Initial Environmental Examination

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India: MFF Uttar Pradesh Power Distribution Network Rehabilitation Project

Prepared by the Uttar Pradesh Power Corporation Limited, Government of Uttar Pradesh for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 19 September 2020 (4 Month forward rate
as of 19 May 2020)

Currency Unit	=	Indian Rupee (₹)
₹1.00	=	$0.01307
$1.00	=	₹76.5129

ABBREVIATIONS

ABC	-	aerial bundled conductors
ADB	-	Asian Development Bank
ASI	-	archeological survey of India
ATC	-	aggregate technical and commercial (losses)
BCM	-	billion cubic meters
CEA	-	Central Electricity Authority
CERC	-	Central Electricity Regulatory Commission
CPCB	-	Central Pollution Control Board
DISCOM	-	distribution company
DVVNL	-	Dakshinanchal Vidyut Vitaran Nigam Limited (South Distribution Company)
EFS	-	environmental framework and safeguards (of UPPCL)
EHS	-	environment, health and safety
EIA	-	environmental impact assessment
EMF	-	electromagnetic field
EMP	-	environmental management plan
ESP	-	environmental and social policy (of UPPCL)
GFP	-	grievance focal person
GHG	-	greenhouse gas
GRC	-	grievance redress committee
GRM	-	grievance redress mechanism
ICNIRP	-	International Commission for Non-Ionizing Radiation Protection
IEE	-	initial environmental examination
IFC	-	International Finance Corporation
ILO	-	International Labour Organization
MFF	-	multitranche financing facility
MOEF&CC	-	Ministry of Environment, Forest and Climate Change
MOP	-	Ministry of Power
MVVNL	-	Madhyanchal Vidyut Vitaran Nigam Limited (Central (Distribution Company)
OBC	-	other backward class
PCB	-	polychlorinated biphenyls
PIU	-	project implementation unit
PMA	-	project management agency
PMC	-	project management consultant
PMU	-	project management unit
POPs	-	persistent organic pollutants
PTW	-	private tube wells

PuVVNL	-	Purvanchal Vidyut Vitaran Nigam Limited (East Distribution Company)
PVVNL	-	Pashchimanchal Vidyut Vitaran Nigam Limited (West Distribution Company)
R&R	-	resettlement and rehabilitation
ROW	-	right of way
SAUBHAGHYA	-	Sahaj Bijili Har Ghar Yojana (Government of India project to provide electricity to the households)
SARF	-	safeguard assessment and review framework (combined environmental assessment and review framework and resettlement framework under ADB's Safeguard Policy Statement (2009))
SEC	-	social and environmental cell (of UPPCL)
SEP	-	social and environmental policy (of UPPCL)
SP&P	-	social policy and procedure (of UPPCL)
TKC	-	turnkey contractor
UPPCB	-	Uttar Pradesh Pollution Control Board
UPPCL	-	Uttar Pradesh Power Corporation Limited
WHO	-	World Health Organization

WEIGHTS AND MEASURES

ha	–	hectare
amp	-	ampere
Hz	-	hertz
km	–	kilometer (1,000 meters)
kV	–	kilovolt (1,000 volts)
kW	–	kilowatt (1,000 watts)
mG	-	milligauss

NOTES

(i) The fiscal year (FY) of the Government of India ends on 31 March. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY 2020 ends on 31 March 2020.

(ii) In this report, "$" refers to US dollars unless otherwise stated.

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APPENDIXES

EXECUTIVE SUMMARY

1. This initial environmental examination (IEE) including project-level environmental management plan (EMP) has been prepared based on the assessment of potential sample subproject components and preliminary consultations for the proposed Uttar Pradesh Power Distribution Network Rehabilitation Multitranche Financing Facility Project (the Project) in compliance with Asian Development Bank (ADB) Safeguard Policy Statement (2009), and national (India) environment, health and safety requirements. During project implementation and prior to the commencement of works, it will need to be updated in accordance with the Safeguards Assessment and Review Framework (SARF) for the Project, once the actual subproject components and their design have been confirmed by the turnkey contractors, to reflect the completion of meaningful consultations and any site-specific assessment, mitigation and monitoring measures.

2. The Project will provide improved electricity supply to rural areas of Uttar Pradesh state of India in a financially sustainable manner. The executing agency will be Uttar Pradesh Power Corporation Limited (UPPCL) (an Uttar Pradesh government owned distribution utility company) and it will be responsible for Project implementation oversight. The four subsidiary distribution companies (DISCOMs) of UPPCL will act as the Project implementing agencies for the subprojects, namely, Purvanchal Vidyut Vitran Nigam Ltd (PuVVNL), Dakshinanchall Vidyut Vitran Nigam Ltd (DVVNL), Paschimanchal Vidyut Vitran Nigam Ltd (PVVNL), and Madhyanchal Vidyut Vitran Nigam Ltd (MVVNL).

3. The Project is estimated to cost $800 million. The Government of Uttar Pradesh, through the Government of India, has requested ADB to provide financing in the form of a multitranche financing facility (MFF) with a ceiling on ADB financing of $430 million. ADB will provide a large-scale project loan through a time-sliced MFF of $430 million to UPPCL with a first tranche of $300 million and an indicative second tranche of $130 million. Tranche 2 of the MFF will be requested when substantial progress on disbursements has been achieved under Tranche 1. The Project will be implemented over 9 years with completion date by December 2029 and will have the following outputs:

- Output 1: Electricity distribution network in rural habitations improved.
- Output 2: Systems for separating electricity distribution for agriculture consumers from residential consumers established.
- Output 3. Systems for bill collection in rural areas, financial management and creating gender sensitive workplace improved.

4. Under Output 1, most works will take place within 45,816 habitations across 22 subprojects in 75 districts of all four DISCOMs in order to convert 65,384 km of existing bare conductors to aerial bundled conductors (ABC). Conversion to ABC will utilize existing poles emanating from existing ground or pole-mounted 11 kV/400 V transformers thus impacts are generally anticipated to be minimal. Rehabilitation and replacement of old transformers is not included in the program scope. Under Output 2, feeder separation will be implemented across the regions of two DISCOMs, namely, PVVNL and DVVNL. Feeder separation involves installing new 11 kV lines from existing 33 kV/11 kV substations to connect to existing 11 kV/400 V transformers supplying residential consumers. Under the Project, 1,092 feeders will be separated of which 484 (over 6 subprojects in 14 districts) will be in the PVVNL region and 608 (over 7 subprojects covering 21 districts) will be in the DVVNL region. No new substations are required, feeders will connect to existing substations which may be augmented in order to connect feeders to them.

5. In relation to location, most works will take place within villages for the replacement of existing bare conductors with ABC. Hence, no additional land should be required, except in the case of minor diversions to ensure safety distances from structures are maintained. The feeder lines will require additional land but will mostly be constructed on flat terrain along the right of way of existing rural roads bounded by agricultural land. However, some will run through built-up areas and will be required to cross agricultural land. The associated poles, conductors, and any transformers for feeder lines will require only minor civil works and have a small footprint. While significant impacts could result if subproject locations supported high biodiversity value or internationally or nationally important biodiversity areas and physical cultural resources, these will be avoided through the application of subproject component selection criteria. Similarly, any risks of electrocution to endangered Asian elephants from the distribution lines will be avoided by virtue of location and design. As a result, the Project is unlikely to cause any significant irreversible, diverse, or unprecedented adverse environmental impacts and has been categorized as "B" for environment under ADB's Safeguard Policy Statement (2009).

6. Potential impacts relate to (i) management of existing transformers; (ii) other pollution risks; (iii) management of waste such as old conductors generated by the work; (iv) trimming or cutting of trees along alignments for safety purposes; (v) disturbance to local communities including interference with agricultural activities, road traffic and access during installation; and (vi) occupational and community health and safety issues related to construction and operation as elaborated on in the following sections. These minor impacts and risks will be common to all subprojects regardless of location, mostly temporary and of short duration during construction works, and can be easily dealt with through adherence to national regulations and the adoption of international good practice measures as set out in the IFC Environmental, Health, and Safety (EHS) General Guidelines including EHS Guidelines for Electric Power Transmission and Distribution and the project-level EMP included in this IEE. Given the feeder lines involve existing facilities, the project-level EMP also includes a corrective action plan for existing substations based on audit of sample substations and to be implemented by the DISCOMs prior to contractors being given access to existing substations to connect in the feeder lines. There will also be beneficial socio-economic impacts in relation to the quality of life and improved electricity supply to rural areas of Uttar Pradesh state of India. Mitigation measures will be assured by a program of environmental supervision and monitoring to be conducted during the construction and operation stages. Any unanticipated impacts or requirements for corrective action during implementation will be reported by UPPCL and the DISCOMs to ADB.

7. During preliminary consultations local communities along the potential sample subproject components were invited to express any environmental and social concerns they had regarding the Project. Consultation meetings in 19 villages involving 279 participants (21% female) were held. Local communities identified project benefits and the response was generally positive although some villages did not see the need for feeder separation. No major environmental issues were raised during the consultation process, most felt there would be no environmental impacts as a result of the Project, although attention needs to be paid to alignments, timing of works, involvement of residents in design, visual clutter from too many feeder lines, keeping dust to a minimum, reducing fire risk, avoiding climate change impacts of increasing electricity consumption, and keeping residents informed of the timing of supply to agricultural feeders, ideally at night to reduce evaporation and conserve water resources. This IEE will be made available to public and will be disclosed to a wider audience locally and via ADB website. In accordance with the SARF, meaningful consultation will be completed by the DISCOMs during project implementation to ensure all project stakeholders and local

communities have an opportunity to inform the design of subproject components and any site-specific assessment.

I. INTRODUCTION

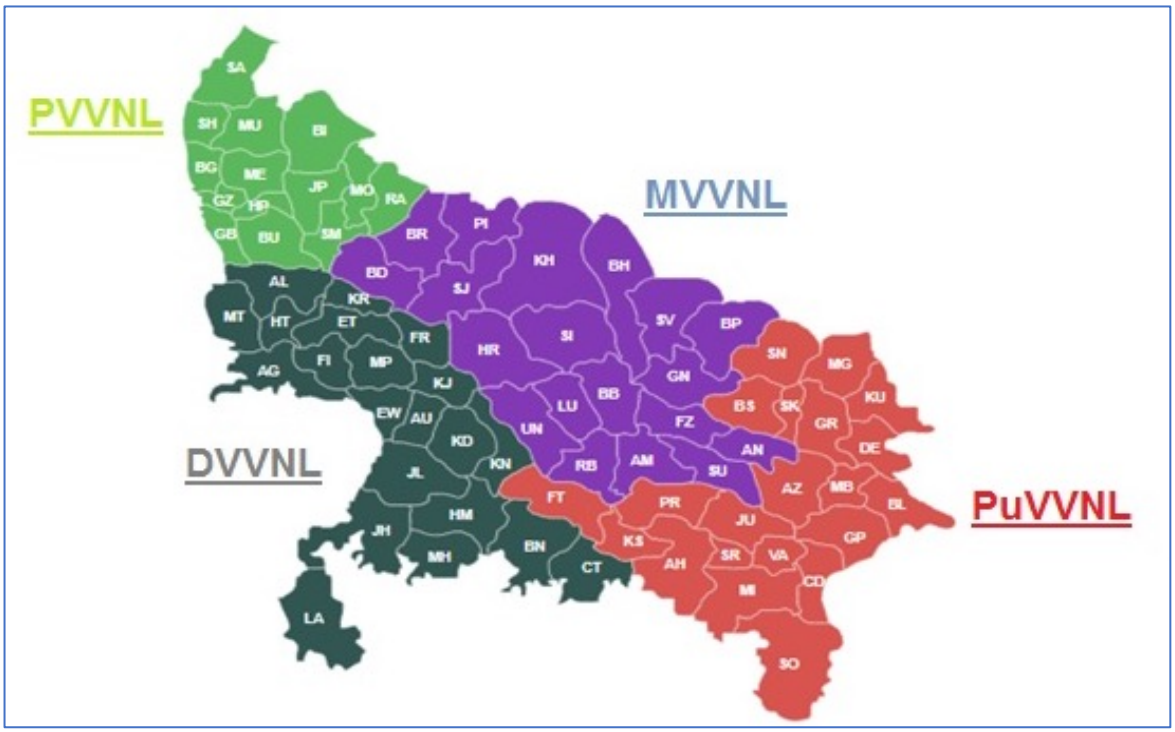
A. Project Background

1. The Indian government has allocated significant resources to Uttar Pradesh under the Integrated Power Development Scheme to rehabilitate the urban distribution network, and under the Deen Dhayal Upadhyay Gram Jyoti Yojana (DDUGJY) scheme to strengthen the rural distribution network. However, there has been a significant funding shortfall given the large investment required to rehabilitate the electricity distribution network in a large state like Uttar Pradesh. The existing government programs are mainly concentrated on strengthening the medium voltage network and extending the low voltage network to provide new connections; thus, maintenance and rehabilitation of the existing low voltage network has been neglected. The Uttar Pradesh power sector has not received assistance from development partners for over 2 decades.

2. Underinvestment in the low voltage distribution network in Uttar Pradesh over several decades combined with increasing number of legal and illegal electricity connections have imposed a severe stress on the operational performance of the network. Overloading of the network has caused the technical losses, whilst the widespread illegal tapping of distribution wires by consumers, unmetered residential and agriculture consumers, and the inefficiency in billing and collections by Uttar Pradesh Power Corporation Limited (UPPCL) (an Uttar Pradesh government owned distribution utility company) have contributed to the high level of commercial losses.

3. The project is aligned with the following impact: improved socio-economic development in rural areas in Uttar Pradesh through 24X7 power supply. The outcome of the proposed Uttar Pradesh Power Distribution Network Rehabilitation Multitranche Financing Facility Project (the Project) will be improved electricity supply to rural areas of Uttar Pradesh state of India in a financially sustainable manner. The executing agency will be UPPCL and it will be responsible for Project implementation oversight. The four subsidiary DISCOMs of UPPCL will act as the Project implementing agencies for the subprojects, namely, Purvanchal Vidyut Vitran Nigam Ltd (PuVVNL), Dakshinanchall Vidyut Vitran Nigam Ltd (DVVNL), Paschimanchal Vidyut Vitran Nigam Ltd (PVVNL), and Madhyanchal Vidyut Vitran Nigam Ltd (MVVNL). All the four DISCOMs conduct the business of distribution and retail supply of electricity in their franchise areas shown in Figure 1.

Figure 1: Distribution Areas of each DISCOM in Uttar Pradesh



4. The Project is estimated to cost $800 million. The Government of Uttar Pradesh, through the Government of India, has requested the Asian Development Bank (ADB) to provide financing in the form of a multitranche financing facility (MFF) with a ceiling on ADB financing of $430 million. ADB will provide a large-scale project loan through a time-sliced MFF of $430 million to UPPCL with a first tranche of $300 million and an indicative second tranche of $130 million. Tranche 2 of the MFF will be requested when substantial progress on disbursements has been achieved under Tranche 1. The Project will be implemented over 9 years with completion date by December 2029.

5. The Project will have following outputs:

- **Output 1: Electricity distribution network in rural habitations improved.** This will consist of replacement of existing bare conductors with aerial bundle conductors (ABC) in rural low voltage distribution network in approximately 46,000 rural habitations having a population of more than 1,000 in Uttar Pradesh and the Project impact areas will have a population of approximately 70 million . It is expected approximately 65,000 km of distribution lines will be converted to ABC. This will improve the reliability and safety of electricity distribution and cost recovery by discouraging the illegal connections. The rural communities including women will also be trained in safe and efficient use of electricity.

- **Output 2: Systems for separating electricity distribution for agriculture consumers from residential consumers established.** Approximately 1,100 11 kV feeders having a length of 17,000 km and supplying 273,000 private tube wells (PTWs) and 2.42 million households will be separated. Separate 11 kV feeders of approximately 17,000 km will be constructed under this component to connect the existing distribution transformers supplying residential consumers while retaining the existing 11 kV feeder for supplying the agricultural consumers. This will enable UPPCL to increase the

duration of power supply to rural households from 18 hours at present to 22–24 hours and control the supply duration to PTWs to match the seasonal requirement of water for agriculture. This is expected to reduce the wastage of electricity and groundwater by agricultural users and reduce the financial and fiscal burden of supplying electricity to unmetered PTWs.

6. **Output 3. Systems for bill collection in rural areas, financial management and creating gender sensitive workplace improved.** This will be delivered through the attached technical assistance (TA) grant. This grant will finance (i) developing and pilot testing innovative bill collection strategies involving active participation of rural women as collection agents; (ii) strengthening the financial management capacity of UPPCL and four distribution companies (DISCOMs), such as establishing and maintaining a comprehensive fixed asset register, reconciliations of receivable balances, ageing analysis and development of provisioning policy; (iii) supporting UPPCL in adopting Indian Accounting Standards and related areas; (iv) facilitating introduction of gender sensitive workplace practices improved working conditions for contractual workers with focus on female contractual workers; and (iv) supporting the implementation of Financial Management Action Plan to improve the corporate governance of UPPCL.

7. The Project which is state-wide will be implemented under 26 turnkey contracts (subprojects) for ADB funded work and an additional 9 turnkey contracts for counterpart funded work, For the ADB funded work contracts are based on a bill of quantities for an estimated km of distribution lines and a long list of villages across 3-4 districts in each distribution zone as presented in Appendix 1 with a further district wide breakdown of both the ADB and counterpart funded works in Appendix 2. Replacement of bare conductors with ABC will take place under 13 contracts/subprojects (covering 40 districts in two DISCOMs) funded by ADB with a further 9 contracts/subprojects (covering 35 districts in two DISCOMs) funded by counterpart funds. Separation of 11 kV feeders will take place under 13 contracts/subprojects covering 35 districts of Uttar Pradesh. The actual subproject components and their design to be included in the scope of the Project within each of the DISCOMs will be confirmed by the turnkey contractors during project implementation and are still to be determined.

B. Objective of the IEE

8. This IEE documents the environmental assessment of the Project based on information available to date and identifies the potential adverse environmental impacts and risks which need to be considered in the design, pre-construction, and construction phases, to be undertaken by 45 turnkey contractors under the direction of the DISCOMs, and the operation and maintenance phases, to be undertaken by the DISCOMs, of the Project. The initial environmental examination (IEE) addresses, as far as required, the environmental management, health and safety requirements of India as well as those of the ADB's Safeguard Policy Statement (2009). The objectives of the IEE are to:

- identify any legislative and approval requirements under which project activities must occur;
- assess the existing environmental conditions and receptors in the project area of influence including the identification of environmentally sensitive areas, such as, protected areas;
- assess the direct, indirect, cumulative, and induced environmental impacts of the project on and risks to physical, biological, socioeconomic, and physical cultural resources; and

- set out in an EMP the mitigation and monitoring measures that will guide environmental management during design, pre-construction, construction, operation and maintenance of the Project.

C. Methodology of the IEE

9. The IEE including a project-level EMP has been prepared by TA consultants supported by ADB to fulfil ADB's Safeguard Policy Statement (2009) requirements on behalf of UPPCL and the DISCOMs. The IEE also considers relevant environmental, health and safety requirements of India and any international agreements India is a signatory to. The environmental assessment was informed by reconnaissance surveys, preliminary consultations, and review of secondary data sources by the TA consultants. The stepwise activities carried out include:

- review of legal requirements,
- review of available project details and identification of potential sample subproject components in consultation with the DISCOMs,
- reconnaissance surveys for potential sample subproject components during June to October 2019,
- secondary data collection from the internet, Government of Uttar Pradesh, and the DISCOMs,
- preliminary consultations with local communities along the potential sample subproject components,
- identification of potential adverse environmental impacts and risks, and
- identification of mitigation and monitoring measures for inclusion in project-level EMP.

10. The environmental assessment was carried out for various environment components including terrestrial and aquatic ecology, ornithology, soil, water, air, noise, socio-economic aspects including occupational and community health and safety, and physical cultural resources. Non-location specific impacts have been assessed in full since they will occur regardless of location. However, since the actual subproject components and their design will not be confirmed until the turnkey contractors are on board, the assessment of location specific impacts has been based on eight potential sample subproject components and anticipated routings of the new 11kV feeder separation lines to be installed. These feeders were selected by the social specialists in consultation with officials of concerned DISCOMs; officials considered that these feeders were representative of both their DISCOM and the state and present the spectrum of impacts and risks that may be encountered. Given that the turnkey contractors will decide which villages from their long list will be included, these feeder lines may or may not be included in the project.

11. Once the actual subproject components and their design have been confirmed by the turnkey contractors the IEE will need to be updated. Any update to the IEE and EMP will be subject to ADB clearance and disclosure. The application of subproject component selection criteria set out in the SARF will ensure any locations supporting high biodiversity value or internationally or nationally important biodiversity areas and physical cultural resources will be avoided. The IEE and EMP will also need to be updated and revised, if necessary, during project implementation if there are any unanticipated impacts including a scope or design change.

12. Secondary data has been collected on a state-wide basis since activities will take place across Uttar Pradesh. For the potential sample subproject components, the project area of

influence as defined in ADB's Safeguard Policy Statement (2009) was taken as a 30m corridor along the distribution line alignments (right of ways (ROW) for 11 kV distribution lines in forests are 7m, and the footprint of civil works for the foundations of any new poles would be a maximum 1m^2) plus a 1km buffer zone in respect of environmentally sensitive areas, such as, protected areas.

D. Structure of the IEE

13. In compliance with ADB's Safeguard Policy Statement (2009) requirements, this IEE has been structured and consists of eight sections: (i) Introduction; (ii) Policy, Legal and Administrative Framework; (iii) Description of the Project; (iv) Description of the Environment; (v) Anticipated Environmental Impacts and Mitigation Measures; (vi) Consultations, Participation, and Information Disclosure; (vii) Environmental Management Plan including the Corrective Action Plan (CAP) for existing facilities (substations); and (viii) Conclusion and Recommendation. The executive summary is also provided at the beginning of the IEE report.

II. POLICY, LEGAL AND ADMINSTRATIVE FRAMEWORK

14. The Project will be undertaken in accordance with ADB's Safeguard Policy Statement (2009) requirements, Government of India, and Government of Uttar Pradesh environment, health and safety policies, laws, and regulatory requirements, including relevant international agreements.

A. Government of India Framework

15. **Environment Framework.** The legal framework of the country consists of several acts, notifications, rules and regulations to protect the environment and wildlife. In 1976, the 42nd Constitutional Amendment created Article 48A and 51A, placing an obligation on every citizen of the country to attempt to conserve the environment. The legal framework is broadly divided under following categories:

- Environmental Protection;
- Forests Conservation; and
- Wild Life Protection.

16. The umbrella legislation under each of the above categories is as follows:

- **The Environment (Protection) Act, 1986** was enacted with the objective of providing for the protection and improvement of the environment. It empowers central government to establish authorities charged with the mandate of preventing environmental pollution in all its forms and to tackle specific environmental problems that are peculiar to different parts of the country. Various rules are framed under this act for grant of environmental clearance for any development project, resources conservation and waste management.
- **The Forest Conservation Act, 1980** was enacted to help conserve the country's forests. It strictly restricts and regulates the de-reservation of forests or use of forest land for non-forest purposes without the prior approval of central government. To this end the act lays down the pre-requisites for the diversion of forest land for non-forest purposes.
- **Wild Life (Protection) Act, 1972 (amended 2003)** was enacted with the objective of effectively protecting the wildlife of the country and to control poaching, smuggling and illegal trade in wildlife and its derivatives. It defines rules for the protection of wildlife and ecologically important protected areas.

17. **Institutional Arrangements for the Environment Framework.** The environmental management and pollution control framework at Government of India level defines the roles and responsibility of various ministries and government departments at central level and state level with the Ministry of Environment, Forest and Climate Change (MOEF&CC) at central level as the apex body and state boards/departments working under their guidance and overall coordination. Uttar Pradesh Pollution Control Board (UPPCB) together with Central Pollution Control Board (CPCB) provide the regulatory function for pollution prevention and control applicable to the Project. Other ministries/departments responsible for ensuring environmental compliance and granting various clearances/permits for the Project are the Environment, Forest and Climate Change Department of Uttar Pradesh.

18. **Environmental Clearance.** The environmental impact assessment (EIA) requirement in India is based on the Environment (Protection) Act, 1986 and the Environmental Impact

Assessment Notification, 2006 (amended 2009). Neither conversion of rural low voltage distribution network to ABC nor feeder separation fall under the purview of EIA Notification, 2006 so no environmental clearance is required for the Project. However, construction work including the establishment by the contractor of any related facilities for a subproject, such as, construction camps is still required to comply with the provisions of various acts and rules. UPPCL and the DISCOMs will need to ensure compliance by the turnkey contractors and their subcontractors with these acts and rules through contractual obligations and regular supervision checks and penalties. The applicable standards for air, noise and water quality are provided in Appendix 3.

- The Water (Prevention and Control of Pollution) Act 1972 (Amended 1988) and Rules 1974;
- The Air (Prevention and Control of Pollution) Act, 1981 (Amended 1987) and Rules 1982;
- The Noise Pollution (Regulation and Control) Rules, 2000 (Amended 2002);
- Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; and
- Regulation of Polychlorinated Biphenyls Order, 2016 (S.O. 1327(E).

19. **Forest Clearance**:

(i) As per the Forest Conservation Rules (1981, amended 2003) a forestry clearance from Department of Forests is required for diversion of forest land for non-forest purpose. Processing of the forestry clearance entails two stages: stage I and stage II. Among other requirements, stage I clearance requires the applicant to make payments for compensation of forest land that will be acquired and trees that will be cut. Accordingly, timely allocation of budget for this purpose by the applicant is necessary to expedite the clearance process. Per the subproject component selection criteria, it should be noted that subprojects involving forest land will not be eligible under the Project.

(ii) Cutting of trees in non-forest land requires a tree cutting permit from the local forest department. All trees cut under the Project must be compensated by compensatory afforestation as required by the Forest Department. Obtaining the tree cutting permit needs special attention in order to avoid any delays to subproject implementation.

20. The Forest (Conservation) Act, 1980 provides guidance on the distribution line right of way (ROW) and tree cutting. Where routing of distribution lines through forest areas cannot be avoided, they should be aligned in such a way that it involves the least number of trees cutting. The maximum width of a ROW for distribution lines on forest land is given in Table 1. Below each conductor, a width clearance of 3 meters (m) would be permitted for the movement of tension stringing equipment. The trees within this width would have to be felled but, after cable stringing is completed, the natural vegetation should be allowed to regenerate. Felling/pollarding/pruning of trees will be done with the permission of the local forest officer whenever necessary to maintain the electrical clearance. One outer strip of 2m width shall be left clear (without any encroachment) to permit maintenance of the distribution line.

Table 1: Description of Right-of-Way of Distribution Lines in Forest Areas

Voltage (kV)	ROW (meter)
11	7

Sources: Code of Practice for Design, Installation and Maintenance of Overhead Power Lines, Part 1 – Lines up to and including 11 kV (IS 5613), and MOEF&CC Guidelines for Laying Transmission Lines Through Forest Areas (MOEF&CC F.No.7-25/2012-FC, dated 5 May 2014.

21. **Labour, Health and Safety Framework.** There are many acts and regulations framed by the Government of India for the protection of workers applicable to UPPCL, DISCOMs, and contractors in charge of construction under the Project. There are also health and safety aspects included under energy related legislation applicable to distribution networks.

22. UPPCL and the DISCOMs will need to ensure compliance by the turnkey contractors and their subcontractors including informal workers to these labour, health and safety acts and rules through contractual obligation and regular supervision checks and penalties:

- The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996;
- Child Labour (Prohibition and Regulation) Act, 1986;
- Minimum Wages Act, 1948;
- Workmen Compensation Act, 1923;
- Payment of Gratuity Act, 1972;
- Employee State Insurance Act;
- Employees P.F. and Miscellaneous Provision Act, 1952;
- Maternity Benefit Act, 1951;
- Payment of Wages Act, 1936;
- Equal Remuneration Act, 1979;
- Inter-State Migrant Workmen's (Regulation of Employment & Conditions of Service) Act, 1979;
- Equal Remuneration Act, 1979
- Electricity Act (1910) and its Amendments (2004) and (2007);
- Indian Electricity (Uttar Pradesh Amendment) Ordinance, 2002;
- Electricity Rule (1956) and its Amendments (2000);
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998 EMF Guidelines; and
- The Indian Telegraphic Act (1885) and its Amendments (2003).

23. **Applicable Requirements.** A review was undertaken of permissions and clearances that might be applicable to the Project, those applicable are summarised in Table 2.

Table 2: Applicable Environmental National and State Requirements

No.	Permissions/Clearances and relevance to the Project	Acts/Rules/ Notifications/ Guidelines	Concerned Agency	Responsibility/ Status
1.	Forest clearance for subproject components located in forest land.	Forest Conservation Act, 1980.	Environment, Forest and Climate Change Department of Uttar Pradesh	Per the SARF selection criteria subproject components involving forest land will not be eligible under the Project.
2.	Permission for felling of trees for subprojects requiring cutting of trees.	Forest Conservation Act, 1980.	Concerned District Authorities in Uttar Pradesh State in non-forests areas.	For non-forest areas DISCOMs / to be obtained
3.	Authorization for disposal of hazardous waste for handling and disposal of phased out distribution transformers.	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	Uttar Pradesh Pollution Control Board.	DISCOMs / to be obtained
4.	Permit for employing labour/workers for construction work.	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996	District Labour Commissioner for concerned districts.	Turnkey contractor engaged by DISCOM / to be obtained before construction works
5.	Permission for use of water for construction and drinking purpose for workers during construction work.	Environment (Protection) Act, 1986	Respective Municipal Office of Project region.	Turnkey contractor engaged by DISCOM / to be obtained before use of water for construction or drinking purpose

B. UPPCL Environmental and Social Policy

24. The UPPCL has high concern for ensuring a clean environment and sustainable development in its every activity. To achieve this objective UPPCL has formulated its own environmental framework and safeguards (EFS) for transmission and distribution projects and subsequent environment management plans (EMPs). To effectively minimise adverse impacts,

UPPCL's EFS for transmission and distribution projects requires an EMP. This EMP is an important tool that suggests suitable mitigative measures for identified impacts, during planning, construction and maintenance stages of transmission and distribution works. Environmental impacts that may arise during implementation are loss of vegetation, forests and land. Other impacts include loss of cultural and historical heritage, generation of chemical contaminates and fire hazards. Suitable mitigation measures are to be implemented and monitored at various stages of project implementation by the zonal level project authorities.

25. In addition, UPPCL announced an environmental and social sustainability policy focusing specifically on the distribution system as of 23 July 2020 (Appendix 10). It recognizes that distribution system works may have environmental impacts, albeit minor. The following environmental commitments and principles of UPPCL's environmental and social sustainability policy will be implemented by the UPPCL and DISCOMs while designing and implementing the Project.

- Ensure transparency of the project to all stakeholders through dissemination of information and consultation at every stage of project implementation.
- Maintain the highest standards of social and environmental responsibility not only towards employees but also to the consumers and the community as well.
- Minimize ecological impacts on environment, land and flora/fauna through progressive policies like consciously economizing on the requirement of the land.
- As far as possible avoid operations in environmentally sensitive areas with special respect for fragile ecosystems and their inherent biodiversity.
- As far as possible avoid areas like high mountains, hilly terrain prone to landslides, large lakes, reservoirs, and marshy places.
- Care is taken to route the lines through a minimum disturbance path.
- Avoid protected area to the extent possible.
- ROW is selected duly considering the location of different utilities such as telecommunication lines, railway circuits, and gas pipelines to avoid interference.
- Adoption of best technology / latest equipment to avoid pollution and to ensure electrical safety.
- Minimize energy losses and promote energy efficiency in all activities.
- Used transformer oil, batteries, and capacitor banks to be disposed of with utmost care as per prescribed norms to minimize any ill effect on the environment.
- Concerns and complaints of affected persons and communities should be addressed in a manner that is fair, objective, and constructive. A mechanism shall be established to enable individuals and communities affected by any operational activities to raise their grievances.

C. Safeguard Policy Statement Requirements

26. Specific to environmental aspects, the objective of the ADB's Safeguard Policy Statement (2009) is to "ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making

process." The environmental policy principles of ADB's Safeguard Policy Statement (2009) are as follows:

(i) Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks.

(ii) Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.

(iii) Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.

(iv) Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an EMP that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.

(v) Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.

(vi) Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.

(vii) Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.

(viii) Do not implement project activities in areas of critical habitats, unless (a) there are no measurable adverse impacts on the critical habitat that could impair its ability to function; (b) there is no reduction in the population of any recognized

endangered or critically endangered species; and (c) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (a) alternatives are not available; (b) the overall benefits from the project substantially outweigh the environmental costs; and (c) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.

(ix) Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's EHS Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gas (GHG) emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phaseouts. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.

(x) Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.

(xi) Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.

27. ADB's Safeguard Policy Statement (2009) defines the requirements to be followed with regards to project screening and classification, information disclosure, consultation and participation, due diligence, monitoring and reporting, local grievance redress mechanisms, and ADB's Accountability Mechanism.

28. **Project screening and classification**. ADB's Safeguard Policy Statement (2009) requires screening as early as possible to (i) determine the significance of adverse impacts; and (ii) identify the level of assessment and institutional resources required; and (iii) determine disclosure requirements. A project's category is determined by its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Each project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are then assigned to one of the following three categories:

- **Category A**. A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.

- **Category B**. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
- **Category C**. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

29. ADB has categorized Tranche 1 of the MFF Project as category B for environment, Tranche 2 is likely to have the same categorization.

30. **Information disclosure**. ADB's Safeguard Policy Statement (2009) requires information about environmental safeguard issues to be made available in a timely manner, in an accessible place, and in a form and language(s) understandable to affected people and to other stakeholders, including the general public, so they can provide meaningful inputs into project design and implementation. For illiterate people, suitable communication methods will be used. During project implementation UPPCL will need to submit the following for posting on ADB's website: (i) final or updated IEEs and corrective action plans prepared during implementation by the DISCOMs upon receipt by ADB; and (ii) environment monitoring reports submitted by UPPCL during project implementation upon receipt by ADB.

31. **Consultation and participation**. ADB's Safeguard Policy Statement (2009) requires communities, groups, or people affected by proposed projects, and civil society to be engaged by UPPCL through information disclosure, consultation, and informed participation in a manner commensurate with the risks to and impacts on affected communities. Meaningful consultation processes are defined as those that, (i) beginning early in the project preparation stage and being carried out on an ongoing basis throughout the project cycle; (ii) providing timely disclosure of relevant and adequate information that is accessible to affected people; (iii) being free of intimidation and coercion; (iv) being gender inclusive and responsive; and (v) enabling the incorporation of all relevant views of affected people and other stakeholders in decision-making. The consultation process and its results are to be documented and reflected in the IEE report.

32. **Monitoring and reporting**. ADB's Safeguard Policy Statement (2009) requires that UPPCL implement the safeguard measures and relevant safeguard plans, as provided in the legal agreements, and submit periodic monitoring reports on their implementation performance. Given the Project is category B for environment, UPPCL is required to (i) establish and maintain procedures to monitor the progress of implementation of safeguard plans; (ii) verify the compliance with safeguard measures and their progress toward intended outcomes; (iii) document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports; (iv) follow up on these actions to ensure progress toward the desired outcomes; and (v) submit periodic monitoring reports on safeguard measures as agreed with ADB. In addition to recording information to track environmental performance, UPPCL will need to undertake inspections to verify compliance with the EMP and progress toward the expected outcomes. Environmental monitoring reports should describe progress with implementation of the EMP and compliance issues and corrective actions, if any, and be posted in a location accessible to the public. ADB will also monitor projects on an ongoing basis until a project completion report is issued.

33. **Local grievance redress mechanisms (GRM) and ADB's Accountability Mechanism**. ADB's Safeguard Policy Statement (2009) requires that UPPCL set up and maintain a GRM to receive and facilitate resolution of affected peoples' concerns and

grievances about their environmental performance at project level. It should address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people. Affected people can also take complaints to ADB's Accountability Mechanism although they should approach the local GRM in the first instance; but the GRM should not impede access to the country's judicial or administrative remedies.

a. IFC Environmental, Health, and Safety (EHS) Guidelines

34. The Project will follow national as well as international good practice related to environment, health and safety including as set out in the IFC EHS General Guidelines (30 April 2007), in particular Section 4 on Construction and Decommissioning and the guidelines on Electric Power Transmission and Distribution. The latter requires consideration of terrestrial and aquatic habitat alteration, electric and magnetic fields, hazardous materials, occupational health and safety and community health and safety.

35. UPPCL and the DISCOMs are required to follow these guidelines regarding assessment of potential impacts and applicable standards and management measures, performance indicators, and monitoring guidelines; they should also ensure that all appointed contractors and subcontractors follow the guidelines. When country regulations differ from these standards and measures, UPPCL will ensure that it achieves whichever is more stringent.

D. International and Regional Treaties, Conventions, and Agreements

36. India is a party and signatory to several international and regional environmental treaties, conventions, and agreements for which the MOEF&CC is the national focal point. Screening was carried out of these treaties regarding applicability to this Project. Key international agreements that India is signatory to and relevant for the Project are as follows:

- Convention Relative to the Preservation of Fauna and Flora in the Natural State (1933) - no direct relevance, but seek to avoid loss of natural flora and fauna
- International Plant Protection Convention (1951) - no direct relevance, but seek to avoid loss of natural flora and fauna
- Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar, 1971) – ensure potential impacts on Ramsar designated sites avoided
- Convention concerning the Protection of World Cultural and Natural Heritage (Paris, 1972) – ensure potential impacts on world cultural and natural heritage designated sites avoided
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 1973) – no direct relevance, but seek to avoid poaching by construction workers
- Convention on Migratory Species of Wild Animals (Bonn, 1979) – ensure potential impacts on any mitigatory species supported by the Project area of influence assessed and managed
- Convention on the Prior Informed (Consent) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC or Rotterdam, 1990) - no direct relevance, but avoid use of hazardous chemicals and pesticides
- United Nations Framework Convention on Climate Change (Rio De Janeiro, 1992) - stabilize GHG emissions, SF6 is a GHG used in gas insulated switchgear although it is not used in project scope.

- Convention on Biological Diversity (Rio De Janeiro, 1992) - biodiversity conservation and sustainable usage, habitat preservation, and protection of indigenous people's rights, and intellectual property, no direct relevance, but seek to avoid loss of natural flora and fauna
- Protocol to the United Nations Convention on Climate Change (Kyoto, 1997) - to achieve stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level low enough to prevent dangerous anthropogenic interference with the climate system, SF6 is a GHG used in gas insulated switchgear although it is not involved in project scope.
- Stockholm Convention- of Persistent Organic Pollutants (POPs) (1972) - ensures the environmentally sound management and the disposal of POPs including polychlorinated biphenyls (PCBs). India has started using PCB free equipment, but existing equipment contaminated and cross contaminated with PCBs are also present in significant quantity. The convention gives governments until 2025 to phase out "in–place equipment" such as electrical transformers containing PCBs, as long as the equipment is maintained in a way that prevents leaks. It grants them another three years to destroy the recovered PCBs. The recovered PCBs must be treated and eliminated by 2028.
- Basel Convention - this convention came into force on 5 May 1992 and aims to reduce the amount of waste produced by signatories and regulates the international traffic in hazardous wastes including PCBs and asbestos which may be present in existing facilities.
- International Labour Organization (ILO) conventions and protocols ratified by India (47 conventions and 1 protocol) - related to the core labor standards for construction workers
- ILO Asbestos Congestion, 1986 (Convention No. C 162) – yes to be ratified by India but will be applied to project as measure to avoid use of asbestos in substations. This convention applies to all activities involving exposure of workers to asbestos in the course of work.

37. UPPCL will need to ensure the Project is implemented in compliance with the above agreements.

III. DESCRIPTION OF THE PROJECT

A. Location of Project Components

38. The Project which is based in the Uttar Pradesh State of India (Figure 2) which has 18 divisions and 75 districts will be state-wide. Uttar Pradesh, with a total area of 243,290 square kilometers (km^2), is India's fourth-largest state in terms of land area and it is situated on the northern spout of India and shares an international boundary with Nepal. The Project will be implemented in numerous villages across the state under 45 turnkey contracts (subprojects) with the actual subproject components and their design to be included in the scope of the Project to be confirmed by the turnkey contractors during project implementation. Replacement of bare conductors with ABC will take place under 13 contracts/subprojects (covering 40 districts in two DISCOMs) funded by ADB with a further 9 contracts/subprojects (covering 35 districts in two DISCOMs) funded by counterpart funds. Separation of 11 kV feeders will take place under 13 contracts/subprojects covering 35 districts of Uttar Pradesh. The 26 contracts to be awarded under the Project for ADB funded work consist of an estimated km of distribution line and long list of villages across 3-4 districts in each distribution zone as presented in Appendix 1 with a further district wide breakdown of both the ADB and counterpart funded works in Appendix 2.

Figure 2: Map of the State of Uttar Pradesh

B. Output 1 Subprojects and Construction Works

39. Under the Project, conversion of the rural low voltage distribution network to ABC will be implemented across all four DISCOMs (Figure 1). The loan proceeds from ADB will finance this work in two DISCOMS namely MVVNL and PuVVNL while counterpart funds will fund work in the remaining two DISCOMS namely DVVNL and PVVNL. There will be 21 districts consisting of a total of 15,334 habitations in PuVVNL and 19 districts consisting of 11,299 habitations in MVVNL funded by ADB. There will be 21 districts consisting of a total of 10,932

habitations in DVVNL and 14 districts consisting of 8,251 habitations in PVVNL which will be counterpart funded. In all there will be 22 contracts/subprojects. The Output 1 Project activities by DISCOM are given in Table 3. The habitations included are already electrified; have a population size of between 1,000 to 5,000; and are characterized by high levels of distribution losses and a high per capita power consumption.

Table 3: Conversion to ABC

	PuVVNL	**MVVNL**	**DVVNL**	**PVVNL**	**Total**
	ADB funded		**Counterpart funded**		
Number of subprojects	6	7	5	4	22
Number of Districts	21	19	21	14	75
Number of Habitations	15,334	11,299	10,932	8,251	45,816
Length to be converted to ABC (km)	10,864	21,248	14,031	19,241	65,384
Cost (₹ Million)	5,612	8,160	5,111	5,612	30,147

40. Most works under Output 1 will take place within villages in order to convert existing bare conductors to ABC. Maps A to D show the routings of existing (LT) networks in sample villages within PuVVNL and DVVNL for illustrative purposes, these villages may or may not be included in the Project scope by the turnkey contractors. LT networks commence from the 11 kV/400 V transformers at the edge of or in the center of the village which is fed by 11kV feeder.

41. It will generally take less than a week to complete reconductoring works in each village. Conversion to ABC will utilize existing poles emanating from existing ground or pole-mounted 11 kV/400 V transformers. Rehabilitation and replacement of old transformers is not included in the program scope. The main activities involved in conversion to ABC are:

(i) Network survey and design: This includes surveying existing low tension (LT) networks to collect basic information such as coordinates of lines, alignment, location of poles, sensitive receptors; preparation of a single line diagram indicating survey information; preparation of a schedule of network survey information; and preparation of the load readings network design for conversions of bare conductors to ABC.

(ii) Installation of poles: This activity will be carried out in the event there are locations where minor diversions to avoid sensitive receptors; are required or when it is deemed to be necessary to replace existing unusable poles along the same alignment. The exact number of poles required is to be defined by the contractor. All unusable poles will be removed and either reused or disposed of. If the existing pole is removed for reuse measures will be taken not to damage the pole during removal. Existing poles will be removed by pulling the complete pole from the ground; poles will not be cut off at the ground level. Poles will then be cleaned, and any material attached to the pole (including concrete) removed. Unused pits will then be backfilled and compacted completely with enough backfill piled above grade to prevent depressions being created by natural compaction. For new pole locations digging of any foundation pits is done manually using auguring tools, concrete mixture for foundation is cast, and poles are unloaded for erection which is done using chain and pulley blocks.

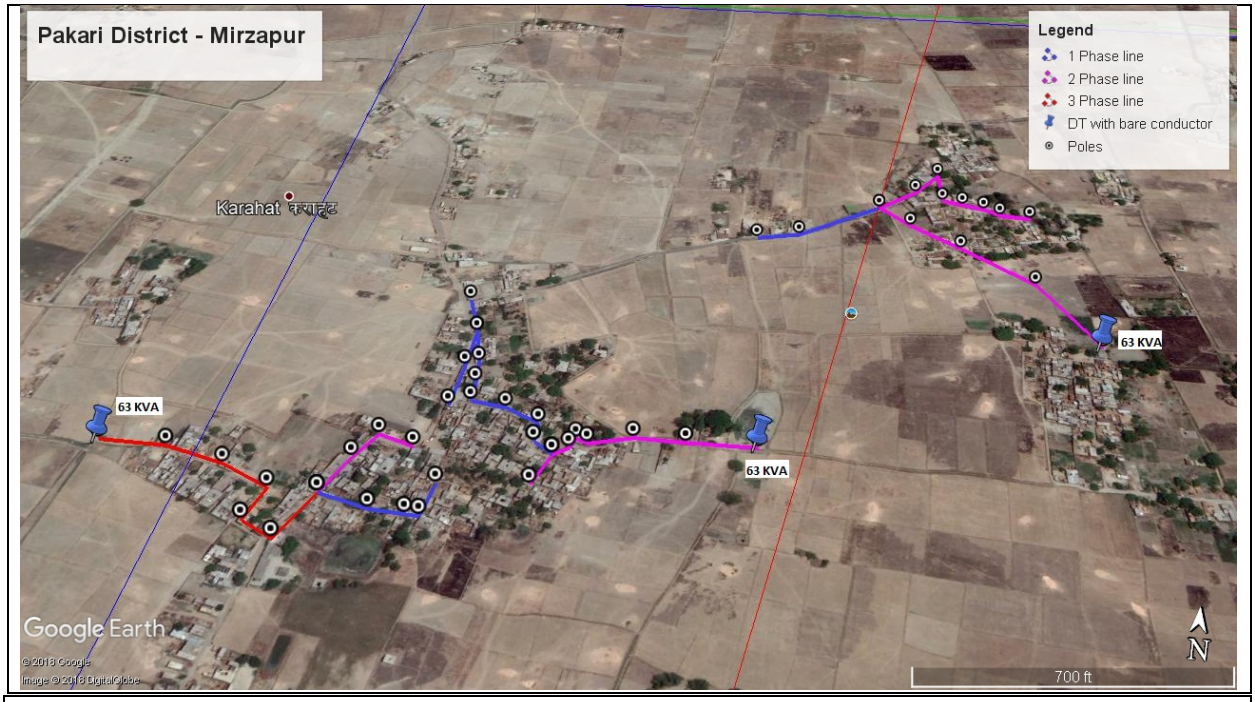
(iii) Installation of stays and struts for supporting distribution poles.

(iv) Trimming of trees: In the event trimming of tree branches is required, the contractor will mark with suitable quality of paint all the trees that are required to be trimmed to obtain the required safety clearance. Permission from the local administration will be arranged for trimming of trees by the contractor through the DISCOM Project Manager. The contractor will pay compensation for any loss or damage due to the fault of the contractor's work.

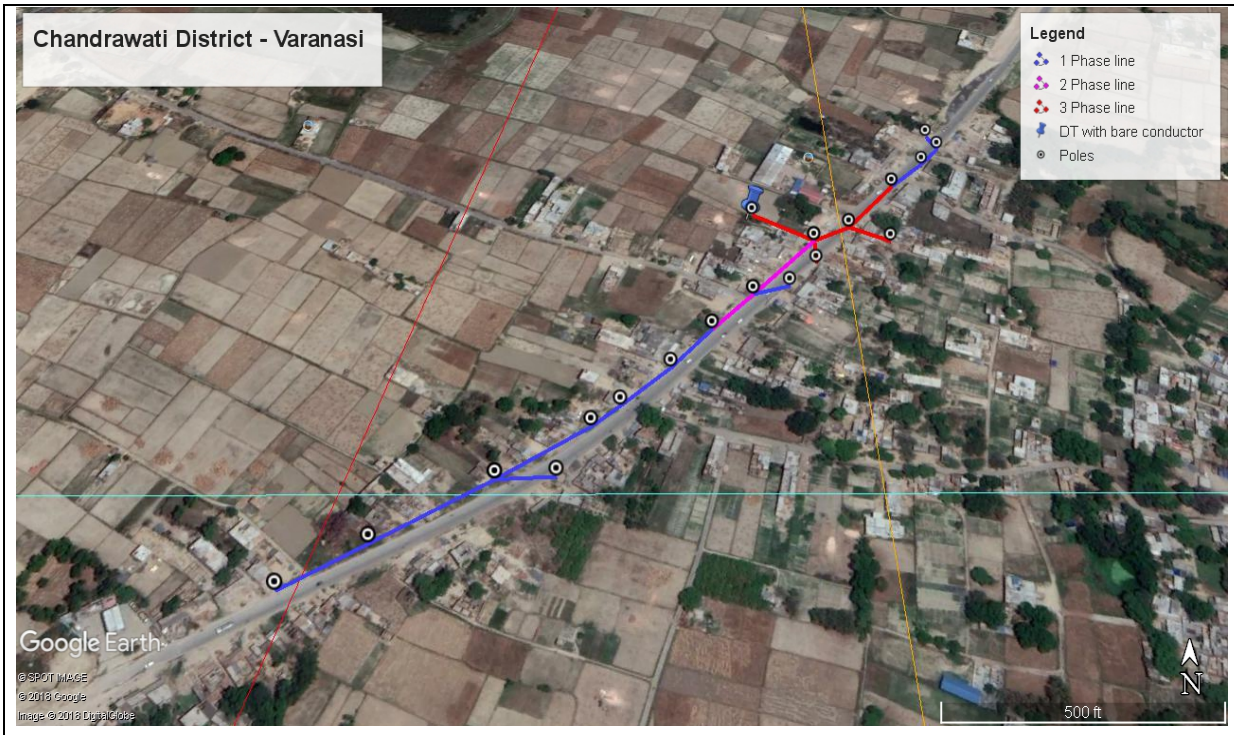
(v) Conversion of bare conductor line to ABC (Photo 1): This includes stringing of the ABC, connecting the ABC to the external insulator bushing of existing distribution transformers, earthing of poles, and dismantling existing bare conductors and line hardware such as distribution boxes, insulators, etc.

(vi) Installation of LT distribution boxes for ABC: This includes mounting of small distribution boxes to poles, connecting the distribution boxes to the ABC and consumer service cables.

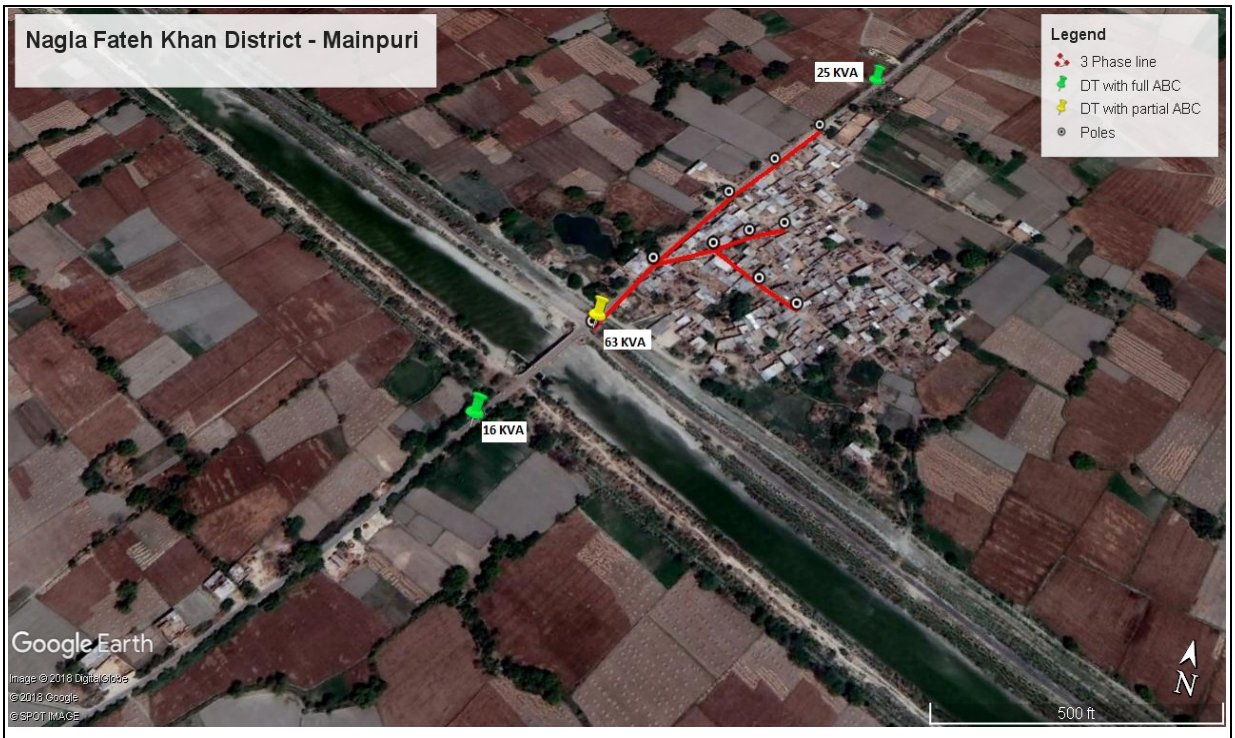
(vii) Replacement of existing consumer service connections: Existing service cables will be replaced with armoured service cables in certain villages (depending on the extent to which illegal connections are an issue in the village) which will generally take 2-3 hours.



Map A: Routings of LT Networks Pakari, Mirzapur District, Varanasi Zone, PuVNNL



Map B: Routings of LT Network in Chandrawati, Varanasi District, Varanasi Zone, PuVVNL



Map C: Routings of LT Network in Nagla Fateh Khan, Mainpuri District, Agra, DVVNL

Map D: Routings of LT Network in Jamhil, Chitrakoot District, Agra, DVVNL

C. Output 2 Subprojects and Construction Works

42. Feeder separation will be implemented across the regions of two DISCOMs, namely, PVVNL and DVVNL (Figure 1). PVVNL is divided into 6 zones: Meerut zone, Noida zone, Ghaziabad zone, Bundalshaher zone, Saharanpur zone and Moradabad zone. Similarly, DVVNL is divided into six zones: Agra – 1 zone, Agra – 2 zone, Aligarh zone, Kanpur zone, Jhansi zone and Banda zone.

43. Under the Project, 1,092 feeders will be separated of which 484 feeders (over 6 subprojects in 14 districts) will be in the PVVNL region and 608 (over 7 subprojects covering 21 districts) in the DVVNL region. No new substations are required, feeders will connect to existing substations which may be augmented in order to connect the feeders to them. The augmentation includes a control panel for the new feeder, and outdoor cabling and circuit breaker for the new feeder, no works will take place in the substation switchyard or to the existing substation transformers. The Output 2 Project activities by DISCOM are given in Table 4.

Table 4: Feeder Separation

Items to be Installed	Unit	DVVNL	PVVNL
Construction of New 11kV Feeders			
11 kV line on 8.5 m pre-cast concrete pole with rabbit conductor	km	10,860	6,066
11 kV line on 8.5 m pre-cast concrete pole with ABC	km	-	149

Items to be Installed	Unit	DVVNL	PVVNL
11 kV underground line (to take feeders out from existing substations, and in case of railway line crossing)	km	31	139
11 kV line crossing railway line	Nos.	51	48
11 kV feeder (originating from existing substations)	Nos.	608	484
Construction of New Distribution Transformers			
100 kVA, 11/0.433 kV Distribution Transformer	Nos.	181	2,635
63 kVA, 11/0.433 kV Distribution Transformer	Nos.	336	2,592
25 kVA, 11/0.433 kV Distribution Transformer	Nos.	1,282	1,689

44. Feeder separation involves installing new 11 kV lines from existing 33 kV/11 kV substations to connect to existing 11 kV/400 V transformers supplying residential consumers. In the event the existing 11 kV/400 V transformer is supplying mixed load to households and agricultural users, a new 11 kV/400 V transformer will be installed under the program with the existing transformer retained for supplying pumps for private tube wells for agriculture. The scope of this component does not entail any replacement or rehabilitation of existing ground or pole-mounted 11 kV/400 V transformers. The feeder lines will mostly be constructed on flat terrain along the right of way of existing rural roads, but a percentage will need to cross agricultural land.

45. The main activities required for construction of new 11kV feeders (Photos 2 and 3) and new distribution transformers are:

(i) Surveying: Including mapping of routes of proposed 11 kV lines and locations of new distribution transformers using global positioning system (GPS) surveys. While surveying, existing electrical infrastructure and other utilities, sensitive receptors, existing agriculture PTW locations, capacity and load details, required vertical and horizontal statutory clearances to buildings and vehicular traffic shall be mapped. Optimal locations for new distribution transformers will be proposed to minimize the length of lines for providing supply to existing consumers. In surveying the routes it will be ensured by the DISCOMs that the locations of poles and distribution transformers along the new alignments will be selected adhering to the Central Electricity Authority (CEA) electricity rules/guidelines and IFC EHS Guidelines on Transmission and Distribution e.g. installation above or adjacent to residential properties or other locations intended for highly frequent human occupancy (e.g. schools or offices) will be avoided.

(ii) Construction of line: New distribution line works will involve staging and transportation of equipment, installation of poles for lines, unrolling of cables, and installation. Surveys will be carried out to ascertain the need to clear the ROW that may have vegetation to be trimmed etc. Equipment (distribution poles, lines and transformers) will be transported to the construction site and temporary traffic diversions will be put in place. Digging of any foundation pits is done manually using auguring tools, concrete mixture for foundation is cast, and poles are unloaded for erection which is done using chain and pulley blocks.

(iii) Stringing of cables: Stringing of conductors will be carried out manually on the towers as per design requirements. The process of stringing the cables will engage crew members ranging from 5 to 10 people with multiple groups posted

along the alignment for about 1 week.

(iv) 11 kV line underground at railway crossings: In the event the line crosses railway lines, a detailed survey of location of the crossing will be carried out by the contractor, who will need to avoid multi-crossings of the same railway line at nearby locations. Prior approval from railway authorities for execution of this work shall be obtained by the contractor through the DISCOM Project Manager.

(v) 11 kV line at roads and waterways crossings: In the event the line crosses road/highways or water bodies, a detailed survey of location of the crossing will be carried out by the contractor to choose the optimum crossing location. Prior approval from roads and waterways authorities for execution of this work shall be obtained by the contractor through the DISCOM Project Manager. Traffic management will take place during the work at road crossings.

(vi) 11 kV underground line: For underground distribution lines, earthworks/drilling will be involved. Radar systems are used to identify other utility structures under the ground and using a drilling technique a micro tunnel is bored through the ground using a boring machine. The cables are cast into the ground using conduit carried over a vehicle. The size of construction crew depends upon site conditions, the volume of works and techniques. Typically, a crew of 8 to 10 people will be employed and around 1-2 weeks will be needed for the construction of 1 km of 11 kV line however boring technique using modern equipment will take less time.

(vii) 11 kV feeder at existing substations: The contractor will verify during the survey the availability of existing 11 kV feeder bays at the existing substation. In the event existing feeders are not available, the contractor will arrange for the installation of a new outgoing feeder control panel at the existing substation.

(viii) Tree cutting and trimming: In the event tree cutting and trimming is required, the contractor will count and mark with suitable quality of paint all the trees that are required to be cut or trimmed to obtain the required safety clearance. Permission from the forest or other applicable department will be arranged for tree cutting of public trees by the contractor through the DISCOM Project Manager. For tree cutting and trimming or private trees compensation to affected parties based on UPPCL standard rates will be paid. Moreover, the contractor will pay compensation for any loss or damage due to the fault of the contractor's work.

(ix) Installation of distribution transformers: Distribution transformer shall be constructed as per design specifications. The distribution transformers are generally installed on single or double poles with transformers mounted on the pole (with switch gear and an enclosed control panel) or ground mounted. Concrete foundation will need to be constructed in the case of ground mounted transformer, for which earth works are required.

Photo 1: ABC Installation and Stringing Work

Photo 2: Feeder Separation Works

Photo 3: Completed Feeder Separation (left and middle) and ABC (right) Works

D. Potential Sample Subproject Components

46. For the purposes of the environmental assessment eight potential sample subproject components and anticipated routings of the new 11kV feeder separation lines to be installed have been considered as set out in Table 5. Given that the turnkey contractors will decide which villages from their long list will be included, these feeder lines may or may not be included in the project, and the anticipated routing may or may not be followed, but they provide an example of the nature of works to be undertaken. Local community consultations were conducted in the villages along these potential sample subproject components as detailed in Section VI.

47. These 11kV feeder lines are connected to existing pole or ground-mounted 11 kV/400 V transformers located either on the boundaries of or inside the center of the villages served. From the transformer LT lines supply electricity to households within the village.

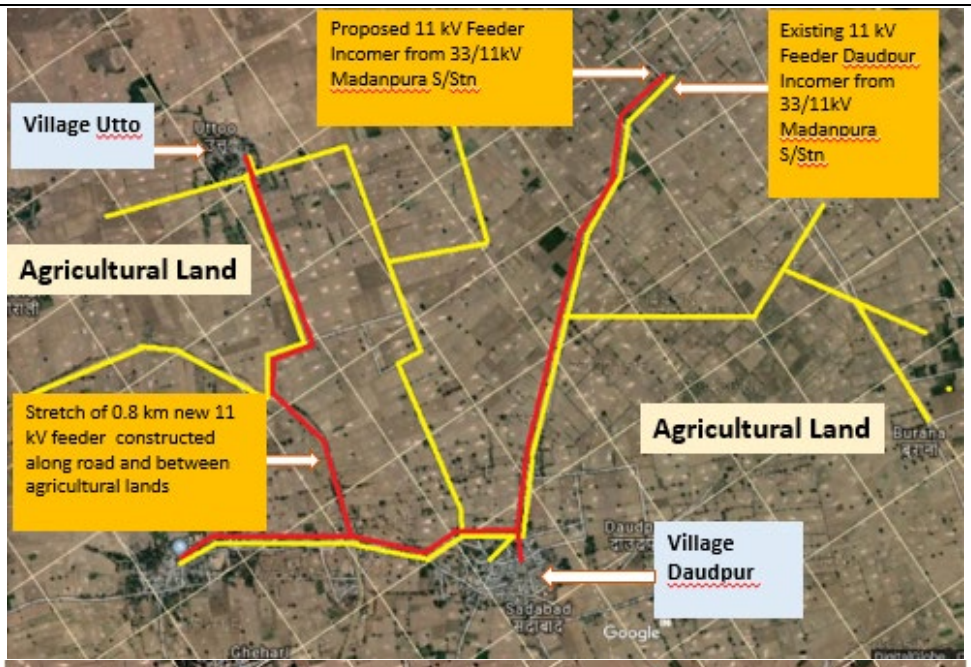
Table 5: Sample Feeders, Villages, Anticipated Design, and Design Considerations

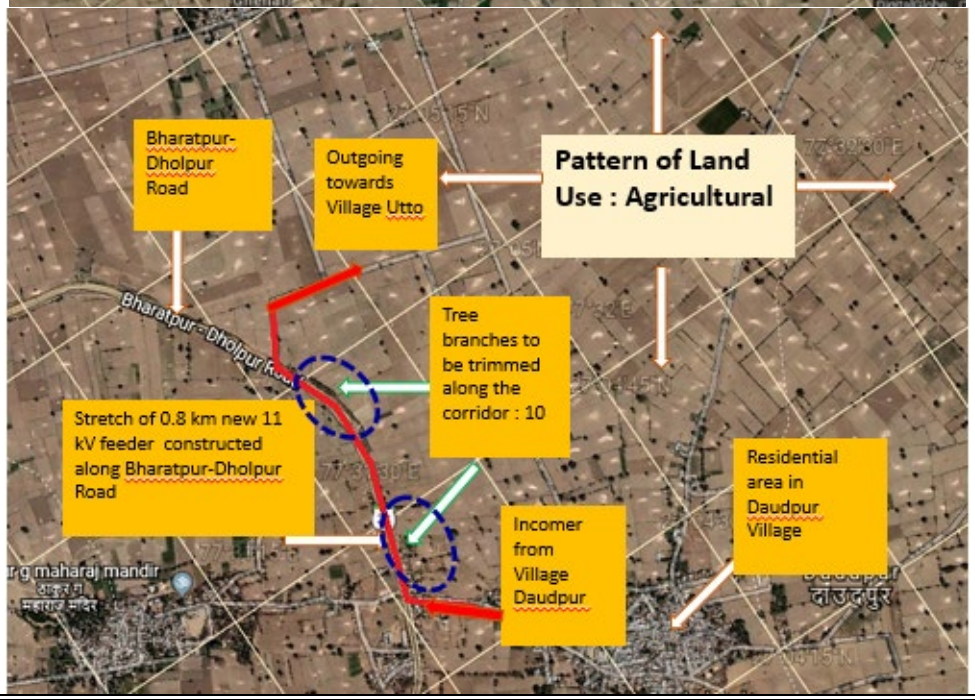
Map #	Feeder Line (yellow lines)	DISCOM Zone	Villages Served	Anticipated Design (red lines)	Design Considerations
DVVNL					
Map 1	Existing 11 kV Daudpur feeder from 33/11 kV Madanpura substation	Agra 2	Daudpur 27.074534 N 77.530277 E Utto 27.092864 N 77.530492 E	Follows existing feeder lines – a stretch of 0.8 km new feeder will have to be laid along Bharatpur – Dholpur Road bordering agricultural land	0.8 km new feeder will require trimming of tree branches, likely to affect around 10 trees; tree trimming may be required along existing road for safety clearances
Map 2	Existing 11 kV Dawar feeder	Agra 2	Dabar	Follows existing feeder	In Sirauli village the 0.7km new

	from 33/11 kV Madanpura substation		27.049286 N 77.592231 E Sirauli 27.038317 N 77.576009 E Banja Nagra 27.044590 N 77.574133 E	lines – a stretch of 0.7 km new feeder will have to be constructed following a road bordering agricultural land	feeder will be near some houses; the road ROW is wide enough for installation. Tree trimming may be required along existing road for safety clearances
Map 3	Existing 11 kV Feeder No. 2 from 33/11 kV Kirawli substation	Agra 2	Kheda Bakanda 27.106730 N 77.771445 E Singarpur Khera 27.127395 N, 77.744052 E Santha 27.128940 N, 77.718278 E	Follows existing feeder lines – a stretch of 0.5 km new feeder will have to be laid along an existing road within the boundary of the Kirawali town	Stretch of 0.5 km new feeder will have to be laid in Kirawali town in proximity to houses; the road ROW is wide enough for installation. Tree trimming may be required along existing road for safety clearances
Map 4	Existing 11 kV Feeder No. 3 from 33/11 kV Kirawli substation	Agra 2	Mori 27.119586 N 77.797383 E Nahchani 27.104412 N 77815614 E Nagla Shyuram 27.127297 N 77.808309 E	Follows existing feeder lines – two stretches of 0.8 km new feeder will have to be laid along existing road or between the boundaries agricultural land	In a settlement called Barauli which is located on the alignment to Mori village the new feeder will be near some houses; the road ROW is wide enough for installation. Tree trimming may be required along existing road for safety clearances
PVVNL					
Map 5	Existing 11 kV Sathedi feeder from 33/11 kV Khatauli Rural substation	Saharanpur	Sathedi 29.2671949 N 77.705037 E Sardhan 29.26014493 N 77.7096727 E	Parallel to existing feeder lines	No impact is expected on trees or crops as the alignment follows existing road or is on land which serves as an agricultural boundary (not private farmland) -- although tree trimming may be

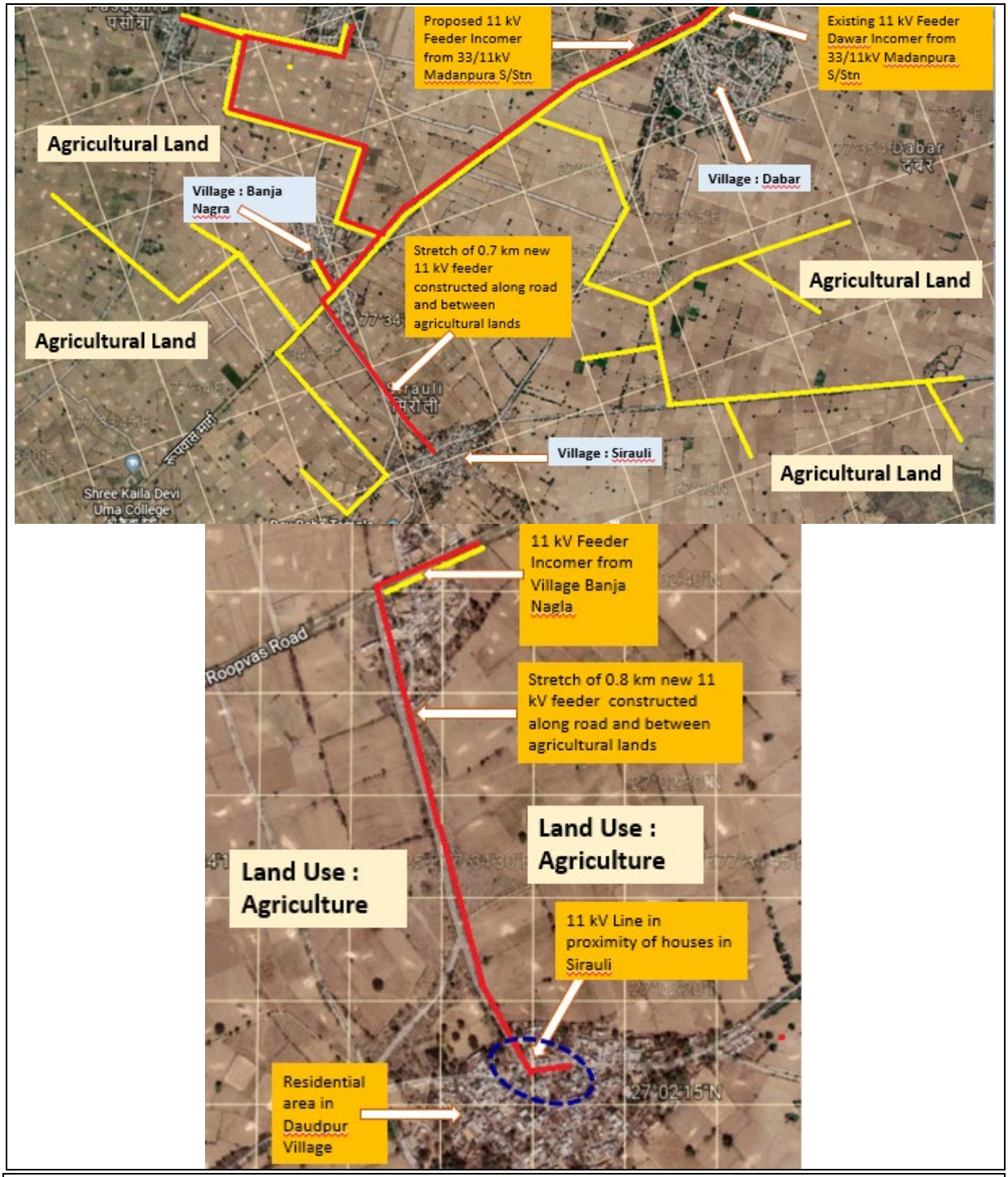
					required along existing road for safety clearances
Map 6	Existing 11 kV Goana Shyam Nagar Feeder from 33/11 kV Modinagar Road Substation	Bulandshahar	Goana 28.7401495 N 77.738491 E Shyam Nagar 28.7320255 N 77.7410650 E	Parallel to existing feeder lines	For a stretch of 0.5 km the new feeder will pass through some agricultural fields which are located between Goana and Shyam Nagar village. The standing crop may get affected for 5/6 agricultural fields during construction. Tree trimming may be required along existing road for safety clearances
Map 7	Existing 11 kV Alipur Feeder from 33/11 kV Lohiya Nagar substation	Meerut	Shyam Nagar 28.7320255 N 77.7410650 E Alipur 28.904645 N 77.749235 E	Parallel to existing feeder lines	For less than 0.5 km close to Hajipur village the new feeder line may cause some damage to standing crop in the neighbouring 6-8 fields during project implementation. Tree trimming may be required along existing road for safety clearances
Map 8	Existing 11 kV Duhai Feeder from 33/11 kV Aslat Nagar substation	Ghaziabad	Bhikampur 28.75207295 N 77.4568319 E Duhai 28.7271627 N 77.4751366 E	Parallel to existing feeder lines with some underground sections	No impact is expected on trees or crops as the alignment follows existing road or is on land which serves as an agricultural boundary (not private farmland) – although tree trimming may be required along

					existing road for safety clearances



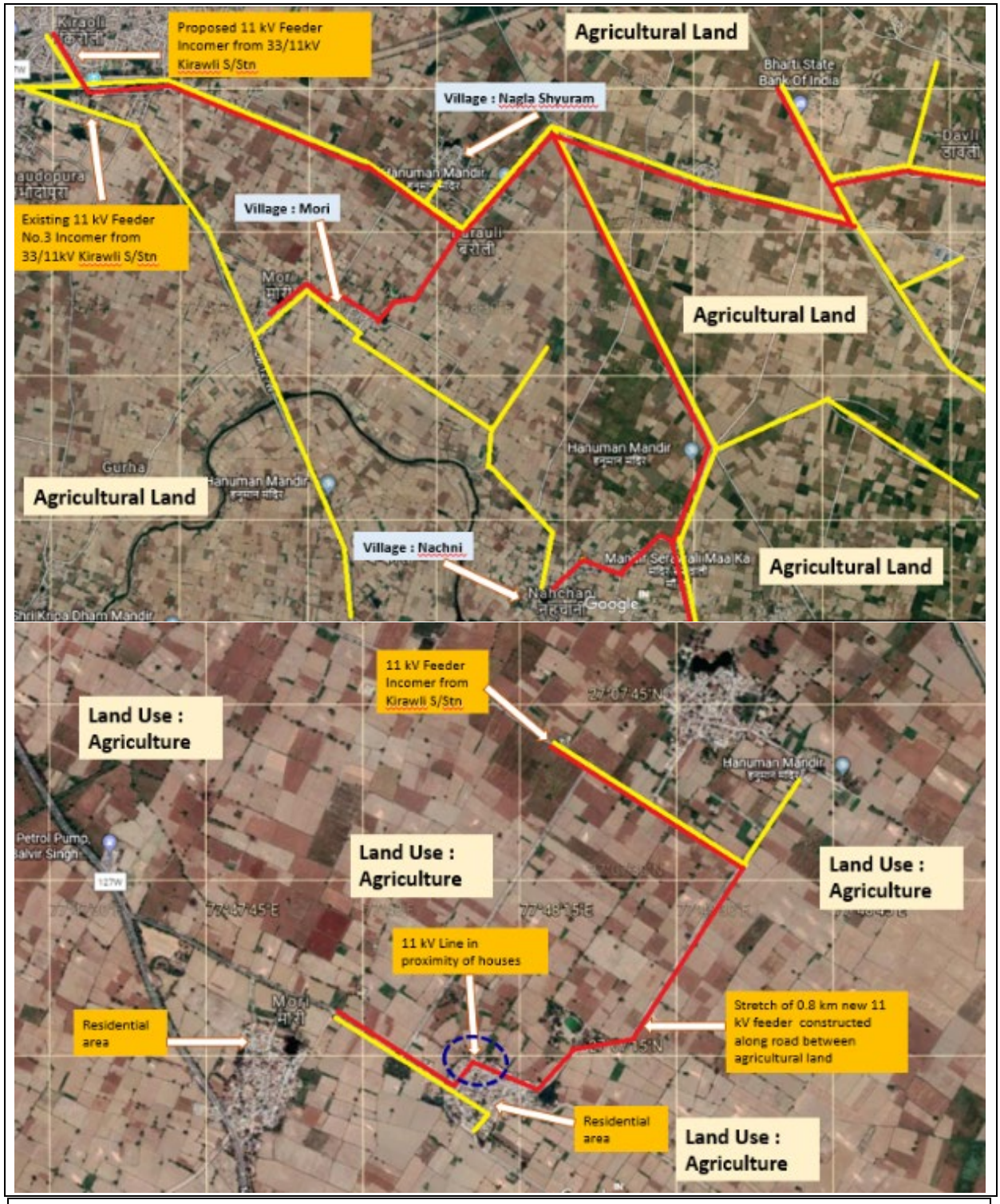


Map 1: Daudpur Feeder from 33/11 kV Madanpura substation in PVVNL

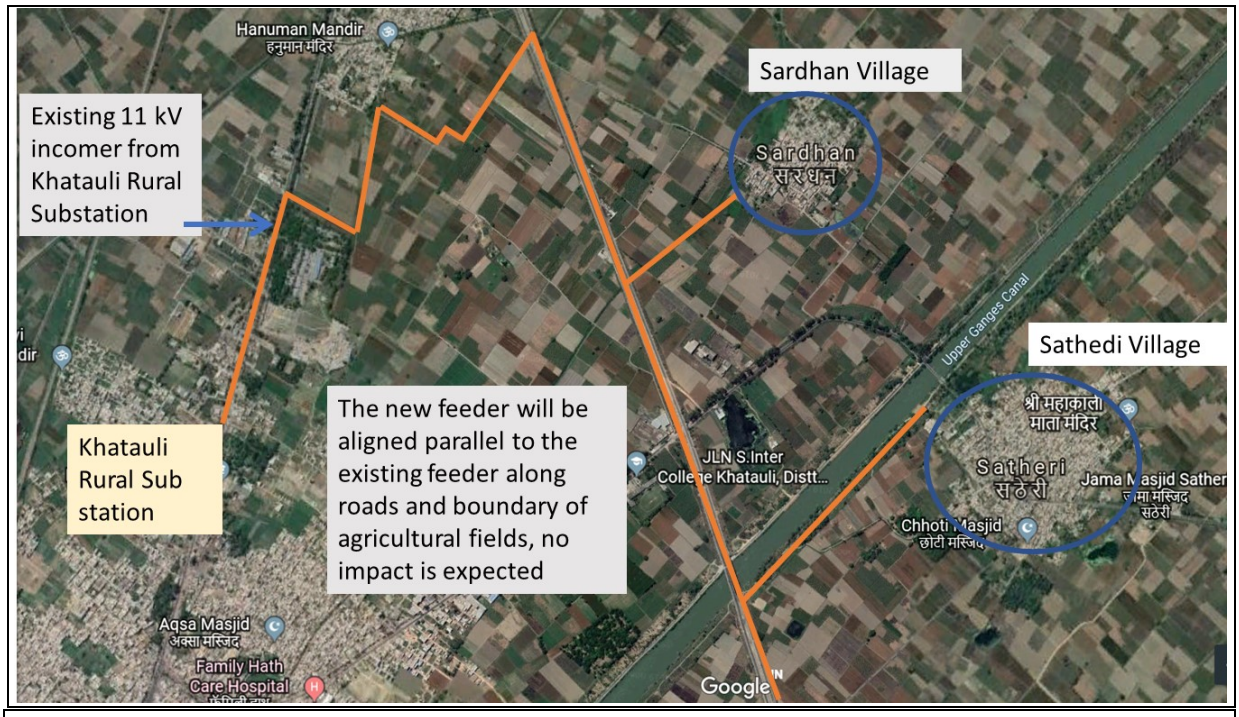


Map 2: Dawar Feeder from 33/11 kV Madanpura substation in PVVNL

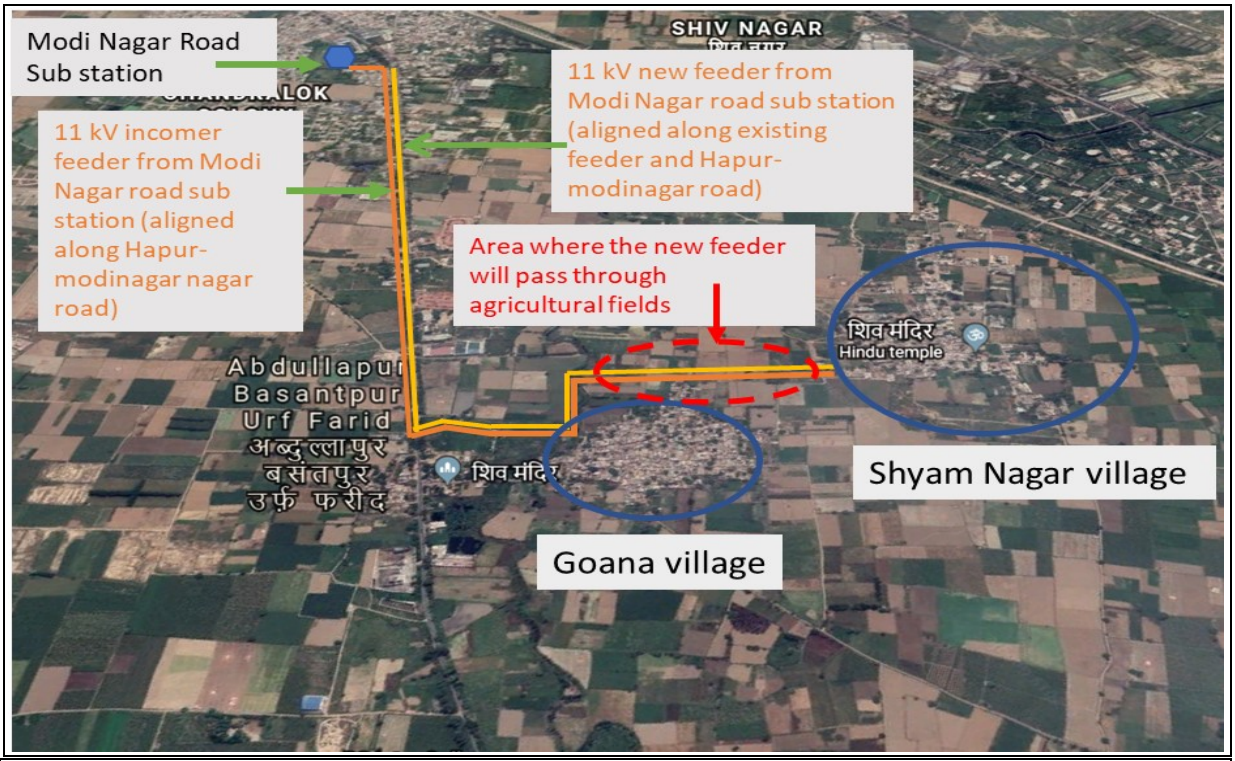
Map 3: Feeder No. 2 from 33/11 kV Kirawli substation in PVVNL



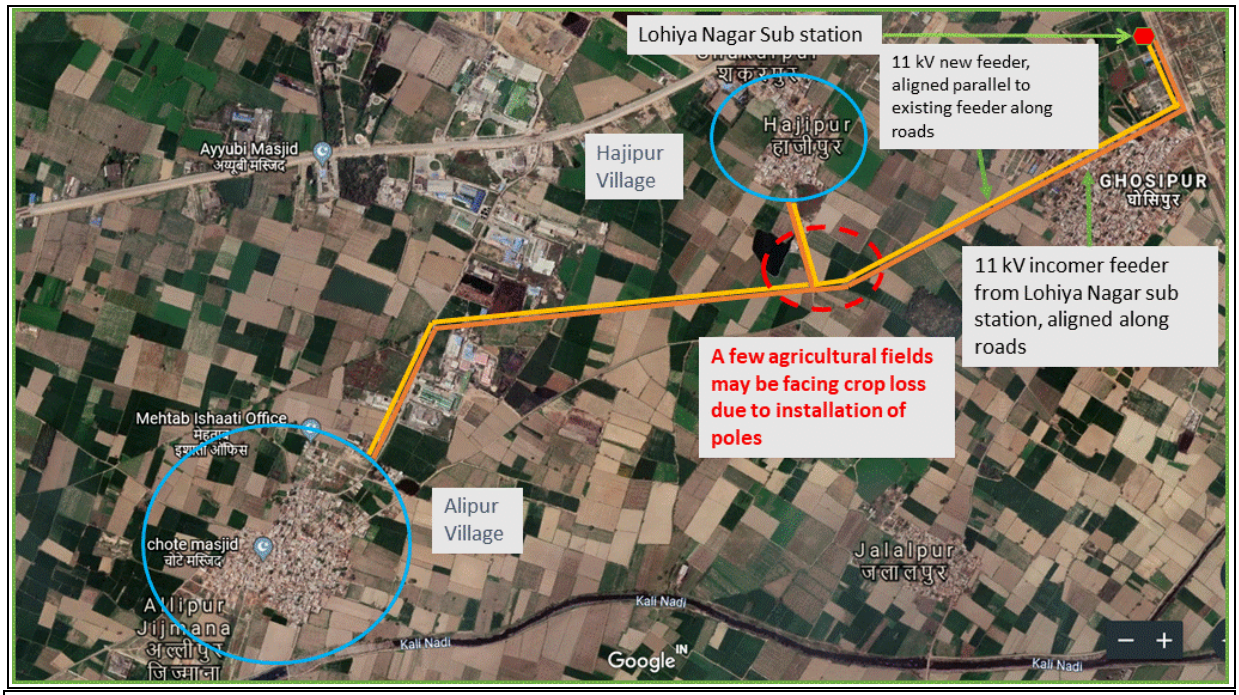
Map 4: Feeder No. 3 from 33/11 kV Kirawli substation in PVVNL



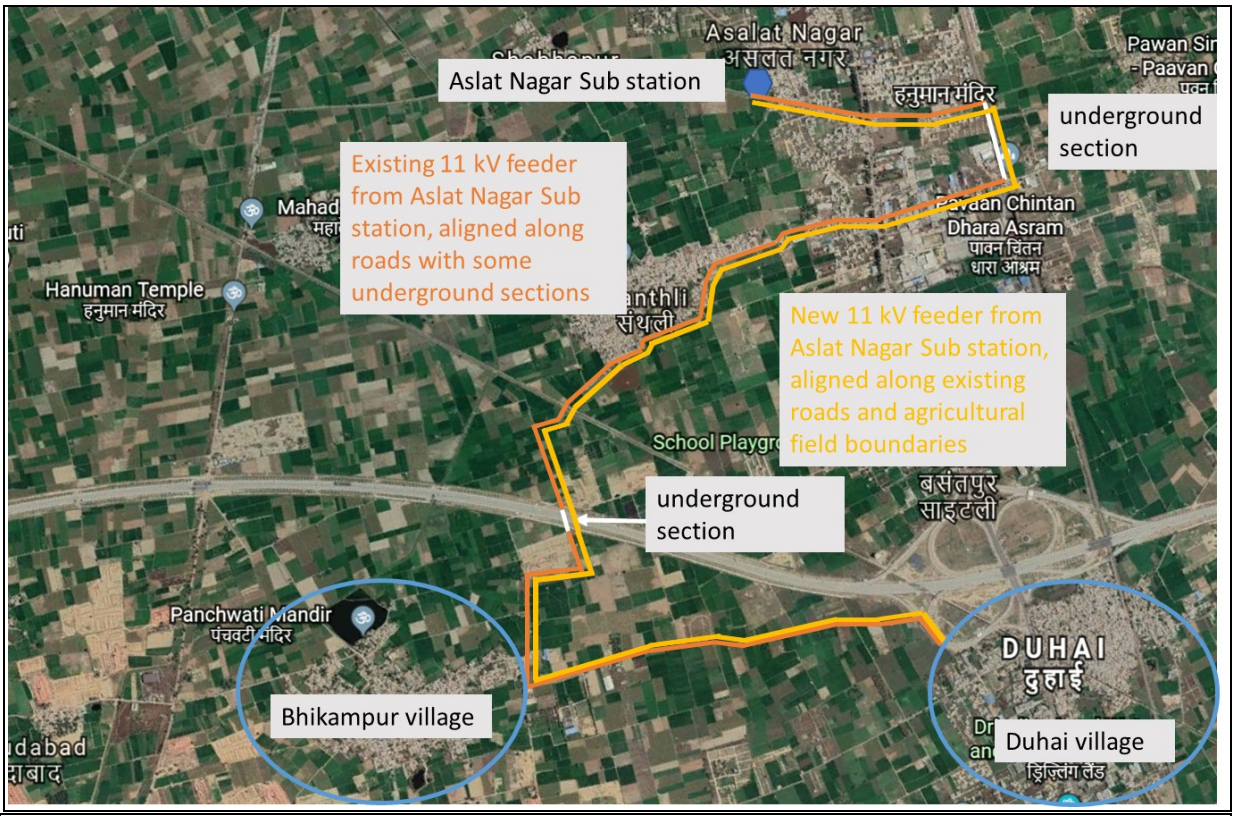
Map 4: Khatauli Rural Feeder from 33/11 kV Khatauli Rural substation in DVVNL



Map 5: Goana Shyam Nagar Feeder from 33/11 kV Modinagar Road Substation in DVVNL



Map 6: Alipur Feeder from 33/11 kV Lohiya Nagar Substation in DVVNL



Map 7: Duhai Feeder from Aslat Nagar Sub station in DVVNL

E. Operation and Maintenance

48. During the operation and maintenance phase, regular activities that will be implemented include routine monitoring and inspection by the DISCOM district units (distribution division of DISCOMs) to check the condition and integrity of poles, lines and transformers and that the required safety clearances from trees and structures are being maintained. Maintenance activities will include replacement of missing or corroded parts and the trimming of trees and vegetation if required. The clearing of vegetation shall be done manually without the use of heavy equipment and herbicides.

F. Existing and Associated Facilities

49. The Project involves augmentation of existing facilities i.e. substations for Output 2. The augmentation includes a control panel for the new feeder, and outdoor cabling and circuit breaker for the new feeder. These are classified as existing facilities as per ADB's Safeguard Policy Statement (2009). An environmental audit of sample substations (existing facilities) has been undertaken, Appendix 2, based on which a corrective action plan has been developed for inclusion in the project EMP.

50. There are no associated facilities connected to the project.

G. Project Benefits

51. There will be beneficial socio-economic impacts as a result of the Project in relation to the quality of life and improved electricity supply to rural areas of Uttar Pradesh state of India.

H. Project Alternatives

52. Under the "do nothing" option if the rural low voltage distribution network is not converted to ABC there will be no opportunity to improve the reliability and safety of electricity distribution and cost recovery by discouraging the illegal connections. If feeder separation is not undertaken there will be no opportunity to increase the duration of power supply to rural households which will remain at the current 18 hours and there will be no opportunity to control the supply duration to PTWs to match the seasonal requirement of water for agriculture resulting in wastage of electricity and water in agriculture. The financial and fiscal burden of supplying electricity to unmetered PTWs will remain.

53. For historical reasons PTWs in Uttar Pradesh are not metered with agricultural consumers being heavily subsidized. This has led to the situation where agricultural consumers become indifferent to their electricity consumption, in turn impacting on water availability and the hydrogeological environment, and the DISCOMs take on the financial and fiscal burden of supplying electricity to unmetered PTWs. The alternative to feeder separation is to meter PTWs and address subsidies but this is not considered viable at this stage due to political economy issues.

54. The application of the following subproject component selection criteria as set out in the SARF will ensure that any components in locations supporting high biodiversity value or internationally or nationally important biodiversity areas and physical cultural resources will be avoided:

(i) All components/activities that trigger environment Category A (e.g. components/activities with significant adverse environmental impacts that are irreversible, diverse, or unprecedented) must be excluded from the Project.

(ii) Components/activities that result in the significant conversion or degradation of

natural habitat or which are within a critical habitat must be excluded from the Project.

(iii) Components/activities will not encroach on precious ecosystems or ecologically sensitive areas including legally protected areas such as National Parks, Wildlife Sanctuaries; natural World Heritage sites; Ramsar sites, important bird areas; key biodiversity areas; reserve/protected forest areas; biodiversity heritage sites; wetlands; etc.

(iv) Components/activities requiring new poles or lines to be constructed will not encroach on designated buffer zones or corridors between ecologically sensitive areas; conversion of lines to ABC using existing route alignments will only be permitted if the risks to elephants can be avoided by virtue of location and/or design.

(v) Components/activities with new poles or lines constructed in community or private forest must be excluded, unless it can be demonstrated that no trees need to be cut; conversion of lines to ABC using existing route alignments is permitted.

(vi) Components/activities which would result in significant damage to physical cultural resources or require physical cultural resources to be removed from their current location must be excluded.

(vii) Components/activities will not encroach on historical/cultural areas including ASI monuments or their buffer zones, cultural World Heritage Sites and their buffer zones etc.

(viii) Components/activities with new feeder lines constructed across school compounds or buildings must be excluded; conversion of existing lines to ABC will only be permitted if school compounds are not crossed, or minor rerouting takes place to avoid them.

I. Project Implementation Schedule

55. The Project will be implemented progressively over nine years with completion date by end 2029. Civil work for each contract will be for 5-6 years.

IV. DESCRIPTION OF THE ENVIRONMENT

A. Physical Setting

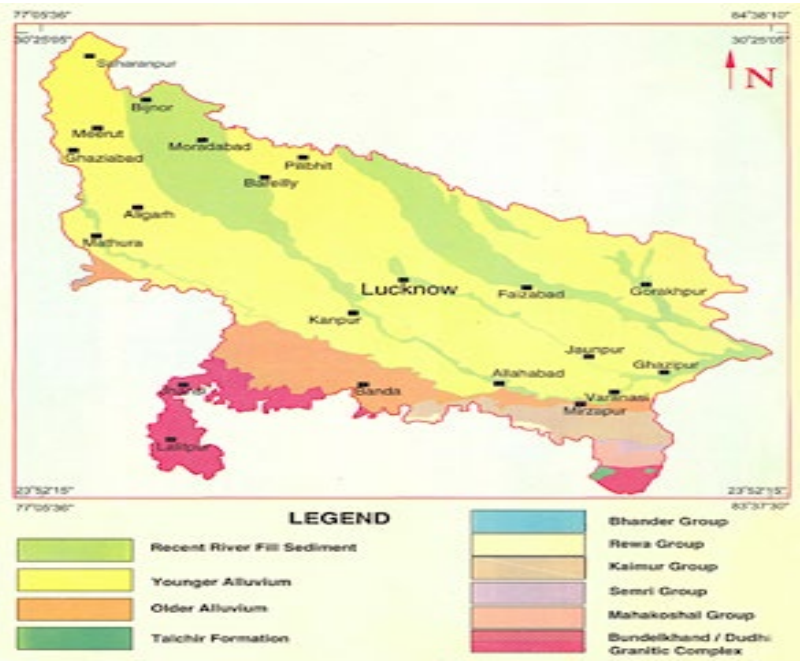
a. Geographical location

56. Uttar Pradesh with a total area of 243,290 km^2, is India's fourth-largest state in terms of land area and it is situated on the northern spout of India sharing an international boundary with Nepal and borders with Uttarakhand in the north, Delhi and Haryana in the northwest, Rajasthan in the west, Madhya Pradesh in the southwest, Bihar in the east and Jharkhand in the southeast (Figure 2). The state has 75 districts under 18 administration divisions for control, the capital city is Lucknow. For each subproject, district administrative officials as well as village heads should be consulted.

b. Geology and soils

57. The Himalayas border the state on the north, but Plains cover most of the state with the larger featureless Gangetic Plain region in the north comprised of the recent Ganga alluvium. The Gangetic Plan covers about three quarters of the geographical area, and includes the Ganges-Yamuna Doab, the Ghaghra plains, the Ganges plains, and the Terai. These areas range in elevation from 60 to 300 feet above mean sea level (amsl) and support extremely fertile alluvial soils from sandy to clayey loam. The smaller Vindhya Range and plateau region is in the south (Figure 3) ranging in elevation rarely exceeding 1000 feet amsl and where the oldest crystalline rocks are found, dominantly represented by basement gneisses, older metamorphites (schist, quartzite, marble and gneiss) with younger granitoids as intrusives; metasedimentaries; sedimentaries and the alluvial. Several mineral deposits of economic importance occur in association with these rock units.[1] It has reserves of dolomite and coal, sulphur, pyrophyllite, diaspore, limestone and silica sand. The southern part of the state generally has mixed red and black or red-to-yellow soils. The underlying geology and soil structure and composition in the subproject areas should be considered in foundations designs.

Figure 3: Physiographics Zone of Uttar Pradesh

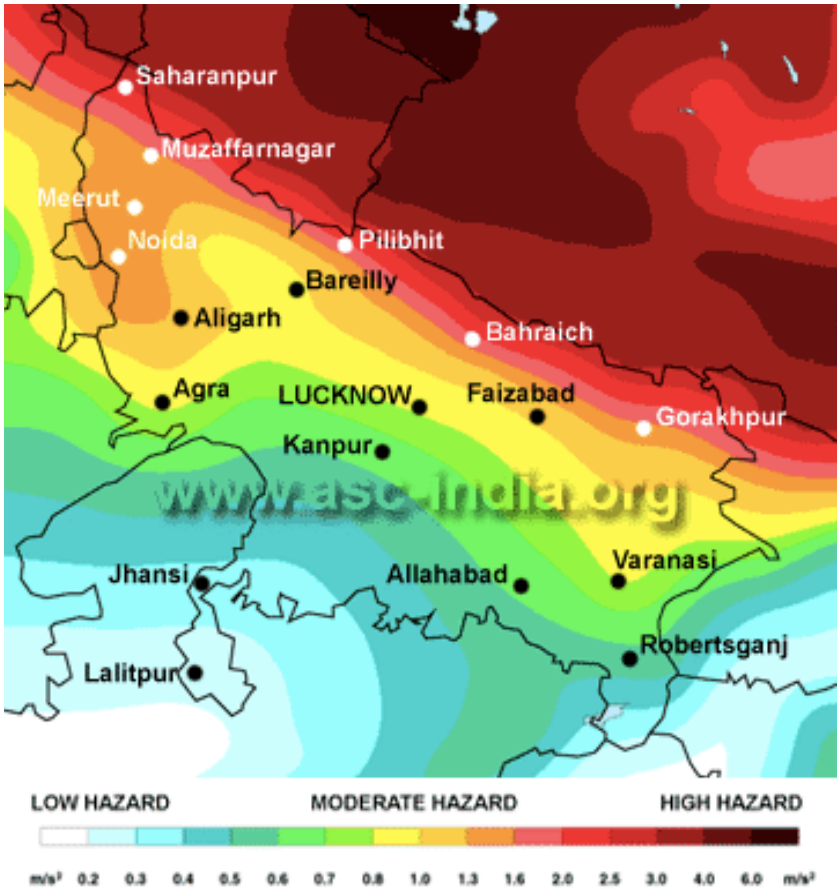


[1] https://www.gsi.gov.in/webcenter/ShowProperty;jsessionid=_AJ64d8DFhXwS-kMDCTgXNXUYZSXuMPrB9mUU13GNlZ2nL9ENyyF!-68022989!-107032927?nodeId=%2FUCM%2FDCPORT1GSIGOVI063357%2F%2FidcPrimaryFile&revision=latestreleased

c. Geological hazards

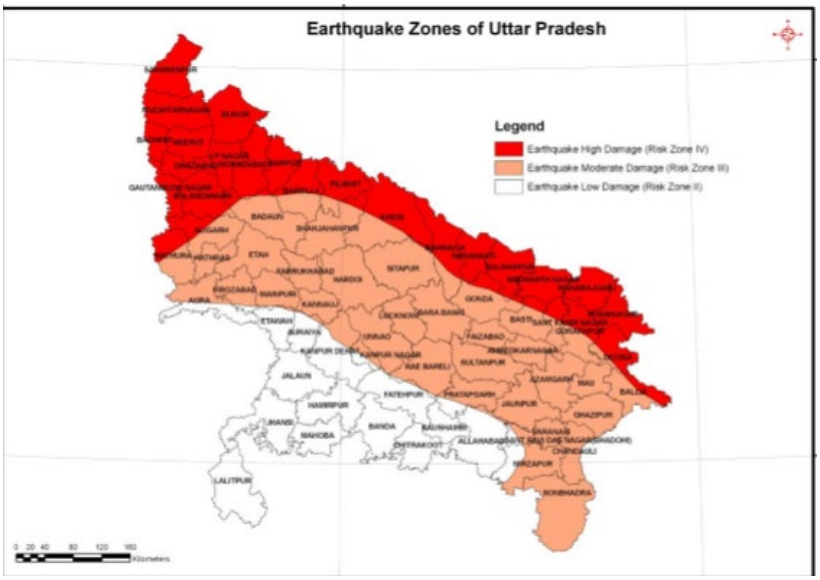
58. Since the terrain is generally flat landslide risk in Uttar Pradesh is generally low although greater in the hilly areas where this risk should be considered in the design of pole foundations. Earthquakes have occurred in mostly all parts of Uttar Pradesh. Major earthquakes in neighboring states and in Nepal have also shaken many parts of Uttar Pradesh. One of the most powerful earthquakes in Uttar Pradesh at magnitude of 6.2 struck western Uttar Pradesh in 1956 centered near Jehangirpur, in Bulandshahr District. 17 other significant earthquakes have occurred since 1720. Uttar Pradesh is categorized as a region of low to high seismic hazard and is Seismic Zones II to IV (Figures 4 and 5). Therefore, earthquake risk needs to be taken into account the design of pole foundations following the Government of India's Seismic Code.

Figure 4: Hazard Risk Map of Uttar Pradesh



Source: Amateur Seismic Center, Pune

Figure 5: Seismic Zone Maps of Uttar Pradesh



Source: https://rahat.up.nic.in/sdmplan/Earthquake/Earthquake_Plan05March4pm.2010.pdf

d. Land use

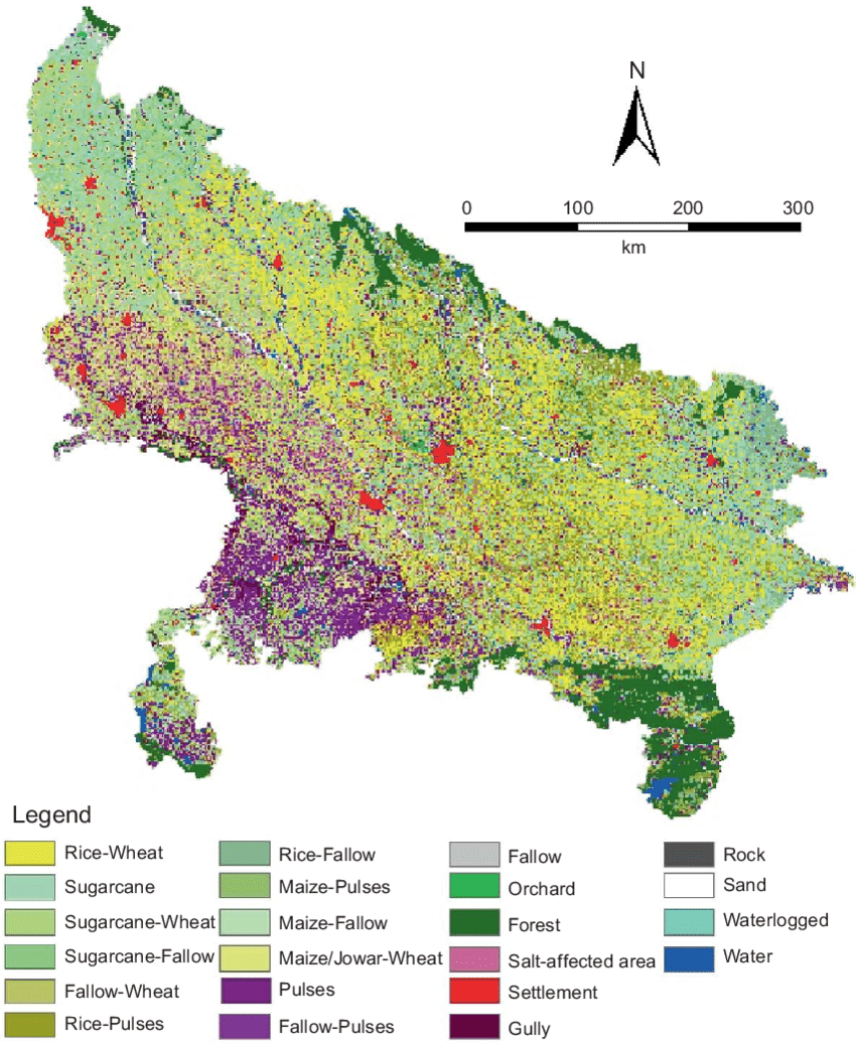
59. Most land in the state is used for agriculture, 68% of the land in the state is cultivated and sown (Table 6 and Figure 6) with 7% providing forest cover. This is consistent with the fact that cultivation and agriculture dominate the State's economy providing more than 60% of its GDP and 70% of employment of the working population. Predominant crops are millet, wheat, maize (corn), rice, gram, soybean, cotton, ground nuts, and pulses. Soils are primarily rainfed during the monsoon season, and irrigated agriculture is commonplace. Given forest resources are scarce it is important to minimize impacts of forest land, and for socioeconomic reasons impacts on agricultural land.

Table 6: Land Use Pattern in the State

Land Use	Area in '000 ha	Percentage
Reporting Area for Land Utilization	24,170	100
Net Area Sown	16,546	68.46
Forest*	1,658	6.86
Area Not Available for Cultivation	3,491	14.44
Permanent Pasture and Grazing Land	65	0.27
Land Under Misc. Tree Crops and Groves	325	1.34
Cultivable Waste Land	410	1.70
Fallow Land Other Than Current Fallows	539	2.23
Current Fallows	1135	4.70

*Landuse Statistics, Ministry of Agriculture, Government of India, 2013-14

Figure 6: Land Use in Uttar Pradesh

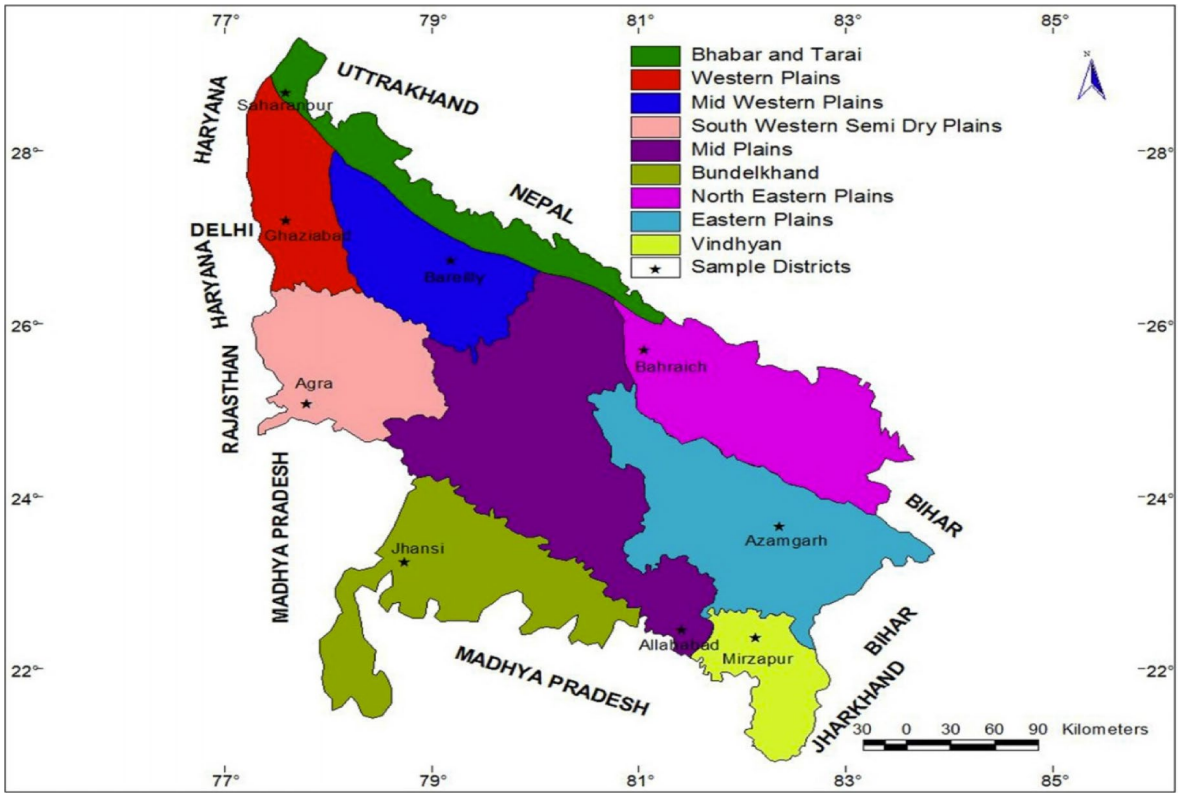


Source: https://www.researchgate.net/figure/Cropping-patterns-of-Uttar-Pradesh-and-other-classes_fig4_233181275

e. Climate and related hazards

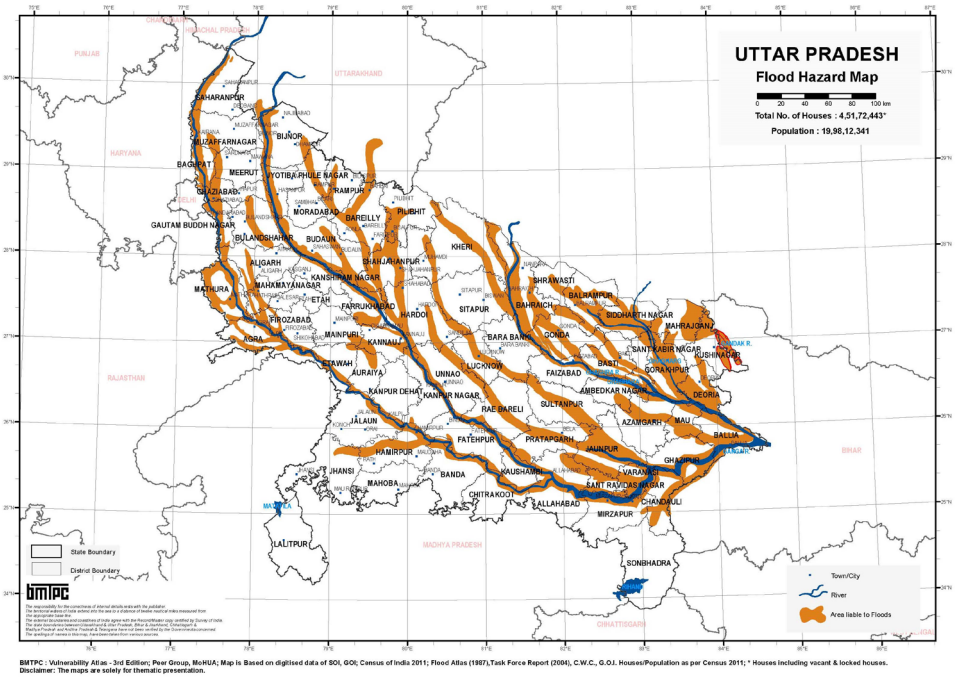
60. In spite of a humid subtropical climate, Uttar Pradesh has four seasons. The winter lasts from December to February; followed by summer between March and May; the monsoon season between June and September; with October and November considered post-monsoon months. The state can be divided into nine agro-climatic zones experiencing different rainfall and temperatures (Table 7 and Figure 7). Approximately 90% of the rainfall occurs during the southwest Monsoon. The monthly rainfall distribution of the State during monsoon season is shown in Table 8. In terms of storms, Uttar Pradesh is in zone of medium to high risk of wind damage, including pre-monsoon dust storms which can result in significant damage to distribution lines with fallen poles, potentially resulting in fire (Photo 4). Distribution lines will need to be designed to withstand the highest monsoon winds including allowance for climate change. Floods are a reoccurring problem and can cause fatalities and heavy damage to crops and properties (Figure 8) and any electrical equipment should be raised above the highest flood level including allowance for climate change to avoid damage. Uttar Pradesh is in a region of extremely high-water stress. Further, periodic failure of the monsoons results in drought conditions with agriculture dependent on irrigation making crop production vulnerable.

Figure 7: Agro-climatic Zones and Flood Risk of Uttar Pradesh



Source: Agriculture Department, Government of Uttar Pradesh

Figure 8: Flood Risk in Uttar Pradesh



Source: http://bmtpc.org/DataFiles/CMS/file/VAI2019/up.html

Table 7: Details of Agro-climatic Zones of Uttar Pradesh

Zone	Districts	Soil Type	Average Rainfall	Temperature (^{0}C)	
				Min	Max
Bhabhar and Tarai zone	Saharanpur (58%), Muzaffarnagar (10%), Bijnaur (79%), Moradabad (21%), Rampur (40%), Bareilly (19%), Pilibhit (75%), Shahjahanpur (6%), Khiri (39%) Bahraich (47%), Shravasti (71%)	Alluvial least to medium phosphorus medium to high potassium and highly carbonised matter.	1400	5.5	38.4
Western Plain zone	Saharanpur (42%), Muzaffarnagar (90%), Meerut, Bagpat, Gaziabad, Gautam Budh Nagar, Budandshahar	Alluvial pH value normal to sodic and carbonic matter from least to medium.	795	1.50	43.3
Mid-western Plain zone	Bareilly (81%), Badaun, Pilibhit (25%), Moradabad (79%), J.P. Nagar, Rampur (60%), Bijnour(21%)	All most alluvial normal to slight sodic and contains medium carbonic matters	1032	4.5	45.4
South western semi-arid zone	Agra, Firozabad, Aligarh, Hathras, Mathura, Mainpuri, Etah	Alluvial & arawali.	662	4.0	47.0
Central plain zone	Shahjahanpur (94%), Kanpur nagar, Kanpurdehat, Etawa, Auraiya, Farrukhabad, Kannauj, Lucknow, Unnao, Raebareli, Hardoi, Kheri (61%), Sitapur, Fatehpur, Allahabad (58%) & Kaushmbi	Allunial, pH normal to sodic and containing carbonic matter from least to medium quantity	863	5.5	45.0
Bundel khand zone	Lalitpur, Jhansi, Jalaun, Hamirpur, Mahoba, Banda and Chitrakut	Rakar, Parwa, Kabar and Maar	867	3.0	47.8
North eastern plain zone	Gorakhpur, Maharajganj, Deoria, Kushinagar, Basti, Sant Kabir Nagar, Siddharthnagar, Gonda, Baharaich (63%), Balrampur and Shrawasti (29%)	Alluvial, calcarius.	1240	4.9	44.2
Eastern plain zone	Azamgarh, Mau, Ballia, Pratapgarh, Faizabad, Ambedkar Nagar, Barabanki, Sultanpur,Varanasi, Chandauli, Jaunpur, Ghazipur and Sant Ravidas Nagar (86%)	Alluvial, sodic and Diara soil	803	5.7	41.4
Vindhyan zone	Allahabad (42%), Sant Ravidas Nagar (14%), Mirzapur and Sonbhadra	Kali, Bhari red granules and llunial soil in plane area	1134	5.0	45.2

Table 8: Monthly Distribution of Rainfall in Monsoon Season, 2014

Month	Rainfall (mm)
June	37.5
July	196.2
August	115.2
September	98.7

Source: Central Ground Water Board, 2015 report

Photo 4: Toppled Distribution Poles in Agra Zone following 2018 Dust Storm

Source: https://www.hindustantimes.com/lucknow/up-may-2-storm-leaves-power-infrastructure-in-bad-shape/story-HC1EJvm2XJacpsXemX4xbI.html

f. Hydrology, hydrogeology and water quality

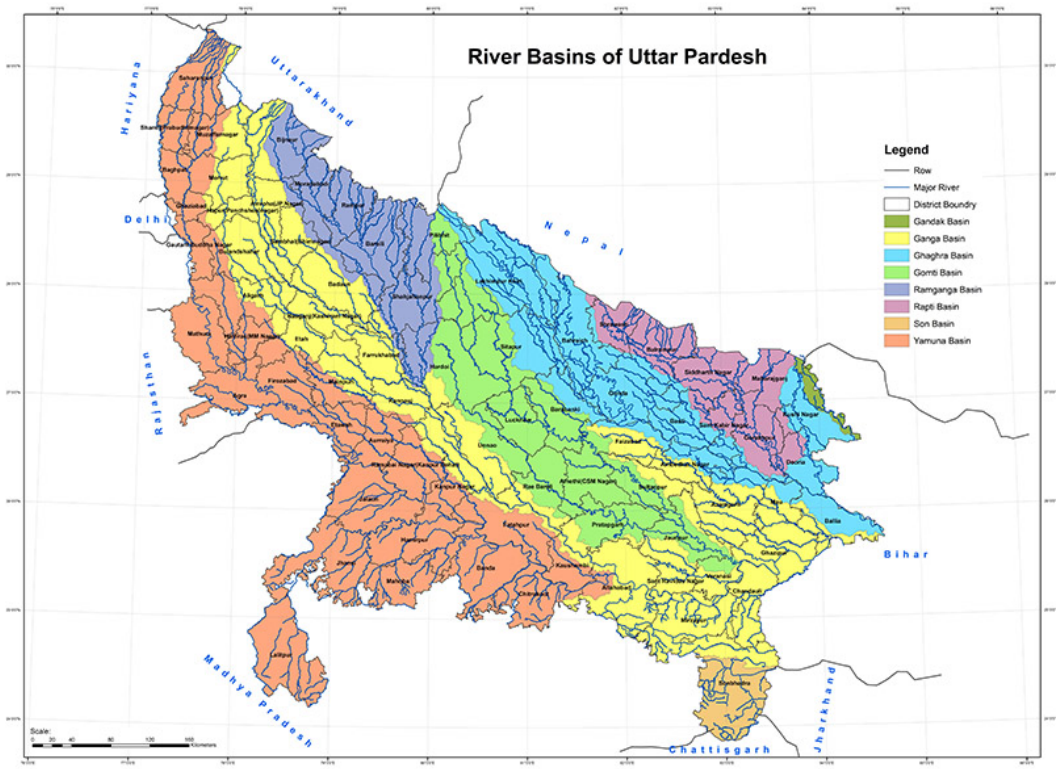
61. The state is well drained by a number of rivers (Figure 9) originating in the Himalayas or the Vindhya Range. The Ganga and its main tributaries – Yamuna, Ramganga, Gotmati, Ghaghara, and Gandak are snow fed from the north. The Chambal, Betwa, and Ken drain the south western part of the state before joining the Yamuna. At Allahabad the Ganga and Yamuna merge – their confluence called the Sangam, the holiest of the holiest place for Hindu Communities. With an area of more than 860,000 square kilometers, the Ganges River Basin is the largest in India. The Central Pollution Control Board in association with State Pollution Control Board has set up 20 monitoring stations on the Ganga in Uttar Pradesh (Tables 9 and 10).

62. The state can be divided into five units according to hydrogeology; namely (i) Bhabar; (ii) Tarai; (iii) Central Ganga plains; (iv) Marginal alluvial plains; and (v) southern peninsular zone from north to south. The yield of tube wells tapping Bhabar and Tarai zones ranges between 100-300 m3/hr and 100-200 m3/hr. The water level is deep in Bhabar whereas in Tarai auto flow conditions are noticed with piezometric head of 6-9 meters below ground level (mbgl) (Figure 10). The Central Ganga plain is characterized by low relief and numerous alluvial features including four major aquifers in the depth range of 700 mbgl. The yield of these tube wells ranges from 90 to 200 m3/hr. The thickness of sediments in the Marginal alluvial plains is 50-300 m and yield of tube wells is between 35 to 70 m3/hr. The yield prospects of crystalline rocks in the southern peninsular region are limited. There are issues with arsenic contamination of groundwater including levels over 0.05mg/l in several states of Uttar Pradesh meaning that it would not be suitable for drinking water (Figure 11).[2] Groundwater is also polluted from agricultural and industrial activities as well as fecal contamination from a lack of sanitation and sewerage systems in rural areas. Given the risks of contamination groundwater should not be used as a drinking water source by turnkey contractors who should bring in bottled water for workers.

63. About 80% of the drinking water, 85% of industrial water and 70% of irrigation needs were met from groundwater sources. Currently, there are: (i) 48 million shallow tube wells; (ii) 49,480 medium tube wells; (iii) 33,510 deep tube wells; and, (iv) and 30,917 government tube wells in operation. As a result, there is an imminent risk of over-exploitation of the resource, this is not aided by planting of water intensive crops (e.g. sugar cane and rice paddy) and the waste of groundwater resources due to electricity use by agricultural pumps being heavily subsidized. Uttar Pradesh currently uses 43.8 billion cubic meters of surface water for irrigation purposes. With about 162 billion cubic meters utilizable surface water, the Uttar Pradesh State Water Policy outlines a roadmap for a shift from groundwater to more surface water use by 2025.

[2] http://cgwb.gov.in/WQ/WQMAPS/Arsenic.pdf, https://www.thehindubusinessline.com/news/science/high-levels-of-arsenic-found-in-groundwater-in-up/article27329332.ece

Figure 9: Drainage Map



Source: Irrigation & Water resources department, Govt. of Uttar Pradesh

Table 9: Physio-Chemical Quality of Surface Water (Ganga River)

Parameter	Bijnor		Narora		Kanpur		Allahabad		Varanasi	
	Pre*	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Colour	Greenish	Greenish	Brownish	Brownish	Clear	Brownish	Brownish	Brownish	Clear	Brownish
Odour	Fishy	Fishy	Fishy	Fishy	Fishy	Fishy	Fishy	Fishy	Fishy	Fishy
Temp (°C)	34	23	33	33	33	23	33	23	31	30

**Note- Pre-monsoon, Post-monsoon*

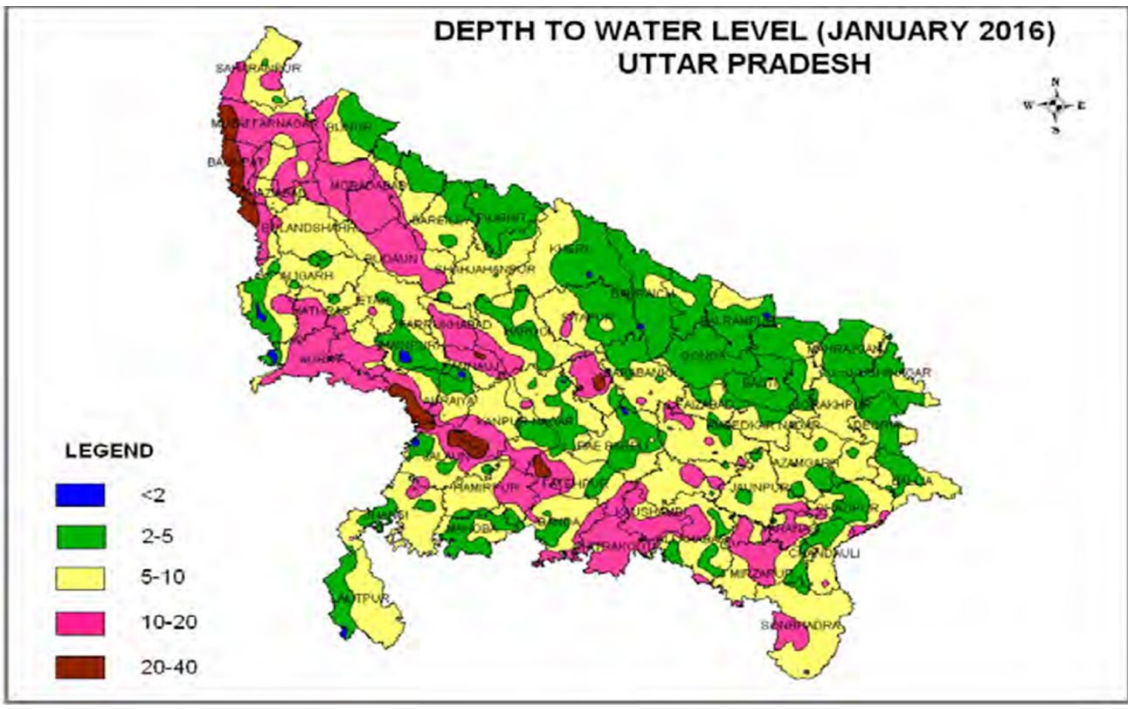
Table 10: Chemical Quality of Surface Water (Ganga River)

Parameter	Units	Drinking Water Quality Standard (IS 10500:2012)	Season	
			Pre-monsoon	Post-monsoon
Turbidity	NTU	5	29	32
TDS	mg/l	500	230	234
Dissolved Oxygen	mg/l	-	7.3	7.0
Biological Oxygen demand	mg/l	-	3.9	2.3
Chemical Oxygen Demand	mg/l	-	39	28
pH		6.5-8.5	8.0	7.6
EC	µS/cm	-	358	316
Total Hardness	mg/l	300	113	125
Sodium as Na+	mg/l	-	37.4	19.7
Potassium as K+	mg/l	-	7.3	4.4
Calcium as Ca++	mg/l	75 (as Ca++)	24.1	32.2
Magnesium as Mg+	mg/l	-	12.7	12.5
Alkalinity	mg/l	200	111	143
Nitrate as NO3	mg/l	45	0.59	0.71

NTU = Nephelometric Turbidity Units, mg/l = milligrams per liter, µS/cm = microsiemens per centimeter

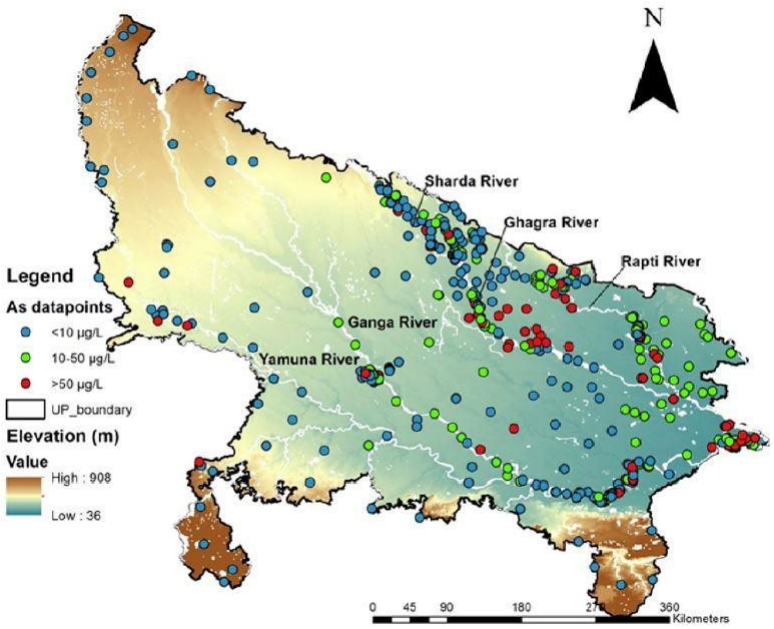
Source: NMCG, NEERI Report

Figure 10: Groundwater Status in Uttar Pradesh



Source: Groundwater Monitoring Report, January 2016

Figure 11: Arsenic Contamination in Uttar Pradesh



Source: https://thewire.in/environment/high-levels-of-arsenic-found-in-groundwater-in-uttar-pradesh

g. Air quality

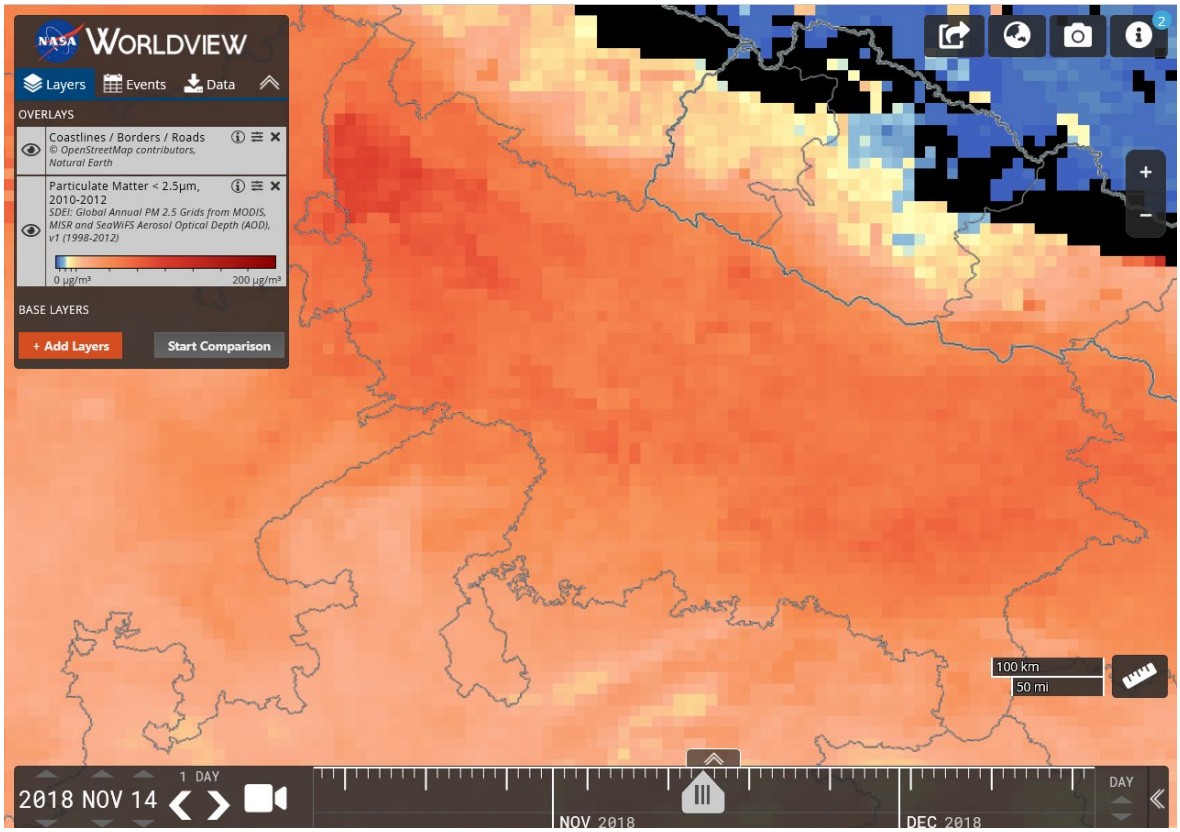
64. PM10, SO2 and NO2 are the primary air quality parameters monitored by Uttar Pradesh State Pollution Control Board at 52 locations in 15 cities of the state under the National Air Monitoring Programme. The annual average ambient air quality data obtained in the year 2017-2018 is given in Table 11. These airsheds are seen to be significantly degraded for PM10 and on occasion, Kanpur and Allahabad, for NO2. PM10 Indian standard is also significantly above the World Health Organization guidelines, thus these levels of dust pose a risk to human health. The ambient air quality in the rural areas is generally better than in the cities and near industrial areas although dust levels can still be an issue throughout the state as shown in Figure 12. Given this baseline, particular attention should be paid during works to minimizing any dust generation. The EMP includes for the collection of more representative subproject specific baseline air quality data by the DISCOMs pre-construction, to help inform environmental monitoring during construction.

Table 1: Annual Average Ambient Air Quality Results

City	Year 2017 (µg/m^3)			Year 2018 (µg/m^3)		
	PM_{10}	**SO2**	**NO2**	**PM_{10}**	**SO2**	**NO2**
Lucknow	**230.70**	8.19	25.41	**215.85**	8.03	28.50
Kanpur	**224.34**	6.65	**44.46**	**216.98**	7.11	**45.54**
Agra	**186.10**	7.00	14.75	**218.76**	5.30	21.87
Anpara	**173.20**	16.80	31.50	**201.90**	18.20	27.59
Gajraula	**205.40**	22.15	34.95	**225.67**	19.92	32.71
Ghaziabad	**275.45**	16.60	39.30	**234.90**	17.76	34.07
Varanasi	**250.86**	10.24	39.18	**200.73**	9.04	35.26
Noida	**209.65**	11.40	37.95	**239.80**	17.41	38.53
Firozabad	**219.77**	8.50	31.10	**223.01**	8.05	30.89
Jhansi	**112.85**	6.60	19.35	**95.99**	5.92	18.07
Khurja	**192.45**	22.70	21.15	**204.65**	20.62	19.20
Allahabad	**145.26**	4.30	**41.00**	**231.05**	3.91	**46.32**
Moradabad	**213.05**	19.60	33.50	**227.42**	19.88	34.33
Bareilly	**206.85**	11.50	21.40	**227.30**	11.38	22.83
Raebareli	**140.93**	11.37	17.23	**132.14**	11.30	17.36
Residential Standard (Annual)*	**60**	**50**	**40**	**60**	**50**	**40**
WHO Guidelines	**20**	**n/a**	**40**	**20**	**n/a**	**40**

**Note-National Ambient Air Quality Standards, 18th November 2009 (Appendix 3)*
PM10 = fine particulate matter less than 10 microns in diameter
SO2 = sulfur dioxide
NO2 = nitrogen dioxide
µg/m^3 = micrograms per cubic meter
Source: Action plans for the control of air pollution in 15 cities of Uttar Pradesh, UPPCB, Lucknow

Figure 12: Annual Average PM2.5 Levels in Uttar Pradesh 2010-2012



h. Noise

65. The Central Pollution Control Board has established a noise level monitoring network together with the state pollution control board. The results of noise level monitoring in cities during 2014-2017 are given in Table 12. The ambient noise in the rural areas is generally less than in the cities. The EMP includes for the collection of more representative subproject specific baseline noise quality data by the DISCOMs pre-construction, to help inform environmental monitoring during construction.

Table 2: Noise Level in Leq dB(A) on a Single Pre-Deepawali Day 2014-2017

City	2014	2015	2016	2017
Agra	72	73	62	62
Lucknow	55	60	57	58
Unnao	-	-	48	48
Faizabad	-	70	69	60
Jhansi	67	57	58	57
Varanasi	-	-	62	60
Allahabad	-	-	59	56
Kanpur	-	-	72	68
Gorakhpur	61	62	60	52
Noida	-	-	-	60
Rai Bareli				54
Moradabad	-	-	-	61
Bareilly	Previous years data not available			76
Meerut				57
Aligarh				72
Ghaziabad				60

Mathura		74
Saharanpur		63
Sonebhadra		59
Bulandshar		60
Firozabad		56
Indian and WHO Guideline (residential)	**LAeq 1hr 55dB(A) day LA eq 1hr 45dB(A) night**	

Source: CPCB, Air quality and noise level monitoring report, 2017

B. Biological Setting

66. Uttar Pradesh has a diversity of habitats spread across the varied physiographic regions of Terai, the Gangetic plains and the Bundelkhand, holding a wide variety of flora and fauna. Moist deciduous forests, riparian forests and extensive grasslands are found in the Terai. The Gangetic plain has scattered sal dominated and mixed forests as well as dry thorny forests while the dry deciduous forests are found in the Bundelkhand region.[3]

67. In the Indian State of Forest Report 2013, the recorded forest cover in Uttar Pradesh was 16,582 km^2, constituting about 7% of the State's total geographic area: 12,070 km^2 is classified as reserved forest (forest land owned by Government of India and may be upgraded to the status of national parks/national sanctuaries); 1,157 km^2 is protected forest (forests that enjoy a certain degree of protection from Government of India, such as land not permitted to be developed on) and 3,355 km^2 is unclassed forest (wild forests which are not classified as either of the above) (Figure 13).

68. The large network of wetlands covers an area of over 32,00 square kilometers in the rainy season including both rivers and stagnant wetlands. Significant migratory and breeding populations of water birds are supported, 18 out of 25 important bird areas in the state are wetlands (footnote 3). The use of concrete poles with metal crossarms presents a risk to birds. Distribution lines in areas where birds at risk from distribution lines are present (raptors etc.) should adopt an ecologically sensitive design e.g. suspended insulators.

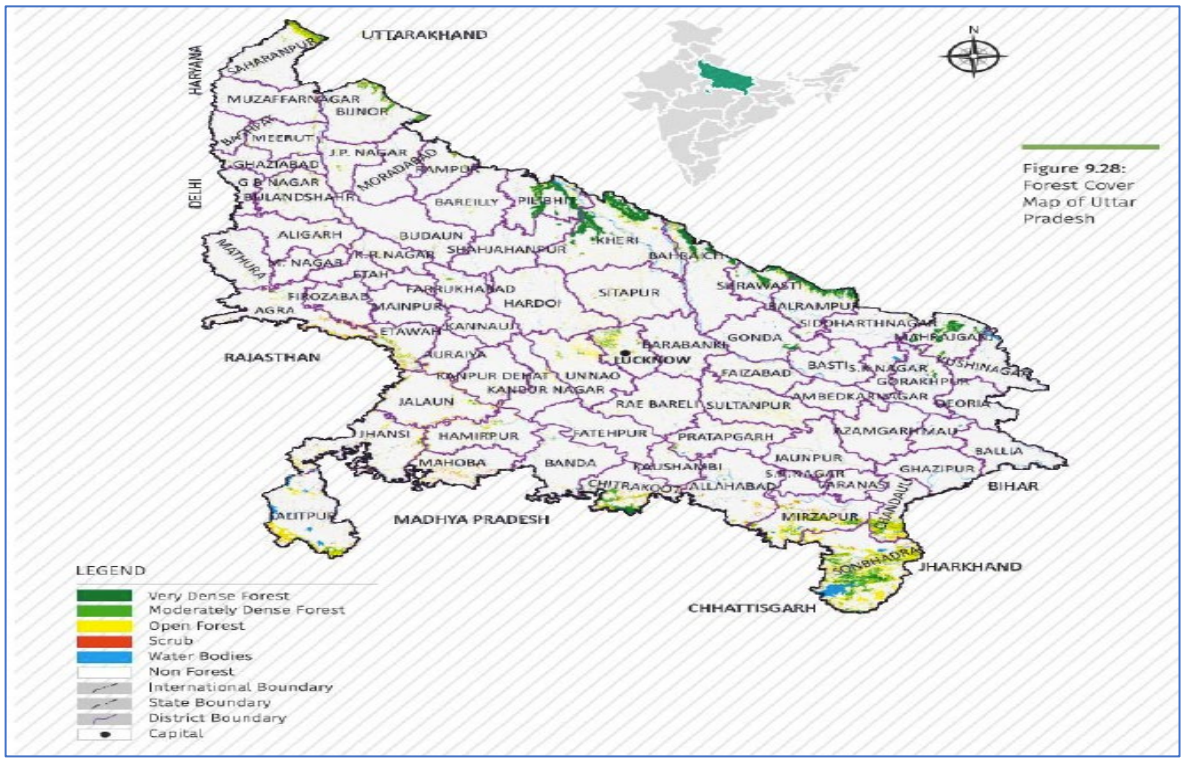
69. The protected area network in Uttar Pradesh occupies a 6,310ha area which constitutes about 2.62% of the state's geographical area (Figure 14). Dudhwa National Park, is the only National Park in Uttar Pradesh, located in the northern Terrai region, bordering Nepal. With an area of 680 km^2, Dudhwa National Park has also been classified as a Tiger Reserve, with the population of tigers at 98, as of 2005. There are also tiger reserves at Pilibhit in central Uttar Pradesh and Amangarh (buffer of Corbett tiger reserve in Uttarakhand) reserved forest in the north. Tiger corridors have been demarked between Dudhwa and Corbett National Parks, and from Dudhwa National Park – Kishanpur Wildlife Sanctuary – Katerniaghat Wildlife Sanctuary in the north of the state.

70. The recorded flora diversity of Uttar Pradesh includes 2,932 species of plants whilst the faunal diversity includes 87 mammal species, 358 bird species, and 868 reptiles and amphibians.[4] The Terai is an important home to tiger, where the other mega-mammals Leopard, Asian elephant, Sloth bear, and Single horned rhino are also found. The grasslands are renowned for their ungulate and deer species. The protected area network covers the critical ecosystems and wildlife species of the state; the endangered species like tiger, leopard, Asian elephant, sloth bear, single-horned rhinoceros, blackbuck, Gangetic dolphin, Bengal florican, Sarus crane, gharial and marsh crocodile are also covered by it (footnote 3).

[3] https://shodhganga.inflibnet.ac.in/bitstream/10603/214907/8/08%20chapter%203.pdf
[4] http://www.upsbdb.org/diversity-of-up.php#

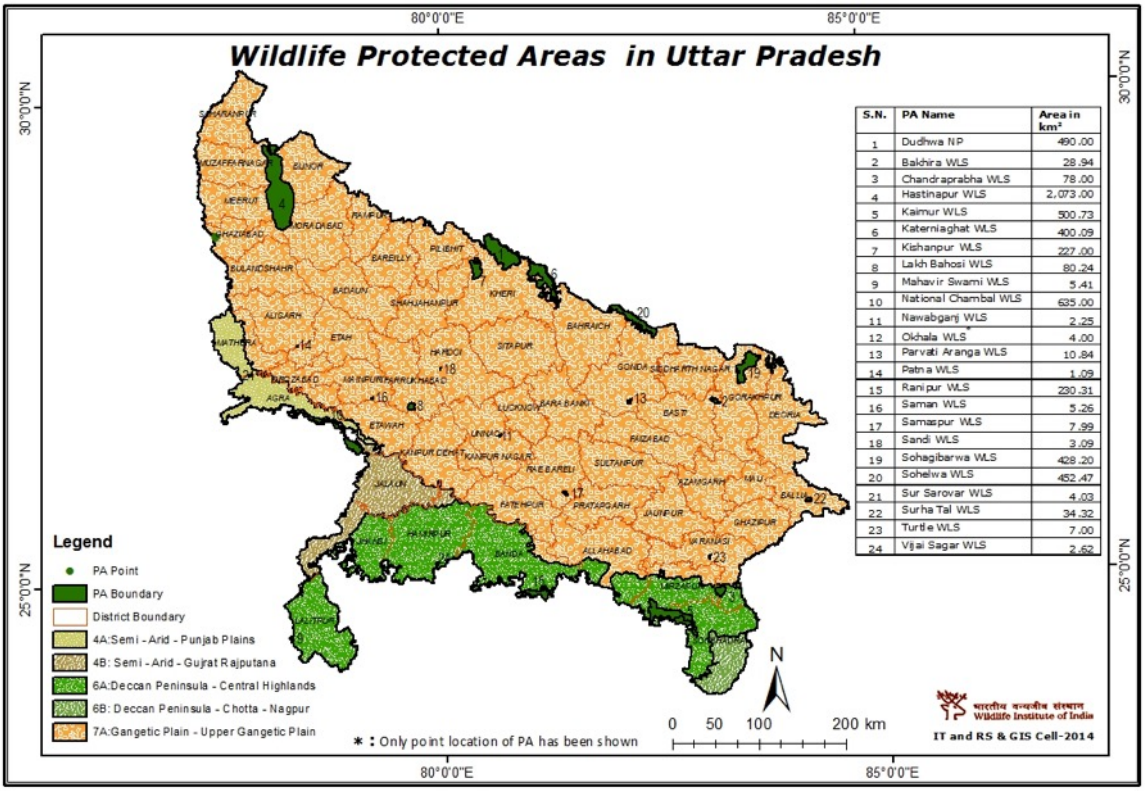
71. The Asian elephant is particularly at risk from distribution lines (Figure 15). In 2012 there were 380 elephants in Uttar Pradesh with one elephant reserve notified in 2009 Saharanpur and Bijnore districts and two elephant corridors in the north of the state at Rawasn – Sonanadi via Lansdowne and Sonanadi via Bijnor to allow movement to Uttarakhand. Distribution lines in open areas where elephant is present should adopt an ecologically sensitive design with the clearance above ground of the lower conductor per national regulations or above maximum trunk height of an elephant, whichever is the higher.

Figure 13: Map of Forest Cover in Uttar Pradesh



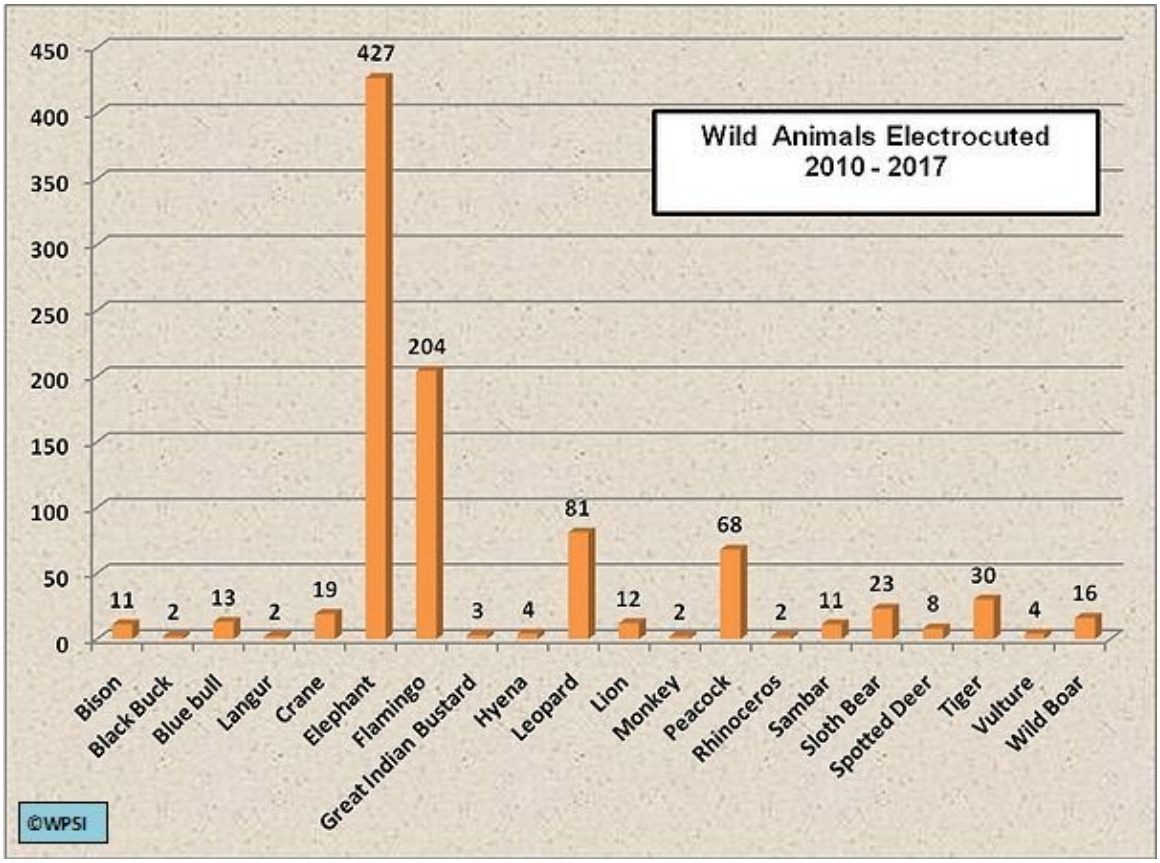
Source: India state of Forest Report, 2017

Figure 14: Map Showing Protected Areas in Uttar Pradesh



S.N.	PA Name	Area in km²
1	Dudhwa NP	490.00
2	Balchira WLS	28.94
3	Chandraprabha WLS	78.00
4	Hastinapur WLS	2,073.00
5	Kaimur WLS	500.73
6	Katerniaghat WLS	400.09
7	Kishanpur WLS	227.00
8	Lakh Bahosi WLS	80.24
9	Mahavir Swami WLS	5.41
10	National Chambal WLS	635.00
11	Nawabganj WLS	2.25
12	Okhala WLS	4.00
13	Parvati Aranga WLS	10.84
14	Patna WLS	1.09
15	Ranipur WLS	230.31
16	Saman WLS	5.26
17	Samaspur WLS	7.99
18	Sandi WLS	3.09
19	Sohagibarwa WLS	428.20
20	Sohelwa WLS	452.47
21	Sur Sarovar WLS	4.03
22	Surha Tal WLS	34.32
23	Turtle WLS	7.00
24	Vijai Sagar WLS	2.62

Figure 15: Wild Animals Electrocuted in Uttar Pradesh 2010-2017



Source: http://www.wpsi-india.org/crime_maps/electrocution_chart.php

C. Cultural Setting

72. The state has great religious and cultural heritage. The culture has its roots in the Hindi and Urdu literature, music, fine arts, and drama. Uttar Pradesh is the birthplace of Lord Rama and Lord Krishna and it witnessed the setting of two great epics – the Ramayana and the Mahabharata and left the mark of this in the form of rich heritage and structures.

73. The state is home to large number of historical sites and heritage monuments. There are 3 World Heritage Sites, 741 Monuments of National Importance and 143 state protected monuments have been recognized by the archeological survey of India (ASI) in Uttar Pradesh.

74. Agra is one of the most popular cities of the world supporting the state's three UNESCO World Heritage monuments - Taj Mahal, Fatehpur Sikri and Red Fort. Lucknow, the capital of Uttar Pradesh, also has several historical monuments such as Bara Imambara and Chota Imambara. Other historical cities in the state which are famous for their historical monuments are Mathura, Vrindavan, Gokul, Varanasi, Ayodhya, Kushinar, Sarnath Agra, Jhansi, Lucknow, Meerut and Allahabad. Other historical monuments and places in Uttar Pradesh include Sun temple in Kushinagar, Kans Qila in Mathura, Bateshwar nath Temple, Akbar's Tomb, Patthar ka Sher, Medhak Shiva Temple, Shahi Pul Jaunpur, Allahabad Public Library, Guptar Ghat in Ayodhya, Husainabad Ghanta ghar and Chhatris of Govardhan.

D. Socioeconomic Setting

75. The population of Uttar Pradesh is 199.81 million (Census 2011) making up 16.51% of India's population. The rural population makes up 68.84% of this total, while 31.16% of the population is urban. However, the population growth rate in urban areas is about 29%, while the rural population growth rate is about 18%. Uttar Pradesh has a little less than 33 million households and the average household size is about 6.5 persons. Comparative demographic features of Uttar Pradesh with India are given in Table 13.

a. Vulnerable groups

76. 52% of the population were male and 48% were female. The sex ratio (i.e., the number of females per thousand males) is 912:1000. About one fifth of the population is from Schedule Castes, groups that occupy a low position in India's caste system. A smaller proportion (22.3%) of the state population are from Scheduled Tribes (indigenous peoples). The main tribal groups are Gond, Bhil, Baiga, Kokru, Bhariya, Halba, Kaul, Mariya and Sahariya. Most of the population in Hindu with Muslims the largest minority – there are also Sikhs, Christians, Jains and Bhuddists. Hindi is the official language, but Urdu is also a state language.

77. At 67.68%, Uttar Pradesh has one of the lowest literacy rates among Indian States ranked 29th in India. The population of literate males (77.30%) is comparatively higher than female literates (57.20%). About 2 in every 100 people in Uttar Pradesh is either physically or mentally disabled based on the data of Census 2011. With just under 30% of its population below the poverty line (defined on the basis of nutritional requirements of 2,400 and 2,100 calories per person per day for rural and urban) Uttar Pradesh is ranked 20th in the country. While there has been progress in literacy rates and other indicators, it remains below the India average poverty line of 21.92%. Poverty levels in the state have always been higher than all India figures, indicative of greater vulnerability compared to other parts the country.

78. Populations are vulnerable to electrocution from poorly installed and maintained distribution lines; data from the Directorate of Electrical Safety Uttar Pradesh showed that electrocution deaths in the state have almost doubled in the last seven years — from 570

in 2012-13 to nearly 1,120 in 2018-19.[5] School children are particularly exposed when lines pass adjacent to or over school compounds. In 2019 in Balrampur district 50 children were electrocuted in a school compound crossed by an 11kV line[6] and in Sambhal district four children were killed when a line fell into a tubewell.[7]

Table 13: Demographic Profile of the State versus India

No.	Feature	Uttar Pradesh	India
1	Geographical Area (sq. km)	240,093	3,287,240
2	Total Population	199,812,341	1,210,193,422
3	Male population	104,480,510	623,724,248
4	Female population	95,331,831	586,469,174
5	Rural Population	155,317,278	833,087,662
6	Urban Population	44,495,063	377,105,760
7	Density/km^2	829	3,829
8	Sex ratio (female/1000 male)	912	940
9	Literacy (%)	67.68	74.04

Source: Census Data, Census of India, 2011

b. Employment and economic activity

79. According to the 2011 census, more than 73% of the total population were non-workers (including working in family owned farms, subsistence farmers); 20% were main workers (salaried workers); and 7% were marginal workers (employed part time). Of the roughly 54 million workers, 41.1% are cultivators, 24.8% are agricultural laborers, 5.6% are in household industries, and 28.5% are in various other sectors.

80. Uttar Pradesh is the largest producer of food grains in India and accounted for about 17.83% of India's total food grain production in 2016-2017. Food grain production in the state in 2016-2017 stood at 49,903.1 thousand tons and increased to 51,252.7 thousand tons in 2017-2018. Major food grains output include rice, wheat, maize, millet (bajra), gram, pea and lentils. In 2017-2018, Uttar Pradesh's export of agricultural commodities amounted to $2.83 billion. Pulses production in the state was 2,208.0 thousand tons and the production of vegetables stood at 28.23 thousand tons in 2017-2018. At present, the state is the largest vegetable producer in India.

81. As Uttar Pradesh is home to one of the eight Wonders of the World, the Taj Mahal, it is a popular tourist destination. In 2017, domestic tourist arrivals in the state were 234 million; while international tourist arrivals were more than 3.56 million. Under the state budget 2018-2019, $192.4 million has been allocated to boost religious tourism. In February 2018, the state government launched a new tourism policy to attract investments valued at $772.32 million every year, to increase domestic tourism by 15% and foreign tourism by 10%.

82. Kanpur, Ghaziabad, Lucknow, and Balmrampur are the major industrial areas of Uttar Pradesh. More recently, the state has made efforts to promote itself as an IT and software hub for IT services including software development, business process outsourcing (BPO) and electronics. Moreover, it is becoming a key hub for the semiconductor industry with several IT firms establishing R&D facilities in Noida. As of January 2019, Uttar Pradesh had 23 approved Special Economic Zones. The main bottleneck to industrialization is a lack of robust infrastructure, including rail and road networks.

[5] https://timesofindia.indiatimes.com/india/electrocution-kills-nearly-30-indians-a-day/articleshow/70428682.cms
[6] https://www.tribuneindia.com/news/archive/nation/55-kids-injured-as-high-tension-wire-falls-on-school-in-up-802956
[7] https://www.business-standard.com/article/pti-stories/four-children-die-of-electrocution-in-up-119062101363_1.html

c. Water supply and sanitation

83. The majority of the people (52%) have access to drinking water facilities, which are within their premises. Around 36% of the households have access to drinking water near their premises, while 12% of households fetch their drinking water away from home. The details are given in Table 14. The main source of drinking water is hand pump; 64.93% of the households use hand pumps as their main source of drinking water. Just over 27% of the households use the tap water, followed by borehole/tube well (2.93 % of households use this as their water source) (Table 14). These drinking water sources are compromised by contamination (excess fluoride, arsenic, brackishness, iron, etc.) caused by the geological formations, ground water pollution (nitrates) from agriculture and bacteriological contamination, surface water pollution due to seasonal turbidity and bacteriological contamination. As per the Census 2001, only 28% households have individual household toilets.

Table 14: Source of Drinking Water

Particulars	Total No	%
Tap	8,976,317	27.26
Hand pump	21,379,080	64.93
Borehole	964,281	2.93
Well	1,304,356	3.96
Tank, Pond	36,133	0.11
River, Canal	27,866	0.08
Spring	12,160	0.04
Any other	224,073	0.68
Total	**32,924,266**	**100**

Source: Census of India, 2011

d. Transportation

84. Uttar Pradesh's major towns and cities are connected by a blend of roads, national highways and railways. Road networks are categorized as: (i) National Highway; (ii) State Highway; (iii) Major District Roads; (iv) Other District Roads; and (v) Village Roads. According to the Public Works Department (PWD), the five categories make up 390,256 km of road network as of 2011. This translates to roughly 162 km of road per 100 km^2 of area.

85. Uttar Pradesh is home to the largest railway network in the country. North Eastern Railway and North Central Railway, based in Gorakhpur and Allahabad, respectively, connect to nine neighboring States in India.

86. There are two airports connecting the State with other parts of the country and beyond. The Lal Bahadur Shastri International Airport in Varanasi, and the Chaudhary Charan Singh International Airport in Lucknow.

e. Power Sources and Availability

87. As demand for electricity significantly exceeds supply, Uttar Pradesh regularly experiences power crises. Over the last 20 years power shortage has remained within the range of 10-15%, while shortages in periods of peak demand reach even higher levels. 2013 witnessed the largest gap between supply and demand: a 43% gap. In 2010, Uttar Pradesh had an installed capacity of 520 MW for hydro, 4,370 MW of thermal power capacity and 590 MW of new and renewable energy capacity. By February 2019, this figure increased about five-fold, as Uttar Pradesh currently has a total installed power generation capacity of 25,072.25 megawatts (MW). Power generation in the state for 2018 reached 122,730.05 GWh. The state's energy requirement was 108,347 million units between April to December 2018.

88. The most commonly used fuel among the households is firewood, which is about 45% of the various fuels used, and cow dung stands second which makes up just over 27%; followed by crop residue (just under 14%), LPG - 11% and kerosene - just over 2%. The use of electricity as fuel is quite negligible since only 0.14% of the households use it for cooking (Table 15).

Table 15: Type of Fuel Used

Particulars	Total No.	%
Firewood	11,401,917	44.26
Crop residue	3,541,376	13.75
Cow dung	7,043,989	27.34
Coal, Lignite	99,898	0.39
Kerosene	587,795	2.28
LPG	2,913,579	11.31
Electricity	36,228	0.14
Biogas	55,459	0.22
Any other	35,192	0.14
No cooking	45,168	0.18
Total Households	25,760,601	100

Source: Census of India, 2001(equivalent data in the 2011 Census not available)

E. Setting of Potential Sample Subproject Components

89. In order to establish the baseline setting of the project area of influence for the potential sample subproject components a desk study was carried out with reconnaissance surveys undertaken in June to October 2019. 30m either side of the existing and potential distribution line alignments (right of ways (ROW) for 11 kV distribution lines are 7m) was observed during the reconnaissance surveys whilst the desk study identified sensitive areas, such as, protected areas within a distance of 1km from the distribution lines. In addition, an Integrated Biodiversity Assessment (IBAT) search was also run for a 10km buffer to check the presence or absence of key biodiversity areas and critical habitat trigger species in the wider area that may need further consideration with the results included in Appendix 7.

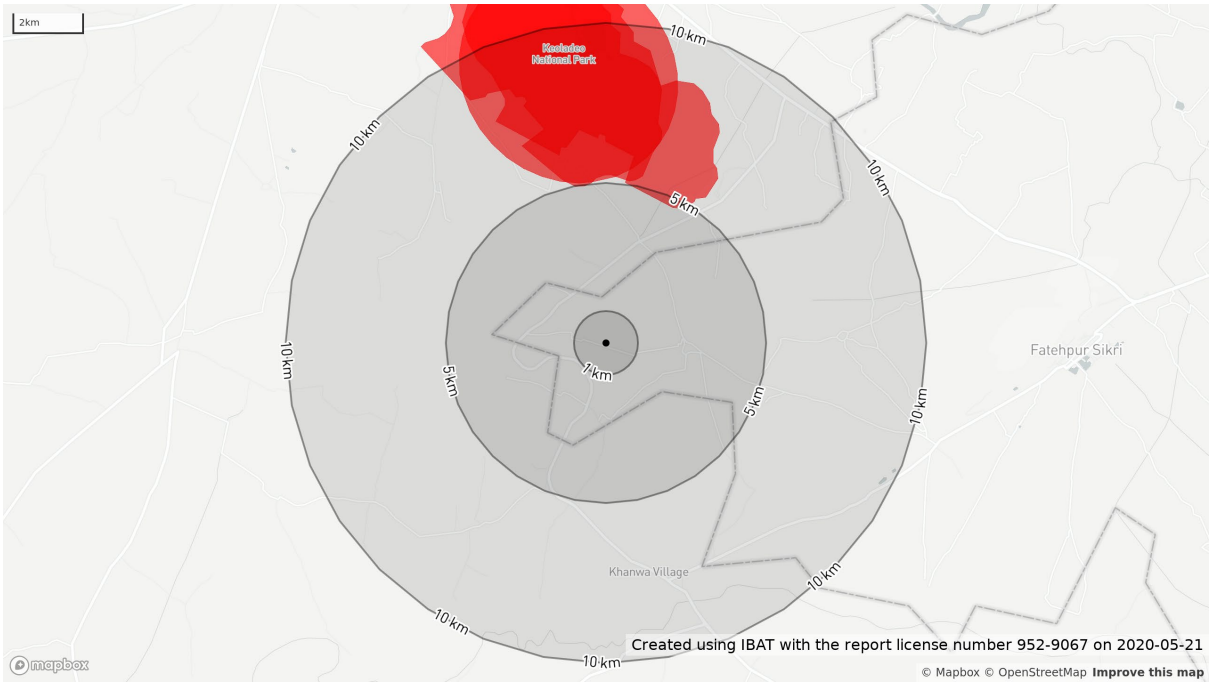
a. DVVNL Sample Subproject Components (Agra District, Agra Zone 2)

90. **Map 1, Existing 11kV Daudpur Feeder Separation.** This 11kV mixed feeder line starts from the 33/11kV Madanpura substation surrounded by agricultural land and is about 5 km in length. It travels south along the ROW of a paved secondary road for about 2 km, until the road, and the line, pass through the outskirts of Daudpur village for about 500m. The secondary road is bounded by scatted individual trees bordering agricultural land. Following Daudpur village the network bifurcates; this feeder runs north for about 2.5 km to Utto village (a rural village with poor road access) running primarily along unpaved access tracks bounded by agricultural land but at times over private farmland. The potential route would run parallel to the existing feeder until Daudpur village where it would continue around the outskirts of the village and along the paved secondary road for 1.5km, then heading north along unpaved access tracks bounded by agricultural land for 500m to Utto village.

91. Daudpur and Utto villages are both surrounded by flat terrain comprising modified habitat -- agricultural land with individual mature trees and shrubs along the boundaries. Other than the residential homes and small shops in Daudpur village no sensitive receptors (schools, temples, hospitals etc.) were identified during the field visit. For these receptors adequate safety clearances must be maintained. There are no forests or biodiversity conservation areas within 1km. However, in the wider study area, Keoladeo National Park, which is an IUCN Category II national park, a natural World Heritage Site, a Ramsar site and Important Bird Area (IBA) is found in the adjacent state of Rajasthan, at about 5 km

distant (Figure 16) – the IBAT report based on coordinates for Utto village is included in Appendix 7 but given the agricultural setting no significant impacts on threatened species supported are anticipated.

Figure 16: Map Showing Protected Areas Relative to Utto Village



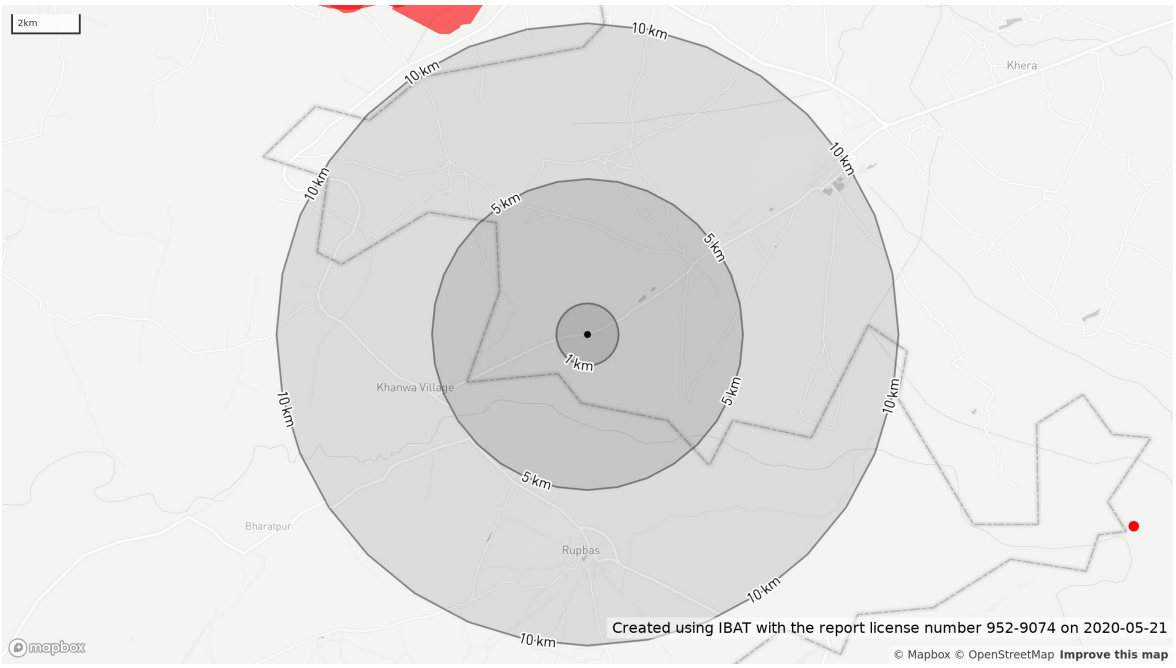
	
Daudpur village is surrounded by agricultural land, with no forest cover	11 kV line to Utto village, at times feeders run over private farmland

	
Utto is surrounded by flat, agricultural land. Road access exists, but is poor	11 kV line crossing over agricultural land, pole erected on farmland on the way to Utto village

92. **Map 2, Existing 11 kV Dawar Feeder Separation.** This 11kV mixed feeder line also starts from the 33/11kV Madanpura substation and is about 8.5 km in length. The line heads from the substation for about 6km towards Dabar where it passes through the outskirts of the village; the exact route taken to reach Dabar is not currently mapped. On reaching Dabar the feeder continues along the paved secondary road for 2km to Banja Nagra. The secondary road is bounded by scatted individual trees bordering agricultural land. This feeder then runs for a further 500m south along an unpaved access track bordered by agricultural land providing access to Sirauli village. The potential route would follow the same route to Banja Nagra but would head to Sirauli village along the ROW of a narrow-paved road 250m sooner.

93. Following Dabar village the roads are surrounded by flat terrain comprising modified habitat -- agricultural land with individual mature trees and shrubs along the boundaries. In addition to residential homes and small shops on the road in Dabar there is also a school and clinic, further on there is a primary school set back from the road between Dabar and Banja Nagra. There are also residential homes and small shops in Sirauli village since the transformer is in the village center. For all these receptors adequate safety clearances must be maintained. There are no forests or biodiversity conservation areas within 1km. However, in the wider study area, Keoladeo National Park, which is an IUCN Category II national park, a natural World Heritage Site, a Ramsar site and Important Bird Area (IBA) is found in the adjacent state of Rajasthan, at just over 10 km distant (Figure 17) – the IBAT report based on coordinates for Dabar village is included in Appendix 7 but given the agricultural setting no significant impacts on threatened species supported are anticipated.

Figure 17: Map Showing Protected Areas Relative to Dabar Village



	
Tree growth along the existing road	11 kV Dabar Feeder passing through built up section of road at Dabar
	

11 kV line feeding Sirauli village using existing road RoW	LT lines in Banja Nagra connected to 11kV line in background

94. **Map 3 Existing 11 kV Feeder No. 2.** This 11kV mixed feeder line starts from the 33/11kV Kirawli substation in Kiraoli town and is about 9.5 km in length. From the substation the feeder runs through the town and along the ROW of the Bikaner-Agra Road, for about 2 km, after which is bifurcates and one line leads off the road to Khera Bakanda village, south of the Bikaner-Agra Road – the line to Khera Bakanda village runs along existing narrow-paved roads and between the boundaries of agricultural land with individual mature trees and shrubs for about 3.5km. It passes through an unnamed village and Jajav village. Feeder No. 2 continues from the point of bifurcation for about 1.5 km along the Bikaner-Agra Road, bounded by scatted individual trees bordering agricultural land and a pond surrounded by tree cover, to reach Singarpur village, located off the Bikaner-Agra Road along a stretch of unpaved road lined by trees. It then continues beyond Singarpur along existing narrow roads paved in part but also with unpaved stretches and between the boundaries of agricultural land with individual mature trees and shrubs for about 2.5 km to serve Santha village. On the outskirts of Santha village is an area of ponds set back from the road. This village is more rural than Singarpur as it is located further away from the Bikaner-Agra Road. The potential route would follow the same route except within Kiraoli town where it would route along a road bounded by residential and commercial properties.

95. In Kiraoli town, a small farming town, land use is built up and mostly dense residential and commercial. Immediately after leaving Kiraoli town, the surrounding land use turns into agricultural land with individual mature trees and shrubs along the boundaries. The terrain is flat, and the habitat modified. There are also residential homes and small shops the unnamed village and Jajav village, for all these receptors adequate safety clearances must be maintained. Outside of the town no sensitive receptors (schools, temples, hospitals etc.) were identified during the field visit. There are no forests or biodiversity conservation areas within 1km and IBAT did not identify any key biodiversity areas (KBAs) in the wider study area.

	Feeder in Kiraoli town along Bikaner-Agra Road

	
Feeder No. 2 using existing ROW of Bikaner-Agra Road, as it leaves Kiraoli town to serve nearby villages	11 kV feeder line to Khera Bakanda occasionally crosses agricultural land with individual trees (a high voltage line can also be seen in the photograph)
	
11 kV line feeding into Singarpur village following existing road RoW	11 kV line crossing agricultural land, poles erected on boundaries of agricultural land surrounding Singarpur Village

	
Feeder No.2 using the existing RoW of access road leading to Santha village	Feeder No.2 approaching Santha village, using RoW of existing road

96. **Map 4 Existing 11 kV Feeder No. 3.** This 11kV mixed feeder line starts from the 33/11kV Kirawli substation in Kiraoli town and is about 9 km in length. From the substation the feeder runs south through the town, in the opposite direction of Feeder No. 2, where it bifurcates after about 250 m and having crossed a railway line. One section runs for 6.5 km, first along the railway line then the ROW of an existing paved road with tree cover, starting in the town and running to Mori village south of Kiraoli, and subsequently on paved access roads, that are occasionally unpaved, through an unnamed village, to Nahchani village about 3 km distant. The other section continues to Nagla Shyuram village about 2km south of Kiraoli town. The feeder travels for about 500 meters along the railway line after the point of bifurcation, and then the line travels along a paved access road. On reaching the village the line travels through the outskirts, along the unpaved village road, to connect to a transformer located near the village center. There are areas in the village that have some tree cover and it was observed that the trees do obstruct passage of the lines. The potential route is somewhat different in that the feeder will run to Nagla Shyuram village, then bifurcate to reach Mori village and Nahchani village running along paved access road including adjacent to an irrigation canal for approximately 2km, but also between the boundaries of agricultural land as this is a more direct route than following exactly the road.

97. In Kiraoli town, a small farming town, land use is built up and mostly residential and commercial. Immediately after leaving Kiraoli town, the surrounding land use turns into flat agricultural land with individual mature trees and shrubs along the boundaries. The terrain is flat, and the habitat modified. There are also residential homes and small shops in the villages that are passed through, for all these receptors adequate safety clearances must be maintained. Outside of the town no sensitive receptors (schools, temples, hospitals etc.) that the line passes were identified during the field visit. There are no forests or biodiversity conservation areas within 1km and IBAT did not identify any KBAs in the wider study area.

	
Secondary road leading to Mori village from Kiraoli	Mori village transformer, this portion of line uses the existing road RoW
	
Feeder No. 3 connecting to Nahchani village is surrounded by flat agricultural land. The line crosses agricultural land on occasion	Feeder No. 3 approach to village.

	
Feeder No. 3 traveling through Nagla Shyuram village, using the existing ROW of the internal village road	Feeder No. 3 traveling through Nagla Shyuram village, using the existing ROW of the internal village road lined with trees

F. PVVNL Sample Subproject Components

98. **Map 5. Existing 11 kV Sathedi Feeder in Muzaffarnagar District, Saharanpur Zone.** This 11kV mixed feeder line serves five villages including Sathedi and Sardhan villages. It starts from the 33/11kV Khatauli Rural substation in Khatauli Colony (a township) and is about 5.5 km in length. It runs for about 750m along a major thoroughfare leaving the township, then alongside rural roads bounded by individual trees and shrubs for 1.25 km, and along a major road for 1km before it bifurcates. One section of the line runs for a further 2km including a section alongside the Upper Ganges Canal until it reaches Satheri village. The other section of line runs for about 500m along a paved access road to serve Sardhan village.

99. Sensitive receptors adjacent to the existing line in the peri-urban section adjacent to the road within Khatauli colony include two mosques, two academies and one Government hospital. On leaving Khatauli colony the roads are bounded by modified habitat (agricultural land with individual mature trees and shrubs along the boundaries) on flat terrain and there are no other sensitive receptors (schools, temples, hospitals etc.) which are passed. There are no forests or biodiversity conservation areas within 1km and IBAT did not identify any KBAs in the wider study area.

	
Satheri village	11kV Satheri feeder along rural road leading to Satheri village
	
11 kV line feeding into Sardhan village	Transformer at Sardhan village from where LT line begins

100. **Map 6. Existing 11 kV Goana-Shyam Nagar Feeder in Hapur District, Bulandshahar Zone.** This 11kV mixed feeder line starts from the 33/11kV Hapur-Modinagar substation and is about 2.5 km in length. It runs along an existing by-pass road bordered by scattered individual trees and shrubs for about 1.75km until it reaches the access road to Goana village. Here the line runs 250m along the unpaved road to Goana village; there is transformer at the start of Goana village from where LT lines supply electricity to the households and small shops. The line then routes across a small river a further 500 m through agricultural land and along unpaved access roads to reach the Shyam Nagar village to the south where it connects to a transformer located at the rear end of the village.

101. Sensitive receptors adjacent to the existing line in the peri-urban section include a high school adjacent to the by-pass road for which safety distances will need to be maintained. The terrain is flat, and the habitat modified -- agricultural land with individual mature trees and shrubs along the boundaries. There are no forests or biodiversity conservation areas within 1km and IBAT did not identify any KBAs in the wider study area.

	
Feeder along By-pass Road to Goana and Shyam Nagar villages	Incoming 11 kV feeder along access road to Goana village
	
11 kV line to Shyam Nagar village with ground mounted transformer	11 kV line along unpaved access roads to Shyam Nagar village

102. **Map 7. Existing 11 kV Alipur Feeder in Meerut District, Meerut Zone.** This 11kV mixed feeder line runs from the 33/11 kV Lohiya Nagar substation on the outskirts of Meerut City, and is 4 km in length. The Lohiya Nagar substation is located 250m south of a large open dumpsite, along a major artery leading to Meerut City center. The line runs for about 1.5 km along a paved road, after which it bifurcates. One section runs for 500m on an unpaved access road reach Hajipur village. It continues into Hajipur village to a transformer located in front of the Village Head's (Village Pradhan) office. The roads within the village are not paved. The other section of the feeder continues to Alipur for 2km through agricultural land and an industrial area.

103. The land use is mostly agricultural land, mainly sugarcane fields and rice paddies, with individual mature trees and shrubs along the boundaries. The terrain is flat, and the habitat modified. However, there is an industrial area near Alipur village. The field visit identified there are no sensitive receptors (schools, temples, hospitals etc.) along the route alignment. There are no forests or biodiversity conservation areas within 1km and IBAT did not identify any KBAs in the wider study area.

	
11kV feeder crossing agricultural land, showing pole erected within farmland	11 kV line in Hajipur village
	
11 kV line crossing over agricultural land to feed into Alipur village	From the transformer LT lines supply electricity to Alipur Village

104. **Map 8. Existing 11 kV Duhai Feeder in Gaziabad District, Ghaziabad Zone.** This 11kV mixed feeder line runs from the 33/11 kV Asalat Nagar substation and is 7.5 km in length. This substation is located next to agricultural land. The line runs for about 5.5 km from the substation to Bhikanpur village along an existing road RoW through the urban area of Asalat Nagar and around the outskirts of Santhli village before passing under an expressway and past a brick factory. The roads within Bhikanpur village are paved. The line ccontinues a further 2km to Dohai village located south of a large junction on the major road.

105. The roads are surrounded by flat terrain comprising modified habitat -- agricultural land growing mostly sugarcane, wheat, and rice paddy with individual mature trees and shrubs along the boundaries. There are residential homes and small shops in Asalat Nagar and Santhli village, for all these receptors adequate safety clearances must be maintained. The field visit identified that there are no sensitive receptors (schools, temples, hospitals etc.) along the line. In Dohai village, there are small temples, mosques or places of worship, but only LT lines pass them. There are no forests or biodiversity conservation areas within 1km and IBAT did not identify any KBAs in the wider study area.

11kV feeder along existing road adjacent to agricultural land

11 kV line along existing road RoW

11 kV line erected on boundaries of agricultural land feeding into Dohai village

V. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

107. Environmental impacts will result from both the location of the subprojects and the scope of the Project.

108. In relation to location, most works will take place within villages for the replacement of existing bare conductors with ABC. Hence, no additional land should be required, except in the case of minor diversions to ensure safety distances from structures are maintained. The feeder lines will require additional land but will mostly be constructed on flat terrain along the right of way of existing rural roads but with a percentage required to run through built-up areas or cross agricultural land. The associated poles, conductors, and any transformers for feeder lines will have a small footprint. The turnkey contractor will be required to consult with affected landowners and households prior to any construction works.

109. Conservation to ABC can reduce the electrocution of birds of prey and bats hanging on wires when their large wing spans meet live conductor cables, but poorly installed and sagging distribution lines can still result in the electrocution of wildlife. For example, elephants in forest areas have been electrocuted crossing under distribution lines whilst birds of prey are electrocuted when perched at the top of poles or on the steel crossarm etc. Significant impacts could result if subproject locations support high biodiversity value or internationally or nationally important biodiversity areas, however, these will be avoided through the application of subproject component selection criteria. Studies have shown that for birds, electrocution rates can be significantly lower, average reduction of 85%, by discouraging them from perching on top of the pole and providing a barrier to touching the live cables. Mitigation is relatively inexpensive to implement (approximately $12/pole for materials) with no additional maintenance requirement. Similarly, any risks of electrocution to endangered Asian elephants from the distribution lines will be avoided by virtue of location and design. In areas where elephants are regularly found, such as the elephant corridors at Rawasn – Sonanadi via Lansdowne and Sonanadi via Bijnor in the north west of the state, outside of the habitations, overhead cables should be installed with the clearance above ground of the lower conductor above the maximum trunk height of an elephant.

110. In addition, whilst significant impacts could result if subproject locations support internationally or nationally important physical cultural resources these will be avoided through the application of subproject component selection criteria. There are existing feeder lines and telecommunication lines in villages and along the road in most locations, so the feeder lines are not a new component in the landscape. Good quality installation will be required to minimize further disfiguration of the rural landscape in which distribution lines are already an existing feature especially as consultees have concerns over visual clutter. Locally important biodiversity features (e.g. trees) and physical cultural resources will be avoided to the extent possible during survey works for the feeder lines. However, as noted in the baseline, roads and agricultural land are bounded by scattered individual mature trees and shrubs so where safety clearances cannot be met some trees may need to be trimmed or in the worst case cut. Compensation to local communities for the loss of any crops or private trees will be provided in accordance with the Project's Resettlement Plan. Compensatory trees native in the district should be planted in order to preserve the ecological value of the modified habitat. Chance find procedures as per national regulations and ADB's Safeguard Policy Statement (2009) requirements for physical cultural resources will be applied to the Project.

111. In relation to the scope of the Project, potential impacts relate to (i) management of existing transformers; (ii) other pollution risks; (iii) management of waste such as old conductors generated by the work; (iv) trimming or cutting of trees along alignments for safety purposes; (v) disturbance to local communities including interference with agricultural

activities, road traffic and access during installation; and (vi) occupational and community health and safety issues related to construction and operation as elaborated on in the following sections. These minor impacts and risks will be common to all subprojects regardless of location, mostly temporary and of short duration during construction works, and can be easily dealt with through adherence to national regulations and the adoption of international good practice measures as set out in the project-level EMP included in this IEE.

112. **Risk Associated with Management of Existing Transformers.** New transformers purchased under the Project will be required to be certified PCB free and be installed with adequate health and safety protection including fencing and warning signs.

113. PCB oils being non-biodegradable and carcinogenic are subject to international phase out of use under the Stockholm Convention. The Project does not include for the replacement or rehabilitation of existing ground or pole-mounted 11 kV/400 V transformers but the risk such transformers may still contain PCBs needs to be considered. Under normal operating conditions loss of oil containing PCBs to the environment should not occur if transformers are well maintained. Thus, Government of India regulations permit the use of existing PCB containing equipment up until 2025 provided it is within its certified lifetime and properly maintained without possibility of leakage or release of PCBs into the environment with disposal of waste PCBs or contaminated equipment by 2028 in accordance with the Stockholm Convention.[8] Given the 2025 deadline for removal which coincides with the date of the project completion, the DISCOMs have a responsibility to replace any existing transformers which contain PCBs. In addition, health and safety risks to contractors and communities need to be considered in the short term since based on site visits some existing 11 kV/400 V transformers were seen to be in a poor state of repair and leaking oil with some located in high risk locations e.g. adjacent to community water sources.

114. PCBs were not manufactured in India although transformers containing PCBs were made by a couple of companies up until 2004-2006 and their import was only banned in 2016. Since that was only 3 years ago and equipment nameplates and maintenance records may have also been altered during retrofits it cannot be assumed that any transformers are PCB free. In the absence of documentary evidence (e.g. contract specification or certification for supply of original transformer, maintenance records for oil replacement including material safety data sheet, or transformer oil test results etc.) for given transformers confirming they are PCB-free, all old transformers must be considered at risk of containing PCBs. However, the risk is significantly lower for transformers manufactured post-2003 since by that time Indian regulations on the reprocessing and recycling of used oil limiting PCB content had been introduced reducing the likelihood of any cross-contamination.[9]

[8] Notification on Regulation of Polychlorinated Biphenyls (PCBs) Order, 2016.

[9] Hazardous Wastes (Management and Handling) Amendment Rules, 2003 (below detection limit); Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 (<2pmm).

Table 16: Risk of Transformers Containing Polychlorinated Biphenyls (PCBs)

<table>
<tr><th>Risk of containing PCBs</th><th>Date of manufacture</th><th>Short-term corrective action pre-construction</th><th>Long-term corrective action by 2025</th></tr>
<tr><td>High</td><td>No date, tampered rating plate, or dating pre-1994 (ceased global manufacture)</td><td rowspan="2">Obtain rating plate details, include in inventory – in absence of any documentary evidence PCB free, test transformers</td><td rowspan="4">For all transformers ensure well maintained and do not leak.
Comply with the Regulation of Use, Handling and Disposal of Polychlorinated Biphenyls prohibition on PCB containing equipment by deadline of 31.12.2025.</td></tr>
<tr><td>High-Medium</td><td>Pre-2004
(reuse of waste oils 20.5.03)</td></tr>
<tr><td>Medium-Low</td><td>Post-2003
(reuse of waste oils 20.5.03)</td><td rowspan="2">Obtain rating plate details and include in inventory – in absence documentary evidence PCB free, test transformers that
(i) are of brand listed by UNIDO in Table 5 of their 2014 Guidelines for PCB Waste Identification, Tracking and Recording;[10]
(ii) are poorly maintained and leaking and the project directly connects to;
(iii) are at risk of being disturbed (moved) as a result of project works resulting in oil leakage; or
(iv) are poorly maintained and leaking in high risk locations e.g. adjacent to community water source.</td></tr>
<tr><td>Low</td><td>Post-2016
(national ban import 6.4.16)</td></tr>
</table>

115. The only way to determine if transformers contain PCBs is for a suitably qualified institute to sample and analyse the oil following UNEP Guidelines for the Identification of PCB and Materials Containing PCB and a health and safety risk assessment and plan referring to the measures in UNEP (2002) PCB Transformers and Capacitors: From Management to Reclassification and Disposal. In the short term, testing should be undertaken based on the risk of transformers containing PCBs and the health and safety risks to contractors and communities as set out in Table 16. It is not recommended to take an oil sample for hermetically sealed oil distribution transformers since the transformer itself is fully closed to the environmental condition, but conservator type transformers can be tested. Once transformers have been found to contain PCBs the must be labelled as such, any PCB storage areas should also be marked to allow expeditious identification and response to a PCB accident. Similarly, transformers found to be PCB free should be marked as such for future reference of compliance with Government of India regulations and the log of test results to support this kept by UPPCL.

116. Since PCBs are toxic and bioaccumulate, unless transformers have been certified PCB free all workers must avoid all exposure of transformer oil to skin and eyes and avoid any potential for accidental ingestion by wearing suitable chemical and/or oil resistant gloves, goggles, and protective clothing even under normal working conditions if there is a risk of coming into contact with transformer oil. If oil meets the skin, the workers should

[10] UNIDO. 2014. Guidelines for PCB Waste Identification, Tracking and Recording. https://open.unido.org/api/documents/4695226/download/GUIDELINES%20FOR%20PCBs%20WASTE%20IDENTIFICATION,%20TRACKING%20AND%20RECORD%20KEEPING

immediately rinse the affected area with large amounts of running water. This may be done in a sink if the hands are the only portion of the body contacted or under a safety shower if the exposure area is more extensive. If large parts of the skin met with the oil, the workers should remove contaminated clothing while under the shower for a minimum of 15 minutes. Hand wash, safety shower and eyewash stations are therefore required at the construction sites.

117. DISCOMs and contractors involved with decommissioning and disposal of old transformers will be required to follow the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 for transport, storage and disposal of potentially PCB oil containing transformers. Disposal should involve facilities capable of safely transporting and disposing of hazardous waste containing PCBs. UPPCL has stores (Appendix 6) located in each DISCOM where scrap metal from operations and old equipment are stored, they and the workshops are responsible for initial repairing of broken transformers and processing of any used transformer oils. In the stores, transformers will need to be stored on a bunded concrete pad enough to contain the liquid contents should they spill or leak. The storage area should also ideally have a roof to prevent precipitation from collecting in the storage area. The collected PCB oils will be handed over to the authorized third-party vendor (MMCT) by the DISCOMs for proper disposal of the waste. The third-party vendors will need to be approved by Uttar Pradesh State Pollution Control Board[11] for transportation and collection of hazardous waste including transformer oil and PCBs. These vendors will deliver the collected waste to approved recycling and disposal sites for the hazardous waste.

118. Furthermore, in the location where any leaking transformer was removed from site surrounding soil exposed to oil leakage should be assessed for potential contamination, and appropriate removal and / or remediation measures of oil or PCB contamination should be implemented, as addressed in the section on contaminated soil in the EHS General Guidelines.

119. Existing 11 kV/400 V transformers also pose a health and safety risk to local communities especially where ground mounted, Photos 5 and 6 show examples of transformers in Uttar Pradesh. Even if transformers are retained in-situ all should have warning signs and ground mounted transformers (especially those located close to a drain, stream, other waterbody, spring, groundwater well, or hand pump) should be retrofitted with 110% bunding to prevent oil leaking to soil, surface water, and groundwater as well as fencing to prevent access.

[11] UPPCB has approved vendors with the capacity to treat and dispose of hazardous waste that might be generated by the project, the current list of vendors is available at http://www.uppcb.com/pdf/Haz-Waste-recycler-units-New_180320.pdf

Photo 5 and Photo 6: Distribution Transformers Posing Community H&S Risk

120. **Other Pollution Risks.** Whilst no PCB oils will be used in new transformers, as per international good practice, oils[12] and other fuels/chemicals used during construction could still adversely affect soil and water quality if released to the environment. Management measures for prevention and control of hazards associated with spill prevention, emergency response, clean-up, and contaminated soil remediation will follow national regulations and the EHS General Guidelines. If not in use oil/fuel/chemicals to be stored in drums under lock and key on drip trays or an impermeable surface bunded to 110% capacity stored. Plant containing oil and diesel is also to be mounted on drip trays to catch leaks. Spill clean-up materials (sorbent pads, loose sorbent material, etc.) should be stationed at the construction site.

121. The Project will involve only minimal excavation that could contribute to soil erosion and the potential for sedimentation of watercourses. Excavation works will be mainly limited to auguring a single hole for the poles of 11kV feeder lines and any replacement poles for conversion to ABC. Given the small-scale nature of the excavations required for pole foundations (about 1-meter square [m^2]) and that works will be undertaken in dry season, the impacts associated with uncontrolled erosion and silt runoff will not be significant. Contractors will be required to minimize removal of existing vegetation and topsoil. Topsoil disturbed during foundation excavation for poles will be used to restore the surface of the excavated area. Infertile and rocky material will where possible be reused immediately as fill material.

[12] In India, insulating oil in transformers is usually required to meet Indian Standard 335:2018 (https://bis.gov.in/wp-content/uploads/2018/12/PM_IS-335-final.pdf) – such mineral oil is flammable and also poorly biodegradable.

122. Contractors are to develop a pollution prevention plan for each package of works in accordance with the project-level EMP for approval by the DISCOMs prior to any works.

123. **Management of Wastes.** Construction will generate wastes including vegetation trimmings, old equipment, and solid waste from construction workers. Waste management will be in accordance with national regulations and the EHS General Guidelines. Scrap metal and old equipment which will be the majority of waste generated can be taken to DISCOM stores for reuse or recycling via selling to the third-party venders approved by the Uttar Pradesh State Pollution Control Board ─ on reaching the stores the DISCOMs must ensure that old transformers are stored on drip trays or on an impermeable surface bunded to 110% capacity stored.

124. Other solid and hazardous waste (e.g. old oil containers or oily rags) generated during construction will be limited in volume and should be temporarily stored on the construction site in segregated, labelled, sealed, and covered garbage bins. It will need to be disposed of by the contractor using a licensed waste management operator to recycle or dispose of it to suitably designed and licensed waste management facility in Uttar Pradesh. Illegal dumping and open burning of construction related waste will be strictly prohibited.

125. For construction workers adequate sanitation and welfare facilities will need to be provided including portable self-contained toilets at the construction site to prevent open defecation, the wastewater from which will be taken to existing sewage treatment works for treatment.

126. Contractors are to develop a solid and hazardous waste management plan for each package of works in accordance with the project-level EMP for approval by the DISCOMs prior to any works.

127. Records of materials used, generated waste, and transfer records will need to be kept by the contractor.

128. **Trimming or Cutting of Trees.** There may be some trees along the alignment of feeder lines that would need to be cut or trimmed during construction or maintenance works to achieve the standard safety clearances for distribution lines. For conversion to ABC as existing poles will be used cutting or trimming to achieve the safety distances may not be avoidable but, for new 11kV feeder lines, the line route and the position of the concrete poles can be easily adjusted to minimize impacts on trees. Trees about 3 m height within the ROW will be either need to be removed or pruned to provide the necessary conductor clearance distance. In addition, large trees within 3 m of the base of the poles will need to be selectively removed or pruned to reduce the potential to fall and strike these structures. Tree removal or pruning will also be undertaken immediately outside the ROW to prevent trees from falling and striking the lowest conductor.

129. DISCOMs and their contractors should identify and conduct an inventory of trees to be cut or trimmed prior to the start of works. If any public trees are to be cut these will be compensated for by compensatory afforestation planting 10 trees for each tree cut, and the requisite forest or other applicable department's permission for any tree cutting will be sought pre-construction. DISCOMs will either undertake the compensatory afforestation or provide funds for this work rather than undertaking the compensatory afforestation themselves. Compensation for the loss of private trees would be based on their replacement cost as per the resettlement framework. The DISCOMs will monitor the progress of any compensatory afforestation process it has funded or undertaken to ensure land is identified, planting takes place, and the same number of trees remains established after two years so "no net loss of biodiversity" is achieved.

130. Cut vegetation will need to be stored away from habitation and any vegetation material that is not handed over to the landowner will be immediately disposed using

appropriately licensed waste management operator on the completion of the cutting and trimming activities.

131. **Disturbance to Local Communities.** Potential nuisance to nearby properties during construction includes:

- Noise and vibration from construction equipment and vehicles transporting equipment and materials to the construction sites;
- Dust arising during excavation of pole foundations and transport of materials given some access roads will be unpaved; and
- Air pollution due to exhaust gases from vehicles and plant.

132. Construction activities will involve temporary and periodic use of mechanical equipment over a short time period with much of the work carried out using manual labor. Greatest disturbance will occur for conversion to ABC as these works will take place in villages but should only take about 2 days. For new feeder lines there will be fewer receptors, it will generally take about 8 hours to install each pole with foundation of maximum $1m^2$. Good construction practice to minimize these temporary construction impacts is specified in the project-level EMP including undertaking construction works in the daytime using only manual and no heavy equipment and water sprinkling of areas prone to dust generation.

133. There will be temporary disruption of agricultural activities, road traffic and access during installation. For new 11kV feeder lines, the line route and the position of the concrete poles can be easily adjusted and generally the road reserves of existing roads will be followed to minimize impacts on agricultural land. Compensation for interference with agricultural activities where 11 kV feeder lines do need to traverse agricultural land would be based on their replacement cost as per the resettlement framework. In case there is a need for temporary storage, locations to be agreed and any impacts on private land and assets to be compensated in line with the resettlement framework. DISCOMs will need to seek requisite clearance prior to construction from agencies like departments of railways, roads, telecommunication, that could be affected by the construction of power distribution infrastructure.

134. In villages the roads are relatively narrow and often single lane used by a number of vehicles such as bicycles, motorbikes, cars, vans, and trucks as well as, thus (i) movement of large trucks along these roads carrying the poles and other materials; (ii) side street parking of trucks carrying these materials given limited space for the temporary storage of the poles and materials; and (iii) the works themselves might cause temporary blockage and nuisance to villagers. Contractors will be required to ensure existing access ways to public and private amenities are maintained throughout the construction period. They will be required to post warning signs and manage traffic movements to protect the travelling public and its workers and ensure drivers obey road rules and travel at a safe speed given the nature of local roads and size of vehicles involved. Road safety and warning signs must be posted at 500m, 100m, and immediately in advance of the construction works at least 2 weeks prior to the works commencing to inform the public of temporary blockage during pole installation and stringing works. During the works flagmen should be provided at the construction site. In the event stringing conductors presents a possible risk to traffic, scaffolds will be constructed to protect pedestrians and vehicles (and the conductor itself) from potential injury/damage during these works. A traffic management plan will be prepared by the contractor for each subproject in consultation with relevant local authorities for approval prior to any works. All traffic management will need to be done in consultation with the affected communities to ensure they are aware of likely disruption.

135. **Occupational Health and Safety**: Construction poses a moderate risk to the health and safety of workers with the same risks present for maintenance workers during operation. The occupational health and safety issues inherent to the Project include hazards due to exposure to live power lines, working in heights, potential exposure to electric and magnetic fields, and potential exposure to any PCBs (see above) and asbestos in existing facilities. Given the current COVID-19 pandemic there is also a risk of construction workers being exposed to this and other communicable viral diseases, particularly given construction is directly within the community and the transient nature of the construction workforce. Accidents related to the distribution network may involve electrocution, lightning, fires, and explosion.

136. To mitigate this risk, the contractor will be required to (i) take COVID-19 precautions during pre-construction consultations and survey works,[13] and (ii) prepare and implement an occupational health and safety risk assessment and plan for approval prior to construction works. The risk assessment should be undertaken through facilitated risk assessment workshop involving the contractor, DISCOM, and project management consultant (PMC). The plan should follow the health and safety hierarchy including measures set out in the EHS General Guidelines, Section 2 on Occupational Health and Safety and those on Electric Power Transmission and Distribution. The provision of personal protective equipment (PPE) such as hard hats and safety boots with steel cap/midsole for every worker and for those working at heights harnesses, tool bags, and ropes (with use being mandatory and subject to no work conditions if not compliant) should be made as a last resort where risks cannot be avoided. The risk assessment will need to give particular attention to potential exposure to PCBs and asbestos,[14] and exposure to communicable viral diseases notably COVID-19.[15] The health and safety management plan will need to include emergency preparedness and response plan including flow charts and contact details to deal with emergency situation, including should any construction worker or community member be diagnosed with COVID-19 during the course of the construction works. Guidance on general COVID-19 preparedness measures are included in Appendix 8.

137. The contractor will undertake works in accordance with the agreed health and safety plan and use skilled workers with suitable training for the job in hand, e.g. trained electricians and supervisors for meter installation. All workers will receive a health and safety induction and those working with live electricity and at heights will attend specialist health and safety trainings and be certified to do so following a medical check. Untrained workers will not be permitted to work with live electricity or at height. Live lines will be deactivated and properly grounded before work is performed on, or in close proximity, to

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[13] Prior to any pre-construction consultations and survey works being undertaken, since surveyors are at medium risk of exposure due to potential public interaction, DISCOM and Contractor to develop procedures to ensure that national COVID-19 requirements and WHO workplace and hand hygiene guidelines are followed, including providing awareness raising activities for surveyors, minimizing travel requirements, undertaking screening health checks to confirm those going in the field are not symptomatic, providing surveyors with adequate supplies of personal hand sanitizer and masks, ensuring social distancing of at least 1m, that masks are worn at all times during consultations, and that a register of all contacts is maintained etc.

[14] There are no acts or regulations published by the Government of India banning the use of asbestos in construction but use of any asbestos containing materials will be prohibited in new construction under the Project. There is a risk that asbestos may therefore be present in existing substations and disturbed during construction. Therefore, because of the health risks associated with exposure to asbestos dust, which is carcinogenic, the potential presence of asbestos needs to be checked/surveyed by the contractor before any works disturbing existing control buildings are undertaken.

[15] For COVID-19 national restrictions for containing the spread of COVID-19 must be complied with and in developing the health and safety management plan Government of India (https://www.mygov.in/covid-19 and https://www.mohfw.gov.in/) and World Health Organization guidance (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance) should be followed ensuring adequate sanitation and welfare facilities including for hand washing and personal protective equipment are provided on-site and at accommodation to construction workers. Particular attention must be paid to accommodation of workforce given the transient nature of work, to avoid spreading any virus between communities. Given the specialist nature of responding to COVID-19 public health officials/experts to be consulted. Medical insurance should be provided for all workers with sick leave allowance to ensure symptomatic workers do not attend site due to no work-no pay policies.

the lines and this will be checked and certified in writing by the contractor's health and safety officer in advance of the works.

138. Sufficient toilets and hand washing facilities, clean eating area, and shaded rest area to accommodate the number of workers on site must be accessible at all construction sites. Drinking water that meets drinking water standards must be provided, if an authorized supplier of canned water is not used the source must be regularly tested to confirm it meets these standards. Either use can be made of existing DISCOM facilities or, if adequate facilities meeting international good practice requirements are not available, the contractor must provide portable facilities. Since workers will not be local to the area suitable accommodation must be provided by the contractor, ideally use should be made of existing accommodation facilities but if a construction camp is provided it must be adequately equipped with sufficient toilets, hand washing facilities, showers or baths, food preparation and clean eating area, etc.

139. The existing health services in the rural areas of Uttar Pradesh may not be able to accommodate additional patients from the construction workforce during emergencies. Therefore, in the construction phase, the contractor will be required to provide readily available first aid for workers as well as identify the nearest hospital and provide an ambulance for more serious cases.

140. **Community Health and Safety:** The Project may potentially result in adverse impacts to community health and safety such as toppling of concrete poles, construction traffic and accidents, and accidental spills of liquid materials. In addition, there may be instances where dangerous working areas would expose the villagers to hazards. Poorly installed electricity meters would expose the villagers to hazards such as live electricity whilst standing water will need to be avoided due to potential to spread vector borne disease. Photos 7 and 8 show examples of poor installations causing community health and safety risks.

Photo 7 and Photo 8: Poor Installations Posing Community Health and Safety Risk

141. To mitigate potential impacts to the health and safety of villagers, the contractor will be required to develop a community health and safety risk assessment and plan for approval prior to construction works that incorporates good international practices and recognized standards such as emergency response and preparedness procedures, communication systems and protocols to report any emergency, including interaction with commune and provincial emergency and health authorities. EHS General Guidelines, Section 3 on Community Health and Safety and those on Electric Power Transmission and Distribution will be followed in developing the community health and safety plan by contractor. The risk

assessment should be undertaken through facilitated risk assessment workshop involving the contractor, DISCOM, and PMC.[16] The contractor will be required to follow the agreed community health and safety plan, respond promptly to any grievances and undertake community awareness raising of potential risks involved. Contractors staff and local communities will also be provided with awareness raising in relation to COVID-19, HIV/AIDS, and other communicable diseases, and sexual, exploitation, abuse and harassment. Guidance on general COVID-19 preparedness measures are included in Appendix 8.

142. People and animals can be electrocuted by encountering live wires. Several persons in India are killed due to electricity-related accidents every year. In Uttar Pradesh, in 2016-2017, 958 people died in 1,824 power accidents. Studies have shown that the key reasons are: contacting / touching live overhead power lines especially snapped conductors (70%); electric shocks due to defective pump motor starter wiring and lack of earthing (15%); attempts to replace fuses at transformers by villagers to restore power for pumping; and safety issues in single wire earth return single phase high voltage transformers. In many places, bare live wires are hung at five feet above ground, no fencing or barricades are provided, and regulations and standards are not being followed. The project will therefore have health and safety benefits if properly implemented by the DISCOMs. However, during operation, health and safety issues that may still be encountered by communities living near power distribution lines include electrocution, lightning strikes, explosion and fire, and exposure to magnetic field.

143. The operation of the 11 kV distribution lines near community areas may expose the villagers to electrocution hazards as a result of direct contact with live conductors, flashover from the conductor to a pole and conductor breakage, particularly if the person, tree or structure is near a live line where the safe horizontal or vertical clearances are compromised. The minimum electrical clearance, as required by the Indian Electricity Rules and Regulations are to be maintained with respect to the ground, roads, railway lines and habitations, to ensure safety of human beings and livestock in the vicinity of the distribution lines. DISCOM staff need to conduct regular inspections (at least monthly) on the lines to ensure that the clearances are maintained. The inspection protocol should include possible conductor snapping and de-energizing of the line within three cycles to avoid the potential for electrocution from a breakage. The community should be educated with respect to the importance of maintaining horizontal clearance from buildings in order that they do not erect new buildings within this zone. Lightning arresters will be provided along the line. There will also be provision for ensuring security of the cable to avoid vandalism. Regular inspections of the line and the facilities would help identify missing or corroded parts that need immediate replacement. Each pole should have installed a sign warning about the safety hazard from the power lines. Ground mounted transformers should be fenced off with a locked gate; for pole-mounted transformers anticlimbing deterrents should be provided. The community should be educated with respect to the hazards associated with coming into contact with electrical equipment. In case of fire events, explosion, and other related situations, given the DISCOM may not be available immediately in rural locations the community should be educated with respect to emergency response with 24/7 emergency contact numbers for UPPCL included on signs; UPPCL will need to ensure this is manned 24/7 to ensure that it is effective reporting route. Awareness programs to be conducted in each village will use distribution of posters, leaflets and safety booklets in appropriate

[16] Particular attention to be paid to COVID-19 given construction is directly within the community and the transient nature of the construction workforce who could pass it to the community (especially those with existing medical conditions such as diabetes, heart and lung disease) and vice versa. Risk assessment to consider distribution and number of cases in India and Uttar Pradesh in relation to home base of construction workers, options for travel to work – public or private transport, and the location of works and overnight worker accommodation. Particular attention will need to be paid to the ability of communities to comply with protective measures such as regular handwashing and for the local health care facilities capacity to deal with any infections. Given the specialist nature of responding to COVID-19 public health officials/experts to be consulted.

language(s) to all households along the corridor distribution lines as well as face-to-face orientation at the village level.

144. There have been some concerns about possible increased risk of cancer from exposure to electromagnetic radiation from overhead transmission lines. Research has been undertaken into this matter throughout the world. A World Health Organization (WHO) review in 1996 of long term exposure to EMF from overhead transmission lines concluded that "from the current scientific literature, there is no convincing evidence that exposure to radiation field shortens the life span of humans or induces or promotes cancer." Further, EMF levels associated with distribution lines are significantly lower than those associated with overhead transmission lines. Within inhabited communities the existing environment also includes EMF from a number of sources including the use of electrical appliances and equipment.

145. The EMF from distribution circuits can vary widely in the communities depending upon the number of phases and whether the circuit is overhead or underground. A typical 11kV overhead distribution line with 300 amps current can result in magnetic field of 22 mG below the line dropping to 15 mG at 7.5m from the line and 8mG at 14m distance.[17] The impact of EMF is dependent on the duration of exposure but provided the International Commission for Non-Ionizing Radiation Protection (ICNIRP) guidelines for public exposure (Table 17) are met by the distribution lines in the project there should be no significant impact.

Table 17: ICNIRP Limit Values Concerning Electric and Magnetic Fields (50 Hz) for the Public and at Working Places

Source	Electric Field Strength [kV/m]	Magnetic Flux Density [μT]
Occupational exposure	10	500
General public exposure	5	100

146. Benefits to local people can be maximized if local construction and maintenance workers are employed. However, precedence must be given to ensuring all workers are appropriately skilled given the hazardous nature of distribution works and so local workers will be limited to very few unskilled positions during construction which will need to be made clear during meaningful consultations. Wherever possible, the contractor should not discriminate and should proactively encourage the employment of suitably skilled women on the project.

[17] Washington State Electric Transmission Research Needs Task Force and social policy https://uprvunl.org/uppcl/en/article/environmental-and-social-policy

VI. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

147. Per ADB's Safeguard Policy Statement (2009), meaningful consultations need to be undertaken as part of the environmental assessment and documented in the IEE. Meaningful consultation should inform the environmental assessment before the commencement of any construction works but should also continue throughout project implementation. Consultations at different stages may take the form of public meetings in villages, focus groups e.g. for women, or one-on-one consultations with landowners, adjacent residents etc.

A. Preliminary Consultations with Local Communities

148. To inform the IEE, preliminary consultations were held in the villages served by the eight potential sample subproject components in June to October 2019. Formal and informal discussions were held, and participants were informed about the details of the Project. The purpose of the meetings was to:

- provide information to the public on the key features of the Project including benefits, potential adverse impacts and risks, and how these will be managed by the DISCOMs,
- obtain the views and concerns of local communities with respect to environmental issues relating the project, and
- gather site-specific information on the physical, biological, cultural and socioeconomic environment.

149. Key participants at the meetings included:

- representatives from respective DISCOMs,
- village head as well as other staff of village authorities, and
- village residents.

150. The affected people and communities were informed in advance about proposed consultation dates and the agenda and were encouraged to attend the meetings, including female member(s) of their family. In total consultation meetings were organized in 19 villages attended by between 6-23 participants each as shown in Table 18. In total, 279 persons were consulted, 79% of whom were male and 21% of whom were women. However, gender representation varied significantly and in DVVNL consultations women's participation was only 5% with some meetings having no female representation, compared to 32% and all meetings having female representation in PVVNL consultations. Turnout at the meetings was also low with for example about 0.5% of the village population of Dabar comprising 420 families and 2,875 persons. The attendance sheets and photographs are provided in Annex 3.

151. During each meeting, the representatives from the DISCOM introduced the project to participants and opened the meeting for discussions. The project team then:

- described the Project and reasons why it is being undertaken including the benefits of the project to the community and local economy,
- described the potential temporary disturbances (environmental and social impacts) the Project could involve. It was pointed out that all components would be constructed on land with prior consent, to minimize disturbance to any private assets by the works,
- advised the participants that environmental and social assessments were being undertaken for the Project by ADB's environmental and social consultants in accordance with ADB's safeguard policies and this would result in the preparation of environmental and social management plans to be implemented during project

implementation. Implementation of these plans would ensure that potential adverse impacts and risks would be managed, and

- invited the participants to raise any queries, concerns or comments regarding the Project.

Table 18: Summary of Public Consultations

No.	Date and Location / Village	Participants		
		Male	Female	Total
DVVNL				
1	June 28, 2019 Village: Daudpur, District: Agra	11	0	11
2	June 28, 2019 Village: Utto, District: Agra	7	0	7
3	June 28, 2019 Village: Dabar, District: Agra	13	0	13
4	June 28, 2019 Village: Banja Nagra, District: Agra	11	0	11
5	June 28, 2019 Village: Sirauli, District: Agra	13	0	13
6	June 29, 2019 Village: Khera Bakanda, District: Agra	11	0	11
7	June 29, 2019 Village: Santha, District: Agra	11	0	11
8	June 29, 2019 Village: Singarpur, District: Agra	11	0	11
9	June 29, 2019 Village: Mori, District: Agra	6	0	6
10	June 29, 2019 Village: Nagla Shyuram, District: Agra	11	2	13
11	June 29, 2019 Village: Nanchani, District: Agra	7	4	11
	SubTotal DVVNL	**112**	**6**	**118**
PVVNL				
12	October 13, 2019 Village: Satheri, District: Muzaffarnagar	11	9	20
13	October 13, 2019 Village: Sardhan, District: Muzaffarnagar	10	8	18
14	October 14, 2019 Village: Goana, District: Hapur	17	2	19
15	October 14, 2019 Village: Shyam Nagar, District: Hapur	12	10	22
16	October 14 2019 Village: Hajipur, District: Meerut	18	5	23
17	October 14 2019	13	6	19

No.	Date and Location / Village	Participants		
		Male	Female	Total
	Village: Alipur, District: Meerut			
18	October 15 2019 Village: Bhikanpur, District: Gaziabad	19	2	21
19	October 15 2019 Village: Dohai, District: Gaziabad	09	10	19
	Sub Total PVVNL	**109**	**52**	**161**
	Total	**221**	**58**	**279**

152. During consultations local communities identified project benefits and the response was generally positive although some villages did not see the need for feeder separation. In terms of social issues villagers were concerned about crop loss during installation and the timing of supply of electricity to the agricultural feeders requesting reassurance feeder separation would not reduce their supply of agricultural electricity. Loss of the illegal connections which is prevalent in some villages also needs to be addressed in respect of any vulnerable groups.

153. No major environmental issues were raised during the consultation process, most felt there would be no environmental impacts as a result of the Project, although there were some villagers who were concerned with visual clutter, details are provided in Annex 3. The following minor environment issues need to be given further attention during project implementation:

- preference for locating poles along the ROW of existing roads and avoidance of poles erected in agricultural land – this will be ensured wherever possible by the turnkey contractor, but if lines do cross private farmland the landowners will be consulted;
- pole erection and cabling work be carried out between cropping seasons, in order to prevent any forgone income due to crop loss – this will be ensured wherever possible, but if such timing is not possible compensation will be paid in accordance with the Resettlement Plan;
- residents should be consulted during the design/route alignment stage when it will be mapped by the contractor so they can provide their views – this is a requirement of the project for the turnkey contractor to comply with;
- need to reduce the number of feeder lines, as this is not aesthetically pleasing and can be a bit of a nuisance for the residents – feeder separation will unfortunately result in the doubling up of lines causing visual clutter but planning of routes will seek to minimize new lines;
- in some villages background dust levels are cause for complaint, therefore additional dust generation should be kept to a minimum – dust management measures are included in the EMP to be complied with by the turnkey contractor, any issues can be raised through the GRM;
- fallen poles may result in fires, which would in turn ruin crops and hence their livelihoods – the DISCOMs, through supervision and monitoring of the turnkey contractor with support of the PMC and PMA, need to pay close attention to quality of installation ensuring design responsive to seismic, storm, flood risk etc. Further DISCOMs must undertake regular inspections and maintenance to avoid this fire risk;

- need to consider energy efficiency as villagers identified that domestic electricity consumption may increase as there will be less load shedding enhancing standards of living but contributing to climate change – the Project to include energy efficiency awareness raising activities;
- need to keep consumers informed about when the electricity in the agricultural feeders will be supplied since if a farmer is at home he/she would no longer know when the electricity of the agricultural feeder will be switched on, currently with a mixed feeder they know when the electricity is on – DISCOMs must inform the users of timings; and
- preference is for a fixed timing and to water crops at night as less water is lost to evaporation at night than during the day so conserving water resources; want to see more electricity hours at night to meet irrigation needs and more electricity hours for domestic use during the day -- DISCOMs must consider this environmental benefit, and inform the users of timings.

B. Meaningful Consultations During Project Implementation

154. During project implementation, meaningful environmental consultations will be completed for subproject components involving conversion to ABC and feeder lines in accordance with the SARF and prior to the commencement of any construction works. Consultations for each subproject must ensure a representative percentage of the local community are consulted, as well as gender balance and representation of vulnerable groups.

155. For the consultations, the dates, attendees, male/female split, details of any participants vulnerabilities, topics covered, and, views and opinions raised should be recorded along with details of how the subproject has responded to them. Consultation meetings are to be attended by at least 10% of the village population and have at least 20% representation of women excluding DISCOM and turnkey contractor representatives, if it is not possible at the public consultation a separate gender focus group must be held to ensure their concerns are heard. If public meetings are not possible to convene due to COVID-19 restrictions, then the same representation should be achieved through door-to-door consultations within communities.

156. Given the current COVID-19 pandemic, in undertaking any additional face to face consultations it will need to be ensured by the DISCOM and contractor that national COVID-19 requirements [18] and WHO meeting [19] and hand hygiene [20] guidelines are followed, including awareness raising activities for those undertaking consultations, minimizing travel requirements, undertaking screening health checks to confirm those going in the field are not symptomatic, providing them with adequate supplies of personal hand sanitizer and masks, ensuring social distancing of at least 1m, that masks are worn at all times during consultations, and that a register of all contacts is maintained. Consultations should also convey how the DISCOM and contractor will ensure community health and safety during construction.

C. Information Disclosure

157. The updated IEE must be submitted by DISCOMs to ADB and disclosed on ADB's website prior to the commencement of construction works. UPPCL (and the DISCOMs) will also disclose relevant safeguards information from the safeguards documents in a timely

[18] https://www.mygov.in/covid-19 and https://www.mohfw.gov.in/
[19] https://www.who.int/docs/default-source/coronaviruse/advice-for-workplace-clean-19-03-2020.pdf
[20] https://www.who.int/infection-prevention/campaigns/clean-hands/WHO_HH-Community-Campaign_finalv3.pdf?ua=1

manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders.

158. It is recommended UPPCL disclose all safeguard documents on their own website and have a hard copy available at the nearest substation to the ongoing subproject components/activities. They should also translate the executive summary of the IEE into Hindi (or most appropriate) local language and provide copies to affected village panchayat to be distributed to landowners and villagers.

VII. GRIEVANCE REDRESS MECHANISM

159. GRM can be an effective tool for early identification and resolution of complaints on subprojects. Under the Project, it is required that an efficient consultation and grievance redress mechanism be established to assist affected persons to resolve queries and complaints, if any, in a timely manner. The guidelines on GRM will be applied at project and subproject level to assure that adequate resources are made available for the Project GRM to function effectively.

160. ADB's Safeguard Policy Statement (2009) requires the establishment of a responsive, readily accessible and culturally appropriate GRM capable of receiving and facilitating the resolution of affected persons' concerns and grievances about the physical, social and economic impacts of the Project. The GRM aims to (i) reduce conflict, risk of undue delay and complication in Project implementation; (ii) improve the quality of Project activities and outputs; (iii) ensure that the rights of affected persons are respected; (iv) help identify and respond to unintended impacts of Project on individuals; and (v) maximize participation, support and benefits to local communities. The proposed GRM for the Project is presented in Table 19 and Figure 18.

161. The proposed GRM, which will handle both environmental and social grievances, includes grievance redress committees (GRCs) to be setup by UPPCL (EA) at Project (corporate) level and each DISCOM HQ (IA) to provide the means for the effective resolution of complaints and issues on each subproject. The GRCs will be convened as necessary by the UPPCL or DISCOM grievance focal point (GFP) and, in addition, include a representative of the affected person, a representative of women groups, the relevant Village Headman (Gram Pradhan), the relevant zonal or DISCOM chief engineer, a nominated divisional forest officer or equivalent for environment safeguards grievances or nominated district revenue officer as nodal officer for social safeguards grievances, and, the designated GFP of the contractor dealing with the environmental or social safeguards as applicable. The GRCs will meet as and when a major grievance (i.e. grievance which cannot be resolved at contractor or DISCOM level) arises.

162. The fundamental objectives of the GRM are:

(i) to reach mutually agreed solutions satisfactory to both, the Project and the affected persons, and to resolve any Project-related grievance locally, in consultation with the aggrieved parties;

(ii) to facilitate the smooth implementation of the EMPs and resolution of compensations and prevent delay in subproject implementation;

(iii) to democratize the development process at the local level, while maintaining transparency as well as to establish accountability to the affected people;

(iv) to facilitate an effective dialogue and open communication between the Project and affected persons; and

(v) to have clear definition of roles and responsibilities of the various parties involved in consideration and resolution of grievances.

Figure 18: Chart View of Grievance Handling Process

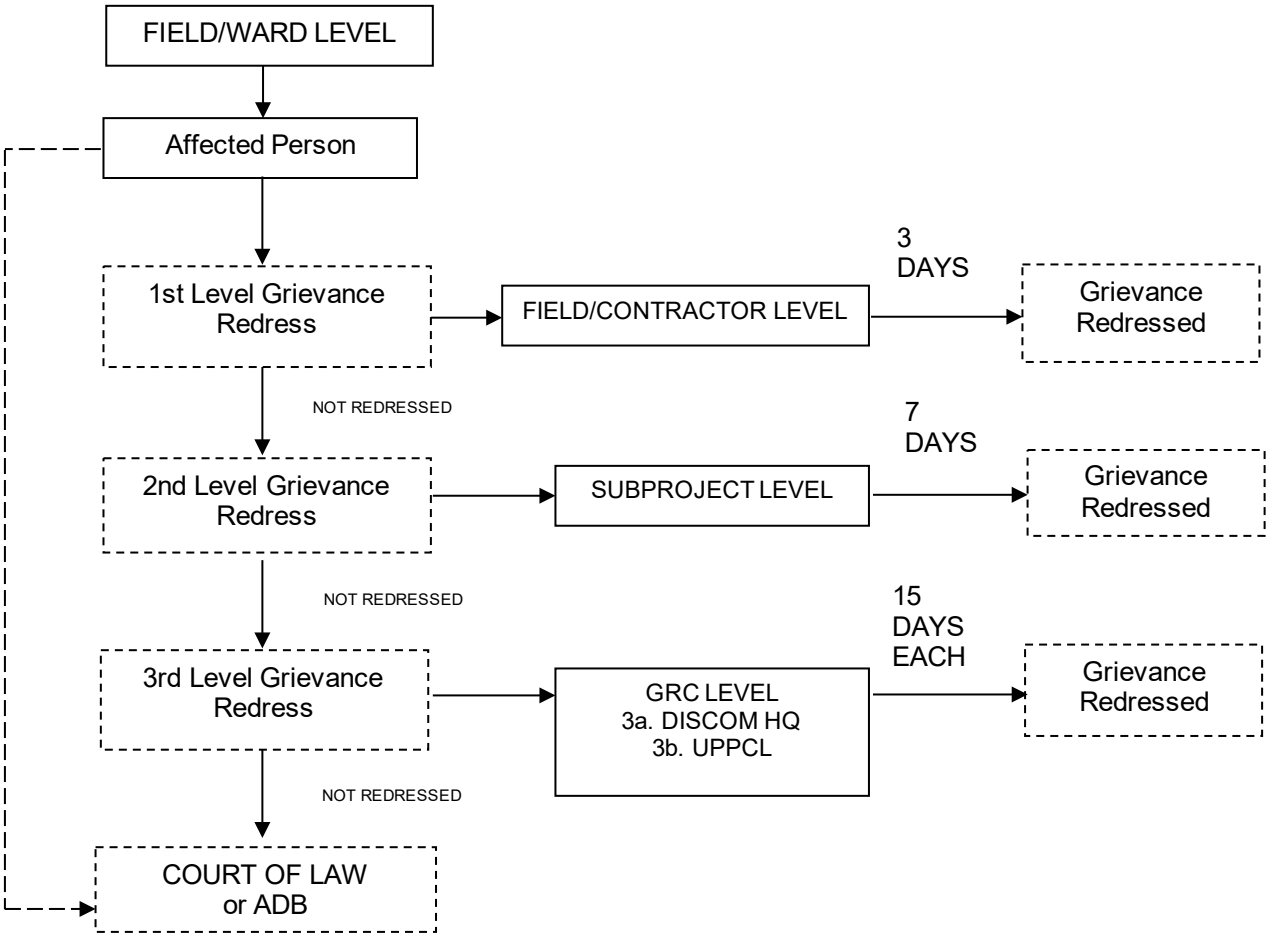

Table 19: Grievance Handling Process

Level	Name of Level	Description	.Time frame[21]
1	Field level (by contractor and DISCOM field officials)	One Grievance Focal Person (GFP) will be assigned by each contractor and the DISCOM in order to receive and handle grievances. Complaints can be registered by contractor or directly to DISCOM. Contractor's GFP should receive the complaint (written or verbal) and provide acknowledgement letter to the complainer within 3 days after receipt of the complaint. Contractor's GFP should maintain data of Grievance Logbook and submit/update all necessary data related to the registered grievances to the DISCOM's GFP on a weekly basis. Upon resolution the Contractor's GFP should convey the solution to the affected person and seek their concurrence (written or verbal) that it is acceptable to them. If the grievance cannot be solved within 3 working days, then Contractor's GFP should submit	3 working days

[21] The health and safety issues and ongoing issues which pose a life-and-death risk shall be resolved immediately on receipt.

Level	Name of Level	Description	Time frame[21]
		information to the next level (DISCOM GFP at subproject level) and provide updated information to the complainant regarding the grievance resolution process being followed.	
2	MFF subproject level (DISCOM GFP)	The DISCOM GFP for each subproject should review the grievance with the support of the environment and social safeguards officers and resolve it within 7 working days. If the case is complex and requires investigation (experts' opinion) expertise or confirmations from the state bodies, the resolution period can be extended up to 15 calendar days. Upon resolution the DISCOM's GFP should convey the solution to the affected person and seek their concurrence (written or verbal) that it is acceptable to them. If the grievance cannot be resolved still, or the complaining party is not agreed with the offered solution, then the DISCOM GFP should submit information to the next level (DISCOM HQ GRC) and provide updated information to the complainant regarding the grievance resolution process being followed. DISCOM's GFP should maintain data of Grievance Logbook and submit/update all necessary data related to the registered grievances to DISCOM HQ and UPPCL on a monthly basis.	7 working days
3a	Implementing Agency level Grievance Redress Committee (DISCOM HQ)	The DISCOM GFP will request the DISCOM HQ GRC to review the grievance and resolve it within 15 calendar days. If the grievance is found invalid (after investigation of the GRC) a written response should be given to the complaining party explaining the reasons for its rejection. Otherwise a written response explaining the resolution should be provided to the complaining party and their concurrence (written or verbal) sought by the DISCOM GFP to confirm that it is acceptable to them. If the grievance cannot be resolved still, or the complaining party is not agreed with the offered solution, then the DISCOM GFP should submit information to the next level (UPPCL GFP and GRC) and provide updated information to the complainant regarding the grievance resolution process being followed.	15 working days
3b	Executing Agency level Grievance Redress Committee (UPPCL)	The UPPCL GFP will request the UPPCL GRC to review the grievance and resolve it within 15 calendar days. If the grievance is found invalid (after investigation of the GRC) a written response should be given to the complaining party explaining the reasons for its rejection. Otherwise a written response explaining the resolution should be provided to the complaining party and their concurrence (written or verbal) sought by the DISCOM GFP to confirm that it is acceptable to	15 working days

Level	Name of Level	Description	Time frame[21]
		them.	
4	Court or INRM	If the affected person is still not satisfied with the GRC decision, the affected person can submit his/her complaint to the appropriate court of law in India for its resolution. The GRM does not impede access to the country's judicial or administrative remedies, so the project affected persons can file the case to the court of law regardless of the GRM stage and process. In addition, the affected person may raise the concern with ADB Operations Department through INRM for resolution. Project-affected people can also submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-financed projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures.	Depends on nature of the complaint

163. **Receiving grievances**: All the received grievances should be registered by the GFPs of contractor and DISCOMs. Submitting grievances and registration should be a straightforward process, and the affected persons should be able to submit their grievances and questions directly or through a third party. This process requires availability of (i) responsible person to receive and register the complaints (GFP); (ii) multiple points (at field, DISCOM office) for receiving grievances; (iii) procedure for acknowledging the receipt (registered and signed) and informing the complaining party about the expected timeframe for the review and resolution; and (iv) grievance logbook about the complaints and their status.

164. The complaining party should be able to submit grievance in person, by phone call, email, letter or fax, to the GFP assigned by the contractor or DISCOM. Receipt of grievance lodged in person or via phone should be acknowledged immediately by a paper issued by the GFP or other persons who received the grievance. Any documentation relating to submitting and feeding back on grievances should be in Hindi (and other appropriate) local language.

165. All the grievances, however minor, and regardless of its nature and eligibility, should be recorded in a grievance logbook in detail. Upon receipt of grievances, the contractor's GFP in coordination with the DISCOM GFP should sort them into the following categories to define if the complaint is eligible for the Project established GRM. The procedure should establish clear parameters (if complaint is caused by the Project activities) for qualifying grievance as eligible or ineligible for the Project established GRM. The following types of grievances are not eligible for resolution by the Project established GRM:

- Grievances that are not related to the Project, or
- Grievances that should be reviewed by separate, more appropriate procedures (e.g. issues of fraud and corruption).

166. **Feedback provision**: After receiving grievance, the GFP (or other responsible person):

- should provide acknowledgement of the grievance receipt, with response/ recommendations to complainant;

- should provide the complainant with information about the status of grievance resolution in each of the grievance resolution levels;
- if the resolution is not reached or seem to be unreachable in a given level, the grievance should be passed on to the next level and the complainant should be informed accordingly. Information to the complainant shall include the date when the case was passed on to the next level and the date by which the resolution is expected; and
- the resolution proposed at each level should be informed to the complainant.

167. In all the levels, the parties involved in resolution for grievance should closely discuss the issue and resolution alternatives with the complainant in order to come to the resolution that is reasonable and acceptable for all parties.

168. **Reporting***:* The DISCOM is responsible to monitoring implementation of the Project established GRM and reflect the outcomes in the safeguard monitoring reports.

- The GFP of the contractor should document and monitor the grievance status in a grievance logbook. All grievances, no matter how minor, and regardless if immediately resolved by the contractor, will be logged.
- GFP of the contractor should report to responsible person in DISCOM on GRM on weekly basis and immediately inform them on receipt of any grievance.

169. Responsible person in DISCOM will record all grievances, no matter how minor, and regardless if immediately resolved by the contractor, in a tracking table (provided by ADB – Table 20) and report on a monthly basis to the UPPCL GFP and to ADB on semi annual basis through the safeguard monitoring reports and immediately inform them of any grievance which reaches level 3a or 3b of the GRM. Besides, all grievances and their status along with details of the grievance and their resolution should be reflected in the environmental monitoring reports.

Table 20: Grievance Registration Form

(Project: Uttar Pradesh Power Distribution Network Rehabilitation)

No	Title of complaint	Type of complaint	Date received	Name of plaintiff	Contact details of plaintiff	Summary of complaint	Action taken	Status of complaint / date	Notes/ comments

VIII. ENVIRONMENTAL MANAGEMENT PLAN

A. Introduction

170. This section is the project-level EMP that sets out the mitigation measures to avoid, minimize, mitigate or compensate adverse environmental impacts and risks that have been identified in the previous sections. The EMP is a management tool and the issues are accordingly addressed with regard to the sequence of operations, i.e., those activities that apply to the design, pre-construction, construction, and operation and maintenance phases.

171. This project-level EMP is applicable to all subprojects under the Project including those that are ADB and counterpart funded. Once the actual subproject components and their design have been confirmed by the turnkey contractors, a site-specific EMP will also be prepared by the DISCOMs to reflect any site-specific mitigation and monitoring measures, supplementary to those set out in this project-level EMP. If no site-specific measures are required for a subproject, the project-level EMP will form the final EMP for it.

172. The project-level EMP contains several components crucial to effective environmental management within the project, these include:

(i) Plan for corrective action related to existing facilities (substations) to be implemented by DISCOMs pre-construction prior to the contractors being given access to the existing substations to connect in the feeder lines – Table 3, Appendix 4.

(ii) Plan for mitigation of impacts (during design, pre-construction, construction and operation and maintenance) including performance standards – Table 1, Appendix 4. The relevant requirements of the project-level EMP will be incorporated into the turnkey contract documents and during design, pre-construction and construction these measures will be implemented by the respective contractor under the supervision of the UPPCL Project Management Unit (PMU) and DISCOM Project Manager. During detailed design and operation and maintenance, the measures will be implemented by the relevant DISCOMs district office under the supervision of the UPPCL PMU and DISCOM HQ.

(iii) Monitoring plan and performance indicators – Table 2, Appendix 4; this includes the proposed quantitative monitoring requirements and performance indicators for implementation of the project. During design, pre-construction and construction, specific quantitative monitoring activities defined in the project-level EMP will be carried out by the DISCOM and the contractor, supervised by the UPPCL PMU and DISCOM Project Manager respectively. During operation and maintenance, monitoring activities will be carried out by the relevant DISCOMs district office under the supervision of the UPPCL PMU and DISCOM HQ.

(iv) Implementation arrangements, including organizational responsibilities, budgets, capacity development requirements (for various aspects of EMP implementation).

B. Supervision, Monitoring and Reporting

173. UPPCL and the DISCOMs will establish a system for preparing semi-annual environmental monitoring reports covering all project components up until the completion of construction, and annual reports thereafter. UPPCL's PMU will take the lead on report preparation with the DISCOMs providing them with inputs related to their project components. UPPCL will submit the report for ADB's review and disclosure on the ADB

website. UPPCL and the DISCOMs will be responsible for local disclosure of the combined report.

174. Progress on EMPs implementation (environmental performance) as well as the results of quantitative monitoring (as defined in Appendix 4, Table 2) will be included in the environmental monitoring reports together with details of any grievances and their resolution and corrective action plans if needed. The format of the environmental monitoring reports is included in the SARF.

175. UPPCL and the DISCOMs will carry out the following actions in supervising and monitoring EMP implementation:

(i) Establishing and maintaining procedures to supervise and monitor the progress of implementation.

(ii) Undertake and document the findings of periodic “spot check” site visits to confirm compliance.

(iii) Conduct and document the findings of monthly supervision visits involving detailed review of safeguards compliance for each ongoing subproject/contract package.

(iv) Confirm compliance by the DISCOMs and their contractors with environmental, health and safety measures, and progress toward the desired outcomes for ongoing measures.

(v) Document monitoring findings in the environmental monitoring reports, identify corrective action for any non-compliance identified and set out in a corrective action plan – all four DISCOMs should consolidate their quarterly reports into a single report for submission to UPPCL for consolidation and onwards submission to ADB.

(vi) Implement corrective action plans as needed to ensure progress toward the desired outcomes.

(vii) UPPCL to submit semi-annual environmental monitoring reports up until the completion of construction, reverting to annual reports thereafter, (to be combined with social monitoring reports) to ADB for review and disclosure on the ADB website up until the Project Completion Report is issued, or longer if recommended on completion;

(viii) UPPCL and DISCOMs to locally disclose the findings of the environmental monitoring reports through publication on their websites, copies of reports available at substations, and notices at construction sites informing of main findings and the availability of the reports which should be shared upon request; and

(ix) Inform the ADB of any changes to the design or other unanticipated impacts and any changes to the IEE/EMP recommended prior to implementing the changes for ADB clearance.

176. ADB will carry out the following monitoring actions to supervise EMP implementation:

(x) conduct periodic site visits during the project implementation to confirm compliance;

(xi) if required, conduct supervision missions with detailed review by ADB’s safeguard specialists/officers or consultants;

(xii) review the environmental monitoring reports submitted by UPPCL to ensure that adverse impacts and risks are mitigated as was planned and agreed with ADB;

(xiii) work with UPPCL and the DISCOMs to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the loan agreement, and exercise remedies to re-establish compliance as appropriate; and

(xiv) prepare a project completion report that assesses whether the objective and desired outcomes of the EMP has been achieved, considering the baseline conditions and monitoring results.

177. For this purpose, UPPCL and the DISCOMs will provide ADB with access to the site and all requested information on the Project.

C. Implementation Arrangements

178. The main institutions that will be involved in environmental management activities are UPPCL as the Project executing agency and the four DISCOMs as Project implementing agencies.

179. Responsibility for environmental management and compliance with ADB's Safeguard Policy Statement (2009) requirements ultimately lies with UPPCL. UPPCL has the ultimate responsibility for all aspects of the Project. A PMU will be established within UPPCL which will be responsible for the overall management of the technical, environmental, and social aspects of the Project with the support of the PMC. UPPCL will be required to nominate as part of the PMU at least one suitably qualified and experienced staff to be receiving trainings and act as their (i) environmental focal; (ii) occupational health and safety focal; and (iii) social focal (also acting as GFP for UPPCL) to liaise with the DISCOMs.

180. Each DISCOM will act as implementing agency for their respective jurisdictions and a nominated DISCOM Project Manager will be responsible for the day to day management of the technical, environmental, and social aspects of the Project. In addition, each DISCOM will be required to nominate at least one suitably qualified and experienced staff to receive trainings and act as environment focal, health and safety focal, and community liaison/GFP for the DISCOM.

181. UPPCL and the DISCOMs will ensure that the specified staff resources and adequate environmental and social management and monitoring budgets are available to the Project and utilized as necessary for timely and satisfactory environment safeguards implementation.

182. Each contractor, for each contract package if they are awarded multiple contracts, will be required to nominate the following to receive trainings prior to the commencement of works and ensure compliance with the safeguard requirements (i) one appropriately qualified and experienced, dedicated Environment Officer designated with responsibility for ensuring implementation of the project-level EMP and any site-specific EMP included in the updated IEE; (ii) one appropriately qualified and experienced, dedicated Health and Safety Officer designated with responsibility for ensuring implementation of the health and safety requirements under the project-level EMP and any site-specific EMP included in the updated IEE; (iii) one appropriately qualified and experienced, dedicated community liaison officer who will also act as the GFP for the contractor to undertake consultations and deal with any grievances received by the subproject; and (iv) appropriately qualified and experienced environment, health and safety site supervisors (several site supervisions will be required, the actual number depending on the scheduling of works) responsible for the day to day implementation of the EMPs who will be permanently based on-site for the duration of all works being undertaken for each subproject component/activity implemented.

183. The main responsibilities of each institution are listed below (this is not an exclusive list):

a. UPPCL (PMU) Responsibilities with Support Project Management Consultant (PMC)

(i) Ensure that all environment safeguards requirements as given in ADB's Safeguard Policy Statement (2009), the SARF, applicable laws and rules of the Government of India and Uttar Pradesh Government, and UPPCL environmental framework and safeguards (EFS) for transmission and distribution projects, the IEE, and EMPs, are being fully complied with during all tranches and stages of the subprojects supported by the Project, including counterpart funded components/activities.

(ii) Nominate at least one suitably qualified and experienced staff to act as the PMU's (a) environmental focal, (b) occupational health and safety focal, and (c) social focal (also acting as GFP for UPPCL) to liaise with the DISCOMs.

(iii) Ensure that consolidated screening forms and consultation proformas are completed and the IEE updated as required by the DISCOMs for all subprojects and components/activities in accordance with the SARF prior to the DISCOM's approval of the contractor's detailed designs and the commencement of any construction works associated with them.

(iv) Review and approve all environment safeguard related documents prepared (such as consolidated screening forms, consultation proformas, the updated IEE, environmental monitoring reports etc.) seeking recommendations and clarifications from the DISCOMs where necessary prior to endorsement and submission to ADB for clearance and disclosure on the ADB website.

(v) Timely endorsement and signing of key documents and forwarding to the respective agency such as documents required for the processing of tree cutting permission, etc.

(vi) Taking proactive and timely measures to address any environment safeguards related challenges at the national or state level such as delays in processing of clearances (during pre-construction stage) or significant grievances.

(vii) Ensure that the DISCOMs have access to the SARF, IEE and EMP and that they fully understand their responsibilities to implement the EMP and mitigate environmental impacts associated with the design, pre-construction, construction, and operational and maintenance stages of the Project and, supported by the TRTA consultants, provide necessary safeguards training to their staff and contractors.

(viii) Ensure that the requirements of the SARF and EMPs as relevant to the contractor are incorporated by the DISCOMs in the contract documents for each subproject.

(ix) Support DISCOMs in reviewing and approving contractor sub-plans e.g. construction EMPs plus traffic management plans, construction waste management plans, and health and safety plans.

(x) Support the DISCOMs in undertaking ongoing consultation and establishing and implementing the GRM, ensuring effective implementation of the GRM and that all relevant concerns and complaints are being promptly and effectively addressed.

(xi) Supervise and monitor that the SARF and EMP is being properly implemented.

(xii) Ensure that the DISCOMs submit their quarterly reports for consolidation into and prepare the environmental monitoring reports semi-annually up until the completion of construction and annually thereafter up until project completion.

(xiii) Submit environmental monitoring reports to ADB.

(xiv) In case unanticipated environmental impacts occur during the Project implementation stage, including design changes, for example, due to site conditions encountered by contractors following the approval of detailed designs, inform ADB, and, as required, ensure the DISCOMs update the IEE and EMPs for clearance by ADB before any changes are implemented by the contractor.

(xv) In case of non-compliance, inform ADB, and prepare in consultation with relevant government agencies and implement as necessary a corrective action plan for clearance by ADB.

b. DISCOM (Project Manager) Responsibilities with Support Project Management Agency (PMA)

(i) Together with the executing agency, ensure that all environment safeguards requirements as given in ADB's Safeguard Policy Statement (2009), the SARF, applicable laws and rules of the Government of India and Uttar Pradesh Government, and UPPCL EFS for transmission and distribution projects, the IEE and EMP, are being complied with during all tranches and stages of respective subprojects supported by the Project, including counterpart funded components/activities.

(ii) Nominate at least one suitably qualified and experienced environment focal, health and safety focal, and community liaison focal who will also act as the GFP for the DISCOM.

(iii) Prepare consolidated screening forms, consultation proformas, and the updated IEE in accordance with the SARF for all subprojects and components/activities prior to the DISCOM's approval of the contractor's detailed designs and the commencement of any construction works associated with them.

(iv) Undertake site visits and consultations with villagers and landowners and complete the environment screening forms and consultation proformas for all subproject components/activities in accordance with the SARF requirements.

(v) Provide necessary support and all required documentation to the TRTA consultants to enable them, on behalf of the DISCOMs, to adequately support preparation of the updated IEE in accordance with the SARF requirements.

(vi) Obtain necessary permits and/or clearance from relevant government agencies (except those required to be obtained by the contractor) ensuring that all necessary regulatory clearances are obtained before the contractor is given permission to commence any construction works on the relevant components.

(vii) Timely endorsement and signing of key documents and forwarding to the respective agency such as documents required for the processing of tree cutting permission by contractor, etc.

(viii) Implement the SARF and EMP in respect of actions which have been allocated to the DISCOMs during the design, pre-construction, construction,

and operation and maintenance stages.

(ix) Ensure that the requirements of the SARF and EMPs and RP as relevant to the contractor are incorporated in the contract documents for each subproject.

(x) Ensure that the contractors have access to the SARF, IEE, and EMP for their contract packages and that they fully understand their responsibilities to implement the requirements set out therein and mitigate environmental and social impacts associated with their design, pre-construction and construction activities and with support of UPPCL/TRTA consultants provide necessary safeguards training to them.

(xi) Review and approve contractor sub-plans e.g. construction EMPs plus traffic management plans, construction waste management plans, and health and safety plans with support of UPPCL.

(xii) Undertake ongoing consultation and establish and implement the GRM, ensuring effective implementation of the GRM and that all relevant concerns and complaints are being promptly and effectively addressed at DISCOM level.

(xiii) Undertake the requisite quantitative environmental and social monitoring as set out in the EMP during design, pre-construction, construction and operation.

(xiv) Supervise and monitor that the SARF and EMP are being properly implemented on a day to day basis.

(xv) Ensure that the contractors submit monthly environmental management reports (to be included as part of contractors' monthly progress reports) for consolidation into and prepare quarterly reports on environmental safeguards.

(xvi) Submit quarterly reports on environmental safeguards to UPPCL for consolidation into the environmental monitoring reports.

(xvii) In case unanticipated environmental and social impacts occur during the Project implementation stage, including any design changes, inform UPPCL, and, as required, update the IEE and EMP in consultation with relevant government agencies for clearance by ADB before any changes are implemented.

(xviii) In case of non-compliance, inform UPPCL, and help prepare in consultation with relevant government agencies and implement as necessary a corrective action plan for clearance by ADB.

c. Turnkey Contractors' Responsibilities

(i) Nominate the:

a) appropriately qualified and experienced, dedicated Environment Officer designated with responsibility for ensuring implementation of the project-level EMP and any site-specific EMP included in the updated IEE;
b) appropriately qualified and experienced, dedicated Health and Safety Officer designated with responsibility for ensuring implementation of the health and safety requirements under the project-level EMP and any site-specific EMP included in the updated IEE;
c) appropriately qualified and experienced, dedicated community liaison officer who will also act as the GFP for the contractor to

undertake consultations and deal with any grievances received by the subproject; and

d) appropriately qualified and experienced environment, health and safety site supervisors (several site supervisions will be required, the actual number depending on the scheduling of works) responsible for day to day implementation of the EMPs who will be permanently based on-site for the duration of all construction works being undertaken for each subproject component/activity implemented.

(ii) Confirm line alignments for the conversion to ABC and 11 kV feeders for approval by the DISCOMs, provide the inputs required for completing the subproject screening forms for subproject components/activities to the DISCOMs.

(iii) Assist the DISCOMs in undertaking consultation; disclose the proposed line alignment for feeder separation, prior to the consultation.

(iv) Implement the requirements of the SARF and EMPs as relevant to the contractor as incorporated in the contract documents, and specifically the project-level EMP and any site-specific EMPs included in the updated IEE, in respect of actions allocated to the contractor during design, pre-construction and construction.

(v) Inform the DISCOM if there is a need to review and update the EMP (and IEE if required) based on site conditions i.e. a change in subproject scope or design is required and as needed provide documentation to update the IEE and EMP.

(vi) Prepare sub-plans including construction EMPs plus traffic management plans, construction waste management plans, and health and safety plans as specified in the EMPs for review and approval by the DISCOM.

(vii) Ensure that construction workers including all formal and informal subcontractors understand their responsibilities to implement the EMP and mitigate environmental and social impacts associated with their design, pre-construction and construction activities and with support of UPPCL and the DISCOM provide training to construction workers as required.

(viii) Support the DISCOM in undertaking ongoing consultation and implementing the GRM.

(ix) Undertake the requisite quantitative environmental monitoring as set out in the EMP during design, pre-construction and construction.

(x) Submit monthly environmental management reports to the DISCOM (as part of the contractors' monthly progress reports). These reports will identify the details of work undertaken over the reporting period and document the environmental measures including monitoring activities that have been carried out on a component basis, problems encountered, and follow-up actions that were taken (or will be taken) by the contractor to correct the problems.

(xi) In case unanticipated environmental impacts occur during the Project implementation stage, including design changes, for example to site conditions encountered by contractors following the approval of detailed designs, inform DISCOM, and, as required, help them to update the IEE for clearance by ADB before any changes are implemented.

(xii) In case of non-compliance, inform the DISCOM, and help prepare and implement as necessary a corrective action plan for clearance by ADB.

D. Capacity Development

184. As discussed in the SARF given UPPCL and DISCOM do not currently have adequate capacity and have not previously implemented an ADB project, three sets of consultants will provide environment safeguards support to UPPCL and the DISCOMs to help them implement the Project,

(i) Transaction TA (TRTA) consultants will be recruited by ADB under the accompanying TRTA project to (a) support the DISCOMs with updating the IEE in accordance with the SARF for clearance by ADB prior to works; (b) provide safeguards capacity development to UPPCL, the DISCOMs, and their consultants and contractors; and (c) ensure UPPCL, the DISCOMs, and their consultants are undertaking adequate safeguards supervision and monitoring during project implementation.

(ii) PMC at UPPCL will assist UPPCL and their PMU in overall coordination and project management. They will support the executing agency prepare environmental monitoring reports during project implementation, help establish the GRM and address grievances received, and help ensure compliance with environmental safeguard requirements including this EMP.

(iii) Four PMA (consultant teams) to support each of the DISCOMs with day to day project implementation. They will support the implementing agencies in completing site-specific assessments, undertaking site visits and consultations, establishing the GRM and addressing grievances received, supervising and monitoring their contractors' day to day work, and ensuring compliance with the environment safeguard requirements including this EMP.

185. The PMC and PMA consultant teams can complement and backstop UPPCL and the DISCOMs in meeting their responsibilities as outlined above, including but not limited to:

(i) undertaking site visits and consultations with villagers and landowners and completing the environment screening forms and consultation proformas for all subproject components/activities in accordance with the SARF requirements;

(ii) providing necessary support and documentation to the TRTA consultants to enable them to provide the updated IEE for subprojects;

(iii) reviewing contract documents to ensure SARF and EMPs requirements as relevant to the contractors have been included, or assisting with variations if required;

(iv) reviewing contractor sub-plans e.g. construction EMPs plus traffic management plans, construction waste management plans, and health and safety plans;

(v) establishing environmental and social monitoring and reporting procedures that are in accordance with ADB's Safeguard Policy Statement (2009), SARF and EMPs requirements;

(vi) providing input on safeguards and GRM for regular project progress reports;

(vii) undertaking environmental compliance supervision and monitoring; and

(viii) preparing the environmental monitoring reports.

186. In addition, various environment safeguard training activities will be provided for UPPCL, the DISCOMs, and turnkey contractors as budgeted for in the SARF and summarised in Table 21.

Table 21: Summary of Training Activities

Item	Attendees
ADB's Safeguard Policy Statement (2009), SARF, undertaking Screening and Categorization, Meaningful Consultations, and Assessment of Subprojects including Auditing of Existing Substations	UPCCL safeguard focals, DISCOM PM and safeguard focals, PMA consultants Contractors EHS staff
a. PCB awareness and national requirements, and b. Hazardous materials and waste management system/procedure (train-trainers)	UPCCL safeguard focals DISCOM PM and safeguard focals DISCOM O&M Staff PMA Consultants Contractor EHS Staff
ADB's Safeguard Policy Statement (2009), EHS Guidelines, Implementing EMP and RP and Preparing Environmental and Social Monitoring Reports	UPCCL Safeguard Focals DISCOM PM and Safeguard Focals PMC E&S Specialists PMA consultants Contractor EHS staff
GRM requirements	UPPCL GFP DISCOM GFP Contractor GFP GRC representatives
a. EMP and RP implementation for detailed design and pre-construction, b. EMP and RP implementation for construction, and c. EMP for operation and maintenance. (train-trainers)	DISCOM PM and safeguard focals DISCOM O&M staff PMA consultants Contractors design team Contractors construction team Contractors EHS staff

E. Budget for EMP Implementation

187. Adequate budget and resources should be allocated by the turnkey contractor to implement the EMP as summarised in Table 22.

Table 22: EMP Implementation Budget

Item	Description	Unit Cost ($)	Total Cost ($)	Budget Source
Training activities	Table 21 (details in SARF)	n/a	80,850	TRTA budget
Monitoring and supervision capacity development support	PMC and PMA Consultant	n/a	48,000	PMC and PMA consultants (estimate)
Corrective action for existing facilities (substations)	Table 3 of Appendix 4		2,326,000	DISCOMs SS operational budget
Design, preconstruction and construction mitigation, monitoring and supervision	Table 1 of Appendix 4	0.2% of AB Cabling project cost and 0.3% of feeder separation project cost	1,088,800	Contract Cost, DISCOMs staff cost, PMC and PMA Consultant
Operation and maintenance mitigation, monitoring and supervision	Table 1 of Appendix 4	0.05% of total project cost per year	215,500 per year	DISCOMs internal cost
Quantitative monitoring activities per Table 2 of Appendix 4	Testing of transformer oil for PCB	$20-25 per screening test, $200 per laboratory test. (based on age and status of transformers anticipated only a sample of those screened will require laboratory tests)	50,000	TRTA budget for PCB, air, and noise monitoring cost, DISCOMs staff cost, PMC and PMA Consultant (estimate)
	PM10 monitoring per 24-hour period, baseline plus spot checks	$30 per sampling activity (assume 6no. per 26 subprojects plus travel)	10,000	
	Noise monitoring over a 48-hour period, baseline plus spot checks	$20 per sampling activity (assume 6no. per 26 subprojects plus travel)	5,000	

X. CONCLUSION AND RECOMMENDATION

188. This IEE, including project-level EMP, has been prepared based on the assessment of potential sample subproject components and preliminary consultations for the proposed Project in compliance with ADB's Safeguard Policy Statement (2009), and national (India) environment, health and safety requirements.

189. In relation to location, most works will take place within villages for the replacement of existing bare conductors with ABC, hence, no additional land should be required, except in the case of minor diversions to ensure safety distances from structures are maintained. The feeder lines will require additional land but will mostly be constructed on flat terrain along the right of way of existing rural roads bounded by agricultural land, however, some will run through built-up areas and will be required to cross agricultural land. The associated poles, conductors, and any transformers for feeder lines will require only minor civil works and have a small footprint. Whilst significant impacts could result if subproject locations supported high biodiversity value or internationally or nationally important biodiversity areas and physical cultural resources these will be avoided through the application of subproject component selection criteria. Similarly, any risks of electrocution to endangered Asian elephants from the distribution lines will be avoided by virtue of location and design. As a result, the project is unlikely to cause any significant irreversible, diverse, or unprecedented adverse environmental impacts and has been categorized as "B" for environment under the ADB's Safeguard Policy Statement (2009).

190. Potential impacts relate to (i) management of existing transformers; (ii) other pollution risks; (iii) management of waste such as old conductors generated by the work; (iv) trimming or cutting of trees along alignments for safety purposes; (v) disturbance to local communities including interference with agricultural activities, road traffic and access during installation; and (vi) occupational and community health and safety issues related to construction and operation as elaborated on in the following sections. These minor impacts and risks will be common to all subprojects regardless of location, mostly temporary and of short duration during construction works, and can be easily dealt with through adherence to national regulations and the adoption of international good practice measures as set out in the IFC EHS Guidelines including those on Electric Power Transmission and Distribution and the project-level EMP included in this IEE. Given the feeder lines involve existing facilities the project-level EMP also includes a corrective action plan for existing substations based on audit of sample substations and to be implemented by the DISCOMs prior to contractors being given access to existing substations to connect in the feeder lines. There will also be beneficial socio-economic impacts in relation to the quality of life and improved electricity supply to rural areas of Uttar Pradesh state of India.

191. During project implementation and prior to the commencement of works, it will need to be updated in accordance with the Safeguards SARF for the Project, once the actual subproject components and their design have been confirmed by the turnkey contractors, to reflect the completion of meaningful consultations and any site-specific assessment, mitigation and monitoring measures.

192. Mitigation measures will be assured by a program of environmental supervision and monitoring to be conducted during the construction and operation stages. Any unanticipated impacts or requirements for corrective action during implementation will be reported by UPPCL and the DISCOMs to ADB.

APPENDIX 1: INDICATIVE LIST OF DISTRICT ALLOCATION FOR ADB FUNDS

Name of Sub Project	Districts Included in Each Subproject			
AB Cabling Subproject				
PuVVNL / Varanasi	Ghazipur	Jaunpur	Varanasi	Chandauli
PuVVNL / Mirzapur	Mirzapur	-	Sonbhadra	Sant Ravidas Nagar
PuVVNL /Allahabad	Fatehpur	Kaushambi	Allahabad	Pratapgarh
PuVVNL /Gorakhpur	Kushinagar	Maharajganj	Gorakhpur	Deoria
PuVVNL / Basti	Sant Kabir Nagar	Siddharth Nagar	Basti	-
PuVVNL / Azamgarh	Ballia	-	Azamgarh	Mau
MVVNL / Faizabad	Ambedkar Nagar	Amethi	Faizabad	Sultanpur
	Barabanki	-	-	-
MVVNL / Devipatan	Bahraich	Shravasti	Gonda	Balrampur
MVVNL / Bareilly-I	Shahjahanpur	-	Baduan	-
MVVNL / Bareilly-II	Pilibhit	-	Bareily	-
MVVNL / Lucknow-I	Sitapur	-	Kheri	-
MVVNL / Lucknow-II	Raebareli	Unnao	Hardoi	-
MVVNL / Lucknow-LESA	Lucknow	-	-	-
Feeder Separation SubProjects				
DVVNL / Agra - II	Mathura	Firozabad	Mainpuri	-
DVVNL / Agra - I	Agra	-	-	-
DVVNL / Aligarh	Hathras	Kasganj	Aligarh	Etah
DVVNL / Jhansi	Jalaun	-	Jhansi	Lalitpur
DVVNL / Banda	Hamirpur	Mahoba	Chitrakoot	Banda
DVVNL / Kanpur	Kanpur Dehat	-	Etawah	Auraiya
	-	-	Farrukhabad	-
DVVNL / Kanpur	Kanpur nagar	-	Kannauj	-

Name of Sub Project	Districts Included in Each Subproject			
PVVNL / Meerut	Meerut	-	Baghpat	-
PVVNL / Ghaziabad	Ghaziabad	-	-	-
PVVNL / Bulandshahar	Bulandshahar	-	Hapur	-
PVVNL / Noida	GB Nagar	-	-	-
PVVNL / Saharanpur	Saharanpur	-	Muzaffarnagar	Shamli
PVVNL / Moradabad	Amroha/ JPNagar	Rampur	Sambhal	Moradabad
	Bijnor	-	-	-

APPENDIX 2: DISTRICT WISE PROJECT ACTIVITIES FOR ADB AND COUNTERPART FUNDS

A. PuVVNL (AB Cabling using ADB Funds)

Name of the District	Number of Habitations	Length of AB Cables to be installed (km)	Number of poles to erected(replacement, relocation and new)
Allahabad	1534	945	5287
Azamgarh	694	522	1895
Ballia	910	787	3184
Basti	654	419	1874
Chandauli	596	320	2066
Deoria	886	529	3226
Fatehpur	1064	1307	4697
Ghazipur	696	404	2522
Gorakhpur	963	369	3055
Jaunpur	928	560	2738
Kaushambi	453	403	1516
Kushinagar	853	559	2586
Maharajganj	977	527	3699
Mau	229	248	639
Mirzapur	465	677	1323
Pratapgarh	801	600	2430
Sant Kabir Nagar	463	271	1502
Sant Ravidas Nagar	930	223	727
Siddharth Nagar	671	288	1854
Sonbhadra	465	328	1373
Varanasi	772	577	2547
Total	**16004**	**10864**	**50740**

B. MVVNL (AB Cabling using ADB Funds)

Name of the District	Number of Habitations	Length of AB Cables to be installed (km)	Number of poles to erected(replacement, relocation and new)
Ambedkar Nagar	303	554	1835
Amethi	208	538	1853
Baduan	533	1029	3627
Bahraich	761	1660	5786
Balrampur	531	1178	4123
Barabanki	697	940	3867
Bareily	800	960	11165
Faizabad	503	1073	4877
Gonda	353	605	2036
Hardoi	704	1262	4774
Kheri	962	1674	6094
Lucknow	500	1126	3940
Pilibhit	650	1833	6213
Raebareli	504	1132	3866
Shahjahanpur	797	1411	5100
Shravasti	193	369	1271
Sitapur	1121	1832	6438
Sultanpur	421	844	2938
Unnao	728	1229	4421
Total	**11269**	**21248**	**84224**

C. PVVNL (AB Cabling using Counterpart Funds)

Name of the District	Number of Habitations	Length of AB Cables to be Installed (km)	Number of Poles to be erected (replacement, relocation and new)
Meerut	500	266.77	2033
Hapur	250	349.47	2455
GB Nagar	107	110.41	788
Bulandshahr	732	601.23	4422
Baghpat	232	89.65	1248
Ghaziabad	153	125.57	1103
Saharanpur	946	431.30	3428
Mujaffarnagar	525	475.59	4960
Shamli	270	381.30	3150
Bijnor	968	268.55	3580
Rampur	282	347.45	2117
Moradabad	514	945.77	9015
Sambhal	353	578.32	6121
JP Nagar	232	325.15	3465
Total	**6064**	**5296.53**	**47885**

D. DVVNL (AB Cabling using Counterpart Funds)

Name of the District	Number of Habitations	Length of AB Cables to be Installed (km)	Number of Poles to be erected (replacement, relocation and new)
Aligarh	926	858.19	8589
Mahamaya Nagar	664	559.83	5591
Firozabad	559	264	2640
Mainpuri	577	378	3780
Kanpur Nagar	372	343	3430
Kanpur Dehat	406	294	2943
Auraiya	348	448	4480
Etah	515	561	2860
Kashiram Nagar	415	285	1432
Farrukhabad	415	419	1982
Kannauj	261	443.45	1825
Etawah	435	446.32	2043
Agra	897	1177	13965
Mathura	1532	2174	22007
Jhansi	458	1100	11093
Lalitpur	332	1087	11850
Jalaun	489	1148	12632
Banda	437	614.6	4917
Chitrakoot	204	264	2112
Hamirpur	354	572	5720
Mahoba	336	462	4620
Total	**10932**	**13898.39**	**130511**

E. PVVNL (Feeder Separation using ADB Funds)

Name of District	Number of new feeders	Length of new 11 kV line (bare)	Length of 11 kV AB Cables	Length of 11 kV UG Cables	LT line (bare)	LT Line (AB Cables)	Number of new DTR	No. of Control room extenstion
Baghpat	10	124	3	3	10	11	130	4
Meerut	43	515	10	10	39.7	44	534	17
Ghaziabad	21	250	8.7	6	19.7	20	295	6
Hapur	18	200	5.3	5	19.2	18	265	7
Bulandshahar	117	1530	31.1	30	118.7	117	1672	31
GB Nagar	20	271	6	6	20	21	300	6
Saharanpur	67	847	20.55	20	68.4	68	992	21
Muzaffarnagar	32	403	10	8	33.2	32	448	10
Shamli	16	164	5	6	16	16	231	6
Amroha/ JP Nagar	17	216	5.65	5	17.2	17	254	5
Moradabad	33	410	11.4	10	407	33	492	9
Rampur	23	280	11.65	11.2	22.6	23	326	5
Sambhal	21	260	8.46	7	20.3	20	294	7
Bijnor	46	596	12	12	46.7	47	683	16
Total	**484**	**6066**	**148.81**	**139.2**	**858.7**	**487.1**	**6916**	**150**

F. DVVNL (Feeder Separation using ADB Funds)

Name of District	Number of new feeders	Length of new 11 kV line (bare)	Length of 11 kV AB Cables	11 kV UG Cables (Nos.)		LT line (bare)	LT Line (AB Cables)	Number of new DTR	No. of Control room extenstion
				Road Crossing	Railways Crossing				
Agra	157	2528	0	4	3	0	0	251	0
Mainpuri	44	760	0	3	3	0	0	186	0
Mathura	4	62	0	2	2	0	0	19	0
Firozabad	48	803	0	3	2	0	0	123	0
Aligarh	33	537	0	3	2	0	0	91	0
Hathras	28	444	0	3	3	0	0	74	0
Etah	5	90	0	2	2	0	0	24	0
Kasganj	15	229	0	3	2	0	0	40	0
Kanpur Dehat	61	1080	0	3	2	0	0	279	0
Etawah	1	17	0	3	2	0	0	2	0
Auraiya	1	15	0	3	3	0	0	2	0
Farrukhabad	13	213	0	4	2	0	0	45	0
Kanpur nagar	70	1246	0	4	4	0	0	313	0
Kannauj	31	537	0	3	2	0	0	134	0
Jhansi	11	261	0	3	3	0	0	25	0
Jalaun	26	617	0	2	2	0	0	61	0
Lalitpur	11	260	0	3	2	0	0	27	0
Banda	12	284	0	3	3	0	0	26	0
Chitrakoot	11	263	0	2	3	0	0	22	0
Hamirpur	11	260	0	3	2	0	0	25	0
Mahoba	15	355	0	2	2	0	0	30	0
Total	**608**	**10859.8**	**0**	**61**	**51**	**0**	**0**	**1799**	**0**

APPENDIX 3: NATIONAL AMBIENT AIR QUALITY, NOISE LEVEL, AND WATER QUALITY STANDARDS

National Ambient Air Quality Standards (MOEF&CC, 2009)

Pollutant	Time Weighted Average	Concentration in Ambient air (µg/m³)	
		Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Areas
Sulphur Dioxide (SO2)	Annual Average*	50	20
	24 hr**	80	80
Oxides of Nitrogen (as NO2)	Annual Average *	40	30
	24 hr**	80	80
Particulate Matter: PM10 (<10 µm)	Annual Average *	60	60
	24 hr**	100	100
Particulate Matter: PM2.5 (<2.5 µm)	Annual Average *	40	40
	24 hr**	60	60
Lead	Annual Average *	0.5	0.5
	24 hr**	1.0	1.0
Carbon monoxide mg/m3	8 hr	2.0	2.0
	1 hr	4.0	4.0

* Annual Arithmetic mean of minimum 104 measurement in a year taken for a week 24 hourly at uniform interval.

** 24 hourly or 8 hourly or 1 hourly monitored values should meet 98 percent of the time in a year

Source: MOEF&CC notification Central Pollution Control Board (1997) National Ambient Air Quality Monitoring Series, NAQMS/a/1996-97.

National Ambient Noise Level Standards*

Area Code	Category	Limits in Decibels (dB A)	
		Day Time	Night Time
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silence Zones	50	40

Note: (1) Daytime: 6 AM to 9 P.M., Night-time 9 PM to 6 AM;
(2) Silence zone is an area up to 100 m around premises as hospitals, educational institutions and courts.

Source: Central Pollution Control Board, New Delhi

* ADB's Safeguard Policy Statement (2009) requires the more stringent of national and WHO noise 1hr LAeq guidelines to be adhered to, the latter apply on an individual receptor not area basis and for industrial receptors require a level of 70dBA daytime as well as nighttime limit to be met which is more stringent than national.

Indian Standard Drinking Water Specification: IS 10500:1991

Sl. No.	Substance/ Characteristic	Desirable Limit	Permissible limit	Remarks
1	Colour, Hazen units, Max	5	25	Extended to 25 if toxic substance are not suspected in absence of alternate sources

Sl. No.	Substance/ Characteristic	Desirable Limit	Permissible limit	Remarks
2	Odour	Unobjectionable		a) Test cold and when heated
				b) Test at several dilution
3	Taste	Agreeable		Test to be conducted only after safety has been established
4	Turbidity NTU, Max	5	10	
5	pH value	6.5 to 8.5	No relaxation	
6	Total Hardness (as $CaCO_3$ mg/lit)	600	600	
7	Iron (as Fe mg/lit, Max	0.3	1.0	
8	Chlorides (as Cl mg/lit Max	250	1000	
9	Residual Free Chlorine, mg/lit Max	0.2		To be applicable only when water is chlorinated. Treated at consumer end. When protection against viral infection is required, it should be Min 0.5 mg/lit
10	Dissolved Solids mg/l, Max	500	2000	
11	Calcium (as Ca) mg/l, Max	75	200	
12	Copper (as Cu) mg/l, Max	0.05	1.5	
13	Manganese (Mn) mg/l Max	0.1	0.3	
14	Sulphate (As SO_4), Max	200	400	May be extended up to 400 provided (as Mg) does not exceed 30
15	Nitrate (as NO_3) mg/l, Max	45	100	
16	Fluoride (as F) mg/l, Max	1.0	1.5	
17	Phenolic Compounds (as C_6H_6OH) mg/l Max	0.001	0.002	
18	Arsenic (as As mg/l	0.05	No relaxation	To be tested when pollution is suspected
19	Lead (as Pb) mg/l	0.05	No relaxation	
20	Anionic Detergents (as MBAS) mg/l	0.2	1.0	
21	Chromium (as Cr) mg/l	0.05	1.0	To be tested when pollution is suspected
22	Mineral Oil mg/l	0.01	0.03	
23	Alkalinity mg/l	200	600	
24	Total Coliform	95% of the sample should not contain coliform in 100 ml. 10 coliform /100 ml		

APPENDIX 4: PROJECT ENVIRONMENTAL MANAGEMENT PLAN (EMP)

This project EMP is applicable to all subprojects under the Project and provides the mitigation and monitoring measures to be followed by the DISCOMs and their contractors in relation to potential impacts that are common to all subprojects. Following site-specific assessment, it will be identified if any additional site-specific management measures need to be applied to each subproject, these measures will be supplementary to those set out in this project EMP.

Table 1. Project EMP Matrix

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
A. DESIGN AND PRE-CONSTRUCTION PHASE						
Existing facilities (substations)	• Complete environmental audit form included in the SARF for all substations that are existing facilities • Following completion of the environmental audit form identify and implement applicable short-term and long-term actions from the CAP as set out in Table 3 of this EMP for all existing substations to which an 11kV feeder will connect. • Submit a report on status of short-term corrective actions to ADB for clearance prior to the contractor being given access to the substation in question in order to undertake augmentation or connect in an 11kV feeder. • Submit a report on status of long-term corrective actions to ADB prior to project completion.	100% of short-term corrective actions implemented in a timely manner prior to contractor being given access 100% of long-term corrective actions implemented in a timely manner prior to project completion (2029)	ADB loan funds; see Table 3 of this EMP for CAP budget	Complete environment audit checklist, comply with corrective action plan	Supervise and monitor DISCOM compliance, preconstruction and project completion audit to confirm if corrective actions complied with	NA
Final IEE and EMP in contract documents	• DISCOM (PMA Consultant) and Contractor to undertake further consultations in	100% of consolidated screening forms	ADB loan funds for the cost of PMA	Complete screening forms for all	Review and endorse consolidated	Support DISCOMS (PMA

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	accordance with the SARF [at the same time ensuring national COVID-19 requirements[22] and WHO meeting[23] and hand hygiene[24] guidelines are followed including awareness raising activities, minimizing travel requirements, undertaking screening health checks to confirm those going in the field are not symptomatic, providing them with adequate supplies of personal hand sanitizer and masks, ensuring social distancing of at least 1m, that masks are worn at all times during consultations, and that a register of all contacts is maintained] to give community members the opportunity to be actively involved in the design process for all 11 kV feeder separation components. • Complete screening forms included in the SARF for all subproject components (on a divisional basis) and consultation proformas for small sample of ABC and all feeder separation components, confirm all components meet the subproject component selection criteria in the SARF • Prior to DISCOM approval of the detailed designs and commencement of construction for each division: seek ADB clearance of the consolidated screening forms, update the IEE as required, confirm	and consultation proformas submitted to and cleared by ADB before the commencement of works IEE updated as required and cleared by ADB before the commencement of works Relevant provisions of project-level EMP and site-specific EMPs, if required for feeder separation project components, included in contract documents	Consultant support to DISCOM, and ADB TRTA for updating of IEE for sample subprojects	subproject components and consultation proformas for small sample of ABC and all feeder separation components Confirm the compliance with subproject selection criteria of SARF Update IEE with the assistance of TRTA consultants. Include mitigating measures for Contractor as	screening forms for all subprojects, and consultation proformas for small sample of ABC and all feeder separation components Confirm the compliance with subproject selection criteria of SARF Endorse the updated IEE by TRTA consultants on behalf of DISCOMs for ADB clearance. Check contract document to ensure compliance	Consultant) to undertake consultation and complete consultation proformas.

[22] https://www.mygov.in/covid-19 and https://www.mohfw.gov.in/
[23] https://www.who.int/docs/default-source/coronaviruse/advice-for-workplace-clean-19-03-2020.pdf
[24] https://www.who.int/infection-prevention/campaigns/clean-hands/WHO_HH-Community-Campaign_finalv3.pdf?ua=1

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	no change from the impacts and risks described and assessed in the IEE, undertake site-specific assessment and develop site-specific EMP if required, and seek ADB clearance of any updated IEE. • Ensure relevant provisions of the project-level EMP are included in the contract documents and that requirement to comply with any site-specific EMP included in updated IEE will form an integral part of the contractor's agreement. • Contractor to implement measures in any site-specific EMP included in updated IEE.			part of tender specifications		
Planning for construction environmental management	• DISCOM with assistance TRTA Consultants to conduct training on EMP implementation for those with responsibilities under it. • Contractor to nominate suitably qualified and experienced Environment Officer, dedicated Health and Safety Officer, and a Community Liaison/GRM Officer. • Contractor to nominate EHS Site Supervisors who will be permanently based on-site for the duration of works undertaken for each component implemented. • DISCOM to ensure GRM is fully operational. • Conduct training on GRM for those with responsibilities under it and distribute verbally and through leaflets, brochures,	Contractor appointed full contingency of staff prior to mobilization CEMP approved before commencement of works 100% landowner consent obtained and/or compensation paid prior to commencement of works No unresolved	Part of detailed design and pre-construction cost, to be included in turnkey contracts (TKC)	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications Review and approval of CEMP Supervise and monitor Contractor compliance	Check contract document to ensure compliance Assist with review and approval of CEMP Supervise and monitor DISCOM/Contractor compliance	Comply with mitigating measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	notices with the GRM contacts. • Prior to mobilization the Contractor to prepare and submit a construction environmental management plan (CEMP) to DISCOM for approval, to provide details on how contractor plans to implement the construction mitigation measures specified in this EMP and relevant parts of the International Finance Corporation's (IFC) Environment Health and Safety (EHS) Guidelines on Construction and Demolition (2007).[25] • CEMP will identify temporary construction facilities needed e.g. laydown and storage areas, temporary workers facilities etc. • Temporary impacts (e.g. land rentals) that are not within the assessed corridor of impact to be compensated for at cost of Contractor in line with the RP entitlement matrix.	grievances from local community Compliance with national laws and regulations				
Release of toxic pollutants, chemicals and gases to receptors (air, water, land) from transformers and other project equipment	• DISCOM with assistance TRTA consultants to conduct training on PCB hazards related to old transformers and requirements of national laws and regulations for their phase out and environmentally sound disposal. • PCBs will not be used in any transformers and any other Project facilities or equipment.	100% of new and old transformers used in the project are confirmed to be PCB free by 2025 No H&S incidents involving PCBs reported	ADB TRTA for support on training and testing ($50,000) Part of detailed design and pre-	Comply with mitigating measures Facilitate specialist task of testing sample of	Check contract document to ensure compliance Supervise and monitor DISCOM/ Contractor compliance	Comply with mitigating measures

[25] https://www.ifc.org/wps/wcm/connect/7d708218-2a9e-4fcc-879d-9d5051746e7d/4%2BConstruction%2Band%2BDecommissioning.pdf?MOD=AJPERES&CVID=ls62NKq

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• Equipment purchased by DISCOM or Contractor for use on the Project to be accompanied by letter from the manufacturer and material safety data sheet for insulating oil used confirming that it is guaranteed PCB free and labelled as PCB free. • In the absence of test data all transformers must be assumed by the Contractor to contain PCBs. • In confirming if old transformers used in the project are PCB free, DISCOM, supported by TRTA, to sample and analyze conservator type transformers at risk, as per Table 16, of containing PCBs. Sampling and analysis to follow UNEP Guidelines for the Identification of PCB and Materials Containing PCB[26] and a health and safety risk assessment and plan referring to the measures in UNEP (2002) PCB Transformers and Capacitors: From Management to Reclassification and Disposal. To start with a representative sample of conservator type transformers should be screened for containing PCBs and if positive should be tested for PCB in a laboratory, starting with those at highest risk of containing PCBs as indicated Table 16. If any of these are found to contain PCBs then, taking a precautionary approach, the remaining conservator type transformers	100% of PCB transformers disposed of under project are transported, stored, decontaminated, and disposed of in an environmentally sound manner by 2025 (national deadline is 2028) Compliance with national laws and regulations	construction cost, to be included in turnkey contracts (TKC)	transformers for PCBs Include mitigating measures for Contractor as part of tender specifications Supervise and monitor Contractor compliance Transport, storage, decontamination, and disposal of contaminated units		

[26] https://wedocs.unep.org/bitstream/handle/20.500.11822/32457/PCB.pdf?sequence=1&isAllowed=y

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	belonging to the same manufacturers batch should be labelled as positive for PCB and other conservator type transformers at risk should also be tested. It is not recommended to test hermitically sealed type transformers. If PCBs are found in existing transformers and other project equipment they should be labelled as such. • Workers must wear suitable chemical and/or oil resistant gloves, goggles, and protective clothing whilst sampling transformers. • Eye wash station and water supply to shower to be provided during sampling due to risk of PCB coming into contact with skin. • Transformers known to contain PCBs may not be retained in-situ by the DISCOMS given the 2025 national deadline which coincides with the date of the project completion. • DISCOM to ensure appropriate transport, storage, decontamination, and disposal of contaminated units; disposal should involve facilities capable of safely transporting and disposing of hazardous waste containing PCBs. • Equipment that is found to be PCB free can be labelled as being PCB free for future reference. • In decommissioning and disposing of any transformers DISCOM and Contractor to follow the Hazardous and Other Wastes					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	(Management and Transboundary Movement) Rules, 2016 [27] for transport, storage and disposal of potentially PCB oil containing transformers; disposal should involve facilities and vendors licensed by the UPPCB to safely transport and dispose of hazardous waste containing PCBs. • On reaching stores DISCOM must ensure that old transformers are stored on drip trays. • Surrounding soil that has been exposed to oil leakage from transformer equipment should be assessed by the Contractor, and appropriate removal and / or remediation measures for any contamination identified should be implemented in accordance with the IFC's General EHS Guidelines (2007).[28]					
Interference with other utilities and traffic due to design and layout of Project equipment	• Obtain necessary clearances consistent with the requirements of Government of India and Government of Uttar Pradesh from other utilities that could be affected by the Project (electric, water, sewerage, telecommunications, road, rail etc.) • Contractor to prepare for DISCOM approval traffic management plan in consultation with relevant local authorities to ensure proper execution of traffic controls including where temporary blockage of one lane of the road during	100% of clearances obtained before commencement of works Traffic management plan approved before commencement of works No unresolved	Part of pre-construction cost, to be included in turnkey contracts (TKC)	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications	Check contract document to ensure compliance Assist with review and approval of traffic management plan	Comply with mitigating measures

[27] http://extwprlegs1.fao.org/docs/pdf/ind183717.pdf
[28] https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	installation is required for health and safety purposes that highly visible guides, advance warning signs or flag persons are in place to direct pedestrian and vehicular traffic.	grievances from local community Compliance with national laws and regulations		Review and approval of traffic management plan Supervise and monitor Contractor compliance	Supervise and monitor DISCOM/ Contractor compliance	
Land acquisition and resettlement/ temporary disruption of farming activities	• Distribution line alignment to be designed to be within road reserves as far as is practical, having minimal impact on private land holdings. • Carefully select the line route to minimize impacts on existing structures (e.g. buildings) and roads, tracks, crops, canals, or drains. • Where alignment is on private land Contractor to inform DISCOM who are to initiative engagement with landowner for obtaining consent or to compensate in accordance with the RP entitlement matrix. • Schedule works to avoid or minimize crop disturbance where lines cross private land, such as undertaking works in between crops. • If road reserves are being informally used for agriculture, compensation shall be paid for lost productivity in accordance with the RPs.	100% of consent obtained and/or compensation paid for erecting poles in private land prior to commencement of works Pre-condition survey approved before commencement of works No unresolved grievances from local community Compliance with national laws and regulations	Part of detailed design and pre-construction cost, to be included in turnkey contracts (TKC) RP budget for compensation	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications Review and approval of pre-condition survey Supervise and monitor Contractor compliance	Check contract document to ensure compliance Supervise and monitor DISCOM/ Contractor compliance	Comply with mitigating measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• Since any damages must be paid by the Contractor, photographic and structural pre-condition surveys of property including existing structures (e.g. buildings) and roads, tracks, crops, canals, or drains should be completed and agreed with the DISCOM and property owner prior to any works to provide a baseline for any claims. • If existing structures (e.g. buildings) and roads, tracks, crops, or, canals, or drains are damaged by works, the Contractor will be required to rehabilitate them to at least their condition prior to construction works to the satisfaction of the property owner having reference to pre-condition surveys.					
Cutting or trimming of trees and clearing of vegetation.	• Carefully select the line route to avoid or at least minimize the need to cut/trim trees by avoiding areas with a high concentration of trees. • Cutting or trimming of trees will only be planned when required to meet safety clearance requirements. • Contractor to identify and conduct an inventory of trees to be cut prior to the start of works. • Where alignment results in loss of loss of fruit-bearing trees that have economic value compensate in accordance with the entitlement matrix in the Project RPs; the contractor will pay any subsequent compensation for loss or damage to private trees due to the fault of the contractor's	100% of consents obtained and/or compensation paid prior to commencement of works No unresolved grievances from local community Compliance with national laws and regulations	Part of detailed design and pre-construction cost, to be included in turnkey contracts (TKC)	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications Supervise and monitor Contractor compliance	Check contract document to ensure compliance Supervise and monitor DISCOM/ Contractor compliance	Comply with mitigating measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	work. • Obtain approvals for cutting of public trees from forest or other applicable department per national regulatory framework, permission is required for tree cutting of public trees outside protected or forest areas with compensatory afforestation on at least a 10:1 basis to be funded or undertaken by the DISCOM. • DISCOM will monitor the progress of any compensatory afforestation process it has funded or undertaken to ensure that land is identified, the planting takes place, and that the same number of trees remains established after two years after their plantation so "no net loss of biodiversity" is achieved. • Schedule tree cutting/trimming works outside the bird breeding season.			Ensure compensatory afforestation is funded or undertaken, monitor the health and survival of planted trees		
Encroachment into ecologically sensitive areas	• No temporary or permanent Project facilities shall be established within precious ecosystems or ecologically sensitive areas including legally protected areas such as National Parks, Wildlife Sanctuaries; natural World Heritage sites; Ramsar sites, important bird areas; key biodiversity areas; reserve/protected forest areas; biodiversity heritage sites; wetlands; etc. • In conjunction with detailed route survey confirm habitats and species present, identify locally important receptors e.g.	No impact on protected area, KBA, reserved forest area, etc. 100% of new and existing lines designed to incorporate ecologically sensitive features Compliance with national laws and	Part of detailed design and pre-construction cost, to be included in TKC contract.	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications Confirm the compliance	Check contract document to ensure compliance Confirm the compliance with subproject selection criteria of SARF Supervise and monitor DISCOM/	Comply with mitigating measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	mature trees to be avoided, determine if defined elephant corridors (https://www.wti.org.in/wp-content/uploads/2017/08/pub_right_of_passage-1.pdf) or tiger corridors (https://www.conservationindia.org/wp-content/files_mf/Tiger-corridors-2.pdf) are crossed by the route alignments, as well as confirming the absence of any precious ecosystems, ecologically sensitive areas, or designated buffer zones. Confirm that all components are in accordance with the subproject component selection criteria in the SARF and/or subject to site-specific assessment if environmentally sensitive areas identified by survey work. • If ABC lines are within designated buffer zones or defined elephant or tiger corridors, then outside the built-up area of habitation it will be ensured that the clearance above ground of the conductor is at least above the maximum trunk height of an elephant. • New 11kV lines will be designed to be ecologically sensitive in accordance with international good practice for birds, elephants etc. E.g. maintaining 1.5 meter spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and retrofitting elevated perches, insulating jumper loops, placing obstructive perch deterrents, changing the location of	regulations		with subproject selection criteria of SARF Supervise and monitor Contractor compliance	Contractor compliance	

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	conductors, and / or using raptor hood.					
Impact on visual aesthetics / loss of original landscape beauty	• New lines and distribution poles to be sited to minimize visual impacts and the amount of visual clutter as far as possible given the nature of the project. • Consult individual households where a new pole location is directly in front of private property prior to finalizing detailed design.	No unresolved grievances from local community Compliance with national laws and regulations	Part of detailed design and pre-construction cost, to be included in TKC contract.	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications Supervise and monitor Contractor compliance	Check contract document to ensure compliance Supervise and monitor DISCOM/ Contractor compliance	Comply with mitigating measures
Location of workers camp and materials storage areas could adversely affect residential areas and sensitive receptors (schools, hospitals/clinics)	• If required, laydown and storage areas, temporary worker camps, etc. to be located at least 25m from waterbodies, 50m from springs and groundwater wells, and 50m from sensitive receptors (houses, schools, clinics, temples, etc.) however noisy and dusty activities such as concrete batching, hot mix, construction workers overnight accommodation etc. to be located at least 200m away from any sensitive receptors. • Local communities to be consulted when selecting sites for project facilities prior to finalization.	Related facilities located sufficient distance from nearest receptors No unresolved grievances from local community Compliance with national laws and regulations	Part of detailed design and pre-construction cost, to be included in TKC contracts	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications Supervise and monitor	Supervise and monitor DISCOM/Contractor compliance	Implement mitigating measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
				Contractor compliance		
Risks of soil erosion, damages to sub-surface utilities and chance find of physical cultural resources during construction.	• Schedule installation of poles during the dry season to minimize exposed areas subject to erosion by surface water runoff. • No lines will be routed adjacent to physical cultural resources. • Chance find procedure to be developed for implementation in the even physical cultural resources are found, to include the following procedures: - If suspected physical cultural resources are encountered, all works at the find site should be immediately halted; - The find should be assessed by a competent local District Office of Culture and Fine Arts official, and procedures to avoid, minimize or mitigate impacts to such physical cultural objects should be agreed in writing with them. - Work should not begin until the procedures to avoid, minimize or mitigate impacts to the physical cultural resources have been agreed and implemented in full. - If avoidance is not feasible, and no alternatives to removal exist, and the Project benefits outweigh the anticipated cultural heritage loss from	Chance find procedure approved before commencement of works No unresolved grievances from local community Compliance with national laws and regulations	Part of detailed design and pre-construction cost, to be included in TKC contracts	Comply with mitigating measures Include mitigating measures for Contractor as part of tender specifications Review and approval of chance find procedure Supervise and monitor Contractor compliance	Supervise and monitor DISCOM/Contractor compliance Assist with review and approvals of change find procedure	Implement mitigating measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	removal which is unlikely unless in case of resource of local value, following clearance of ADB the physical cultural resources should be removed and preserved using the best available technique in accordance with relevant provisions of national heritage protection laws and decrees. - Records should be maintained of all finds, including chain of custody instructions for movable finds. - All construction workers to be made aware of the chance-find procedure and types of finds to be reported.					
Pollution risk and generation of construction wastes	• Prepare pollution prevention plan (PPP) and construction waste management plan (CWMP) for solid and hazardous waste management in accordance with national regulations and the IFC's General EHS Guidelines (2007).[29] • Contractor to conduct training of workers on PPP and CWMP including good housekeeping and how to clean up oil/fuel spills and dispose of contaminated sorbent material which would be treated as a hazardous waste.	PPP and CWMP approved by DISCOM before commencement of works No unresolved grievances from local community Compliance with national laws and regulations	Part of detailed design and pre-construction cost, to be included in TKC contracts	Include mitigating measures for Contractor as part of tender specifications Review and approval of PPP and CWMP Supervise and monitor	Supervise and monitor DISCOM/Contractor compliance Assist with review and approvals of PPP and CWMP	Implement mitigating measures

[29] https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
				Contractor compliance		
Health and safety	• For all pre-construction and construction works comply with Government of India rules and regulations for the protection of workers. • Prior to any pre-construction field work being undertaken, since surveyors are at medium risk of exposure due to potential public interaction, DISCOM and Contractor to develop procedures to ensure that national COVID-19 requirements[30] and WHO workplace[31] and hand hygiene[32] guidelines are followed, including providing awareness raising activities for surveyors, minimizing travel requirements, undertaking screening health checks to confirm those going in the field are not symptomatic, providing surveyors with adequate supplies of personal hand sanitizer and masks, ensuring social distancing of at least 1m, that masks are worn at all times during consultations, and that a register of all contacts is maintained etc. • No asbestos containing materials of any type will be used in the design and construction of project facilities.	100% of new project facilities do not use asbestos containing materials H&S Plan including COVID-19 response approved and cleared by ADB before commencement of works No unresolved grievances from local community Compliance with national laws and regulations	Part of detailed design and pre-construction cost, to be included in TKC contracts.	Comply with mitigating measures Review and approval of H&S Plan, Supervise and monitor Contractor compliance	Supervise and monitor DISCOM/Contractor compliance Assist with review and approvals of H&S Plans	Implement mitigating measures

[30] https://www.mygov.in/covid-19 and https://www.mohfw.gov.in/
[31] https://www.who.int/docs/default-source/coronaviruse/advice-for-workplace-clean-19-03-2020.pdf
[32] https://www.who.int/infection-prevention/campaigns/clean-hands/WHO_HH-Community-Campaign_finalv3.pdf?ua=1

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• To inform H&S risk assessment Contractor to check/survey for the presence of asbestos prior to any work to existing control buildings or equipment following national requirements and international good practice as detailed in the IFC EHS General Guidelines on OHS[33] and document findings. If any asbestos was found to be present and it will be disturbed by construction works, it must be removed following national requirements and international good practice per the IFC EHS General Guidelines on OHS and disposed of as hazardous waste material. • For all construction works undertake risk assessment and prepare H&S plan in accordance with the IFC EHS General Guidelines on OHS for approval by DISCOM, considering occupational and community H&S and including adherence to electrical safety standards and emergency preparedness and response plan with communication systems and protocols to report an emergency situation. • In undertaking H&S risk assessment and planning adequate attention given to potential exposure to PCBs and asbestos. • In undertaking H&S risk assessment and planning adequate attention to be given to the risks associated with COVID-19 pandemic and other communicable viral					

[33] https://www.ifc.org/wps/wcm/connect/1d19c1ab-3ef8-42d4-bd6b-cb79648af3fe/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES&CVID=ls62x8l

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	diseases. National restrictions for containing the spread of COVID-19 must be complied with and in developing the health and safety management plan Government of India (https://www.mygov.in/covid-19 and https://www.mohfw.gov.in/) and World Health Organization guidance (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance) should be followed. Contractor to ensure adequate sanitation and welfare facilities including for hand washing and personal protective equipment are provided on-site and at accommodation and to consider the ability of communities to comply with protective measures such as regular handwashing and for the local health care facilities capacity to deal with any infections. Particular attention must be paid to accommodation of workforce given the transient nature of work, to avoid spreading any virus between communities. H&S plan to include emergency preparedness and response plan including flow chart and contact details to deal with situation should any construction worker or community member be diagnosed with COVID-19 during the course of the works. Medical insurance should be provided for all workers with sick leave allowance to ensure symptomatic workers do not attend site due to no work-no pay policies. Given the specialist nature of responding to					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	COVID-19 public health officials/experts to be consulted in undertaking the risk assessment and management planning for COVID-19. • Contractor to conduct training on occupational health and safety for all construction workers including refreshers. To include training for PMA and all Contractor management and construction workers including subcontractors before commencement of works. • Contractor to conduct training of workers on emergency preparedness and response procedures in case of an occupational or community health and safety incident during construction works. To include training for PMA and all Contractor management and construction workers including subcontractors before commencement of works. • Detailed designs of any ground mounted transformers to ensure infrastructure is located above the maximum flood level allowing for climate change (e.g. platforms to be placed at least 2m above the highest flood level) • Design to include adequate pole foundation in order that all poles remain vertical during operation, and that the lines are tensioned. For reconductoring old poles or poles previously incorrectly installed may need to be replaced.					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• Given seismic risk ensure the design of all foundations are checked for seismic safety by the design team. • Given storm risk ensure that the design responds to the highest recorded wind speeds taking into account climate change. • Design to provide on all poles and ground mounted transformers visual and written warning signages to the public to include the ISO 7010 Hazard Type: Electrical Symbol warning of the risk of electrocution. • Design to provide lighting arrestors along all lines. • Design to prefer pole mounted transformers over use of ground mounted transformers to minimise community H&S risks. • To prevent touching or climbing design to provide around the base of all ground mounted transformers a fence with locked gate and for pole mounted transformers a suitable anti-climbing deterrent, to be used together with suitable warning signs. • Detailed design of lines to ensure EMF levels are within international good practice International Commission on Non-Ionizing Radiation Protection (ICNIRP) reference levels (average and peak exposure) and to meet national vertical and horizontal safety distances • Detailed design of lines to ensure their installation above or adjacent to locations					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	intended for highly frequent human occupancy (e.g. schools) is avoided. For lines within 5m of such facilities the detailed arrangement plan will be provided. • If safety distances found not to be complied with during reconductoring reroute to facilitate compliance; also reroute to avoid distribution lines passing over any school compounds or similar community facilities – for any lines within 5m of such facilities the detailed minor rearrangement plan will be provided.					
B. CONSTRUCTION PHASE						
Unanticipated impacts on property including land and structures. Loss of agricultural land that causes temporary disruption of farming activities, damage to crops, bunds, canals and drains.	• Follow design drawings and implement careful construction practices to avoid damage to existing structures (e.g. buildings) and roads, tracks, crops, canals and drains. • Demarcation of the working area and avoid encroachment outside the agreed corridor of impact. • All unanticipated damage to existing structures (e.g. buildings) and roads, tracks, crops, canals and drains outside the assessed corridor of impact shall be restored to pre-project condition and/or compensated at the cost of the Contractor in line with the entitlement matrix in the Project RPs.	100% of structures (e.g. buildings) and roads, tracks, crops, canals and drains left in same condition as prior to construction No unresolved grievances from local community	Part of construction cost, to be included in TKC contracts	Check with Contractor regarding need for pole replacement on private land and initiate engagement with landowner Supervise and monitor Contractor compliance Undertake site visits using	Supervise and monitor DISCOM/Contractor compliance Undertake site visits and review documentation to audit implementation of measures at all construction sites	Implement mitigation measures Advise PMA of need for pole replacement on private land

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
				checklist to confirm implementation of measures by Contactor		
Cutting or trimming of trees and clearing of vegetation.	• No temporary or permanent Project facilities shall be established within protected areas, KBA, reserved forest areas etc. • Follow design drawings and implement careful construction practices to avoid damage to trees. • Demarcation of mature trees to be avoided and retained. • Demarcation of the working area and avoid encroachment outside the agreed corridor of impact. • Cutting or trimming of trees prohibited unless in accordance with design drawings in order to meet safety clearance requirements. • Cut/trimmed trees and other vegetation trimmings will be temporarily stored at designated places outside of built up area to avoid blocking of accesses or dumping on agriculture fields. • Cut/trimmed trees and other vegetation trimmings will be removed off-site as soon as line is completed. Unless sold for reuse, to be disposed of to a suitably	No impacts on protected area, KBA, reserved forest areas etc. Works in accordance with project EMP, approved CEMP and compensatory afforestation plan Compliance with national laws and regulations No unresolved grievances from local community	Part of construction cost, to be included in TKC contracts	Supervise and monitor Contractor compliance Undertake site visits using checklist to confirm implementation of measures by Contactor	Supervise and monitor DISCOM/Contractor compliance Undertake site visits and review documentation to audit implementation of measures at all construction sites	Implement mitigation measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	licensed waste management facility with all waste transfer records retained. • Unanticipated loss of fruit-bearing trees that have economic value shall be compensated in accordance with the RP. • Before cutting/trimming trees Contractor's Environment Officer to check for presence of nesting birds or roosting bats. • Undertake works requiring tree cutting/trimming outside the bird nesting/breeding season. • Avoidance of construction works from one hour after dawn to one hour before dusk in areas where there is no existing human disturbance. • Removal and disposal of identified invasive plant species in an ecologically sound manner. • Use of herbicides or burning in order to clear vegetation is strictly prohibited.					
Interference with traffic and accessways	• Implement agreed traffic management plan. • Safe access to property and roads should be maintained and alternative routes and access provided where there are temporary diversions or blockages • Stockpiling of concrete poles, spoil and cable reels shall be away from properties and only in designated areas where no	Works in accordance with project EMP and approved CEMP Compliance with national laws and regulations No unresolved	Part of construction cost, to be included in TKC contracts.	Supervise and monitor Contractor compliance Undertake site visits using checklist to confirm	Supervise and monitor DISCOM/Contractor compliance Undertake site visits and review documentation	Implement mitigation measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	access will be blocked. • Implement traffic management controls during construction works with advance warning signs or flag persons to ensure health and safety of construction workers and road users. • Road safety and warning signs must be posted at 500m, 100m, and immediately in advance of the works at least two weeks prior to the works commencing to inform the public of the temporary blockage of one lane of the road. • Scaffolds will be constructed to protect pedestrians and vehicles (and the conductor itself) from potential injury /damage during conductor stringing over roads, rivers etc.	grievances from local community		implementation of measures by Contactor	to audit implementation of measures at all construction sites	
Soil erosion during auguring/ excavation of pole foundation.	• Minimize removal of existing vegetation and topsoil to that which is absolutely necessary. • Topsoil disturbed will be used to restore the surface of the excavated area. • Infertile and rocky material will where possible be reused as fill material, if it needs to be taken off site it will be disposed by licensed waste management operator at designated disposal area suitable for accepting inert wastes. • Records of excavated soil, generated waste, and transfer records will be kept by the contractor.	Works in accordance with EMP measures and approved CEMP provisions Compliance with national laws and regulations No unresolved grievances from local community	Part of construction cost, to be included in TKC contracts	Supervise and monitor Contractor compliance Undertake site visits using checklist to confirm implementation of measures by Contactor	Supervise and monitor DISCOM/Contractor compliance Undertake site visits and review documentation to audit implementation of measures at all construction sites	Implement mitigation measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• Excavation will be limited to within the agreed corridor of impact, ideally road reserve • Rehabilitate any disturbed areas beyond footprint of pole foundation to at least original condition through revegetation using native species etc. • Use of auguring to limit the area to be disturbed for installation pole foundation. • Undertake installation of poles during the dry season to minimize exposed areas subject to erosion by surface water runoff.					
Risks of damages to sub-surface utilities and chance find of physical cultural resources during construction.	• Check with relevant local authorities (electric, water, telecoms) whether there are known pipes, cables, or other utility lines and carry out a scan using Cable Avoidance Tool (CAT) to identify any unknown underground utilities prior to excavation • Rehabilitate any damaged utilities to at least original condition in conjunction with relevant local authorities at cost to the Contractor. • Follow chance find procedure if physical cultural resources are found during construction works; if physical cultural resources are encountered, all works at the find site should be immediately halted.	Works in accordance with project EMP and approved CEMP provisions Compliance with national laws and regulations No unresolved grievances from local community Chance find procedure provisions followed	Part of construction cost, to be included in TKC contracts	Supervise and monitor Contractor compliance Undertake site visits using checklist to confirm implementation of measures by Contactor	Supervise and monitor DISCOM/Contractor compliance Undertake site visits and review documentation to audit implementation of measures at all construction sites	Implement mitigation measures
Dust, noise and	• Provide at least one-month advance notice to local community through the village	Comply with CBCB air and	Part of construction	Supervise and monitor	Supervise and monitor	Implement mitigation

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
general disturbance to local community	heads about the schedule of, location plan, and details of planned construction works. • Carry out construction works only during daytime hours (8am-6pm) and on weekdays unless otherwise agreed with the village heads and all adjacent residents/occupants of buildings to avoid noise nuisance. • Noise generating construction-related activities will be avoided during evenings, school hours, prayer times, religious or cultural events in close proximity to the sensitive receptors • Construction noise in the vicinity of houses must be limited to 55dB(A) as 1hour LAeq – if nighttime work is permitted it must be limited to 45dB(A) as 1hour LAeq • If these levels are exceeded, the contractor will be required to implement additional noise mitigation measures such as adjusting his working methods or placing of temporary noise barriers to ensure the noise standard is met. • Construction workers exposure to noise should not exceed the levels set out in the General EHS Guidelines on Occupational Health and Safety otherwise the hearing protection is to be provided • Construction to be conducted using manual and no heavy equipment. • Use low noise generating equipment e.g.	noise standards, or WHO noise guidelines where stricter than the national Works in accordance with EMP measures and approved CEMP Compliance with national laws and regulations No unresolved grievances from local community	cost, to be included in TKC contracts	Contractor compliance Undertake site visits using checklist to confirm implementation of measures If required undertake quantitative dust and noise monitoring to confirm compliance with performance standards at any given location	DISCOM/Contractor compliance Undertake site visits and review documentation to audit implementation of measures at all construction sites	measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	less than 55dBA sound pressure level at 1m • Prohibit the use of horns in areas where sensitive receptors are located (houses, schools, clinics, temples, etc.) • Limit engine idling to maximum 5 minutes • Ensure all construction vehicles are maintained in a good working order and have passed applicable emissions tests • Ensure all stationary emission sources are maintained in good working order in accordance with manufacturer instructions and have passed applicable emission tests • Position any stationary emission sources (e.g. diesel generators, compressors, etc.) as far as practical from sensitive receptors (houses, schools, clinics, temples, etc.) • Impose speed limits on construction vehicles to minimize dust emission along areas where sensitive receptors are located (houses, schools, clinics, temples, etc.) • During the dry season or in windy conditions undertake water sprinkling at least twice a day on unpaved access roads to distribution lines being used by construction traffic but more often if needed during windy conditions that enable dust to be easily mobilized of where sensitive receptors are located (houses, schools, clinics, temples, etc.)					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• Vehicles delivering construction materials shall be covered • Stockpiles of soil and other dust generating materials will be covered with tarpaulin • Provide workers with N95 dust masks to be worn when ambient conditions are dusty or when dust generating activities take place • Open burning of wastes generated by Project-related activities to be strictly prohibited					
Pollution risk and generation of construction wastes	• Implement agreed PPP and follow General EHS Guidelines for the use and storage of fuel, oil, and chemical including prevention and control of hazards associated with spill prevention, emergency response, clean up and contaminated soil remediation • Fuel, oil and chemicals used to be kept under lock and key and stored in labelled, sealed containers on drip trays to provide secondary containment, ideally, they will be located on an impermeable surface and be under cover • Mounting of plant containing oil and diesel on drip trays to catch leaks. • Refueling operations, equipment servicing and washdown to take place on an impermeable surface at least 25m from watercourses, and 50m from springs and wells, with drainage directed through oil and grease interceptors before being discharged into a settling pond prior to	Works in accordance with EMP measures and approved PPP and CWMP Compliance with national laws and regulations No unresolved grievances from local community	Part of construction cost, to be included in TKC contracts	Supervise and monitor Contractor compliance Undertake site visits using checklist to confirm implementation of measures	Supervise and monitor DISCOM/Contractor compliance Undertake site visits and review documentation to audit implementation of measures at all construction sites	Implement mitigation measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	discharge offsite • Provide sufficient absorbent materials (e.g. sorbents, dry sand, sandbags) on-site for soaking up fuel, oil or chemical leaks/spills. • Provide workers with access to an existing functional toilet facility (toilets and hand washing area) or provide a self-contained portable toilet with hand washing facilities (open defecation and use of pit latrines to be prohibited) – generated wastewater to be disposed of to wastewater treatment plant • Construction materials will be sourced from existing approved sources with operating licenses. • Implement agreed CWMP and avoid or minimize the generation of waste materials, as far as is practicable. • Provision of an appropriate domestic solid waste and construction waste collection and disposal system. • Collect and segregate construction wastes including scrap metal, oils, and solid waste. • Store all wastes in designated, labelled area in an environmentally sound manner e.g. oils to be stored in sealed drums on drip trays, solid wastes to be stored in an enclosed bin. • Recover recyclable wastes that could be reused or sold to recyclers. • Prohibit burning of construction wastes.					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• Prohibit dumping of construction wastes into canals, rivers, agricultural fields etc. • Scrap metal waste to be immediately removed off-site to the DISCOM stores for appropriate reuse or disposal with all waste transfer records retained. • Unless reused or sold, other construction waste to be disposed of to a suitably licensed waste management facility (depending on if hazardous or non-hazardous) with all waste transfer records retained. • If existing wooden poles are removed ensure disposed of at facility that can handle potential chemical leaching properties given potential use preservative chemicals. • Other hazardous wastes generated by construction (oily rags etc.) to be disposed of in accordance with the General EHS Guidelines[34] and Government of India's Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.[35]					
Occupational health and safety	• Require workers to confirm they have seen and understood the requirements of the OHS plan before proceeding with the work. • Construction workers to be given medical check up including checks for COVID-19	No fatalities or lost time incidents 100% of H&S	Part of construction cost, to be included in TKC	Supervise and monitor Contractor compliance	Supervise and monitor DISCOM/Contractor compliance	Implement mitigation measures

[34] https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p
[35] http://extwprlegs1.fao.org/docs/pdf/ind183717.pdf

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	symptoms before being allowed on site. • Only allow suitably trained and qualified workers to be allowed to work on electrical equipment and at height, these workers must have training record of attending suitable training course on electrical safety and working at height and have a recent medical checkup to confirm they are fit for work. • Untrained workers and/or workers not passing their medical checkup will not be permitted to work with live electricity or at height. • Provide PPE for workers in accordance with Table 2.7.1. Summary of Recommended Personal Protective Equipment According to Hazard in EHS Guidelines on OHS with additional PPE provided as needed for COVID-19 risks. • Enforce disciplinary system (e.g. immediate removal from site) for non-compliance with PPE requirements • Require workers to observe the EHS Guideline on Construction and Demolition • Require workers to observe EHS Guideline on T&D requirements for working with live power lines • Ensure proper grounding and deactivation of live power lines during construction work or before any work in close proximity to the lines and this will be checked and certified	incidents including near miss recorded, immediately investigated, and corrective action taken to prevent repeat Works in accordance with EMP measures and approved H&S Plans Compliance with national laws and regulations No unresolved grievances from workers or the local community	contracts	Undertake site visits using checklist to confirm implementation of measures	Undertake site visits and review documentation to audit implementation of measures at all construction sites	

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	by Health and Safety Officer in advance. • Only suitably trained workers that meet the requirements set out in EHS Guidelines on Transmission and Distribution (T&D) to be allowed to work on live power lines with strict adherence to safety and insulation standards including those listed in the EHS Guidelines • Require other workers to observe the minimum approach distances for excavations, tools, vehicles, pruning, and other activities when working around power lines • Require workers to observe EHS Guideline on T&D requirements for working at height • Require workers to test the structural integrity of poles prior to proceeding with the work. • Use fall protection measures when working on poles, i.e. mobile elevated working platform, all workers are required to wear body harness. • Unless transformers have been certified PCB free workers must wear suitable chemical and/or oil resistant gloves, goggles, and protective clothing whilst working with transformers. Eye wash station and water supply to shower to be provided on-site during works due to risk of PCB coming into contact with skin. • Handwashing facilities with clean running					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	water supply and soap as well as hand sanitizers and closed bins for disposal of hygiene-related wastes to be provided on-site during works. Display posters to promote handwashing and respiratory hygiene etc. • Sanitation and welfare facilities used by construction workers to be regularly cleaned and disinfected by the contractor. • Ensure employees are able to take time off sick without being penalized, including any self isolation for COVID-19 that is required. • During construction works ensure qualified first aider and trained fire marshal is always available on-site with an appropriately equipped first aid kit and appropriate fire extinguisher and other firefighting equipment immediately available for use • Arrange with nearest Health Center and/or Hospital for emergency cares of workers • Provide workers with access to an existing functional toilet facility (toilets and hand washing area) or provide a self-contained portable toilet with hand washing facilities (open defecation and use of pit latrines to be prohibited) – generated wastewater to be disposed of to wastewater treatment plant • Sufficient toilet facilities should be provided for the number of workers, and there should be an indication of whether the toilet facility is “in use” or “vacant” if not					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	segregated. • Toilet facilities to be provided with adequate supplies of hot and cold running water, soap, and hand drying device. • Provide workers with access to clean eating area with supply of drinking water. • Adequate supplies of potable drinking water meeting national standards should be provided to workers, groundwater must not be used as supply due to arsenic contamination etc. • No forced or child labor to be employed in construction with the minimum age for employment on construction site to be 18 given hazardous nature of works involved.					
Community health and safety such as toppling of concrete poles, traffic and accidents, emergency spill of materials, and access of villagers to dangerous working areas.	• Install on all poles visual and written warning signages to the public to include the ISO 7010 Hazard Type: Electrical Symbol warning of the risk of electrocution. • Install lighting arrestors along all lines. • Provision for ensuring security of the cable to avoid vandalism. • Install around the base of all ground mounted transformers a fence with locked gate and for pole mounted transformers a suitable anti-climbing deterrent, to be used together with suitable warning signs. • Fence and sign immediate working area to prevent public access during construction	No fatalities or lost time incidents 100% of H&S incidents including near miss recorded, immediately investigated, and corrective action taken to prevent repeat Works in accordance with EMP measures	Part of construction cost, to be included in TKC contracts	Supervise and monitor Contractor compliance Undertake site visits using checklist to confirm implementation of measures	Supervise and monitor DISCOM/Contractor compliance Undertake site visits and review documentation to audit implementation of measures at all construction sites	Implement mitigation measures

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	works • Do not leave hazardous conditions (e.g. unlit open excavations without means of escape) overnight unless no access by public can be ensured • Prevent standing water as it may become a breeding habitat for mosquitoes etc. • During construction works provide signage detailing site and office contacts in case of grievance. • Before handover all poles to be confirmed to have adequate foundation that they will remain vertical during operation, and that all the feeder lines are correctly tensioned. • Contractor will ensure affected communities are pre-informed of emergency procedures included in the agreed community health and safety plan and as appropriate given proximity of residents to works included in their mock drills etc. • Contractors staff and local communities will also be given awareness raising in COVID-19, HIV/AIDS, other communicable diseases, and sexual, exploitation, abuse and harassment with strict penalties (e.g. immediate removal from site) for any non-compliance of workers to an agreed code of practice • Display posters to promote handwashing and respiratory hygiene etc.	and approved H&S Plans Compliance with national laws and regulations No unresolved grievances from local community				

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• Wherever possible, the contractor should not discriminate and should proactively encourage the employment of suitably skilled women on the project.					
C. OPERATIONAL AND MAINTENANCE PHASE						
Impacts on occupational health and safety due to exposure to live power lines, working at heights, and risks of accidents (electrocution, lightning, fires and explosion)	• DISCOM to appoint suitably qualified and experienced staff on a full time basis to oversee implementation of environment, health and safety matters across the organization, to provide staff regular trainings, and continually improve compliance with national requirements and good international practice for EHS including health and safety and solid and hazardous waste management in particular • For all maintenance works undertake risk assessment and prepare H&S plan in accordance with EHS Guidelines, considering occupational and community H&S and including adherence to electrical safety standards and emergency preparedness and response plan with communication systems and protocols to report an emergency situation. • Require workers to confirm they have seen and understood the requirements of the OHS plan before proceeding with the work. • DISCOM to conduct training on occupational health and safety for all operations and maintenance workers including refreshers.	No fatalities or lost time incidents 100% of H&S incidents including near miss recorded, immediately investigated, and corrective action taken to prevent repeat Works in accordance with EMP measures and approved H&S Plans Compliance with national laws and regulations No unresolved grievances from local community	DISCOM O&M Budget	DISCOM District Units; under supervision of DISCOM management	Supervise and monitor DISCOM compliance Undertake site visits and review documentation to audit implementation of measures	NA

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	• DISCOM to conduct training of workers on emergency preparedness and response procedures in case of an occupational health and safety incident during operation and maintenance. • Only allow suitably trained and qualified workers to be allowed to work on electrical equipment and at height, these workers must have training record of attending suitable training course on electrical safety and working at height and have a recent medical checkup to confirm they are fit for work. • Provide PPE for workers in accordance with Table 2.7.1. Summary of Recommended Personal Protective Equipment According to Hazard in EHS Guidelines on OHS with additional PPE provided as needed for COVID-19 risks. • Enforce disciplinary system (e.g. immediate removal from site) for non-compliance with PPE requirements • Ensure proper grounding and deactivation of live power lines during maintenance work or before any work in close proximity to the lines • Require workers to test the structural integrity of poles prior to proceeding with the work • Use fall protection measures when working on poles, i.e. mobile elevated working platform, all workers are required to wear					

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	body harness • Require workers to observe the minimum approach distances for excavations, tools, vehicles, pruning, and other activities when working around power lines • During maintenance works ensure qualified first aider and trained fire marshal is always available on-site with an appropriately equipped first aid kit and appropriate fire extinguisher and other firefighting equipment immediately available for use • Arrange with nearest Health Center and/or Hospital for emergency cares of workers • Provide workers with access to an existing functional toilet facility (toilets and hand washing area) or provide a self-contained portable toilet with hand washing facilities (open defecation and use of pit latrines to be prohibited) – generated wastewater to be disposed of to wastewater treatment plant • Occupational EMF exposure should be prevented or minimized through the preparation and implementation of an EMF safety program in accordance with the "Environmental, Health, and Safety Guidelines – Electric Power Transmission and Distribution" (IFC) dated 30 April 2007					
Impacts to community health	• For all maintenance works undertake risk assessment and prepare H&S plan in accordance with EHS Guidelines,	No fatalities or lost time incidents	DISCOM O&M Budget	DISCOM District Units; under	Supervise and monitor	NA

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
and safety such as electrocution and lightning strikes, explosion and fire, and exposure to magnetic field.	considering occupational and community H&S and including adherence to electrical safety standards and emergency preparedness and response plan with communication systems and protocols to report an emergency situation. • DISCOM to conduct training of workers on emergency preparedness and response procedures in case of a community health and safety incident during operation and maintenance. • Undertake public information/awareness campaign covering all Project villages using distribution of posters, leaflets and safety booklets as well as orientation at village level on health and safety risks related to live electric lines and how to avoid or respond to incidents. • Ensure affected communities are pre-informed of emergency procedures included in the agreed community health and safety plan and as appropriate given proximity of residents to works included in mock drills etc. • Regularly inspect (at least quarterly) the condition of poles, lines and transformers to check minimum vertical clearance and protection is maintained; integrity of the poles and line is in good condition; electrical safety warning signs and lighting arrestors in place; missing or corroded parts are immediately identified and	100% of H&S incidents including near miss recorded, immediately investigated, and corrective action taken to prevent repeat Works in accordance with EMP measures and approved H&S Plans Compliance with national laws and regulations No unresolved grievances from local community		supervision of DISCOM management	DISCOM compliance Undertake site visits and review documentation to audit implementation of measures	

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	replaced; that any leaking oil from transformers is immediately addressed; and, the status of any vegetation growth that may damage or threaten the integrity of the lines. • Inspection protocol should include possible conductor snapping and de-energizing of the line within three cycles to avoid the potential for electrocution from a breakage • Keep photographic records and log of all inspections and actions taken in response.					
Disturbance to local community due to operation and maintenance works.	• DISCOM to inform users of the timings of agricultural feeder operation • Preference is to allow electricity to be supplied to agricultural pumps at night due to opportunity for reduced evaporation of water thereby conserving water resources. • Provide awareness raising in respect of energy efficiency measures in order that energy consumption does not significantly increase as a result of increased hours of supply to residential properties. • Provide at least one month advance notice to local community through the village heads about the schedule of, location plan, and details of planned maintenance works. • Carry out maintenance works only during daytime hours and on weekdays unless otherwise agreed with the village heads. • During maintenance works provide signage	Users informed of timings of feeder operation Energy efficiency awareness program delivered Works in accordance with EMP measures and approved H&S Plans Compliance with national laws and regulations No unresolved	DISCOM O&M Budget	DISCOM District Units; under supervision of DISCOM management	Supervise and monitor DISCOM compliance Undertake site visits and review documentation to audit implementation of measures	NA

Environmental Impact	Mitigating Measures	Performance Standard	Budget/ Source	Responsibilities		
				DISCOM (PMA Consultant)	UPPCL PMU (PMC)	Contractor
	detailing site and office contacts in case of grievance. • Implement traffic management controls during maintenance works with advance warning signs or flag persons to ensure health and safety of maintenance workers and road users. • Prohibit the use of herbicides, pesticides or burning to control any vegetation growth or to manage vegetation waste. • Removal and disposal of identified invasive plant species in an ecologically sound manner. • Scrap metal waste to be immediately removed off-site to the DISCOM stores for appropriate reuse or disposal with all waste transfer records retained. • Vegetation and other solid waste to be immediately removed off-site and disposed of to a suitably licensed waste management facility with all waste transfer records retained.	grievances from local community				

Table 2. Project Environmental Monitoring Plan (EMoP)

No.	Environmental Features	Aspect to be Monitored	Time, Frequency, Location and Method of Monitoring	Performance Standard	Responsible party		
					DISCOM PMA (PMA Consultant)	UPPCL PMU (PMC)	Contractor
PRE-CONSTRUCTION STAGE							
1.	PCBs in transformer oil	Transformer oil testing to confirm transformers manufactured before 2016 to be retained as part of the project are PCB free. To start with a representative sample of conservator type transformers should be screened for containing PCBs and if positive should be tested for PCB in a laboratory, starting with those at highest risk of containing PCBs as indicated in Table 16. If any of these are found to contain PCBs then, taking a precautionary approach, the remaining conservator type transformers belonging to the same manufacturers batch should be labelled as positive for PCB and other conservator type transformers at risk should also be tested.	Testing of transformer oil following UNEP Guidelines pre-construction to identify any with PCB	100% of transformers retained as part of the project are confirmed to be PCB free by 2025	DISCOM to facilitate testing by specialists and report at least quarterly to UPPCL	UPPCL to supervise testing and report at least semiannually to ADB	N/A
2.	Dust levels	Baseline dust levels for feeder separation subprojects based on sample subproject components.	Undertake PM10 monitoring taking 24-hour averages once over a fortnight during dry season, using professional, calibrated portable monitoring devices in	National standards for PM10 24 hour, no change from available baseline if WHO 24-hour guidelines exceeded	DISCOM to undertake testing (or arrange for it to be undertaken e.g. by TRTA Consultant) and report at	UPPCL to supervise testing and report at least semiannually to ADB	N/A

No.	Environmental Features	Aspect to be Monitored	Time, Frequency, Location and Method of Monitoring	Performance Standard	Responsible party		
					DISCOM PMA (PMA Consultant)	UPPCL PMU (PMC)	Contractor
			at least one typical village per subproject.		least quarterly to UPPCL		
3.	Noise levels	Baseline noise levels for feeder separation subprojects based on sample subproject components.	Undertake noise monitoring as 1hr LAeq over a 48-hour period, using professional, calibrated portable monitoring devices in at least one typical village per subproject.	Noise level limited to 55dB(A) as 1hour LAeq day and 45dB(A) as 1hour LAeq at night, no change from available baseline >3dBA if WHO guidelines exceeded	DISCOM to undertake testing (or arrange for it to be undertaken e.g. by TRTA Consultant) and report at least quarterly to UPPCL	UPPCL to supervise testing and report at least semiannually to ADB	N/A
CONSTRUCTION STAGE							
4.	Construction materials and wastes	Materials used and waste generated during construction	Record all construction materials used and waste generated by construction (including type, volumes, sources, and disposal routes with copies of licenses if third parties are used)	100% of materials used and waste generated sourced or disposed of in environmental sound manner	DISCOM to supervise record keeping and to report at least quarterly to UPPCL	UPPCL to supervise record keeping report at least semiannually to ADB	Contractor to keep records and report monthly to DISCOM

No.	Environmental Features	Aspect to be Monitored	Time, Frequency, Location and Method of Monitoring	Performance Standard	Responsible party		
					DISCOM PMA (PMA Consultant)	UPPCL PMU (PMC)	Contractor
5.	Trees	Number of trees removed and replanted during construction	Record all trees removed during construction, compensation paid, and replacements planted (including location, species, size, and, economic value) and monitor their current health and survival status, for up to two years following plantation	100% of trees removed compensated for or with 10:1 replacement by native tree species remaining established after two years	DISCOM to supervise record keeping and to report at least quarterly to UPPCL	UPPCL to supervise record keeping report at least semiannually to ADB	Contractor to keep records and report monthly to DISCOM
6.	Health and safety; injury to workers and villagers	Health and safety incidents (near miss including fires, minor, lost time, and fatal) to workers and villagers	Record all incidents associated with construction and responses taken (including date, time, and, details of incident, treatment given and the outcome)	Zero lost time or fatalities 100% lost time and fatalities reported to DISCOM/UPPCL in 24 hours For 100% incidents immediate action taken to avoid repeat	DISCOM to supervise record keeping and to report quarterly to UPPCL but to report lost time and fatalities within 24 hours	UPPCL to supervise record keeping and report semiannually to ADB, but to report lost time and fatalities to ADB within 48 hours	Contractor to keep records and report monthly to DISCOM, but to report lost time and fatalities to DISCOM and direct to UPPCL within 24 hours
7.	Dust levels	Only required if DISCOM/UPPCL are concerned Contractor is not complying with the EMP measures or there are grievances raised related to dust generation.	Undertake PM10 monitoring taking 24-hour averages once over a fortnight with active earthworks during dry season, using professional, calibrated portable monitoring devices.	National standards for PM10 24 hour, no change from available baseline if WHO 24-hour guidelines exceeded	DISCOM to undertake testing (or arrange for it to be undertaken e.g. by TRTA Consultant) and report at	UPPCL to supervise testing and report at least semiannually to ADB	N/A

No.	Environmental Features	Aspect to be Monitored	Time, Frequency, Location and Method of Monitoring	Performance Standard	Responsible party		
					DISCOM PMA (PMA Consultant)	UPPCL PMU (PMC)	Contractor
					least quarterly to UPPCL		
8.	Noise levels	Only required if DISCOM/UPPCL are concerned Contractor is not complying with the EMP measures or there are grievances raised related to noise generation.	Undertake noise monitoring as 1hr LAeq over a 48-hour period twice during active construction and once on completion prior to handover, using professional, calibrated portable monitoring devices.	Noise level limited to 55dB(A) as 1hour LAeq day and 45dB(A) as 1hour LAeq at night, no change from available baseline >3dBA if WHO guidelines exceeded	DISCOM to undertake testing (or arrange for it to be undertaken e.g. by TRTA Consultant) and report at least quarterly to UPPCL	UPPCL to supervise testing and report at least semiannually to ADB	N/A
OPERATION STAGE							
9.	Trees	Number of trees replanted surviving during operation	Record the current health and survival status of all replacement trees, for up to two years following plantation	100% of replacement trees remaining established after two years	DISCOM to keep records and to report at least quarterly to UPPCL	UPPCL to supervise record keeping report at least semiannually to ADB	N/A
10.	Health and safety; injury to workers and villagers	Health and safety incidents (near miss including fires, minor, lost	Record all incidents associated with project facilities and	Zero lost time or fatalities	DISCOM District Units to report	UPPCL to supervise record	N/A

No.	Environmental Features	Aspect to be Monitored	Time, Frequency, Location and Method of Monitoring	Performance Standard	Responsible party		
					DISCOM PMA (PMA Consultant)	UPPCL PMU (PMC)	Contractor
		time, and fatal) to workers and villagers	responses taken (including date, time, and, details of incident, treatment given and the outcome)	100% lost time and fatalities reported to DISCOM/UPPCL in 24 hours For 100% incidents immediate action taken to avoid repeat	quarterly to UPPCL but to report lost time and fatalities within 24 hours	keeping and report semiannually to ADB, but to report lost time and fatalities to ADB within 48 hours	

Table 3. Common Corrective Action Plan for Existing Substations

No.	Issue	Corrective Action	By whom	By when	Budget (source)
SHORT TERM CORRECTIVE ACTIONS					
1	**Housekeeping / Waste Management**	• Label and move all drums of transformer oil and other stored fuels or chemicals to a covered, impermeable, 110% bunded area. If bunded area is not currently available on-site then store them temporarily on drip trays undercover. • Identify and cover all open ducts, channels, holes in the floor of buildings with solid panel or grating to remove trip hazards. • Identify and demark within the SS compound appropriate waste storage yard and for storage of oil barrels etc. • Collect all debris to remove trip hazards and segregate all solid and hazardous waste and ensure environmentally sound storage of all solid and hazardous waste in dedicated, labelled areas in the waste storage yard. • Quantify and request stores to remove current scrap metal and electronic wastes stored on site; remove and transport all stored scrap metal waste from substation to DISCOM stores. • Quantify and request stores to remove any old transformers and oil stored on site; remove and transport all stored transformers and oil from substation to DISCOM stores.	DISCOM / SS Managers to implement, supervised by UPPCL PMU	Immediately to be completed by DISCOMs before any project works utilizing this substation	DISCOM SS operational budget.
2	**Transformer Oil Leakage**	• Soak up existing oil spills and remove soil to depth 30cm for 1m beyond footprint for disposal to hazardous landfill site by reputable, legitimate,			

No.	Issue	Corrective Action	By whom	By when	Budget (source)
		licenced contractor keeping photographic records and waste transfer notes. • Extra gravel to at least 30cm depth extending 1m beyond footprint to be placed to intercept and prevent any further oil percolation into the ground. • Provide in a signed, accessible location on-site enough absorbent materials (e.g. sorbents, dry sand, sandbags) to soak up oil spills.			
3	**Lighting and Ventilation**	• If existing lighting does not provide enough illumination to meet EHS Guideline standards *(Table 2.3.3. Minimum Limits for Workplace Illumination Intensity in OHS Guidelines)* install additional illumination • Ensure existing ventilation ducts are always kept open.	DISCOM / SS Managers to implement, supervised by UPPCL PMU	Immediately to be completed by DISCOMs before any project works utilizing this substation	DISCOM SS operational budget.
4	**First Aid Equipment**	• Ensure appropriately equipped first aid kits available at first aid stations in each working area and building to be signed and easily accessible; to include list of equipment and use by dates. • Ensure that a qualified first-aider is always provided on-site; this can be a member of staff trained in first aid. • Eye-wash station and/or emergency shower to be provided, locate close to working area where immediate flushing with water is recommended first-aid response.	DISCOM / SS Managers to implement, supervised by UPPCL PMU	Immediately to be completed by DISCOMs before any project works utilizing this substation	DISCOM SS operational budget.
5	**Fire Safety Equipment**	• In each working area and building provide fire extinguishers and other manual fire fighting equipment maintained in good working order and	DISCOM / SS Managers to implement, supervised by UPPCL PMU	Immediately to be completed by DISCOMs before any project works utilizing this substation	DISCOM SS operational budget.

No.	Issue	Corrective Action	By whom	By when	Budget (source)
		readily accessible – number to be adequate for size of premises, equipment installed, physical and chemical properties of substances present, and the maximum number of people present. • Ensure that a fire marshal is always provided on-site; this can be a member of staff trained in emergency procedures to follow in event of fire.			
6	**Community Health and Safety**	• Erect a new or maintain existing fence with locked gates around the SS compound to prevent access by unauthorised persons if there are gaps • Provide appropriate signage to warn of electrical hazards to include the ISO 7010 Hazard Type: Electrical Symbol warning of the risk of electrocution • Erect a new or maintain existing fence around the transformer and switch yard appropriately signed to include the ISO 7010 Hazard Type: Electrical Symbol	DISCOM / SS Managers to implement, supervised by UPPCL PMU	Immediately to be completed by DISCOMs before any project works utilizing this substation	DISCOM SS operational budget.
LONG TERM CORRECTIVE ACTIONS					
7	**Housekeeping / Waste Management**	• Develop and cascade to all SS for implementation a standardized hazardous materials and waste management system/procedure in accordance with national laws and regulations and the EHS Guidelines on Hazardous Materials Management and Waste Management. • If waste generation cannot be avoided but has been minimized, the preference should be recovery and reuse. • Where waste cannot be recovered or	UPPCL/DISCOMs to develop system/procedure and provide training with technical support TRTA consultant	By project completion, 2025-2029 depending on legal requirements	TRTA Budget and DISCOM SS operational budget.

No.	Issue	Corrective Action	By whom	By when	Budget (source)
		reused, reputable, legitimate, licensed contractors must be appointed to treat, destroy and dispose of it in an environmentally sound manner. • Develop as part of the system/procedure a checklist for SS managers to follow on correct storage and disposal of old transformers, transformer oils, other fuel, oil, lubricants, and chemicals, scrap metals and electronic wastes, lead acid batteries, municipal solid wastes, etc. • Once stockpiled waste cleared enough workers and vehicles to remain available to collect from all the SS on a regular basis. • Provide training to all SS managers on implementation of the hazardous materials and waste management system/procedure and use of the checklist on storage and disposal (document training and attendance)			
8	**Transformer Oil Leakage**	• Carry out preventive maintenance of transformers and ensure values, nuts and bolts are fully functional and tightly secured, ensure rubber seals of radiators are intact, continue to do so on a regular basis. • Existing concrete foundations for transformers to be retrofitted so that an impermeable platform extends 1m beyond the footprint and incorporate elevated impermeable bunds to 110% capacity above the highest known flood level. • If not available construct dedicated, covered, bunded impermeable area to	DISCOM / SS Managers to implement, supervised by UPPCL PMU	By project completion, 2025-2029 depending on legal requirements	DISCOM SS operational budget.

No.	Issue	Corrective Action	By whom	By when	Budget (source)
		110% for storage of new transformer oil to prevent the leakage of oil into the ground. • Test for PCBs in accordance with the EMP and label transformers as PCB free or containing PCBs in accordance with international good practice and keep inventory of equipment and the PCB status on-site. • Soil and groundwater investigation to be undertaken by suitably qualified consultant to confirm extent of any contamination across/beneath SS from oil leaks and spills and determine if additional remedial measures required.			
9	**Fire Safety Equipment**	• In control buildings, all rooms to be installed with fire detectors with visible and auditable alarm.	DISCOM / SS Managers to implement, supervised by UPPCL PMU	By project completion, 2025-2029 depending on legal requirements	DISCOM SS operational budget.
10	**Handling Emergencies**	• Develop and implement emergency preparedness and response plans for (i) environmental incident, (ii) health and safety incident in accordance with the General EHS Guidelines to include details of emergency equipment on site, DISCOM designated team, nearest doctors, hospital, fire station, monthly testing of fire alarms, emergency preparedness and response training plan, and quarterly emergency drills with records.	DISCOM / SS Managers to implement, supervised by UPPCL PMU	By project completion, 2025-2029 depending on legal requirements	DISCOM SS operational budget.
11	**Health and Safety of Staff**	• Conduct health and safety training and awareness workshop for staff – the importance of safety needs to be stressed to effect behavioral/attitudinal change	DISCOM / SS Managers to implement, supervised by UPPCL PMU	By project completion, 2025-2029 depending on legal requirements	DISCOM SS operational budget.

No.	Issue	Corrective Action	By whom	By when	Budget (source)
		• PPE (footwear, masks, protective clothing and goggles in appropriate areas) to be provided to the staff in accordance with Table 2.7.1. Summary of Recommended Personal Protective Equipment According to Hazard in EHS Guideline on OHS with additional PPE provided as needed for COVID-19 risks • Introduce disciplinary system for non-compliance with PPE requirements to enforce their use in accordance with the DISCOM requirements for work being carried out • Periodic checks of safety kits at substations should be carried out, recorded and information on the same should be monitored as per operating procedures. • Survey for asbestos containing materials in existing control buildings following national requirements that exist and international good practice; retain copy of survey on site for future record.			
12	**Drainage**	• Identify areas of the SS most susceptible to flooding from experience. Install underground drainage pipe or channel of enough size to accommodate runoff around the perimeter of SS site with oil interceptor fitted on the outlet into the drainage system outside the boundary of the SS. • Once built, the drainage pipe or channel must be kept clear of scrap-metal and other solid waste in order to not clog the hydraulic flow into the drainage outside.	DISCOM / SS Managers to implement, supervised by UPPCL PMU	By project completion, 2025-2029 depending on legal requirements	DISCOM SS operational budget.
13	**Sanitation and Welfare Facilities**	• Provide SS staff with access to an	DISCOM / SS	By project	DISCOM SS

No.	Issue	Corrective Action	By whom	By when	Budget (source)
		existing functional toilet facility (toilets and hand washing area) connected to existing sewerage system or functional septic tank with soakaway or provide a self-contained portable toilet with hand washing facilities (use of pit latrines to be prohibited). • Toilet facilities to be provided with adequate supplies of hot and cold running water, soap, and hand drying device as well as a lock or an indication if occupied. • Provide SS staff with access to indoor kitchen facilities and a clean eating and rest area that has an adequate supply of drinking water. • Supply of potable drinking water meeting national standards to be available to SS staff.	Managers to implement, supervised by UPPCL PMU	completion, 2025-2029 depending on legal requirements	operational budget.

Appendix 5: Records of Public Consultations

Table 1: DVVNL Consultation Meeting Summaries

Date	Venue	No. Participants	Issues discussed / remarks
Zone: Agra Zone 2			
June 28, 2019	Village: **Daudpur** District: Agra	Total: 11 persons Male: 11 persons Female: 0 persons **Participants:** village residents	There are about 500 HH in the village. 80% of the village land is used for agriculture. The typical agricultural land holding size is 4 acres per family. 100% of the HH are electrified and have access for about 18 hours a day. Residents complained that they would prefer longer electricity supply – 24 hours instead of 18 hours. The population is 4,000 people, with a voting size of 2,500 people. Not all are employed in the agricultural sector. While majority are, there are servicemen and women from Government, army, police as well as teachers. The main crops that are grown are wheat, bajra, sorghum, potato, mustard and cotton. Dalbergia sissoo – or Sheesham tree as it is locally known – Neem, Peepal, Babool and Papri are the primary endemic trees of the area. Main animals include cows, buffalos and Nilgai (Asian antelope) – they are not endangered. There is a National Park approximately 2 km from the feeder, the Keoladeo National Park in Rajasthan. Residents said that they go to the forest land in Rajasthan for various uses (recreational, wood etc.), but are not concerned about this project affecting the forest. Groundwater is the primary source of water for residents. However, they say they cannot use it for drinking. The water level is at 150-200 ft, they use electricity for extracting it (not handpumps). There are no historical resources along the feeder line. Nearest Hospital is in Samara, which is 3 km from the village. However, that is a small hospital. Therefore, for major illnesses, residents travel to Bharatpur (24 km away) to access better health care in a larger hospital. Respondents appreciated being made aware of the project and support it fully.

Date	Venue	No. Participants	Issues discussed / remarks
			
June 28, 2019	Village: **Utto** District: Agra	Total: 7 persons Male: 7 persons Female: 0 persons **Participants:** village residents	Utto is a small village with 80 HH, and a population of 400 – 1000. Only 65 to 70% of the HH are electrified for about 16 hours/day. Almost the entire village population is involved in agriculture, with a few exceptions, who run their own stores. Some of the respondents complained about the dust generated from red stone cutting businesses in the area. However, residents are grateful to the Government for introducing a ban on red stone cutting in the area.

Village -Dandpur, Feeder Name - Dandpur 27.072839, 77.528973

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Mr. Radha Shyam Dagur	50	M	High School	Agriculture	No	
2.	Kanaiya lal	70	M	BTC	Head Master Agriculture	No	
3.	Mohan Singh	62	M	8th	Labour Agriculture	No	
4.	Girdhar Singh	55	M		Labour	No.	
PTW 5.	Madan Singh	65	M	8	Agriculture	No	
PTW 6.	Ram Murti	"	M	8th	Agri	No	
7.	Kapil Singh	23	M	Graduate	Teaching	No	Kapil
PTW. 8.	Jai Pal	32	M	BA.	Agri	No	
PTW. 9.	Hem Chand	32	M	10th	Agri	No	
Shed 10.	Nek Ram	60	M	8th	Agri	No.	
Not connected (No meter) 11.	Mahendra	35	M	12th	Labour	No	

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Date	Venue	No. Participants	Issues discussed / remarks
			Ground water is the main source of water for the residents, and the water table is at 150 ft, residents use electricity for extraction and as such if electricity supply is hindered, then water access is directly impacted. The respondents do not believe there will be any pollution caused by the proposed project. There are no historical resources along the existing feeder line. The respondents said that the Keoladeo National Park and Fatehpur Sikri (a World Heritage Site 15-20 km distant) are too far for negative impacts. Neem, Peepal and Babul are the primary endemic trees of the area. Main animals include cows, buffalo and Nilgai. The respondents said there were no endangered animal species in the area. No healthcare access in the village; nearest hospitals are Fatehpur Sikri and Kurawali.

Date	Venue	No. Participants	Issues discussed / remarks
			
June 28, 2019	Village: **Dabar** District: Agra	Total: 13 persons Male: 13 persons Female: 0 persons **Participants:** village residents	The residents were generally optimistic about the Project and welcomed it. There are about 400 HH in the village; of which 95% are electrified for 15 to 16 hours/day. The total population of the village is between 4,000 to 4,500 people (about 2,200 of whom are of voting age). The respondents say that electricity supply of 16 hours/day is adequate, however, voltage regulation can be an issue. Most of the population is working in agriculture on their own farms, while some are daily laborers. The main crops that are grown are sugarcane and wheat, while minor crops are mustard, potato, corn and tomatoes. Neem, Peepal and Babool are the primary endemic trees of the area. Main animals include farm animals and dairy cattle.

Village - Utto , Feeder Name - Dawalpur

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Mr ~~Sehdev~~ Sehdev Solanki	50	M	12th	Agri/Shop	No	
2.	Raj Kumar	23	M	BSC	Studying	No	
3.	Rohit Solanki	20	M	BA (Final)	Studying	No	
4.	Anil Chowdhary	24	M	Graduate	Studying	No.	
5.	Arjun Singh	55	M	10th	Agri	No.	
6.	Harendra Singh	32	M	10th	Agri/Labour	No.	
7.	Veer Singh	65	M	8th	Agri	No.	
8.							
9.							

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Date	Venue	No. Participants	Issues discussed / remarks
			The respondents did not say they had any major concerns about the project other than that they would prefer that pole erection and cabling work be carried out between cropping seasons, in order to prevent any forgone income. There are no historical resources along the feeder line. Ground water is the main source of water for the residents, some said that it is potable. The residents use handpumps and private tube wells for ground water extraction. The water table is at 500-600 ft. There are no hospitals in the area, the nearest Hospital is in Fatehpur Sikri, at about 15 to 20 km. The respondents found the consultation useful as they felt it was important for the village residents to be aware of any upcoming project.

Date	Venue	No. Participants	Issues discussed / remarks

Village - Dabar , Feeder Name - Dabar

LIST OF PARTICIPANTS

S.No. (Pradhan)	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Dharam Singh	52	M	BSc (LLB)	Lawyer, Agri, Dairy	No.	
2.	Geeta Ginesh Chand	64	M	10th	Agri	No.	
3.	Devi Singh	72	M	10th	Agri	No.	
4.	Attar Singh	53	M	12th	Agri	No.	
5.	Damodar	66	M	10th	Agri	No.	
6.	Vijay Singh	46	M	M.A.	Agri	No.	
7.	Prashant Faujdar	25	M	Diploma	Shop	No.	
8.	Mahesh Singh	47	M	5th	Agri/Labour	No.	
9.	Chandan Singh	67	M	12th	Agri	No.	
10	Lal Singh	41	M	-	Agri/Labour	No.	
11.	Rajveer Singh	45	M	12th	Agri	No.	
12.	Raju	50	M	-	Agri	No.	
13.	Gopal	45	M	5th	Agri/Labour	No.	

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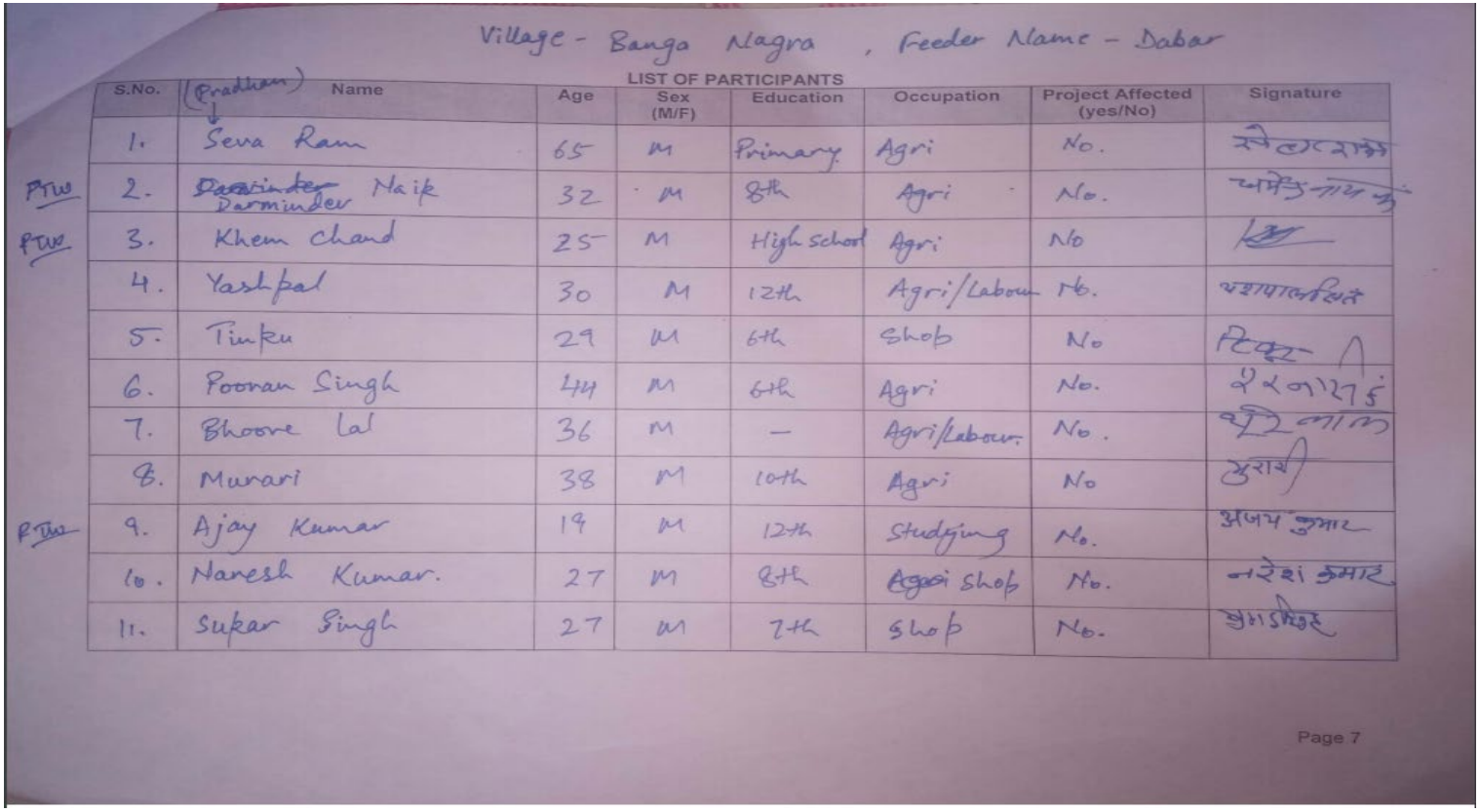
Date	Venue	No. Participants	Issues discussed / remarks
			
June 28, 2019	Village: **Banja Nagra** District: Agra	Total: 11 persons Male: 11 persons Female: 0 persons **Participants:** village residents	There are about 225 to 250 households (HH) in the village; of which 90% are electrified for 14 to 15 hours/day (those HH which are not formally electrified connect their homes through hooking). The total population of the village is between 1,800 to 2,000 people (about 700 to 800 of whom are of voting age). The respondents complained that their supply is at least 2 hours less than neighboring villages (Dabar and Sirauli). As such, they were very supportive of the feeder separation project. 95% of the population is working in agriculture on their own farms; each land holding is about 1.5 acres. The main crops that are grown are wheat, potatoes and sorghum. The respondents only major concern was less crop production during installation work of the project. Neem, and Babool are the primary endemic trees of the area. Main animals include farm and dairy animals. There are no endangered animal species in the area. There are no historical resources or protected forest areas in the area. Ground water is the main source of water for the residents, some said that it is potable. The residents use handpumps for ground water extraction. The water table is at 300-350 ft. The respondents say that there is a shortage of water. However, they do not believe that the project will negatively impact their water access.

Date	Venue	No. Participants	Issues discussed / remarks
			There are no hospitals in the area. The nearest Hospital is in Fatehpur Sikri, at about 15 to 20 km. The respondents showed support for the project and were keen to assist the project in any way they can.



Village - Banga Nagra , Feeder Name - Dabar

LIST OF PARTICIPANTS

S.No.	(Pradhan) Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Seva Ram	65	M	Primary	Agri	No.	
PTW 2.	~~Parminder~~ Parminder Naik	32	M	8th	Agri	No.	
PTW 3.	Khem Chand	25	M	High school	Agri	No	
4.	Yashpal	30	M	12th	Agri/Labour	No.	
5.	Tinku	29	M	6th	Shop	No	
6.	Pooran Singh	44	M	6th	Agri	No.	
7.	Bhoore lal	36	M	—	Agri/Labour	No.	
8.	Murari	38	M	10th	Agri	No	
PTW 9.	Ajay Kumar	19	M	12th	Studying	No.	
10.	Naresh Kumar.	27	M	8th	~~Agri~~ Shop	No.	
11.	Sukar Singh	27	M	7th	Shop	No.	

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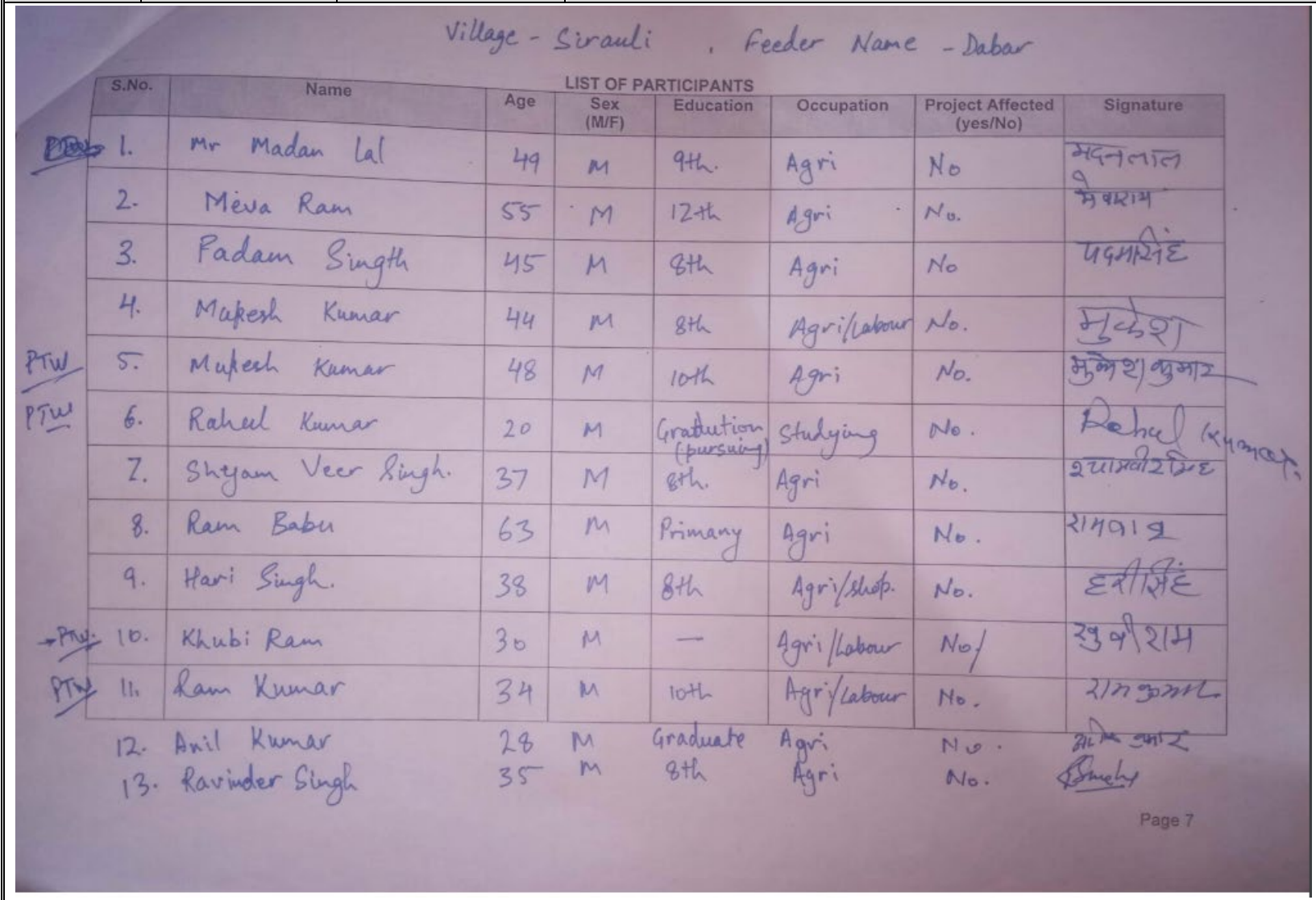
Date	Venue	No. Participants	Issues discussed / remarks
			
June 28, 2019	Village: **Sirauli** District: Agra	Total: 13 persons Male: 13 persons Female: 0 persons **Participants:** village residents	There are about 350 HH in the village; of which 100% are electrified for 15 to 16 hours/day. The total population of the village is between 2,300 to 2,400 people (about 1,300 to 1,350 of whom are of voting age). The respondents complained about low voltage, especially at night. As such, they support the project to reduce overloading. 90% of the village land is agricultural land; each land holding is about 1 to 1.25 acres. Half of the village population is employed in agriculture, while the other half are laborers. The main crops that are grown are wheat, potatoes, corn and pulses. Keekar and Babool are the primary endemic trees of the area. The only animals are farm animals; there are no endangered animal species in the area. There are no historical resources, or protected forest areas in the area. Ground water is the main source of water for the residents; however, they are dependent on electricity supply for their access to drinking water; they do not use handpumps – only submersible pumps/tube well. The water table is at 250-300 ft; some people also complained that the water contains chloride (not verified). Access to potable drinking water was the principal concern of the participants but they do not believe that this project will exacerbate their challenges to clean drinking water access.

Date	Venue	No. Participants	Issues discussed / remarks
			There are no hospitals in the area. The nearest Hospital is in Fatehpur Sikri, at about 15 to 20 km. Out of 13 participants, 8 found the consultation useful while 5 did not. However, all would support the project.

Date	Venue	No. Participants	Issues discussed / remarks



Village - Sirauli , Feeder Name - Dabar

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Mr Madan Lal	49	M	9th.	Agri	No	मदनलाल
2.	Meva Ram	55	M	12th	Agri	No.	मेवाराम
3.	Padam Singth	45	M	8th	Agri	No	पदमसिंह
4.	Mukesh Kumar	44	M	8th	Agri/Labour	No.	मुकेश
5.	Mukesh Kumar	48	M	10th	Agri	No.	मुकेश कुमार
6.	Rahul Kumar	20	M	Graduation (pursuing)	Studying	No.	Rahul Kumar
7.	Shyam Veer Singh.	37	M	8th.	Agri	No.	श्यामवीरसिंह
8.	Ram Babu	63	M	Primary	Agri	No.	रामबाबू
9.	Hari Singh.	38	M	8th	Agri/Shop.	No.	हरीसिंह
10.	Khubi Ram	30	M	—	Agri/Labour	No/	खुबी राम
11.	Ram Kumar	34	M	10th	Agri/Labour	No.	रामकुमार
12.	Anil Kumar	28	M	Graduate	Agri	No.	अनिल कुमार
13.	Ravinder Singh	35	M	8th	Agri	No.	Ravinder

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Date	Venue	No. Participants	Issues discussed / remarks
			
June 29, 2019	**Village:** Khera Bakanda (along Feeder No. 2) District: Agra	Total: 11 persons Male: 11 persons Female: 0 persons **Participants:** village residents	There are about 225 to 250 HH in the village. Of this, 10 to 15 are landless. 100% of the houses are electrified, with supply of electricity between 15 to 16 hours. Most of the families are involved in agriculture, while some work as laborers, or private shop owners. The residents' primary complaint is that the voltage is low. The main crops that are grown are wheat, potato, pulses, corn and bajra. Neem, Babul and Peepal, are the primary endemic trees of the area. Main animals include cows, goat and sheep. None of the respondents face major/severe negative environmental impacts at present. They complained that the ground water is not suitable for drinking, and ground water is the main source of water for the residents. The water table is 50 to 60 ft below; residents use submersible pumps to extract water for domestic use. There are no conflicts in accessing water, and the water use is divided according to area – each private land is 0.80 to 1 acre. There is no large water body or stream that the feeder line currently crosses. There are no historical resources along the feeder line. No medical care facility in the village. The nearest one village residents go to is in Kurawali (about 8 km away). The respondents support the project. They do not foresee any negative environmental impact from the implementation of this project.

Date	Venue	No. Participants	Issues discussed / remarks

Village - Khera Bakanda , Feeder Name - Feeder No. 2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Bane Singh	45	M	8th	Labour/Agri	No.	
2.	Rajveer	23	M	Graduate	Studying	No.	
3.	Lokesh	21	M	12th	Driver	No.	
4.	Mahesh Chand	38	M	8th	Agri	No	
5.	Shiv Prasad	30	M	12th	Labour	No.	
6.	Padam Singh	55	M	8th	Agri	No.	
7.	Amarjeet	35	M	12th	Agri/Labour	No	
8.	Krishna	19	M	12th, ITI	Studying	No.	
9.	Mukesh	26	M	Graduate	Studying	No	
10.	Hari Chandra	39	M	8th	Agri	No	
11.	Harendra Singh	20	M	Graduate	Studying	No.	

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Date	Venue	No. Participants	Issues discussed / remarks
			
June 29, 2019	**Village:** Santha Village: (along Feeder No. 2) District: Agra	Total: 11 persons Male: 11 persons Female: 0 persons **Participants:** village residents	There are about 350 HH in the village. 100 % of the houses are electrified, with supply of electricity between 16 to 18 hours. The residents' primary complaint is that the electricity supply is irregular and as such, they support this project if the irregular supply will be addressed. Most of the families are involved in agriculture, while some work as laborers. Furthermore, there are some private shop owners. The main crops that are grown are wheat, bajra and potatoes. Neem, Babul and Keekar, are the primary endemic trees of the area. Main animals include cows and buffalos. At present, the respondents face air and dust pollution, but were also quick to point out that it was not so severe. However, they complain that the ground water is not suitable for drinking, and ground water is the main source of water for the residents. The water table is at 40 ft below; residents use handpumps to extract water for domestic use. For irrigation, they use private tube well. There is no large water body or stream that the feeder line currently crosses. There are no historical resources along the feeder line. No medical care facility in the village. The nearest facility village residents go to is in Kurawali (about 8 km away). For major medical reasons, they travel to Agra (30 km). Only some of the respondents found the consultation useful. Nevertheless, they support the project. They do not foresee any negative environmental impact from the implementation of this project. The only concern the residents have is reduction in crop production during implementation of the project. However, if that does not interfere with their yields, they fully support the project.

Date	Venue	No. Participants	Issues discussed / remarks
			
June 29, 2019	**Village:** Singarpur (along Feeder No. 2) District: Agra	Total: 11 persons Male: 11 persons Female: 0 persons **Participants:** village residents	There are about 90 to 110 HH in the village; with about 90 to 95% own agricultural land. 100 % of the houses are electrified, with supply of electricity between 17 to 18 hours. The residents had no complaints about current electricity supply. In fact, they all responded that supply has in fact improved recently. Most of the families are involved in agriculture, while some work as laborers on other families' land. The main crops that are grown are wheat, cotton, bajra, potatoes chilies and tomatoes. Neem, and Peepal are the primary endemic trees of the area. There are no endangered animals in the area.

Village - Santha , Feeder Name - Feeder No.2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Luv Kush	29	M	12th	Agri	No.	
2.	Sodan Singh	65	M	8th	Agri	No	
3.	Laxman Singh	56	M	10th	Agri	No	
4.	Om prakash	26	M	12th	Agri/Shop	No.	
5.	Ashwani Sisodiya	24	M	12th	Agri	No.	
6.	Ravi	40	M	8th	Labour	No.	
7.	Raghunath	30	M	10th.	Agri	No.	
8.	Sirendra Singh	35	M	12th	Agri	No.	
9.	Ram Prakash	55	M	B Ed.	Agri/Labour	No.	
10.	Gaurav Singh	35	M	10th	Agri	No.	
11.	Mahendra Singh	30	M	Graduate	Job	No.	

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Date	Venue	No. Participants	Issues discussed / remarks
			At present, the respondents don't face any environmental pollution. However, as is in many of the other villages, they complain that the ground water quality not being suitable for drinking, and ground water is the main source of water for the residents. The water table is at 50 to 60 ft below; residents use handpumps to extract water for domestic use, but there are only 3 to 4 handpumps in the village. As such, there is always queuing for domestic water use. However, there is no conflict to access water. Of the 11 people surveyed, 5 responded that the project will not adversely impact water or soil resources in the area; while the rest of the 6 participants said that it is too early to tell and that they can't definitively answer. There is no large water body or stream that the feeder line currently crosses. There are no historical resources along the feeder line. No medical care facility in the village. The nearest facility village residents go to is in Kurawali (about 8 km away). Respondents found the consultation useful and were happy to make other residents aware of the project, participants supported the project.

Date	Venue	No. Participants	Issues discussed / remarks

Village - Singarpur , Feeder Name - Feeder No. 2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
PTW 1.	Amar Singh	60	M	5th	Labour/Agri	No.	
2.	Tez Singh	55	M	—	Labour	No.	
PTW 3.	Ramesh	35	M	5th	Labour/Agri	No.	
PTW 4.	Mahavir	18	M	9th	Labour/Agri	No	
5.	Teeja Solanki	41	M	10th	Repairing shed	No	
6.	Santosh Baghel	18	M	9th	Labour	No	
7.	Bheeri Singh	25	M	12th	Labour/ Agri.	No	
PTW 8.	Mahaveer Singh	28	M	8th	Flour Mill/ Atta	No.	
9.	Ramesh	28	M	12th	Studying	No.	
10.	Vijay Singh Rana.	32	M	12th	Flour Mill	No.	
11.	Naseer Ahmad	20	M	12th	Tailor	No.	

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Date	Venue	No. Participants	Issues discussed / remarks
			
June 29, 2019	**Village: Mori (along Feeder No. 3)** **District: Agra**	Total: 6 persons Male: 6 persons Female: 0 persons Participants: village residents	There are about 100 households (HH) in the village, and about 90 families own agricultural land, of about 2 Acres per family. 85% of the houses are electrified legally (remaining connect to the line illegally), with supply of electricity between 16 to 17 hours/day. As with the other consultations, most of the families are involved in agriculture, while some work as laborers, or private shop owners. The main crops that are grown are wheat, potato, pulses, chili and cotton. Babul and Keekar are the primary endemic trees of the area. Main animals include cows and buffalo for farming. The residents' primary complaint is that the voltage is low especially at night; or when irrigation is required. After explaining the project to participants, all agreed that the project is needed. Their biggest concern is quality of supply and believe that the project will enhance the quality of the supply. There are no protected areas or forests along the feeder line. There are no historical resources along the feeder line. None of the respondents face major/severe negative environmental impacts at present. However, the participants mentioned that water is the biggest concern, both quantity and quality. Ground water is the main source of water for the residents. The water table is 50 to 60 ft below but is not or cannot be used for drinking purposes. The residents use handpumps pumps to extract water for domestic use. However, the respondents do not think that the project will negatively impact their water supply or quality. There is no large water body or stream that the feeder line currently crosses.

Date	Venue	No. Participants	Issues discussed / remarks
			No medical care facility in the village. The nearest one village residents go to is in Kirawali The respondents support the project. They do not foresee any negative environmental impact from the implementation of this project.
			
June 29, 2019	**Village: Nagla Shyuram (along Feeder No. 3) District: Agra**	Total: 11 persons Male: 9 persons Female: 2 persons	There are about 140 to 150 households (HH) in the village. 100% of the houses are electrified, with supply of electricity between 16 to 17 hours. 50% of the HH work in agriculture, while the other 50% work as laborers. The main crops that are grown are wheat, pulses, bajra and potatoes.

Village - Mori , Feeder Name - Feeder No. 3

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Rajan Singh	76	M	10th	Agri	No.	
2.	Akshay Kumar	24	M	BA	Business	No.	
3.	Vipin Kumar	32	M	12th	Job	No.	
4.	Shree Bachu Singh	60	M	8th	Agri	No.	
5.	Dwarika	47	M	–	Agri	No.	
6.	Ram Singh	41	M	10th	Agri/Labour	No	

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Date	Venue	No. Participants	Issues discussed / remarks
		Participants: village residents	The residents do not have any current complaints about the project. They are satisfied with the supply of electricity at present. For this reason, the participants' only concern was that the project may interfere with their crop production. As such, they voiced their request that installation work take place after their harvests, so the project does not result forgone crop income. There are no endangered animals in the area. Respondents do not face any environmental pollution, this included water pollution. Ground water is their primary water source. The water table is at 50 ft and is potable, unlike the observations from other consultations. There is no large water body or stream that the feeder line currently crosses. There are no historical resources along the feeder line. Participants do not foresee any negative environmental impact from the implementation of this project. As mentioned above, the only concern the residents have is reduction in crop production during implementation of the project. However, if that does not interfere with their yields, they fully support the project.

Date	Venue	No. Participants	Issues discussed / remarks

Village - Nagla Shyuram , Feeder Name - Feeder No. 3

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Puspendra Singh	25	M	Graduate	Agri.	No.	
2.	Raj Rajveer Singh	60	M	—	Agri	No	
3.	Kamlesh	50	F	—	Housewife/ Agri	No	
4.	Prem Singh	32	M	12th	Flour Mill.	No.	
5.	Rajveer	48	M	—	Agri	No.	
6.	Krishan Pal	38	M	8th	Agri/Labour	No.	
7.	Seesh Pal	40	M	5th	Labour	No.	
8.	Vikram	45	M	10th	Agri/Shop	No.	
9.	Ramwati	32	F	5th	Shop/Agri	No	
10.	Mukesh	35	M	10th	Labour/Agri	No.	
11.	Bachu Singh	55	M	8th	Agri	No.	

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Date	Venue	No. Participants	Issues discussed / remarks
			
June 29, 2019	**Village: Nahchani (along Feeder No. 3) District: Agra**	Total: 11 persons Male: 7 persons Female: 4 persons Participants: village residents	There are about 400 to 410 households (HH) in the village; with about 90 to 75% own agricultural land; each holding is about 1.5 to 2 acres. 100 % of the houses are electrified, with supply of electricity between 16 to 18 hours. Most of the families are involved in agriculture, while some work as laborers on other families' land. Neem, Babul and Keekar are the primary endemic trees of the area. There are no endangered animals in the area. Most common animals are domesticated goats, sheep and cows. The main crops that are grown are wheat, pulses, corn and tomatoes. The residents had no complaints about current electricity supply. In fact, as was the case in Nagla Shyuram, the supply has in fact improved drastically. The only point of the project that respondents raised was the pole erection should be done on the boundaries of the field, rather than in the farmland. At present, the respondents don't face any environmental pollution. Furthermore, another similarity to Nagla Shyuram consultations, is that the ground water is potable. The water table is at 80 to 100 ft. Residents use a combination of handpumps and submersible pumps to extract the fresh, potable water. No water shortage problems faced. Of the 11 people no one feared that the project would impact water or soil resource in the area. There is no large water body or stream that the feeder line currently crosses. There are no historical resources along the feeder line. No medical care facility in the village. The nearest facility village residents go to is in Kirawali.

Date	Venue	No. Participants	Issues discussed / remarks
			All of the respondents found the consultation useful and were happy to make residents aware of the project. Participants support the project and do not envisage any adverse environmental impacts from the project.

Village - Nahchani , Feeder Name - Feeder No. 3

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1.	Digambar Singh	58	M	Graduate	Agri	No.	
2.	Shyam Singh	55	M	8th	Agri	No.	
3.	Birender Kumar	28	M	12th	Agri/Driver	No.	
4.	Vijay Pal Singh	58	M	BA	Agri	No.	
5.	~~Kashmeer~~ Krishanveer	50	M	10th	Agri	No.	
6.	Kali charan Singh	52	M	8th	Agri	No.	
7.	Maharveer Singh	65	M	12th	Agri	No.	
8.	Rashmi Devi	22	F	10th	Housewife	No.	
9.	Raj Kumari	48	F	5th	Housewife	No.	
10.	Dharamwati Devi	50	F	5th	Housewife/ Shop	No.	
11.	Guddi Devi	42	F	10th	Housewife	No	

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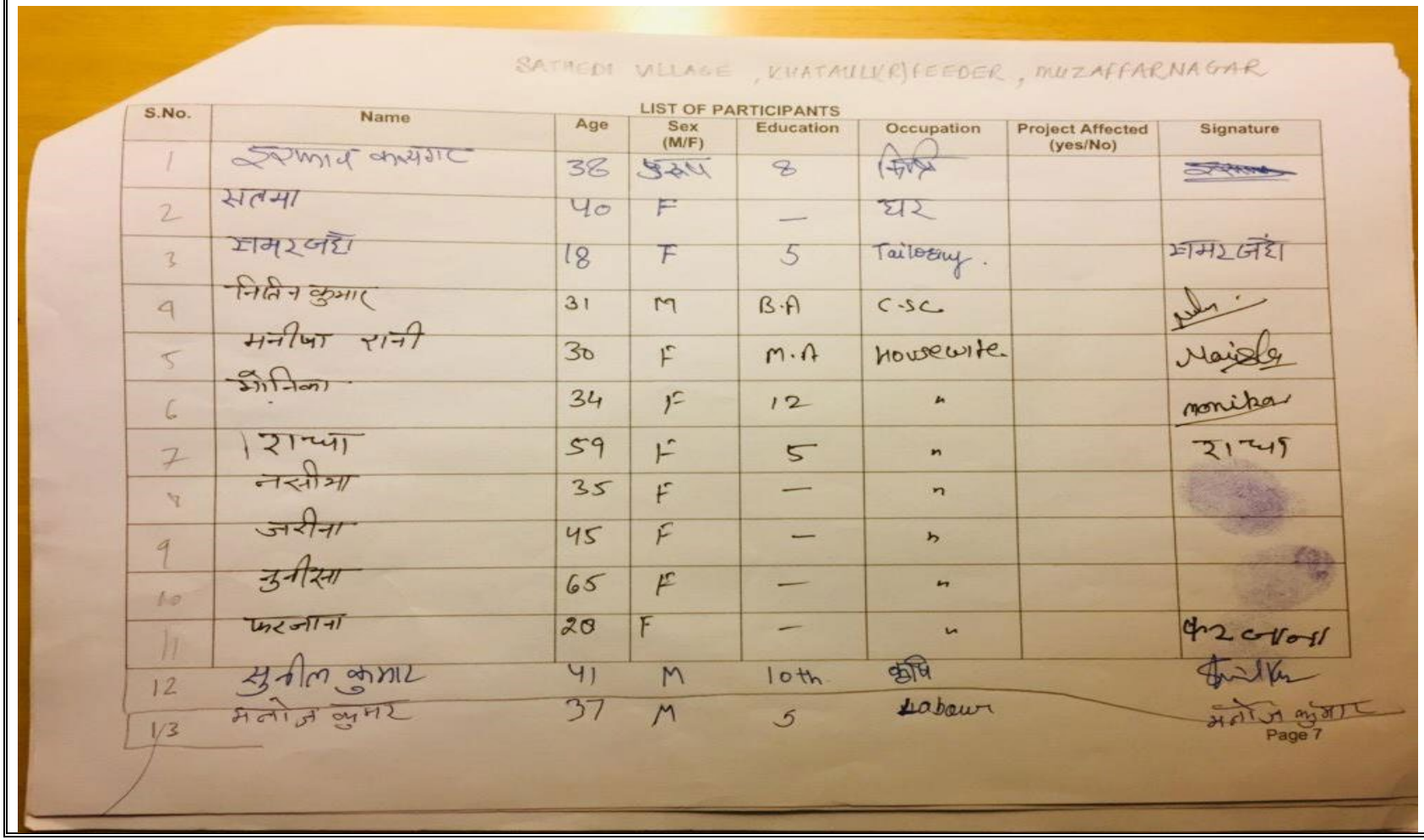
Date	Venue	No. Participants	Issues discussed / remarks
			

Table 2: PVVNL Consultation Meeting Summaries

Date	Venue	No. Participants	Issues discussed / remarks
Zone: Saharanpur			
October 13, 2019	Village: **Satheri** District: Muzaffarnagar	Total: 20 persons Male: 11 persons Female: 9 persons **Participants:** Village Pradhan (village head), village residents	The residents were generally optimistic about the project and welcomed the project as it would enhance the quality of their electricity supply. There are about 800 to 1000 households (HH) in the village; of which 80% are working in agriculture on their own farms; while the rest are involved as agricultural laborers on others' farms. The main crops that are grown are sugarcane (from March to November) and wheat (December to February). Eucalyptus trees, Dalbergia sissoo – or Sheesham tree as it is locally known – and Mango are the primary endemic trees of the area. Main animals include wild hogs, cows, dogs and undomesticated cattle. Of the 800-1000 HH, 100% are electrified, and have access between 15 to 18 hours a day. However, residents complained that the timings of electricity supplied is not consistent every day. Ground water is the main source of water for the residents. The residents said that they are fortunate to have an abundance of water as the water table is just 8 to 10 ft; residents use handpumps for extracting water for domestic use.

Date	Venue	No. Participants	Issues discussed / remarks
			There used to be five industrial plants operating in the area. However, they shut down due to high electricity costs. During the period of operation, residents recalled the air and water pollution from the plants. However, ever since the plants were shut down, the residents were not concerned with any form pollution. Moreover, the residents do not feel that pole erection will cause any adverse environmental damage and are thus not averse to it, if it is not on their private lands. There are no historical resources along the feeder line. Government hospital (CSE Khatauli) is about 5km from the center of the village. As mentioned above, the only major concerns the residents consulted had was that poles are not erected in the middle of their farmlands. However, if poles are erected on existing access road RoW, they do not feel that this project would have any adverse environmental impacts on them, and decisively welcome the project.

Date	Venue	No. Participants	Issues discussed / remarks



SATHEDI VILLAGE , KHATAULI(R) FEEDER , MUZAFFARNAGAR

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1	इमाद कासगर	38	पुरुष	8	किसान		
2	सलमा	40	F	—	घर		
3	समरजहाँ	18	F	5	Tailoring.		समरजहाँ
4	नितिन कुमार	31	M	B.A	C.S.C.		
5	मनीषा रानी	30	F	M.A	Housewife.		Manisha
6	मोनिका	34	F	12	"		monika
7	राच्चा	59	F	5	"		राच्चा
8	नसीमा	35	F	—	"		
9	जरीना	45	F	—	"		
10	जुनैसा	65	F	—	"		
11	फरजाना	20	F	—	"		फरजाना
12	सुनील कुमार	41	M	10th	कृषि		
13	मनोज कुमार	37	M	5	Labour		मनोज कुमार

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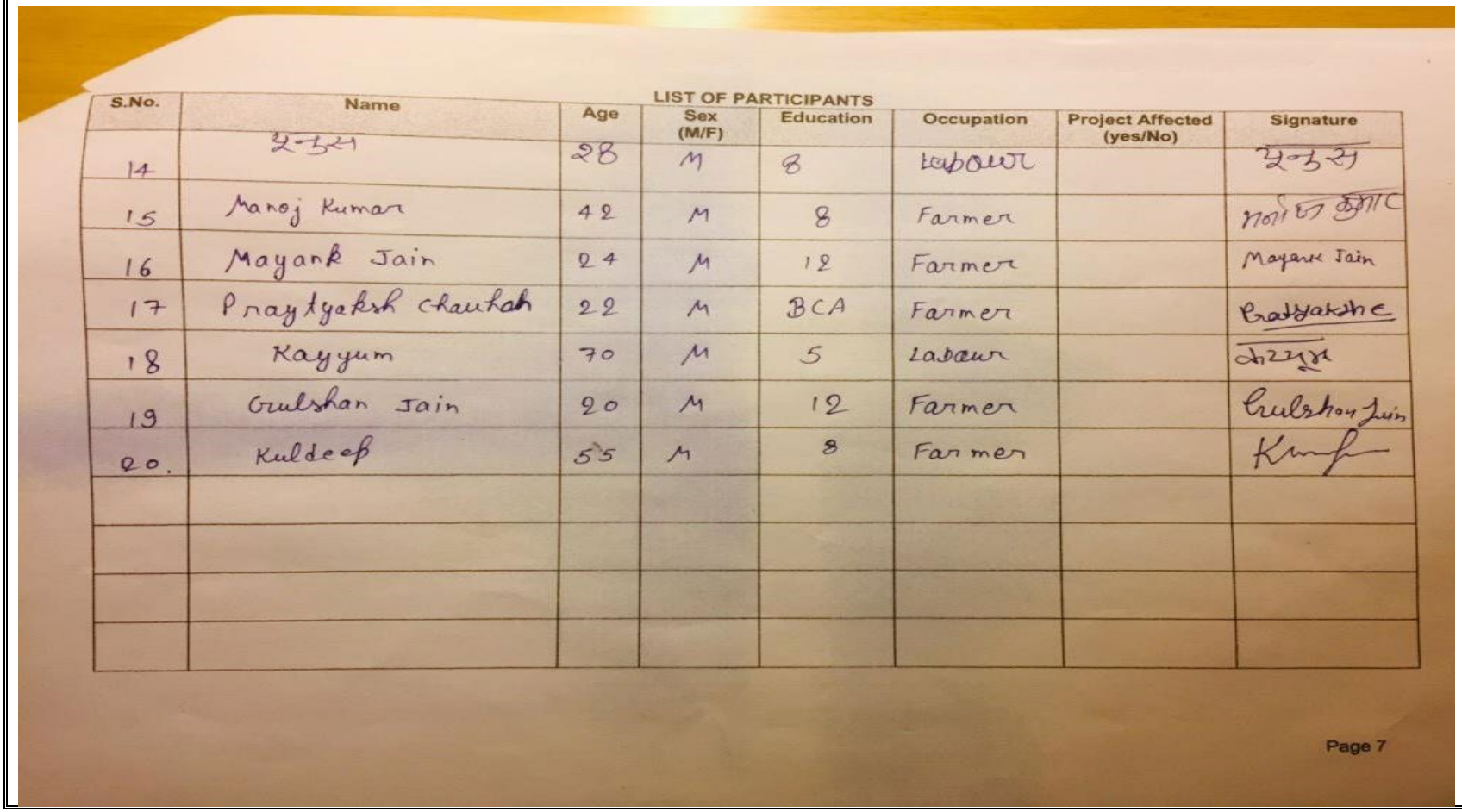
Date	Venue	No. Participants	Issues discussed / remarks



LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
14	[illegible]	28	M	8	Labour		[illegible]
15	Manoj Kumar	42	M	8	Farmer		[illegible]
16	Mayank Jain	24	M	12	Farmer		Mayank Jain
17	Prayatyaksh Chauhan	22	M	BCA	Farmer		Prayatyaksh
18	Kayyum	70	M	5	Labour		[illegible]
19	Gulshan Jain	20	M	12	Farmer		Gulshan Jain
20.	Kuldeep	55	M	8	Farmer		[illegible]

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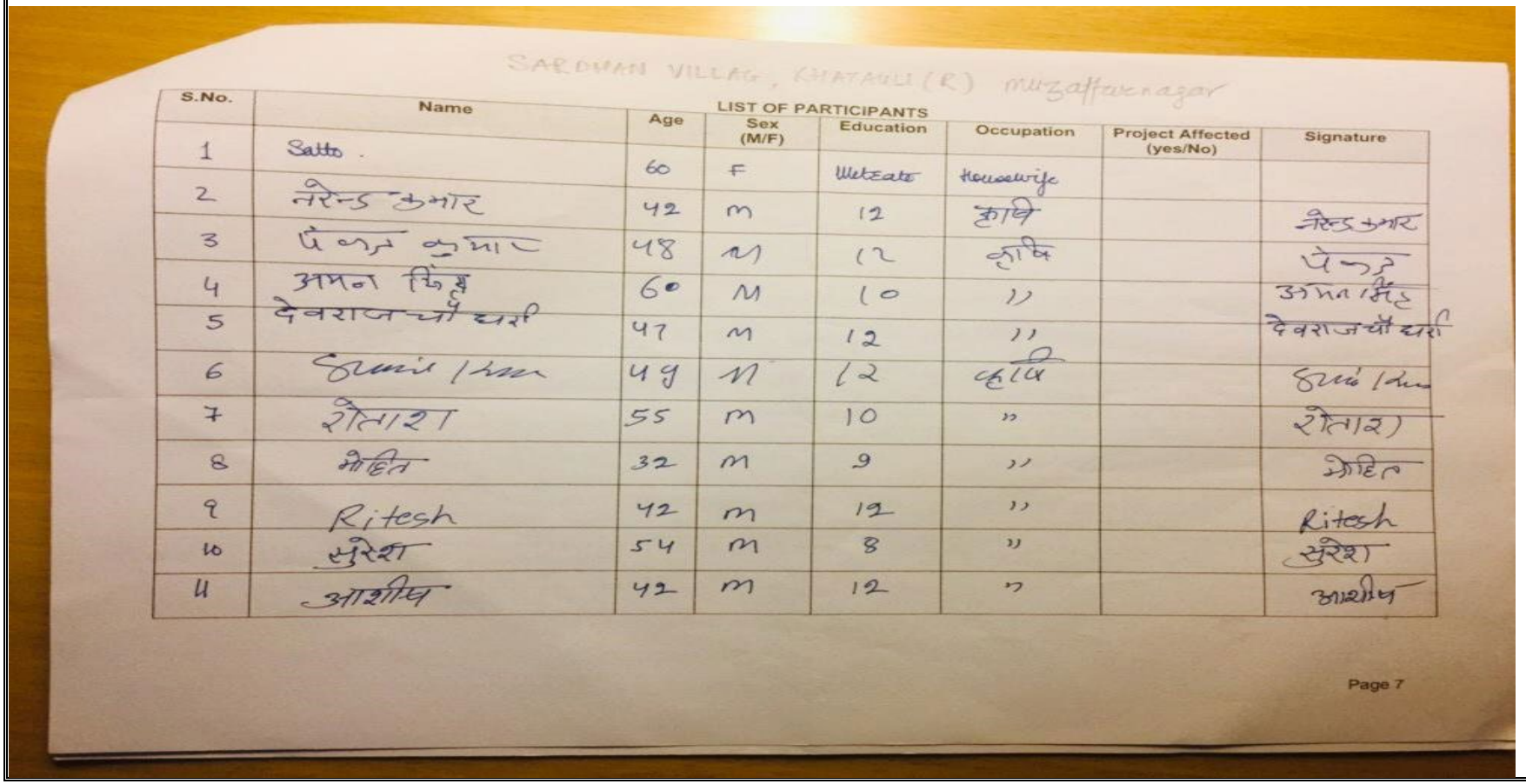
Date	Venue	No. Participants	Issues discussed / remarks
			
Zone: Saharanpur			
October 13, 2019	Village: **Sardhan** District: Muzaffarnagar	Total: 18 persons Male: 10 persons Female: 8 persons **Participants:** Village Pradhan (village head), village residents	It is important to note that women in this village did not feel comfortable attending discussions in the presence of men. As a result, consultations with women were carried out separately; and they were not comfortable with their photographs to be taken. There are about 100 – 150 HH in Sardhan Village; of which 50% work in agriculture and 50% work in the service sector as laborers. Sugarcane and wheat are the principal crops grown in the village. Eucalyptus trees, Sheesham, Mango, Neem, and Jamun are the primary endemic trees of the area. Main animals include undomesticated cattle and buffalo. Of the 100 - 150 HH, 100% are electrified, and have access between 14 to 15 hours a day. One of the main concerns of the residents consulted was that of faulty billing by PVVNL. Some participants of the consultations were very discontent and thought that our consultation may be a good platform to convey that. However, the project team was quick to point out that it was not the appropriate forum for that discussion.

Date	Venue	No. Participants	Issues discussed / remarks
			However, the residents were very supportive of the feeder separation project. The respondents said that after the separation project, domestic electricity consumption will increase, as they will be less load shedding, which in turn will enhance the standards of living of the village community. Ground water is the main source of water for the residents, and the water table is at 20 ft; residents use diesel generators in this village for extracting water for domestic use. While water quantity is adequate, water quality is not. The main environmental complaint of residents was ground water pollution from Khatuali Colony. Raw sewerage from Khatauli is polluting the groundwater which is being extracted by downstream residents of Sardhan village. Villagers have lodged formal complaints and are waiting to hear back from authorities. The respondents do not believe there will be any pollution caused by the proposed project. There are no historical areas along the feeder line. Government hospital (CSE Khatauli) is about 5-6km from the center of the Village.

Date	Venue	No. Participants	Issues discussed / remarks



SARDHAN VILLAGE, KHATAULI (R) MUZAFFARNAGAR

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1	Satto	60	F	Illiterate	Housewife		
2	नरेन्द्र कुमार	42	M	12	कृषि		नरेन्द्र कुमार
3	पेंकज कुमार	48	M	12	कृषि		पेंकज
4	अमन सिंह	60	M	10	"		अमन सिंह
5	देवराज चौधरी	47	M	12	"		देवराज चौधरी
6	[illegible]	49	M	12	कृषि		[illegible]
7	रोताश	55	M	10	"		रोताश
8	मोहित	32	M	9	"		मोहित
9	Ritesh	42	M	12	"		Ritesh
10	सुरेश	54	M	8	"		सुरेश
11	आशीष	42	M	12	"		आशीष

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Date	Venue	No. Participants	Issues discussed / remarks

Sardhan Village 2/2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
12.	Jaiwati	65.	F	—	Housewife		जयवती
13.	पूनम	48	F	10th	,,		पूनम
14.	सोनिया	23	F	B.A	,,		सोनिया
15.	संतोष	38	F	—	,,		
16.	निरमला	50	F	5th pass	,,		निरमला देवी
17	रेशा	65	F	—	,,		
18	रुकसाना	35	F.	—	,,		

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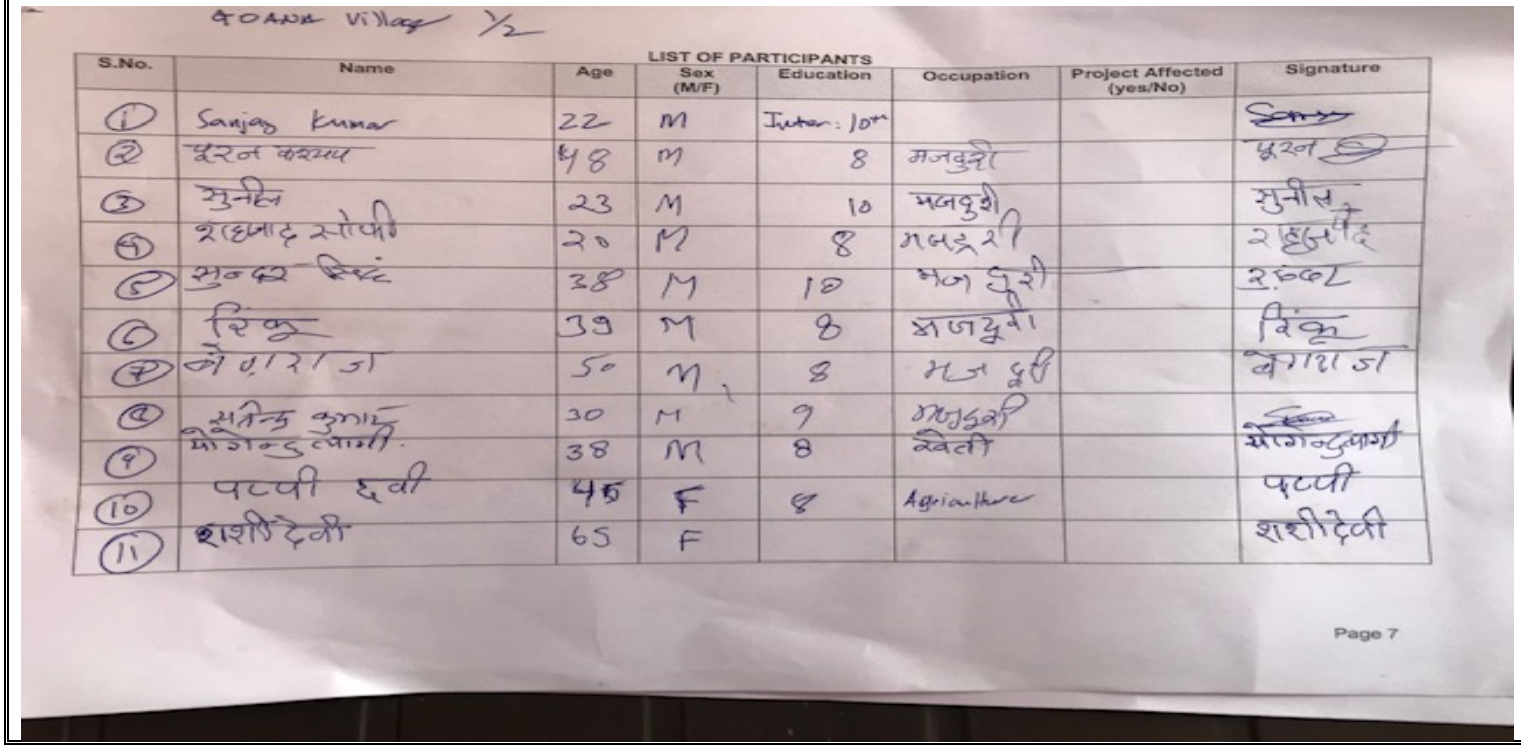
Date	Venue	No. Participants	Issues discussed / remarks
			
Zone: Bulandshahr			
October 14, 2019	Village: **Goana** District: Hapur	Total: 19 persons Male: 17 persons Female: 2 persons **Participants:** Village Pradhan (village head), village residents	The residents were supportive the project. There are about 600 households (HH) in the village; of which 80% are working in agriculture on their own farms while the rest are involved as agricultural laborers on others' farms. The main crops that are grown are sugarcane, wheat, potato, mustard, and rice. Dalbergia sissoo – or Sheesham tree as it is locally known – and mango are the primary endemic trees of the area. Main animals include wild monkeys and undomesticated cattle – about which the participants voiced their dissatisfaction. When cows can no longer produce milk, villagers let them into the wild. This practice wreaks havoc, as the then undomesticated cows ruin valuable crops. Of the 600 HH, 100% are electrified, and have access between 17 to 18 hours a day. However, residents complained that the timings of electricity supplied is not consistent every day. Ground water is the main source of water for the residents, which is available at 70 to 90 ft below. However, ground water pollution from improper effluent disposal from nearby factories is increasingly a concern for the residents of the village. There are no historical resources along the feeder line from the substation to Goana village.

Date	Venue	No. Participants	Issues discussed / remarks
			Village participants were not concerned about any environmental risks posed by the feeder separation project. Their concerns were primarily socio-economic in nature i.e. pole should not be erected in the middle of their lands. The main concern is that fallen poles may result in fires, which would in turn ruin their crop and hence their livelihoods.



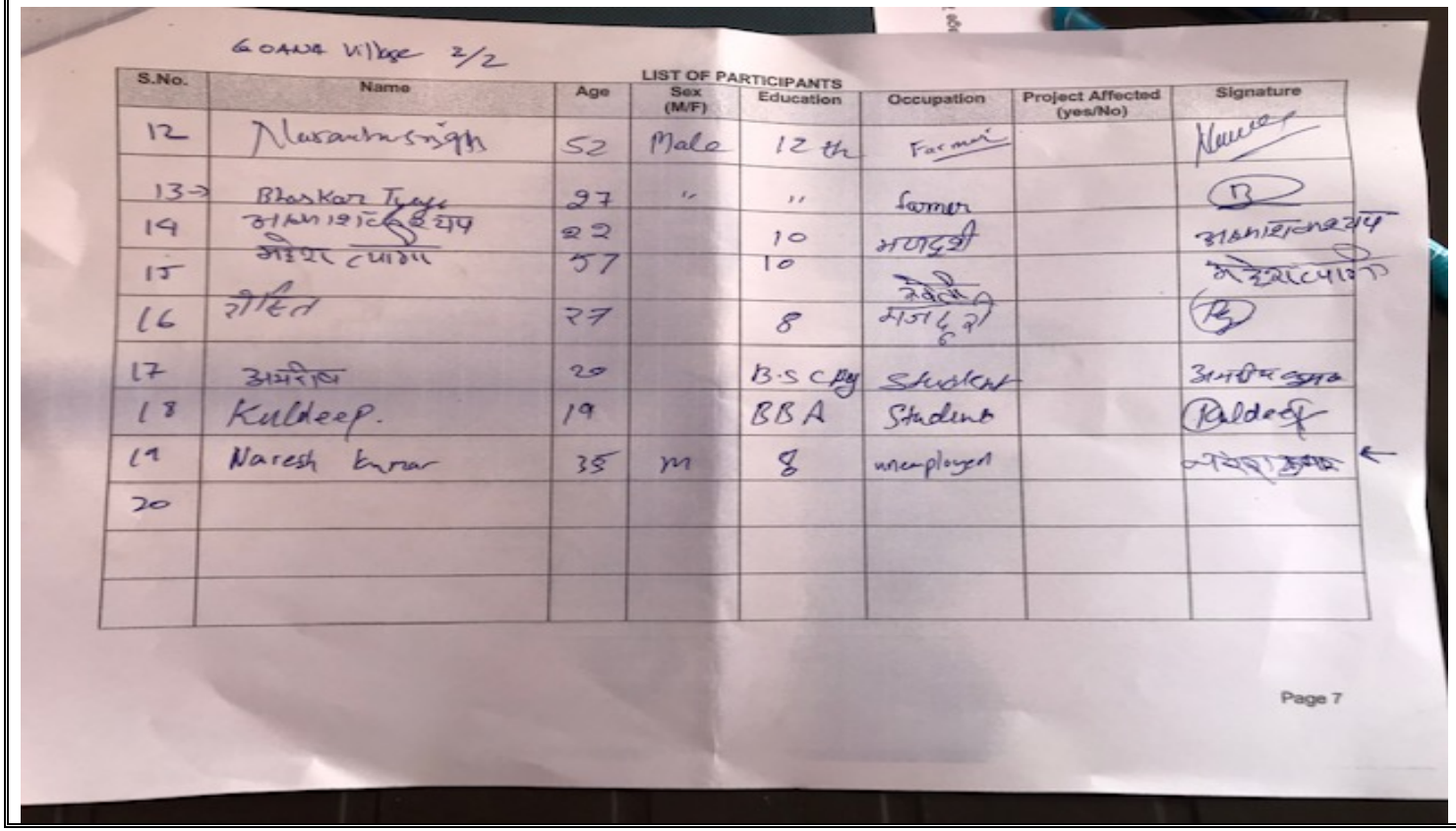
KOANA Village 1/2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1	Sanjay kumar	22	M	Inter: 10th			
2	दूरन कश्यप	48	M	8	मजदूरी		दूरन
3	सुनील	23	M	10	मजदूरी		सुनील
4	शहजाद सोपी	20	M	8	मजदूरी		शहजाद
5	सुन्दर सिंह	38	M	10	मजदूरी		सुन्दर
6	रिंकू	39	M	8	मजदूरी		रिंकू
7	बेगराज	50	M	8	मजदूरी		बेगराज
8	सतेन्द्र कुमार	30	M	9	मजदूरी		
9	योगेन्द्र वर्मा	38	M	8	खेती		योगेन्द्र वर्मा
10	पट्टी देवी	45	F	8	Agriculture		पट्टी
11	शशी देवी	65	F				शशी देवी

Page 7

Date	Venue	No. Participants	Issues discussed / remarks



GOANA Village 2/2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
12	Narendra Singh	52	Male	12 th	Farmer		
13	Bhaskar Tyagi	27	"	"	farmer		
14	[illegible]	22		10	मजदूरी		
15	[illegible]	57		10	[illegible]		
16	रोहित	27		8	मजदूरी		
17	अमरीष	20		B.S C Ag	Student		
18	Kuldeep.	19		BBA	Student		
19	Naresh Kumar	35	M	8	unemployed		
20							

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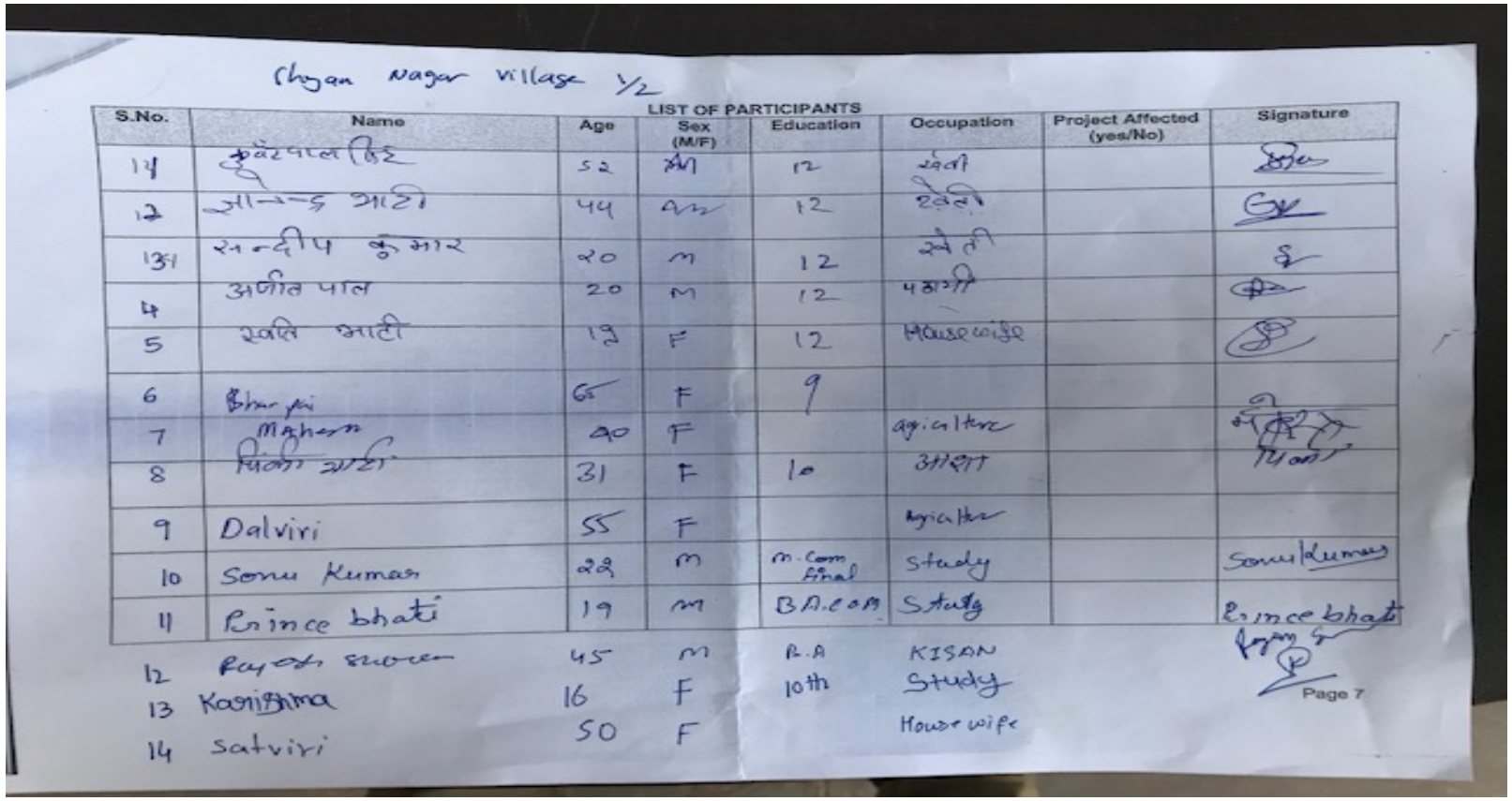
Date	Venue	No. Participants	Issues discussed / remarks
			
October 14, 2019	Village: **Shyam Nagar** District: Hapur	Total: 22 persons Male: 12 persons Female: 10 persons **Participants:** Village Pradhan (village head), village residents	The residents, particularly the women, seemed genuinely interested in learning more about the project and understanding its benefits. There are about 387 HH in Shyam Nagar Village; of which 80% work in agriculture and 20% work as laborers in the service sector. The main crops grown are sugarcane, wheat, potato, mustard, and rice. Of the 387 HH, 100% are electrified, but electricity supply in inconsistent, with residents complaining that are left with no option but to use inverters for 5-6 hours a day. As such, this project was very much welcomed. Mango, Neem and Sheesham, are the primary endemic trees of the area. Main animals include wild monkeys and domestic cattle. Ground water is the main source of water for the residents, there is a major concern of groundwater pollution from nearby industries (Century Industry have papermills and plywood factories about 2-3 km away) which have contaminated the ground water due to improper

Date	Venue	No. Participants	Issues discussed / remarks
			industrial effluent disposal. The water table is receding and is currently at 70 ft. However, due to the ground water contamination, residents must extract water from greater depths (120 ft) – using submersible pumps – to ensure safe water quality. Furthermore, residents of Shyam Nagar Village feel the air pollution from the factories and complain of respiratory difficulties. The respondents, however, do not believe there will be any pollution caused by the proposed project. There are no historical resources along the feeder line. There are no health facilities in the village but there is a Government hospital in Hapur which is about 4-5 km away. Overall, the response from the respondents, including the women who actively participated, was very positive. They feel that this project's benefits far outweigh the costs. Moreover, they understand that the minor and temporary disturbances will occur only during pole erection, for which they are not concerned about any negative environmental impacts.



Chyan Nagar Village 1/2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
14	[illegible]	52	M	12	[illegible]		
12	[illegible]	44	M	12	[illegible]		
13	[illegible]	20	M	12	[illegible]		
4	[illegible]	20	M	12	[illegible]		
5	[illegible]	19	F	12	Housewife		
6	[illegible]	65	F	9			
7	[illegible]	40	F		agriculture		
8	[illegible]	31	F	10	[illegible]		
9	Dalviri	55	F		Agriculture		
10	Sonu Kumar	29	M	M.Com final	Study		Sonu Kumar
11	Prince bhati	19	M	B.A.com	Study		Prince bhati
12	[illegible]	45	M	B.A	KISAN		
13	Kashishma	16	F	10th	Study		
14	Satviri	50	F		House wife		

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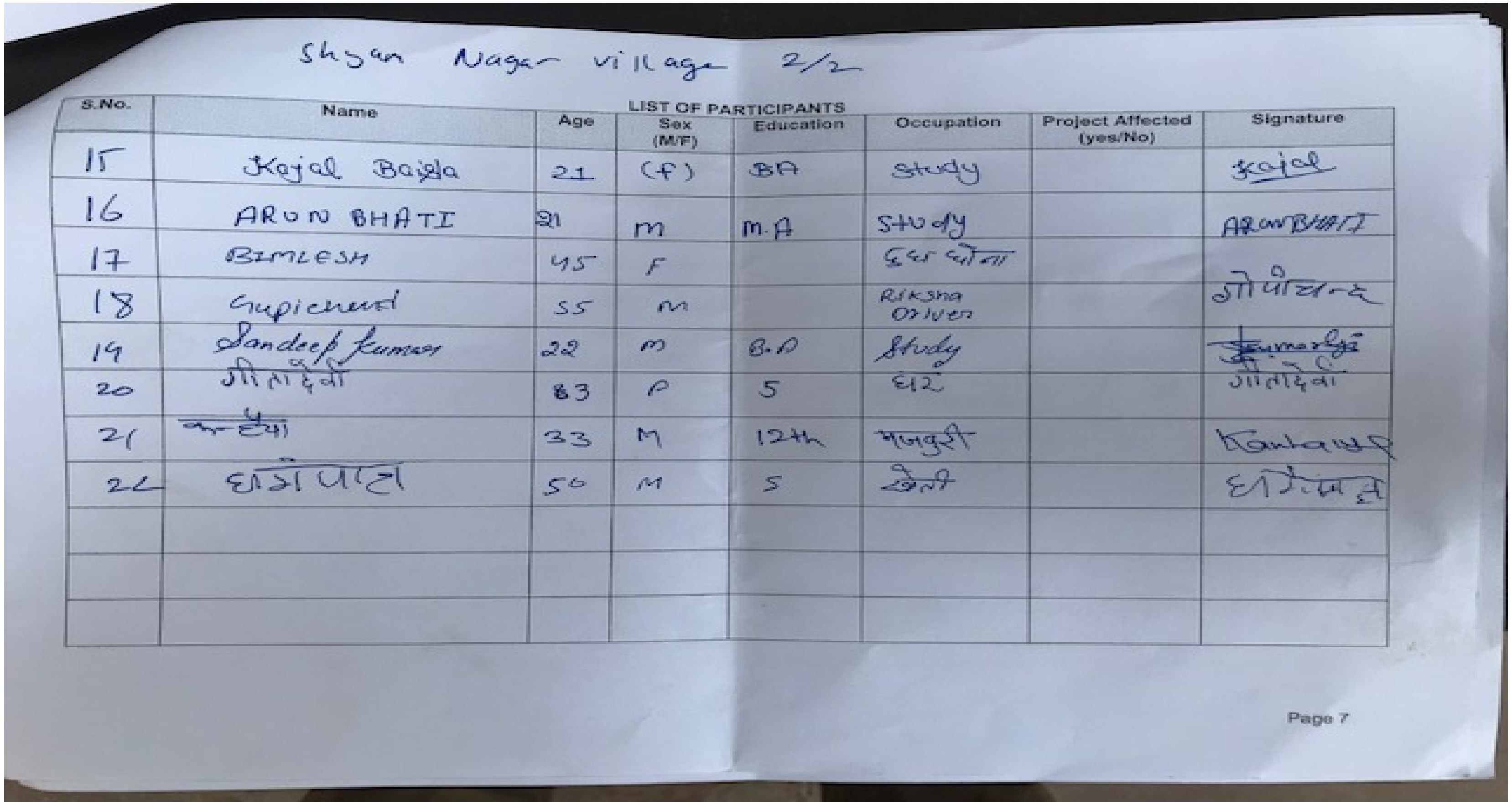

Shyam Nagar village 2/2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
15	Kajal Baijla	21	(F)	BA	Study		Kajal
16	ARUN BHATI	21	m	M.A	Study		ARUNBHATI
17	BIMLESH	45	F		घर चलाना		
18	Gupichand	55	m		Riksha Driver		गोपीचन्द
19	Sandeep Kumar	22	m	B.A	Study		Sandeep Kumar
20	गीता देवी	83	F	5	घर		गीता देवी
21	कन्हैया	33	M	12th	मजदूरी		Kanhaiya
22	धर्मपाल	50	M	5	खेती		धर्मपाल

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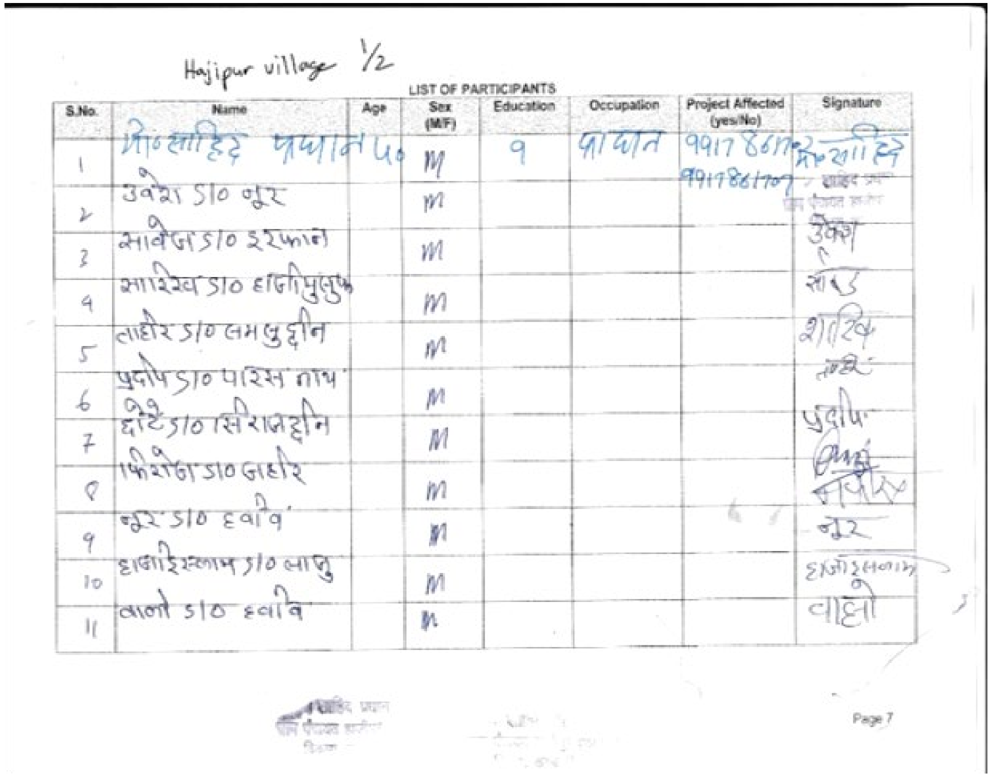
<table>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
<tr><td colspan="2">Zone: Meerut</td><td></td><td></td></tr>
<tr><td>October 14 2019</td><td>Village: Hajipur
District: Meerut</td><td>Total: 23 persons
Male: 18 persons
Female: 5 persons

Participants: Village Head (Village Pradhan), village residents</td><td>The residents were generally positive about the project, but had a few concerns,.
Located 5km from Meerut City, Hajipur Village has 340 HH, of which 100% are electrified, with 17-18 hours/day.
When discussing the project, one primary concern of the residents was brought to light. Residents were concerned with not knowing when the electricity in the agricultural feeder would be supplied, in the event of a feeder separation project. This is because there is no consistent schedule for supply of electricity. For example, if a farmer is at home, he/she would not know when the electricity of the agriculture feeder would be switched on. Currently, as it is a mixed feeder line, residents know when electricity is being supplied, even when at home. Moreover, another point of concern was that villagers were appeared to not want so many feeder lines, as that is not aesthetically pleasing and can be a bit of a nuisance for the residents.
While there are factories (meat plant and pharmaceutical) around the area, the villagers said there is no water, air or noise pollution issues endured. Ground water is the primary water source, with the water table at 90-100 ft.</td></tr>
</table>

			The endemic trees found in the area include Mango, Neem, Sheesham and Sagwan (teak). There are no forests or protected areas in the vicinity. There are no hospitals of medical care/emergency clinics in the village. The nearest one is in Meerut City. The respondents of the consultations reiterated their support for the project but wanted PVVNL to provide fixed timing for electricity supplied to the agricultural feeder lines.



Hajipur village 1/2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1	मो० शाहिद प्रधान	40	M	9	[illegible]	9917861709	मो० शाहिद
2	उवैश S/o नूर		M				उवैश
3	आवेज S/o इरफान		M				आवेज
4	आरिब S/o हाजीमुस्तुफ		M				शाकिब
5	ताहिर S/o शमशुद्दीन		M				ताहिर
6	प्रदीप S/o पारस नाथ		M				प्रदीप
7	हाजी S/o सिराजुद्दीन		M				
8	फिरोज S/o ताहिर		M				फिरोज
9	नूर S/o हबीब		M				नूर
10	हाजी इस्लाम S/o बाबू		M				हाजी इस्लाम
11	वाली S/o हबीब		M				वाली

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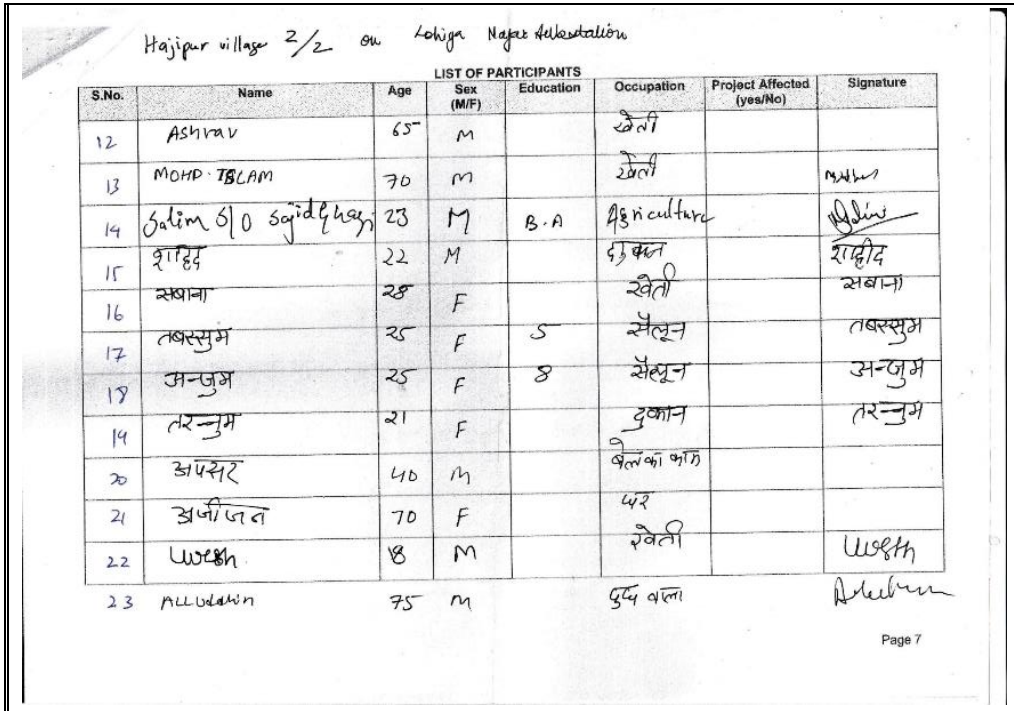

Hajipur village 2/2 on Lohiya Nagar Rehabilitation

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
12	Ashrav	65	M		खेती		
13	MOHD TABLAM	70	M		खेती		
14	Salim S/O Sajidghazi	23	M	B.A	Agriculture		
15	शाहिद	22	M		दुकान		शाहीद
16	सबाना	28	F		खेती		सबाना
17	तबस्सुम	25	F	5	सैलून		तबस्सुम
18	अन्जुम	25	F	8	सैलून		अन्जुम
19	तरन्नुम	21	F		दुकान		तरन्नुम
20	अफसर	40	M		बेलदारी काम		
21	अजीजन	70	F		घर		
22	Wasim	18	M		खेती		Wasim
23	ALLudin	75	M		दूध वाला		

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October 14 2019	Village: Alipur District: Meerut	Total: 19 persons Male: 13 persons Female: 6 persons **Participants:** Village Head (Village Pradhan), village residents	Due to local practices, it was challenging to arrange for women and men to be present in the same room during consultations. As such, women were consulted separately. Alipur is about 6 km from the Meerut City center. The Village has 700 to 750 HH, of which 100% are electrified 15-16 hours/day. Unlike in previously surveyed villages, it was found that 20-25% the residents were working the agriculture sector while 75 to 80% were daily wage laborers (plumbers, contractors etc.). The main crops cultivated are potato, paddy and wheat. There used to be 10 meat plants in the area, but currently only two are operational. However, villagers complain that effluent from the two operational meat plants is being discharged illegally, which in turn is percolating into the ground and contaminating the ground water – the primary domestic water source for the village. The villagers plan to lodge a complaint to authorities. When asked if the feeder separation project would contribute to any adverse environmental impacts, the villagers were vocal in saying that it would not and reiterated their support for the project.

			There are no forests or protected areas in the vicinity. There are no hospitals in the Village, as all medical emergency cases are taken to the Government hospital in Meerut City.

Allipur Village 1/2

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1	MOHD. FAHEEM.	24.	Meal	B.Com-II	Student.		
2	Manish bansal	40	male	M A	Agriculture		
3	Danish	23	Male	12	Lever		Danish
4	[illegible]	38	Male	5	Lives		[illegible]
5	Mhad Shadab.	25	Male	BA	Job		
6	[illegible]	53	Male	Pardhan	HoME		[illegible]
7	[illegible]	35	Male	6	Dayji		[illegible]
8	SAFAT	65	Male	7	Home		SAFAT
9	संदीप	25	male	5	Agriculture		
10	Harveer	28	male	BA	Job		Harveer
11	इरफान	48	male	10th	Agriculture		

Allipur Village 2/2

LIST OF PARTICIPANTS

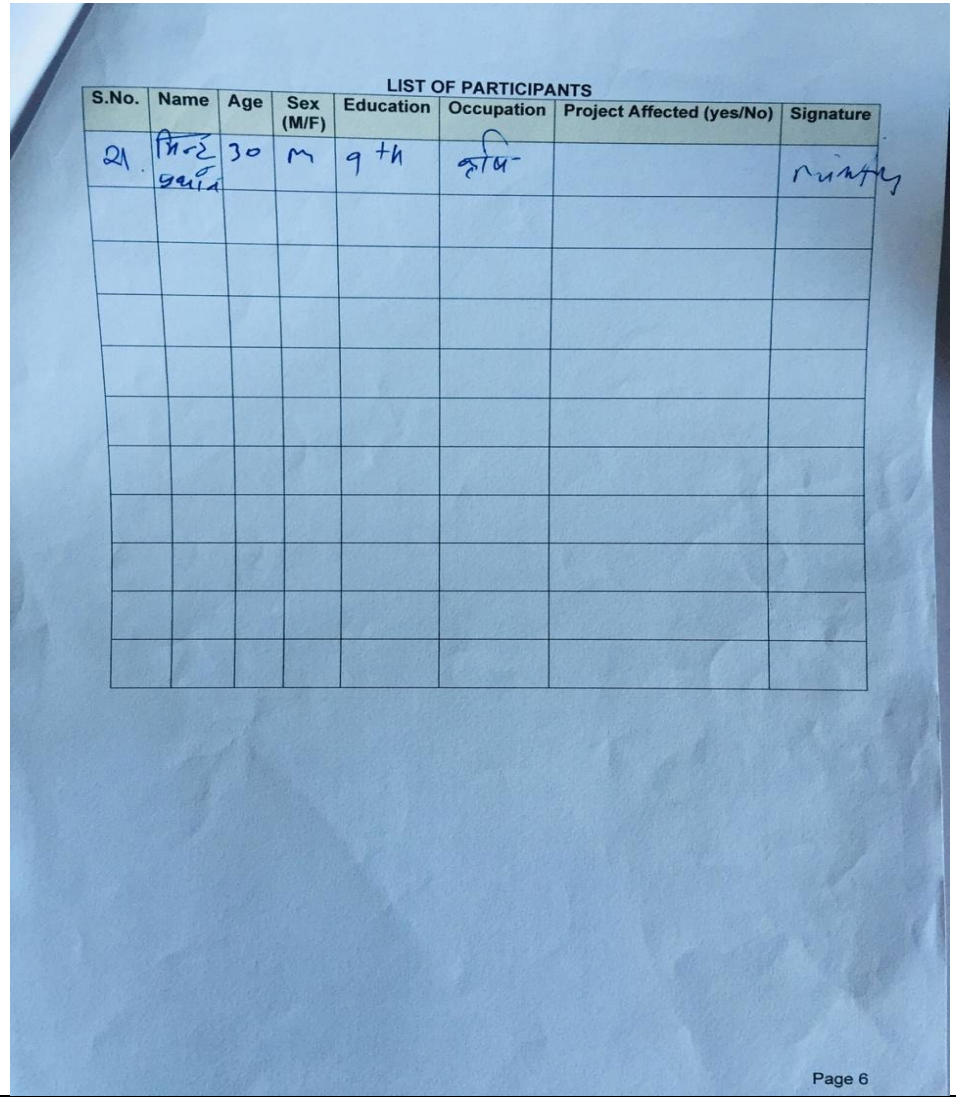
S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
12	शाकिद	49	M		लोहे का काम		[illegible]
13	शमशाद अली	30	M		मैकिनस्टोर		Shamshad Ali
14	आसीम	17	M	10	मीस्त्री		Aasim
15	[illegible]	55	M	5	घर		[illegible]
16	खुरसीद	50	F	12	घर		खुरसीद
17	परवीन	55	F		घर		प्रवीन
18	कुलसुम	16	F	10	घर		कुलसुम
19	सोनी	19	F	8	घर		सोनी
20	शाबिया	24	F	8	घर		शाबिया
21	जिया	25	F		घर		जिया
22	Ekrar	30	M	B.A	Genin		[illegible]

Zone: Ghaziabad			
October 15 2019	Village: **Bhikanpur**	Total: 21 persons Male: 19 persons Female: 2 persons **Participants:** Village Head (Village Pradhan), village residents	The residents were generally positive about the project. Located along the Dohai feeder line, Bhikanpur village is largely an agricultural village, of 1,150 HH. All of the HH are electrified with 16-18 hours of electricity a day. The participants were in favor of the Project as all participants were in favor of reliable electricity supply that the project would deliver. The endemic trees found in the area include Kekar and Sheesham. The primary environmental concern villagers currently have is dust pollution. However, the respondents said there is no water or noise pollution issues are currently endured. Ground water is the primary water source with the water table at 50-80 ft. There are no forests or protected areas in the vicinity. The nearest hospital is a Moradnagar Government Hospitals, about 2-3 km away. The respondents did mention that they would like to be consulted during the project's design route alignment stage when it would be mapped by the contractor. The participants reiterated their support for the project and had no issues with the project being implemented.

BHIKAMPUR VILLAGE
ASLAT NAGAR SUB STATION
GHAZIABAD

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1	Pawan	23	male		मजदूरी		
2	[illegible]	41	M		मजदूरी		
3	[illegible]	70	M		किसान		
4	ओमकार ss	M.			खेती		ओमकार
5	[illegible]	35	M		मजदूरी		
6	Rashid	19	M		पढ़ाई		Rashid
7	Shivam	20	M		खेती		
8	Rabiya	17	F		घर		Rabiya
9	[illegible]	20	M		Electrical		
10	[illegible]	30	M		मजदूरी		
11	[illegible]	62	M		किसान		
12	[illegible]	19	M		student		
13	[illegible]	61	M		कृषी		
14	[illegible]		M		मजदूरी	मेरा खेत नहीं है	
15	[illegible]	50 ss	M		खेती		
16.	[illegible]	66	F		घर		
17.	[illegible]	60	M		घर		
18	[illegible]	65	M		घर	—	
19	[illegible]	18	M		पढ़ाई		
20	[illegible]	48			खेती		



LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
21.	[illegible]	30	M	9th	कृषि		[illegible]

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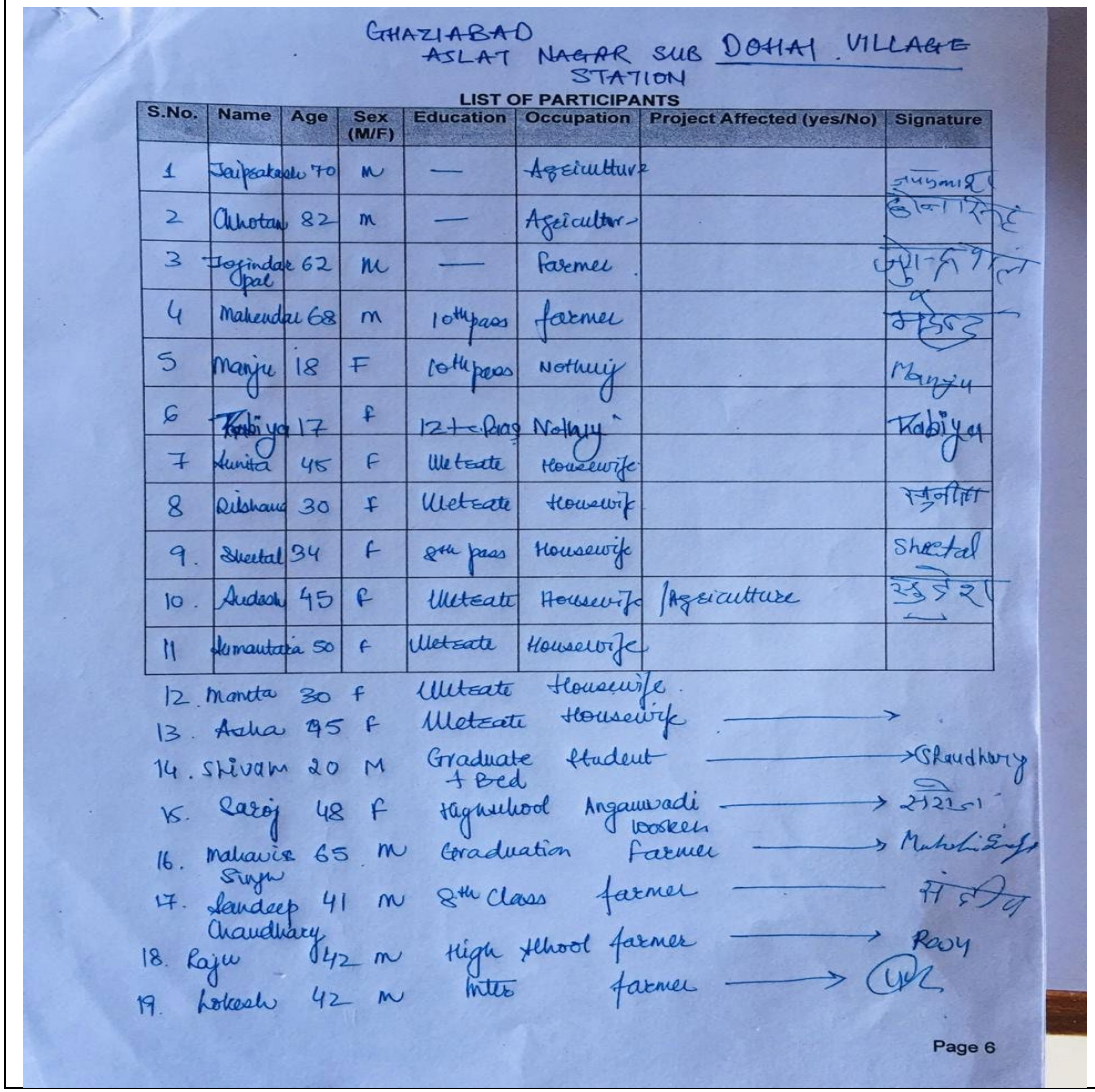
October 15 2019	Village: Dohai	Total: 19 persons Male: 9 persons Female: 10 persons **Participants:** Village Head (Village Pradhan), village residents	The Village has 200 HH, of which 100% are electrified for 18 hours/day. The residents are employed in agriculture as well as local business owners, such as shops and stores. Many also work as laborers during the day and tend to their farm at night (mainly irrigation at night). The main crops cultivated are sugarcane, paddy and wheat. Ground water is the primary water source with the water table at 50 ft. At present, they access the ground water through a combination of submersible pumps and handpumps. Moreover, the water quality is good and there were no complaints regarding water pollution. However, some respondents complained about existing air pollution. The main response from residents was that a feeder separation project for that area was not required. Respondents said that they prefer to water crops at night as less water is lost to evaporation at night, than during the day. As such, they prefer more electricity hours at night to meet irrigation needs and more electricity hours for domestic use during the day. When asked if the feeder separation project would contribute to any adverse environmental impacts, the villagers were vocal in saying that it would not affect the ambient environment negatively. However, as mentioned earlier, respondents wanted to be reassured that the feeder separation project would not reduce their supply of agricultural electricity.

			There are no forests or protected areas in the vicinity. The nearest hospital is the Moradnagar Government Hospital, same as Bhikanpur village.



GHAZIABAD
ASLAT NAGAR SUB STATION
DOHAI VILLAGE

LIST OF PARTICIPANTS

S.No.	Name	Age	Sex (M/F)	Education	Occupation	Project Affected (yes/No)	Signature
1	Jaiparkash	70	M	—	Agriculture		
2	Chhotan	82	M	—	Agriculture		
3	Jogindar Pal	62	M	—	Farmer		
4	Mahendar	68	M	10th pass	farmer		
5	Manju	18	F	10th pass	Nothing		Manju
6	Kabiya	17	F	12th pass	Nothing		Kabiya
7	Kunita	45	F	Illeterate	Housewife		
8	Rishana	30	F	Illeterate	Housewife		
9	Sheetal	34	F	8th pass	Housewife		Sheetal
10	Sudesh	45	F	Illeterate	Housewife	Agriculture	
11	Kamautara	50	F	Illeterate	Housewife		
12	Mamta	30	F	Illeterate	Housewife		
13	Asha	45	F	Illeterate	Housewife	→	
14	Shivam	20	M	Graduate + Bed	Student	→	Shivdhary
15	Saroj	48	F	Highschool	Angawadi workes	→	
16	Mahavir Singh	65	M	Graduation	Farmer	→	
17	Sandeep Chaudhary	41	M	8th Class	farmer	→	
18	Raju	42	M	High school	farmer	→	Roop
19	Lokesh	42	M	Inter	farmer	→	

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Appendix 6: Environmental Audit of Sample Substations and Stores in PVVNL and DVVNL

PART A – INTRODUCTION

1. Objectives of the Environmental Compliance Audit

1. The proposed Uttar Pradesh Power Distribution Network Rehabilitation Multitranche Financing Facility Project (the Project) is categorized as an Environment B project per ADB's Safeguard Policy Statement (SPS) 2009. For Category B projects, an Initial Environmental Examination (IEE) is required to address the anticipated impacts of the project and to suggest appropriate mitigation measures. In addition, for projects involving facilities and/or business activities that already exist or are under construction before ADB's involvement, ADB requires relevant external experts to conduct an Environment Audit, including on site assessment. For a project involving an upgrade or expansion of existing facilities, the requirements for environmental assessment and planning apply in addition to the Environmental Audit. In the case of the Project, the 11kV feeder separation will connect into existing substations, which will be augmented. The augmentation includes a control panel for the new feeder, and outdoor cabling and circuit breaker for the new feeder. There will be no substation upgrades or expansions.

2. The Environmental Audit will determine the existence of any areas where the substations may cause or are causing environmental risks and impacts. The existing facilities must comply with the ADB's SPS 2009 and applicable national laws and regulations on environment, health and safety. Where existing facilities are found not to be in accordance with the environment safeguard principles and requirements applicable to the Project, a Corrective Action Plan (CAP) is to be prepared, including implementation schedule and sufficient budget, to bring the existing facilities into compliance.

3. The Environment Audit has been conducted with the aim of assessing compliance with:

(i) National (India) laws and regulations on environment, health and safety. This incudes, but not limited to, The Water (Preventions Control of Pollution) Act, 1974 (amended 1988), The Air (Prevention & Control of Pollution) Act, 1981 (amended 1987), Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016; and the Regulation of Polychlorinated Biphenyls Order, 2016 (S.O. 1327(E);
(ii) Health and safety measures at work places under National Acts and State Rules including the Factories Act, 1948 and the Electricity Act, 2003 (amended 2007); and

(iii) Environmental safeguards according to ADB's SPS 2009 and IFC EHS Guidelines.

4. The Environmental Audit helps the Project to,

(i) identify present inadequacies in environmental management, and occupational health and safety issues in the existing facilities, i.e. substations;
(ii) determine the need for remedial actions necessary to bring the existing facilities into compliance with ADB safeguard policies; and
(iii) recommend actions to be taken to improve and strengthen UPPCL and the DISCOMs' environmental, health, and safety management.

2. Scope of Environmental Audit

5. The Environmental Audit focused on a sample of existing 33/11kV substations under the responsibility of PVVNL and DVVNL, three in substations under PVVNL (Meerut zone) and three under DVVNL (Agra zone). The 11kV feeder separation will connect into existing substations, which will be augmented, hence as per SPS 2009 these qualify as existing facilities requiring an Environmental Audit. Given that the turnkey contractors will decide which villages from their long list will be included, these six sample substations may or may not be included in the Project.

6. In addition, a sample of stores in PVVNL and DVVNL were also audited, these are not existing facilities but the audit helped to identify the capacity of UPPCL and the DISCOMs' with respect to environmental, health, and safety management. The Environmental Audit focused six stores, three under the purview of PVVNL (Meerut zone) and 3 under DVVNL (Agra zone).

3. Method of Environmental Audit

7. The Environmental Audit was conducted by a TA Consultant in October 2019 based on site visits. Relevant in-house documents such as existing environmental management systems, standard operating procedures (SOPs) and records and training on environment, health and safety and compliance were not reviewed. During the site visits, a visual inspection was conducted and critical environment, health and safety issues cross checked using an Audit Checklist to identify areas of strength, and areas that need corrective actions to meet the required standard. The Audit Checklist identifies critical issues as per the following criteria deduced from the standards and guidelines mentioned above:

- General environmental management,
- Waste management practices,
- Hazardous material management,
- Occupational health and safety management, and
- Community health and safety management.

PART B – ENVIRONMENTAL AUDIT FINDINGS FROM SAMPLE SUBSTATIONS

8. The three substation audited under the purview of PVVNL were i) 33/11kV Lohia Nagar substation (Meerut zone); ii) 33/11kV Khatauli Rural substation (Saharanpur zone); and iii) 33/11kV Hapur Delhi Road substation (Bulandshahar zone).

9. The three substations audited under the purview of DVVNL i) 33/11kV Khandoli Ujrai substation (Agra Zone 1); ii) 33/11kV Gokul Mathura substation (Agra Zone 2); and iii) 33/11kV Singarpur substation (Aligarh Zone).

10. Copies of completed Audit Checklists are included in Annex 1 with photos of the substations audited in Annex 2.

4. 33/11 kV Lohiya Nagar Substation (PVVNL- Meerut zone):

11. Observations are:

- The substation is earthed and has protective shields to minimize radiation and magnetic field effects.
- The substation is reported by the DISCOM to be PCB free. The substation has two transformers (one 10 MVA and one 5 MVA, the 5 MVA transformer was not in commission during the time of audit as it was being repaired in the PVVNL workshop) and oil circuit breakers; none of them are thought to use PCB however there is no documentary evidence available.
- The substation compound is housed within a large concrete perimeter and has warning signs to prevent the general public from being exposed to any risk of electrocution, although this needs improvement. The substation compound houses the billing office as well as the two transformers in the yard, but the fencing of the yard where the transformers are placed is badly damaged and a new fence around the transformer yard needs to be erected to prevent access.
- The two transformers are placed on impermeable concrete platforms, but they are not bunded or elevated. They concrete platforms on which the transformers are placed should be retrofitted with impermeable bunds to 110% capacity above the highest known flood level, which would contain any oil spillage, as well as reduce susceptibility of transformers to flood risk.
- Handling of hazardous material e.g. transformer oil needs to be improved. In particular, containment of leaked oil, in the event of spillage as no bunding is provided.
- There is scrap metal scattered around the yard. It is evident that there is no waste management, including handling and ultimate disposal of scrap metal. A system for managing waste generated from substations needs to be standardized and institutionalized across all substations. The scattered metal poses a falling/tripping hazard.
- Lighting within the substation is inadequate; ventilation in the substation is adequate but needs improvement. Many light fixtures within the substation were in disrepair and need to be fixed. The substation has been designed

with ventilation ducts, but they are being kept closed, or blocked. They need to remain open for proper air circulation.

- Some safety kit (PPE, fire extinguisher) was seen to be available in the substation compound.

5. 33/11 kV Khatauli Rural Substation (PVVNL - Saharanpur zone)

12. Observations are:

- The substation is earthed and has protective shields to minimize radiation and magnetic field effects.
- The substation is reported by the DISCOM to be PCB free. The substation has two transformers (10 MVA each) and oil circuit breakers; none of them are thought to use PCB however there is no documentary evidence available.
- The substation compound is housed within a large concrete perimeter and has warning signs to prevent the general public from being exposed to any risk of electrocution, although this needs improvement. The substation compound houses the billing office as well as the two transformers in the yard, the fencing of the yard where the transformers are placed is badly damaged. A new fence around the yard needs to be erected.
- The two transformers are placed on elevated, impermeable concrete platforms, but there are no bunds to stop the leaked transformer oil from trickling down from the concrete bases into to the soil.
- Handling of hazardous material e.g. transformer oil needs to be improved. In particular, containment of leaked oil, in the event of spillage as no bunding is provided.
- Leaking oil from transformers is evident. In response, substation staff merely tighten the bolts of the source of the leak – primarily the bolts of the end covers of the transformers. Oil leaks need to be better addressed and prevented by carrying out regular preventive maintenance of transformers, ensuring valves, nuts and bolts are tightly secured, and the rubber seals of the radiators of the transformers (another source of oil leakage) are regularly replaced. While not large in volume, the spilled oil falls on the concrete transformer platform and travels to ground. Extra gravel could be placed to intercept and prevent any oil percolation into the ground. The elevated concrete platforms on which the transformers are placed should be retrofitted with impermeable bunds to 110% capacity above the highest known flood level, which would contain any oil spillage, as well as reduce susceptibility of transformers to flood risk.
- There is scrap metal scattered around the yard. It is evident that there is no waste management, including handling and ultimate disposal of scrap metal. A system for managing waste generated from substations needs to be standardized and institutionalized across all substations. The scattered metal poses a falling/tripping hazard. There is a replaced transformer sitting

idle as scrap metal within the premises for the substation awaiting for disposal/removal.

- Lighting within the substation is adequate; ventilation in the substation is adequate but needs improvement. Substation has been designed with ventilation ducts, but they are being kept closed, or blocked. They need to remain open for proper air circulation.
- Some safety kit (PPE, fire extinguisher) was seen to be available in the substation compound.

6. 33/11 kV Hapur Delhi Road Substation (PVVNL - Bulandshahar zone)

13. Observations are:

- The substation is earthed and has protective shields to minimize radiation and magnetic field effects.
- The substation is reported by the DISCOM to be PCB free. The substation has two transformers (one 10 MVA and one 5 MVA) and oil circuit breakers; none of them are thought to use PCB however there is no documentary evidence available.
- The substation is fenced and has signs warning the public of the risk of electrocution. However, the signs need to be larger and more legible.
- Barrels of transformer oil are stored in the open on permeable soil. While the barrels are sealed, they are exposed to the elements. There is no dedicated storage shed/facility for the transformer oil. Some spillage from handling of the oil evident. Prevention of spillage through better handling of oil and containment of spillages that do occur through the use of enclosed bunds in a dedicated storage area are required.
- Oil leakage from transformers was observed. In response, substation staff merely tightened the bolts of the source of the leak. This can be addressed by carrying out regular preventive maintenance of transformers and ensuring values, nuts and bolts are tightly secured. While not large in volume, the spilled oil falls on the concrete transformer platform and travels to the soil. Extra gravel could be placed to intercept and prevent any oil percolation into the ground. The elevated concrete plaforms need to be retrofitted with elevated impermeable bunds to 110% capacity to contain any oil spillage.
- The floor panels of the substation were seen to be excavated and left open, this poses a risk of substation employees/workers falling/tripping near live electrical equipment. Civil works within the substation control room need to be completed on a priority basis.
- Some safety kit (PPE, fire extinguisher) was seen to be available in the substation compound.

7. 33/11 kV Khandoli Ujrai substation (DVVNL – Agra Zone 1)

14. Observations are:

- The substation is earthed and has protective shields to minimize radiation and magnetic field effects.
- The insulation mats in the substation have worn out and need replacement.
- The substation is reported by the DISCOM to be PCB free. The substation has three transformers (two 10 MVA transformers and one 8 MVA transformer) and oil circuit breakers; none of them are thought to use PCB however there is no documentary evidence available.
- While the substation is fenced, there are no warning signs to prevent the general public from being exposed to any risk of electrocution and these need to be installed.
- New materials to be used for operation and maintenance of the substation are mostly kept in locked storage rooms. This includes new transformer oil and cables. The storage rooms are concreted and have impervious flooring. Spillage is occurring during handling of the oil. Handling of hazardous and non-hazardous material needs to be improved especially the storage arrangement and prevention of spillage through better handling of transformer oil.
- There is currently no regular preventive maintenance carried out for the transformers. As such, there is oil leakage from i) the end cover of each of the three transformers, and ii) from the eroded rubber seals of the transformer radiators. This oil is not being collected. Gravel needs to be placed at the bottom of the concrete platforms/base to intercept any leaked oil before seeping into the soil. The transformers need to be retrofitted with elevated impermeable bunds to 110% capacity above the highest known flood level, which would contain any oil spillage, as well as susceptibility of transformers to flood risk.
- The substation yard needs to be thoroughly cleared and cleaned. Discarded, unrepairable items are scattered around the substation. These include indoor electric panels, spent bare conductors and spent transformers. When asked, substation workers said that they are awaiting to be taken to the DISCOM store to be auctioned. However, there are no vehicles to take the scrap waste.
- Municipal solid waste disposal (as opposed to electronic waste) is a major issue in the substation. Currently, there is no trash collection and transportation process and substation workers are burning their waste in situ.
- There is a well-lit and functioning toilet for substation workers.

8. 33/11 kV Gokul Mathura substation (DVVNL – Agra Zone 2)

15. Observations are:

- The substation is earthed and has protective shields to minimize radiation and magnetic field effects.

- The substation has two transformers (5 MVA each) and oil circuit breakers; none of them are thought to use PCB and the substation is reported by the DISCOM, however, there is no documentary evidence available.
- The substation is fenced and has warning signs to prevent the general public from being exposed to any risk of electrocution.
- Handling of hazardous and non-hazardous material needs to be improved especially in storage arrangement and prevention of spillage. The storage and handling of hazardous transformer oil is a major concern. Currently, barrels of new oil are stored in one corner of the substation, on permeable soil. This poses a risk of leakage oil into the soil resulting in ground water contamination. An undercover, impermeable bund should be made to store the barrels of oil and contain any oil leakage. Transformers need retrofitting with a proper impermeable bund to 110% capacity above the highest known flood level.
- The substation has discarded scraps of metal all over the premises. The substation needs to make work with the DISCOM stores to ensure the swift removal of scrap metals to maintain yard cleanliness.
- There is no drainage in the substation.
- Some safety kit (PPE, fire extinguisher) was seen to be available in the substation compound but PPE is rarely worn by substation workers.
- There has been no operational training to substation workers; no training on health and safety guidelines either. For example, they don't use gloves while handling toxic transformer oil.

9. 33/11 kV Singarpur substation (DVVNL – Aligarh Zone)

16. Observations are:

- The substation is earthed and has protective shields to minimize radiation and magnetic field effects.
- The substation is reported by the DISCOM to be PCB free. The substation has two transformers (one 10 MVA and one 5 MVA) and oil circuit breakers; none of them are thought to use PCB however there is no documentary evidence available.
- The substation's switch yard is well fenced, and has warning signs to prevent the general public from being exposed to any risk of electrocution. However, the outer perimeter of the substation does not have a secure wall. Moreover, there are no signs in the outer perimeter indicating the risks of electrocution. A proper wall should be erected along the outer perimeter and entrance of the substation, with legible signs warning the public of the risk of electrocution.
- The transformers are each elevated on concrete platforms. However, there are no transformer oil collection mechanisms. As such, oil trickles from the elevated platform to infiltrate into the soil. Handling of the transformer oil needs to be improved especially during the operations. This includes prevention of leaks through protective maintenance, coupled with prevention

of spillage through retrofitting proper impermeable bund to 110% capacity above the highest known flood level.

- The substation switch yard is clean and clear of scrap metal.
- The substation control room's flooring has been excavated for cable laying and has not been re-tiled. As such, this may result in substation workers tripping on cables/wirings. The substation floor needs to be re-tiled as a priority.
- There is adequate ventilation in the substation's control room.
- Some safety kit (PPE, fire extinguisher) was seen to be available in the substation compound.
- There is a toilet in the substation, but the toilet is not functioning. The toilet needs to be repaired as a priority.

10. Conclusions and Recommendations

17. The Environmental Audit of sample substations found that hazardous materials and waste management, including handling, storage and disposal, is the principal environment, health and safety concern in all substations audited. Handling of hazardous material (transformer oils) needs to be significantly improved especially related to their storage and the prevention of spillage. Nearly all transformers seen were leaking oil. Impermeable bases beyond the footprint of the transformer are required with a protective bund of 110% capacity to contain any oil leaks. However, first priority should be prevention of spillage, which can be achieved through regular checks and preventive maintenance. Pieces of solid wastes (removed parts of transformers, metal scraps etc.) had no specific and designated area for collection and storage, and there was no organized disposal mechanism. Substation facilities should designate special segregated areas/points for solid and hazardous waste collection and collect all unwanted scraps for safe disposal with separate bins for storing pieces of cables, switch gears and other waste prior to its disposal. To ensure used and scrap equipment/material are properly disposed after removal/replacement, it is recommended for hand-over procedures of equipment/projects to include an environmental checklist which prompts the disposal method. This is required to avoid new debris and waste/scrap being accumulated at the substations in the future. Furthermore, training and awareness of staff was found to be woefully inadequate. There is no written solid and hazardous materials or waste management system and guidelines for substation personnel and there were no written Environment, Health and Safety Plans or trainings to prepare staff for emergencies. While Personal Protective Equipment (PPE) was observed to be provided, substation workers were not aware of the importance of wearing them. Trainings need to include and highlight the importance of worker safety.

18. In conclusion, corrective action is required and as 33/11kV substations are existing facilities of the Project, a Corrective Action Plan has been developed as part of the EMP (Appendix 4 of IEE) based on the Environmental Audit of these sample substations.

PART C - ENVIRONMENTAL AUDIT FINDINGS FROM SAMPLE STORES

19. It is important to have a general understanding of how the stores operate, in order to be able to access the fundamental environmental, health and safety risks associated with them. The general process followed by each of the stores includes the following:

- stage 1: receiving of all new material procured by the DISCOMs including new transformers, transformer oil, aluminium coils, brass nuts, insulating paper for transformer core material;
- stage 2: the storage of old/damaged material received back from operational sites in relation to the items mentioned above;
- stage 3: transportation of old/damaged items from above to DISCOM workshops for repair of damaged transformers; transportation of new oil and new raw material to be used in transformer core as part of the transformer rehabilitation process to the DISCOM workshops;
- stage 4: storage of scrap metal where equipment (cables, transformers etc.) are deemed unrepairable. These items are stored in the DISCOM stores, until they are auctioned off.

20. Transformers deemed beyond repair, are sent back to stores, after being drained of all transformer oil in the DISCOM workshops. The oil from the faulty transformer is drained into an iron chambered sumpwell as part of the dismantling process and is processed and refined by a private contractor. The private contractor working for PVVNL and DVVNL workshops is Power Petrochemicals. Their Consent to Operate (CTO) is included in Annex 5. As part of the oil reclamation process, the private contractor removes fine particulates such as burnt insulting paper. Once this process is complete, the oil then is transported back to the workshops in sealed oil tanker trucks to re-used in repaired transformers – the stores are **not** involved in the used transformer oil handling and processing. The solid residual waste from the transformer dismantling process (carried out in workshops) is scrap metal. The scrap metal is stored and auctioned off on an online platform hosted by the Metals and Minerals Trading Corporation (MMTC), an enterprise of the Government of India.

21. Copies of completed Audit Checklists are included in Annex 3 with photos of the substations audited in Annex 4.

11. Meerut Store (PVVNL - Meerut Zone)

22. Observations are:

- The store has an enclosed perimeter by way of a boundary wall, to keep away the general public from theft. There is a guardhouse which is occupied around the clock, everyday.
- New transformers are stored on impermeable concrete, to prevent any oil from leaching into the ground. Damaged transformers are stored on impermeable concrete as well.

- Scrap metal is scattered around the floor, or in piles around the store; need to work with MMTC to dispose of the scrap metal in a timely manner.
- The storage rooms which store winding paper, coils etc. are well lit as opposed to the shed. The lighting in the closed/locked l storage sheds need improvement. The sheds house larger items such as fire extinghishers, distribution boxes, LEDs, printers etc. The lack of adequate lighting makes it very difficult to see items at the back of the shed, as the shed only opens from one side.
- The storage shed does not have vents. New vents need to be included in the shed.
- Proper labelling in the store needs to be enforced. There are many sections without any proper signs, such as, sections for each new material storage, damaged transformer storage, and scrap metal.
- There is no proper drainage in the store.
- There are PPE kits in the store but use of them is lacking.

12. Muzaffarnagar store (PVVNL - Saharanpur zone)

23. Observations are:

- The store is well fenced and there are guards. The store is monitored very well through CCTV surveillance
- The store area's flooring and the storage area of old and new transformers in queue for shipment, is made of impermeable concrete, to prevent any oil from leaching into the ground but needs improvement as general cleanliness and organization is lacking. There are bits of scrap metal in the floor in all areas of the store.
- Old scrap material has dedicated storage rooms but these are either not used, or are filled to capacity. Moreover, there are stacks of old scrap metal which are waiting to be shipped out. It appears that transformers for scrapping are just stacked. Need to work with MMTC to dispose of the scrap metal in a timely manner.
- The storage shed is made of tin and is not well lit. The shed stores items such as LEDs, meters, control cubicles etc. However, lighting in the shed needs to be enhanced. At present, the storage shed only opens from one side. As such, when accessing material from the back of the storage shed, visibility can be an issue for workers.
- New items are labelled. However, the labelling is inconsistent. Some are well labelled, while other items do not have labels.
- Fire extinguishers are available in the all sections of the store.
- There is a functioning toilet for workers.
- There is no proper drainage in the store. The nearest drainage system is outside the store, but there is no mechanism to channel water from within the store to the drainage system. This needs to addressed.

13. Hapur store (PVVNL - Bulandshahr zone)

24. Observations are:

- The store is neat and clean with very minimal metal waste/scrap.
- Old and new transformers are stored on impermeable concrete flooring, ensuring that no transformer oil leakages into the ground.
- New oil storage is well sealed and stored properly. However, proper labelling can be improved of each.
- There is adequate ventilation in all areas of the store, particularly in the storage shed, however, it needs improvement as on occasion they are covered in order to prevent rainwater from entering the storage sheds. It is recommended that ventilation ducts be retrofitted with netting. The ventilation ducts must remain open and unimpeded to provide adequate air circulation for store workers.
- The store has adequate PPE. However, as observed in all other stores, it is not always common for the store workers to wear the PPE. Work-place safety gear (masks, gloves, welding glass etc.) are provided but store officials are not able to convince workers to use them.
- There is a functioning toilet for workers.
- There is adequate drainage to prevent the store from flooding during monsoon season.

14. Agra Store (Agra Zone 1)

25. Observations are:

- The store's boundary wall is well fenced with a concrete wall around its perimeter. The facility is under surveillance through CCTV.
- The area where new and refurbished transformers are stored is made of impermeable concrete flooring. While new and refurbished transformers are kept on a concrete pad, damaged transformers waiting to be collected and transported to the workshop are not stored on impermeable flooring. They are stored on un-lined, bare soil. These damaged transformers, arguably, pose more of an environmental risk than new transformers. As such, they should be stored on concrete flooring to ensure transformer oil does not leak through the ground.
- The section of the store reserved for scrap disposal is not organized at all and are stored as heaps of scrap. Moreover, these heaps are exposed to the elements and could result in a 'waste slide' causing harm to workers.
- Items such as stationery, meters, LEDs, new fire fighting equipment, disk insulators, BPL kits (below poverty line electrical kits – provided to the poorest consumers by the Government), conductors are stored in locked sheds. However, these sheds need to be refurbished.
- The storage shed for new material is very poorly lit with only one functioning bulb in the shed. The storage shed is made out of tin and has several holes in the tin roofing, leaving the new items/equipment inside vulnerable to

moisture exposure during rainfall events. The roofing holes need to be patched and sealed.

- Sections and access roads within the store are not paved. This not only poses an environmental risk from any damaged transformer oil leakage, but also is a risk to workers' safety. Uneven, unpaved roads can cause accidents when moving items in the store from one section to another; or during loading and unloading of new items.
- All items should be properly labelled in a consistent manner. Currently, new items are kept/stored in a random manner, rather than following any logic or method. For example, new transformers are stored next to end-of-life transformers (or unrepairable transformers) waiting to be auctioned off as scrap.
- The store has adequate PPE such as gloves and hard hats, but use by staff is lacking
- There is a common, operational toilet for store workers
- There is no drainage system in the store. The nearest drainage system is outside the store, but there is no mechanism to channel water from within the store to the drainage system. This needs to addressed.

15. Mathura Store (Agra Zone 2)

26. Observations are:

- The store is well fenced with a guard house with strict entry/exit procedures in place. Moreover, the store is equipped with CCTV monitoring.
- New transformers are kept on impermeable brick pads. While new transformers are stored on impermeable flooring, damaged transformers waiting to be repaired are not placed on impermeable floors. The stores should ensure that the old transformers are placed on concrete or brick floored areas in the stores.
- The store area is too small to accommodate new transformers coming in (in part due to the large amount of area being occupied by scrap metal). Some new transformers are being stored outside the perimeter of the store. While there is no risk of theft, as there are three guards, all store-related items need to be within the boundary of the store, with proper labelling.
- Mountains of scrap metal can be seen all over the store. Scrap metal, including old transformer casings, control cubicles etc., is awaiting to be auctioned. However, the storage of such waste can house an occupational threat to workers, in the event the scrap waste falls on them. There should be better coordination with MMTC to transport the scrap metal and clear the store area at regular intervals.
- There are labels on some items, but the labelling is not consistent. Some sections of the store area are not labelled. As such, old/damaged transformers are sometimes placed right next to new transformers. The store should have dedicated areas assigned for each type of item being stored. This would avoid confusion and result in enhanced inventory management.

- The storage shed is well-lit.
- Store workers need to ensure that the storage shed's vents are not blocked by boxes of any new material, and the vents remain open. At present the storage shed's vents are blocked by boxes.
- The store has adequate PPE such as gloves and hard hats, but use is lacking
- There is no drainage in the store.

16. DVVNL store (Aligarh Zone)

27. Observations are:

- The store perimeter is well fenced, with guards monitoring store activity through CCTV.
- New transformers are placed on impermeable flooring. Old transformers, waiting to be taken shipped for repairs, are not always placed on impermeable floors. Instead, they are placed on bare soil, or on top of each other, and with no dedicated space in the store.
- Scrap metal, including old transformer casings, are stored at random around the store. The store needs to improve its scrap metal disposal.
- Some of the new merchandise is well labelled, however, they are placed at random. For example, a transformer would be placed next to new fire extinguishers which are to be shipped to substations. The store needs to organize how old and new material is kept. There should be proper labelling of sections of the store, and a system for items' storage needs to be devised.
- Access within some parts of the store is not easy, as new, damaged and scrap material are all placed together. The store needs to work with workshops, and with MMTC to ensure removal and disposal of damaged and scrap items, respectively.
- The storage shed is not well-lit. Additional lighting needs to be installed.
- The storage shed's roof has holes. These holes need to be patched/filled in order to keep the merchandise safe
- The store has PPE for workers. This only includes gloves and hardhats. However, their use is not commonplace.

17. Conclusions and Recommendations

28. Non-hazardous waste management, including collection, handing and storage was the principal concern in all stores. The general cleanliness and work-place organization can be significantly improved to enhance efficiency and safety. Dismantled parts of transformers, scrap metal etc. have designated areas/rooms for storage of scrap material but they are either not used or have reached their capacity. In cases of reaching capacity, additional dedicated storage areas for scrap material need to be assigned.

29. The stores do not have written Health and Safety Plans and periodic trainings are not carried out to prepare workers for emergencies. PPE was seen to be sufficient, but

adoption was lacking due to lack of discipline by workers. This also could be a result of lack of awareness, hence training of workers is critical. Moreover, the storage sheds need better lighting to prevent workplace accidents. Furthermore, at present, apart from the Hapur Store, none of the stores visited have proper drainage. This could pose a risk, in the event stores flood during monsoon season. In addition, the roofing of all storage sheds need touch-up work to fill any holes to ensure no rainwater leakage into the sheds.

30. The stores are no an existing facility of the Project, but the observations have fed into the development of a Corrective Action Plan in relation to the substations especially with respect to waste management since the substations rely on the stores to be able to dispose of waste materials etc.

Annex 1. Environmental Audit Checklist for Sample 33/11kV Substations in PVVNL and in DVVNL

Guidelines Considered	PVVNL Lohiya Nagar Substation (Meerut zone)	PVVNL Khatauli Rural Substation (Saharanpur zone)	PVVNL Hapur Delhi Rd Substation (Bulandshahar zone)	DVVNL Khandoli Substation (Agra Zone 1)	DVVNL Gokul Substation (Agra Zone 2)	DVVNL Singarpur Substation (Aligarh Zone)
PCB oil in transformers and switchgear						
• Transformers with PCB	X	X	X	X	X	X
• Switchgear with PCB	X	X	X	X	X	X
• Safe disposal of PCB oil	NA	NA	NA	NA	NA	NA
• Prevention of PCB fires	NA	NA	NA	NA	NA	NA
• PCB labelling	NA	NA	NA	NA	NA	NA
• PCB oil leakage	X	X	X	X	X	X
• Retrofitting	X	X	X	X	X	X
• PCB oil storage	X	X	X	X	X	X
Use of SF_6 and other greenhouse/hazardous gases						
• Gas insulated switchgear	X	X	X	X	X	X
• Gas insulated transformer	X	X	X	X	X	X
• Presence of SF_6 in switchgear	X	X	X	X	X	X
• SF_6 retrieval arrangements	NA	NA	NA	NA	NA	NA
• Presence of other hazardous gases	X	X	X	X	X	X
Storage of liquid fuels, raw and in-process materials, solvents, wastes: to prevent spills, to prevent soil contamination and to prevent ground and surface water contamination						
• Containment, dikes, and berms (e.g. for transformers)	X	X	X	X	X	X
• Storage facility	X	X	X	X	X	X
• Drainage	X	X	X	X	X	X
• Oil leakage	✓ (yes, leakage)	✓ (yes, leakage)	✓ (yes, leakage)	✓ (yes, leakage)	✓ (yes, leakage)	✓ (yes, leakage)
• Need for extra gravel	✓	✓	✓	✓	✓	✓
Workplace air quality						
• Monitoring of workplace air quality	X	X	X	X	X	X
• Good ventilation (ensure)	✓	✓	✓	✓	✓	✓
• Maintenance of air quality	X	X	X	X	X	X
• Providence of respiratory equipment	X	X	X	X	X	X
• Enforcement of the application of personal protective equipment whenever exposure levels of fumes, solvents and other materials exceed threshold limit	NA	NA	NA	NA	NA	NA

Workplace noise								
• Noise control equipment			X	X	X	X	X	X
IFC/ EHS Noise levels								
Ambient Noise (dB)	Day		Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit
Residential	55	45						
Industrial	70	70						
• Maintenance of equipment			✓	✓	✓			
• Use of protective gear when noise level exceeds 85 dB(A)			NA	NA	NA	NA	NA	NA
Other Physical Agents								
• Safe working area (absence of radiation, magnetic fields etc.)			✓	✓	✓	✓	✓	✓
• Monitor regularly for radiation and field levels and equipment integrity (earthing, protective shields, lockouts etc.)			✓	✓	✓	✓	✓	✓
Electrocution								
• Strict procedure for de-energizing before working on electrical equipment			✓	✓	✓	✓	✓	✓
• Training of personnel for safety procedures			X	X	X	X	X	X
Occupational health and safety guidelines								
• Physical factors in the workplace signage			X	X	✓	X		
• Lighting (including security lights)			✓	✓	✓	X		
• Fire detection mechanism/equipment			X	X	X	X	X	X
• Firefighting equipment			✓	✓	✓	✓	✓	✓
• Cleanness (inside and outside substation)			X	X	✓	X (substation-generated MSW being burned for means of waste disposal)	✓	X
• First aid kit			✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
• Features that pose safety risks (missing or broken slabs, dogged holes, etc.)			✓NI	✓NI/ NR (open trenches from where cables feed from within the s/s to the transformers)	✓NI/ NR (there are open slabs on the flooring of the control room)	✓	✓	✓

• Fence or enclosure of the site (restriction of unauthorized people)	✓	✓	✓NI	✓NI	✓	✓NR
Welfare Facilities						
• Safe and clean drinking water	✓	✓	✓	✓	✓	✓
• Toilets	✓	✓NR	✓	✓	✓NR	✓NR
• TV/Radio/internet	✓	X	✓	X	X	X
• Guard kiosk	✓	✓	✓	✓	✓	X
Personal Protective Equipment						
• Eye and face	X	X	X	X	X	X
• Head	✓	✓	✓	✓	✓	✓
• Hearing	X	X	X	X	X	X
• Hand	✓	✓	✓	✓	✓	✓
• Respiratory	X	X	X	X	X	X
• Leg and body	X	X	X	X	X	X
Ambient factors in the workplace						
• Noise	✓OK	✓OK	✓OK	✓OK	✓OK	✓OK
• Vibration	X	X	X	X	X	X
• Illumination	✓	✓	✓	✓	✓	✓
• Reflections	X	X	X	X	X	X
• Temperature	✓ventilation/fans	✓ ventilation/fans	✓ ventilation/fans	✓ventilation/fans	✓ ventilation/fans	✓ ventilation/fans
• Hazardous materials	✓	✓	✓			
• Biological agents	X	X	X	X	X	X
• Ionization radiation	✓	✓	✓	✓	✓	✓
Training and Documentation						
• Training (learning materials, equipment and tools)	✓	✓	✓	✓	✓	✓
• Training on operational hazardous and how to control the hazards	✓NI	✓NI	✓NI	✓NI	X	✓NI
• Training on health risks, hygiene, and exposure prevention	✓NI	✓NI	✓NI	✓NI	X	✓NI
• Training on accidents and accident prevention, protective equipment and clothing	✓NI	✓NI	✓NI	✓NI	X	✓NI
Performance Monitoring						
• OHSMS organization policy	✓	✓	✓	✓	X	✓

• Emergency prevention, preparedness and response	✓NI	✓NI	✓NI	✓NI	X	✓NI
• Investigation of work-related injuries, ill health, disease and accidents	✓	✓	✓	✓	X	✓
• Safety inspection, testing and calibration	✓	✓	✓	X	X	✓
Material Handling (Hazardous and non-hazardous materials)						
• Storage	X	X	X	✓	X	X
• Labelling	X	X	X	X	X	X
• Handling	X	X	✓	X	X	X
Solid Waste/Scraps						
• Handling	✓	X	✓			
• Disposal	X	X	X	X	X	X
Space for Expansion						
• Availability of space for expansion	✓	X	✓	X	X	X

OHSMS- Occupational Health & Safety Management System

NA Not Applicable,
✓ Yes/OK
X No
✓t/f Yes, on transformers
✓CB Yes, on oil Circuit Breakers
✓AC Yes, with air conditioners
✓NI It is there, but Need Improvements
NI Need Improvements
S/S Substation
NT Need Training
NR Need some Repair
NM Need Maintenance
✓Con Yes, it is contaminated

Annex 2: Photographic Records of Sample Substation Conditions

PVVNL – 33/11 Lohiya Nagar Substation (Meerut Zone)

PVVNL – 33/11 Khatauli Rural Substation (Saharanpur Zone)	
	
	

PVVNL – 33/11 Hapur-Delhi Rd Substation (Bulandshahr Zone)

DVVNL – 33/11 Khandoli Substation (Agra Zone - 1)	
	
	

DVVNL – 33/11 Gokul Substation (Agra Zone - 2)

DVVNL – 33/11 Singarpur Substation (Aligarh Zone)

Annex 3. Environmental Audit Checklists for Sample PVVNL and DVVNL Stores

Guidelines Considered	PVVNL Meerut Store (Meerut Zone)	PVVNL Muzaffarnagar Store (Saharanpur Zone)	PVVNL Hapur Store (Bulandshahr Zone)	DVVNL Agra Store (Agra Zone-1)	DVVNL Mathura Store (Agra Zone-2)	DVVNL Aligarh Store (Aligarh Zone)
Storage of liquid fuels, raw and in-process materials, solvents, wastes: to prevent spills, to prevent soil contamination and to prevent ground and surface water contamination						
• Containment, dikes, and berms	X	X	X	X	X	X
• Storage facility	✓NI/NR	✓NI/NR	✓	✓NI/NR	✓	✓NI/NR
• Drainage	X	X	✓	X	X	X
• Oil spillage from damaged and/or new transformers	✓ (from damaged and new transformers)	✓ (from damaged and new transformers)	✓ (from damaged and new transformers)	✓ (from damaged and new transformers)	✓ (from damaged and new transformers)	✓ (from damaged and new transformers)
Workplace Air Quality						
• Monitoring of workplace air quality	X	X	X	X	X	X
• Good ventilation in storage sheds (ensure)	X(not in the storage shed)	✓NI	✓ (NI – keep the vents need to be cleared of boxes and merchandise)	✓NI	✓ (NI – keep the vents need to be cleared of boxes and merchandise)	✓
• Maintenance of air quality	✓	✓	✓	✓	✓	✓
• Providence of respiratory equipment	X	X	X	X	X	X
• Enforcement of the application of personal protective equipment whenever exposure levels of fumes, solvents and other materials exceed threshold limit	X	X	X	X	X	X
Workplace Noise						
• Noise control equipment	X	X	X	X	X	X
IFC/ EHS Noise levels						
Ambient Noise (dB) / Day /	Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit	Level within 45 dB limit
Residential / 55 / 45						
Industrial / 70 / 70						
• Maintenance of equipment	NA	NA	NA	NA	NA	NA
• Use of protective gear when noise level exceeds 85 dB(A)	NA	NA	NA	NA	NA	NA
Other Physical Agents						
• Safe working area	✓	✓	✓	✓	✓	✓

• Monitor regularly for radiation and field levels and equipment integrity (earthing, protective shields, lockouts etc.	✓	✓	✓			
Electrocution						
• Strict procedure for de-energizing before working on electrical equipment	NA	NA	NA	NA	NA	NA
• Training of personnel for safety procedures	NA	NA	NA	NA	NA	NA
Occupational Health and Safety Guidelines						
• Physical factors in the workplace signage	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
• Lighting (including security lights)	✓NI (Needs improvement particularly in storage sheds)	✓NI (Needs improvement particularly in storage sheds)	✓NI (Needs improvement particularly in storage sheds)	✓NI (Needs improvement particularly in storage sheds)	✓NI (Needs improvement particularly in storage sheds)	✓NI (Needs improvement particularly in storage sheds)
• Fire detection mechanism/equipment	X	X	X	X	X	X
• Firefighting equipment	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
• Cleanness (inside and outside store)	X	X	✓			
• First aid kit	✓	✓	✓	✓	✓	✓
• Features that pose safety risks (paved access roads within store area etc.)	✓NC/NI	✓NC/NI	✓NC/NI	✓NC/NI		✓NC/NI
• Fence or enclosure of the site (restriction of unauthorized people)	✓	✓	✓	✓	✓	✓
Welfare Facilities						
• Safe and clean drinking water	✓	✓	✓	✓	✓	✓
• Toilets	✓NR	✓	✓	✓	✓	✓
• TV/radio/internet	✓	✓	✓	✓	✓	✓
• Guard kiosk	✓	✓	✓	✓	✓	✓
Personal Protective Equipment						
• Eye and face	X	X	X	X	X	X
• Head	✓	✓	✓	✓	✓	✓
• Hearing	X	X	X	X	X	X
• Hand	✓	✓	✓	✓	✓	✓
• Respiratory	X	X	X	X	X	X

• Leg and body	X	X	X	X	X	X
Ambient factors in the workplace						
• Noise	✓OK	✓OK	✓OK	✓OK	✓OK	✓OK
• Vibration	✓OK	✓OK	✓OK	✓OK	✓OK	✓OK
• Illumination	X (not enough lighting in storage shed)	X (not enough lighting in storage shed)	✓ (storage shed well lit)	X (not enough lighting in storage shed)	✓ (storage shed well lit)	X (not enough lighting in storage shed)
• Reflections	NA	NA	NA	NA	NA	NA
• Temperature	✓ OK	✓OK	✓OK	✓OK	✓OK	✓OK
• Hazardous materials	✓(transformer oil)	✓(transformer oil)	✓(transformer oil)	✓(transformer oil)	✓(transformer oil)	✓(transformer oil)
• Biological agents	X	X	X	X	X	X
Training and Documentation						
• Training (Learning materials, equipment and tools)	✓	✓	✓	✓	✓	✓
• Training on operational hazardous and how to control the hazards	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
• Training on health risks, hygiene, and exposure prevention	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
• Training on accidents and accident prevention, protective equipment and clothing	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
Performance Monitoring						
• OHSMS organization policy	✓	✓	✓	✓	✓	✓
• Emergency prevention, preparedness and response	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
• Investigation of work-related injuries, ill health, disease and accidents	✓	✓	✓	✓	✓	✓
• Safety inspection, testing and calibration of heating ovens for moisture removal from assembled transformer cores	✓	✓	✓	✓	✓	✓
Material handling (Hazardous and non-hazardous materials)						
• Storage	✓NI	✓NI	✓	✓NI	✓NI	✓NI
• Labelling	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
• Handling	✓NI	X	✓	✓	X	✓NI
Solid Waste/Scraps						
• Handling	✓	✓NI	✓	✓NI	✓NI	✓NI
• Disposal	✓NI	✓NI	✓NI	✓NI	✓NI	✓NI
Space for Expansion						

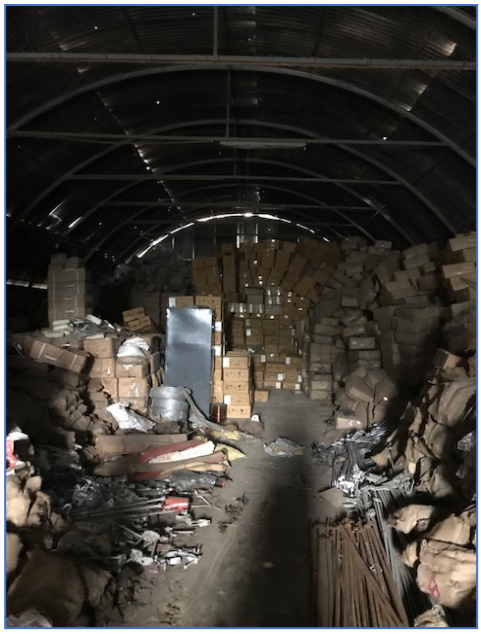
• Availability of space for expansion	✓	X	✓	X	X	X

OHSMS- Occupational Health & Safety Management System

NA Not Applicable,
✓ Yes/OK
X No
✓t/f Yes, on transformers
✓CB Yes, on oil Circuit Breakers
✓AC Yes, with air conditioners
✓NI It is there, but Need Improvements
NI Need Improvements
S/S Substation
NT Need Training
NR Need some Repair
NM Need Maintenance
NC Need Cleaning
✓Con Yes, it is contaminated

Annex 4: Photographic Records of Sample PVVNL and DVVNL Stores

PVVNL – Meerut Store (Meerut Zone)



PVVNL – Muzaffarnagar Store (Saharanpur Zone)

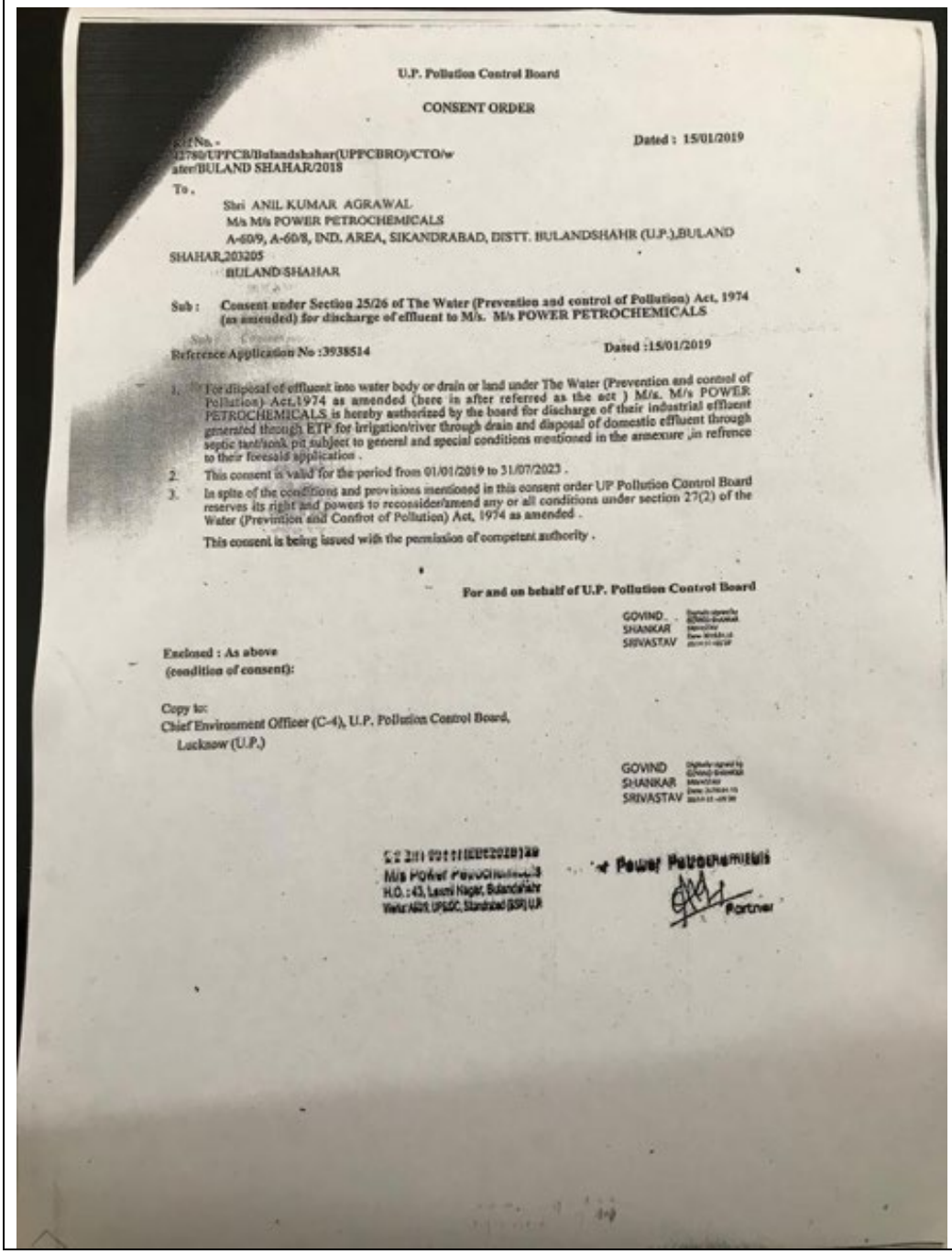
PVVNL – Hapur Store (Bulandshahr Zone)	
	
	

DVVNL – Agra Store (Agra Zone 1)

DVVNL – Mathura Store (Agra Zone 2)	
  	 

DVVNL – Aligarh Store (Aligarh Zone)	
  	 

Annex 5: Power Petrochemical's Consent to Operate (CTO) Issued by Uttar Pradesh Pollution Control Board



U.P. Pollution Control Board

CONSENT ORDER

s.t No. -
12780/UPPCB/Bulandshahar(UPPCBRO)/CTO/w
ater/BULAND SHAHAR/2018

Dated : 15/01/2019

To,

Shri ANIL KUMAR AGRAWAL
M/s M/s POWER PETROCHEMICALS
A-60/9, A-60/8, IND. AREA, SIKANDRABAD, DISTT. BULANDSHAHR (U.P.),BULAND SHAHAR,203205
BULAND SHAHAR

Sub : Consent under Section 25/26 of The Water (Prevention and control of Pollution) Act, 1974 (as amended) for discharge of effluent to M/s. M/s POWER PETROCHEMICALS

Reference Application No :3938514

Dated :15/01/2019

1. For disposal of effluent into water body or drain or land under The Water (Prevention and control of Pollution) Act,1974 as amended (here in after referred as the act) M/s. M/s POWER PETROCHEMICALS is hereby authorized by the board for discharge of their industrial effluent generated through ETP for irrigation/river through drain and disposal of domestic effluent through septic tant/sonk pit subject to general and special conditions mentioned in the annexure ,in refrence to their foresaid application .
2. This consent is valid for the period from 01/01/2019 to 31/07/2023 .
3. In spite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 27(2) of the Water (Prevention and Confrot of Pollution) Act, 1974 as amended .

This consent is being issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board

GOVIND SHANKAR SRIVASTAV

Enclosed : As above
(condition of consent):

Copy to:
Chief Environment Officer (C-4), U.P. Pollution Control Board,
Lucknow (U.P.)

GOVIND SHANKAR SRIVASTAV

M/s Power Petrochemicals
H.O. : 43, Laxmi Nagar, Bulandshahr
Partner

U.P. Pollution Control Board

CONSENT ORDER

Dated : 15/01/2019

Ref No. - 42779/UPPCB/Bulandshahar(UPPCBRO)/CTO/air/BULAND SHAHAR/2018

To ,

Shri ANIL KUMAR AGRAWAL
M/s M/s POWER PETROCHEMICALS
A-60/9, A-60/8, IND. AREA, SIKANDRABAD, DISTT. BULANDSHAHR (U.P.),BULAND SHAHAR,203205
BULAND SHAHAR

Sub : Consent under section 21/22 of the Air (Prevention and control of Pollution) Act, 1981 (as amended) to M/s. M/s POWER PETROCHEMICALS

Reference Application No. 3938496 Dated : 15/01/2019

1. With reference to the application for consent for emission of air pollutants from the plant of M/s M/s POWER PETROCHEMICALS. under Air Act 1981. It is being authorised for said emissions, as per the standards, in environment, by the Board as per enclosed conditions .
2. This consent is valid for the period from 01/01/2019 to 31/07/2023 .
3. Inspite of the conditions and provisions mentioned in this consent order UP Pollution Control Board reserves its right and powers to reconsider/amend any or all conditions under section 21 (6) of the Air (Prevention and Control of Pollution) Act, 1981 as amended.

This consent is being issued with the permission of competent authority .

For and on behalf of U.P. Pollution Control Board

GOVIND SHANKAR SRIVASTAV

Enclosed : As above
(condition of consent):

Copy to: Chief Environment Officer (C-4), U.P. Pollution Control Board, Lucknow (U.P.)

GOVIND SHANKAR SRIVASTAV

M/s Power Petrochemicals
H.O. : 43, Laxmi Nagar, Bulandshahr

For Power Petrochemicals
Partner

Appendix 7: Integrated Biodiversity Assessment

IBAT

Multi-site Report

UP DISTRIBUTION 10KM

Number of sites selected: 19

Buffer applied: 10.0 km

Generated by: Emma Marsden

Company/Subscriber: ADB

Date of analysis: 21 May 2020

About this report

The Multi-site Report serves to improve the inclusion of biodiversity within annual sustainability reporting. The report enables users to assess the biodiversity related features of multiple operational sites in accordance with Global Reporting Initiative (GRI) standards, in particular, GRI 304: Biodiversity. For each operational site chosen by the user, the following biodiversity-related features are provided; counts of protected areas and Key Biodiversity Areas (KBAs) within the selected radius of operational sites, counts of critically threatened, endangered and vulnerable IUCN Red List species that are potentially found within a 50 km radius.

Report package contents

This report is part of a package generated by IBAT on 21 May 2020 which includes the following files:

1. This PDF report.
2. PDF "README" containing recommended use of IBAT, limitations, and glossary.
3. Compressed CSV file "redlist" containing the total number of IUCN Red List species by level of extinction risk within 50 km buffer of each operational site.
4. Compressed CSV file "wdpa" containing names and designations of protected areas found within the selected buffer of each operational site.
5. Compressed CSV file "kba" containing names of Key Biodiversity Areas (and details such as biodiversity elements triggering identification of the KBA) found within the selected buffer of each operational site.
6. Compressed CSV file "overlaps" listing the operational sites and the numbers of protected areas and Key Biodiversity Areas that occur within the selected buffer of each operational site.

Data used to generate this report

- UNEP-WCMC and IUCN, 2020. Protected Planet: The World Database on Protected Areas (WDPA)[On-line], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net - May 2020.
- BirdLife International (on behalf of the KBA Partnership), 2019. Key Biodiversity Areas - October 2019.
- IUCN, 2020. IUCN Red List of Threatened Species - January 2020.

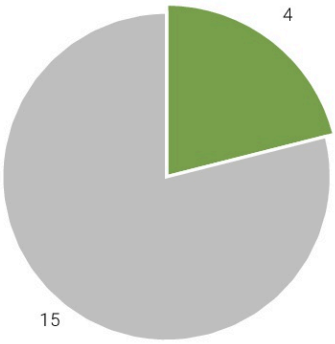
IBAT

Overlap with protected areas and Key Biodiversity Areas (KBAs)

The following table shows the number of protected areas and KBAs overlapped by a 10.0 km buffer for each operational site where an overlap occurs.

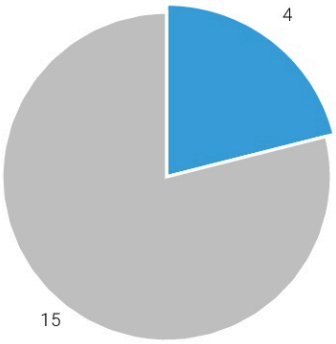
Site	Area (km^2)	Protected Areas	KBAs
Daudpur	0	3	1
Utto	0	3	1
Banga Nagra	0	1	1
Dabar	0	1	1

% Summary of protected areas overlap



- 4 (21.05% of sites) are within 10.0 km of a protected area.
- 15 (78.95% of sites) are not within 10.0 km of a protected area.

% Summary of KBAs overlap



- 4 (21.05% of sites) are within 10.0 km of a Key Biodiversity Area.
- 15 (78.95% of sites) are not within 10.0 km of a Key Biodiversity Area.

IUCN Red List of Threatened Species

The following table shows counts of species categorized as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) under the IUCN Red List of Threatened Species and found within 50 km of each site. For counts of all IUCN Red List species within a 50 km radius of each site please refer to the "redlist" CSV file located in the download package.

Site	CR	EN	VU	TOTAL
Daudpur	10	12	23	45
Sardhan	12	15	31	58
Utto	10	11	23	44
Santha	10	12	23	45
Alipur	12	14	27	53
Sirauli	10	12	23	45
Nahchani	10	12	23	45
Duhai	10	11	24	45
Hajipur	12	14	27	53
Banga Nagra	10	12	23	45
Mori	10	12	23	45
Shyam Nagar	12	14	26	52
Singarpur Khera	10	12	23	45
Dabar	10	12	23	45
Sathedi	12	15	31	58
Goana	12	14	26	52

Site	CR	EN	VU	TOTAL
Nagla Shyuram	10	12	23	45
Bhikampur	10	11	24	45
Kheda Bakanda	10	12	23	45

List of selected operational sites assessed in this report

Daudpur, Sardhan , Utto, Santha, Alipur, Sirauli, Nahchani, Duhai, Hajipur , Banga Nagra, Mori, Shyam Nagar, Singarpur Khera, Dabar, Sathedi , Goana, Nagla Shyuram , Bhikampur , Kheda Bakanda

Recommended citation

IBAT Multi-site Report, 2020. Generated under license 952-9070 from the Integrated Biodiversity Assessment Tool on 21 May 2020. https://www.ibat-alliance.org.

Limitations

This report provides an indication of potential biodiversity related features; protected areas, Key Biodiversity Areas and species close to the specified location. While it provides an early indication of potential biodiversity concerns, the report does not provide details of potential direct, indirect, downstream or cumulative impacts. Furthermore, the report provides a set of conservation values sourced from global data sets and is not a substitute for additional investigation and due diligence, especially concerning national and/or local conservation priorities.

IBAT

Proximity Report

UTTO

Country: India

Location: [27.1, 77.5]

Date of analysis: 21 May 2020

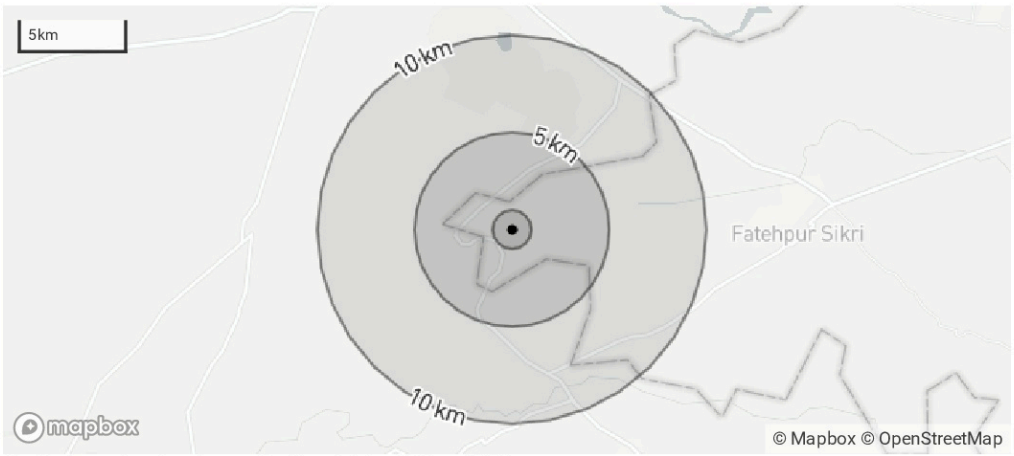
Buffers applied: 1.0 km | 5.0 km | 10.0 km

Generated by: Emma Marsden

Company/Subscriber: ADB

Overlaps with:

Protected Areas	3
Key Biodiversity Areas	1
IUCN Red List	44



Displaying project location and buffers: 1.0 km, 5.0 km, 10.0 km

About this report

This report presents the results of [952-9067] proximity analysis to identify the biodiversity features and species which are located within the following buffers: 1.0 km, 5.0 km, 10.0 km.

This report is one part of a package generated by IBAT on 21 May 2020 that includes full list of all species, protected areas, Key Biodiversity Areas in CSV format, maps showing the area of interest in relation to these features, and a 'How to read IBAT reports' document.

Data used to generate this report

- UNEP-WCMC and IUCN, 2020. Protected Planet: The World Database on Protected Areas (WDPA)[On-line], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net - May 2020.
- BirdLife International (on behalf of the KBA Partnership), 2019. Key Biodiversity Areas - October 2019.
- IUCN, 2020. IUCN Red List of Threatened Species - January 2020.

Protected Areas

The following protected areas are found within 1.0 km, 5.0 km, 10.0 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Within buffer of
Keoladeo Ghana	5.0 km
Keoladeo National Park	5.0 km
Keoladeo National Park	5.0 km

Key Biodiversity Areas

The following key biodiversity areas are found within 1.0 km, 5.0 km, 10.0 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance
Keoladeo National Park and Ajan Bande	5.0 km

IUCN Red List of Threatened Species

The following threatened species are potentially found within 50km of the area of interest.

For the full IUCN Red List please refer to the associated csv in the report folder.

Species name	Common name	IUCN Category	Taxonomic Class
Amblyceps arunchalensis		EN	Actinopterygii
Anacyclus pyrethrum	Atlas daisy	VU	Magnoliopsida
Antigone antigone	Sarus crane	VU	Aves

Species name	Common name	IUCN Category	Taxonomic Class
Aquila heliaca	Eastern imperial eagle	VU	Aves
Aquila nipalensis	Steppe eagle	EN	Aves
Aquila rapax	Tawny eagle	VU	Aves
Ardeotis nigriceps	Great indian bustard	CR	Aves
Aythya ferina	Common pochard	VU	Aves
Batagur dhongoka	Three-striped roofed turtle	CR	Reptilia
Batagur kachuga	Red-crowned roofed turtle	CR	Reptilia
Ciconia episcopus	Asian woollyneck	VU	Aves
Clanga clanga	Greater spotted eagle	VU	Aves
Clanga hastata	Indian spotted eagle	VU	Aves
Columba eversmanni	Yellow-eyed pigeon	VU	Aves
Crocodylus palustris	Mugger	VU	Reptilia
Falco cherrug	Saker falcon	EN	Aves
Gavialis gangeticus	Gharial	CR	Reptilia
Geoclemys hamiltonii	Spotted pond turtle	EN	Reptilia
Gyps bengalensis	White-rumped vulture	CR	Aves
Gyps indicus	Indian vulture	CR	Aves

Species name	Common name	IUCN Category	Taxonomic Class
Gyps tenuirostris	Slender-billed vulture	CR	Aves
Haliaeetus leucoryphus	Pallas's fish-eagle	EN	Aves
Leptoptilos dubius	Greater adjutant	EN	Aves
Leptoptilos javanicus	Lesser adjutant	VU	Aves
Leucogeranus leucogeranus	Siberian crane	CR	Aves
Lutrogale perspicillata	Smooth-coated otter	VU	Mammalia
Manis crassicaudata	Indian pangolin	EN	Mammalia
Marmaronetta angustirostris	Marbled teal	VU	Aves
Melursus ursinus	Sloth bear	VU	Mammalia
Neophron percnopterus	Egyptian vulture	EN	Aves
Oryza malampuzhaensis		VU	Liliopsida
Oxyura leucocephala	White-headed duck	EN	Aves
Panthera pardus	Leopard	VU	Mammalia
Prionailurus viverrinus	Fishing cat	VU	Mammalia
Rhinoceros unicornis	Greater one-horned rhino	VU	Mammalia
Rusa unicolor	Sambar	VU	Mammalia
Rynchops albicollis	Indian skimmer	VU	Aves

Species name	Common name	IUCN Category	Taxonomic Class
Sarcogyps calvus	Red-headed vulture	CR	Aves
Saxicola macrorhynchus	White-browed bushchat	VU	Aves
Sterna acuticauda	Black-bellied tern	EN	Aves
Sypheotides indicus	Lesser florican	EN	Aves
Tetracerus quadricornis	Four-horned antelope	VU	Mammalia
Vanellus gregarius	Sociable lapwing	CR	Aves
Wallago attu		VU	Actinopterygii

Recommended citation

IBAT Proximity Report, 2018. Generated under licence 952-9067 from the Integrated Biodiversity Assessment Tool on 21/05/2020. http://www.ibat-alliance.org

How to use this report

This report provides an indication of the potential biodiversity-related features - protected areas, key biodiversity areas and species - close to the specified location. It provides an early indication of potential biodiversity concerns, and can provide valuable guidance in making decisions. For example, this information can be helpful when assessing the potential environmental risk and impact of a site, categorising investments/projects, preparing the terms of reference for an impact assessment, focusing attention on key species of conservation concern and sites of known conservation value, and reviewing the results of an impact assessment.

The report does not provide details of potential indirect, downstream or cumulative impacts. Furthermore, the report should be regarded as a "first-step", providing a set of conservation values sourced from global data sets, and is not a substitute for further investigation and due diligence, especially concerning national and/or local conservation priorities.

IBAT

Proximity Report

DABAR

Country: India

Location: [27, 77.6]

Date of analysis: 21 May 2020

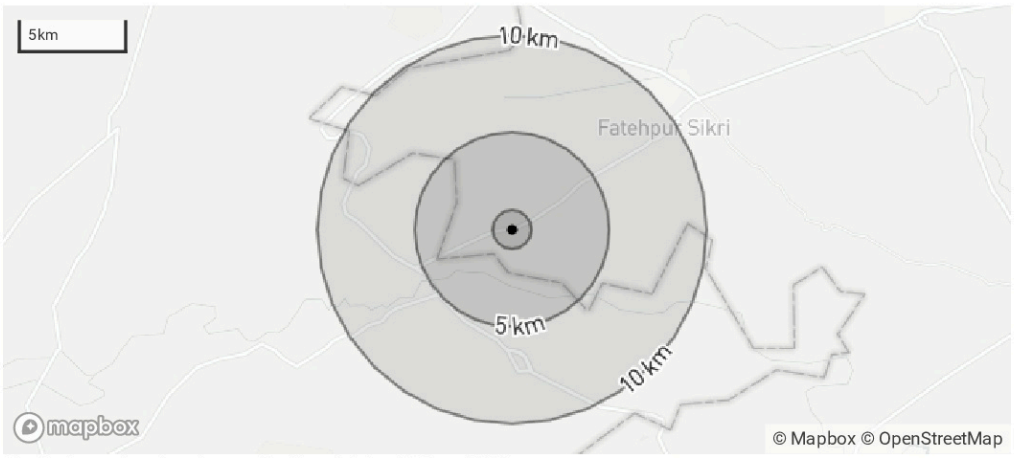
Buffers applied: 1.0 km | 5.0 km | 10.0 km

Generated by: Emma Marsden

Company/Subscriber: ADB

Overlaps with:

Protected Areas	1
Key Biodiversity Areas	1
IUCN Red List	45



Displaying project location and buffers: 1.0 km, 5.0 km, 10.0 km

About this report

This report presents the results of [952-9074] proximity analysis to identify the biodiversity features and species which are located within the following buffers: 1.0 km, 5.0 km, 10.0 km.

This report is one part of a package generated by IBAT on 21 May 2020 that includes full list of all species, protected areas, Key Biodiversity Areas in CSV format, maps showing the area of interest in relation to these features, and a 'How to read IBAT reports' document.

Data used to generate this report

- UNEP-WCMC and IUCN, 2020. Protected Planet: The World Database on Protected Areas (WDPA)[On-line], Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net - May 2020.
- BirdLife International (on behalf of the KBA Partnership), 2019. Key Biodiversity Areas - October 2019.
- IUCN, 2020. IUCN Red List of Threatened Species - January 2020.

Protected Areas

The following protected areas are found within 1.0 km, 5.0 km, 10.0 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Within buffer of
Keoladeo National Park	10.0 km

Key Biodiversity Areas

The following key biodiversity areas are found within 1.0 km, 5.0 km, 10.0 km of the area of interest.
For further details please refer to the associated csv file in the report folder.

Area name	Distance
Keoladeo National Park and Ajan Bande	10.0 km

IUCN Red List of Threatened Species

The following threatened species are potentially found within 50km of the area of interest.

For the full IUCN Red List please refer to the associated csv in the report folder.

Species name	Common name	IUCN Category	Taxonomic Class
Amblyceps arunchalensis		EN	Actinopterygii
Anacyclus pyrethrum	Atlas daisy	VU	Magnoliopsida
Antigone antigone	Sarus crane	VU	Aves
Aquila heliaca	Eastern imperial eagle	VU	Aves
Aquila nipalensis	Steppe eagle	EN	Aves

Species name	Common name	IUCN Category	Taxonomic Class
Aquila rapax	Tawny eagle	VU	Aves
Ardeotis nigriceps	Great indian bustard	CR	Aves
Aythya ferina	Common pochard	VU	Aves
Batagur dhongoka	Three-striped roofed turtle	CR	Reptilia
Batagur kachuga	Red-crowned roofed turtle	CR	Reptilia
Ciconia episcopus	Asian woollyneck	VU	Aves
Clanga clanga	Greater spotted eagle	VU	Aves
Clanga hastata	Indian spotted eagle	VU	Aves
Columba eversmanni	Yellow-eyed pigeon	VU	Aves
Crocodylus palustris	Mugger	VU	Reptilia
Falco cherrug	Saker falcon	EN	Aves
Gavialis gangeticus	Gharial	CR	Reptilia
Geoclemys hamiltonii	Spotted pond turtle	EN	Reptilia
Gyps bengalensis	White-rumped vulture	CR	Aves
Gyps indicus	Indian vulture	CR	Aves
Gyps tenuirostris	Slender-billed vulture	CR	Aves
Haliaeetus leucoryphus	Pallas's fish-eagle	EN	Aves

Species name	Common name	IUCN Category	Taxonomic Class
Leptoptilos dubius	Greater adjutant	EN	Aves
Leptoptilos javanicus	Lesser adjutant	VU	Aves
Leucogeranus leucogeranus	Siberian crane	CR	Aves
Lutrogale perspicillata	Smooth-coated otter	VU	Mammalia
Manis crassicaudata	Indian pangolin	EN	Mammalia
Marmaronetta angustirostris	Marbled teal	VU	Aves
Melursus ursinus	Sloth bear	VU	Mammalia
Neophron percnopterus	Egyptian vulture	EN	Aves
Oryza malampuzhaensis		VU	Liliopsida
Oxyura leucocephala	White-headed duck	EN	Aves
Panthera pardus	Leopard	VU	Mammalia
Platanista gangetica	South asian river dolphin	EN	Mammalia
Prionailurus viverrinus	Fishing cat	VU	Mammalia
Rhinoceros unicornis	Greater one-horned rhino	VU	Mammalia
Rusa unicolor	Sambar	VU	Mammalia
Rynchops albicollis	Indian skimmer	VU	Aves
Sarcogyps calvus	Red-headed vulture	CR	Aves

Species name	Common name	IUCN Category	Taxonomic Class
Saxicola macrorhynchus	White-browed bushchat	VU	Aves
Sterna acuticauda	Black-bellied tern	EN	Aves
Sypheotides indicus	Lesser florican	EN	Aves
Tetracerus quadricornis	Four-horned antelope	VU	Mammalia
Vanellus gregarius	Sociable lapwing	CR	Aves
Wallago attu		VU	Actinopterygii

Recommended citation

IBAT Proximity Report, 2018. Generated under licence 952-9074 from the Integrated Biodiversity Assessment Tool on 21/05/2020. http://www.ibat-alliance.org

How to use this report

This report provides an indication of the potential biodiversity-related features - protected areas, key biodiversity areas and species - close to the specified location. It provides an early indication of potential biodiversity concerns, and can provide valuable guidance in making decisions. For example, this information can be helpful when assessing the potential environmental risk and impact of a site, categorising investments/projects, preparing the terms of reference for an impact assessment, focusing attention on key species of conservation concern and sites of known conservation value, and reviewing the results of an impact assessment.

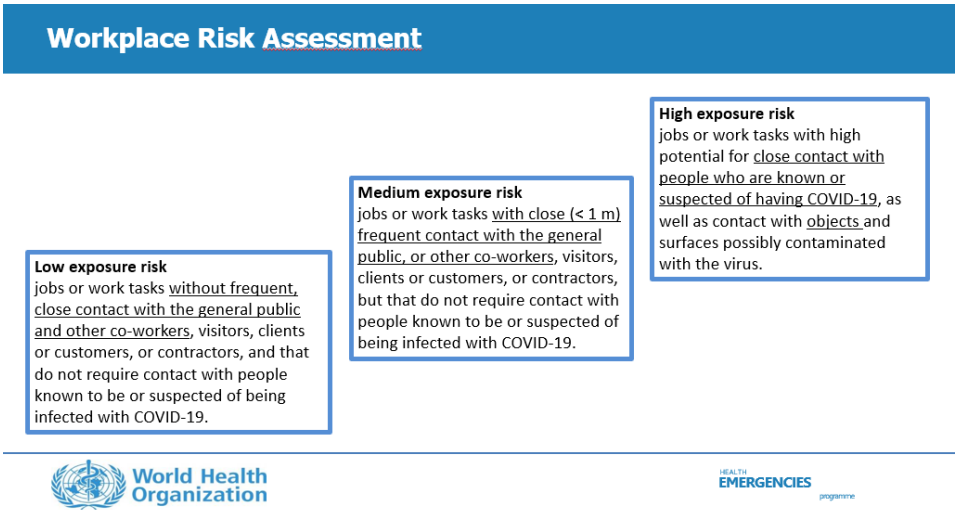
The report does not provide details of potential indirect, downstream or cumulative impacts. Furthermore, the report should be regarded as a "first-step", providing a set of conservation values sourced from global data sets, and is not a substitute for further investigation and due diligence, especially concerning national and/or local conservation priorities.

Appendix 8: Guidelines on COVID-19 Preparedness Measures

Risk of Exposure

The World Health Organization (WHO) notes that COVID-19 is transmitted primarily through respiratory droplets or contact with contaminated surfaces such that the risk of occupational exposure depends on the probability of coming into (i) close, less than 1m, or frequent contact with people who may be infected and (ii) contact with contaminated surfaces.

The nature of pre-construction consultations and surveys and construction works required for the project mean that the WHO occupational exposure risk will be low to medium:



The following factors will increase the risk of exposure if COVID-19 is circulating in either the local community where workers live/travel from or where the project will be implemented,

- Poor sanitation and welfare facilities on-site, in accommodations and for local communities
- Transient workforce; moving frequently between the local communities
- Construction workers likely from outside local community and/or state
- Construction workers likely to be residing within the local communities
- Underlying health conditions; asthma, chronic kidney or lung disease, diabetes, liver disease, serious heart conditions, serious obesity etc.
- Distribution line works taking place along public roads and in habitations
- Local health capacity limited especially in the more rural locations; Uttar Pradesh has below the 0.55 national average number of public hospital beds/1,000 persons[36]

However, the national government is monitoring incidences of COVID-19 including identifying hotspots designated as containment zones and has various requirements (SOP) to be followed by companies and the public as well as a

[36] https://www.brookings.edu/blog/up-front/2020/03/24/is-indias-health-infrastructure-equipped-to-handle-an-epidemic/

tracking app Aarogya Setu. Uttar Pradesh is in lockdown until at least 30 June 2020 with 11,335 cases as of 10 June 2020 and containment zones in Gautam Buddh Nagar, Ghaziabad, and districts in Delhi NCR.

These risks will need to be reviewed on an ongoing basis by the DISCOMs and contractors as the COVID-19 pandemic evolves over the project implementation period.

COVID-19 Preparedness

To demonstrate how the project will address the above risks COVID-19 will be included as part of the health and safety plan. The health and safety plan will need to include details of the current risk, day to day measures to be taken on-site, trainings, roles and responsibilities, an emergency procedure to follow in the event anyone develops symptoms including flow chart and contact details for local health facilities, screening checklists etc. It will need to demonstrate how government requirements will be followed by the DISCOMs and contractors. In addition to any government requirements applicable at the time the following measures should be considered:

- During pre-construction activities social distancing of at least 1m will be maintained by all those working in the field, in order to reduce the risk of exposure as far as possible.
- Check and follow the government advice for the local community where planning to undertake consultations, surveys, and/or construction works
- Confirm the local health authority and liaise with them in advance to identify the current status of COVID-19 in the local community and any advise to be followed.
- Develop an emergency procedure to follow in the event anyone in the field develops symptoms including flow chart and contact details of local health facilities; this is to cover self monitoring of symptoms, isolation, testing and quarantine, and transfer and admittance to hospital as a situation requires.
- Provide awareness raising activities for those being deployed to the field to cover hand hygiene, symptoms, risk, and procedures to follow if symptoms occur – keep records of all trainings.
- Ensure those going in the field are provided with accommodation that allows social distancing of at least 1m, is regularly cleaned, and with adequate sanitation and welfare facilities to enable them to undertake hand washing etc.
- Ensure temperature and medical checks are undertaken before deploying anyone to the field, especially for anyone travelling from outside the local community and/or state.
- Provide those going in the field with adequate supplies of PPE including soap, hand sanitizer, paper tissues, masks, thermometer to check own temperature etc.
- For consultations consider if rather than one large public meeting a series of smaller focus groups or face-to-face consultations could serve the same purpose without compromising the requirement to undertake meaningful consultations.

- Clean and disinfect the venue including objects and surfaces before and after any event.
- Consider the use of outdoor venues in order to maximise ventilation, space chairs at least 1m apart and ensure there are no bottlenecks to avoid close contact.
- If health authorities advise COVID-19 is circulating in the local community then advise participants in advance that if they have any symptoms or feel unwell, they should not attend.
- On arrival at the public meeting check the temperature of participants and require them to self-declare free of COVID-19 symptoms and not in recent contact with anyone who has had symptoms before being allowed into the venue.
- Those that cannot attend should be given the option of a telephone consultation or similar if they have an interest or concern about the project, to avoid them feeling obliged to attend for their voice to be heard.
- Provide awareness raising posters and have a hand wash station at the entry equipped with clean water, soap and hand sanitizer for participants to use.
- Pre-order enough PPE, including soap, paper towels, paper tissues, hand sanitizer, and surgical masks for all participants to use; if not nationally mandated, at minimum, masks must be worn by all participants that cannot maintain social distancing or are elderly or otherwise medically vulnerable.
- If using microphones, ensure that they are wiped down with alcohol at least 70% concentration before passing it on.
- If food and drink is provided, try to provide pre-ordered individual packed food to avoid cross-contamination
- Identify an area where someone feeling unwell or has symptoms can be safely isolated, in case of serious case have a vehicle on call in which patient can be safely transferred to a local health facility with a driver who has full PPE and is trained to deal with potential cases and deep clean the vehicle afterwards.
- Emergency procedure to include for participants reporting symptoms and contacting other participants if anyone tests positive later, for contact tracing purposes ensure that all participants including support workers such as caterers or cleaners provide their contact details: telephone, address etc.
- Disposal of hygiene related waste in garbage bins with sealed lids lined with plastic bags, for onwards disposal in accordance with national regulations

During construction activities social distancing of at least 1m will be maintained by construction workers to members of the local communities in which they are undertaking work with awareness raising posters and notices so that local community members understand social distancing with them must be maintained. However, it may not be possible to maintain social distancing of 1m with other construction workers given tasks to be undertaken. If the tasks cannot be reconfigured to enable this, additional measures must be taken to reduce the risk of transmission between them:

- Daily temperature reading and self-certification check to be undertaken by the construction workers before leaving accommodation to confirm fit for work and having no COVID-19 symptoms.
- Posters and signages to be displayed on-site and at accommodation with daily toolbox talks to provide COVID-19 reminders on hygiene, emergency procedures etc.
- Enhanced cleaning and disinfection (using sodium hypochlorite (bleach) of surface at concentration 0.1% or alcohol at least 70% concentration for surfaces which can be damaged by sodium hypochlorite) of objects and surfaces that are regularly touched on-site and in construction worker accommodation including materials and equipment, shared rooms, surfaces, floors, toilets, and, washing facilities etc.
- Minimizing face-to-face and skin-to-skin contact by construction workers, orientate tasks so working side by side or facing away from each other rather than face on, and always assign construction workers to the same small working gang and the same accommodation, so as to limit social interaction between them
- Enhanced hand hygiene - regular hand washing with soap and water or alcohol-based hand sanitizer, including before entering and on leaving accommodation, on arriving and leaving site, and before putting on and after taking off any PPE
- Provide appropriate PPE and training on its proper use – masks, gloves, eye protection as applicable
- Provide medical insurance for all construction workers and sick leave to avoid them turning up for work when symptomatic due to no work-no pay situation

Further Sources of Information

- India Ministry of Health and Family Welfare https://www.mohfw.gov.in/
- WHO Advice for the Public https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public
- WHO Technical Guidance https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance
- WHO Guidance for Schools, Workplace and Institutions https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/guidance-for-schools-workplaces-institutions

Appendix 9: UPPCL Policy on Environmental and Social Sustainability

उत्तर प्रदेश पावर कारपोरेशन लिमिटेड
(उत्तर प्रदेश सरकार का उपक्रम)
U.P. POWER CORPORATION LIMITED
(Govt. of Uttar Pradesh Undertaking)
CIN:U32201UP1999SGC024928

संख्या–1003–कार्य/चौदह–पाकालि/2020–21–के/2020 दिनांक: 23 जुलाई, 2020

कार्यालय ज्ञाप

उ0प्र0 पावर कारपोरेशन लि0 एवं इसके सहयोगी वितरण निगमों हेतु " Environmental and Social Sustainability" नीति को एतद्द्वारा संलग्न विवरण के अनुसार निर्धारित किया जाता है।

संलग्नक:–यथोक्त।

निदेशक मण्डल

संख्या : 1003–(1)–कार्य/चौदह–पाकालि/2020 तद्दिनांक।

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित :–

1. प्रमख सचिव, ऊर्जा, उ0 प्र0 शासन, लखनऊ।
2. अध्यक्ष के निजी सचिव, उ0प्र0 पावर कारपोरेशन लि0, शक्ति भवन, लखनऊ।
3. प्रबन्ध निदेशक के निजी सचिव, उ0प्र0 पावर कारपोरेशन लि0, शक्ति भवन, लखनऊ।
4. निदेशक (का0प्र0 एवं प्रशा0/वित्त/वितरण/वाणिज्य/कारपोरेट प्लानिंग), उ0प्र0 पावर कार्पोरेशन लि0, शक्ति भवन, लखनऊ।
5. प्रबन्ध निदेशक, मध्यांचल/पूर्वान्चल/पश्चिमांचल/दक्षिणान्चल, विद्युत वितरण निगम लि0, लखनऊ /वाराणसी/मेरठ/आगरा/केस्को–कानपुर।
6. समस्त निदेशकगण (का0प्र0 एवं प्रशा0/वित्त/वितरण/वाणिज्य), समस्त डिस्काम।
7. मुख्य अभियन्ता, नियोजन/वाणिज्य/रेस्पो/पीपीए/आर0ए0यू0/सी0एम0यू0डी0, उ0प्र0 पावर कारपोरेशन लि0, शक्ति भवन विस्तार/शक्ति भवन, लखनऊ।
8. अपर सचिव–I,II, III उ0प्र0 पावर कार्पोरेशन लि0, शक्ति भवन, लखनऊ।
9. समस्त मुख्य अभियन्ता (वितरण), समस्त डिस्काम एवं केस्को, कानपुर।
10. अधिशासी अभियन्ता (वेब), कक्ष संख्या–407, उ0प्र0 पावर कारपोरेशन लि0, शक्ति भवन विस्तार, लखनऊ को वेबसाइट–www.uppcl.org पर अपलोड करने हेतु।
11. कट फाइल।

आज्ञा से,

(आर0के0 श्रीवास्तव)
उप सचिव (कार्य)

अधीक्षण अभि0-I/...
अधिशासी अभि0-I/...

मुख्य अभियन्ता
सी0एम0यू0(जे0)

& Dilip, SE
& Rajeev, EE, ADB

25/7/20

कार्यालय ज्ञाप संख्या–1003–कार्य/चौदह–पाकालि/2020–21–के/2020 दिनांक: 23 जुलाई, 2020 का संलग्नक

POLICY ON ENVIRONMENTAL AND SOCIAL SUSTAINABILITY

1. Introduction

Uttar Pradesh Power Corporation Ltd. (UPPCL) has been a pioneer in promoting innovative ideas and setting new standards in service delivery. The organization is continuously working towards sustainability of environment and safety. The Corporation is making every effort to ensure that the power requirements of the State are met, and the consumers are provided with reliable, quality and cost-effective electricity along with cleaner, safer and healthier environment with minimum/no social disturbances.

2. Social and Environmental Aspects and Policy Formulation

The distribution system includes and incorporates the distribution line, transformers, cables, switchyards and sub-stations etc. To cater to the power requirement of state, UPPCL is continuously engaged in developing new infrastructure of sub-stations and distribution lines for giving power to every household. UPPCL recognizes that the implementation of distribution schemes may have some unavoidable environmental and social implications in miniscule. The construction of sub-stations and laying of distribution lines would result in acquisition of land and some minor temporary damages to crop and trimming/lofting of tree branches. It is with this objective that UPPCL has formulated the Social Policy and Procedures (SP&P) to address all adverse impacts arising out of its distribution projects systematically.

UPPCL also has concerns for clean environment and sustainable development in all its activities. To achieve this objective, UPPCL has formulated environmental framework and safeguard mechanisms for distribution project and an Environmental Management Plan (EMP) to mitigate the ill effects of the developmental activities.

The Environmental Social Policy and Procedures (ESP&P) being implemented by UPPCL and its associated Discoms, are consistent with relevant national and state policies and regulations, inter-alia the Indian Electricity (Supply) Act 1948, Indian Electricity Rules, 1956 and Indian Electricity Act 2003.

3. Environment and Social Performance Parameters/Standards

UPPCL is developing an E&S assessment framework broadly encompassing the following points:

i. Assessment and Management of Environmental and Social Impacts
ii. Labour and Working Conditions
iii. Community Health, Safety, and Security
iv. Land Acquisition
v. Biodiversity Conservation and Sustainable Management of Natural Resources
vi. Indigenous People
vii. Cultural Heritage

Central to these requirements is the application of a mitigation hierarchy to anticipate and avoid adverse impacts on workers, communities, and the environment.

Environment and Social Policy Statement of UPPCL

UPPCL is committed to identify, assess, and manage environmental and social concerns at both organization and project levels by consciously following the basic principles of avoidance, minimization and mitigation of environmental & social impacts with the improvement of Management System and introduction of State of the Art and proven technologies.

4. UPPCL and Associated Discoms' Commitments

i. Ensure transparency of the project to all stakeholders through dissemination of information and consultation at every stage of project implementation.
II. Maintain highest standards of social and environmental responsibility not only towards its employees but also to the consumers and the community as well.
III. To minimize ecological impacts on environment, land and flora/fauna through progressive policies like consciously economizing on the requirement of land.

5. Principles of Environment and Social Policy / Safeguards

The key principles and safeguards of UPPCL environmental and social policy are:

i. As far as possible avoid operations in environmentally sensitive areas with special respect for fragile ecosystems and their inherent biodiversity.
ii. As far as possible avoid areas like high mountains, hilly terrain prone to landslides, large lakes, reservoirs and marshy places.
iii. Care is taken to route the lines through a minimum disturbance path.
iv. Avoid protected areas to the extent possible.
v. ROW (Right of way) is selected duly considering the location of different utilities such as telecommunication lines, railway circuits, and gas pipelines to avoid interference.
vi. Adoption of best technology/latest equipment to avoid pollution and to ensure electrical safety.
vii. Minimizing energy losses and promote energy efficiency in all its activities.

UPPCL weighs due consideration to address the associated environmental & social issues in line with above principles to create a suitable organizational structure to implement mitigation measures systematically. The policy and procedures will be subject to periodical review in accordance with the guiding principles of avoidance, minimum disturbance and suitable remedial measures.

6. Environmental and Social impacts of distribution projects

UPPCL has a vast network of Distribution lines and substations spread across Uttar Pradesh. Operational activities and construction of new substations, lines, etc. may have some distinct environmental and social impacts. UPPCL has identified certain environmental and social issues typically associated with its projects.

Loss of Land

UPPCL normally receives land for their sub-stations provided by Gram-Sabha at free of cost/on lease for long period or at a very nominal token amount in rural areas; whereas in urban areas it is provided by Municipal Corporation/statutory body. However, if the land belongs to private owner, it is acquired at the rate prescribed by prevailing government policy. Normally no land is lost in erecting a distribution line. The line is preferably erected on the roadsides, canal sides, boundaries of the fields and on barren land. Similarly, the underground cable is also laid in such a way that it is not likely to be damaged during soil-tilling/ploughing. No compensation is admissible regarding pole erection, conductor stringing or cable laying.

Loss of Crop/Trees/Vegetation

Normally flexibility is adopted in choosing routes to avoid trees but in case, it is unavoidable then minimum trimming/pruning of tree branches is done. In case of complete loss of a tree/fruit bearing tree, adequate compensation is granted as per the prevailing rules as decided by the competent authority.

Every effort is made that erection is done during off-crop-season to avoid any damage to crop. If there is any significant damage to standing crop and/or trees or loss of crop due to electrical fire, the value of damaged crop is assessed by district authorities and is compensated accordingly.

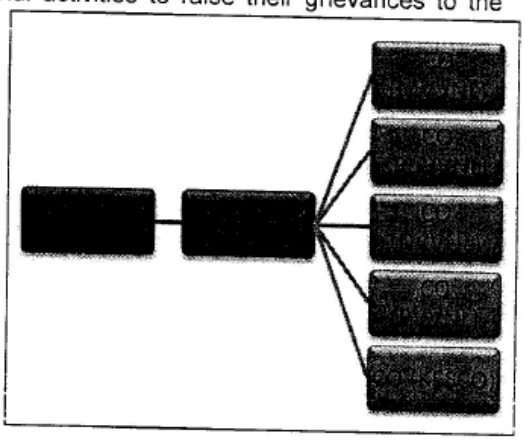
Disposal of used transformer oil, batteries and capacitor bank

The used transformer oil, battery and capacitor banks are to be disposed - off with utmost care as per prescribed norms to minimize any ill-effect on environment.

UPPCL shall ensure a fair, efficient and transparent process relating to land acquisition, including loss of assets and other negative impacts on Affected Persons (APs) resulting from its development program, irrespective of sources of financing.

7. Institutional Arrangements and Grievance Redressal Mechanism

Considering the importance of accountability, the concerns and complaints of Affected Persons and Communities should be addressed in a manner that is fair, objective, and constructive. A mechanism shall be established through the Compliance Officer (CO) at Discom Level to enable individuals and communities affected by any operational activities to raise their grievances to the authority concerned. At UPPCL Head Quarter, an officer shall also be designated to coordinate across Discoms. The CO shall be an officer not below the rank of Chief Engineer (CE). At Discom level CO will act through Divisional Engineer and respective Zonal Chief Engineer as part of grievance redressal mechanism.



The CO shall respond to the complaints from those affected by any operational activities by UPPCL/Discoms with the goal of enhancing environmental and social outcomes on the ground and fostering greater public accountability. The Discom CO shall update the UPPCL CO on regular basis. The E&S Grievance Redressal Cell is to be headed by Director (P&A), UPPCL