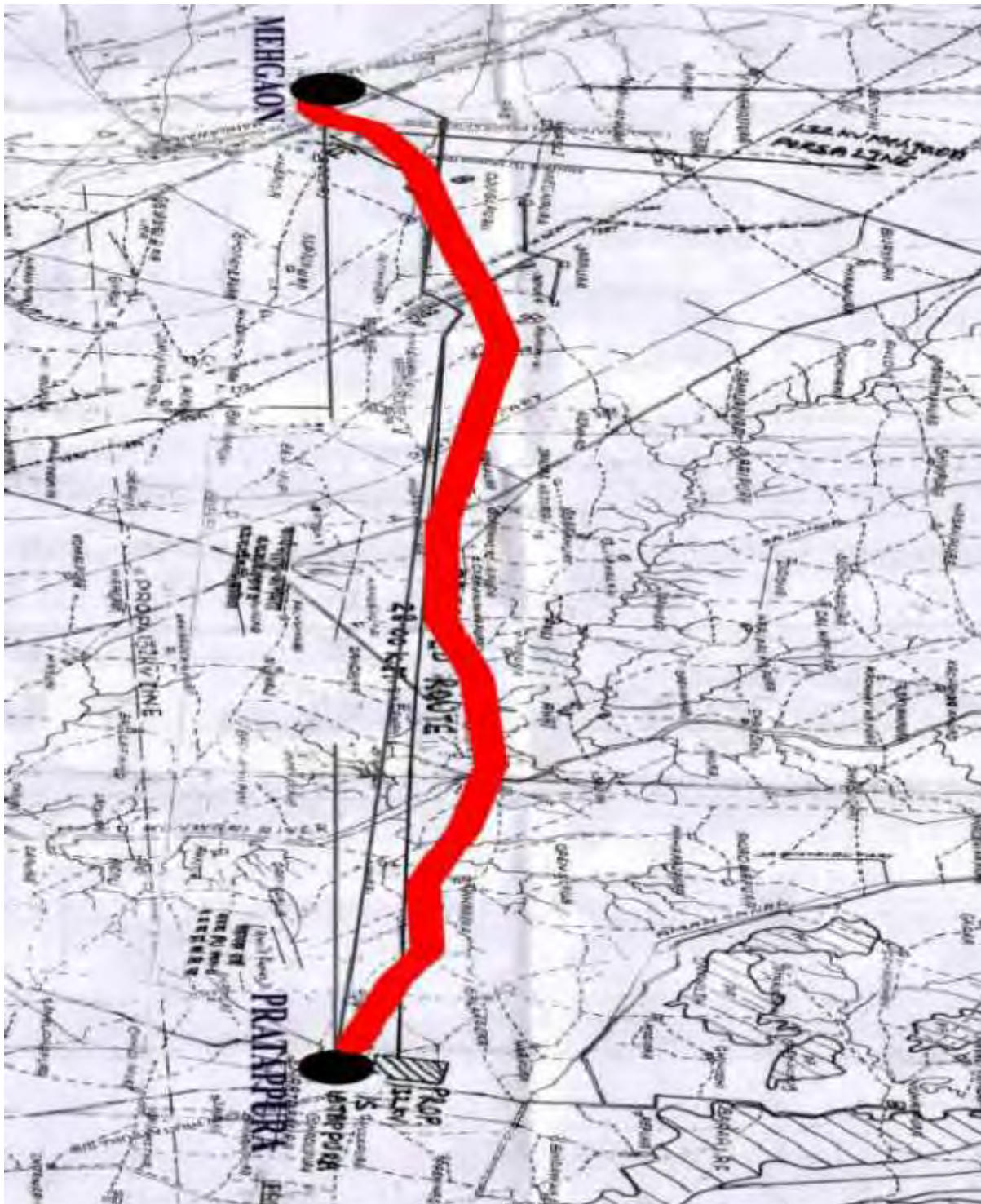
95. The line LILO of 132 KV Gwalior- Dabra/ Karera Line at Chinaur was proposed with three alternatives with route lengths 13.68, 16.70 and 15.20. The first alternative was treated as final as it had shortest distance, and as it avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.59: Datiya220- Bhandar 132kV DCSS Line



96. The line Datiya220- Bhandar 132kV DCSS was proposed with three alternate route lengths of 35, 37.327 and 34.735. The revised route length is 34.038 as it had shortest distance, and as it avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.60: Mehgaon 220-Pratappura 132kV DCSS line



97. The line Mehgaon 220-Pratappura 132kV DCSS line was proposed with three alternatives with route lengths 30, 28 and 25.9. The third alternative was finalized as it had the shortest distance and avoided large settlements and reserve forests. However, in order to maintain adequate buffer distance from reserve forests, the revised route length is 29.74 kms. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.61: Sabalgarh 220- Kelaras 132kV DCSS Line



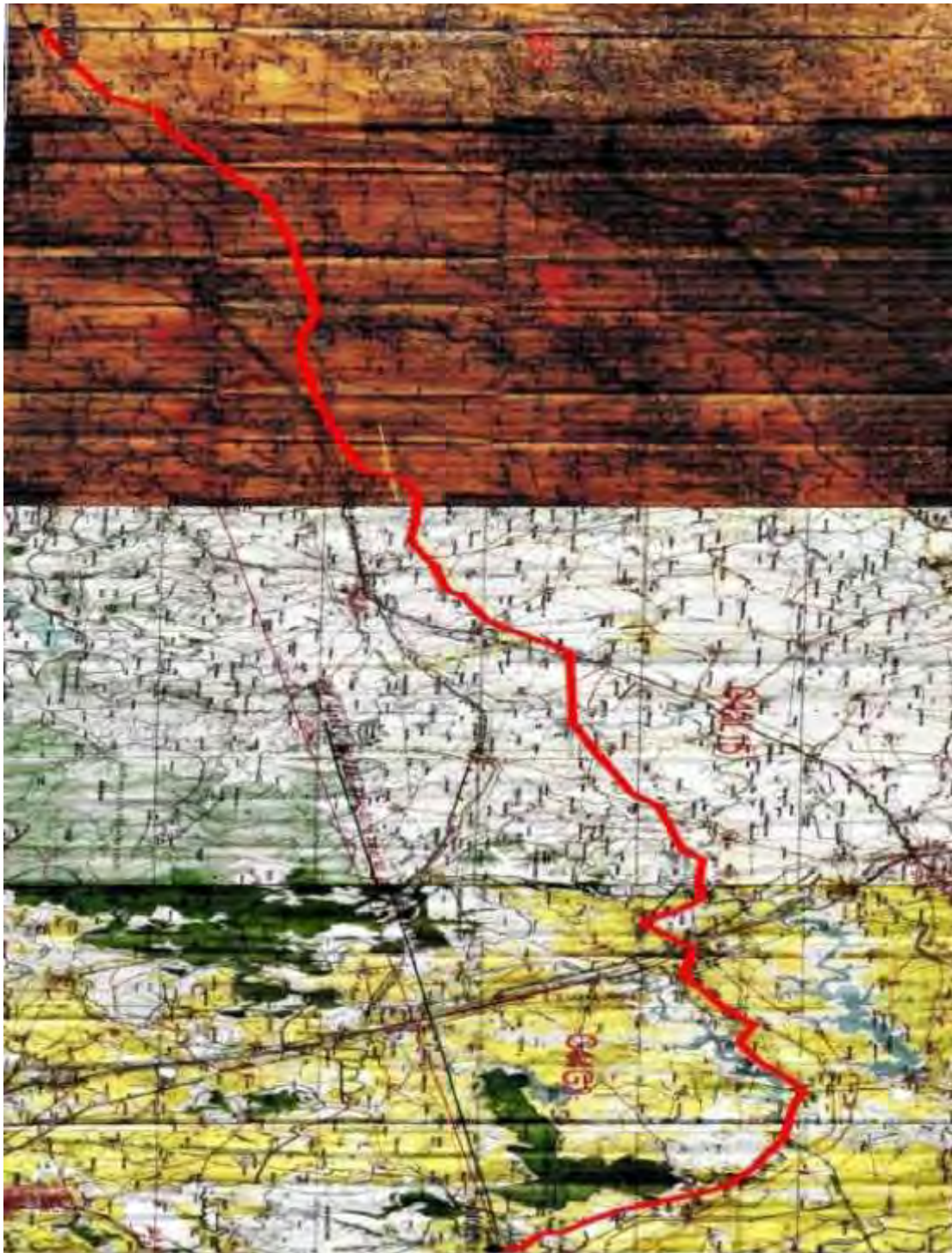
98. The line Sabalgarh 220- Kelaras 132kV DCSS Line was proposed with two alternatives with route lengths 24 and 25 kms. The final revised length is 19.636 and is chosen as it avoids Badhreta reserve forest and Chmabal canal. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.62: Malanpur 220- Gohad 132kV DCDS Line



99. The line Malanpur 220- Gohad 132kV DCDS was proposed with three alternatives with route lengths 20, 14.492, and 13.882 kms. The final route length is 14.5 and is chosen as avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.63: 220kV DCDS Morena 400kv (CWRTL Adani) -Sabalgarh DCDS line



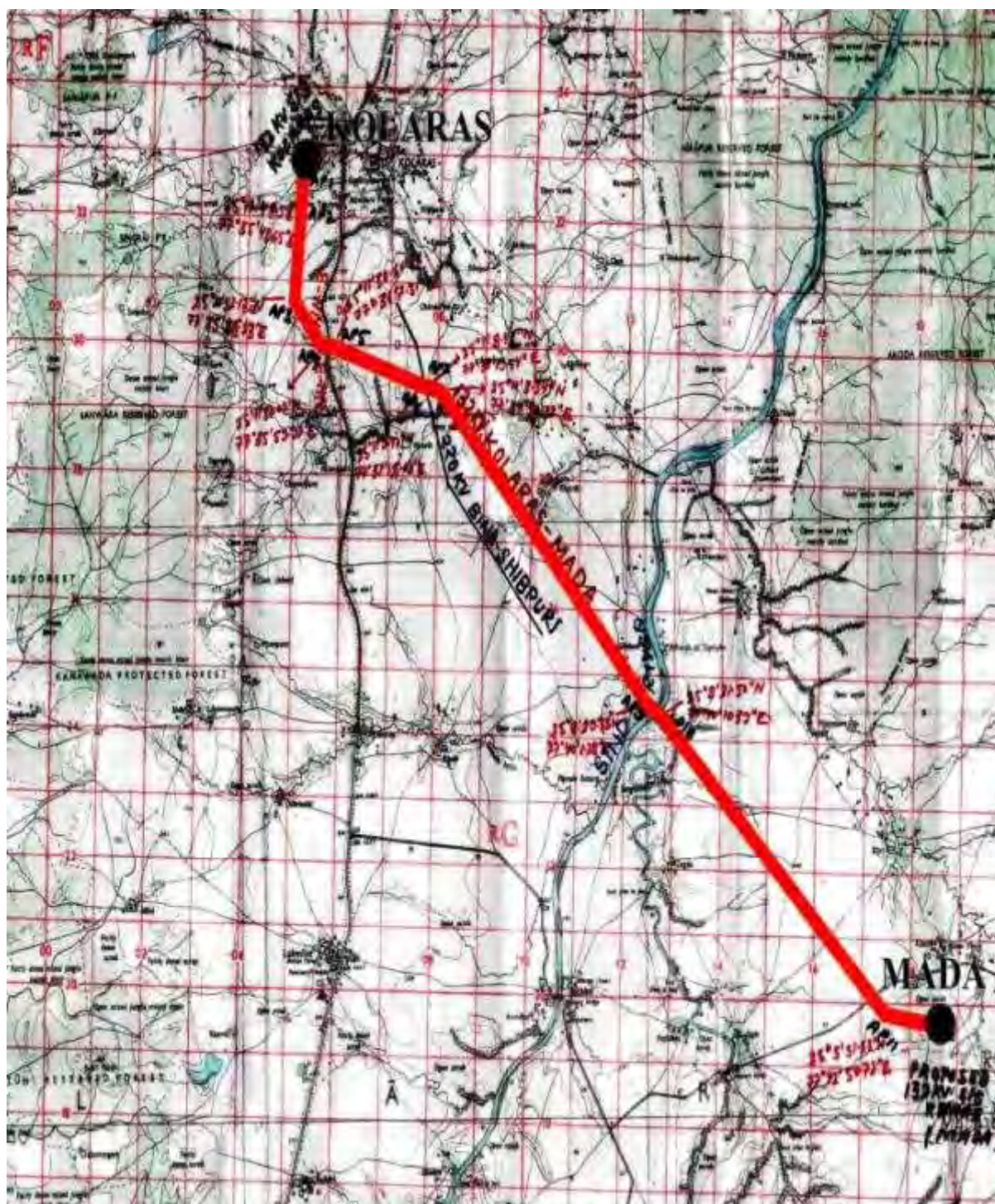
100. The line 220 KV DCDS Morena 400 KV (CWRTL Adani) – Sabalgarh DCDS was proposed with a route length of 80 kms but had a forest involvement of 13.31%. The line was further revised to 92 kms but the longer length resulted in zero forest involvement. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.64: Bhonra-Kapasi 132 kv DCSS line



101. The line Bhonra-Kapasi 132 kv DCSS line was proposed with a route length of 45 kms. However, it had a forest involvement of 3.29% comprising both reserve and protected forests. The line was then revised to an increased length of 50 kms but this has ensured reduced forest involvement of 2.24%. A total of 3.037 hectares of forest land will be involved and no trees will be felled. Forest clearance has been applied for and case has been forwarded to CCF, Shivpuri.

Figure 3.65: Kolaras-Mada 132kV DCSS line



102. The line Kolaras-Mada 132kV DCSS line was proposed with a route length of 20 kms. However, in order to maintain sufficient buffer distance from Akoda reserve forest and Sarjapur and Ramrai protected forests, the route length was further revised to 18.366 kms. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.66: 132kv DCDS Guna 220-Bhonra line



103. The line 132kv DCDS Guna 220-Bhonra line was proposed with a route length of 20 kms with forest involvement of 14.5%. However, in order to reduce the forest involvement to 9%, the length was revised to 25 kms. A total of 6.09 hectares of forest land will be involved and total number of 2352 trees will be felled. Forest clearance has been applied for and case has been forwarded to CCF, Shivpuri.

Figure 3.67: Malanpur 400 kv -Morena 220 kv DCDS line



104. The line LILO of one circuit of Malanpur- Mehgaon line at 400 KV S/s (CWRTL Adani) Morena was proposed with a route length of 20 kms. There are a number of reserve and protected forest patches in the region and so to avoid them, the revised length is 8 kms. This final route alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.68: 2nd circuit of Shivpuri 220- Kolaras 132kV DCSS line



105. The line 2nd circuit of Shivpuri 220- Kolaras 132kV DCSS was proposed with a route length of 35 kms as it avoids avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.69: 2nd ckt of Malanpur- Morar 132kV line



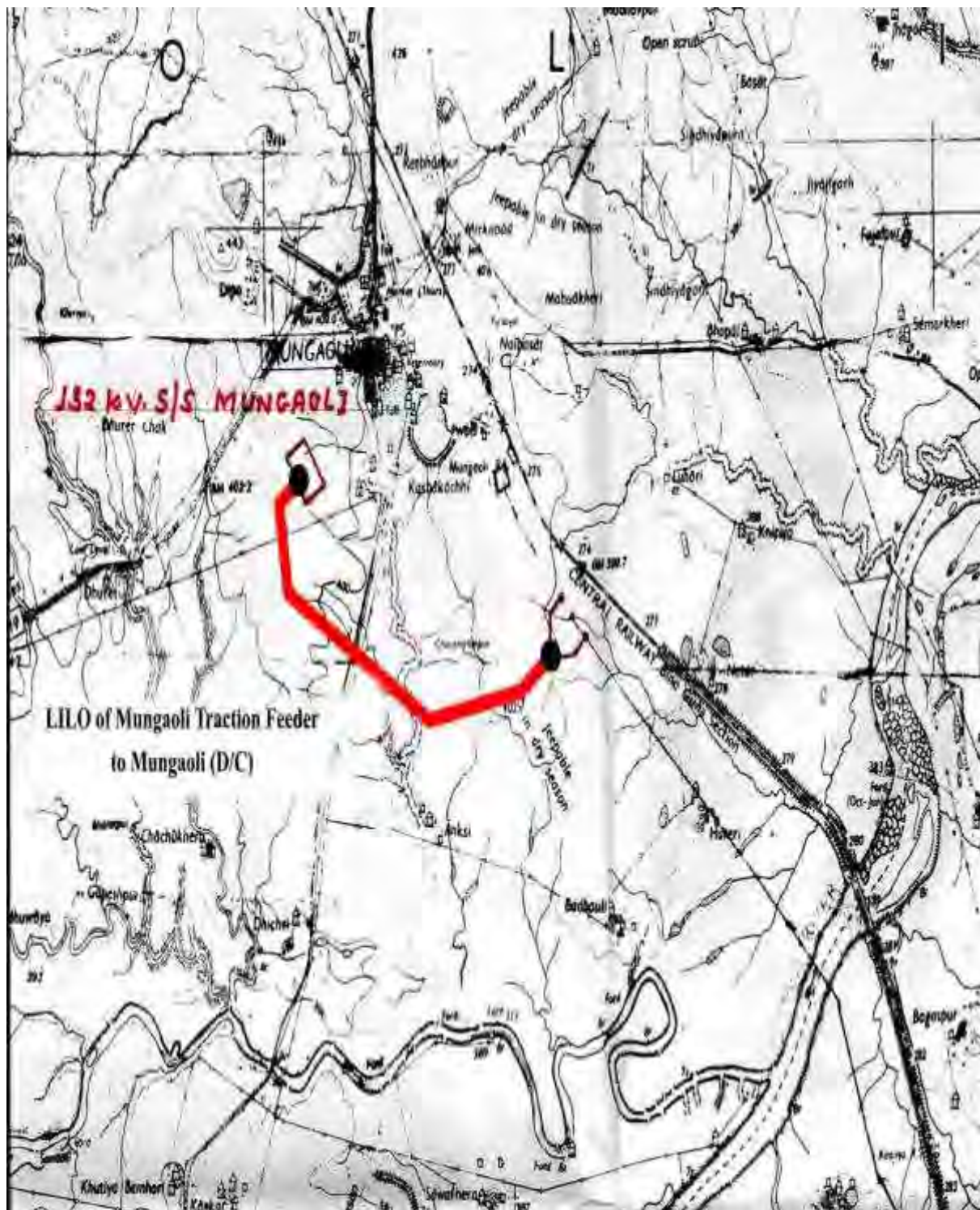
106. The line 2nd ckt of Malanpur- Morar 132kV line was proposed with a route length of 29 kms. This final alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.70: Khurai- Khimlasa 132kV DCSS line



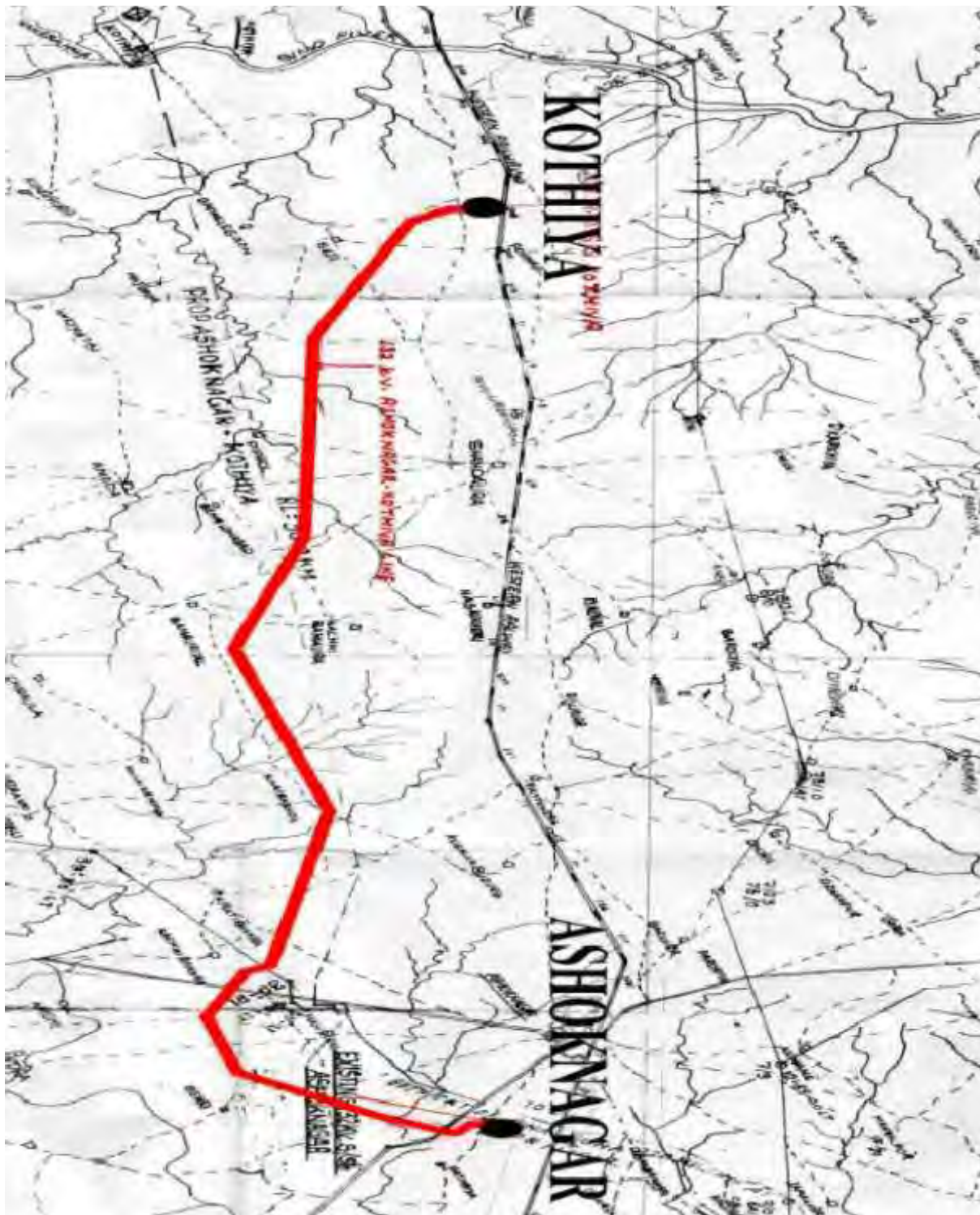
107. The line Khurai- Khimlasa 132kV DCSS line was proposed with a route length of 20 kms later revised to 20.937 in order to maintain buffer distance from large settlements and reserve forest. This final alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.71: LILO of Mungaoli Traction Feeder to Mungaoli (D/C)



108. The line LILO of Mungaoli Traction Feeder to Mungaoli was proposed with a route length of 10 kms later revised to 8.32 kms in order to avoid large settlements. This final alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.72: Ashoknagar 220-Kothiya 132kV DCSS Line



109. The line Ashoknagar 220-Kothiya 132kV DCSS was proposed with a route length of 35 kms later revised to 30 kms in order to avoid large settlements. This final alignment avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.73: Sagar220- Rehli 132kV DCSS line



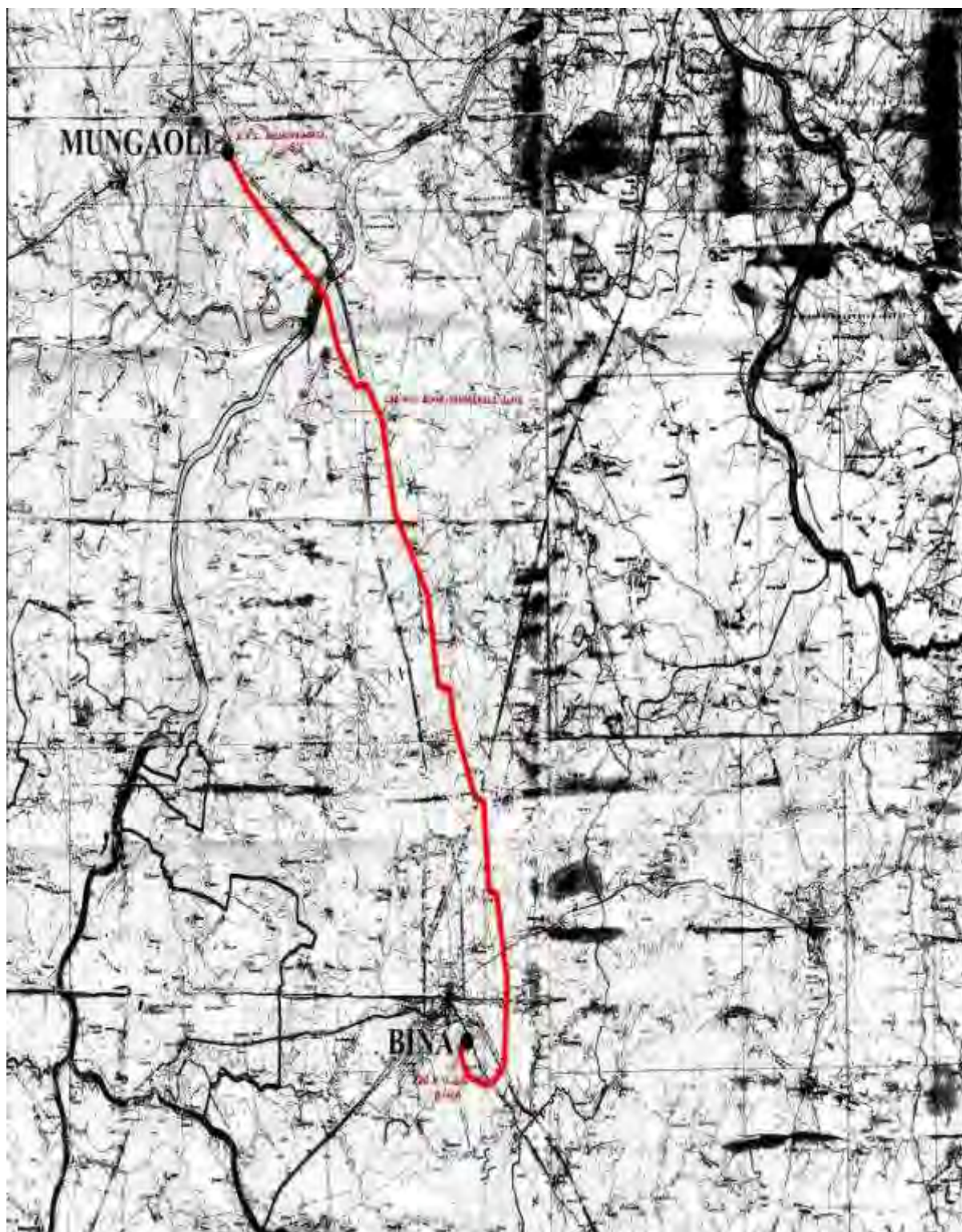
110. The line Sagar220- Rehli 132kV DCSS was proposed with three alternatives with route lengths 38.475, 39.722, and 46.260 with forest involvement of 7.89%, 8.38%, and 7.84%. The route length was revised to 40 kms and has now reduced forest involvement to 7.59%. A total of 8.202 hectares of forest land will be involved and total number of 470 trees will be felled. Forest clearance has been applied for and case has been forwarded to APCCF, Shivpuri.

Figure 3.74: 2nd ckt of Sagar 220-Sagar 132kV (I/C)



111. The line 2nd ckt of Sagar 220-Sagar 132kV (I/C) was proposed with a route length of 9 kms which is selected as it avoids reserve forests altogether and large settlements and other critical sensitive environmental areas.

Figure 3.75: Stringing of 3rd conductor from Bina220 to Mungaoli



112. The line stringing of 3rd conductor from Bina220 to Mungaoli was proposed with a route length of 35 kms. The revised route length is 31.3 kms as it avoids large settlements. The final route length also avoids reserve forests altogether and other critical sensitive environmental areas.

113. Substation name: Balaghat/Kirnapur 132kV

The substation Balaghat/Kirnapur 132kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

114. Substation name: Waraseoni 132kV

The substation Waraseoni 132kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious,

historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

115. Substation name: Bada Malehra 132/33kV

The substation Bada Malehra 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

116. Substation name: Deonagar 132/33kV

The substation Deonagar 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

117. Substation name: Belkheda 132/33kV

The substation Belkheda 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

118. Substation name: Karakbel 132/33kV

The substation Karakbel 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

119. Substation name: Saori 132/33kV

The substation Saori 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will

be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

120. Substation name: Palohabada 132/33kV

Land allotment for Palohabada 132/33kV substation has not been finalized yet and the IEE report will be updated after finalization of land allotment.

121. Substation name: Patera 132/33kV

The substation Patera 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

122. Substation name: Satna II 132/33kV

Land allotment for Satna II 132/33kV substation has not been finalized yet and the IEE report will be updated after finalization of land allotment.

123. The Additional Transformer at Sidhi 220 (2nd), Additional Transformer at Kotar 220 (2nd), Additional Transformer at Chhatarpur (2nd), 400/220kv additional transformer at Chhegaon 400kv S/S, 400/220kv additional transformer at Bhopal 400kv S/S, Additional Transformer at Mandideep 220 (2nd), Additional Transformer at Betul 220 (2nd), 400kv Bus Reactor at Nagda 400kv S/S are all being carried out inside existing substation locations. Installation of these additional components will not cause any environmental impacts of significance.

124. Substation name: Badnawar 400/220kv

The substation Badnawar 400/220kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

125. Substation name: Shahdol 220/132kv

The Upgradation of substation Shahdol 220/132kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

126. Substation name: Chapda 132kv

The Upgradation of Chapda 132kv substation to 220kv is being done entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

127. Substation name: Depalpur 132kv

The Upgradation of Depalpur 132kv substation to 220kv is being done entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

128. Substation name: Agrod 132/33kV

The substation Agrod 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

129. Substation name: Teesgaon 132/33kV

The substation Teesgaon 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

130. Substation name: Bistan 132/33 kV

The substation Bistan 132/33 kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

131. Substation name: Pandhana 132/33kV

The substation Pandhana 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

132. Substation name: Singhana 132/33kV

The substation Singhana 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

133. Substation name: Talakpura 132/33kV

The substation Talakpura 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

134. Substation name: Kukshi 220/132kv

The substation Kukshi 220/132kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

135. Substation name: Chhanera 220/132kV

The substation Chhanera 220/132kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

136. Substation name: Singot 132/33kV

The substation Singot 132/33kV is located entirely on government wasteland. The

substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

137. Substation name: Salamatpur 132/33kv

The substation Salamatpur 132/33kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

138. Substation name: Intkhedi 132/33kv

The substation Intkhedi 132/33kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

139. Substation name: Narsingharh 132/33kv

The substation Narsingharh 132/33kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

140. Substation name: Adampur 220/33kv

The substation Adampur 220/33kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

141. Substation name: Bilkisganj 132/33kV

The substation Bilkisganj 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as

reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

142. Substation name: Khujner/sindaota132/33kV

The substation Khujner/sindaota132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

143. Substation name: Silvani 132kv /33kv

The substation Silvani 132kv /33kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

144. Substation name: Udaipura 132/33kv

The substation Udaipura 132/33kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

145. Substation name: Bisnoor/Masod 132/33kV

The substation Bisnoor/Masod 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

146. Substation name: Chhayan 132/33kV

The substation Chhayan 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious,

historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

147. Substation name: Shyamgarh 132/33kV

The substation Shyamgarh 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

148. Substation name: Chinaur 132/33kV

The substation Chinaur 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

149. Substation name: Bhandar 132/33kV

The substation Bhandar 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

150. Substation name: Pratappura 132/33kV

The substation Pratappura 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

151. Substation name: Kelaras 132/33kV

The substation Kelaras 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will

be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

152. Substation name: Gohad 132/33kV

The substation Gohad 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

153. Substation name: Kapasi/ Paranth 132/33kv

The substation Kapasi/ Paranth 132/33kv is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

154. Substation name: Mada132/33kV

Land allotment for Mada132/33kV substation has not been finalized yet and the IEE report will be updated after finalization of land allotment.

155. Substation name: Khimlasa 132/33kV

The substation Khimlasa 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

156. Substation name: Mungaoli 132/33kV

The substation Mungaoli 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

157. Substation name: Kothiya 132/33kV

The substation Kothiya 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

158. Substation name: Rehli 132/33kV

The substation Rehli 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

159. Substation name: Suwasra 220/132kV

The substation Suwasra 220/132kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

160. Substation name: Unhel 132/33kV

The substation Unhel 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

161. Substation name: Budha 132/33kV

The substation Budha 132/33kV is located entirely on government wasteland. The substation does not lie near any critical and sensitive environmental locations such as reserve forest, wildlife sanctuary, estuary, important bird area etc. No religious, historical or ASI recognised sites lie in the proposed substation location. No trees will be cut during substation construction as the land is wasteland. No crop will be destroyed as there is hardly any vegetation in the substation location as it comprises of wasteland.

162. All the 56 new substations will be air insulated substation (AIS) which uses atmospheric air as the phase to ground insulation for the switchgear of the substation. Main disadvantage of the AIS substation is the overall size making it attractive to

locate in the rural areas and they are usually installed outdoor. Given the available space on Government land in MP and the cost of land transfer between Government agencies, using AIS will not be a constraint.

163. Land required for substations varies with capacity and in selecting a potential substation site; MP Transco considers future growth and expansion of substations. As a rule of thumb, MP Transco is guided by the following land requirements: (i) 36 ha for 440 kV substations, (ii) 9 ha for 220 kV substation, and (iii) 2.25 ha for 133 kV substation. All substations are located on government wasteland with little scrubland or no vegetation and thus, there will be negligible environmental impacts from substation construction.¹⁸
164. The conductors for the transmission line will be a mix of single ACSR double circuit and ACSR moose four (quad bundle) of aluminum alloy conductor material while the supporting towers will be lattice steel structures of two types – tension and suspension, double-circuit with bolted joints which is designed to carry the line conductors with necessary insulators, earth wire, fittings and fixtures under all loading conditions. Double circuit configuration allows for an increased long-term reliability and capacity of the transmission lines to evacuate power over long distances.

3.1.3 Implementation Activities

165. Broadly, the implementation of transmission system improvements includes detailed and check survey, excavation, tower site leveling, backfilling (if needed), construction of substations, tower erection and assembly, stringing of conductors and earthwire, pre-commissioning and commissioning. For the erection of transmission lines and construction of substation, the following GoI standards/codes shown in Table 3.3 will be complied with by MP Transco:

Table 3.3: Relevant Construction Standards of the Government of India

GoI Standards and Codes	Title
IS:5613-1995 (Part-II)	Code of practice for design, installation and maintenance of overhead power lines. Section 1 - Designs. Section 2 - Installation and Maintenance
IS:269-1967	Ordinary rapid hardening and low heat Portland cement.
IS:456-2000	Code of practice for plain and reinforced concrete
IS:1786-1966	Cold twisted steel bars for concrete reinforcements.
IS:4091-1967	Code of practice for design and construction of foundation for transmission line towers & poles.
IS:3072-1975	Code of practice for the installation and maintenance of switchgear.
IS: 3043-1987	Code of practice for earthing.
IS: 1255-1983	Code of practice for the installation and maintenance of power cables <ul style="list-style-type: none"> • Cable sheaths and armour bonding to the earthing system
IS: 1866	Transformer insulation oil quality analysis <ul style="list-style-type: none"> • Circulation and filtering of oil, heating of oil, sampling and testing of oil • Inspection, storage, installation of transformers/reactors

¹⁸ Palohabada 132/33kV, Satna-II 132/33kV, and Mada 132/33kV substations have not been finalized yet and the IEE report will be updated after finalization of land allotment for these substations.

IS: 7205-1974	Safety code for erection of structural steelworks.
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166. Table 3.4 provides a comparison of the general situation in case of “with project” and “without project” scenario.

Table 3.4: “With Project” and “Without Project” Scenario

No.	Parameter	With Project Scenario	Without Project Scenario
1	Electricity	Major effect, improved voltage, less fluctuation, increased availability	Unstable power supply, energy not served to users
Environment			
2	Effect on protected, sensitive, or forest areas	No effect, avoids protected, sensitive or forest areas	No effect
3	Effect on endangered species	No effect, avoids protected, sensitive or forest areas	No effect
4	Tree cutting	Minor effect, no forest will be involved but shall comply with environmental safeguards provision of ADB, GoI national laws and regulations	No effect
5	Air emissions	Major effect; improvement due to reduced usage of diesel generators currently employed for water abstraction from surface/ground water sources for agricultural purposes	May increase use of diesel generators for agricultural purposes
9	Water supply	Improved water accessibility for agricultural purposes	No improvement in access to water for agricultural purposes
Social			
10	Disturbances of people/communities	During construction phase, short and temporary impact	No issue
11	Effect of business	Construction activities may employ local people generating economic and livelihood opportunities.	Opportunity cost
12	Status of living	Improved access to electricity will reduce domestic load for women such as for cooking purposes, education, etc.	No change
Economic			
13	Economic development	Greater rate of economic development expected	Slow development

4.0 DESCRIPTION OF ENVIRONMENT

4.1 Physical Resources

4.1.1 Topography, Geology, and Soils

167. The project and subprojects of MP Transco are located in various geographic locations across MP, which lies between latitude 21°6' and 26°54'N and longitude 74°0' and 82°47'E. MP covers a geographical area of 308,245 square km (km²) or about 9.38% of the total area of India. MP is land-locked and surrounded by Uttar Pradesh, Chhattisgarh, Andhra Pradesh, Maharashtra, Gujarat and Rajasthan. MP is traversed by the Vindhya, Satpura and Maikal hill ranges running east-west. Most of MP has an elevation of between 305 to 610 meters above mean sea level. Low-lying areas are in the narrow Narmada valley in the central southern parts. In general, MP stretches across a geographically elevated position.¹⁹ The area is part of peninsular plateau consisting of sedimentary and metamorphic rocks and is structurally part of the peninsular block.
168. MP has 5 crop zones, 11 agro climatic regions and 4 soil types, which add to its biodiversity and acts favorably for production of various agriculture and horticulture crops. The soil of the region is rich and fertile and of variety ranging from rich clayey to gravelly. The major groups of soils found in MP can be divided into 4 categories namely; alluvial, medium and deep black, shallow and medium black, mixed red and black.²⁰

4.1.2 Meteorology and Climate

170. Climate: MP has a typically tropical climate varying from dry sub-humid to semi-arid, with three distinct seasons - winter, summer and monsoons.
171. Rainfall: Annual rainfall in the state varies from 600 mm to 1,600 mm while the average rainfall in MP is 1,200 mm. There is one distinct rainy season when MP receives rains through the southwest monsoon in the months of June to October. Production in almost 70% of the agriculture area remains highly dependent on rainfall.
172. Temperature: MP has a tropical climate. The lowest temperature during the cooler months of December and January is 10°C and in the summer months of May and June, the temperature reaches 29°C.²¹ Most parts of MP in summer are hot and humid.

4.1.3 Air Quality and Noise

173. Air quality in MP is considered to be good except in few urban and industrial centers where air quality is poor due to industrial activities and transport sources. Ambient air quality measurements are conducted on a continuous basis by the Madhya Pradesh State Pollution Control Board (MPPCB) in various cities in MP.²² Ambient air quality

¹⁹ The Department of Land Resources, GoI.

http://dolr.nic.in/dolr/downloads/spsp/Madhya%20Pradesh_SPSP.pdf. (Accessed 3 March, 2016)

²⁰ Ibid 17.

²¹ India – WRIS (Water Resources Information System of India).

http://india-wris.nrsc.gov.in/wrpinfo/index.php?title=Madhya_Pradesh#Climate. (Accessed 3 March 2016)

²² Madhya Pradesh State Pollution Control Board. Ambient air quality measurements (interactive). http://www.mppcb.nic.in/aaqm_data.htm. (Accessed 3 March, 2016)

measurements generally comply with Air Prevention and Control of Pollution Act 1981 and the National Ambient Air Quality Standards.²³ For the project, baseline data for environmental parameters such as air and noise is not available but will be carried out and recorded by contractor before commencement of civil works.

174. As of February 2013, MPPCB has come up with new guidelines for curbing air and noise pollution associated with construction activities, with the implementation of the Indore Municipal Corporation. Under the new guidelines, all construction works will have to be carried out between 7 am and 7 pm, and construction sites should be covered with acoustic screens and enclosures to control noise. Aside from this, contractors will have to enclose noisy machineries in acoustic enclosures. The noise standards as given by the MoEF are:²⁴

Table 4.1 Noise Standards, Ministry of Environment and Forests

Noise Standards			
Code		Day Time (6 am – 9 pm)	Night Time (9 pm – 9 am)
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silence Zone	50	40

4.1.4 Natural Hazards

175. Seismicity: The Bureau of Indian Statistics (IS-1893 Part 1, 2002) classified India into four seismic zones based on various scientific inputs including earthquake data from India Meteorological Department (IMD). The seismic zones in India are given below:

Table 4.2 Seismic Zones of India

Seismic Zone	Intensity on Modified Mercalli Scale	% of total area
II (Low intensity zone)	VI (or less)	43%
III (Moderate intensity zone)	VII	27%
IV (Severe intensity zone)	VIII	18%
V (Very severe intensity zone)	IX (and above)	12%

176. According to IMD, MP falls with Zones II and III (i.e., low to moderate damage risk seismic zone). Historically, parts of MP have experienced seismic activity in the range of intensity 5 to 6 of the Modified Mercalli Intensity (MMI) scale. Based on historical records of earthquake events in India from 16 June 1819 to 18 September 2011, only one earthquake occurred in Madhya Pradesh on 22 May 1997 at intensity 6 based on MMI scale. IMD has an earthquake monitoring and a real time seismic monitoring for early warning of tsunamis.
177. Drought and Floods: With its vast expanse, geographical features and varying climate conditions, different parts of MP have been perennially prone to drought conditions as well as floods. During 2007-2008, 39 out of 50 districts (165 Tehsils and one cluster) of MP have been declared as drought affected. Additionally, district in the western

²³ The Central Pollution Control Board. http://cpcb.nic.in/National_Ambient_Air_Quality_Standards.php. (Accessed 3 March, 2016)

²⁴ Ministry of Environment and Forests (MoEF). <http://moef.gov.in/citizen/specinfo/noise.html>. (Accessed 3 March, 2016)

and northwestern parts of MP are considered to be susceptible to desertification. These regions also do not have a thick forest cover in comparison with the central and eastern parts of MP. The calamity events recorded from 1991-2007 are shown in Table 4.3.

Table 4.3 Calamity Events in Madhya Pradesh (1991-2007)

Year	No. of Districts	Name of Districts	Type of Calamity
1991-92	25	Rewa, Sidhi, Satna, Shahdol, Jabalpur, Balaghat, Chhindwara, Mandla, Seoni, Rajgarh, Betul, Dhar, Jhabua, Khandwa, Sagar, Damoh, Panna, Tikamgarh, Chhatarpur, Gwalior, Guna, Data, Ratlam	Drought
1992-93	4	Mandla, Khandwa, Chhindwara, Balaghat	Drought
1994-95	4	Rajgarh, Tikamgarh, Balaghat, Khandwa	Drought
1995-96	8	Panna, Tikamgarh, Chhatarpur, Rajgarh, Ratlam, Khandwa, Jhabua, Chhindwara	Drought
1996-97	5	Balaghat, Jabalpur, Seoni	Drought
1997-98	35	Indore, Khargone, Khandwa, Ujjain, Dewas, Shajapur, Mandsaur, Ratlam, Gwalior, Shivpuri, Guna, Bhind, Rewa, Shahdol, Satna, Sagar, Damoh, Panna, Chhatarpur, Tikamgarh, Bhopal, Betul, Raisen, Rajgarh, Sehore, Vidisha, Hoshangabad, Jabalpur, Balaghat, Chhindwara, Seoni, Mandla, Narsinghpur	Excessive Rains & Hail Storms
1998-99	23	Vidisha, Dhar, Neemuch, Ujjain, Bhopal, Ratlam, Betul, Shajapur, Sagar, Guna, Chhindwara, Damoh, Dindori, Dewas, Khandwa, Khargone, Indore, Mandsaur, Gwalior, Sehore, Mandla, Jabalpur, Rajgarh	Hail Storms
1999-2000	4	Dhar, Jhabua, Khargone, Badwani	Drought
	8	Hoshangabad, Harda, Raisen, Sehore, Narsinghpur, Dewas	Flood
2000-01	32	Ratlam, Rajgarh, Panna, Seoni, Jhabua, Ujjain, Khargone, Badwani, Balaghat, Khandwa, Dhar, Neemuch, Katni, Bhind, Mandsaur, Chhindwara, Mandla, Jabalpur, Damoh, Chhatarpur, Narsinghpur, Tikamgarh, Shahdol, Indore, Sheopur, Satna, Betul, Sidhi, Dindori	Drought
2001-02	6	Ujjain, Shajapur, Ratlam, Rajgarh, Seoni & Chhindwara	Drought
2002-03	53	Ratlam, Rajgarh, Panna, Seoni, Ujjain, Morena, Gwalior, Balaghat, Neemuch, Katni, Shivpuri, Guna, Datia, Bhind, Mandsaur, Chhindwara, Mandla, Jabalpur, Damoh, Chhatarpur, Tikamgarh, Shahdol, Shajapur, Barwani, Sheopur, Satna, Sidhi, Dindori, Raisen, Sagar, Rewa, Umaria and Vidisha	Drought
2004-05	21	Sheopur, Datia, Tikamgarh, Balaghat, Panna, Chhatarpur, Rewa, Shahdol, Sidhi, Chhindwara, Harda, Hoshangabad, Seoni, Betul, Dewas, Khargone, Barwani, Ratlam, Umaria, Sehore, Ujjain	Drought
2005-06	9	Tikamgarh, Ratlam, Mandsaur, Shajapur, Chhatarpur, Khargone, Rajgarh, Chhindwara, Panna	Drought
	3	Chhindwara (Chhindwara)	Drought
		Shajapur (Agar), Panna (Gunnor & Pawel)	Drought
2006-07	8	Panna, Tikamgarh, Chhatarpur, Satna, Gwalior, Shivpuri, Rewa, Katni, Ratlam	Drought

4.1.5 Water Resources

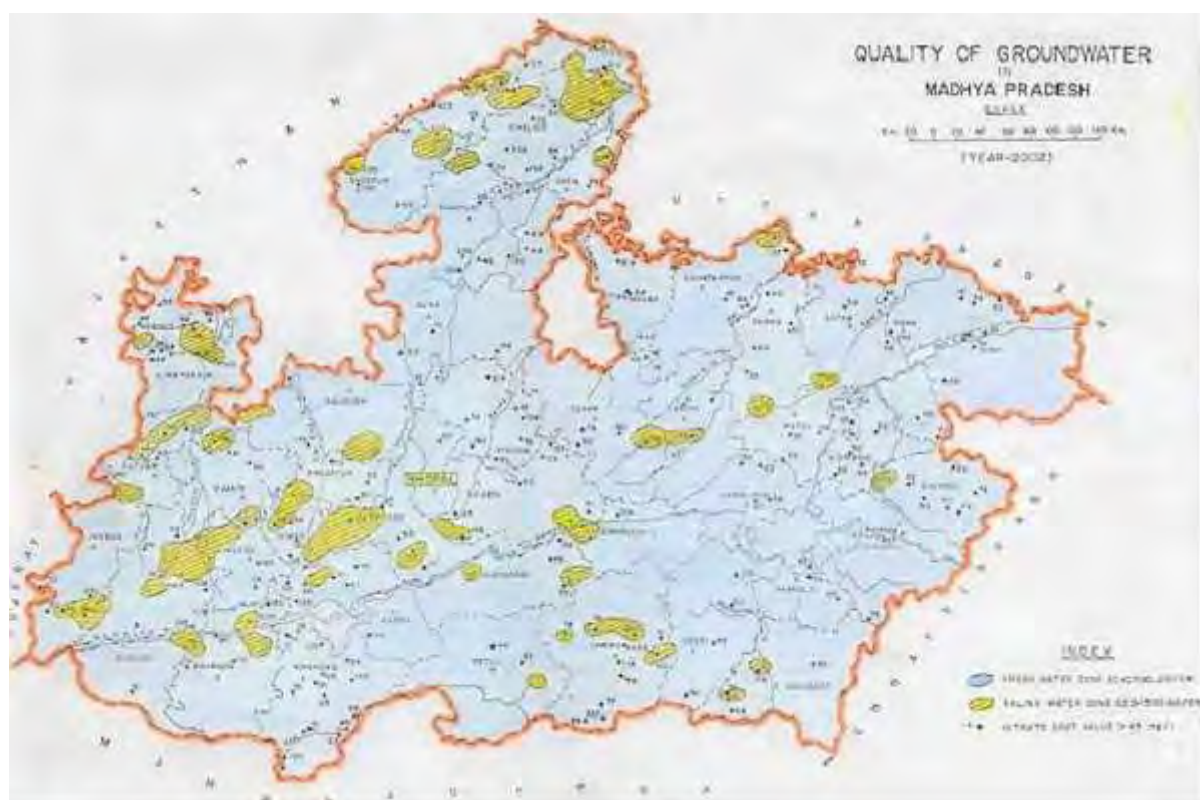
178. **Surface Water:** There are 10 major rivers that originate from MP and most are interstate rivers. The rivers namely Chambal, Sindh, Betwa, Ken flow northward and meet with Yamuna River. Sone River drains directly into Ganga, Narmada, Tapti and Mahi Rivers which then flow westward and meet Arabian Sea while Wainganga and Pench Rivers meet Godavari River in the south. Annual run-off from these rivers within MP is estimated at 81,719 hectometer (hm), out of which about 49, 743 hm can be harnessed for irrigation purpose.²⁵ None of the subprojects lie near important surface water resources and are not likely to cause significant impacts on any surface water bodies.

179. **Groundwater:** Groundwater use is common in MP with groundwater development at

²⁵ 25 Ibid 19.

48 %.²⁶ Due to varied topographical, rainfall and climatic conditions in MP, the availability of water is not uniform spatially or temporally. There is an increasing demand of water for human consumption, agriculture and industrial purposes, etc. In May 2001, a total of 790 water samples were collected from the National Hydrograph Network Stations in MP and analyzed by the Chemical Lab of NCR in Bhopal. Based on the results, groundwater quality in the northern region of MP is generally good but shows high salinity in Bind district and in localized areas in the districts of Shajapur, Sagar, Ratlam, Ujjain, Vidisha, Chhatarpur and Sheopur. Very high values (more than 3,000 m/cm) of electrical conductivity (EC) were found in few localized pockets in these areas while those ranging from 750 to 1,500 m/cm at 25°C were found in the north and western parts of MP. Results of analysis showed that generally, ground water in MP is alkaline-earth bicarbonate type. Figure 4.1 shows the groundwater quality map of MP.²⁷ None of the subprojects lie near important ground water resources and are not likely to cause significant impacts on any ground water resources.

Figure 4.1: Groundwater Quality of MP



180. **Drainage:** The drainage system of the state is governed by six major river basins namely the Ganga basin (consisting of Yamuna, Tons and Sone sub-basins), Narmada basin, Godavari basin, Tapti basin, Mahi basin and Mahanadi²⁸ basin. Details of basins and sub-basins with respective drainage area in MP and corresponding water availability are provided in Table 4.4. None of the subprojects lie near important

²⁶ http://www.cgwb.gov.in/gw_profiles/st_mp.html. (Accessed 3 March, 2016)

²⁷ Central Ground Water Board, Geochemical Studies. <http://cgwb.gov.in/ncr/GWQuality.htm>. (Accessed 3 March, 2016)

²⁸ The major portion of Mahanadi basin now lies in Chhattisgarh.

drainage bodies and are not likely to cause significant impacts on drainage patterns.

Table 4.4 Basin Wise Water Resources and Availability

Name of Basin	Drainage Area (Sq.km)	Water Availability (hm)	Water Share of MP (hm)
1. Ganga Basin			
a. Yamuna sub-basin	1,42,250	27,267	23,642
b. Sone sub basin	28,880	7870*	3970*
c. Tons sub-basin	11,924	2,244	2244
2. Narmada Basin	85,149	34,542	22,511
3. Godavari/Waingaga sub Basin	23,388	5083*	2700*
4. Tapi Basin	9,800	2,401	1,546
5. Mahi Basin	6,700	1,952	338
6. Mahanadi	154	Not Defined	Negligible
Total	3,08,245	81,719	57,051

* On account of division of MP into MP and Chhattisgarh, 2001-2002, the water availability may have changed.

4.2 Biological Resources

4.2.1 Terrestrial Ecology

181. **Flora:** MP is very rich in terms of forest wealth compared to its neighbors, Uttar Pradesh, Chhattisgarh, Andhra Pradesh, Maharashtra, Gujarat and Rajasthan. MP is ranked fourth in the country in terms of forest wealth. According to India State of Forest Report (2011) published by the Forest Survey of India, 30 MP has a recorded forest area at 94,689 km², which is about 30% of its total geographic area. Out of this area, reserved forests constitute 65.36%, protected forests 32.84%, and un-classed forests 1.8%. Figure 4.2 shows the map of forest cover in MP. Except five transmission lines (where forest clearance has either been obtained or has been applied for from the forest department), none of the subprojects lie near any forests or wildlife sanctuaries and are not likely to cause significant impacts on any forests or wildlife sanctuaries or other important natural habitats.
182. The common flora species are babul, neem, keekar, jaria, chhola, and reonjha, while the important non-wood forest products are Tendu leaves (*Diospyros melanoxylon*), Sal seed, (*Shorea robusta*), Harra (*Terminalia chebula*), Chironji (*Buchnanian lanzan*), and flowers and seeds of Mahua (*Madhuca indica*). It is also famous for its bamboo resources.
183. **Fauna:** Most notable wildlife species reported are jackal, fox, monkey, wolf, squirrel, and reptiles. There are currently no threatened, protected, or endangered species in the project area as listed under the IUCN Red List. Moreover, the project does not transverse through Government-declared wildlife sanctuaries/national parks, or tiger reserves.
184. **Protected Areas:** According to the Forest Department of MP, there are nine national parks and 25 sanctuaries spread over an area of 10,900 km² which constitutes 11.40% of the total national forest area and 3.52% of the geographical area of MP.²⁹ **Figure 4.3** shows a location map of the national parks and sanctuaries.³⁰ Except five transmission lines (where forest

²⁹ The Forest Department, Madhya Pradesh. <http://www.mpforest.org/wildlife/default.aspx> (Accessed 3March, 2016)

³⁰ Ibid 28.

clearance has either been obtained or has been applied for from the forest department), none of the subprojects lie near any protected areas, and are not likely to cause significant impacts on any forests or wildlife sanctuaries or other important natural habitats.

Figure 4.2 Map of Forest Cover in Madhya Pradesh



Table 4.5 National Park and Sanctuaries in Madhya Pradesh

National Parks		Sanctuaries			
No.	Name	No.	Name	Name	
1	Kanha	1	Bori	14	Khuno
2	Bandhavgarh	2	Bagdara	15	Pench
3	Panna	3	Phen	16	Ratapani
4	Pench	4	Ghatigaon	17	Sanjay Dubri
5	Satpura	5	Gandhisagar	18	Singhori
6	Sanjay	6	Karera	19	Son Ghariyal
7	Madhav	7	Ken Ghariyal	20	Sarfarpur
8	Vanvihar	8	Kheoni	21	Sallana
9	Fossil	9	Narsinghgarh	22	Ralamandal
		10	N. Chambal	23	Orchha
		11	Navrahedi	24	Gangau
		12	Pachmari	25	V. Durgawati
		13	Pan Patha		

- ### 4.2.2 Aquatic Ecology

- ### 4.3 Socioeconomic Profile

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spread out in remote and sparsely populated areas. None of the subprojects lie near densely populated regions and are not likely to cause significant impacts on settlements.

188. **Economy:** MP continues to be predominately agrarian with agricultural sector contributing about 26% to its gross state domestic product (GSDP) in 2007-2008.³³ The secondary sector comprising of mining, manufacturing, electricity, water supply and construction contributes about 26.93% to GSDP and the tertiary sector constituting railways and other transport, communication, banking and allied services, public services, tourism development across MP contributes 46.1%. It is the secondary and tertiary sectors which have seen substantial growth in MP while growth in the primary sector being almost static. Major industries are cotton textiles, newsprint, pottery, cement, carpets, silk, rayon, jute, glass, steel, electrical engineering goods, electronics, telecommunications, petrochemicals, food processing, and automobiles. MP has also taken the lead in cement production and is famous for its traditional handicrafts and handlooms manufactured at Chanderi and Maheshwar.
189. **Water Supply and Sanitation:** MP ranks among the top states in accessibility and availability of safe drinking water supply. Nearly 90% of the total population has access to safe drinking water. Groundwater is primarily used for agricultural purposes in the project influence area. According to 2001 Census, majority of the people access drinking water near their premises (51%), around 25% have access within their premises, and 24% of households fetch their drinking water away from home. In terms of sanitation, MP is one of the five States (including Chhattisgarh, Jharkhand and Orissa) – largely rural that has less than 30% access to any sanitation source.
190. **Public Health:** Healthcare services network of MP comprises 50 district hospitals (13,400 beds), 333 community health centers, 1,155 primary health centers and 8,659 sub-centers. MP is one of the top two States that have high infant mortality rates with Panna standing at 93. MP is next only to Uttar Pradesh in high neonatal mortality rates (NNMR) standing at 44. NNMR is significantly high in rural areas than urban.³⁴ Despite improvements in the coverage of antenatal care, only 4 in 10 women in MP receive them.
191. **Land Use:** MP has 10 divisions and 51 districts. Nearly 44.33% of the land is utilized for agriculture with a few variations every year that largely depends upon the onset of monsoon and rainfall variability. MP has a total of 30.76 million hectares of land of which about 150.78 lakh hectares is the net sown area under agriculture. This represents 49% of the total geographical area. Forestland covers around 30% of the total geographical area with total cultivable area estimated at about 18.704 million ha.

³³ Draft Madhya Pradesh State Action Plan on Climate Change. April 2012. Government of Madhya Pradesh <http://www.moef.nic.in/downloads/public-information/MP-SAPCC.pdf>. (Accessed 3 March, 2016)

³⁴ The Ministry of Home Affairs. Government of India. Annual Health Survey 2010–2011. http://www.censusindia.gov.in/vital_statistics/AHSBulletins/AHS_Baseline_Factsheets/M_P.pdf. (Accessed 3 March, 2016)

Table 4.6 Land Use in Madhya Pradesh

Land Use	Area in '000 ha	Percentage
Total geographical area	30,825	
Reporting area for land utilization	30,757	100.00
Forests	8,696	28.27
Not available for land cultivation	3,401	11.06
Permanent pastures and other grazing lands	1,337	4.35
Land under misc. tree crops and groves	19	0.06
Culturable wasteland	1,160	3.77
Fallow lands other than current fallows	621	2.02
Current fallows	582	1.89
Net area sown	14,941	48.58

Source: Land Use Statistics, Ministry of Agriculture, GOI, 2008-09.

192. **Employment and Income:** MP is largely agrarian state with 43% of the workers being cultivators and 29% agricultural laborers. Industrial growth centres have been established in MP which aims to attract industries towards economic development. As of January 2011, MP had 733 large and medium industrial units providing direct employment to about 1.75 lakh people. In terms of economic groups, the landless laborers, the marginal and small farmers, the forest produce collectors, the construction workers and the household based artisans are the ones who are engaged in the most economically insecure livelihoods.
193. **Governance:** MP has a three-tier Panchayat Raj system and Urban Local Bodies as the institutions of local self-governance. MP has 10 Commissioner Divisions, 50 Districts, 272 Tehsils and 313 Community Development Blocks, including 89 Tribal Development Blocks.
194. **Cultural and Archaeological Resources:** The following are the major cultural and archaeological resources (excavation sites) in MP that are ascertained as protected areas by the Archaeological Survey of India, and hence of national importance.³⁵ None of the subprojects lie near any important cultural and archaeological resources and are not likely to cause significant impacts on cultural and archaeological resources.
- Besnagar, Dt Vidisha, MP Besnagar is identified with ancient Vidisa (Nagara) and is renowned in ancient literature as the capital of Akara and Dasawa and as a centre of cultural activities, with trade routes passing through it.
 - Sanchi Dt. Raisen, MP With impressive Buddhist remains ranging in date from the 3rd century B.C. to the 12th century A.D., situated on a low hill-top, anciently known as Vedisa-giri (due to its proximity to Vidisa, Besnagar) Cetiya-giri. Kakanada-bota and Bota-sri-parvata. The main stupa, Stupa 1, the outstanding monument on the hill, is believed to have been built by Asoka in the 3rd century B.C., and one of his queens is said to have built a monastery here. Asoka set up one of his pillars near his stupa, surmounted it by a four-lioned capital and had his anti-schism edict inscribed on it.
 - Ujjain, MP Situated on the eastern bank of the Sipra and well-known as the capital

³⁵ The Archaeological Survey of India, Government of India. http://asi.nic.in/asi_exca_imp_madhyapradesh.asp. (Accessed 4 March, 2016)

of Avanti, one of the 16 mahajanapadas in die 6th century B.C. and as the seat of a viceroy (kumara) of the Mauryan empire during the rule of Asoka in the 3rd century B.C., as mentioned in his Dhauli separate Rock-edict I. It is hallowed traditionally by its association with the jyotir-Linga of Mahakala and as one of seven holy cities of India, and remembered through later history and literature, especially the Meghaduta of Kalidasa.

195. **Climate change impacts:** MP is highly dependent of agriculture for livelihood and thus, vulnerable to climate change. According to the MP State Action Plan on Climate Change (draft report, April 2012),³⁶ some of the projected climate risks for MP are increase in maximum and minimum temperatures, changes in spatial and temporal distribution of monsoon, increase in frequency and intensity of rains, loss of rainy days, extended summers etc. Climate change will not only affect the natural resources but would also impact upon human health and availability of safe habitats in the future. These climate change risks may affect the envisioned sustainable development of MP.

³⁶ Ibid 32.

5.0 Anticipated Environmental Impacts and Mitigation Measures

196. The Ministry of Environment and Forests (MoEF) of GoI, in its notification in September 2006, has exempted transmission projects from environmental clearances due to the non-polluting nature of its activities.³⁷ However, forest clearance under the Forest Conservation Act 1980 will be necessary in the event the transmission line passes through forest areas.
197. One of the factors considered in selecting the best and optimum transmission line route is avoidance of potential significant environmental impacts. In power transmission projects, potential environmental impacts are confined in the right of way (ROW) for while substations, they are site specific.
198. Appropriate survey methods and good engineering practice have been used to select the best alignment but residual impacts associated with the project cannot be entirely avoided resulting from varying topographical locations that will be traversed by the transmission line. An environmental management plan (EMP) and an environmental monitoring plan (EMoP) will help ensure that these residual impacts are mitigated and/or enhanced.

5.1.1 Pre-construction and Design Phase

5.1.1.1 Location of substations and transmission line routes

199. As discussed earlier, 25 criteria question checklist/questionnaire guide the selection of transmission line route and substations, among others, to avoid significant adverse environmental impacts.
200. There are nine national parks and 25 wildlife sanctuaries in MP. Based on these criteria and checklist, forest, cultural and archaeological sites, sanctuary, protected, and other ecologically-sensitive areas such as Ratapani Wildlife Sanctuary in Sehore and Raisen districts, Bandhavgarh National Park, Bhoj Wetland (known as the “Upper Lake”, a Ramsar site) were avoided.
201. Aside from the criteria and checklist used by MP Transco, the walkover survey/transect, which involves setting up of temporary tracks, helps determine the type and number of trees and plants that may be affected (if any), type of structures and settlements within the ROW, and natural physical features and public utilities that may be traversed by the transmission line. Walkover surveys may cause short and temporary disturbance to local people within the ROW.
202. Second circuit string works will not require erection of additional towers as they mainly involve stringing of conductors on already erected towers.

5.1.1.2 Choice of equipment and technology

203. All the substations will be air insulated and not gas insulated. Air insulated substation (AIS) uses atmospheric air as the phase to ground insulation for the switchgear of the substation while gas insulated substation (GIS) uses sulfur hexafluoride (SF₆) gas. SF₆ has a dielectric strength higher than air and the phase to phase spacing is reduced

³⁷ Notification in the Gazette of India, Extra-ordinary part II and section 3, subsection II, 14 September 2006).

resulting to a more compact substation that is particularly advantageous in an urban environment where space is expensive. However, SF6 is a potent greenhouse gas (GHG) with a global warming potential of 23,900 times compared to CO2. One of the disadvantages of the AIS substation is the overall size making it more attractive to locate in the rural areas and they are usually installed outdoor. Given the available government land in MP, the use of AIS will not be a major constraint.

5.1.1.3 Land acquisition for the substations

204. All the MP Transco substation sites are on government land so there is no need for land acquisition from private owners.

5.1.2 Construction Phase

205. During this phase, some activities include clearing of ROW, setting up of temporary access tracks, setting up of materials storage areas along the route and substation work sites, transport of material and equipment to the site, excavation for substations and towers foundation, cementing/concreting of tower foundation, erection of the towers, and conductor stringing. MP Transco-PMU will ensure that the contract of the Engineering, Construction and Procurement (EPC) Contractor(s) will include the obligation to compensate for any temporary damage, loss or inconvenience as result of the project during the construction phase.

5.1.2.1 Prepare construction management plan

206. The construction management plan (CMP) will help in avoiding the unplanned activities of EPC Contractor(s) and will guide the smooth implementation of earth-moving works, civil and electrical works. The CMP will cover temporary pedestrian and traffic management, community and safety, spoils or muck disposal, noise and dust control, drainage and stormwater management, material management, and waste management. The CMP will also include designate sites/areas for monitoring such as workers facilities, work areas, and materials warehouse/storage.

5.1.2.2 Hiring of project staff and workers

207. The implementation of several subprojects will be opportunities for local employment. While this is beneficial, it may also be a cause of conflict due to migration of workers and dispute over transparency of hiring particularly if migrant workers are recruited over local people. The EPC Contractor(s) will be required to use local labour for manual work and eligible local workforce for technical and administrative jobs. MP Transco-PMU will monitor the compliance to priority of local hiring.

5.1.2.3 Orientation for EPC contractor(s) and workers

208. MP Transco-PMU will conduct briefing and/or orientation for EPC Contractor(s) on the environmental management plan (EMP), grievance redress mechanism, consultation, and reporting. This will provide an understanding of their responsibility in implementing and compliance to the EMP as well as agreement on critical areas that needs monitoring. The briefing will also include strict compliance against child labour, bonded or forced labour, and awareness about socially transmitted disease such as HIV/AIDS to prevent potential incidence. Aside from relevant national and state labour regulations, ADB's core labour standards will provide guidance for

compliance. EPC Contractor(s) will provide training/drills on emergency preparedness and exercises before start of work will be encouraged to maintain health and fitness.

5.1.2.4 Presence of workers at construction sites

209. The presence of workers and staff at the construction sites may increase demand for services such as housing, food, etc. This localized demand may be an opportunity for local people to have temporary small-scale business in providing services such as food, temporary lodging, etc. This will be a beneficial impact to local economy.

5.1.2.5 Site preparation and construction of substations and transmission towers

- *Impacts on land and vegetation*

210. Clearing of land and vegetation, excavation and earthmoving will be done and some mature trees (e.g., teak) of economic value (i.e., firewood, timber, furniture, etc.) will be cleared in some cases. Cut trees owned by the Government will be sold and revenue turned over to Revenue Authority.
211. Vegetation clearing may cause some loss of habitat. All substation sites are on government wasteland and transmission line routes will traverse mainly agricultural land. No protected area, sanctuary or forest will be affected except for five lines discussed earlier. Construction works will not be scheduled during harvest time to minimize damage to cash crops. The destruction and/or loss of habitat due to clearing of ROW and to stringing of conductors will naturally regenerate in about 2-3 years. Agricultural activities within the ROW will be allowed after construction but with restrictions to height of vegetation.
212. Earthmoving works in substation sites may cause potential erosion and localized flooding. Adequate erosion control measures will be provided in areas located in sloping terrain (or as needed) and spoils disposal plan will be strictly implemented to prevent localized flooding. For transmission towers, earthworks will be isolated to tower sites only. Tower foundations involve small-scale excavations and the excavated topsoil will be used for backfilling. For substations, wherever necessary, downhill slopes will be provided with revetments, retaining walls or sow soil binding grass around the sites to contain soil erosion. Landscaping/replanting/revegetation will be done as soon as earthworks are completed to stabilize the soil.
213. For transmission towers, only the exact amount of construction materials (i.e., sand, gravel, concrete, etc.) will be brought on-site to avoid stockpiling that may cause localized flooding during the monsoon season and to minimize any inconvenience to local people. At substation sites, adequate storage for materials needed for construction works will be provided.
214. During the erection of transmission towers, a four- legged steel lattice type will be used. Following the Forest Conservation Act 1980 and the Indian Standard (IS) 5613-1993, the ROW for the 400 kV transmission line is 52 m from the centreline, 35 m for 220 kV transmission line, and 27 m for 132 kV transmission line.
215. The subprojects that will involve 400 kV transmission line will require about 68 towers while the subprojects on 220 kV transmission line would need an approx. 1530

towers. The subprojects on 132 kV transmission line will need about 3,720 towers. Therefore, the estimated total number of towers for transmission system improvement will be about 5,318 towers. Second stringing subprojects do not require towers as these will only involve stringing of conductors.

216. Crops and trees along the ROW that may be affected or damaged during the erection of towers and stringing of conductors will be compensated based on entitlements following the national laws and SPS 2009. Payments to affected farmers cover at least three phases (i.e., if there are crops during each phase): (i) preparing the foundation for towers, (ii) erection of towers, and (iii) stringing of conductors.
217. Based on the Schedule of Rates (2012-2013) of MP Transco for transmission line, the crop/tree compensation for clearing of ROW in non-forest areas will be Rs50,000 per location for construction of double circuit/single string (DCSS) and double circuit/double string (DCDS). For second circuiting of DCSS, the rate will be Rs 80,000 per km.
218. Agricultural activities within the ROW will be allowed after construction but with restrictions to the height of vegetation: (i) 5.5 m for the 400 kV, (ii) 4.6 m for the 220 kV, and (iii) 4 m for the 132 kV. Thus, plants and crops that are less than 3 m tall like wheat, soybean, corn, rice, etc. will remain along the buffer area of the ROW.
219. There will be no access road construction for erection of towers and stringing of conductors but access tracks will be created to reach the location of the towers. The access tracks created for bringing in the tower components will remain tracks and would just be wide enough to accommodate the machinery needed to erect the towers and to maintain them. Materials required for the erection of towers will be carried manually to minimize disturbance. In some substation sites such as Intkhedi and Adampur, existing approach roads may require upgrading and/or rehabilitation to facilitate construction. This will benefit not only MP Transco operations but local people as well who will use the roads.
 - *Impacts on people*
220. There will be some existing substations that will be upgraded which may require dismantling of structures and equipment and/or installation of new transmission transformers. Workers assigned to dismantling works will be provided with proper safety clothes and protection gear/equipment to avoid accidents. Debris and scrap materials from dismantling activities will be transported to MP Transco's warehouses located in Jabalpur, where there are dedicated storage yards, for resale and auction to authorized dealers. Similarly, servicing and/used transformer oil (if any) will be disposed of/sold to Government-registered recyclers only as set forth by the Hazardous Waste Management and Handling Rules 2008. MP has a common treatment, storage and disposal facility located in Pitampur, Dhar District. EPC Contractor(s) will be required to observe and implement the construction waste management plan. MP Transco-PMU will monitor compliance.
221. The erection of towers and poles as well as stringing of conductors may potentially interfere with road crossings that may pose safety risks to the public and construction workers. To minimize the risks, adequate danger and clearly visible warning signs will be posted at designated sites while scaffoldings will be placed over road crossing

points. EPC Contractor(s) will be required to instruct drivers of construction vehicles to strictly follow road regulations and to implement the temporary pedestrian and traffic management plan. Security personnel will be assigned to prevent trespassing and accidents at the substation sites.

222. Local hiring will be given priority so workers can come home after work every day. However, if required, EPC Contractor(s) will provide construction camps with sanitary facilities, wash areas, safe drinking water, garbage bins, and designated security personnel. Designated staff will be provided with communication device to facilitate communication particularly during emergency.
223. Site engineers will find the location of the nearest hospital and will make arrangements in case of accidents in the worksites. First aid treatment will be set up within the construction sites and field offices. Workers will be provided with hard hats, safety shoes, and safety belts while designated staff will be provided with communication devices. A health personnel (or a nurse) will be assigned by EPC Contractor(s) to visit the construction sites once a week to broadly check the sanitary conditions of the construction sites and overall health condition of workers to minimize outbreak of diseases. Good housekeeping will be enforced at all times and will be monitored by MP Transco-PMU. The Contractor(s) will comply with relevant safety measures required by law and best engineering practices.

- *Impacts on air quality, noise and vibration*

224. The use of heavy equipment and construction vehicles may increase vehicular emissions. Vehicular emissions, land clearing, earthmoving works and transport of construction materials may increase levels of suspended particulate matter affecting air quality. Opened and exposed land areas at the substation sites and transmission towers will be sprayed with water to suppress dust level particularly during the summer season. Construction sites for substations will be temporarily enclosed to contain dust dispersion. EPC Contractor(s) will be required to maintain construction vehicles regularly to minimize the contribution of vehicular emissions to poor air quality. Warehouse for construction materials will be provided onsite to reduce the trips of material delivery while construction vehicles transporting materials that generate dusts will be covered.
225. Aside from vehicular emissions, the use of heavy equipment, construction vehicles and civil works may increase the noise levels while excavation works at the substation sites may induce vibration. Increase in noise levels and potential vibration may inconvenience local people living at and around these sites. As required by MPPCB guidelines (February 2013), noise-generating activities will be scheduled between 7AM and 7PM while noise-generating machineries and construction areas will be covered with acoustic screens and/or temporary enclosures. Drivers will be required to observe low speed wherever necessary and no blowing of horns. EPC Contractor(s) will ensure that the traffic management plan as well as air quality and noise control plans are implemented. MP Transco-PMU will monitor compliance.

- *Impacts on water quality*

226. Presence of workers at construction sites will generate sewage that may affect water quality while earth moving works may cause localized flooding during monsoon

season and in other low-lying areas. EPC Contractor(s) will provide workers with sanitary facilities and safe drinking water. The site selection of subprojects avoided waterways to minimize the costs of mitigating the associated environmental impacts. To avoid localized flooding, construction works will be scheduled during summer in areas potential to flooding and during the monsoon season, drainage and stormwater management plan will be implemented by EPC Contractor(s). MP Transco-PMU will monitor compliance to these measures.

5.2.2 Operation Phase

5.2.2.1 Presence of transmission towers and substations

- *Impacts on land and vegetation*

227. The presence of substations and transmission towers may lower the real estate property values near or adjacent to these facilities. However, the availability of a stable and reliable power supply will attract and promote local economic development and thus, may actually enhance property values.
228. There will be restrictions on height of plants/crops that will be allowed within the ROW to keep its integrity. This is to ensure that the required vertical spacing between the conductors and the vegetation is maintained for safety reasons. Height restrictions on vegetation will be: (i) 5.5 m for the 400 kV, (ii) 4.6 m for the 220 kV, and (iii) 4 m for the 132 kV. A budget for planting medicinal plants along the ROW is allocated at Rs457,200 per hectare.
229. A service road for vehicles will be set up under the transmission line but will be used only to maintain the towers and the conductors. The services road will not be maintained and will remain access tracks to discourage encroachment and unauthorized public access.
230. Majority of subprojects (except five lines) are not located near or adjacent to the 9 national parks and 25 wildlife sanctuaries, birds and other wildlife may be attracted to the presence of substations and transmission towers particularly migratory birds. Transmission lines are designed to have ground wire spacing and lightning arresters as safety features to generally protect the public (and birds). Spot checks/ocular inspection of wildlife crossing and bird electrocution (if any) will be included as part of maintenance work along the transmission line. Maintenance workers will be trained to create awareness on this monitoring.

- *Impacts on noise*

231. Substations may cause disturbance to settlements adjacent to it due to noise generated by its operation. To minimize the impact, noise-generating equipment will be enclosed (if needed) and periodic maintenance of equipment such as transformers will be conducted.

- *Impacts on people*

232. The presence of transmission line and substation may pose potential hazards such as electrocution, lightning strike, etc. due to accidental failure of power transmission. To ensure safety, transmission towers are equipped with danger boards, barbed wire, and

galvanized groundwire for earthing purposes. MP Transco provides a budget for anticlimbing device for transmission towers at Rs 8,040 per location.

233. Aside from these measures, security and inspection personnel will be deployed to avoid vandalism of equipment and pilferage of cables which may cause accident and/or electrocution. Transmission systems are designed with protection system that shuts off during power overload or similar emergencies. Indian and international electrical standards will be complied with by MP Transco at all times. There will be regular monitoring and maintenance to ensure safety and integrity of power lines and substations.
234. After more than 20 years of global research, concerns on the potential risks of cancer from exposure to electric and magnetic field (EMF) from overhead transmission lines and substations continue. In the Philippines, the Bureau of Health Devices and Technology of the Department of Health measured on 19 April 2004 the strength of electric and magnetic field generated by a 138 kV double circuit transmission line and from transformers in the substations as follows:³⁸

Table 5.1: Exposure to electric and magnetic field (EMF) from overhead transmission lines

Type of Exposure	132KV Transmission Line		International Commission on Non-Ionizing Radiation Protection (ICNRP) limit of exposure for the general public
	Centerline	Conductors	
Electric field, kV per meter	1.76	1.503	4.17
Magnetic field, milliGauss (mG)	0.813	0.823	833
	Substations		
	150 MVA transformer	50 MVA transformer	
Electric field, kV per meter	1.891	0.148	4.17
Magnetic field, mG	15.75	4.71	833

235. The National Grid Corporation of the Philippines measured the electric and magnetic field for their 230 kV Sucat-Araneta-Balintawak transmission line as 0.04 kV/m and 3.15 mG, respectively.³⁹ They also measured the 500 kV Tayabas-San Manuel-San Jose transmission line as 1.15 kV/m (electric field) and 6.04 mG. These results suggest that the EMF which may be generated by the subprojects of MP Transco are not expected to exceed the limits set by the International Commission on Non-Ionizing Radiation Protection (ICNRP) which is 4.17 kV/m for electric field and 833 mG for magnetic field. Therefore, the substations and power transmission lines are

³⁸ National Transmission Corporation, Negros-Panay Overhead Transmission Line and Substation Expansion Project, IEE Checklist of Cebu-Negros-Panay Interconnection Updating Project, Annex 8, September 2004.

³⁹ National Grid Corporation of the Philippines. Electric and Magnetic Fields (EMF) Frequently Asked Question. Manila.

not expected to pose health risks to the public. The substations will be fenced and security staff will be assigned to prevent unauthorized public access. Appropriate warning signs will be posted at designated areas. MP Transco will conduct information and education campaign to local people to enhance awareness on living safely near the substations. Spot measurements of EMF will be conducted to have a baseline data.

236. Working on elevated position during maintenance of power transmission lines may also pose occupational and safety risks to workers. To minimize risks of accidents, maintenance workers/linemen will be provided with safety clothing and other working gears for protection, provide training on safety and emergency preparedness, and implement a safety plan.
237. The operation of the 36 subprojects will create employment to local people. It is estimated that more than 200 positions will be created as a result of the project. Aside from employment, there will be a stable and reliable supply of power, and improved delivery of service.

5.2.2.2 Use of mineral oil for transformers

- *Impacts on land and water*

238. The use of transformers may cause potential accidental spillage that may contaminate land and water. The substations will have an oil-water separator and will have oil-containment structure/basin at the workshop areas.

- *Impacts on people*

239. Use and handling of mineral oil for transformers may pose occupational and health risks to workers due to exposure. Delivery and acceptance of mineral oil will be accompanied by material safety data sheets and/or be certified that it is polychlorinated biphenyl-free. Fire extinguishers will be posted at designated locations in the storage areas for mineral oil. Workers will be provided with training on emergency preparedness.

6.0 Analysis of Alternatives

240. During the planning stage and preliminary design, alternatives were considered in the selection of the substation site and transmission line routes to ensure that they are economically and financially feasible, at the same time, potential environmental impacts are minimized. The following selection criteria guided MP Transco:
- (i) Availability of a suitable right of way (ROW) and access to site by overhead transmission and distribution circuits;
 - (ii) Location of existing transmission and distribution lines for potential interconnection;
 - (iii) Distance to all weather roads, accessibility of heavy equipment under all weather conditions and access roads to the site;
 - (iv) Site maintenance requirements, water supply and storage;
 - (v) Soil resistivity, drainage, and soil conditions;
 - (vi) Cost of earth removal, earth conditions and earth moving;
 - (vii) Atmospheric conditions and potential contamination from industry;
 - (viii) Available space for future expansion and current requirements;
 - (ix) Land ownership, avoidance of private land acquisition;
 - (x) Topographical features of the site, avoidance of flood plains, wetlands, forests and other environment-sensitive areas;
 - (xi) Consideration of public safety and concern, avoidance of schools, playgrounds, hospitals, and structures of worship;
 - (xii) Avoidance of waterways and existing utilities, railway, road crossings, etc.; and,
 - (xiii) Total costs including transmission and distribution lines with due consideration of environmental factors.
241. Following the criteria above, a questionnaire/checklist with 25 criteria questions is used during site planning. Some considerations include the following:
- “Whether any Nallah, water tank, canal, etc. is within the proximity of the proposed land should be clearly mentioned. In case of the existence of the above, the extent of water spread during maximum flood level should be indicated.”
 - “In the detailed map, give the orientation of the EHT lines (existing or proposed) and the distance of lines from the proposed site.”
242. Preliminary site assessments conducted by MP Transco are based on the interpretation of available relevant maps of the area (i.e., topographic maps, vegetation maps, land use, etc.) aided by existing satellite images, aerial photos, location of permanent wetlands, and other environmentally-sensitive areas, and walk-over survey. During field works or walkover surveys, locations of forests, railways, schools, waterways, utilities, road crossings, structures of worship, etc. are identified along the alignments under consideration (or a “bee-line”). Soil characterization and land use evaluation are also carried out during the walk-over survey or inventorization.

243. From the outputs of preliminary assessment, the alignment that will be selected for further evaluation is determined. Based on preliminary assessment, some alignments are reduced while others are extended. The finalized route alignments along with options considered are given in table 6.1 to table 6.75. Substations are entirely located on government wasteland and are not likely to cause any significant environmental impacts.

Table 6.1: Final Survey details of LILO of 400kv Seoni to Bhilai S/C line at Balaghat/Kirnapur (D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	3	5	7	6.5
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Balaghat	Balaghat	Balaghat	Balaghat
ii)	Population of district	17,01,698	17,01,698	17,01,698	17,01,698
iii)	Town/Village in Alignment (Nearby)	Waratola, Wara, Kaneri, Sompuri, Hirapur	Waratola, Wara, Kaneri, Sompuri, Hirapur	Waratola, Wara, Kaneri, Sompuri, Hirapur	Waratola, Wara, Kaneri, Sompuri, Hirapur
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁴⁰	8			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None

⁴⁰ Tree cutting status given here is tentative. The actual number of trees to be felled for the project is being assessed and will be updated accordingly.

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	None	None
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	1	1	1	1
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

244. The final route length of the line is 3 kms. The line passes through primarily agricultural land comprising villages of Waratola, Wara, Kaneri, Sompuri, Hirapur with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a road crossing and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.2: Final Survey Details of LILO of 132kV Balaghat- Seoni/ Katangi line at Waraseoni 132kV S/s (2XD/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	4.7	20
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Balaghat	Balaghat
ii)	Population of district	17,01,698	17,01,698
iii)	Town/Village in Alignment (Nearby)	Kholtola, Sarandi, Chandanpur, Kasartola, Kahandawa and Chanderi	Kholtola, Sarandi, Chandanpur, Kasartola, Kahandawa and Chanderi
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁴¹	28	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	1	1
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	1	1
iv)	Road Crossing	1	1
5	Construction Problem	Minimum	Moderate

⁴¹ Ibid 40

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

245. The final route length of the line is 4.7 kms. The line passes through primarily agricultural land comprising villages of Kholtola, Sarandi, Chandanpur, Kasartola, Kahandawa and Chanderi with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a railway crossing, a road crossing and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.3: Final Survey Details of LILO of both circuit of 132kV Balaghat-Bhanegaon Line at Balaghat/Kirnapur 4000kV S/s (2XD/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	1.79	18
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Balaghat	Balaghat
ii)	Population of district	17,01,698	17,01,698
iii)	Town/Village in Alignment (Nearby)	Hirapur, Kumeri, Waratolo, Nara and nearby areas	Hirapur, Kumeri, Waratolo, Nara and nearby areas
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁴²	9	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None
iii)	River Crossing etc.	None	None

⁴² Iddid 41

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
iv)	Road Crossing	None	None
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

246. The final route length of the line is 1.79 kms. The line passes through primarily agricultural land comprising villages of Hirapur, Kumeri, Waratolo, Nara with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.4: Final Survey Details of LILO of 132 Tikamgarh-Bijawar line for Bada Malehra

S.No.	Description	Final Alignment where construction is ongoing	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	1.14	2
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Balaghat	Balaghat
ii)	Population of district	17,01,698	17,01,698
iii)	Town/Village in Alignment (Nearby)	Mungwari, Bandha, Gharauli, Goura	Mungwari, Bandha, Gharauli, Goura
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁴³	NIL	NIL
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None
iii)	River Crossing etc.	1	1

⁴³ Ibid42

S.No.	Description	Final Alignment where construction is ongoing	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
iv)	Road Crossing	None	None
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

247. The final route length of the line is 1.14 kms. The line passes through primarily agricultural land comprising villages of Mungwari, Bandha, Gharauli and Goura with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is canal crossing and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.5: Final Survey Details of Second circuit of Tikamgarh- Budhera 132kV DCSS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	32.218	33	35	45
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Tikamgarh	Tikamgarh	Tikamgarh	Tikamgarh
ii)	Population of district	14,45,166	14,45,166	14,45,166	14,45,166
iii)	Town/Village in Alignment (Nearby)	Nayakhera, Lachamanpur, Nonhitehri, Ganesgnagar, Barmarai, Tikamgarh, Sundarpur, Dholiyakhera, Gharauli	Nayakhera, Lachamanpura, Nonhitehri, Ganesgnagar, Barmarai, Tikamgarh, Sundarpur, Dholiyakhera, Gharauli	Nayakhera, Lachamanpura, Nonhitehri, Ganesgnagar, Barmarai, Tikamgarh, Sundarpur, Dholiyakhera, Gharauli	Nayakhera, Lachamanpura, Nonhitehri, Ganesgnagar, Barmarai, Tikamgarh, Sundarpur, Dholiyakhera, Gharauli
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁴⁴	122			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				

⁴⁴ Ibid43

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	None	None
iii)	River Crossing etc.	None	1	1	1
iv)	Road Crossing	6	8	8	8
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

248. The final route length of the line is 32.218 kms. The line is already constructed and present project activity involves only stringing of second circuit. The line passes through primarily agricultural land comprising villages of Nayakhera, Lachamanpura, Nonhitehri, Ganesgnagar, Barmarai, Tikamgarh, Sundarpur, Dholiyakhera, Gharauli with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are a total of 6 road crossings in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.6: Final Survey Details of Narsinghpur 220- Devnagar 132kV DCSS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	24.43	37.7	35.9	37.9
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Narsinghpur	Narsinghpur	Narsinghpur	Narsinghpur
ii)	Population of district	10,91,854	10,91,854	10,91,854	10,91,854
iii)	Town/Village in Alignment (Nearby)	Magardha, Samnapur, Bhelpani, rohhata, Babriya, Kannerpani, Boriya, Samadhi, Bakori etc	Magardha, Samnapur, Bhelpani, rohhata, Babriya, Kannerpani, Boriya, Samadhi, Bakori etc	Magardha, Samnapur, Bhelpani, rohhata, Babriya, Kannerpani, Boriya, Samadhi, Bakori etc	Magardha, Samnapur, Bhelpani, rohhata, Babriya, Kannerpani, Boriya, Samadhi, Bakori etc
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	6
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	Reserve Forest
b)	% of Forest	NIL	NIL	^ NIL	15.83
c)	Tree Cutting Status ⁴⁵	126			
d)	Type of Fauna and Flora	Agriculture land	Agriculture land	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				

⁴⁵ Ibid44

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Railway	None	None	None	None
ii)	Transmission line	1	1	1	1
iii)	River Crossing etc.	1	1	1	2
iv)	Road Crossing	3	3	5	5
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

249. The final route length of the line is 24.43 kms. The line passes through primarily agricultural land comprising villages of Magardha, Samnapur, Bhelpani, rohhata, Babriya, Kannerpani, Boriya, Samadhi, Bakori etc with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are a total of 3 road crossings in the final route alignment and some roads that are motorable in dry season. There is one river crossing and one transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.7: Final Survey Details of Karakbel- Belkheda 132kV DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	24.445	20
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	None	None
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Narsinghpur	Narsinghpur
ii)	Population of district	10,91,854	10,91,854
iii)	Town/Village in Alignment (Nearby)	Belkhera, Kunra, Jamuniya, Rakhi, Khobi, Kamod, Charguwan, Akhiwara, Tikri	Belkhera, Kunra, Jamuniya, Rakhi, Khobi, Kamod, Charguwan, Akhiwara, Tikri
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁴⁶	201	
d)	Type of Fauna and Flora	Agriculture Land	Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural Land	Agricultural Land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	6	6
iii)	River Crossing etc.	1	2

⁴⁶ Ibid45

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
iv)	Road Crossing	2	3
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

250. The final route length of the line is 24.445 kms. The line passes through primarily agricultural land comprising villages of Belkhera, Kunra, Jamuniya, Rakhi, Khobi, Kamod, Charguwan, Akhiwara and Tikri with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are a total of 2 road crossings in the final route alignment and some roads that are motorable in dry season. There is one river crossing and 6 transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.8: Final Survey Details of Narsinghpur 220KV Karakbel 132KV DCS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	26.62	26.7	26.9	33.8
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	None	None	None	None
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Narsinghpur	Narsinghpur	Narsinghpur	Narsinghpur
ii)	Population of district	10,91,854	10,91,854	10,91,854	10,91,854
iii)	Town/Village in Alignment (Nearby)	Bichua, Pindarai, Mekh, dokarghat, Barwaha, Kapkhera, Basanpani, Mudiya etc	Bichua, Pindarai, Mekh, dokarghat, Barwaha, Kapkhera, Basanpani, Mudiya etc	Bichua, Pindarai, Mekh, dokarghat, Barwaha, Kapkhera, Basanpani, Mudiya etc	Bichua, Pindarai, Mekh, dokarghat, Barwaha, Kapkhera, Basanpani, Mudiya etc
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁴⁷	154			
d)	Type of Fauna and Flora	Agriculture Land	Agriculture Land	Agriculture Land	Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agricultural Land	Agricultural Land	Agricultural Land	Agricultural Land
ii)	Forest	NIL	NIL	NIL	NIL
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL

⁴⁷ Ibid46

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
ii)	Transmission line	1	1	1	1
iii)	River Crossing etc.	1	1	1	1
iv)	Road Crossing	2	2	2	2
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

251. The final route length of the line is 26.62 kms. The line passes through primarily agricultural land comprising villages of Bichua, Pindarai, Mekh, dokarghat, Barwaha, Kapkhera, Basanpani, and Mudiya etc with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are a total of 2 road crossings in the final route alignment and some roads that are motorable in dry season. There is one river crossing and 1 transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.9: Final Survey Details of Panagar 220-Patan 132kV DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	22.749	40	23.2	26.2
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Jabalpur	Jabalpur	Jabalpur	Jabalpur
ii)	Population of district	24,63,289	24,63,289	24,63,289	24,63,289
iii)	Town/Village in Alignment (Nearby)	Rampura, Patan, Jogiya, Kukarbhuka, Kamond, Didhaura, Raithara, Pararia, Bikhirwa, Nagna, Ponri, Sarkhandi and Maniyari Khurd	Rampura, Patan, Jogiya, Kukarbhuka, Kamond, Didhaura, Raithara, Pararia, Bikhirwa, Nagna, Ponri, Sarkhandi and Maniyari Khurd	Rampura, Patan, Jogiya, Kukarbhuka, Kamond, Didhaura, Raithara, Pararia, Bikhirwa, Nagna, Ponri, Sarkhandi and Maniyari Khurd	Rampura, Patan, Jogiya, Kukarbhuka, Kamond, Didhaura, Raithara, Pararia, Bikhirwa, Nagna, Ponri, Sarkhandi and Maniyari Khurd
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁴⁸	128			
d)	Type of Fauna and Flora	Agriculture land	Agriculture land	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None

⁴⁸ Ibid47

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	2	2	2	2
iii)	River Crossing etc.	1	1	1	1
iv)	Road Crossing	4	4	5	5
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

252. The final route length of the line is 22.749 kms. The line passes through primarily agricultural land comprising villages of Rampura, Patan, Jogiya, Kukarbhuka, Kamond, Didhaura, Raithara, Pararia, Bikhirwa, Nagna, Ponri, Sarkhandi and Maniyari Khurd with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are a total of 4 road crossings in the final route alignment and some roads that are motorable in dry season. There is one river crossing and 2 transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.10: Final Survey Details of Chhindwara 220- Saori 132kV DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	31.6	31.6
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Chhindwara	Chhindwara
ii)	Population of district	20,90,922	20,90,922
iii)	Town/Village in Alignment (Nearby)	Ghoghra, Kukrachiman, Malhanwara, Paunari, Linga, Narsara, Bhalrampur	Ghoghra, Kukrachiman, Malhanwara, Paunari, Linga, Narsara, Bhalrampur
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁴⁹	147	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	2	2
iii)	River Crossing etc.	2	2
iv)	Road Crossing	2	2

⁴⁹ Ibid48

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

253. The final route length of the line is 31.6 kms. The line passes through primarily agricultural land comprising villages of Ghoghra, Kukrachiman, Malhanwara, Paunari, Linga, Narsara, and Bhalrampur with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are a total of 2 road crossings in the final route alignment and some roads that are motorable in dry season. There are 2 river crossings and 2 transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.11: Final Survey Details of Chichli 220- Palohabada 132kV DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	12	21.186	22.39	22.42
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Narsinghpur	Narsinghpur	Narsinghpur	Narsinghpur
ii)	Population of district	10,91,854	10,91,854	10,91,854	10,91,854
iii)	Town/Village in Alignment (Nearby)	Sukri, Chiraha, Motiyadau, Siddhi, Tanchana, Gujarkheda, Kajrota	Sukri, Chiraha, Motiyadau, Siddhi, Tanchana, Gujarkheda, Kajrota	Sukri, Chiraha, Motiyadau, Siddhi, Tanchana, Gujarkheda, Kajrota	Sukri, Chiraha, Motiyadau, Siddhi, Tanchana, Gujarkheda, Kajrota
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁵⁰	73			
d)	Type of Fauna and Flora	Agriculture land	Agriculture land	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	4	4	4	4
iii)	River Crossing etc.	1	1	1	1

⁵⁰ Ibid49

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
iv)	Road Crossing	1	1	3	3
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

254. The final route length of the line is 12 kms. The line passes through primarily agricultural land comprising villages of Sukri, Chiraha, Motiyadau, Siddhi, Tanchana, Gujarkheda, and Kajrota with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. There is 1 river crossing and 4 transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.12: Final Survey Details of 132kv DCSS line from Damoh 220kv to Patera 132 kv substation

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	35	38.186	44.467	40.821
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	None	None		
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Damoh	Damoh	Damoh	Damoh
ii)	Population of district	12,64,219	12,64,219	12,64,219	12,64,219
iii)	Town/Village in Alignment (Nearby)	Khamkhera, Pathariya, Mara, Chaupa Khurd, Hindoria, Kherna, Kachuriya, Nimamunda, Mahuna	Khamkhera, Pathariya, Mara, Chaupa Khurd, Hindoria, Kherna, Kachuriya, Nimamunda, Mahuna	Khamkhera, Pathariya, Mara, Chaupa Khurd, Hindoria, Kherna, Kachuriya, Nimamunda, Mahuna	Khamkhera, Pathariya, Mara, Chaupa Khurd, Hindoria, Kherna, Kachuriya, Nimamunda, Mahuna
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	1.25	0.75
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	Reserve Forest	Reserve Forest
b)	% of Forest	NIL	NIL	2.81	1.84
c)	Tree Cutting Status ⁵¹	172			
d)	Type of Fauna and Flora	Agriculture Land	Agriculture Land	Agriculture Land	Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agricultural Land	Agricultural Land	Agricultural Land	Agricultural Land
ii)	Forest	NIL	NIL	Yes	Yes
4	N° of Crossing				

⁵¹ Ibid50

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	1	1	1	2
iii)	River Crossing etc.	1	1	2	2
iv)	Road Crossing	2	2	2	2
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

255. The final route length of the line is 35 kms. The line passes through primarily agricultural land comprising villages of Khamkhera, Pathariya, Mara, Chaupa Khurd, Hindoria, Kherna, Kachuriya, Nimamunda and Mahuna with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There is 1 river crossing and 1 transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.13: Final Survey Details of Second circuit of 132kV Tap Line from Balaghat-Katangi

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	36.17	40
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Balaghat	Balaghat
ii)	Population of district	17,01,698	17,01,698
iii)	Town/Village in Alignment (Nearby)	Kateratola, Kosmi, Sirpurtola, Nandgaon, Tigrisola, Lohara, Newargaon, Pathal	Kateratola, Kosmi, Sirpurtola, Nandgaon, Tigrisola, Lohara, Newargaon, Pathal
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁵²	NIL	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None

⁵² Ibid51

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
ii)	Transmission line	2	2
iii)	River Crossing etc.	2	2
iv)	Road Crossing	5	5
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

256. The final route length of the line is 36.17 kms. The line passes through primarily agricultural land comprising villages of Kateratola, Kosmi, Sirpurtola, Nandgaon, Tigrisola, Lohara, Newargaon and Pathal with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are five road crossings in the final route alignment and some roads that are motorable in dry season. There are 2 river crossings and 2 transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.14: Final Survey Details of Second circuit 132kV of Chhatarpur- Khajuraho line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	34	34
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Chhatarpur	Chhatarpur
ii)	Population of district	17,62,375	17,62,375
iii)	Town/Village in Alignment (Nearby)	Chhatarpur, Chandrapura, Ataran, Gathevra, Brajpura, Kudari, Karri, Basari, Sandni, Hathna, Kadoha, Devgaon, Kheri, totka, Dhoora, Bameetha, Jatapahadi, Bandhni	Chhatarpur, Chandrapura, Ataran, Gathevra, Brajpura, Kudari, Karri, Basari, Sandni, Hathna, Kadoha, Devgaon, Kheri, totka, Dhoora, Bameetha, Jatapahadi, Bandhni
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁵³	NIL	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant		

⁵³ Ibid52

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
	information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	1	1
ii)	Transmission line	None	None
iii)	River Crossing etc.	3	3
iv)	Road Crossing	6	6
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

257. The final route length of the line is 34 kms. The line is already constructed and [resent project works include stringing of second cicuir only. The line passes through primarily agricultural land comprising villages of Chhatarpur, Chandrapura, Ataran, Gathevra, Brajpura, Kudari, Karri, Basari, Sandni, Hathna, Kadoha, Devgaon, Kheri, totka, Dhoora, Bameetha, Jatapahadi and Bandhni with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single railway crossing in the RoW. There are six road crossings in the final route alignment and some roads that are motorable in dry season. There are 3 river crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.15: Final Survey Details of LILO of second ckt of Bansagar-Satna 220kV line at Kotar 220kV S/s

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	5.693	4.778	3.25	3.5
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Satna	Satna	Satna	Satna
ii)	Population of district	22,28,935	22,28,935	22,28,935	22,28,935
iii)	Town/Village in Alignment (Nearby)	Lakhanwa, Karahi Khurd, Ahmadpur, Dhenrhi, Mahadeo, Kilaha	Lakhanwa, Karahi Khurd, Ahmadpur, Dhenrhi, Mahadeo, Kilaha	Lakhanwa, Karahi Khurd, Ahmadpur, Dhenrhi, Mahadeo, Kilaha	Lakhanwa, Karahi Khurd, Ahmadpur, Dhenrhi, Mahadeo, Kilaha
iv)	House with in RoW	Few	Few	Few	
v)	Forest in km. / Ha	None	None	None	
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	
b)	% of Forest	NIL	NIL	NIL	
c)	Tree Cutting Status ⁵⁴	38			
d)	Type of Fauna and Flora	Agriculture	Agriculture	Agriculture	
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	
f)	Historical/Cultural Monuments	None	None	None	
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture	Agriculture	Agriculture	
ii)	Forest	None	None	None	
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	None	None

⁵⁴ Ibid53

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	1	1	1	1
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

258. The final route length of the line is 5.693 kms. The line passes through primarily agricultural land comprising villages of Lakhanwa, Karahi Khurd, Ahmadpur, Dhenrhi, Mahadeo, and Kilaha with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.16: Final Survey Details of LILO of second ckt of Birsinghpur - Amarkantak 220kV line at Shahdol

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	5.6	7.9	8.3
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No
c)	Estuarine	No	No	No
d)	Other type of land			
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Shahdol	Shahdol	Shahdol
ii)	Population of district	10,66,063	10,66,063	10,66,063
iii)	Town/Village in Alignment (Nearby)	Gortara, Jamur, Jamua, Raipur, Fatehpur, Ghurwa	Gortara, Jamur, Jamua, Raipur, Fatehpur, Ghurwa	Gortara, Jamur, Jamua, Raipur, Fatehpur, Ghurwa
iv)	House with in RoW	Few	Few	Few
v)	Forest in km. / Ha	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None
b)	% of Forest	NIL	NIL	NIL
c)	Tree Cutting Status ⁵⁵	NIL		
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None
4	N° of Crossing			
i)	Railway	None	None	None
ii)	Transmission line	None	None	1
iii)	River Crossing etc.	None	None	None

⁵⁵ Ibid54

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
iv)	Road Crossing	1	1	1
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

259. The final route length of the line is 5.6 kms. The line passes through primarily agricultural land comprising villages of Gortara, Jamur, Jamua, Raipur, Fatehpur and Ghurwa with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.17: Final Survey Details of Birsinghpur 220-Shahdol 132kV DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	45	43	50	40
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Umaria, Shahdol	Umaria,Shahdol	Umaria,Shahdol	Umaria,Shahdol
ii)	Population of district				
iii)	Town/Village in Alignment (Nearby)	Senduri, Chhotakhamaria, Shahpur, Raugarh, Malachua, Aurher, Gangadar, Kotipat, Dabhunia, Chotatummi, Baramlola, Kumurdu	Senduri, Chhotakhamaria, Shahpur, Raugarh, Malachua, Aurher, Gangadar, Kotipat, Dabhunia, Chotatummi, Baramlola, Kumurdu	Senduri, Chhotakhamaria, Shahpur, Raugarh, Malachua, Aurher, Gangadar, Kotipat, Dabhunia, Chotatummi, Baramlola, Kumurdu	Senduri, Chhotakhamaria, Shahpur, Raugarh, Malachua, Aurher, Gangadar, Kotipat, Dabhunia, Chotatummi, Baramlola, Kumurdu
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	8.202	10.55	7	8.2
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	Reserve Forest	Reserve Forest	Reserve Forest	Reserve Forest
b)	% of Forest	6.74	9.08	5.18	7.59
c)	Tree Cutting Status	1635			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
4	N° of Crossing				
i)	Railway	1	1	1	2
ii)	Transmission line	None	None	None	None
iii)	River Crossing etc.	2	2	2	3
iv)	Road Crossing	10	10	6	8
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

260. The final route length of the line is 45 kms. The line passes through primarily agricultural land comprising villages of Senduri, Chhotakhamaria, Shahpur, Raugarh, Malachua, Aurher, Gangadar, Kotipat, Dabhunia, Chotatummi, Baramlola and Kumurdu with few settlements nearby. Adequate distance is maintained from the settlements. The line passes through 8.202 hectares of reserve forest and forest clearance has been applied for. Civil works will not be commenced until the clearance has been obtained. However, work permission has been received for this line. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single railway crossing in the RoW. There are ten road crossings in the final route alignment and some roads that are motorable in dry season. There are 2 river crossings that will lie in the RoW. A total of 1635 trees will be cut during the construction of the line and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.18: Final Survey Details of LILO of one circuit of Ashta 400-Dewas 220 kv D/C line at Chapda 220kv S/s

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	32.782	35
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Dewas	Dewas
ii)	Population of district	15,63,715	15,63,715
iii)	Town/Village in Alignment (Nearby)	Manasa, Gunai, Budangaon, Nanasa, Khonpirpipaliya, Sarsoda, Nawadharakhedi, Dakachiya, Pandajagir, Guradiyagujar, Jagdishpur, Elechpur	Manasa, Gunai, Budangaon, Nanasa, Khonpirpipaliya, Sarsoda, Nawadharakhedi, Dakachiya, Pandajagir, Guradiyagujar, Jagdishpur, Elechpur
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁵⁶	224	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture	Agriculture land

⁵⁶ Ibid56

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
		land	
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None
iii)	River Crossing etc.	5	5
iv)	Road Crossing	12	12
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

261. The final route length of the line is 32.782 kms. The line passes through primarily agricultural land comprising villages of Manasa, Gunai, Budangaon, Nanasa, Khonpirpipaliya, Sarsoda, Nawadharakhedi, Dakachiya, Pandajagir, Guradiyagujar, Jagdishpur and Elechpur with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are twelve road crossings in the final route alignment and some roads that are motorable in dry season. There are five river crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.19: Final Survey Details of Pithampur 400 - Depalpur 220kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	35.583	35
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Neemuch, Mandsaur	Neemuch, Mandsaur
ii)	Population of district	8,26,067; 13,40,411	8,26,067; 13,40,411
iii)	Town/Village in Alignment (Nearby)	Sejwani, Kumarkaradya, Sulawar, Umariya, Bagoda, Baksana, Nijampura, Chichodi, Narayanpura, Achana, Chandankhed i, Dikhtan, Bachdawda, Pipaliya, Abukhedi, Raiyan, Billore	Sejwani, Kumarkaradya, Sulawar, Umariya, Bagoda, Baksana, Nijampura, Chichodi, Narayanpura, Achana, Chandankhed i, Dikhtan, Bachdawda, Pipaliya, Abukhedi, Raiyan, Billore
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁵⁷	47	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None

⁵⁷ Ibid57

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	2	2
iii)	River Crossing etc.	1	1
iv)	Road Crossing	5	5
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

262. The final route length of the line is 35.583 kms. The line passes through primarily agricultural land comprising villages of Seiwani, Kumarkaradya, Sulawar, Umariya, Bagoda, Baksana, Nijampura, Chichodi, Narayanpura, Achana, Chandankhed, Dikhtan, Bachdawda, Pipaliya, Abukhed, Raiyan, and Billore with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are five road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing and 2 transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.20: Final Survey Details of Dewas 220- Agrod 132kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	19.355	30
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Deaws	Deaws
ii)	Population of district	15,63,715	15,63,715
iii)	Town/Village in Alignment (Nearby)	Jaitpura, Kamarkhedi, Kalukhedi, Karnakhedi, Mukundkhedi, Amlawati, Bilaoli, Morukhedi, Rajpura, Nipaniya, Khajuriya, Ajeejkhedi, Mudka, Maindkidhakad, Newri, Malsapura, Limboda, Narangipur, Sarola, Yashwantnagar, Patlawda, Janoyikhedi, Tigariyasacha, Budani, Sindhni, Lohana, Silakhedi, Vijaypur, Dilalkhedi, Siya, Tumdi, Bagana etc.	Jaitpura, Kamarkhedi, Kalukhedi, Karnakhedi, Mukundkhedi, Amlawati, Bilaoli, Morukhedi, Rajpura, Nipaniya, Khajuriya, Ajeejkhedi, Mudka, Maindkidhakad, Newri, Malsapura, Limboda, Narangipur, Sarola, Yashwantnagar, Patlawda, Janoyikhedi, Tigariyasacha, Budani, Sindhni, Lohana, Silakhedi, Vijaypur, Dilalkhedi, Siya, Tumdi, Bagana etc.
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁵⁸	18	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		

⁵⁸ Ibid58

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	1	1
ii)	Transmission line	3	3
iii)	River Crossing etc.	None	None
iv)	Road Crossing	2	2
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

263. The final route length of the line is 19.355 kms. The line passes through primarily agricultural land comprising villages of Jaitpura, Kamarkhedi, Kalukhedi, Karnakhedi, Mukundkhedi, Amlawati, Bilaoli, Morukhedi, Rajpura, Nipaniya, Khajuriya, Ajeekkhedi, Mudka, Maindkidhakad, Newri, Malsapura, Limboda, Narangipur, Sarola, Yashwantnagar, Patlawda, Janoyikhedi, Tigariyasacha, Budani, Sindhni, Lohana, Silakhedi, Vijaypur, Dilalkhedi, Siya, Tumdi, Bagana etc. with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single railway line crossing that will lie in the RoW. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There are three transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.21: Final Survey Details of Dhar 220 - Teesgaon 132kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	15.35	20	21.9	20.8
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Dhar	Dhar	Dhar	Dhar
ii)	Population of district	21,85,793	21,85,793	21,85,793	21,85,793
iii)	Town/Village in Alignment (Nearby)	Pinjrao, Pipaliya, Kherod, Antaray, Teesgaon, Bhindotakhurd, Rampur, Balowda, Bujurg, Kewdi, Akoliya, Samar, Satkali, Umariya, Tajpur etc.	Pinjrao, Pipaliya, Kherod, Antaray, Teesgaon, Bhindotakhurd, Rampur, Balowda, Bujurg, Kewdi, Akoliya, Samar, Satkali, Umariya, Tajpur etc.	Pinjrao, Pipaliya, Kherod, Antaray, Teesgaon, Bhindotakhurd, Rampur, Balowda, Bujurg, Kewdi, Akoliya, Samar, Satkali, Umariya, Tajpur etc.	Pinjrao, Pipaliya, Kherod, Antaray, Teesgaon, Bhindotakhurd, Rampur, Balowda, Bujurg, Kewdi, Akoliya, Samar, Satkali, Umariya, Tajpur etc.
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁵⁹	49			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				

⁵⁹ Ibid59

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	Proposed railway track	Proposed railway track	Proposed railway track	Proposed railway track
ii)	Transmission line	None	None	None	None
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	3	4	5	6
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

264. The final route length of the line is 15.35 kms. The line passes through primarily agricultural land comprising villages of Pinjrao, Pipaliya, Kherod, Antaray, Teesgaon, Bhindotakhurd, Rampur, Balowda, Bujurg, Kewdi, Akoliya, Samar, Satkali, Umariya, and Tajpur etc. with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three road crossings in the final route alignment and some roads that are motorable in dry season. There is a proposed railway crossing in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.22: Final Survey Details of LILO of both Circuit of 400 kv Nagda-Rajgarh line at Badnawar (2 x D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	8.163	10
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Ujjain, Rajgarh	Ujjain, Rajgarh
ii)	Population of district		
iii)	Town/Village in Alignment (Nearby)	Dokliyapara, Piplipara, Imlipara, Satrunda	Dokliyapara, Piplipara, Imlipara, Satrunda
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁶⁰	35	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	1	1
iii)	River Crossing etc.	None	None
iv)	Road Crossing	1	1

⁶⁰ Ibid60

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

265. The final route length of the line is 8.163 kms. The line passes through primarily agricultural land comprising villages of Dokliyapara, Piplipara, Imlipara, and Satrunda with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. There is a single transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.23: Final Survey Details of Second Circuit of Kukshi Alirajpur 132kv line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	35.82	42
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Dhar, Alirajpur	Dhar, Alirajpur
ii)	Population of district	2185793; 7,28,999	2185793; 7,28,999
iii)	Town/Village in Alignment (Nearby)	Mohnipura, Chaundiyapura, Talanpur, Julwaniya, Haldi, Chikli, Dholiya, Phata, Nanpur, Rajawat, Kharpai, Bhauri, Giral, Lakankot	Mohnipura, Chaundiyapura, Talanpur, Julwaniya, Haldi, Chikli, Dholiya, Phata, Nanpur, Rajawat, Kharpai, Bhauri, Giral, Lakankot
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁶¹	176	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None

⁶¹ Ibid61

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	2	2
iii)	River Crossing etc.	2	2
iv)	Road Crossing	2	2
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

266. The final route length of the line is 35.82 kms. The present project works comprise of stringing of second circuit only. The line passes through primarily agricultural land comprising villages of Mohnipura, Chaundiyapura, Talanpur, Julwaniya, Haldi, Chikli, Dholiya, Phata, Nanpur, Rajawat, Kharpai, Bhauri, Girala, and Lakankot with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There are two river crossings and two transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.24: Final Survey Details of LILO of 132 Khargone Bikayan line at 132 Kv sub-station Bistan

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	18,197	35
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	None	None
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Khargone	Khargone
ii)	Population of district	18,73,046	18,73,046
iii)	Town/Village in Alignment (Nearby)	Magariya, Bargaon, Moghan, Chandabad, Gopalpura, Anakwadi	Magariya, Bargaon, Moghan, Chandabad, Gopalpura, Anakwadi
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁶²	84	
d)	Type of Fauna and Flora	Agriculture Land	Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural Land	Agricultural Land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	1	1
iv)	Road Crossing	7	7

⁶² Ibid62

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

267. The final route length of the line is 18.197 kms. The line passes through primarily agricultural land comprising villages of Magariya, Bargaon, Moghan, Chandabad, Gopalpura, and Anakwadi with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are seven road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.25: Final Survey Details of LILO of 132kv Chegaon Nepanagar line at Pandhana

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	1.895	1.825	30
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None
c)	Estuarine	None	None	None
d)	Other type of land	None	None	None
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Khandwa, Burhanpur	Khandwa, Burhanpur	Khandwa, Burhanpur
ii)	Population of district	13,10,061; 7,57,847	13,10,061; 7,57,847	13,10,061; 7,57,847
iii)	Town/Village in Alignment (Nearby)	Dulhar, Teela etc	Dulhar, Teela etc	Dulhar, Teela etc
iv)	House with in RoW	None	None	None
v)	Forest in km. / Ha	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None
b)	% of Forest	NIL	NIL	NIL
c)	Tree Cutting Status ⁶³	14		
d)	Type of Fauna and Flora	Agriculture Land	Agriculture Land	Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agricultural Land	Agricultural Land	
ii)	Forest	NIL	NIL	NIL
4	N° of Crossing			
i)	Railway	NIL	NIL	NIL
ii)	Transmission line	NIL	NIL	NIL
iii)	River Crossing etc.	NIL	NIL	NIL
iv)	Road Crossing	NIL	NIL	NIL
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate

⁶³ Ibid63

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

268. The final route length of the line is 1.895 kms. The line passes through primarily agricultural land comprising villages of Dulhar, Teela etc with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season and will lie in RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.26: Final Survey Details of LILO Manawar - Kukshi DCSS line at Singhana

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	3.11	20
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Dhar	Dhar
ii)	Population of district	21,85,793	21,85,793
iii)	Town/Village in Alignment (Nearby)	Singhana, Anjaniya and Bhesawad	Singhana, Anjaniya and Bhesawad
iv)	House with in RoW	None	None
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁶⁴	27	
d)	Type of Fauna and Flora	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	NIL	NIL
iv)	Road Crossing	NIL	NIL
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is	

⁶⁴ Ibid64

		selected because of shortest length, nil forest coverage and avoiding settlements.	
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269. The final route length of the line is 3.11 kms. The line passes through primarily agricultural land comprising villages of Singhana, Anjaniya and Bhesawad with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.27: Final Survey Details of LILO of 132Kv Khargone -Julwaniya line at 132Kv S/S Talakpura

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	1.9	30
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	None	None
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Khargone, Dhar	Khargone, Dhar
ii)	Population of district	18,73,046; 21,85,793	18,73,046; 21,85,793
iii)	Town/Village in Alignment (Nearby)	Birla etc	Birla etc
iv)	House with in RoW	None	None
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁶⁵	16	
d)	Type of Fauna and Flora	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	NIL	NIL
iv)	Road Crossing	NIL	NIL
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate

⁶⁵ Ibid65

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

270. The final route length of the line is 1.9 kms. The line passes through primarily agricultural land comprising villages of Birla etc. with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.28: Final Survey Details of Julwaniya 400- Kukshi 220kv line (D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	62.9	80
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Badwani, Dhar	Badwani, Dhar
ii)	Population of district	13,85,881; 21,85,793	13,85,881; 21,85,793
iii)	Town/Village in Alignment (Nearby)	Lingwa, Kusmari, Jalgone, Morgun, Baswi, Pipribujurg and Mandil etc	Lingwa, Kusmari, Jalgone, Morgun, Baswi, Pipribujurg and Mandil etc
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁶⁶	242	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	1	1
ii)	Transmission line	NIL	NIL

⁶⁶ Ibid66

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
iii)	River Crossing etc.	4	4
iv)	Road Crossing	7	7
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

271. The final route length of the line is 62.9 kms. The line passes through primarily agricultural land comprising villages of Lingwa, Kusmari, Jalgone, Morgun, Baswi, Pipribujurg and Mandil etc with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single railway crossing in the RoW. There are seven road crossings in the final route alignment and some roads that are motorable in dry season. There are four river crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.29: Final Survey Details of Malwa TPS- Chhanera 220kV DCDS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	50	54.5	46.3
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No
c)	Estuarine	No	No	No
d)	Other type of land			
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Khandwa	Khandwa	Khandwa
ii)	Population of district	13,10,061	13,10,061	13,10,061
iii)	Town/Village in Alignment (Nearby)	Manjadhar, Sakkapur, Surwanya, Mandla, Bhaiswa, Dohad, Mohad, Saheja	Manjadhar, Sakkapur, Surwanya, Mandla, Bhaiswa, Dohad, Mohad, Saheja	Manjadhar, Sakkapur, Surwanya, Mandla, Bhaiswa, Dohad, Mohad, Saheja
iv)	House with in RoW	Few	Few	Few
v)	Forest in km. / Ha	None	4	9
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	Reserve Forest	Reserve Forest
b)	% of Forest	NIL	7.34	19.44
c)	Tree Cutting Status ⁶⁷	285		
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	Yes	Yes
4	N° of Crossing			
i)	Railway	3	2	2
ii)	Transmission line	None	None	None

⁶⁷ Ibid67

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
iii)	River Crossing etc.	4	2	3
iv)	Road Crossing	5	6	6
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

272. The final route length of the line is 50 kms. The line passes through primarily agricultural land comprising villages of Manjadhar, Sakkapur, Surwanya, Mandla, Bhaiswa, Dohad, Mohad, and Saheja with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three railway crossings that will lie in RoW. There are five road crossings in the final route alignment and some roads that are motorable in dry season. There are four river crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.30: Final Survey Details of Chhegaon 220- Singot 132kV DCDS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	58	57.8	59.58	59.98
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Khandwa	Khandwa	Khandwa	Khandwa
ii)	Population of district	13,10,061	13,10,061	13,10,061	13,10,061
iii)	Town/Village in Alignment (Nearby)	Sahejla, Bikankheri, lakhmenkhri, Sombulai, Bargaon, Idamadpura, Sargaonnipani, Kotwara, Balwara, Bavsinghpura, Bhamgarh, Kanwani, Bhagwanpura, Bharamgiya, Rajpura	Sahejla, Bikankheri, lakhmenkhri, Sombulai, Bargaon, Idamadpura, Sargaonnipani, Kotwara, Balwara, Bavsinghpura, Bhamgarh, Kanwani, Bhagwanpura, Bharamgiya, Rajpura	Sahejla, Bikankheri, lakhmenkhri, Sombulai, Bargaon, Idamadpura, Sargaonnipani, Kotwara, Balwara, Bavsinghpura, Bhamgarh, Kanwani, Bhagwanpura, Bharamgiya, Rajpura	Sahejla, Bikankheri, lakhmenkhri, Sombulai, Bargaon, Idamadpura, Sargaonnipani, Kotwara, Balwara, Bavsinghpura, Bhamgarh, Kanwani, Bhagwanpura, Bharamgiya, Rajpura
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁶⁸	268			
d)	Type of Fauna and Flora	Scrub and Agriculture Land	Scrub and Agriculture Land	Scrub and Agriculture Land	Scrub and Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				

⁶⁸ Ibid68

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Crop	Agricultural Land	Agricultural Land		
ii)	Forest	NIL	NIL	NIL	NIL
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	2	2	4	4
iii)	River Crossing etc.	3	3	3	3
iv)	Road Crossing	4	4	10	12
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

273. The final route length of the line is 58 kms. The line passes through primarily agricultural land comprising villages of Sahejla, Bikankheri, lakhmenkhri, Sombulai, Bargaon, Idamadpura, Surgaonnipani, Kotwara, Balwara, Bavsinghpura, Bhamgarh, Kanwani, Bhagwanpura, Bharamgiya, and Rajpura with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are four road crossings in the final route alignment and some roads that are motorable in dry season. There are three river crossings and two transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.31: Final Survey Details of Chhanera 220- Khirkiya 132kV DCDS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	30.421	29.962
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Khandwa, Harda	Khandwa, Harda
ii)	Population of district	13,10,061; 5,70,465	13,10,061; 5,70,465
iii)	Town/Village in Alignment (Nearby)	Sadiyapani, Manjhad, Bediyakhal, Nishaniya, Bonsarey, Chhapakund, Bhutiyakhurd, Bhutiyakala, Kanpura, Behri, Damodarpura, Dedhgaon mal, Kaldhad, and Khirkiya	Sadiyapani, Manjhad, Bediyakhal, Nishaniya, Bonsarey, Chhapakund, Bhutiyakhurd, Bhutiyakala, Kanpura, Behri, Damodarpura, Dedhgaon mal, Kaldhad, and Khirkiya
iv)	House with in RoW	None	None
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁶⁹	150	
d)	Type of Fauna and Flora	Scrub and Agriculture Land	Scrub and Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural Land	Agricultural Land

⁶⁹ Ibid69

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	3	3
iv)	Road Crossing	4	4
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

274. The final route length of the line is 30.421 kms. The line passes through primarily agricultural land comprising villages of Sadiyapani, Manjhad, Bediyakhil, Nishaniya, Bonsarey, Chhapakund, Bhutiyakhurd, Bhutiyakala, Kanpura, Behri, Damodarpura, Dedhgaon mal, Kaldhad, and Khirkiya with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are four road crossings in the final route alignment and some roads that are motorable in dry season. There are three river crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.32: Final Survey Details of Bairagarh 220 - Intkhedi 132kv DCDS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	9.05	15	10.10	10.50
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Bhopal	Bhopal	Bhopal	Bhopal
ii)	Population of district	23,71,061	23,71,061	23,71,061	23,71,061
iii)	Town/Village in Alignment (Nearby)	Intkhedi, Hazzampura, Hazarpura, Chandanpura, Kurana, Shantinagar, Dobra	Intkhedi, Hazzampura, Hazarpura, Chandanpura, Kurana, Shantinagar, Dobra	Intkhedi, Hazzampura, Hazarpura, Chandanpura, Kurana, Shantinagar, Dobra	Intkhedi, Hazzampura, Hazarpura, Chandanpura, Kurana, Shantinagar, Dobra
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁷⁰	43			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agricultural land	Agricultural land	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL	NIL	NIL
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL

⁷⁰ Ibid70

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
ii)	Transmission line	NIL	NIL	NIL	NIL
iii)	River Crossing etc.	2	2	2	3
iv)	Road Crossing	4	4	3	4
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

275. The final route length of the line is 9.05 kms. The line passes through primarily agricultural land comprising villages of Intkhedi, Hazzampura, Hazarpura, Chandanpura, Kurana, Shantinagar, and Dobra with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are four road crossings in the final route alignment and some roads that are motorable in dry season. There are two river crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.33: Final Survey Details of Second circuit of Bairagarh – Shyampur

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	21.44	20	21.9
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No
c)	Estuarine	No	No	No
d)	Other type of land			
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Bhopal	Bhopal	Bhopal
ii)	Population of district	23,71,061	23,71,061	23,71,061
iii)	Town/Village in Alignment (Nearby)	Bagoniya, Purachindwada, Tarasewaniya etc	Bagoniya, Purachindwada, Tarasewaniya etc	Bagoniya, Purachindwada, Tarasewaniya etc
iv)	House with in RoW	Few	Few	Few
v)	Forest in km. / Ha	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None
b)	% of Forest	NIL	NIL	NIL
c)	Tree Cutting Status ⁷¹	98		
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None
4	N° of Crossing			
i)	Railway	None	None	None
ii)	Transmission line	None	None	None
iii)	River Crossing etc.	1	1	1

⁷¹ Ibid71

iv)	Road Crossing	1	3	4
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

276. The final route length of the line is 21.44 kms. The line passes through primarily agricultural land comprising villages of Bagoniya, Purachindwada, and Tarasewaniya etc with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.34: Final Survey Details of Second circuit of Gairatganj - Vidisha 220 132kv line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	48.27	48.27	48	50
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Vidisha, Raisen	Vidisha, Raisen	Vidisha, Raisen	Vidisha, Raisen
ii)	Population of district	1458875; 13,31,597	1458875; 13,31,597	1458875; 13,31,597	1458875; 13,31,597
iii)	Town/Village in Alignment (Nearby)	Sherpura, Dabar, Berkheri, Berkheda, Ahmadpur, Manakpur, Jetpura	Sherpura, Dabar, Berkheri, Berkheda, Ahmadpur, Manakpur, Jetpura	Sherpura, Dabar, Berkheri, Berkheda, Ahmadpur, Manakpur, Jetpura	Sherpura, Dabar, Berkheri, Berkheda, Ahmadpur, Manakpur, Jetpura
iv)	House with in RoW				
v)	Forest in km. / Ha	14.5	14.5	6	6.2
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	Reserve Forest	Reserve Forest	Reserve Forest	Reserve Forest
b)	% of Forest	11.19	11.19	12.5	12
c)	Tree Cutting Status ⁷²	222			
d)	Type of Fauna and Flora	Agriculture, Trees	Agriculture, Trees	Agriculture, Trees	Agriculture, Trees
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agricultural	Agricultural	Agricultural	Agricultural

⁷² Ibid72

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
		land	land	land	land
ii)	Forest	Reserve Forest	Reserve Forest	Reserve Forest	Reserve Forest
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	NIL	NIL	NIL	NIL
iii)	River Crossing etc.	NIL	NIL	NIL	NIL
iv)	Road Crossing	10	10	10	10
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, minimum forest coverage and avoiding settlements.			

277. The final route length of the line is 48.27 kms. The line passes through primarily agricultural land comprising villages of Sherpura, Dabar, Berkheri, Berkheda, Ahmadpur, Manakpur, and Jetpura with few settlements nearby. Adequate distance is maintained from the settlements. The line passes through 14.5 hectares of forest area. Forest clearance has been received for the line. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are ten road crossings in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.35: Final Survey Details of Shujalpur- Narsingharh 220kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	44.575	50	55.70	53.10
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Shajapur, Rajgarh	Shajapur, Rajgarh	Shajapur, Rajgarh	Shajapur, Rajgarh
ii)	Population of district	15,12,681; 15,45,814	15,12,681; 15,45,814	15,12,681; 15,45,814	15,12,681; 15,45,814
iii)	Town/Village in Alignment (Nearby)	Bamora kheda, Gokalpur, Buchakhedi, Kansrod, Purababeli, Vejar, Varukhedi, Lakhakhedi, Khajori, Pipliya, Tawakkul, Eklera, Nahli, Sahatkhedi, Rawatpura, Ulkhedi, Ankkheda, Radanpura, Hulkhedi, Jangibed, Hatiyakhedi.	Bamora kheda, Gokalpur, Buchakhedi, Kansrod, Purababeli, Vejar, Varukhedi, Lakhakhedi, Khajori, Pipliya, Tawakkul, Eklera, Nahli, Sahatkhedi, Rawatpura, Ulkhedi, Ankkheda, Radanpura, Hulkhedi, Jangibed, Hatiyakhedi.	Bamora kheda, Gokalpur, Buchakhedi, Kansrod, Purababeli, Vejar, Varukhedi, Lakhakhedi, Khajori, Pipliya, Tawakkul, Eklera, Nahli, Sahatkhedi, Rawatpura, Ulkhedi, Ankkheda, Radanpura, Hulkhedi, Jangibed, Hatiyakhedi.	Bamora kheda, Gokalpur, Buchakhedi, Kansrod, Purababeli, Vejar, Varukhedi, Lakhakhedi, Khajori, Pipliya, Tawakkul, Eklera, Nahli, Sahatkhedi, Rawatpura, Ulkhedi, Ankkheda, Radanpura, Hulkhedi, Jangibed, Hatiyakhedi.
iv)	House with in RoW				
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
c)	Tree Cutting Status ⁷³	211			
d)	Type of Fauna and Flora	Agriculture land	Agriculture land	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	None	None
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	3	3	4	5
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

278. The final route length of the line is 44.575 kms. The line passes through primarily agricultural land comprising villages of Bamora kheda, Gokalpur, Buchakhedi, Kansrod, Purababeli, Vejar, Varukhedi, Lakhakhedi, Khajori, Pipliya, Tawakkul, Eklara, Nahli, Sahatkhedi, Rawatpura, Ulkhedi, Ankkheda, Radanpura, Hulkhedi, Jangibed, and Hatiyakhedi with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three road crossings in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

⁷³ Ibid73

Table 6.36: Final Survey Details of LILO of one circuit of Bhopal - Hosangabad 220kv D/C line at Adampur 220kv S/s (D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	2.868	5
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	NIL	NIL
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Open Scrub	Open Scrub
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Bhopal	Bhopal
ii)	Population of district	23,71,061	23,71,061
iii)	Town/Village in Alignment (Nearby)	Hathikera	Hathaikera
iv)	House with in RoW		
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁷⁴	19	
d)	Type of Fauna and Flora	None	None
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	None	None
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None

⁷⁴ Ibid74

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
iii)	River Crossing etc.	None	None
iv)	Road Crossing	1	1
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

279. The final route length of the line is 2.868 kms. The line passes through primarily agricultural land comprising villages of Hathikera with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.37: Final Survey Details of Udaipura -Silvani 132kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	25.8	25		
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Raisen	Raisen	Raisen	Raisen
ii)	Population of district	13,31,597	13,31,597	13,31,597	13,31,597
iii)	Town/Village in Alignment (Nearby)	Nigri, Saikheda, Chunnehitya, Nurpura, Pipariya khurd, Kunwar pipariya, Bhatpura	Nigri, Saikheda, Chunnehitya, Nurpura, Pipariya khurd, Kunwar pipariya, Bhatpura	Nigri, Saikheda, Chunnehitya, Nurpura, Pipariya khurd, Kunwar pipariya, Bhatpura	Nigri, Saikheda, Chunnehitya, Nurpura, Pipariya khurd, Kunwar pipariya, Bhatpura
iv)	House with in RoW				
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁷⁵	128			
d)	Type of Fauna and Flora	Agriculture	Agriculture	Agriculture	Agriculture
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				

⁷⁵ Ibid75

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
3	Consumption cost				
i)	Crop	Agricultural Land	Agricultural Land	Agricultural Land	Agricultural Land
ii)	Forest	NIL	NIL	NIL	NIL
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	NIL	NIL	NIL	NIL
iii)	River Crossing etc.	1	1	1	1
iv)	Road Crossing	NIL	NIL	2	2
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

280. The final route length of the line is 25.8 kms. The line passes through primarily agricultural land comprising villages of Nigri, Saikheda, Chunnehitya, Nurpura, Pipariya khurd, Kunwar pipariya, and Bhatpura with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in final Row. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.38: Final Survey Details of LILO of Vidisha- Bairasiya Line at Salamatpur 132 KV S/s

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	0.162	25	0374	0.390
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Bhopal	Bhopal	Bhopal	Bhopal
ii)	Population of district	23,71,061	23,71,061	23,71,061	23,71,061
iii)	Town/Village in Alignment (Nearby)	Sanchi, Chirohlikhurd	Sanchi, Chirohlikhurd	Sanchi, Chirohlikhurd	Sanchi, Chirohlikhurd
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁷⁶	NIL			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agricultural land	Agricultural land	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL	NIL	NIL

⁷⁶ Ibid76

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
4	N° of Crossing				
i)	Railway	1	1	1	1
ii)	Transmission line	NIL	NIL	NIL	NIL
iii)	River Crossing etc.	NIL	NIL	NIL	NIL
iv)	Road Crossing	1	1	1	1
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

281. The final route length of the line is 0.162 kms. The line passes through primarily agricultural land comprising villages of Sanchi, and Chirohlikhurd with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.39: Final Survey Details of Mugaliyachhaap 220- Bikisganj 132kV DCDS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	11.4	11.212	14.20	13.75
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Vidisha, Bhopal	Vidisha, Bhopal	Vidisha, Bhopal	Vidisha, Bhopal
ii)	Population of district	14,58,875; 23,71,061	14,58,875; 23,71,061	14,58,875; 23,71,061	14,58,875; 23,71,061
iii)	Town/Village in Alignment (Nearby)	Aamkheda, Bilori, Choona, Nagori, Kanakkheda	Aamkheda, Bilori, Choona, Nagori, Kanakkheda	Aamkheda, Bilori, Choona, Nagori, Kanakkheda	Aamkheda, Bilori, Choona, Nagori, Kanakkheda
iv)	House with in RoW	None	None	None	None
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁷⁷	59			
d)	Type of Fauna and Flora	Agriculture	Agriculture	Agriculture	Agriculture
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agricultural land	Agricultural land	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL	NIL	NIL
4	N° of Crossing				

⁷⁷ Ibid⁷⁷

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	NIL	NIL	NIL	NIL
iii)	River Crossing etc.	NIL	NIL	NIL	NIL
iv)	Road Crossing	NIL	NIL	NIL	NIL
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

282. The final route length of the line is 11.4 kms. The line passes through primarily agricultural land comprising villages of Aamkheda, Bilori, Choona, Nagori, and Kanakkheda with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.40: Final Survey Details of 132kv Rajgarh (Biaora) –Khujner/ Sindaota Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	28	27.948	29.30	31.25
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land	Gravel Waste	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Rajgarh	Rajgarh	Rajgarh	Rajgarh
ii)	Population of district	15,45,814	15,45,814	15,45,814	15,45,814
iii)	Town/Village in Alignment (Nearby)	The line is routed in such a way to avoid towns, fixed nature of settlements	The line is routed in such a way to avoid towns, fixed nature of settlements	The line is routed in such a way to avoid towns, fixed nature of settlements	The line is routed in such a way to avoid towns, fixed nature of settlements
iv)	House with in RoW	Few	Few	Few	None
v)	Forest in km. / Ha	None	None	None	Patan Reserve Forest nearby
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	Reserve Forest
b)	% of Forest	NIL	NIL	^ NIL	Part of Reserve Forest near the line
c)	Tree Cutting Status ⁷⁸	147			
d)	Type of Fauna and Flora	Scrub and sparse agriculture	Scrub and sparse agriculture	Scrub and sparse agriculture	Scrub and sparse agriculture
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	1	None	None
g)	Any other relevant information				
3	Consumption cost				

⁷⁸ Ibid78

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Crop	Seasonal Agricultural Land	Seasonal Agricultural Land	Seasonal Agricultural Land	Seasonal Agricultural Land
ii)	Forest	NIL	NIL	NIL	Near the line
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	NIL	NIL	NIL	NIL
iii)	River Crossing etc.	NIL	NIL	NIL	NIL
iv)	Road Crossing	16	16	19	16
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

283. The final route length of the line is 28 kms. The line passes through primarily agricultural land and is routed in such a way to avoid towns and fixed nature of settlements. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are sixteen road crossings in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

**Table 6.41: Final Survey Details of LILO of one ckt of Vidisha Gairatganj at Raisen
132kV S/s**

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	18.221	18.221	19.10	19.60
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Vidisha, Raisen	Vidisha, Raisen	Vidisha, Raisen	Vidisha, Raisen
ii)	Population of district	14,58,875; 13,31,597	14,58,875; 13,31,597	14,58,875; 13,31,597	14,58,875; 13,31,597
iii)	Town/Village in Alignment (Nearby)	Hansuwa, Parasikunda, Dhanorahaveli, Murelkhurd, Mirzapur, Bhuwara, Bhadner, Raisen	Hansuwa, Parasikunda, Dhanorahaveli, Murelkhurd, Mirzapur, Bhuwara, Bhadner, Raisen	Hansuwa, Parasikunda, Dhanorahaveli, Murelkhurd, Mirzapur, Bhuwara, Bhadner, Raisen	Hansuwa, Parasikunda, Dhanorahaveli, Murelkhurd, Mirzapur, Bhuwara, Bhadner, Raisen
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	Yes
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	Reserve Forest
b)	% of Forest	None	None	None	3.82
c)	Tree Cutting Status ⁷⁹	87			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				

⁷⁹ Ibid79

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
3	Consumption cost				
i)	Crop	Agricultural land	Agricultural land	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL	NIL	Kanpohra Reserve Forest
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	NIL	NIL	NIL	NIL
iii)	River Crossing etc.	NIL	NIL	NIL	NIL
iv)	Road Crossing	3	3	2	2
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

284. The final route length of the line is 18.221 kms. The line passes through primarily agricultural land comprising villages of Hansuwa, Parasikunda, Dhanorahaveli, Murelkhurd, Mirzapur, Bhuwara, Bhadner, and Raisen with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three road crossings in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.42: Final Survey Details of Second Circuit of Betul 220 Gudgaon 132KV Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	57	57
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Betul	Betul
ii)	Population of district	15,75,362	15,75,362
iii)	Town/Village in Alignment (Nearby)	Khadla, Surgaon, Markawadi (Amdar), Amdar, Thawdi, Junawani, Chata, Gawdigaula, Loghariya and Jodkaya	Khadla, Surgaon, Markawadi (Amdar), Amdar, Thawdi, Junawani, Chata, Gawdigaula, Loghariya and Jodkaya
iv)	House with in RoW	None	None
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	Few	Few
c)	Tree Cutting Status ⁸⁰	287	
d)	Type of Fauna and Flora	Scrub and Agriculture Land	Scrub and Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		

⁸⁰ Ibid80

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
i)	Crop	Agricultural Land	Agricultural Land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	2	2
iv)	Road Crossing	7	7
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

285. The final route length of the line is 57 kms. The line passes through primarily agricultural land comprising villages of Khadla, Sargaon, Markawadi (Amdar), Amdar, Thawdi, Junawani, Chata, Gawdigaula, Loghariya and Jodkaya with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are seven road crossings in the final route alignment and some roads that are motorable in dry season. There are two river crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.43: Final Survey details of Chichli 220_Udaipura 132kv DCDS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	47.56	58
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Raisen, Narsinghpur	Raisen, Narsinghpur
ii)	Population of district	13,31,597;10,91,854	13,31,597;10,91,854
iii)	Town/Village in Alignment (Nearby)	Injri, Satehri, Kirgikala, Kathalikhurd, Ghanatunda, Bhopatpur, Kaniwada, Barahkala and Kelkuch	Injri, Satehri, Kirgikala, Kathalikhurd, Ghanatunda, Bhopatpur, Kaniwada, Barahkala and Kelkuch
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁸¹	244	
d)	Type of Fauna and Flora	Scrub and Agriculture Land	Scrub and Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural Land	Agricultural Land

⁸¹ Ibid81

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	1	1
iv)	Road Crossing	9	9
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

286. The final route length of the line is 47.56 kms. The line passes through primarily agricultural land comprising villages of Injri, Satehri, Kirgikala, Kathalikhurd, Ghanatunda, Bhopatpur, Kaniwada, Barahkala and Kelkuch with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are nine road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.44: Final Survey details of Betul 400 (PGCIL) -Betul 220 kv DCDS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	1.88	1.88
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	None	None
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Betul	Betul
ii)	Population of district	15,75,362	15,75,362
iii)	Town/Village in Alignment (Nearby)	The line is routed in such a way that it avoids towns and fixed nature of settlements.	The line is routed in such a way that it avoids towns and fixed nature of settlements.
iv)	House with in RoW	None	None
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁸²	14	
d)	Type of Fauna and Flora	Nil	Nil
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Nil	Nil
ii)	Forest	NIL	NIL
4	N° of Crossing		

⁸² Ibid82

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
i)	Railway	NIL	NIL
ii)	Transmission line	1	1
iii)	River Crossing etc.	NIL	NIL
iv)	Road Crossing	NIL	NIL
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

287. The final route length of the line is 1.88 kms. The line passes through primarily agricultural land and the line is routed in such a way that it avoids towns and fixed nature of settlements. with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. There is a single transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.45: Final Survey details of Betul 220-Bisnoor/Masod 132kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	34.5	34.5	37.2
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None
c)	Estuarine	None	None	None
d)	Other type of land	Yes	Yes	Yes
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Betul	Betul	Betul
ii)	Population of district	15,75,362	15,75,362	15,75,362
iii)	Town/Village in Alignment (Nearby)	Khadla, Karajgaon, Sehra, Gorakhar, Sarandai, Junawani, Reuva, Barwi, Gurhi, Parasdohat, Pusli, Tembhurni and Janthi	Khadla, Karajgaon, Sehra, Gorakhar, Sarandai, Junawani, Reuva, Barwi, Gurhi, Parasdohat, Pusli, Tembhurni and Janthi	Khadla, Karajgaon, Sehra, Gorakhar, Sarandai, Junawani, Reuva, Barwi, Gurhi, Parasdohat, Pusli, Tembhurni and Janthi
iv)	House with in RoW	Few	Few	Few
v)	Forest in km. / Ha	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None
b)	% of Forest	NIL	NIL	NIL
c)	Tree Cutting Status ⁸³			
d)	Type of Fauna and Flora	Scrub and Agriculture Land	Scrub and Agriculture Land	Scrub and Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded

⁸³ Ibid83

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agricultural Land	Agricultural Land	Agricultural Land
ii)	Forest	NIL	NIL	NIL
4	N° of Crossing			
i)	Railway	NIL	NIL	NIL
ii)	Transmission line	NIL	NIL	1
iii)	River Crossing etc.	1	1	2
iv)	Road Crossing	7	7	9
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

288. The final route length of the line is 34.5 kms. The line passes through primarily agricultural land comprising villages of Khadla, Karajgaon, Sehra, Gorakhar, Sarandai, Junawani, Reuva, Barwi, Gurhi, Parasdoghat, Pusli, Tembhurni and Janthi with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are seven road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.46: Final Survey details of Badnagar 220-Chhayan 132 kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	28.26	32	28
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No
c)	Estuarine	No	No	No
d)	Other type of land			
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Ujjain, Dhar	Ujjain, Dhar	Ujjain, Dhar
ii)	Population of district	1986864; 2185793	1986864; 2185793	1986864; 2185793
iii)	Town/Village in Alignment (Nearby)	Badnawar, Silodiya, Karoda, Dhulana, Palibaroda, Jawasiya, Mayakhedi, Beganda, Kashibaroda, Kalyanpura, Dhamana, Kherwas, Bherupara, Multhan, Khera, etc.	Badnawar, Silodiya, Karoda, Dhulana, Palibaroda, Jawasiya, Mayakhedi, Beganda, Kashibaroda, Kalyanpura, Dhamana, Kherwas, Bherupara, Multhan, Khera, etc.	Badnawar, Silodiya, Karoda, Dhulana, Palibaroda, Jawasiya, Mayakhedi, Beganda, Kashibaroda, Kalyanpura, Dhamana, Kherwas, Bherupara, Multhan, Khera, etc.
iv)	House with in RoW	Few	Few	Few
v)	Forest in km. / Ha	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None
b)	% of Forest	NIL	NIL	NIL
c)	Tree Cutting Status ⁸⁴	57		
d)	Type of Fauna and Flora	Agriculture land	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded

⁸⁴ Ibid84

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None
4	N° of Crossing			
i)	Railway	None	None	None
ii)	Transmission line	3	3	3
iii)	River Crossing etc.	None	None	None
iv)	Road Crossing	3	3	3
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

289. The final route length of the line is 28.26 kms. The line passes through primarily agricultural land comprising villages of Badnawar, Silodiya, Karoda, Dhulana, Palibaroda, Jawasiya, Mayakhedi, Beganda, Kashibaroda, Kalyanpura, Dhamana, Kherwas, Bherupara, Multhan, and Khera, etc. with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three road crossings in the final route alignment and some roads that are motorable in dry season. There are three transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.47: Final Survey details of LILO of Badnagar-Ratlam 220 kv D/C line at Badnawar (400 kv S/s) D/c

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	23.4	20	16
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No
c)	Estuarine	No	No	No
d)	Other type of land			
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Ujjain, Ratlam	Ujjain, Ratlam	Ujjain, Ratlam
ii)	Population of district	1986864; 1455069	1986864; 1455069	1986864; 1455069
iii)	Town/Village in Alignment (Nearby)	Dhamna, Bhuwankheda, Kherwas	Dhamna, Bhuwankheda, Kherwas	Dhamna, Bhuwankheda, Kherwas
iv)	House with in RoW			
v)	Forest in km. / Ha	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None
b)	% of Forest	NIL	NIL	NIL
c)	Tree Cutting Status ⁸⁵	147		
d)	Type of Fauna and Flora	Agriculture land	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None
4	N° of Crossing			

⁸⁵ Ibid85

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
i)	Railway	None	None	None
ii)	Transmission line	None	None	None
iii)	River Crossing etc.	None	None	None
iv)	Road Crossing	1	1	1
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

290. The final route length of the line is 23.4 kms. The line passes through primarily agricultural land comprising villages of Dhamna, Bhuwankheda, and Kherwas with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.48: Final Survey details of LILO of Both Circuit of Gandhisagar-Suwasra/Garoth 132 kv line at Bhanpura 220 kv SS

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	30	15	15.9	16.2
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Mandsaur	Mandsaur	Mandsaur	Mandsaur
ii)	Population of district	13,40,411	13,40,411	13,40,411	13,40,411
iii)	Town/Village in Alignment (Nearby)	Govindkhera, Dhanakpura, Borobiya	Govindkhera, Dhanakpura, Borobiya	Govindkhera, Dhanakpura, Borobiya	Govindkhera, Dhanakpura, Borobiya
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁸⁶	154			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None

⁸⁶ Ibid86

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	1	1	1	1
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	None	None	None	None
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

291. The final route length of the line is 30 kms. The line passes through primarily agricultural land comprising villages of Govindkhera, Dhanakpura, and Borobiya with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. There is a single transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.49: Final Survey details of LILO of Both Circuit of Badod-Suwasra/Garoth 132 kv line at Suwasra 220 kv SS

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	3	1.2	1.381	1.719
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Mandsaur	Mandsaur	Mandsaur	Mandsaur
ii)	Population of district	13,40,411	13,40,411	13,40,411	13,40,411
iii)	Town/Village in Alignment (Nearby)	Lakhwakhera, Dhankheri, Suwasra, Kishorpura	Lakhwakhera, Dhankheri, Suwasra, Kishorpura	Lakhwakhera, Dhankheri, Suwasra, Kishorpura	Lakhwakhera, Dhankheri, Suwasra, Kishorpura
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁸⁷	15			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None

⁸⁷ Ibid87

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	1	None
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	1	1	1	1
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

292. The final route length of the line is 3 kms. The line passes through primarily agricultural land comprising villages of Lakhwakhera, Dhankheri, Suwasra, and Kishorpura with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.50: Final Survey details of LILO of LILO of 132kv Badod - Garoth line at Shyamgarh (D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	3	25
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Agar	Agar
ii)	Population of district	37,917	37,917
iii)	Town/Village in Alignment (Nearby)	Banskhedi, Barkhera, Dhamniyadiwan	Banskhedi, Barkhera, Dhamniyadiwan
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁸⁸	28	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None
iii)	River Crossing etc.	None	None
iv)	Road Crossing	None	None
5	Construction Problem	Minimum	Moderate

⁸⁸ Ibid88

6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

293. The final route length of the line is 3 kms. The line passes through primarily agricultural land comprising villages of Banskhedi, Barkhera, and Dhamniyadiwan with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.51: Final Survey details of LILO of Ratlam - Meghnagar 132kv S/c line at Petlawad DCDS (D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	7.4	20
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Ratlam, Jahbua	Ratlam, Jahbua
ii)	Population of district	14,55,069; 10,25,048	14,55,069; 10,25,048
iii)	Town/Village in Alignment (Nearby)	Khariya, Khoriya, Nabarpura, Mawaripara, Perakho, Amargarh	Khariya, Khoriya, Nabarpura, Mawaripara, Perakho, Amargarh
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁸⁹	24	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture	Agriculture land

⁸⁹ Ibid89

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
		land	
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None
iii)	River Crossing etc.	1	1
iv)	Road Crossing	2	2
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

294. The final route length of the line is 7.4 kms. The line passes through primarily agricultural land comprising villages of Khariya, Khoriya, Nabarpura, Mawaripara, Perakho, and Amargarh with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table: 6.52: Final Survey details of LILO of Second Circuit of Badod-Kota/Modak 220 kv line at Bhanpura 220 kv SS

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	0.5	2
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Mandsaur	Mandsaur
ii)	Population of district	13,40,411	13,40,411
iii)	Town/Village in Alignment (Nearby)	Govindkhera, Dhanakpura, Borobiya	Govindkhera, Dhanakpura, Borobiya
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ⁹⁰	12	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	2	2
iii)	River Crossing etc.	None	None
iv)	Road Crossing	None	None
5	Construction Problem	Minimum	Moderate

⁹⁰ Ibid90

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

295. The final route length of the line is 0.5 kms. The line passes through primarily agricultural land comprising villages of Govindkhera, Dhanakpura, and Borobiya with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. There are two transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.53: Final Survey details of LILO of Both Circuit of Badod_Kota/Modak 220 kv line at Suwasra 220 kv SS (2 x D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	14	4.103	4.544	4.586
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Mandsaur	Mandsaur	Mandsaur	Mandsaur
ii)	Population of district	13,40,411	13,40,411	13,40,411	13,40,411
iii)	Town/Village in Alignment (Nearby)	Lakhwa, Dhankheri, Ghasoi, Antraliya, Tomkara	Lakhwa, Dhankheri, Ghasoi, Antraliya, Tomkara	Lakhwa, Dhankheri, Ghasoi, Antraliya, Tomkara	Lakhwa, Dhankheri, Ghasoi, Antraliya, Tomkara
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹¹	87			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				

⁹¹ Ibid91

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	1	1	1	1
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	1	1	1	1
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

296. The final route length of the line is 14 kms. The line passes through primarily agricultural land comprising villages of Lakhwa, Dhankheri, Ghasoi, Antraliya, and Tomkara with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. There is a single transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.54: Final Survey details of LILO of second ckt of Nagda- Neemuch 220kV line at Daloda 220kV S/s

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	12.2	4.599	4.714	4.943
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Ujjain, Neemuch	Ujjain, Neemuch	Ujjain, Neemuch	Ujjain, Neemuch
ii)	Population of district	19,86,864; 8,26,067	19,86,864; 8,26,067	19,86,864; 8,26,067	19,86,864; 8,26,067
iii)	Town/Village in Alignment (Nearby)	Lalakhera, Daloda, Sagra, Sersob, Kalhmankheri	Lalakhera, Daloda, Sagra, Sersob, Kalhmankheri	Lalakhera, Daloda, Sagra, Sersob, Kalhmankheri	Lalakhera, Daloda, Sagra, Sersob, Kalhmankheri
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹²	114			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None

⁹² Ibid92

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	None	None
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	2	2	2	2
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

297. The final route length of the line is 12.2 kms. The line passes through primarily agricultural land comprising villages of Lalakhera, Daloda, Sagra, Sersob, and Kalhmankheri with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.55: Final Survey details of LILO of Nagda 220-Ratadiya 132kV line at Unhel

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	2	1.331	1.392	1.414
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Ujjain	Ujjain	Ujjain	Ujjain
ii)	Population of district	19,86,864	19,86,864	19,86,864	19,86,864
iii)	Town/Village in Alignment (Nearby)	Nawada, Gurla	Nawada, Gurla	Nawada, Gurla	Nawada, Gurla
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹³	NIL			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				

⁹³ Ibid93

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	None	None
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	None	None	None	None
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

298. The final route length of the line is 2 kms. The line passes through primarily agricultural land comprising villages of Nawada and Gurla with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.56: Final Survey details of LILO of one ckt of Neemuch 220-Mandsaur 132kV line at Budha 132kvS/s

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	24	22.1	22.976	24.041
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Neemuch, Mandsaur	Neemuch, Mandsaur	Neemuch, Mandsaur	Neemuch, Mandsaur
ii)	Population of district	8,26,067; 13,40,411	8,26,067; 13,40,411	8,26,067; 13,40,411	8,26,067; 13,40,411
iii)	Town/Village in Alignment (Nearby)	Manderi, Jalodiya, Badri, Chitakheri, Akiya, Turkiya, Badpur, Napakhera	Manderi, Jalodiya, Badri, Chitakheri, Akiya, Turkiya, Badpur, Napakhera	Manderi, Jalodiya, Badri, Chitakheri, Akiya, Turkiya, Badpur, Napakhera	Manderi, Jalodiya, Badri, Chitakheri, Akiya, Turkiya, Badpur, Napakhera
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹⁴	117			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				

⁹⁴ Ibid94

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	3	3	3	3
iii)	River Crossing etc.	2	3	4	4
iv)	Road Crossing	None	None	None	None
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

299. The final route length of the line is 24 kms. The line passes through primarily agricultural land comprising villages of Manderi, Jalodiya, Badri, Chitakheri, Akiya, Turkiya, Badpur, and Napakhera with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that lie in RoW. There are two river crossings and three transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.57: Final Survey details of LILO of 132 kv Gwalior-Dabra/Karera line at Chinaur

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	13.68	13.68	16.70	15.20
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Gwalior	Gwalior	Gwalior	Gwalior
ii)	Population of district	20,32,036	20,32,036	20,32,036	20,32,036
iii)	Town/Village in Alignment (Nearby)	Bhagrathpura, Chakrakra, Chakkhurdpur, Khudpur, Chinor	Bhagrathpura, Chakrakra, Chakkhurdpur, Khudpur, Chinor	Bhagrathpura, Chakrakra, Chakkhurdpur, Khudpur, Chinor	Bhagrathpura, Chakrakra, Chakkhurdpur, Khudpur, Chinor
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹⁵	78			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture	Agriculture land	Agriculture land	Agriculture land

⁹⁵ Ibid95

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
		land			
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None		
ii)	Transmission line	None	None		
iii)	River Crossing etc.	None	None		
iv)	Road Crossing	None	None	1	1
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

300. The final route length of the line is 13.68 kms. The line passes through primarily agricultural land comprising villages of Bhagrathpura, Chakrakra, Chakkhurdpur, Khudpur, and Chinor with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season that will lie in RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.58: Final Survey details of Datiya220- Bhandar 132kV DCSS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	34.038	35	37.327	34.735
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Gwalior	Gwalior	Gwalior	Gwalior
ii)	Population of district	20,32,036	20,32,036	20,32,036	20,32,036
iii)	Town/Village in Alignment (Nearby)	Dudhra, Kumehri, Sirol, Chirauli, Sindhware, Karkhara, Charbara, Dubaha, Malkhanpur, Diswar, Baswaha	Dudhra, Kumehri, Sirol, Chirauli, Sindhware, Karkhara, Charbara, Dubaha, Malkhanpur, Diswar, Baswaha	Dudhra, Kumehri, Sirol, Chirauli, Sindhware, Karkhara, Charbara, Dubaha, Malkhanpur, Diswar, Baswaha	Dudhra, Kumehri, Sirol, Chirauli, Sindhware, Karkhara, Charbara, Dubaha, Malkhanpur, Diswar, Baswaha
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹⁶	178			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				

⁹⁶ Ibid96

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	None	None	1	1
iii)	River Crossing etc.	None	None	None	None
iv)	Road Crossing	2	2	2	2
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

301. The final route length of the line is 34.038 kms. The line passes through primarily agricultural land comprising villages of Dudhra, Kumehri, Sirol, Chirauli, Sindhwari, Karkhara, Charbara, Dubaha, Malkhanpur, Diswar, and Baswaha with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.59: Final Survey details of Mehgaon 220-Pratappura 132kV DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	29.74	30	28	25.9
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No	No
c)	Estuarine	No	No	No	No
d)	Other type of land				
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Gwalior	Gwalior	Gwalior	Gwalior
ii)	Population of district	20,32,036	20,32,036	20,32,036	20,32,036
iii)	Town/Village in Alignment (Nearby)	Kheriya, Devri, Maroli, Meghpura, Pali, Pawai, Sehpura, Ashokkahar, Goprikhurd, Goprikhurd kapura, Nayapura, Sohra etc.	Kheriya, Devri, Maroli, Meghpura, Pali, Pawai, Sehpura, Ashokkahar, Goprikhurd, Goprikhurd kapura, Nayapura, Sohra.	Kheriya, Devri, Maroli, Meghpura, Pali, Pawai, Sehpura, Ashokkahar, Goprikhurd, Goprikhurd kapura, Nayapura, Sohra.	Kheriya, Devri, Maroli, Meghpura, Pali, Pawai, Sehpura, Ashokkahar, Goprikhurd, Goprikhurd kapura, Nayapura, Sohra.
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹⁷	142			
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agriculture land	Agriculture land	Agriculture land	Agriculture land

⁹⁷ Ibid97

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
ii)	Forest	None	None	None	None
4	N° of Crossing				
i)	Railway	None	None	None	None
ii)	Transmission line	1	1	1	1
iii)	River Crossing etc.	2	2	2	2
iv)	Road Crossing	1	3	4	
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

302. The final route length of the line is 29.74 kms. The line passes through primarily agricultural land comprising villages of Kheriya, Devri, Maroli, Meghpura, Pali, Pawai, Sehpura, Ashokkhar, Goprikhurd, Goprikhurd kapura, Nayapura, Sohra, Narayanpura, Mehgaon, Jugalpura, Kishanpura, Alampur, Khedrapur, Rampura, Misran, Misrankapura, Sirminor, Kanuapura, and Dandpura with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. There are two river crossings and a single transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.60: Final Survey details of Sabalgarh 220-Kailaras 132 kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
1	Route Particulars			
i)	Length	19.636	24	25
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes
b)	Wet/ Marshy	No	No	No
c)	Estuarine	No	No	No
d)	Other type of land			
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Gwalior	Gwalior	Gwalior
ii)	Population of district	20,32,036	20,32,036	20,32,036
iii)	Town/Village in Alignment (Nearby)	Khumankapura, Surapura, Lilarkupra, Semai, Kulholi, Pasonkhurd, Narayanpura	Khumankapura, Surapura, Lilarkupra, Semai, Kulholi, Pasonkhurd, Narayanpura	Khumankapura, Surapura, Lilarkupra, Semai, Kulholi, Pasonkhurd, Narayanpura
iv)	House with in RoW	Few	Few	Few
v)	Forest in km. / Ha	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None
b)	% of Forest	NIL	NIL	NIL
c)	Tree Cutting Status ⁹⁸	95		
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None
g)	Any other relevant information			
3	Consumption cost			
i)	Crop	Agriculture land	Agriculture land	Agriculture land
ii)	Forest	None	None	None
4	N° of Crossing			
i)	Railway	2	2	2
ii)	Transmission line	None	None	None

⁹⁸ Ibid98

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE	
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)
iii)	River Crossing etc.	1	1	1
iv)	Road Crossing	2	3	4
5	Construction Problem	Minimum	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.		

303. The final route length of the line is 19.636 kms. The line passes through primarily agricultural land comprising villages of Khumankapura, Surapura, Lilarkupra, Semai, Kulholi, Pasonkhurd, and Narayanpura with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing and a single railway crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.61: Final Survey details of Malanpur 220- Gohad 132kV DCDS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	14.5	20	14.492	13.882
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes	Yes	Yes
b)	Wet/ Marshy	None	None	None	None
c)	Estuarine	None	None	None	None
d)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Bhind	Bhind	Bhind	Bhind
ii)	Population of district	17,03,005	17,03,005	17,03,005	17,03,005
iii)	Town/Village in Alignment (Nearby)	Tukera, Ikehra, Jhawanpura, Ramanpur	Tukera, Ikehra, Jhawanpura, Ramanpur	Tukera, Ikehra, Jhawanpura, Ramanpur	Tukera, Ikehra, Jhawanpura, Ramanpur
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	None	None	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None	None	None
b)	% of Forest	NIL	NIL	NIL	NIL
c)	Tree Cutting Status ⁹⁹	87			
d)	Type of Fauna and Flora	Scrub and seasonal Agriculture land	Scrub and seasonal Agriculture land	Scrub and seasonal Agriculture land	Scrub and seasonal Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				
3	Consumption cost				
i)	Crop	Agricultural land	Agricultural land	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL	NIL	NIL
4	N° of Crossing				
i)	Railway	NIL	NIL		
ii)	Transmission line	3	3	3	3
iii)	River Crossing etc.	1	1		

⁹⁹ Ibid99

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
iv)	Road Crossing	5	5	5	5
5	Construction Problem	Minimum	Moderate	Moderate	Moderate
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of nil forest coverage and avoiding settlements.			

304. The final route length of the line is 14.5 kms. The line passes through primarily agricultural land comprising villages of Tukera, Ikehra, Jhawanpura, and Ramanpur with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are five road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing and three transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.62: Final Survey details of 220kV DCDS Morena 400 kv (CWRTL- Adani)- Sabalgarh DCDS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	92	80
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Morena, Gwalior	Morena, Gwalior
ii)	Population of district	19,65,970; 20,32,036	19,65,970; 20,32,036
iii)	Town/Village in Alignment (Nearby)	Basahri, Lolakpur, Barera, Churela, Jafra, Khanela, Jhaundpura, Sipai, Matkura, Saidpur, Dulhani, Khera, Kakardha, Urhera, Bijaygarh, Siphon, Torikapura, Nimda, Khurd	Basahri, Lolakpur, Barera, Churela, Jafra, Khanela, Jhaundpura, Sipai, Matkura, Saidpur, Dulhani, Khera, Kakardha, Urhera, Bijaygarh, Siphon, Torikapura, Nimda, Khurd
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	10.65
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	Reserve Forest
b)	% of Forest	NIL	13.31
c)	Tree Cutting Status ¹⁰⁰	431	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant		

¹⁰⁰ Ibid100

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
	information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	Yes
4	N^o of Crossing		
i)	Railway	None	2
ii)	Transmission line	1	3
iii)	River Crossing etc.	6	2
iv)	Road Crossing	15	12
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

305. The final route length of the line is 92 kms. The line passes through primarily agricultural land comprising villages of Basahri, Lolakpur, Barera, Churela, Jafra, Khanela, Jhaundpura, Sipai, Matkura, Saidpur, Dulhani, Khera, Kakardha, Urhera, Bijaygarh, Siphon, Torikapura, Nimda, and Khurd with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are fifteen road crossings in the final route alignment and some roads that are motorable in dry season. There are six river crossings and a single transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.63: Final Survey details of Bhonra-Kapasi 132kV DCSS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	50	45
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Guna	Guna
ii)	Population of district	12,41,519	12,41,519
iii)	Town/Village in Alignment (Nearby)	Mangrora, Lakhmanpura, Dhanaria, Pachria, Kusalpur, Lalani	Mangrora, Lakhmanpura, Dhanaria, Pachria, Kusalpur, Lalani
iv)	House with in RoW	None	None
v)	Forest in km. / Ha	3.037	4
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	Reserve and Protected Forest	Reserve and Protected Forest
b)	% of Forest	2.24	3.29
c)	Tree Cutting Status	NIL	
d)	Type of Fauna and Flora	Scrub and seasonal Agriculture land	Scrub and seasonal Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	Yes, Protected and Reserve Forests	Yes, Protected and Reserve Forests
4	N° of Crossing		
i)	Railway	NIL	NIL

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	1	1
iv)	Road Crossing	3	3
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of less forest coverage and avoiding settlements.	

306. The final route length of the line is 50 kms. The line passes through primarily agricultural land comprising villages of Mangrora, Lakhmanpura, Dhanaria, Pachria, Kusalpur, and Lalani with few settlements nearby. Adequate distance is maintained from the settlements. The line passes through 3.037 hectares of reserve forest and forest clearance has been applied for. Civil works will not be commenced until the clearance has been obtained. The line does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.64: Final Survey details of Kolaras-Mada 132 kV DCSS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	18.366	20
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Shivpuri	Shivpuri
ii)	Population of district	17,26,050	17,26,050
iii)	Town/Village in Alignment (Nearby)	Manipura, Mohral, Khairdi, Kharee	Manipura, Mohral, Khairdi, Kharee
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ¹⁰¹	98	
d)	Type of Fauna and Flora	Scrub and seasonal Agriculture land	Scrub and seasonal Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL

¹⁰¹ Ibid101

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
ii)	Transmission line	1	1
iii)	River Crossing etc.	1	1
iv)	Road Crossing	2	2
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

307. The final route length of the line is 18.366 kms. The line passes through primarily agricultural land comprising villages of Manipura, Mohral, Khairdi, and Kharee with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing and a single transmission line that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.65: Final Survey details of 132 kV DCDS Guna 220- Bhonra line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	25	20
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Guna, Sehare	Guna, Sehare
ii)	Population of district	12,41,519; 13,11,332	12,41,519; 13,11,332
iii)	Town/Village in Alignment (Nearby)	Bhurakheri, Dhaneria, Khadakpurchak	Bhurakheri, Dhaneria, Khadakpurchak
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	6.09	7.82
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	Reserve Forest	Reserve Forest
b)	% of Forest	9	14.5
c)	Tree Cutting Status	2352	
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	Yes	Yes
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None
iii)	River Crossing etc.	3	3

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
iv)	Road Crossing	5	6
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

308. The final route length of the line is 25 kms. The line passes through primarily agricultural land comprising villages of Bhurakheri, Dhaneria, and Khadakpurchak with few settlements nearby. Adequate distance is maintained from the settlements. The line passes through 6.09 hectares of reserve forest and forest clearance has been applied for. Civil works will not be commenced until the clearance has been obtained. The line does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are five road crossings in the final route alignment and some roads that are motorable in dry season. There are three river crossings that will lie in the RoW. A total of 2352 trees will be cut during the construction of the line and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.66: Final Survey details of LILO of one circuit of Malanpur- Mehgaon line at 400kV Ss (CWRTL Adani) Morena

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE				
			Alignment-I (Proposed Route in the IEE Map)				
1	Route Particulars						
i)	Length	8	20				
ii)	Terrain	Flat and Undulating	Flat and Undulating				
a)	Agriculture	Yes	Yes				
b)	Wet/ Marshy	None	None				
c)	Estuarine	None	None				
d)	Other type of land	Yes	Yes				
2	Environmental Details						
i)	Name of District / District details (through which transmission line Pass)	Bhind	Bhind				
ii)	Population of district	17,03,005	17,03,005	17,03,005	17,03,005	17,03,005	17,03,005
iii)	Town/Village in Alignment (Nearby)	Rithora, Malanpur, Naugaon, Gurkha	Rithora, Malanpur, Naugaon, Gurkha				
iv)	House with in RoW	Few	Few				
v)	Forest in km. / Ha	None	None				
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None				
b)	% of Forest	NIL	NIL				
c)	Tree Cutting Status ¹⁰²	37					
d)	Type of Fauna and Flora	Scrub and Agriculture land	Scrub and Agriculture land				
e)	Endangered species if any	Not Recorded	Not Recorded				
f)	Historical/Cultural Monuments	None	None				
g)	Any other relevant information						
3	Consumption cost						
i)	Crop	Agricultural land	Agricultural land				
ii)	Forest	NIL	NIL				
4	N° of Crossing						
i)	Railway	NIL	NIL				
ii)	Transmission line	NIL	NIL				
iii)	River Crossing etc.	1	1				
iv)	Road Crossing	2	2				

¹⁰² Ibid102

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

309. The final route length of the line is 8 kms. The line passes through primarily agricultural land comprising villages of Rithora, Malanpur, Naugaon, and Gurkha with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table: 6.67: Final Survey details of 2nd Circuit of Shivpuri 220- Kolaras 132kV DCSS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	35	35
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Shivpuri	Shivpuri
ii)	Population of district	17,26,050	17,26,050
iii)	Town/Village in Alignment (Nearby)	Binega, Piparsama, Malakhera, Marikhera, Kulwara	Binega, Piparsama, Malakhera, Marikhera, Kulwara
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	NIL	NIL
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ¹⁰³	164	
d)	Type of Fauna and Flora	Scrub and Agricultural land	Scrub and Agricultural land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		

¹⁰³ Ibid103

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
i)	Railway	1	1
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	NIL	NIL
iv)	Road Crossing	3	3
5	Construction Problem	Minimum	Minimum
6	O & M Problem	Minimum	Minimum
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	Route is selected because of shortest length, nil forest coverage and avoiding settlements.

310. The final route length of the line is 35 kms. The line passes through primarily agricultural land comprising villages of Binega, Piparsama, Malakhera, Marikhera, and Kulwara with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three road crossings in the final route alignment and some roads that are motorable in dry season. There is a single railway crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table: 6.68: Final Survey details of 2nd ckt of Malanpur- Morar 132kV line

S.No.	Description	Final Alignment where construction is ongoing
1	Route Particulars	
i)	Length	29
ii)	Terrain	Flat and Undulating
a)	Agriculture	Yes
b)	Wet/ Marshy	No
c)	Estuarine	No
d)	Other type of land	
2	Environmental Details	
i)	Name of District / District details (through which transmission line Pass)	Guna, Sehare
ii)	Population of district	
a)	N° of People / Percentage of people below poverty line	
iii)	Town/Village in Alignment (Nearby)	Barwari, Sanichara, Paroli, Nayagaon, Balipura, Mahtolikachak, Bamaur
iv)	House with in RoW	Few
v)	Forest in km. / Ha	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None
b)	% of Forest	NIL
c)	Tree Cutting Status ¹⁰⁴	137
d)	Type of Fauna and Flora	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded
f)	Historical/Cultural Monuments	None
g)	Any other relevant information	
3	Consumption cost	
i)	Crop	Agriculture land
ii)	Forest	None
4	N° of Crossing	
i)	Railway	None
ii)	Transmission line	None
iii)	River Crossing etc.	1
iv)	Road Crossing	3
5	Construction Problem	Minimum
6	O & M Problem	Minimum

¹⁰⁴ Ibid104

S.No.	Description	Final Alignment where construction is ongoing
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.

311. The final route length of the line is 29 kms. The line passes through primarily agricultural land comprising villages of Barwari, Sanichara, Paroli, Nayagaon, Balipura, Mahtolikachak, and Bamaur with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are three road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.69: Final Survey details of LILO of Khurai-Khimlasa 132 kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	20.937	20
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Sagar	Sagar
ii)	Population of district	23,78,458	23,78,458
iii)	Town/Village in Alignment (Nearby)	Gamariyakhurd, Naukheda, Jagdishpura, Khejra Ijjat, Parsora, Vithor, Suneti, Nirtala, Lamethi, Sadarpur, Jangrayi, Bamorikhadera, Kapooriya, Kapooriya Semra	Gamariyakhurd, Naukheda, Jagdishpura, Khejra Ijjat, Parsora, Vithor, Suneti, Nirtala, Lamethi, Sadarpur, Jangrayi, Bamorikhadera, Kapooriya, Kapooriya Semra
iv)	House with in RoW	None	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ¹⁰⁵	84	
d)	Type of Fauna and Flora	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information	None	None

¹⁰⁵ Ibid105

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	1	1
ii)	Transmission line	5	5
iii)	River Crossing etc.	None	None
iv)	Road Crossing	1	1
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

312. The final route length of the line is 20.937 kms. The line passes through primarily agricultural land comprising villages of Gamariyakhurd, Naukheda, Jagdishpura, Khejra Ijjat, Parsora, Vithor, Suneti, Nirtala, Lamethi, Sadarpur, Jangrayi, Bamorikhadera, Kapooriya, and Kapooriya Semra with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. There is a single railway crossing and five transmission lines that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.70: Final Survey details of LILO of Mungaoli Traction Feeder to Mungaoli (D/C)

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	8.32	10
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	None	None
c)	Estuarine	None	None
d)	Other type of land	Yes	Yes
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Ashoknagar	Ashoknagar
ii)	Population of district	8,45,071	8,45,071
iii)	Town/Village in Alignment (Nearby)	Semerkhedi, Belai, Nidar, Hureri, Niboda, Dehri, Barghura, Himnod, Futera, Hiranchipa, Bina Etawa, Jirol and Lahatwas	Semerkhedi, Belai, Nidar, Hureri, Niboda, Dehri, Barghura, Himnod, Futera, Hiranchipa, Bina Etawa, Jirol and Lahatwas
iv)	House with in RoW		
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ¹⁰⁶	40	
d)	Type of Fauna and Flora	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant		

¹⁰⁶ Ibid106

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
	information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		
i)	Railway	NIL	NIL
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	NIL	NIL
iv)	Road Crossing	NIL	NIL
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

313. The final route length of the line is 8.32 kms. The line passes through primarily agricultural land comprising villages of Semerkhedi, Belai, Nidar, Hureri, Niboda, Dehri, Barghura, Himnod, Futera, Hiranchipa, Bina Etawa, Jirol and Lahatwas with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.71: Final Survey details of Ashoknagar 220- Kothiya 132 kV DCSS Line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	30	35
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Agriculture	Yes	Yes
b)	Wet/ Marshy	No	No
c)	Estuarine	No	No
d)	Other type of land		
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Ashoknagar	Ashoknagar
ii)	Population of district	8,45,071	8,45,071
iii)	Town/Village in Alignment (Nearby)	Bhorakachi, Takneri, Mohrirai, Silawan, Seji, Semrishahbad, Pipron, Musiyabada, Baniyai, Pathariya	Bhorakachi, Takneri, Mohrirai, Silawan, Seji, Semrishahbad, Pipron, Musiyabada, Baniyai, Pathariya
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ¹⁰⁷	143	
d)	Type of Fauna and Flora	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agriculture land	Agriculture land
ii)	Forest	None	None
4	N° of Crossing		
i)	Railway	None	None
ii)	Transmission line	None	None
iii)	River Crossing etc.	None	None

¹⁰⁷ Ibid107

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
iv)	Road Crossing	None	None
5	Construction Problem	Minimum	Moderate
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

314. The final route length of the line is 30 kms. The line passes through primarily agricultural land comprising villages of Bhorakachi, Takneri, Mohirai, Silawan, Seji, Semrishahbad, Pipron, Musiyabada, Baniyai, and Pathariya with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.72: Final Survey details of Sagar 220-Rehli 132kv DCSS line

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
1	Route Particulars				
i)	Length	40	38.475	39.722	46.260
ii)	Terrain	Flat and Undulating	Flat and Undulating	Flat and Undulating	Flat and Undulating
a)	Hilly/ Plain In (km)%				
b)	Agriculture	Yes	Yes	Yes	Yes
c)	Wet/ Marshy	None	None	None	None
d)	Estuarine	None	None	None	None
e)	Other type of land	Yes	Yes	Yes	Yes
2	Environmental Details				
i)	Name of District / District details (through which transmission line Pass)	Sagar	Sagar	Sagar	Sagar
ii)	Population of district	23,78,458	23,78,458	23,78,458	23,78,458
iii)	Town/Village in Alignment (Nearby)	Pandarpur, Patna Kakri, Khamariya, Jamghat, Patna kalari, Tikuwa, Baruda, Pipariya ram ban, Jhinpini, Barkheda, Dhana, Bansia, Tilakheri	Pandarpur, Patna Kakri, Khamariya, Jamghat, Patna kalari, Tikuwa, Baruda, Pipariya ram ban, Jhinpini, Barkheda, Dhana, Bansia, Tilakheri	Pandarpur, Patna Kakri, Khamariya, Jamghat, Patna kalari, Tikuwa, Baruda, Pipariya ram ban, Jhinpini, Barkheda, Dhana, Bansia, Tilakheri	Pandarpur, Patna Kakri, Khamariya, Jamghat, Patna kalari, Tikuwa, Baruda, Pipariya ram ban, Jhinpini, Barkheda, Dhana, Bansia, Tilakheri
iv)	House with in RoW	Few	Few	Few	Few
v)	Forest in km. / Ha	8.202	8.202	9	9.8
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	Reserve Forest	Reserve Forest	Reserve Forest	Reserve Forest
b)	% of Forest	7.59	7.89	8.38	7.84
c)	Tree Cutting Status	470			
d)	Type of Fauna and Flora	Scrub and Agriculture Land	Scrub and Agriculture Land	Scrub and Agriculture Land	Scrub and Agriculture Land
e)	Endangered species if any	Not Recorded	Not Recorded	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None	None	None
g)	Any other relevant information				

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE		
			Alignment-I (Proposed Route in the IEE Map)	Alignment-II (Alternative 1 in IEE Map)	Alignment-III (Alternative 2 in IEE Map)
3	Consumption cost				
i)	Crop	Agricultural Land	Agricultural Land	Agricultural Land	Agricultural Land
ii)	Forest	Yes	Yes	Yes	Yes
4	N° of Crossing				
i)	Railway	NIL	NIL	NIL	NIL
ii)	Transmission line	1	1	1	1
iii)	River Crossing etc.	3	3	3	3
iv)	Road Crossing	1	1	1	1
5	Construction Problem				
6	O & M Problem	Minimum	Moderate	Moderate	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.			

315. The final route length of the line is 40 kms. The line passes through primarily agricultural land comprising villages of Pandarpur, Patna Kakri, Khamariya, Jamghat, Patna kalari, Tikuwa, Baruda, Pipariya ram ban, Jhinpini, Barkheda, Dhana, Bansia, and Tilakheri with few settlements nearby. Adequate distance is maintained from the settlements. The line passes through 8.202 hectares of reserve forest and forest clearance has been applied for. Civil works will not be commenced until the clearance has been obtained. The line does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There is a single road crossing in the final route alignment and some roads that are motorable in dry season. There are three river crossings and a single transmission line that will lie in the RoW. A total of 470 trees will be cut during the construction of the line and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.73: Final Survey details of Second circuit of Sagar 220-Sagar 132KV (I/C)

S.No.	Description	Final Alignment
1	Route Particulars	
i)	Length	9
ii)	Terrain	Flat and Undulating
a)	Hilly/ Plain In (km)%	
b)	Agriculture	Yes
c)	Wet/ Marshy	No
d)	Estuarine	No
e)	Other type of land	
2	Environmental Details	
i)	Name of District / District details (through which transmission line Pass)	Sagar
ii)	Population of district	23,78,458
iii)	Town/Village in Alignment (Nearby)	Makroniya, Bartuma, Sainkhera
iv)	House with in RoW	Few
v)	Forest in km. / Ha	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None
b)	% of Forest	NIL
c)	Tree Cutting Status ¹⁰⁸	31
d)	Type of Fauna and Flora	Scrub and Agriculture land
e)	Endangered species if any	Not Recorded
f)	Historical/Cultural Monuments	None
g)	Any other relevant information	
3	Consumption cost	
i)	Crop	Agriculture land
ii)	Forest	None
4	N° of Crossing	
i)	Railway	None
ii)	Transmission line	None
iii)	River Crossing etc.	None
iv)	Road Crossing	None
5	Construction Problem	
6	O & M Problem	Minimum
7	Overall Remarks	Route is selected because of shortest length, nil

¹⁰⁸ Ibdi108

S.No.	Description	Final Alignment
		forest coverage and avoiding settlements.

316. The final route length of the line is 9 kms. The line passes through primarily agricultural land comprising villages of Makroniya, Bartuma, Sainkhera with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are some roads that are motorable in dry season. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

Table 6.74: Final Survey details of Stringing of 3rd conductor from Bina 220 to Mungaoli

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
1	Route Particulars		
i)	Length	31.3	35
ii)	Terrain	Flat and Undulating	Flat and Undulating
a)	Hilly/ Plain In (km)%		
b)	Agriculture	Yes	Yes
c)	Wet/ Marshy	None	None
d)	Estuarine	None	None
e)	Other type of land	None	None
2	Environmental Details		
i)	Name of District / District details (through which transmission line Pass)	Sagar, Ashoknagar	Sagar, Ashoknagar
ii)	Population of district	23,78,458; 8,45,071	23,78,458; 8,45,071
iii)	Town/Village in Alignment (Nearby)	Mungaoli, Kasba range, Kasba Kachi, Phuleri, Aksi, Badoli and Nitar	Mungaoli, Kasba range, Kasba Kachi, Phuleri, Aksi, Badoli and Nitar
iv)	House with in RoW	Few	Few
v)	Forest in km. / Ha	None	None
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	None	None
b)	% of Forest	NIL	NIL
c)	Tree Cutting Status ¹⁰⁹	147	
d)	Type of Fauna and Flora	Agriculture land	Agriculture land
e)	Endangered species if any	Not Recorded	Not Recorded
f)	Historical/Cultural Monuments	None	None
g)	Any other relevant information		
3	Consumption cost		
i)	Crop	Agricultural land	Agricultural land
ii)	Forest	NIL	NIL
4	N° of Crossing		

¹⁰⁹ Ibdi109

Loan No. 3066 IND

IEE Madhya Pradesh Power Transmission Project

Implementing Agency – Madhya Pradesh Power Transmission Corporation Limited

S.No.	Description	Final Alignment	Alternatives proposed in the Original IEE
			Alignment-I (Proposed Route in the IEE Map)
i)	Railway	3	3
ii)	Transmission line	NIL	NIL
iii)	River Crossing etc.	1	1
iv)	Road Crossing	2	2
5	Construction Problem		
6	O & M Problem	Minimum	Moderate
7	Overall Remarks	Route is selected because of shortest length, nil forest coverage and avoiding settlements.	

317. The final route length of the line is 31.3 kms. The line passes through primarily agricultural land comprising villages of Mungaoli, Kasba range, Kasba Kachi, Phuleri, Aksi, Badoli and Nitar with few settlements nearby. Adequate distance is maintained from the settlements. The line does not pass through any major critical ecologically sensitive areas such as forest, wildlife sanctuary or National Park. The line also does not pass through any mangrove, important wild life area or any other environment sensitive area. No endangered species have been recorded in vicinity of the area where the line will be constructed. There are no records of any historical or cultural or religious monuments in the region where the line will be constructed. No archaeologically important site lies in the area and thus environmental impacts will be few and easily manageable. There are two road crossings in the final route alignment and some roads that are motorable in dry season. There is a single river crossing and three railway crossings that will lie in the RoW. Farmers will be compensated for tree and crop loss and adequate distance of 4.5 metres will be maintained from the height of vegetation to allow crop cultivation once the line is constructed.

7.0 Public Consultation and Information Disclosure

318. Initial consultations were done during the site visits on March, October and December 2016 for transmission system improvement and project affected persons were consulted. Consultations were held at the transmission lines sites and near substation sites. Concerns of local people were common and they include: (i) load shedding and lack of reliable and stable supply of power affecting their produce and livelihood, and (ii) timely compensation to farmers affected during construction of substations, erection of the transmission towers, and stringing of conductors. Consultation summary table is given in Annexure 2. Photographs of public consultation are given in Annexure 3 and 4 and sample attendance sheet for some transmission lines is given in Annexure 5.
319. Local people are aware of the proposed project and are generally supportive due to expected benefits. Consultations with project stakeholders in varying degrees will continue throughout the life of the project.
320. The updated IEE will be posted to the website of ADB as required by SPS 2009 and Public Communications Policy 2011. A project factsheet or a frequently asked questions flyer in Hindi will be made available to the public at the MP Transco-PMU field office. The flyer will include among others, the information on grievance redress mechanism. Aside from these public disclosure requirements, the Right to Information Act 2005 of GoI also provides for additional obligation to MP Transco to provide information about the project. Hindi translation of IEE report's executive summary and EMP will be disclosed by the client which will provide relevant environmental information in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.

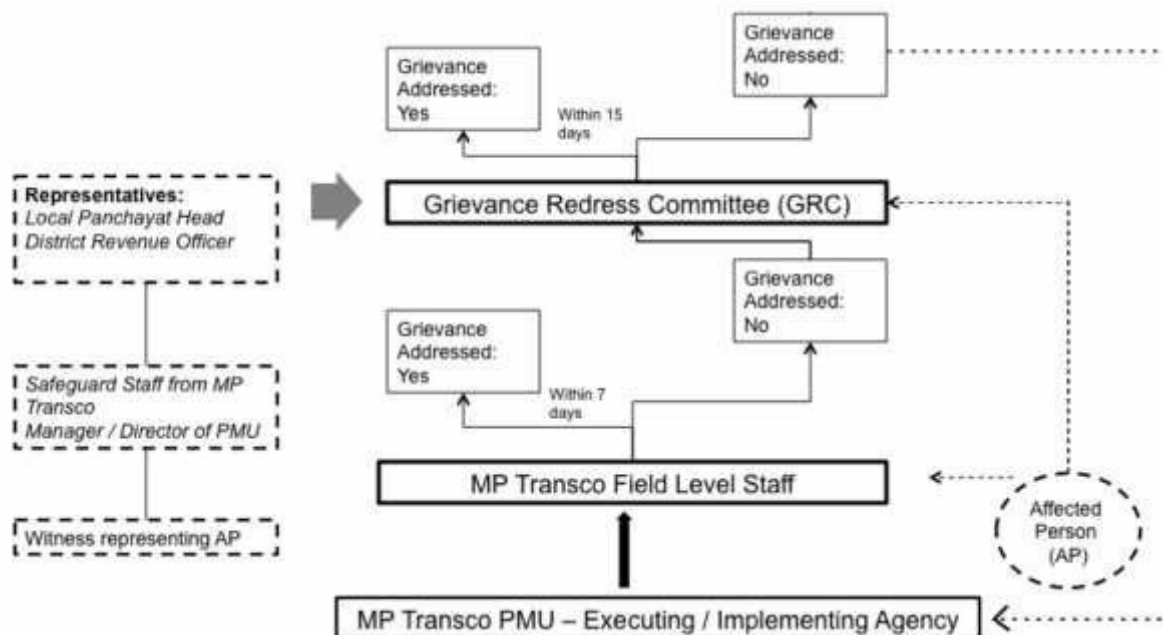
8.0 Grievance Redress Mechanism

321. Current Scenario MP Transco conducts “vigilance” through its cell which covers civil and electrical works only. There is no separate cell to address public grievance or complaint on environmental issues. Generally, public grievance is associated with land acquisition issues. In such a case, affected person(s) contacts the Revenue Department who will lodge the grievance on behalf of the affected person(s) to the Superintendent Engineer (SE) of MP Transco. The SE under Engineering & Construction Department reviews the complaint and resolves the issue.
322. To ensure that public grievance and/or complaint on environmental (and social) issues are addressed during the implementation of the transmission system improvement project, the PMU of MP Transco will establish a grievance redress mechanism (GRM).
323. Goals: The GRM shall provide an accessible platform for receiving and facilitating resolution of affected person’s grievances related to the project/ subproject. According to SPS 2009, the GRM will address concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate and readily accessible to the affected persons at no costs and without retribution. GRM is normally incorporated in the compensation process due to land acquisition and temporary damages to crops and lands during construction but will also cover issues that may be raised on environmental issues such as increased level of dust and noise causing inconvenience to local people, traffic, or other relevant issues.
324. Composition: The GRM will have a grievance redress committee (GRC) set up by MP Transco-PMU as soon as the project commence and will continue to function from construction to operation phase. The GRC will consist of representatives from the local Panchayat Head, a District Revenue Commissioner, representative from the EPC Contractor(s) only during construction phase, designated staff of MP Transco-PMU on safeguards, Manager/Director of MP Transco-PMU, and a witness of the complainant/affected person. MP Transco-PMU will ensure that there is representation of women in the GRC.
325. Responsibilities: The GRC is expected to: (i) resolve issues on land acquisition (if any), compensation to temporary damages to crops and plants, and other use of land such as borrow areas for transmission towers and substations; (ii) convene twice a month to review complaints lodged (if any), (iii) record the grievances and resolve the issues within a month (30 days) from the date the grievance was filed, (iv) report to the complainant(s) the status of grievance resolution and the decisions made.
326. Procedures: Minor grievances on compensation or environmental issue during construction will be resolved onsite through the EPC Contractor(s) Project Site Engineer. As a formal process of grievance resolution, the procedure is given below and described in Figure 8.1.
- (i) Affected persons (APs) will be informed in writing by MP Transco-PMU (or designated representative) of the damages and entitlements for compensation. If the APs are satisfied, compensation can be claimed from MP Transco-PMU through the EPC Contractor(s). If the APs are not satisfied, they can request for

clarification from MP Transco-PMU. If the APs are not convinced with the outcome, they can file the grievance to the GRC with the help of MP Transco-PMU who will provide the written documentation.

- (ii) The GRC will conduct a hearing of the grievance in the presence of the APs and will provide a decision within 15 days from the receipt of the complaint. Minutes of the meeting will be approved by MP Transco-PMU and provided to the APs including the decision made by the GRC. If the APs are satisfied with the GRC decision, they can claim the compensation from MP Transco-PMU and/or EPC Contractor(s).
- (iii) If the issue(s) remains unresolved, the case will be referred by the GRC to the appropriate Court of Law for settlement.

Figure 8.1: Process of Grievance Redress Mechanism at MP Transco



- 327. Area of Jurisdiction: GRC shall be set up at the Panchayat level where subprojects are proposed.
- 328. Record-keeping: Records shall be kept by the PMU of all grievances received including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome. Documentation of the grievances filed and resolved will be summarized and included in the semi-annual monitoring reports submitted to ADB during construction stage and annually during operation stage. Records of grievances are not being maintained presently. The PMU shall ensure that records of grievances are maintained regularly.
- 329. Disclosure of Information: MP Transco-PMU will inform the APs on grievance redress procedure, who to contact and when, where and how to file a grievance, time likely to be taken for redressal of minor and major grievances, etc. Grievances received and responses provided will be documented and provided to the APs during

the process. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the field offices of MP Transco-PMU and offices of the concerned local Panchayat and District Revenue Office.

330. Review of the Process: MP Transco-PMU will periodically review the implementation of the GRM and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances.
331. Cost of Implementation: Costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by MP Transco. The cost of implementation will be taken from the administration cost included in the total cost of the resettlement plan (RP) for the project. If the administration cost is not adequate, the budget will be taken from the contingency cost of the RP.

9.0 Environmental Management Plan

9.1.1 Mitigation

332. The environmental management plan (EMP) presents a summary of the environmental impacts associated with subprojects for power transmission system improvement including the mitigation measures (Table 9.2). The EMP will be updated before the start of civil works, and as needed, to accommodate any change in the condition of the site or alignment of the transmission line after the contractor survey, performance of EPC Contractor(s), and feedback from local people or other stakeholders.

9.1.2 Monitoring

333. During the construction stage, environmental monitoring will be a daily or weekly process to ensure that non-compliance to the EMP by the EPC Contractor(s) if any, will be avoided and/or immediately addressed. The results of monitoring will be submitted to ADB twice a year during construction and annually during operation as required by SPS 2009. Baseline data for environmental parameters such as air and noise is not available but will be carried out and recorded by contractor before commencement of civil works.
334. Monitoring and maintenance of the power transmission system during operation ensure the integrity and safety of the structures and components, thus, minimizing safety risks to the public and damage to properties.

9.1.3 Institutional Arrangements

335. Currently, MP Transco has a PMU responsible for procurement, feasibility assessments, and bid planning. PMU staff are aware of safeguards issues and compliance but there is no staff designated to deal with these concerns. The Madhya Pradesh Power transmission Company (MP Transco will serve as the executing agencies (EAs) and implementing agencies (IAs) for the project. MP Transco has established project management units (PMUs) to implement the ADB loans in Madhya Pradesh Power Sector Program. They will continue as PMUs of the proposed project. Field level staff/engineer will be deputed at divisional level who will assume primary responsibility for the environmental and social assessment as well as implementation of RPs for their respective components. Keeping in view the capacity of MP Transco and its existing PMU, it is proposed that each PMU will designate a Overall implementation of the EMP will be carried out under the supervision of the Head, MP Transco-PMU. An environmental staff (or a Consultant), who will be primarily responsible for ensuring that the EMP is properly implemented, will be recruited for the project prior to award of the civil works contract. He/she will coordinate and interact with MP Transco-PMU on compliance to ADB requirements, relevant government agencies and local authorities on permits (as needed), update and finalize the draft IEE, and will prepare environmental monitoring reports for submission to ADB at least twice a year during construction and annually during operation. The PMUs will be responsible for managing the site activities related to safeguards and will work closely with the field level staff.
336. XIDAS has been appointed as an environmental consultant by MPPTCL for preparing this IEE report. XIDAS or the Xavier Institute of Development Action and

Studies (XIDAS), Jabalpur, is owned and run by the Society of Jesus (Jesuits), a religious organization that is internationally acclaimed as one of the outstanding educationists. For this purpose, XIDAS personnel have carried out field surveys for ground truthing and collecting data. The report is prepared by XIDAS for MPPTCL.

Table 9.1: Xidas Profile

S.N.	Name	Designation	Qualification
1.	Dr. James Santhanam S. J.	Director	PhD-Finance
2.	Dr. Uma Saha	Professor	PhD- Demography
3.	Dr. J.R.Jha	Professor, HoD Rural Management	PhD- Sociology
4.	Mrs. Nivedita Abraham	Hod of HR, Civil society and Governance	MBA-HR, Labour Law
5.	Dr. Jogendra Pathak	HoD	PhD- Rural Development
6.	Mr. Anchal Mishra	Professor	MBA-Rural Management
7.	Mr. Pushpendra Tiwari	Development Professional	M.A. Sociology M.Phil Sociology PGDRD-IGNOU
8.	Mr. Puskar Pande	Environment Consultant	MSc. Environmental Management Remote Sensing- IIRS PGDENLW- IGNOU

337. EPC Contractor(s) will be informed of their responsibility to comply with the EMP and the requirements of ADB. There are specific responsibilities for EMP compliance during construction phase that will rest with the EPC Contractor(s) who will be monitored by the environment staff of the project.

9.1.4 Environmental Budget

338. As part of good engineering practices in the project, there have been several measures as safety, signage, dust suppression, procurement of personal protective equipment, provision of drains, etc. and the costs for which will be included in the design costs of specific subprojects. Therefore, these items of costs have not been included in the IEE budget. Only those items that are not covered under budget for construction are considered in the IEE budget.
339. This project is not expected to cause much significant air, water and noise pollution. However, as per the environmental monitoring plan, routine environmental quality monitoring shall be conducted by the PMC/ Contractor through an NABL/SPCB authorised monitoring agencies. For transmission lines, there will not be major issues as only four foundations are dug for each tower but for substation sites, major excavation works are carried out, hence environmental quality monitoring becomes a necessity. The costs of water sprinkling for dust suppression and providing personal protective equipment's to construction workers shall be borne by contractor as part of conditions of contract. The indicative EMP cost is given in Table 9.1 and is based on rates listed on MPPCB website¹¹⁰. The rates are calculated on biannual monitoring basis.

¹¹⁰ <http://www.mppcb.nic.in/proc/Sampling%20&%20Monitoring%20rates%2016.pdf>

Loan No. 3066 IND

IEE Madhya Pradesh Power Transmission Project

Implementing Agency – Madhya Pradesh Power Transmission Corporation Limited

Table 9.2: Indicative EMP Budget

S.N	DESCRIPTION OF ITEMS	Unit Rate	Unit	Quantity	Unit Rate		AMOUNT
					in Words	in Figures	
1	Environmental Monitoring						
(i)	Air Quality Monitoring <u>Parameters:</u> PM10, PM2.5, SO ₂ & NO _x as per NAAQS, 2009 <u>Frequency:</u> Pre-construction: For each sub-station location, baseline data will be generated once before commencement of civil works. Construction: For each sub-station location, twice a year monitoring will be done. Post construction: Once for each substation location.	16,500	56	56*6	Fifty five lakhs, forty four thousand only.	55,44,000	55,44,000
(ii)	Noise Monitoring <u>Parameters:</u> Leq (Day), Leq (Night), Maximum Noise level. <u>Frequency:</u> Pre-construction: For each sub-station location, baseline data will be generated once before commencement of civil works. Construction: For each sub-station location, twice a year monitoring will be done. Post construction: Once for each substation location.	15,000	56	56*6	Fifty lakhs, forty thousand only.	50,40,000	50,40,000
(iii)	Soil: Pre-construction: For each sub-station location, baseline data will be generated once before commencement of civil works. Construction: For each sub-station location, twice a year monitoring will be done. Post construction: Once for each substation location.	5,400	56	56*6	Eighteen lakhs, fourteen thousand, four hundred only.	18,14,400	18,14,400
	Total				One crore,		1,23,98,400

S.N	DESCRIPTION OF ITEMS	Unit Rate	Unit	Quantity	Unit Rate		AMOUNT
					in Words	in Figures	
					twenty three lakhs, ninety eight thousand and four hundred only.		
	Add Contingencies (@5 %)				Six lakhs, nineteen thousand and nine hundred and twenty only.		6,19,920
	Grand Total				One crore, thirty lakhs, eighteen thousand and three hundred and twenty only.		1,30,18,320

Table 9.3: Environmental Management Plan

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
Planning and Pre-Construction Stage					
Preparation of feasibility study and detailed project report (DPR) • Location of substation, transmission and distribution lines • Choice of equipment and technology	• Land and vegetation	• Loss of agricultural land and crops • Loss of habitat and vegetation clearing • Land acquisition • Increase in soil erosion and impact to soil productivity	• Use of 25 criteria for site selection which include environmental factors to minimize potential impacts • Checklist/questionnaire in evaluating substation sites which aim at avoidance of land acquisition and environmental impacts • Substations are all on government land (56 sites for MP Transco) • No land acquisition required but transfers of ownership from the government to MP Transco. • Use of mineral oil such as Duralife Transformer Oil for transformers • Use of air insulated substations to avoid fugitive emissions of SF6 (a potent GHG gas)	Included in the Project Costs *Associated costs of land transfers from the Government will be borne by MP Transco.	MP Transco, District Commissioner Office
	• People	• Physical displacement of people and structures • Economic loss to people • Disturbance and inconvenience to people due to traffic, increased noise and dust levels, vibration • Interference to existing utilities			
	• Water	• Interference to local drainage • Water quality impacts due to erosion and/or sedimentation			
	• Air	• Increased dust and noise levels, and vibration.			

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
		<ul style="list-style-type: none"> Emissions from heavy equipment machinery and construction vehicles. Baseline data will be generated before commencement of civil works. Twice a year monitoring will be done. 			
Construction Stage					
Orientation for contractor and workers	<ul style="list-style-type: none"> People 	<ul style="list-style-type: none"> Awareness of workers on the environmental requirements and their responsibility Understanding of EPC Contractor(s) of their responsibility in implementing the EMP 	<ul style="list-style-type: none"> Conduct briefing of EPC Contractor(s) on EMP, records management, and reporting Identify critical areas to be monitored and the required mitigation measures Create awareness of sexually-transmitted diseases such as HIV/AIDs 	Included in the costs of EPC Contractor(s)	EPC Contractor(s), PMUs of MP Transco, Environmental staff/consultant in PMU
Prepare construction management workplan	<ul style="list-style-type: none"> People 	<ul style="list-style-type: none"> Avoid effects of EPC Contractor(s) unplanned activities Smooth work implementation 	<ul style="list-style-type: none"> Temporary pedestrian and traffic management plan Community and safety plan 	Included in the costs of EPC Contractor(s)	EPC Contractor(s), PMUs of MP Transco, Environmental staff/consultant in PMU
	<ul style="list-style-type: none"> Land 		<ul style="list-style-type: none"> Spoils disposal plan 		
	<ul style="list-style-type: none"> Air 		<ul style="list-style-type: none"> Noise and dust control plan 		
	<ul style="list-style-type: none"> Water 		<ul style="list-style-type: none"> Drainage and storm water management plan 		
	<ul style="list-style-type: none"> Waste 		<ul style="list-style-type: none"> Materials management plan Construction waste management plan. Baseline data will be generated before commencement 		

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
			of civil works twice a year monitoring will be done.		
Hiring of project staff and workers	<ul style="list-style-type: none"> People 	<ul style="list-style-type: none"> Conflict due to potential workers migration Lack of local support to the project Dispute over transparency of hiring 	<ul style="list-style-type: none"> EPC Contractor(s) will be required to use local labour for manual work and eligible local workforce for clerical and office jobs 	---	EPC Contractor(s), PMUs of MP Transco, Environmental staff/consultant in PMU
Presence of workers at construction sites	<ul style="list-style-type: none"> People 	<ul style="list-style-type: none"> Increase in demand for services such as food, temporary housing, etc. Create opportunities for small-scale business to provide services such as food, temporary housing, etc. 	<ul style="list-style-type: none"> None required 	---	---
<ul style="list-style-type: none"> Site preparation, vegetation and land clearing for substations and transmission line right-of-way (ROW) Construction of substations, installation of required equipment at substations, erection of transmission towers and stringing of conductors 	<ul style="list-style-type: none"> People 	<ul style="list-style-type: none"> Dismantling of structure(s) and equipment from existing substations 	<ul style="list-style-type: none"> Construction management plan will be strictly implemented Use of proper safety clothes/equipment in dismantling structure(s) and equipment Debris/dismantled structures/equipment will be disposed of in designated landfill and/or controlled dumpsites Usable scrap materials from dismantling will be stored in warehouses of MP Transco in Jabalpur. 	Included in the costs of EPC Contractor(s)	EPC Contractor(s), PMUs of MP Transco, Environmental staff/consultant in PMU
		<ul style="list-style-type: none"> Potential safety risks to community 	<ul style="list-style-type: none"> Provide fence or barricade (as appropriate), sufficient lights, clear warning signs and danger signals, and 		

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
			take all precautions identified in the community and safety plan <ul style="list-style-type: none"> • Assign security personnel to prevent accidents, trespassing, and pilferage • EPC Contractor(s) to direct drivers to strictly follow road regulations 		
		<ul style="list-style-type: none"> • Interference with road crossings 	<ul style="list-style-type: none"> • Danger and clearly visible warning signs will be posted at designated sites • Scaffoldings will be placed over road crossing points • Construction vehicles to strictly follow road regulations • Implement temporary pedestrian and traffic management plan 		
		<ul style="list-style-type: none"> • Potential health and safety risks to workers 	<ul style="list-style-type: none"> • Provide sanitary facilities and wash areas • Provide safe drinking water and garbage bins • Enforce good housekeeping at all times • Provide workers with hard hat, safety shoes and belts • Coordinate with nearest hospital for arrangements in case of accidents • Assign nurse or medical staff to make weekly rounds at substation sites • Set up first aid treatment within 		

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
			construction sites and field office <ul style="list-style-type: none"> • Observance and compliance with relevant safety measures required by law and best engineering practices • Provide communication devices to designated workers 		
	<ul style="list-style-type: none"> • Land and vegetation 	<ul style="list-style-type: none"> • Erosion and localized flooding • Loss of habitat and some mature trees of economic value such as teak 	<ul style="list-style-type: none"> • Compensation for temporary damages to crops/plants along the ROW and substations • Cut trees owned by the government will be sold and revenue turned over to Revenue Authority • Landscaping/replanting of trees at subs-stations will be done after completion of construction works • Erosion-control measures will be provided (as needed) • Implement spoils disposal plan and construction waste management plan 		
	<ul style="list-style-type: none"> • Water 	<ul style="list-style-type: none"> • Generation of sewage from construction workers • Localized flooding • Increase turbidity in surface water near construction sites 	<ul style="list-style-type: none"> • Avoidance of waterways in site selection • Provide sanitary facilities to workers and safe drinking water • Construction works will be done during summer in areas potential for erosion and localized flooding • Implement drainage and stormwater management plan • Waterways were avoided in 		

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
	<ul style="list-style-type: none"> Air 	<ul style="list-style-type: none"> Heavy equipment and construction vehicles may increase vehicular emissions Transport of construction materials to constructions sites may increase dust level Earthmoving works, excavations, and opened land areas for substations and towers may increase dust levels Increase in noise level and vibration from excavation and heavy equipment and construction vehicles 	<p>selecting subproject sites</p> <ul style="list-style-type: none"> Construction vehicles will be maintained to minimize vehicular emissions Enclose construction sites temporarily to contain dust dispersion Warehouse for construction materials onsite will be provided to reduce trips of material delivery EPC Contractor(s) will be required to maintain construction vehicles and heavy equipment machineries regularly to reduce emissions Opened land areas or sources of dust will be sprayed with water (as needed) Transport of dust-generating materials will be covered Observance of low speed by vehicles to reduce noise Noise-generating works will be done between 7AM and 7PM done at daytime as required by MPPCB (February 2013) Construction sites will be covered with acoustic screens and machineries will be temporarily enclosed to control noise (MPPCB guidelines, February 2013) Require EPC Contractor(s) to maintain and tune-up construction vehicles to reduce noise and no 		

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
			blowing of horns • Observe/comply with traffic management plan		
Operation and Maintenance Stage					
Use of mineral oil for transformers	<ul style="list-style-type: none"> Land Water 	<ul style="list-style-type: none"> Accidental spillage that would contaminate land and water 	<ul style="list-style-type: none"> Provision of oil-water separator Provide for oil containment structure. Baseline data will be generated before commencement of civil works. Twice a year monitoring will be done. 	Included in the O & M costs of Project	MP Transco
	<ul style="list-style-type: none"> People 	<ul style="list-style-type: none"> Occupational health risks to workers due to exposure 	<ul style="list-style-type: none"> Acceptance of mineral oil should be accompanied with Material Data Safety Sheets and/or be certified that it is PCB-free Fire extinguishers readily available in storage areas for mineral oil 		
Presence of substations, power transmission and distribution lines	<ul style="list-style-type: none"> Land 	<ul style="list-style-type: none"> Depreciation of land property values adjacent to substations and power transmission towers 	<ul style="list-style-type: none"> Availability of stable and reliable power will trigger economic development in the area 	---	---
	<ul style="list-style-type: none"> People 	<ul style="list-style-type: none"> Hazards such as electrocution, lightning strike, etc. due to accidental failure of power transmission and distribution lines 	<ul style="list-style-type: none"> Provide security and inspection personnel to avoid pilferage and vandalism of equipment and lines. Appropriate grounding and deactivation of live power lines during maintenance work Designed with protection system that shuts off during power overload or similar 	Included in the O & M costs of Project	MP Transco

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
			<p>emergencies</p> <ul style="list-style-type: none"> • Maintain and comply with electrical standards • Distribution lines entering and leaving the substations are insulated (or covered) to minimize impacts • Regular monitoring and maintenance to ensure safety and integrity of power lines and substations • Conduct information and education campaign to local people to enhance awareness on safety practices of living near substations 		
		<ul style="list-style-type: none"> • Accident working in elevated position 	<ul style="list-style-type: none"> • Implement safety plan to reduce risks • Provision of safety belts and other working gears for protection 	Included in the O & M costs of Project	MP Transco
		<ul style="list-style-type: none"> • Potential exposure to electric and magnetic fields (EMF) 	<ul style="list-style-type: none"> • EMF levels expected to be way below the limits set by International Commission on Non-Ionizing Radiation Protection(ICNRP) which is 4.17 kV/m for electric field and 833 mG for magnetic field • Spot measurements of EMF • Substations will be fenced and security staff assigned to prevent unauthorized public access • Information and education 	Included in the O & M costs of Project	MP Transco

Project Activity	Environmental Component Likely to be Affected	Description of Potential Environmental Impact	Mitigation/Enhancement Measures	Estimated Cost	Responsible Unit
			campaign will be conducted to local people to create awareness on safety practices		
		• Generation of employment	• More than 200 positions will be created during the operation	---	MP Transco
	• Noise	• Disturbance to settlements near the substations	<ul style="list-style-type: none"> • Periodic maintenance of equipment such as transformers and capacitors to minimize noise generation. • Provide enclosure of noise-generating equipment • Monitor ambient noise levels. Baseline data will be generated before commencement of civil works. Twice a year monitoring will be done. 	Included in the O & M costs of Project	MP Transco

10.0 Conclusion and Recommendation

340. Aside from best engineering practice and survey approaches in selecting the transmission lines, 25 criteria checklist/questionnaire was included to minimize environmental impacts. For substations, one of the primary considerations in selecting the sites is avoidance of land acquisition.
341. Majority of subprojects for transmission system improvement are not located anywhere near the 9 national parks and 25 wildlife sanctuaries or the cultural/archeological excavation sites. The impacts that are associated during construction stage such as increased noise and dust level are temporary and of short duration. Approach roads in some substation sites such as in Adampur and Intkhedi will require upgrading to facilitate construction but this will also benefit local residents using the roads. Relevant Indian construction standards on the design, installation and maintenance of substations and transmission lines such as IS:5613 (1995) Part II, IS:4091-1967 and IS:3072 (1975) will be complied with. Mitigation measures and monitoring to minimize environmental impacts have been incorporated in the environmental management plan and monitoring plan. Environmental monitoring report will be submitted by MP Transco to ADB semi-annually during construction and annually during operation. An environmental staff/consultant will be recruited by MP Transco to provide technical support to MP Transco-PMU in addressing relevant environment issues and in complying the requirements of ADB. To ensure sustainability, a workshop/training on safeguards compliance will be part of capacity building provided by the project.
342. MP Transco conducts “vigilance” through its cell which covers civil and electrical works only and do not include grievance on environmental issues. To address this limitation, a grievance redress mechanism will be implemented as soon as the project commence. As part of this mechanism, a grievance redress committee will be created and MP Transco-PMU will ensure the representation of women in the members. The grievance redress committee will function throughout the life of the project.
343. Consultations with local people were done as part of preliminary surveys and environmental assessment in March, October and December 2016. There were concerns on the transparency and valuation of compensation to temporary damages for crops and plants during construction. Overall, local people are supportive of the project due to the expected long-term benefit of a reliable and stable power supply. Consultations will continue in varying degrees during construction and operation. Local people will be informed of the grievance redress mechanism through a flyer/project brief that will be made available in Hindi at the field office of MP Transco-PMU. The IEE will be posted in the website of ADB as provided for by SPS 2009 and Public Communications Policy 2011. Hindi translation of the report will be made available by the client in easily accessible places. All the relevant permits required by GoI will be obtained by MP Transco prior to construction works.
344. In case of transmission lines, route alignment of one line not yet final and in case of substations, 3 locations are not yet final. The IEE report will be further updated once the locations and route alignments have been finalized.

Annexure 1: REA Checklist

Power Transmission

Rapid Environmental Assessment (REA) Checklist

Instructions:

- (i) The project team completes this checklist to support the environmental classification of a project.
- (ii) This checklist focuses on environmental issues and concerns.
- (iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:

Madhya Pradesh Power Transmission System Improvement Project

Sector Division:

Jabalpur

Sub-project Background:

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?		✓	Except five transmission lines, all proposed substation works are either within existing sub-stations or on government wastelands and in case of transmission lines, except five lines all are away from environmentally sensitive areas. ¹¹¹
• Cultural heritage site		✓	None of the proposed sub-stations and transmission lines are located near to any cultural heritage sites or ASI protected monuments.
• Protected Area		✓	Except five transmission lines ¹¹² , none of the proposed sub-stations and transmission lines are located within or close to or passing through any protected areas.
• Wetland		✓	None of the proposed sub-stations and transmission lines are located within or close to or passing through any wetlands.

¹¹¹ The five lines with forest involvement are: 132kV DCDS line from 220kV Guna to Bhonra (Forest Clearance has been applied for. Case forwarded to CCF Shivpuri); 132kV DCSS Bhonra to Kapasi line (Forest Clearance has been applied for. Case forwarded to CCF Shivpuri); 132kV DCSS Sagar-Rehli line (Forest clearance has been applied for. Case forwarded to APCCF Bhopal); 132kV DCSS Birsinghpur-Shahdol line (First Stage approval received. Working permission received); Second circuit of Gairatganj-Vidisha 220 132Kv line (Forest Clearance has been obtained).

¹¹² Ibid37

• Mangrove		✓	None of the proposed sub-stations and transmission lines are located within or close to or passing through any mangrove areas.
• Estuarine		✓	None of the proposed sub- stations and transmission lines are located within or close to or passing through any estuarine areas.
• Buffer zone of protected area		✓	Except five lines ¹¹³ , none of the proposed sub- stations and transmission lines are located within or close to or passing through any buffer zones of protected areas.
• Special area for protecting biodiversity		✓	None of the proposed sub- stations and transmission lines are located within or close to or passing through any special areas for protecting biodiversity.
B. Potential Environmental Impacts Will the Project cause ...			
• Encroachment on historical/cultural areas, disfiguration of landscape and increased waste generation?		✓	None of the proposed sub- stations and transmission lines are located near to any historical I cultural areas or ASI protected monuments.
• Encroachment on precious ecosystem (e.g. sensitive or protected areas)?		✓	For five lines with forest involvement ¹¹⁴ , permission has been applied for before commencement of civil works. Rest of the proposed sub-stations and transmission lines are not located within or close to or passing through any precious ecosystem.
• Alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?		✓	No such impacts are envisaged due the proposed sub-projects.
• Damage to sensitive coastal/marine habitats by construction of submarine cables?		✓	No submarines cables proposed in these works.
• Deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?		✓	No such impacts due to the proposed sub-projects. No chemicals proposed to be used during construction. No labor camps expected to be set- up for these works.

¹¹³ Ibid 37

¹¹⁴ Ibid37

• Increased local air pollution due to rock crushing, cutting and filling?		✓	No such impacts are envisaged due the proposed sub-projects since no rock crushing, cutting or filling related works envisaged. The construction material will be obtained from statutorily approved sources.
• Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			The environmental management plan will provide requisite mitigation measures to address issues related with occupational health and safety during project construction and operation .
• Chemical pollution resulting from chemical clearing of vegetation for construction site?		✓	Chemical cleaning of vegetation is not envisaged in the proposed works.
• Noise and vibration due to blasting and other civil works?		✓	No blasting works are proposed. However, increased noise levels and vibrations are expected during implementation and operation, for which adequate mitigation measures will be carried out.
• Dislocation or involuntary resettlement of people?		✓	No such impacts are envisaged due to the proposed sub-projects.
• Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		✓	No such impacts are envisaged due the proposed sub-projects.
• Social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?		✓	No such impacts are envisaged due to the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. The relevant mitigation measures will be included in the environmental management plan.
Screening Questions			
• Hazardous driving conditions where construction interferes with pre-existing roads?		✓	No such impacts are envisaged due to the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. The relevant mitigation measures will be included in the environmental management plan.
• Creation of temporary breeding habitats for vectors of disease such as mosquitoes and rodents?		✓	No such impacts are envisaged due the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. The relevant mitigation measures will be included in the environmental management plan.
• Dislocation and compulsory resettlement of people living in right-of-way of the		✓	The proposed works avoid major settlements and pass through

power transmission lines?			agricultural land mostly. Compulsory resettlement of people living in the ROW is not envisaged.
• Environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?		✓	The relevant mitigation measures will be included in the environmental management plan.
• Facilitation of access to protected areas in case corridors traverse protected areas?		✓	No such impacts are envisaged due the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. No works will commence prior to obtaining relevant statutory permissions.
• Disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		✓	No such impacts are envisaged due the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. No herbicides are proposed to be used to control vegetative growth.
• Large population influx during project construction and operation that cause increased burden on social infrastructure and services (such as water supply and sanitation systems)?		✓	No such impacts are envisaged due the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. The environment management plan will include relevant mitigation measures.
• Social conflicts if workers from other regions or countries are hired?		✓	No such impacts are envisaged due the proposed sub-projects. The local labor will be given preference. A very limited number of workers from other regions may be engaged for highly skilled works. However, if any such impacts are noticed during implementation, the same will be addressed immediately.
• Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?		✓	The relevant mitigation measures will be included in environmental management plan to ensure adequate facilities including health. Related impacts are provided to labor in construction camps and work sites.
• Risks to community safety associated with maintenance of lines and related		✓	No such impacts are envisaged due the proposed sub-projects. However, if any such impacts are noticed during

facilities?			implementation, the same will be addressed immediately. The environment management plan will include relevant mitigation measures.
<ul style="list-style-type: none"> Community health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization? 		✓	No such impacts are envisaged due the proposed sub-projects. Since the existing transmission lines are of 220 kV and less, no electromagnetic field related impacts are envisaged.
<ul style="list-style-type: none"> Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation? 		✓	No such impacts are envisaged due the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. The environment management plan will include relevant mitigation measures.
<ul style="list-style-type: none"> Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., high voltage wires, and transmission towers and lines) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? 		✓	No such impacts are envisaged due the proposed sub-projects. However, if any such impacts are noticed during implementation, the same will be addressed immediately. The environment management plan will include relevant mitigation measures.
Climate Change and Disaster Risk Question The following questions are not for environmental categorization. They are included in this checklist to help identify potential climate and disaster risks.	Yes	No	Remarks
<ul style="list-style-type: none"> Is the Project area subject to hazards such as earthquakes, floods, landslides, tropical cyclone winds, storm surges, tsunami or volcanic eruptions and climate changes.? 		No.	
<ul style="list-style-type: none"> Could changes in precipitation, temperature, salinity, or extreme events over the Project lifespan affect its sustainability or cost? 		No.	
<ul style="list-style-type: none"> Are there any demographic or socio- economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)? 		No.	

<ul style="list-style-type: none"> • Could the Project potentially increase the climate or disaster vulnerability of the surrounding area (e.g., increasing traffic or housing in areas that will be more prone to flooding, by encouraging settlement in earthquake zones)? 		No.	
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The proposed environment category of this sub-project is B in accordance with ADB's Safeguards Policy Statement 2009.

Annexure 2: Public consultation Summary

S. No	Sub Project Details	Public consultation carried out during period	Feedback
Jabalpur			
1	LILO of 400kv seoni to Bhilai S/C line at Balaghat/Kirnapur (D/C) (BHEL Noida)	March 2016	People are aware of the project. People enquired about shut down timings and if they will be informed in advance about same. Assured that shutdown timings will notified in advance.
2	LILO of 132kV Balaghat- Seoni/ Katangi line at Waraseoni 132kV S/s (2XD/C) (M/S. B. S. Ltd.)	October 2016	People were apprehensive about construction activities and if they would cause nuisance. Assured that best practices are incorporated as per EMP.
3	LILO of both circuit of 132kV Balaghat-Bhanegaon Line at Blaghat/Kirnapur 4000kV S/s (2XD/C) (M/S. B. S. Ltd.)	October 2016	People were apprehensive if drinking water supply would be affected during the project. Assured that project does not interfere with water table. People also wanted to know about employment activities with the project.
4	LILO of 132 Tikamgarh-Bijawar line for Bada Malehra (Satna Div.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity. Assured that as per MPPTCL practise, a grievance can also be filed in case of any malpractice.
5	Second circuit of Tikamgarh- Budhera 132kV DCSS Line (M/S. B. S. Ltd.)	March 2016	Some people wanted to know if construction can be carried out during non cultivation season. Assured that it is followed by EPC contractor.
6	Narsinghpur 220-Devnagar 132kV DCSS Line (M/S. B. S. Ltd.)	March 2016	People are generally aware about the project and wished to know if Aadhar based compensation mechanism can be established.
7	Karakbel- Belkheda 132kV DCSS line (M/S. B. S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
8	Narsinghpur 220KV Karakbel 132KV DCS line (M/S. B. S. Ltd.)	March 2016	People were apprehensive about construction activities and if they would cause nuisance. Assured that best practices are incorporated as per EMP.
9	Panagar 220-Patan 132kV DCSS line (M/S. B. S. Ltd.)	March 2016	People were apprehensive about construction activities and if they would cause nuisance. Assured that best practices are incorporated as per EMP.
10	Chhindwara 220- Saori 132kV DCSS line (KPTL Ltd.)	October 2016	People were apprehensive about construction activities and if they would cause nuisance. Assured that best practices are incorporated as per EMP.

S. No	Sub Project Details	Public consultation carried out during period	Feedback
11	Chichli 220- Palohabada 132kV DCSS line (KPTL Ltd.)	October 2016	Some people wanted to know if construction can be carried out during non cultivation season. Assured that it is followed by EPC contractor.
12	132kv DCSS line from Damoh 220kv to Patera 132 kv substation (KPTL Ltd.)	October 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
13	Second circuit of 132kV Tap Line from Balaghat-Katangi (M/S. B. S. Ltd.)	October 2016	No major concerns expressed by project affected people.
Satna			
14	Second circuit 132kV of chhatarpur- Khajuraho line (M/S B.S. Ltd.)	October 2016	Some people wanted to know if construction can be carried out during non cultivation season. Assured that it is followed by EPC contractor.
15	LILO of second ckt of Bansagar-Satna 220kV line at Kotar 220kV S/s	December 2016	No major concerns expressed by project affected people.
16	LILO of Satna - Maihar 132kV line at Satna-II 132kV S/s (M/S Vikran Engineering Pvt. Ltd.)	December 2016	People were apprehensive about construction activities and if they would cause nuisance. Assured that best practices are incorporated as per EMP.
17	LILO of second ckt of Birsinghpur - Amarkantak 220kV line at Shahdol 220kV s/s (M/S Vikran Engineering Pvt. Ltd.)	December 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
18	Birsinghpur 220-shahdol 132kV DCSS line (M/S Vikran Engineering Pvt. Ltd.)	December 2016	People were apprehensive about construction activities and if they would cause nuisance. Assured that best practices are incorporated as per EMP.
Indore			
19	LILO of one circuit of Ashta 400-Dewas 220 kv D/C line at Chapda 220kv S/s (D/C) (M/S	October 2016	Some people wanted to know if construction can be carried out during non cultivation season. Assured that it is followed by EPC contractor.
20	Pithampur 400 - Depalpur 220kv DCSS line (M/S B.S. Ltd.)	October 2016	Some people wanted to know if construction can be carried out during non cultivation season. Assured that it is followed by EPC contractor.
21	Dewas 220- Agrod 132kv DCSS line (M/S B.S. Ltd.)	October 2016	Some people wanted to know if construction can be carried out during non cultivation season. Assured that it is followed by EPC contractor.

S. No	Sub Project Details	Public consultation carried out during period	Feedback
22	Dhar 220 - Teesgaon 132kv DCSS line (M/S B.S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
23	LILO of both Circuit of 400 kv Nagda-Rajgarh line at Badnawar (2 x D/C) (M/S BHEL NOIDA)	March 2016	No major concerns expressed by project affected people.
24	Second Circuit of Kukshi Alirajpur 132kv line (M/S B.S. Ltd.)	March 2016	Some people wanted to know if construction can be carried out during non cultivation season. Assured that it is followed by EPC contractor.
Barwaha			
25	LILO of 132 Khargone Bikayan line at 132 Kv sub-station Bistan (M/S. B.S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
26	LILO of 132kv Chegaon Nepanagar line at Pandhana (M/S. B.S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to noise during construction activity and employment opportunities.
27	LILO Manawar - Kukshi DCSS line at Singhana (D/C) (M/S. B.S. Ltd.)	March 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
28	LILO of 132Kv Khargone -Julwaniya line at 132Kv S/S Talakpura (M/S. B.S. Ltd.)	March 2016	No major concerns expressed by project affected people.
29	Julwaniya 400- Kukshi 220kv line (D/C) (M/S. B.S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to noise during construction activity and employment opportunities.
30	Malwa TPS- Chhanera 220kV DCDS Line (KPTL Ltd.)	March 2016	No major concerns expressed by project affected people.
31	Chhegaon 220- Singot 132kV DCDS Line (KPTL Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
32	Chhanera 220- Khirkiya 132kV DCDS Line (KPTL Ltd.)	March 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
Bhopal			March 2016
33	Bairagarh 220 - Intkhedi	March 2016	People are aware of the project. No major

S. No	Sub Project Details	Public consultation carried out during period	Feedback
	132kv DCDS line (M/S. B.S. Ltd.)		concerns were expressed except related to noise during construction activity and employment opportunities.
34	Second circuit of Bairagarh – Shyampur (M/S. B.S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
35	Second circuit of Gairatganj - Vidisha 220 132kv line (M/S. B.S. Ltd.)	March 2016	No major concerns expressed by project affected people.
36	Shujalpur- Narsingharh 220kv DCSS line (Initially charged on 132kv) (M/S. B.S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
37	LILO of one circuit of Bhopal - Hosangabad 220kv D/C line at Adampur 220kv S/s (D/C) (M/S. B.S. Ltd.)	March 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
38	Udaipura -Silvani 132kv DCSS line	October 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
39	LILO of Vidisha-Bairasiya Line at Salamatpur 132 KV S/s	October 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
40	Mugaliyachhaap 220-Bikisganj 132kv DCDS line	October 2016	People are aware of the project. No major concerns were expressed except related to noise during construction activity and employment opportunities.
41	132kv Rajgarh (Biaora) – Khujner/ Sindaota Line	October 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
42	LILO of one ckt of Vidisha Gairatganj at Raisen 132kv S/s (M/S. Punj Loyd)	October 2016	No major concerns expressed by project affected people.
Itarsi			October 2016
43	Second circuit of Betul 220 Gudgaon 132kv line (M/S. B.S. Ltd.)	October 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
44	Chichli 220- Udaipura 132kv DCDS line	October 2016	People are aware of the project. No major concerns were expressed except related to

S. No	Sub Project Details	Public consultation carried out during period	Feedback
	(220kv line charged at 132kv) (M/S. B.S. Ltd.)		noise during construction activity and employment opportunities.
45	Betul400 (PGCIL)- Betul 220kV DCDS line (Punj Loyd Ltd.)	October 2016	No major concerns expressed by project affected people.
46	Betul 220- Bisnoor/Masod 132kV DCSS line (Punj Loyd Ltd.)	October 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
Ujjain			October 2016
47	Badnagar 220- Chhayan 132kv DCSS line (M/S. B.S. Ltd.)	October 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
48	LILO of Badnagar - Ratlam 220kv D/C line at Badnagar 400kv S/s (2xD/C) (M/S. B.S. Ltd.)	October 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
49	LILO of both ckt of Gandhisagar - Suwasra/Garoth 132kV line at Bhanpura 220kV S/s (M/S. Kalptaru Power Trans. Ltd.)	October 2016	People are aware of the project. No major concerns were expressed except related to noise during construction activity and employment opportunities.
50	LILO of both ckt of Badod-Suwasra / Garoth 132kV line at Suwasra	October 2016	No major concerns expressed by project affected people.
Ratlam			
51	LILO of 132kv Badod - Garoth line at Shyamgarh (D/C) (M/S. B. S. Ltd.)	December 2016	No major concerns expressed by project affected people.
52	LILO of Ratlam - Meghnagar 132kv S/c line at Petlawad DCDS (D/C) (M/S. B. S. Ltd.)	December 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
53	LILO of second ckt of Badod - Kota/Madok 220kV line at Bhanpura 220kV S/s (M/S.	December 2016	No major concerns expressed by project affected people.
54	LILO of both ckt of Badod- Kota/Modak 220kV line at Suwasra 220kV S/s (2XD/C)	December 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.

S. No	Sub Project Details	Public consultation carried out during period	Feedback
55	LILO of second ckt of Nagda- Neemuch 220kV line at Daloda 220kV S/s (M/S. Kalptaru)	December 2016	No major concerns expressed by project affected people.
56	LILO of Nagda 220-Ratadiya 132kV line at Unhel (M/S. Kalptaru)	December 2016	People are aware of the project. No major concerns were expressed except related to noise during construction activity and
57	LILO of one ckt of Neemuch 220-Mandsaur 132kV line at Budha 132kvS/s (M/S. Kalptaru)	December 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
Gwalior			December 2016
58	LILO of 132 KV Gwalior- Dabra/ Karera Line at Chinaur	December 2016	People are aware of the project. No major concerns were expressed except related to compensation for crop damaged during project activity.
59	Datiya220- Bhander 132kV DCSS Line (M/S. Bajaj)	December 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
60	Mehgaon 220-Pratappura 132kV DCSS line (M/S. Bajaj)	December 2016	People are aware of the project. No major concerns were expressed except related to noise during construction activity and employment opportunities.
61	Sabalgarh 220- Kelaras 132kV DCSS Line (M/S. Bajaj)	December 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
62	Malanpur 220- Gohad 132kV DCDS Line (M/S. Bajaj)	December 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
63	220 KV DCDS Morena 400 KV (CWRTL Adani) – Sabalgarh DCDS Line	December 2016	People were primarily supportive of the project but were also apprehensive about land acquisition for the project. Assured that no land acquisition would take place due to the project activity.
64	Bhonra-Kapasi 132 kv DCSS line (M/S. L&T)	December 2016	No major concerns expressed.
65	Kolaras-Mada 132kV DCSS line (M/S. L&T)	December 2016	No major concerns expressed.
66	132kv DCDS Guna 220-Bhonra line (M/S. L&T)	December 2016	No major concerns expressed.
67	LILO of one circuit of Malanpur- Mehgaon line	December 2016	People are aware of the project. No major concerns were expressed except related to

S. No	Sub Project Details	Public consultation carried out during period	Feedback
	at 400 KV S/s (CWRTL Adani) Morena		noise during construction activity and employment opportunities.
68	2nd circuit of Shivpuri 220- Kolaras 132kV DCSS line (M/S. L&T)	December 2016	No major concerns expressed by project affected people.
69	2nd ckt of Malanpur-Morar 132kV line (M/S. L&T)	December 2016	No major concerns expressed by project affected people.
Bina			December 2016
70	Khurai- Khimlasa 132kV DCSS line (M/S. B.S. Ltd.)	December 2016	People are aware of the project. No major concerns were expressed except related to noise during construction activity and employment opportunities.
71	LILO of Mungaoli Traction Feeder to Mungaoli (D/C) (M/S. Bajaj)	December 2016	People were primarily supportive of the project but were also apprehensive about land acquisition for the project. Assured that no land acquisition would take place due to the project activity.
72	Ashoknagar 220-Kothiya 132kV DCSS Line (M/S. Bajaj)	December 2016	People enquired about disruption of crop cultivation due to the project. Assured that regular cultivation can resume soon after project is completed.
73	Sagar220- Rehli 132kV DCSS line	December 2016	People were primarily supportive of the project but were also apprehensive about land acquisition for the project. Assured that no land acquisition would take place due to the project activity.
74	2nd ckt of Sagar 220-Sagar 132kV (I/C)	December 2016	No major concerns expressed by project affected people.
75	Stringing of 3rd conductor from Bina220 to Mungaoli (M/S. Bajaj)	December 2016	No major concerns expressed by project affected people.

S. No	Substation Name	Capacity and associated Feeder Bays	Public Consultation carried out during period	Feedback
Jabalpur				
1	Balaghat/Kirnapur 400/132kv (BHEL Noida)	(2 x 100+40MVA) +400kv FB(2) +132kv FB(4)	March 2016	People were aware of the project but were also apprehensive about land acquisition for the project. Assured that no land acquisition would take place due to the project activity.
2	Waraseoni 132kV (M/S. B. S. Ltd.)	40MVA+132kV FB(2)	March 2016	No major concerns reported.
3	Bada Malehra 132/33kV	40 MVA+132kV FB(1)	October 2016	People felt that road connectivity and

S. No	Substation Name	Capacity and associated Feeder Bays	Public Consultation carried out during period	Feedback
				electricity will improve with the initiation of this project.
4	Deonagar 132/33kV (M/S. B. S. Ltd.)	40 MVA+132kV FB(1)	October 2016	No major concerns reported.
5	Belkheda 132/33kV (M/S. B. S. Ltd.)	40MVA+132kV FB(1)	March 2016	No major concerns reported.
6	Karakbel 132/33kV (M/S. B. S. Ltd.)	40MVA+132kV FB(2)	March 2016	Few people want that the project should offer labour jobs during and after the implementation of the project. Moreover, majority of villagers perceive that the youths are educated and they will get jobs during construction and after the construction of the project.
7	Saori 132/33kV S/s (KPTL Ltd.)	(1X50) MVA; 132kV FB(1)	October 2016	People did not mention about any critical issues related to the project.
8	Palohabada 132/33kV S/s (KPTL Ltd.) ¹¹⁵	(1X50) MVA; 132kV FB(1)		People are supportive of the project.
9	Patera 132/33kV S/s (KPTL Ltd.)	(1X50) MVA; 132kV FB(1)	March 2016	People were apprehensive about land acquisition related to the project. Assured that no acquisition would take place.
Satna				
10	Additional Transformer at Sidhi 220 (2nd) (M/S B.S. Ltd.)	+160 MVA	March 2016	No major concerns reported.
11	Additional Transformer at Kotar 220 (2nd) (M/S B.S. Ltd.)	+160 MVA	March 2016	No major concerns reported.
12	Additional Transformer at Chhatarpur (2nd) (M/S B.S. Ltd.)	+160 MVA	March 2016	No major concerns reported.
13	Satna-II 132/33kV S/s (M/S Vikran Engineering Pvt. Ltd.) ¹¹⁶	(2X50) MVA; 132kV FB(2)		People enquired about disruption of crop cultivation due to the project. Assured that project is entirely on government land and

¹¹⁵ Land allotment for substation Palohabada is not yet final and the IEE report will be updated once land allotment is final for this substation.

¹¹⁶ Land allotment for substation Satna II is not yet final and the IEE report will be updated once land allotment is final for this substation.

S. No	Substation Name	Capacity and associated Feeder Bays	Public Consultation carried out during period	Feedback
				would not encroach upon farmlands.
14	Shahdol 220/132kV S/s (Upgradation) (M/S Vikran Engineering Pvt. Ltd.)	(1X60) MVA; 220kV FB(2)+132kV FB(1)	March 2016	No major concerns reported.
Indore				
15	Badnawar 400/220kv	(2x315MVA) + 400kv FB (4) + 220kv FB (4) +125MVAR bus Reactor	Decemebr 2016	People enquired about disruption of crop cultivation due to the project. Assured that project is entirely on government land and would not encroach upon farmlands.
16	Upgradation of Chapda 132kv S/S to 220kv	(1x160MVA) + 220kv FB(2)	Decemebr 2016	No major concerns reported.
17	Upgradation of Depalpur 132kv S/s to 220kv	(1x160MVA) + 220kv FB (1)	Decemebr 2016	No major concerns reported.
18	Agrod 132/33kV	40MVA+132kV FB(1)	Decemebr 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
Barwaha				
19	400/220kv additional transformer at Chhegaon 400kv S/S	1x315 MVA	March 2016	No major concerns reported.
20	Teesgaon 132/33kV	40MVA+132kV FB(1)	Decemebr 2016	People felt that road connectivity and electricity will improve with the initiation of this project.
21	Bistan 132/33 kV	40 MVA+ 132kV FB(1)	October 2016	People enquired about disruption of crop cultivation due to the project. Assured that project is entirely on government land and would not encroach upon farmlands.
22	Pandhana 132/33kV	40MVA+132kV FB(2)	October 2016	People enquired about disruption of crop cultivation due to the project. Assured that project is entirely on government land and would not encroach upon farmlands.
23	Singhana 132/33kV	40MVA+132kV FB(2)	October 2016	People felt that road connectivity and electricity will

S. No	Substation Name	Capacity and associated Feeder Bays	Public Consultation carried out during period	Feedback
				improve with the initiation of this project.
24	Talakpura 132/33kV	40MVA+132kV FB(1)	March 2016	People wanted to know about improvement of infrastructure facilities with the initiation of this project.
25	Kukshi 220/132kv	160 MVA + 220kv FB(2) +132kv FB(1)	March 2016	People enquired about disruption of crop cultivation due to the project. Assured that project is entirely on government land and would not encroach upon farmlands.
26	Chhanera 220/132kV S/s	(2X160+1X50) MVA 220kV FB(2)+132kV FB(3)	December 2016	People wanted to know about improvement of infrastructure facilities with the initiation of this project.
27	Singot 132/33kV S/s	(1X50)MVA; 132kV FB(1)	March 2016	People felt that road connectivity and electricity will improve with the initiation of this project.
Bhopal				
28	Salamatpur 132kv/33kv (M/S. B.S. Ltd.)	40 MVA +132kv FB(1)	October 2016	Some people enquired about water and electricity disruption during construction of the project. Assured that no such disruptions would occur due to the project.
29	Intkhedi 132kv /33kv (M/S. B.S. Ltd.)	63 MVA +132kv FB(2)	October 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
30	400/220kv additional transformer at Bhopal 400kv S/S (BHEL, NOIDA)	1x315 MVA	March 2016	No major concerns reported.
31	Additional Transformer at Mandideep 220 (2nd) (M/S. B.S. Ltd.)	+160 MVA	March 2016	Some people enquired about electricity disruption during construction of the

S. No	Substation Name	Capacity and associated Feeder Bays	Public Consultation carried out during period	Feedback
				project. Assured that no such disruptions would occur due to the project.
32	Narsingharh 132/33kv (M/S. B.S. Ltd.)	40MVA +132kv FB(1)	March 2016	People felt that road connectivity and electricity will improve with the initiation of this project.
33	Adampur 220/33kv (M/S. B.S. Ltd.)	2x50MVA + 220kv FB(2)	December 2016	People wanted to know about improvement of infrastructure facilities with the initiation of this project.
34	Bilkisganj 132/33kV S/s	(1X50) MVA; 132kV FB(1)	December 2016	People felt that road connectivity and electricity will improve with the initiation of this project.
35	Khujner/sindaota 132/33kV	(1X50) MVA; 132kV FB(1)	December 2016	People are supportive of the project and did not express any concerns related to the project.
Itarsi				
36	Additional Transformer at Betul 220 (2nd)	+160 MVA	March 2016	No major concerns reported.
37	Silvani 132kv /33kv	40 MVA +132kv FB(1)	October 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
38	Udaipura 132/33kv	40MVA + 132kv FB(2)	October 2016	
39	Bisnoor/Masod 132/33kV	(1X50) MVA; 132kV FB(1)	October 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
Ujjain				
40	Chhayana 132/33kV	40MVA+132kV FB(1)	December 2016	People are supportive of the project and did not express any concerns related to the project.
41	400kv Bus Reactor at Nagda 400kv S/S	1X125 MVAR	December 2016	
42	Shyamgarh 132/33kV	40MVA+132kV FB(2)	December 2016	People are supportive

S. No	Substation Name	Capacity and associated Feeder Bays	Public Consultation carried out during period	Feedback
	(M/S. B.S. Ltd.)			of the project and did not express any concerns related to the project.
Gwalior				
43	Chinaur 132/33kV	40MVA+132kV FB(1)	March 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
44	Bhander 132/33kV	63MVA+132kV FB(2)	March 2016	People felt that road connectivity and electricity will improve with the initiation of this project.
45	Pratappura 132/33kV	40MVA+132kV FB(1)	March 2016	People are supportive of the project and did not express any concerns related to the project.
46	Kelaras 132/33kV	63MVA+132kV FB(1)	October 2016	No major concerns reported.
47	Gohad 132/33kV	63MVA+132kV FB(2)	October 2016	People felt that road connectivity and electricity will improve with the initiation of this project.
48	Kapasi/ Paranth 132/33kv (M/S. L&T)	(1X50) MVA; 132kV FB(1)	October 2016	People wanted to know about improvement of infrastructure facilities with the initiation of this project.
49	Mada 132/33kV S/s (M/S. L&T) ¹¹⁷	(1X50) MVA; 132kV FB(1)		
Bina				
50	Khimlasa 132/33kV (M/S. B.S. Ltd.)	40MVA+132kV FB(1)	October 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
51	Mungaoli 132/33kV (M/S. Bajaj)	63MVA+132kV FB(2)	October 2016	People are aware and supportive of the project.
52	Kothiya 132/33kV	40MVA+132kV FB(1)	October 2016	People are aware of

¹¹⁷ Land allotment for substation Mada is not yet final and the IEE report will be updated once land allotment is final for this substation.

S. No	Substation Name	Capacity and associated Feeder Bays	Public Consultation carried out during period	Feedback
	(M/S. Bajaj)			the project and wanted to know about employment opportunities associated with the project.
53	Rehli 132/33kV S/s	(1X50) MVA; 132kV FB(1)	December 2016	People are aware and supportive of the project.
Ratlam				
54	Suwasra 220/132kV S/s (M/S. Kalptaru Power Trans. Ltd.)	(2X160+1X50) MVA 220kV FB(4)+132kV FB(4)	March 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
55	Unhel 132/33kV S/s (M/S. Kalptaru Power Trans. Ltd.)	(1X50) MVA; 132kV FB(2)	March 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.
56	Budha 132/33kV S/s (M/S. Kalptaru Power Trans. Ltd.)	(1X50) MVA; 132kV FB(2)	December 2016	People are aware of the project and wanted to know about employment opportunities associated with the project.

Annexure 3: Public consultation Process: Transmission Lines



Public Consultation at Second circuit of Betul
220 Gudgaon 132kv line



Public Consultation at LILO of one
circuit of Vidisha Gairatganj at Raisen
132 KV S/s



Public Consultation at LILO of 132KV
Chhegaon-Nepanagar line at Pandhana



Public Consultation at Ashoknagar 220-
Kothiya 132kv DCSS Line

Annexure 4: Public consultation Process: Substations



Public Consultation at 132/33KV Bhandar substation



Public Consultation at 132/33KV Kothiya substation



Public Consultation at 132/33KV Udaipura substation



Public Consultation at 132/33KV Pratappura substation

Annexure 5: Attendance Sheet of Public consultation

Public Consultation Attendance Sheet for IEL, Loan No. 3066 IND				
S. No.	Name of Person	Employment	Signature	Name of Transmission Line
1	Mr. Ramesh Kumar	Self	[Signature]	Narainpur 220 KV-Kandhal 132 KV DCS Line.
2	Mr. Ramesh Kumar	Self	[Signature]	
3	Mr. Ramesh Kumar	Self	[Signature]	
4	Mr. Ramesh Kumar	Self	[Signature]	
5	Mr. Ramesh Kumar	Self	[Signature]	
6	Mr. Ramesh Kumar	Self	[Signature]	Second circuit of Betul 220 KV-Gudgaon 132 KV Line.
7	Mr. Ramesh Kumar	Self	[Signature]	
8	Mr. Ramesh Kumar	Self	[Signature]	
9	Mr. Ramesh Kumar	Self	[Signature]	
10	Mr. Ramesh Kumar	Self	[Signature]	
11	Mr. Ramesh Kumar	Self	[Signature]	Second circuit of Raigarh - Chyawa
12	Mr. Ramesh Kumar	Self	[Signature]	
13	Mr. Ramesh Kumar	Self	[Signature]	
14	Mr. Ramesh Kumar	Self	[Signature]	
15	Mr. Ramesh Kumar	Self	[Signature]	
16	Mr. Ramesh Kumar	Self	[Signature]	LSD of one ckt. of Vidisha-Chhindwara at Raigarh 132 KV 5%
17	Mr. Ramesh Kumar	Self	[Signature]	
18	Mr. Ramesh Kumar	Self	[Signature]	
19	Mr. Ramesh Kumar	Self	[Signature]	
20	Mr. Ramesh Kumar	Self	[Signature]	
21	Mr. Ramesh Kumar	Self	[Signature]	Second circuit of Rukhi - Alirajpur 132 KV Line.
22	Mr. Ramesh Kumar	Self	[Signature]	
23	Mr. Ramesh Kumar	Self	[Signature]	
24	Mr. Ramesh Kumar	Self	[Signature]	
25	Mr. Ramesh Kumar	Self	[Signature]	
26	Mr. Ramesh Kumar	Self	[Signature]	
27	Mr. Ramesh Kumar	Self	[Signature]	
28	Mr. Ramesh Kumar	Self	[Signature]	
29	Mr. Ramesh Kumar	Self	[Signature]	
30	Mr. Ramesh Kumar	Self	[Signature]	
31	Mr. Ramesh Kumar	Self	[Signature]	
32	Mr. Ramesh Kumar	Self	[Signature]	
33	Mr. Ramesh Kumar	Self	[Signature]	
34	Mr. Ramesh Kumar	Self	[Signature]	
35	Mr. Ramesh Kumar	Self	[Signature]	
36	Mr. Ramesh Kumar	Self	[Signature]	

24	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	Dehiya 220 - Alwar - 132 KV DCS Line
25	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
26	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
27	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	Aishwarya 220 - Kothiyas 132 KV DCS Line
28	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
29	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
30	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
31	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
32	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	LSD of 132 KV Bakhat - Soni/ Kotari Line at Wardah 132 KV S/C (220/132)
33	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
34	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
35	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
36	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
37	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	Pauran 220 - Patan 132 KV DCS Line
38	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
39	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
40	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
41	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
42	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
43	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
44	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	
45	अ. प्र. म. म. -	अ. प्र. म. म. -	अ. प्र. म. म. -	