India Energy Efficiency Scale up Program (P165488)

THE WORLD BANK

ENVIRONMENTAL MANAGEMENT FRAMEWORK

FINAL

Prepared by

ENERGY EFFICIENCY SERVICES LTD. (EESL)

Table of Contents

List of Tables

List of Figures

List of Abbreviations

AgDSM	Agriculture Demand Side Management
BP	Bank Procedures
CCMS	Centralized Control and Monitoring System
CFL	compact fluorescent lamp
CM	Chief Minister
CRZ	Coastal Regulation Zone
DELP	Domestic Efficient Lighting Program
Discom	Distribution Company (Electricity)
EE	Energy Efficiency
EESL	Energy Efficiency Services Limited
EHSS	Environmental, Occupational Health & Safety and Social Manual
EA	Environmental Assessment
ESCO	Energy Services Company
EMF	Environmental Management Framework
ESSA	Environmental and Social Systems Assessment
FAQ	Frequently Asked Questions
GHG	Greenhouse Gas
GoI	Government of India
HR	Human Resources
IFC	International Finance Corporation
IP	Indigenous People
IPPF	Indigenous People Policy Framework
KfW	Kreditanstalt für Wiederaufbau, German Government Development Bank
LED	Light Emitting Diode
M&E	Monitoring and Evaluation
MoEFCC	Ministry of Environment, Forests and Climate Change
MoP	Ministry of Power
MuDSM	Municipal Demand Side Management
NOC	No Objection Certificate
NTPC	National Thermal Power Corporation
O&M	Operations and Maintenance
OHS	Operational Health and Safety
OP	Operational Procedures
PAP	Program Action Plan
PDO	Program Development Outcome
PFC	Power Finance Corporation
PforR	Program for Results
PGCIL	Power Grid Corporation of India Limited
REC	Rural Electrification Corporation
RoHS	Restriction of Hazardous Substances
SLNP	Street Lighting National Program
ToR	Terms of Reference
UJALA	Unnat Jyoti by Affordable LEDs for All
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
WB	The World Bank

ENVIRONMENTAL MANAGEMENT FRAMEWORK

Executive Summary

Project Overview

Energy Efficiency Services Limited (EESL) has emerged as a vital entity for energy efficiency in India by financing and delivering energy efficiency solutions, especially in the residential and public sectors. EESL was established in 2009 as a state-owned ESCO under Ministry of Power (MoP), Government of India (GoI) as a joint venture between four Public Sector Utilities – National Thermal Power Corporation (NTPC), Rural Electrification Corporation (REC), Power Finance Corporation (PFC), and Power Grid Corporation of India (PGCIL).

EESL has been a key implementing agency in the implementation of the GoI's energy efficiency vision. EESL's approach involves aggregating demand for energy efficient appliances and equipment and using competitive bulk procurement to improve affordability while ensuring quality. The GoI has requested World Bank financing to support EESL in the implementation of its growing program, covering priority energy efficiency initiatives.

The proposed operation by the World Bank would support the GoI's program, for energy efficiency market transformation in residential and public sectors which would be implemented through EESL. It comprises a US$ 220 million Program for Results (PforR) loan and US$80 million as Guarantee to support EESL (under the Investment Project Financing (IPF) Component) in scaling up its energy efficiency programs. The proposed scope includes support for scaling up of EESL activities related to Light Emitting Diode (LED) lightbulbs, Ceiling fans and tube lights under the GoI's Unnat Jyoti by Affordable LEDs and Appliances for All (UJALA) initiative and scaling up of GoI's Street Lighting National Program (SLNP). The program will also include technical support to EESL for incorporation of sustainability elements into EESL's newer business areas. In addition, the program will enhance EESL's access to commercial financing; and institutional strengthening.

The Guarantee program is supporting sale of energy efficient LED lightbulbs, tube lights and ceiling fans to domestic consumers under UJALA, and replacing of the existing conventional streetlights, and to a limited extent, supporting electrical systems and light poles under SLNP.

Baseline Environmental Profile

UJALA and SLNP will be implemented nationwide, both in urban and rural areas. India has diverse climate, ecology and geography and the population is distributed across rural, semi urban and urban areas. The climate of India is divided into five (5) zones and there are conditions of extreme temperatures, rainfall, humidity and cold zones with differing demands in terms of lighting requirements, type of lights, warehousing, transportation, distribution and installation of the LEDs. India has 881 sensitive locations which include National Parks, Wildlife Sanctuaries, Core Biosphere Reserves, Ramsar sites pertaining to Wetlands, major estuaries in the coastal areas, Marine protected areas, potential important bird areas and tiger reserves, notified elephant reserves and critically polluted areas. India has more than 3400 Archaeological properties identified by Archaeological Survey of India. Several national level pilgrimages/ mass gatherings (for example Ajmer Sharif, Bodhgaya, Puri, Rameshwaram,

Belur Math, Guruvayoor Temple, Somnath Temple, Rajgir, Shirdi, Vaishno Devi etc. and many others) and various local pilgrim destinations and circuits are also considered as part of local culture by various communities. The potential impacts due to interaction of the project activities with these cultural values should be considered during the project. In addition, there are many areas prone to natural disasters. Under this nationwide program, it is possible that specific project locations can be in urban and rural areas in proximity to the coasts, forests and other natural habitats. While it is not envisaged that the project activities will infringe into such areas, such characteristics are of importance especially for handling the wastes generated from the project activities. Since exact project locations are not yet known, the safeguards management approach will be based on exclusion principles for avoiding key environmental risks and mitigating / managing other risks based on the proposed framework.

Environmental Regulations

Applicable national regulations and the World Bank Operational Policies need to be considered for siting criteria, environmental pollution control requirements, need for institutional mechanisms, occupational health and safety requirements, resource utilisation and considerations on cultural and social aspects.

Project Screening

The proposed project activity comes under the infrastructure development project. The screening criteria for infrastructure development projects under the Environmental Impact Assessment (EIA) Notification, 14th Sep 2006 (updated till date) does not require to obtain environmental clearance from Ministry of Environment, Forests and Climate Change (MoEFCC). Any construction work for industrial sheds or warehouses with built up area less than 1,50,000 sq. m. also does not come under the purview of EIA notification of MoEFCC. However, there is requirement to obtain permits from local bodies for certain activities and consent to establish from respective pollution control boards for use of DG sets.

The proposed project will have significant positive impact as the lifecycle environmental impacts of LED bulbs are significantly less, when compared to that of the alternatives, such as incandescent or Compact Fluorescent Lamp (CFL) bulbs. Moreover, EESL's initiatives (of energy efficient tube lights, ceiling fans and streetlights) will have significant positive impact on the environment because of significant energy savings it stands to generate by replacing less efficient options.

Some of the Program activities, if not managed systematically are expected to have impacts on the environment. These include placement of temporary kiosks for distribution of bulbs, tubelights and ceiling fans; quality of the lighting products, and disposal of packaging and other wastes. These aspects would assume importance when the project locations (urban and rural settlements) are in the proximity to sensitive areas. Hence, there is a need for systematic safeguards management with pre-defined framework for risk mitigation, if any. While such aspects are covered by and large under the existing Environmental, Occupational Health & Safety and Social (EHSS) Manual of EESL, there is a need to update the same to take care of all environmental and safety related impacts of UJALA and SLNP. It is also required to establish an Environmental Management Framework (EMF) with relevant screening, impact assessment procedures, and environmental management measures complying with World Bank requirements including occupational health and safety aspects.

The environmental safeguard policies of the World Bank require the conduct of Environmental Assessment for any physical infrastructure project, if it is expected to generate adverse environmental impacts. To facilitate effective screening and address the issues under UJALA

and SLNP, it is proposed that the projects be screened and categorised into different categories – Ea, Eb and Ec linked to severity of impacts and regulatory requirements. The projects depending on their activity, components involved, location vis-a-vis the surrounding environmental setting, will generate different adverse impacts that would need to be mitigated. The screening guidelines presented in this report identifies the additional studies required and give recommendations on specific prevention/mitigation measures which can be used by various stakeholders of the project. The checklist is provided in this report to check the sensitive features which can have interaction with project.

Key Environmental Impacts and Mitigation Measures

The impact assessment is conducted for each activity under UJALA and SLNP and the mitigation measures are presented upfront in this report. Also, the general impacts are classified in to direct, indirect, long term or short term for better understanding. The various phases of the project such as planning, transportation, storage, installation, operations and maintenance and closeout are taken into consideration for this assessment. The general mitigation measures are provided for impacts on environmental components such as air, water, noise, soil, ecology-biodiversity, socio-economy, heritage-culture, and occupational health and safety. In addition to the general mitigation measures, the specific measures are provided as per the site sensitivity checklist for UJALA and SLNP activities.

The generic Environmental Management Plan (EMP) is provided for each of the activities categorised as **Ec**. The report presents the implementation plan for the required mitigation measures, capacity building plan, as well as a monitoring plan and insight into budget requirement. The EMP will also describe the roles and responsibilities of the key institutions involved in the sub-project for its implementation. The EMP guides on the kind of reporting required from the contractor to monitor the implementation of these mitigation measures. The EMP also presents the special cases where the light pollution (location of luminary) may have impacts on sensitive receptors and recommended mitigation measures.

Special Cases

After screening and categorisation, the projects which are categorised as **Ea** would better be avoided[1] or require separate Environmental Assessment (EA). Those categorised as **Eb** will need to carry out EA, as part of the DPR preparation. The report also presents the key elements of EA and guidance on preparation of EMP.

Update to the EHSS Manual

The nature of activities (especially in case of SLNP), requires more focus on occupational health and safety aspects relating to installation of equipment, more than the project locational aspects. EESL has prepared an EHSS Manual covering mainly UJALA and SLNP, to guide their operations. The EESL also identified the scope for improving the existing EHSS Manual including its Standard Operating Protocols (SOPs) and Documentation Formats (DFs) covers programs and activities under EESL, through updating of the Manual and internalizing mechanisms for program planning, capacity building and monitoring. One of the objectives of this manual is also to prescribe the monitoring mechanism for its operationalization and also

[1] If the area is identified as Indigenous People's habitat, then EESL shall follow recommendations of the Indigenous Peoples Planning Framework (IPPF) prepared for this project.

to provide methodology and framework for updating the same. The current report has outlined the methodology and framework for updation of EHSS Manual in the future, with guiding principles and SOPs to be covered. Also, this EMF document presents the updated SOPs and the additional essential SOPs as per requirements identified by EESL for UJALA and SLNP Programs.

Proposed Institutional Mechanism and Reporting Requirements

In order to bring in environmental sustainability and occupational health and safety in its operations, EESL has a designated EHSS officer and has initiated the process of disseminating EHSS Manual internally among its staff and for the external stakeholders including vendors and contractors. As part of the parent PforR Component under World Bank support, the need to strengthen internal institutional capabilities for Environmental and Social aspects was identified, and EESL has agreed to establish a Sustainable Development Unit. The establishment of this Unit is included as a Disbursement Linked Indicator (DLI), against which World Bank financing would be disbursed, under the proposed PforR. This Department / Unit will be strengthened to the extent that it can also address the institutional requirements for implementing the EMF.

The department is proposed to be staffed with an Environmental Expert, a Social Expert and a Training and Capacity Building Expert. It is essential that this department is adequately staffed by professionals of relevant academic and professional experience, such as environmental sciences, environmental law, development and community outreach. The budgetary provisions for manpower, capacity-building & training, services of advisers/consultants/ experts for specific tasks and any special studies shall need to be arranged by EESL. The costs for measurable quantities in EMP shall be added into the capital costs of respective sub-projects. This report provides the proposed budget for training program, environmental audit and technical workshops based on the expected level of participation of EESL team members. There are total four types of reports expected from contractor in UJALA namely a. Logistics Plan, b. Vehicle Management Plan, c. Warehouse Management Plan and d. Kiosk Design. In SLNP program four types of reports are expected from the contractor namely a. Logistics Plan, b. Vehicle Management Plan, c. Warehouse Management Plan and d. Construction Management Plan. Depending upon the component to be audited, the auditing frequency is also mentioned for each component.

ENVIRONMENTAL MANAGEMENT FRAMEWORK

1 Introduction to India Energy Efficiency Scaleup Program

Energy efficiency is critical to helping India address the multiple challenges facing the power sector, moderate demand growth, and meet its climate change goals. Maintaining India's electricity supply-demand balance while curbing thermal generation and therefore Greenhouse Gas (GHG) emission, will require a combination of investments in networks, additional clean energy generation capacity and energy efficiency (EE). However, India's EE potential remains largely untapped, in part due to limited availability and high cost of financing for these types of investments. Going forward, electricity consumption by lighting, ceiling fans, air conditioners, refrigerators, agricultural pumps, and industrial motors is set to grow significantly. Given the potential growth in use of such appliances, and electricity consumption, the Government shifted its focus to supporting the scale-up of EE appliances and equipment particularly in the residential sector.

Energy Efficiency Services Limited (EESL) is a joint venture of NTPC Limited, Power Finance Corporation, Rural Electrification Corporation and Power Grid Corporation of India Limited. The EESL was set up under the Ministry of Power to facilitate implementation of energy efficiency projects. The EESL was established in 2009, as a public-sector Energy Saving Company (ESCO), or Super ESCO, under the Ministry of Power (MoP) to promote the uptake of energy efficient appliances and catalyse market development, through provision of EE products and services. In close coordination with MoP, BEE, State governments, Local Bodies, and Discoms, EESL has been in the forefront of promoting EE in residential and public sectors, addressing barriers and helping unlock the EE potential in many segments which had remained largely untapped for decades. In particular, with the help of public sector financing, use of practical business models and leveraging relationships with State governments to partner with Discoms and municipalities, EESL has been able overcome the challenges resulting from the lack of commercial financing in these segments, demonstrate the viability of EE and trigger market transformation.

EESL managed to deliver EE in diverse contexts, including for entities that were traditionally not deemed adequately creditworthy by the private sector, and hence had limited interaction with ESCOs. In its role as a Super ESCO, EESL also is mandated with supporting the development of private ESCOs and the broader development of EE market in India.

EESL approach involves aggregating demand for energy efficient appliances and equipment and using competitive bulk procurement to improve affordability while ensuring quality. Using a combination of financing sources, including equity capital from its promoters, along with loans from development partners and commercial lenders, EESL provides upfront financing for investment, delivers solutions, and is repaid based on energy saved by the consumers. EESL has been able to mitigate upfront financing risk for its customers by making the entire upfront capital investment using its own capital, and has demonstrated the viability of the deemed savings approach as the basis for contracts, paving the way for use of this and other performance-based contractual models by private ESCOs. In addition, by procuring large volumes from a variety of suppliers that meet strong technical standards, this model can help spur development of manufacturing capacity in India.

The National Mission for Enhanced Energy Efficiency (NMEEE), which is part of the National Action Plan on Climate Change, aims to strengthen Energy Efficiency by creating conducive regulatory and policy regime and fostering innovative and sustainable business models

NMEEE envisages four initiatives to enhance EE in energy intensive sectors, namely (i) PAT scheme for the industrial sector; (ii) Market Transformation for Energy Efficiency (MTEE) for accelerating the shift to energy efficient appliances in select sectors through innovative measures to improve their affordability; (iii) Energy Efficiency Financing Platform (EEFP), for creation of mechanisms that would help finance demand side EE programs in all sectors; and (iv) Framework for Energy Efficient Economic Development (FEEED), for development of fiscal instruments to promote EE.

As one of the key agencies tasked with NMEEE implementation, EESL will undertake a program of investments totalling nearly INR 655 billion (US$10 billion) through 2022. EESL's mandate is to effect market transformation in sectors and appliances that show significant potential for energy savings. To that end, EESL's business plan, and its investment program up to Fiscal Year (FY22) include appliances under Unnat Jyoti by Affordable LED for All (UJALA); Street Light National Program (SLNP); and scale-up in the newer areas such as agricultural water pumping (AgDSM), superefficient Air Conditioners (ACs) and municipal water pumping, among others, where preparatory analyses and business model development are currently under way.

The proposed program would support EE market transformation for high energy consuming appliances and equipment in residential and public sectors. The Program resources would focus on residential and public sectors.

1.1.1 UJALA Program

The ultimate target of the UJALA program is to increase the market penetration of Light Emitting Diode (LED) lightbulbs, by bringing down prices enough for a strong consumer preference for energy efficient LEDs to emerge, and for market penetration to continue unaided by EESL intervention – the point at which a sustainable market has been created. The initiative has already been highly successful, having deployed over 277.8 million (as on 2 Dec 2017) 7-Watt and 9-Watt LED bulbs to households and institutional consumers through bulk procurement, distribution, quality control, measurement and verification (M&V) of savings, and after-sale and warranty servicing, while also significantly reducing the price of LED lightbulbs in the market. Under this program EESL has also started distributing energy efficient tube lights and ceiling fans to consumers on reduced price.

1.1.2 SLNP Key Objectives

Under SLNP, replacement of 15 million conventional street light will result in considerable energy and cost savings for municipalities annually. Keeping future generations in mind, the revolutionary step is taken to conserve as much energy as possible. The initiative is part of the Government's efforts to spread the message of energy efficiency in the country.

1.1.3 Program Targets and Current Results

Table 1.1 : UJALA Current Results

Parameter	**Achieved as of 2 December 2017[2]**
No of LED lights distributed	27,78,78,896
Annual energy savings	36087 mn kWh
Cost Savings per year	INR 14435 Crores
Avoided Peak demand	7,225 MW
CO2 Reduction Per Year	2,92,30,712 t CO2

Table 1.2: SLNP Current Results

Parameter	**Achieved as of 2 December 2017[3]**
No of street lights completed	4,041,154
Average energy savings per light per day	0.385 kWh
Average Energy savings per day	1555844.29 kWh
GHG Emission reduction	1291.35 tCO2
Avoided Capacity	141.44 MW

1.2 Proposed Program

The proposed program under World Bank support comprises a US$ 220 million Program for Results (PforR) loan and US$80 million as Guarantee to support EESL in scaling up its energy efficiency programs. The proposed scope under PforR includes support for scaling up of EESL activities related to LED lightbulbs, LED tube lights, and ceiling fans under the Government of India's (GoI) UJALA initiative and scaling up of GoI's Street Lighting National Program (SLNP). The program will also include technical support to EESL for incorporation of sustainability elements into EESL's newer business areas and institutional strengthening. The Guarantee Component for which this EMF has been prepared, will enhance EESL's access to commercial financing.

1.3 Program Development Objectives

The Project Development Objectives (PDO) is to scale up energy savings in residential and public sectors, strengthen EESL's institutional capacity, and enhance its access to commercial financing. The PDO level outcome indicators would focus on market transformation of select energy efficient appliances and equipment, development of sustainable business models in new EE market segments, enhanced access to commercial financing and institutional strengthening.

Key Program Results. There will be four Results Areas under the PforR, whose achievement will be measured through six Disbursement Linked Indicators (DLIs). The Results Areas are:

Results Area 1: Energy savings and EE market transformation in the residential sector

Results Area 2: Energy savings and EE market transformation in public street lighting

Results Area 3: Development of sustainable business models in new EE market segments

Results Area 4: Institutional strengthening for sustainable EE scale-up.

[2] http://www.ujala.gov.in/
[3] http://slnp.eeslindia.org/

For the IPF component, the key results on the amount of commercial financing leveraged by the IBRD guarantee will be quantified, measured and reported as a PDO outcome indicator.

The IPF operation would utilize IBRD resources for raising commercial financing to support EESL's Program. EESL's program focuses on scaling up the deployment of LED lightbulbs tube lights and ceiling fans under UJALA and energy efficient streetlights under SLNP, covering locations in both urban and rural areas across India. IPF Guarantee would support only the deployment of LED bulbs, tube lights and ceiling fans under UJALA Program, and street lighting under SLNP. The proposed project will have significant positive impact as the lifecycle environmental impacts of LED bulbs are significantly less, when compared to that of the alternatives, such as incandescent or CFL bulbs. Moreover, EESL's initiatives will have positive impact on the environment on account of significant energy savings. Also, it provides opportunity for minimizing the less environment friendly energy generation options.

1.4 Need for an Environmental Management Framework

Some of the Program activities, if not managed systematically are expected to have impacts on the environment. These include placement of temporary kiosks for distribution of bulbs, tube lights and ceiling fans; quality of the lighting products, disposal of wastes generated from packaging material. These aspects would assume importance when the project locations (urban and rural settlements) are in the proximity to sensitive areas. Hence, there is a need for systematic safeguards management with pre-defined framework for risk mitigation, if any. While such aspects are covered by and large under existing EHSS manual of EESL, the project preparation activities noted that there is a need to update the same to establish a specific Environmental Management Framework (EMF) for safeguards management of the proposed activities under the Guarantee product.

The EMF prepared by the EESL has relevant provisions to address the expected environmental impacts due to the activities envisaged as part of the guarantee product. The EMF provides specific protocols for screening, customized impact assessment procedures for UJALA and SLNP programs, and Environmental management measures complying with World Bank requirements. The EMF has also updated environment, health, and safety provisions for UJALA and SLNP. The EMF has also integrated the inputs from stakeholder consultations and has been reviewed internally by the Bank and EESL management. Post reviews, the EMF is publicly disclosed prior to project appraisal completion.

1.5 Overview of the Environmental Assessment and EMF

1.5.1 Purpose of the EMF

The purpose of the Environmental Assessment is to: (i) assess the policy, legal and regulatory framework for environmental management relevant to the UJALA and SLNP programs of EESL, (ii) conduct a situation analysis and assessment of the environmental priorities for UJALA and SLNP, (iii) assess the institutional framework and capacity for environmental management, (iv) identify the positive and negative environmental impacts and the risks associated with the programs; specifically with respect to project activities.

The purpose of the EMF is to describe a framework for the management of the environmental issues identified through this document including: (i) procedures for screening the environmental aspects related to the programs, (ii) details on the institutional roles and responsibilities for environmental management, (iii) strategy and plan for capacity building of

key stakeholders, (iv) plan for monitoring the implementation of environmental safeguards, (v) strategy for public consultation.

1.5.2 The EMF process

This report presents the elements of the EMF, environmental safeguards of EESL and the respective regulatory requirements along with guidance on preparation of mitigation / management plans and their execution. The following Figure 1.1 shows the Environmental Management Framework Process.

1.5.3 Structure of the EMF

This document is the EMF to guide the activities under UJALA and SLNP programs of EESL. The structure of the document is as follows:

Chapter 1 is the Introductory Chapter of the EMF; describing India Energy Efficiency Program of the EESL

Chapter 2 presents the specific programs: UJALA and SLNP along with project components

Chapter 3 gives broad baseline of India as the program is being implemented throughout India

Chapter 4 reviews applicable regulatory framework

Chapter 5 provides mechanism for screening and categorization of projects

Chapter 6 discusses impacts created by components of the project

Chapter 7 provides environmental management plan

Chapter 8 gives the updated EHSS manual

Chapter 9 specifies process for carrying out specific EAs

Chapter 10 identifies the institutional mechanism and its budgetary requirements for implementing the EMF

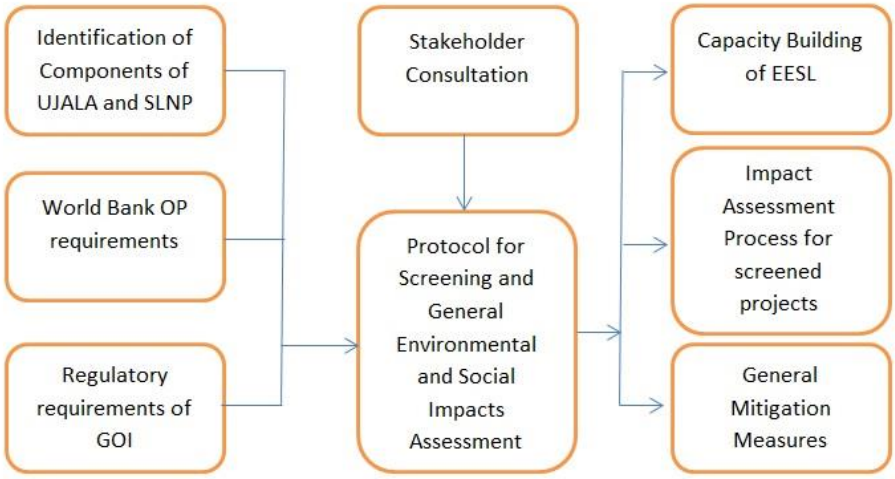

Figure 1.1: EMF Process

2 Project Components: UJALA and SLNP

2.1 UJALA

The Government of India, on 5th January, 2015 launched the UJALA program to provide LED bulbs, Ceiling fans and tube lights to domestic consumers with a target to replace 770 million incandescent/CFL[4] bulbs with LED bulbs by March, 2019. For domestic lights, EESL service model enables domestic households to procure LED lights at an affordable price of $0.154/- each and the balance on easy instalment from their electricity bill. The present status of this program is given in Table 1.1.

UJALA scheme aims to promote efficient use of energy at the residential level; enhance the awareness of consumers about the efficacy of using energy efficient appliances and aggregating demand to reduce the high initial costs thus facilitating higher uptake of LED lights/ tube lights/ ceiling fans by residential users. Every domestic household having a metered connection from their respective Electricity Distribution Company is eligible to get the LED bulbs, Ceiling fans and tube lights under the UJALA Scheme. UJALA LED bulbs, Ceiling fans and tube lights are being distributed through special counters (kiosks) set up at designated places in a city instead of making it available at retail stores. If the LED bulb stops working due to technical defects, EESL provides free-of-cost replacements for a period of three years. All replacements are done through designated replacement/ distribution kiosks. During the distribution period these LEDs can be replaced from any of the UJALA kiosks. Post distribution, there are state specific replacement drives that will indicate the replacement agency kiosks, retail shops/locations where replacement will be available.

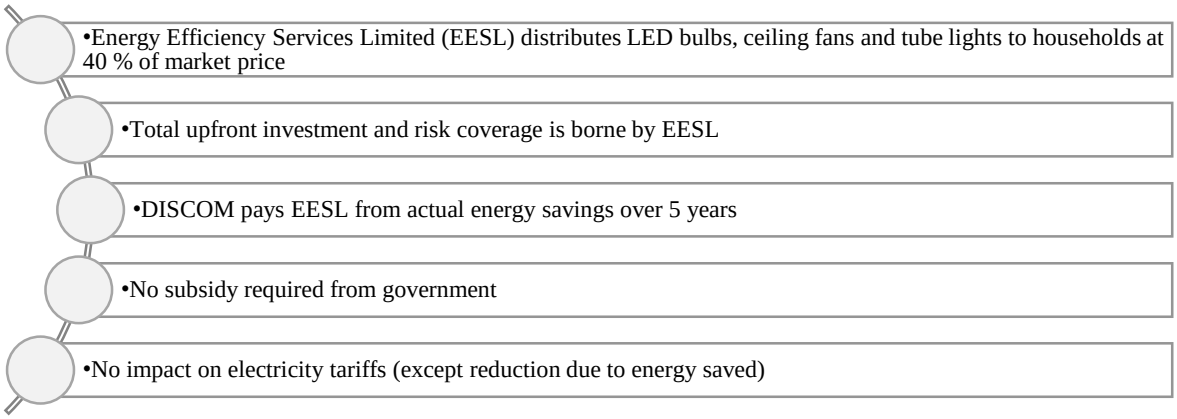

Figure 2.1: The UJALA Operational Model

2.1.1 Components of UJALA

The components of UJALA are presented in this section. The specific activities and relevant key components under UJALA are listed in Table 2-1.

[4] In case of EESL's operations, the lighting agencies take care of the management of broken/ replaced bulbs supplied by them as envisaged by Extended Producer Responsibility (EPR) in E- Waste (Management) Rules,2016. CFLs are not brought back by EESL. The consumers dispose these as per their choice; anytime during the lifetime; though these are covered under EPR. Here, it is pertinent to note that number of CFLs which have shorter life and are environmentally more harmful being purchased by the consumers, will be drastically reduced when the deployment of LEDs is scaled up.

Table 2.2: Activities under UJALA

Main Activity	Key components
Transportation - Of new LED bulbs, Ceiling fans and tube lights from manufacturing units to warehouse Of new LED bulbs, Ceiling fans and tube lights from warehouse to local kiosks or designated distribution centers; Of faulty LED bulbs, Ceiling fans and tube lights from local kiosks or designated distribution centers to warehouse Of faulty LED bulbs, Ceiling fans and tube lights from warehouse to manufacturing facility	– Vehicles and the storage containers on the vehicles – Vehicle routes – Logistics plan
Warehousing - of LED bulbs, Ceiling fans and tube lights during logistics of faulty LED bulbs, Ceiling fans and tube lights received from kiosks	– Warehouse location, design and operation criteria for LED bulbs, Ceiling fans and tube lights storage – Storage and handling of LED bulbs, Ceiling fans and tube lights at warehouse – Material loading and unloading – Fire and safety considerations – Supporting infrastructure (such as sanitary facilities, first aid, rest rooms, changing rooms)
Temporary storage at local kiosks or designated distribution centers: For new LED lamps, tube lights and celing fans received from warehouse; Faulty LED lamps, tube lights and ceiling fansseparated from the packing units; Faulty LED lamps, tube lights and ceiling fans received from the customers	– Return of faulty lamps – Disposal of waste – Supporting infrastructure (such as sanitary facilities, first aid, rest rooms, changing rooms) – Fire and safety considerations

2.2 SLNP

Under SLNP, replacement of 35 million conventional street lights will result in energy of 9 billion units annually. Total cost savings of municipalities every year is estimated by EESL as Rs. 5,500 crores. The present status of this program is given in

Table 1.2.

Keeping future generations in mind, a revolutionary step is taken to conserve as much energy as possible. EESL has been designated as the implementing agency. The main objective is to promote efficient lighting, enhance awareness on using efficient equipment which reduces

the electricity bills and help preserve environment. EESL replaces the conventional street lights with LEDs at its own costs and consequent reduction in energy and maintenance cost of the municipality is used to repay EESL over a period of time. The contracts that EESL enters into with Municipalities are typically of 7 years duration where it not only guarantees a minimum energy saving but also provides free replacements and maintenance of lights at no additional costs to the municipalities. The service model enables the municipalities to go in for the state of the art street light with no upfront capital cost and repayments to EESL are within the present level of expenditure. Thus, there is no additional revenue expenditure required to be incurred by the municipality for change over to smart and energy efficient LED street lights.

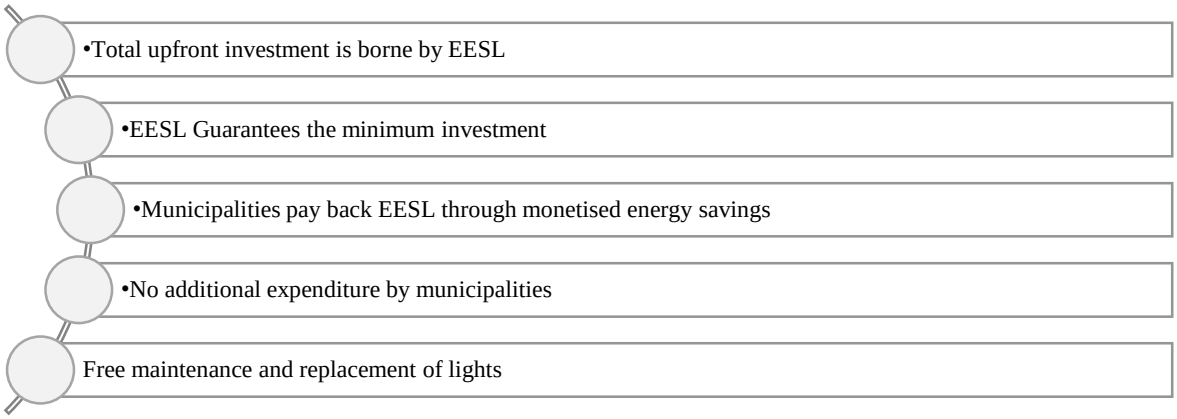

Figure 2.2: The SLNP Operational Model

2.2.1 Components of SLNP

The components of SLNP are presented in this section. The specific activities under SLNP are listed here.

Table 2.3: Activities under SLNP

Main Activity	**Key components**
Transportation - Of new LED Lamps from manufacturing units to warehouse Of new LED lamps from warehouse to installation sites; Faulty LED Lamps from installation sites to disposal site Faulty LED Lamps from warehouse to manufacturing facility Old replaced lamps and luminaries from site to warehouse Broken old lamps and luminaries from site to treatment facility/ intermediate storage	– Vehicles and the storage containers on the vehicles – Vehicle routes – Logistics plan
Warehousing of LED Lamps during logistics	– Warehouse design and operation criteria for LED Lamps storage.

Main Activity	Key components
	- Specific provisions for storage of replaced sodium vapor, metal halide etc. lamps. - Storage of Solid Wastes (cartons, packaging materials etc. - Storage and containment of broken bulbs, hazardous waste, e-waste. - Storage and handling of LED lamps at warehouse. - Material loading and unloading. - Fire and safety considerations. - Supporting infrastructure (such as sanitary facilities, first aid, rest rooms, changing rooms);
Replacement of old lamps and Installation of new LED lamps/ for streetlights	- Cable laying - Selection of location for installation of new poles - Installation of new poles - Repairs on existing poles - Connections with grid - Installation of CCMS (Central Control and Monitoring System) - Excavation, trenching - Use of vehicles and manpower - Power back up (if required) - Removal and Disposal of removed material (debris, metal parts, broken parts of old lamps, waste generated from breakage of old lamps, waste from broken LED lamps during installation) - Safety aspects such as working at heights, safety procedures - Electrical safety
Maintenance of LED Lamps	- Cable connections and CCMS, Routine maintenance / replacement of broken bulbs / fixtures - digging, trenching, excavation for inspection - Use of vehicles and manpower - Power back up - Safety aspects such as working at heights, safety procedures - Electrical safety - Removal and Disposal of removed material, wastes - Maintenance timings - Waste generation, transportation and disposal requirements

3 Baseline Environmental Profile

3.1 Introduction

UJALA and SLNP programs are proposed to be implemented throughout India. India has diverse climate, ecology and geography and the population is distributed in rural, semi urban and urban areas. This Chapter presents the baseline of the country in summary highlighting some examples of complexities which the program needs to address.

The baseline environmental data has been collated available data and reports from various secondary sources including Central and State Pollution Control Boards, MoEFCC, India Meteorological Department etc.

3.2 Climate and Meteorology

This section discusses the aspects of rainfall and temperature across the country. The climate of India is divided into five (5) zones as per SP-7 :2005[5] on the basis of following criteria:

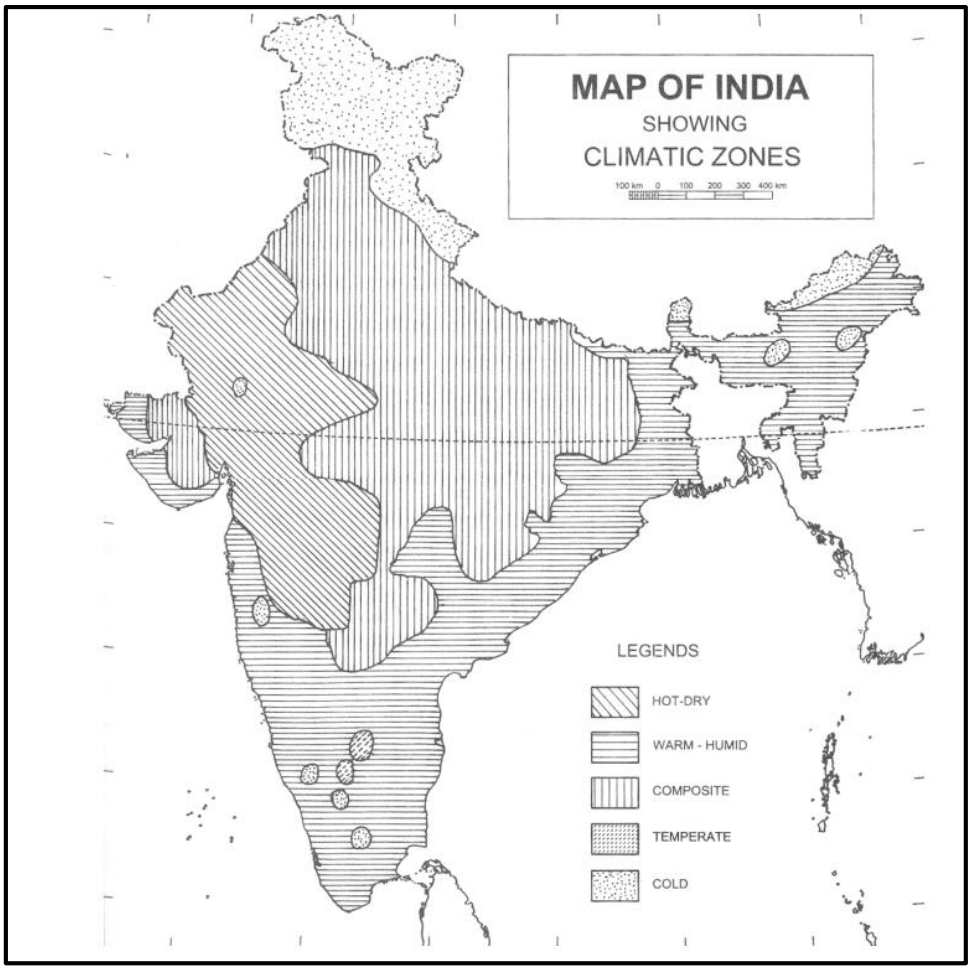

Figure 3.1: Climatic zones of India

[5] Ministry of Non-renewable Energy

Table 3.1: Attributes of each Climatic Zone

Sr. No	Climatic Zone	Maximum Ambient Temperature Range (^{0}C)		Humidity (%)	Annual Precipitation (mm)	Remarks
		Summer	Winter			
1	Hot and Dry	Day: 40-45 Night: 20-30	Day: 5 -25 Night: 0 -10	25-40	< 500	Covers Western and Central Part of India
2	Warm and Humid	Day: 30-35 Night: 25-30	Day: 25-30 Night: 20-25	70-90	1200	Covers coastal parts of the country
3	Moderate /Temperate	Day: 30-34 Night: 17-24	Day: 27-33 Night: 16-18	Winter and Summer: 20—55 Monsoon : 55-90	>1000	Covers hilly or high-plateau regions with fairly abundant vegetation
4	Composite	Day : 32-43 Night : 27-32	Day : 10-25 Night : 4-10	Dry period : 20-25 Wet periods : 55-95	500-1300	Covers Central Part of India
5	Cold and Cloudy	Day :20-30 Night : 17-27	Winter : 4-8 Night : -3 to 4	70-80	1000	Northern part of India experiences this type of climate. Most cold and cloudy regions are situated at high altitudes
6	Cold and Sunny	Day : 17-24 Night : 4-11	Day : -7 to 8 Night : -14 to 0	10-50	200	Leh (Ladakh)

The above Table-3.1 reflects that the extreme temperatures and high rainfall can affect the activities in the LED segment starting from lighting requirements, type of lights, warehousing, transportation, distribution and installation of the LEDs. The transportation of the LEDs can be impeded by extremely cold conditions coupled with foggy conditions especially in the cold and cloudy zones especially during the night time. The transportation and installation of LEDs can also be impeded in the areas of heavy precipitation such as in warm and humid zones, composite zone and cold and cloudy zones classified as per the Table – 3.1.

3.3 Ecology and Biodiversity

The ecology and biodiversity aspects encompass the hotspots of various eco-sensitive zones notified by MOEFCC. India has 881 sensitive locations which include National Parks, Wildlife Sanctuaries, Core Biosphere Reserves, Ramsar sites pertaining to Wetlands, major estuaries in the coastal areas, Marine protected areas, potential important bird areas and tiger reserves,

notified elephant reserves and critically polluted areas. The inventory of the aforesaid eco-sensitive zones in each state in given in Annexure I[6].

Andaman Nicobar, Maharashtra, Gujarat, Tamilnadu, Madhya Pradesh, Rajasthan, Himachal Pradesh, Uttar Pradesh, Karnataka, Kerala, Andhra Pradesh, Assam, Odisha are states with more than 30 sensitive zones as per the list given in Annexure I.

The entire costal belt of India, up to 500 m from High Tide Line, and all locations where mangroves are present are also environmentally sensitive locations.

3.4 Cultural Heritage

The sensitivities regarding cultural heritage in the form of number of notified archaeological monuments as per Archaeological Survey of India were collated and are presented in Annexure II.

India has more than 3400 Archaeological properties identified by Archaeological Survey of India. It reflects that the maximum number of archaeological monuments are in the State of Karnataka (506) followed by Tamil Nadu (413), Uttar Pradesh (376), Maharashtra (285) and Delhi (174). Apart from these there are many properties and occasions which are considered as Heritage by local administration and communities.

Several national level pilgrimages/ mass gatherings (for example Ajmer Sharif, Bodhgaya, Puri, Rameshwaram, Belur Math, Guruvayoor Temple, Somnath Temple, Rajgir, Shirdi, Vaishno Devi etc. and many others) and various local pilgrim destinations and circuits are also considered as part of local culture by various communities.

3.5 Infrastructure related to e-waste handling and hazardous waste handling [7]

Following the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 several Common Hazardous Waste Treatment, Storage and Disposal Facilities (CHWTSDF) have come up in India. The detailed list of these facilities and registered E waste handlers as available on Central Pollution Control Board (CPCB) website is presented in Annexure III.

Out of total reported 27 CHWTSDF facilities 14 are in the states of Maharashtra, Gujarat and Andhra Pradesh. Rest of the facilities are in Uttar Pradesh, Daman Diu, Himachal Pradesh, Kerala, West Bengal, Uttarakhand, Tamilnadu, Rajasthan, Panjab, Karnataka and Madhya Pradesh. Central / State Pollution Control Board registered E-waste vendors are available in almost every state of India (see Annexure III).

3.6 Natural Disasters

The data collected from National Disaster Management Authority website reveals that the states of Sikkim, Maharashtra and Gujarat are prone to Earthquakes, while the states of Odisha, Andhra Pradesh and Tamil Nadu are vulnerable to the cyclonic events, while Jammu and Kashmir are prone to cloudburst and floods also. The State of Uttarakhand is susceptible to floods and Bihar is susceptible to flood events. The data of the notable natural disasters are presented in Annexure IV.

[6] Lists as compiled in Nov 2017.
[7] http://www.cpcb.nic.in/List_of_E-waste_Recycler_as_on_29.12.2016.pdf and http://cpcb.nic.in/divisionsofheadoffice/hwmd/Information_TSDF.pdf

3.7 Land Use

The land is used for agriculture, for growing forests, for grazing animals, for mining, for installing industries and for construction of houses, roads, railways, etc. For sustainable development and prosperity of any country, the proper and wise use of the land is required. The land use depends on the kind of land, its depth, fertility, water retention capacity, available mineral contents, and means of transportation, etc. The use of land for agriculture depends on soil type, irrigation facilities, and climate.

In India, about 51.09% of the land is under cultivation, 21.81% under forest and 3.92% under pasture. Built up areas and uncultivated land occupy about 12.34% (Kundra, 1999). About 5.17% of the total land is uncultivated waste, which can be converted into agricultural land. The other types of land comprises up to 4.67%.

3.8 Demographic profile of India

The demographic profile of India is presented in Table 3.2

Table 3.2: Demographic Profile of India[8]

Sr. No	Demographic Attribute	Total	Males (Percentage)	Female (Percentage)
1	Population	1210854977	623270258 (51.5)	587584719 (48.5)
2	Literates (7+ years)	763638812 (63)	434763622 (36)	328875190 (27)
3	Population Density (per sq.km)	382		
4	Population size (0-6) years	164515253 (13.5)	85752254 (7)	78762999 (6.5)
5	Sex Ratio	943		
6	Sex Ratio (0-6) years	918		

The demographic profile of India as per Census of India 2011 reflects that India has a population of 1,210,854,977 about out of which 51.5% are males while 48.5% are females. The Literate population (7+ years) is about 763,638,812 no's which is about 63% as compared to the total population of India in which 36% are males and the rest i.e., 27% are females. The population density is 382 per sq.km. The population size within the age bracket of 0-6 years is 164,515,253 no's which is about 13.5% out of which 7% are males while 6.5% are females as compared to the total population of India. The sex ratio is 943 while the sex ratio in the age bracket of 0-6 years is 918.

[8] http://www.dataforall.org/dashboard/censusinfoindia_pca/

4 Review of Applicable Environmental Policy, Rules and Regulations

4.1 Environmental Policies and Legal Framework

The environmental safeguards framework aims at incorporating environmental considerations into the project design and development process and makes the projects as a whole sustainable. The important and relevant environmental legislations in India and international treaties are presented in the following Table 4.1 and 4.2 respectively. The table also discusses the general applicability of these to various activities / sub activities of UJALA and SLNP programs of EESL

Table 4.1: Applicable National Environmental Regulations

Sector	Acts	Purpose	Applicability to EESLs operations	
Water Pollution	No.36 of 1977, [7/12/1977] - The Water (Prevention and Control of Pollution) Cess Act, 1977, amended 1992 No. 19 of 2003, [17/3/2003] - The Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003 No.6 of 1974, [23/3/1974] - The Water (Prevention and Control of Pollution) Act, 1974, amended 1988	To provide for the prevention and control of water pollution, and for the maintaining or restoring of wholesomeness of water in the country. The Act was amended in 1988. The Water (Prevention and Control of Pollution) Cess Act was enacted in 1977, to provide for the levy and collection of a cess on water consumed by persons operating and carrying on certain types of industrial activities	UJALA	• Siting of Kiosks or Storage areas near Water bodies • Inadequate waste management resulting in wastes (all types) getting deposited in water bodies
			SLNP	• Inadequate waste management resulting in wastes (all types) getting deposited in water bodies
Air Pollution	No.14 of 1981, [29/3/1981] - The Air (Prevention and Control of Pollution) Act 1981, amended 1987 and rules thereof	To provide for the prevention, control and abatement of air pollution in India.	UJALA	• Air Pollution because of transport vehicles and DG sets in warehouses • Transport of materials through unpaved roads
			SLNP	• Air Pollution because of transport vehicles and DG sets in warehouses • Transport of materials through unpaved roads • Excavation and Vehicles movement during installation

Sector	Acts	Purpose	Applicability to EESLs operations	
Environmental Protection	No.29 of 1986, [23/5/1986] - The Environment (Protection) Act, 1986, amended 1991 and rules	To provide for the protection and improvement of the environment. It empowers the Central Government to establish authorities [under section 3(3)] 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. The Act was last amended in 1991.	Not Applicable	
Public Liability Insurance	No.6 of 1991, [22/1/1991] - The Public Liability Insurance Act, 1991, amended 1992	To provide for damages to victims of an accident which occurs due to handling of any hazardous substance. The Act applies to all owners associated with the production or handling of any hazardous chemicals.	All programs	
Forest Conservation	Forest (Conservation) Act, 1980, amended 1988. The Indian Forest Act, 1927 State/Union Territory Minor Forest Produce (Ownership of Forest Dependent Community) Act, 2005 - Draft	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. The Indian Forest Act, 1927 consolidates the law relating to forests, the transit of forest-produce and the duty leviable on timber and other forest-produce.	UJALA	• Siting of Kiosks or Storage areas near Forested areas • Inadequate waste management resulting in wastes (all types) getting deposited in Forest areas
			SLNP	• Siting of Storage areas or Lighting poles or CCMS in Forested areas • Inadequate waste management resulting in wastes (all types) getting deposited in Forest areas • Lighting intensities or placement disturbing the Flora

Sector	Acts	Purpose	Applicability to EESLs operations	
Biological Diversity	No. 18 of 2003, [5/2/2003] - The Biological Diversity Act, 2002 and related	To realize the objectives enshrined in the United Nations Convention on Biological Diversity (CBD) 1992 which recognizes the sovereign rights of states to use their own Biological Resources. The Act aims at the conservation of biological resources and associated knowledge as well as facilitating access to them in a sustainable manner and through a just process for purposes of implementing the objects of the Act it establishes the National Biodiversity Authority in Chennai.	Not Applicable	
Wetland Protection	Wetland (Conservation and Management) Rules 2010	Protection and management of wetlands	SLNP - Waste dumping, material sourcing and construction in and near wetlands	
Heritage Preservation	Ancient Monuments and Archaeological Sites and Remains Act 1958 updated as per Ancient Monuments and Archeological Sites and Remains (Amendments and Validation) Act, 2010	Excavation of and protection of ancient monuments. Permit for activity near ancient/protected monuments, chance findings	SLNP	
Disaster Related	Disaster Management Act, 2005	Codes for construction under in disaster prone areas Disaster prone areas codes of construction, disaster relief codes, relief and rehabilitation	SLNP	
Wildlife Protection	The Wildlife (Protection) Act, 1972, as amended in 1993.	With the objective of effectively protecting the wild life of this country and to control poaching, smuggling and illegal trade in wildlife and its derivatives. The Act was amended in January 2003 and punishment and	UJALA	• Siting of Kiosks or Storage areas near Wildlife areas, Parks, Sanctuaries • Inadequate waste management resulting in wastes (all types)

Sector	Acts	Purpose	Applicability to EESLs operations	
	The Wild Life (Protection) Amendment Act, 2006 (No. 39 of 2006) The Wild Life (Protection) Amendment Act, 2002 (No. 16 of 2003, [17/01/2003])	penalty for offences under the Act have been made more stringent. The Ministry has proposed further amendments in the law by introducing more rigid measures to strengthen the Act. The objective is to provide protection to the listed endangered flora and fauna and ecologically important protected areas.		getting deposited in Park, Sanctuaries, forested areas
			SLNP	• Siting of Storage areas or Lighting poles or CCMS in Wildlife areas • Inadequate waste management resulting in wastes (all types) getting deposited in Forest areas • Lighting intensities or placement or even uprooting plants during installation or maintenance / operations related works
Green Tribunal	National Green Tribunal Act, 2010 (No. 19 of 2010)	For effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources	Any program can fall under the purview, in case it disturbs forests and wildlife and eco-sensitive regions	
Noise Pollution	The Noise Pollution (Regulation and Control) Rules, 2000	To regulate and control of noise producing and generating sources (industrial activity, construction activity, generator sets, loud speakers and Public-address system, horns, mechanical devices) with the objective of maintaining ambient air quality standards in respect of noise.	UJALA	• Operations in Kiosks or Storage areas creating noise pollution • Noise created by transport vehicles • Public address system used for announcements of scheme
			SLNP	• Operations in Storage areas creating noise pollution (especially during nights in storage areas)

Sector	Acts	Purpose	Applicability to EESLs operations	
				• Installation of street lights causing noise pollution esp. due to vehicles, men and material; aggravated during nights • Public address system used for announcements of scheme
Siting Industries	The Environment (Siting for Industrial Projects) Rules, 1999	Detailed provisions relating to areas to be avoided for siting of industries, precautionary measures to be taken for site selecting as also the aspects of environmental protection which should have been incorporated during the implementation of the industrial development projects	Not Applicable	
Handling of Batteries	The Batteries (Management & Handling) Rules, 2001	Shall apply to every manufacturer, importer, re-conditioner, assembler, dealer, auctioneer, consumer, and bulk consumer involved in the manufacture, processing, sale, purchase, and use of batteries or components so as to regulate and ensure the environmentally safe disposal of used batteries.	SLNP	• Storage of new or used Batteries (In D. G. Sets.) • Inadequate management of battery wastes
Hazardous Wastes	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	To control the generation, collection, treatment, import, storage, and handling of hazardous waste	UJALA	• Storage, handling, disposal of appliances
			SLNP	• Storage, transport, handling, disposal of streetlights, poles, wires, other hazardous parts
Solid Wastes	Solid Waste Management Rules, 2016	Apply to every local bodies/ authority responsible for the collection, segregation, storage, transportation, processing, and disposal of municipal solid wastes.	UJALA	• Storage, transport, handling, recycling/reuse, disposal of solid wastes including packaging materials
			SLNP	• Storage, transport, handling, recycling/reuse, disposal of

Sector	Acts	Purpose	Applicability to EESLs operations	
				solid wastes including packaging materials
Plastic Waste	Plastic Waste Management Rules 2016	Regulatory frame work for management of plastic waste generated in the country; and to implement these rules more effectively and to give thrust on plastic waste minimization, source segregation, recycling, involving waste pickers, recyclers and waste processors in collection of plastic waste fraction either from households or any other source of its generation or intermediate material recovery facility and adopt polluter's pay principle for the sustainability of the waste management system	UJALA	• Storage, transport, handling, recycling / reuse disposal of plastic wastes including packaging materials
			SLNP	• Storage, transport, handling, recycling / reuse disposal of plastic wastes including packaging materials
E-Waste	E-waste (Management) Rules, 2016	Shall apply to every manufacturer producer, consumer, bulk consumer, collection centers, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational but shall not apply to - (a) used lead acid batteries as covered under the Batteries (Management and Handling) Rules, 2001 made under the Act; (b) micro enterprises as defined in the Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006); and (c) radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and rules made there under.	All programs, where E-Waste is generated.	

Sector	Acts	Purpose	Applicability to EESLs operations	
Construction and Demolition waste	Construction and Demolition Waste Management Rules, 2016	Emphasizes the roles and accountability of waste generators and various stakeholders, give thrust to segregation, recovery, reuse, recycle at source, address in detail the management of construction and demolition waste	UJALA	• Only in case storage / kiosk spaces are constructed or demolished
			SLNP	• Storage, transport, handling, recycling / reuse disposal of C&D wastes during street lighting activities
Thermoset Plastic waste	Guidelines for Disposal of Thermoset Plastic Waste including Sheet molding compound (SMC)/Fiber Reinforced Plastic (FRP)	Applies to disposal of thermoset plastics as in Electrical & electronics: housing, fuses, switchgear, etc. and Power utilities like MCB boxes.	UJALA	
Electric Safety	Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Amendment Regulations,2016	Safety requirements for Operations, Construction and maintenance of electric plants and electricity lines	SLNP	
Electric Safety	Electricity Act 2003, relevant para- electricity Laws, section 67, 68 & 69.	Para 67 & 68 give provision for granting license to project proponent to break-up any utility area like roads, railway line, sewage lines, drain or tunnel to lay the transmission lines. This is required to install poles and lattice structures and laying of transmission lines. The Act says that '…the consent in writing of the appropriate government, local authority, owner or occupier as the case shall be required for carrying out the work.' This applies to agricultural land as well.	SLNP	

Sector	Acts	Purpose	Applicability to EESLs operations
Worker Health and Safety at work place	February 2009, the National Policy on Safety, Health and Environment at Work Place	Declared by the Ministry of Labor and Employment, Government of India in February 2009 after consultations with partners. The Action Program to implement the Policy is part of the document. Sets out a set of goals with the view to building and maintaining a national preventative safety and health culture and improving the safety, health and environment at workplace. The Policy also expresses a set of the national objectives.	All programs

Table 4.2: International Environmental Agreements[9]

International Treaties	Details
Vienna Convention for the Protection of the Ozone Layer	Adopted in 1985, convention sets the framework for efforts to protect the globe's ozone layer by means of systematic observations, research and information exchange on the effects of human activities on the ozone layer and to adopt legislative or administrative measures against activities likely to have adverse effects on the ozone layer.
Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention for the Protection of the Ozone Layer)	The original Montreal Protocol was agreed on 16 September 1987 and entered into force on 1 January 1989. It is designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. This treaty also requires controlling emissions of substances that deplete ozone.
United Nations Framework Convention on Climate Change (UNFCCC (1992))	This framework came into force on 21 March 1994 and aims 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.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)	This convention came into force in 1992 and aims to reduce the amount of waste produced by signatories and regulates the international traffic in hazardous wastes.
Stockholm Convention on Persistent Organic Pollutants (POPs)	Treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment. Signed in 2001 and effective from May 2004
Rotterdam Convention on Prior Informed Consent (PIC) for certain Hazardous Chemicals and Pesticides in International Trade	To promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals to protect human health and the environment from potential harm; covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons.
UNEP Minamata Convention on Mercury	Adopted on 10 October 2013, this global treaty aims to protect human health and the environment from the adverse effects of mercury.

9 Environmental and Social Systems Assessment (ESSA) for the proposed India Energy Efficiency Scale up Program (P162849)

International Treaties	Details
Strategic Approach to International Chemicals Management (SAICM)	SAICM overall objective is the achievement of the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health.
Convention on Biological Diversity (CBD), commonly Biodiversity	International legally binding treaty opened for signature at the United Nations Conference on Environment and Development (UNCED) in 1993. The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.
Convention on the Conservation of Migratory Species (CMS or Bonn Convention)	Intergovernmental treaty, concluded under the aegis of the UNEP, concerned with the conservation of wildlife and habitats on a global scale. It is the only global convention specializing in the conservation of migratory species, their habitats and migration routes. The treaty aims to conserve terrestrial, aquatic and avian migratory species throughout their range. India entered the force of CMS on 1.11.1983.
Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA)	An independent international treaty developed under the auspices of the UNEP's Convention on Migratory Species. India is a party to this agreement. Aims to establish coordinated conservation and management of migratory water birds throughout their entire migratory range. It covers 255 species of birds ecologically dependent on wetlands for at least part of their annual cycle.

5 Project Screening and Categorisation

UJALA and SLNP are national level programs. They are carried out state-wide or local body wise. The program activities or sub-components would result in positive or negative environmental impacts. These impacts are related to location of the program activities or related infrastructure, type of activities and wastes arising out of the activities. Many of the program activities and their impacts falls under the purview of regulations.

5.1 Project Screening and Exclusions

5.1.1 National Regulatory Requirements

The proposed project activity comes under the infrastructure development project. The screening criteria for infrastructure development projects under the EIA Notification, 14th Sep 2006 (updated till date) does not require to obtain environmental clearance from MoEFCC. As per 9th Dec 2016 notification new industrial sheds and warehouses do not require environmental clearance if they are below 1,50,000 sq. m. built up. Looking at the short time cycle (3 months to one year) of each project in this program it is not possible for any bidder to build a new warehouse of this scale for this project. Thus, EIA notification will not be applicable for this project.

Consent to Establish from respective pollution control board will be required for all DG set operations.

5.1.2 World Bank Guidelines

The environmental safeguard policies of World Bank, however, require an environmental assessment for any physical infrastructure project, if it is expected to generate any adverse environmental impacts.

Table 5.1: Project Screening Guidelines as per WB-Ops

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	The IPF operation would utilize IBRD resources for raising commercial financing to support EESL's Program. EESL's program focuses on scaling up the deployment of LED lightbulbs and other energy efficient appliances under UJALA and SLNP, covering locations in both urban and rural areas across India. IPF Guarantee would support only the deployment of LED bulbs, tube lights and ceiling fans under UJALA Program, and SLNP. The proposed project will have significant positive impact as the lifecycle environmental impacts of LED bulbs are significantly less, when compared to that of the alternatives, such as incandescent or CFL bulbs. Moreover, EESL's initiatives will have significant positive impact on the environment because of significant energy savings it stands to generate by replacing less efficient options. Some of the Program activities, if not managed systematically are expected to have impacts on the environment. These include placement of temporary kiosks for distribution of bulbs, ceiling fans and tube lights, quality of the lighting products, and disposal of wastes. These aspects would assume importance when the project locations (urban and rural

Safeguard Policies	Triggered?	Explanation (Optional)
		settlements) are in the proximity to sensitive areas. Hence, there is a need for systematic safeguards management with pre-defined framework for risk mitigation, if any. While such aspects are covered by and large under existing EHSS manual of EESL, there is a need to update the same to establish an Environmental Management Framework with relevant screening and impact assessment procedures, and Environmental management measures complying with World Bank requirements including occupational health and safety aspects
Natural Habitats OP/BP 4.04	No	The UJALA and SLNP programs will be implemented in existing settlement areas and are not envisaged to infringe in to any of the natural habitats. However, to avoid doing harm to sensitive areas, the borrower will be advised to incorporate exclusion principles to avoid natural habitats in the vicinity of the settlements, if any. It is recommended that EESL prepares an EMF complying with OP 4.01 to define exclusion principles.
Forests OP/BP 4.36	No	The project is not expected to have any impacts or harm to forests and do not involve in any forest based commercial activities or logging.
Pest Management OP 4.09	No	Pest Management aspects would not be applicable and hence not triggered
Physical Cultural Resources OP/BP 4.11	Yes	Installation of LED street lights may be undertaken in the vicinity of heritage and culturally important precincts. Associated activities may possibly have impacts on the physical and cultural resources. Hence this policy is triggered. The proposed EMF will integrate considerations for managing probable risks related to physical and cultural resources and chance find procedures.

5.1.3 Project Screening Guidelines

To facilitate effective screening and addressing of the issues the projects are categorised into E_a, E_b and E_c categories linked to severity of impacts and regulatory requirements. The E_a, E_b and E_c categories are defined in Table 5.2.

The projects depending on their activity, components involved, location vis-a-vis the surrounding environmental setting, will generate different adverse impacts that would need to be mitigated. Also, depending on the safeguards applicable (according to lender's requirements) and environmental regulation applicable, the environmental significance of the project will vary.

Table 5.2: Criteria for Environmental Category

Environmental Category of Project	Environmental Impact Significance	Mitigation / Management
Ea	Environmental issues are likely to be diverse, unprecedented and irreversible indicating long term stress on environmental components	Either avoid or Project Specific EA / EMP to be carried out by independent agency (convergence with Indigenous People's Policy Framework (IPPF) in case of areas inhabited by indigenous people) Public Consultation and Disclosure Regulatory clearances to be sought as applicable
Eb	Environmental issues are of moderate nature that can be mitigated with a reasonable effort	Project Specific EA / EMP to be carried out along with DPR with Public Consultation as required. Regulatory clearances to be sought as applicable
Ec	Insignificant or negligible environmental issues expected that require little or no mitigation	Generic Environmental Management Plan and good environmental practices to be integrated in the sub-project

At each location, UJALA and SLNP will be subjected to screening followed by decision on further assessment or application of mitigation measures. Generic Environmental Management Plan (EMP) is provided for each of these activities, that will provide an implementation plan for the required mitigation measures, a capacity building plan, as well as a monitoring plan and insight into budget requirement. The EMP will also describe the roles and responsibilities of the key institutions involved in the sub-project for the implementation of the EMP. A checklist for sensitive features is provided in Table 5.3 and Table 5.4 for UJALA and SLNP respectively.

Table 5.3: Environmental Sensitivity Checklist UJALA

Sr. No.	***Aspect to look***	***Yes***	***No***	***Remark***
Project Siting - Putting a new kiosk, Supply route passing through				
1	Within Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves			
2	Within Eco Sensitive Zone of Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves			
3	Within 500m from the boundary of Protected Forest, Eco Sensitive Zone			
4	In coastal areas within Mangroves, Sand Dunes Salt Marshes			
5	Within 500 m from High Tide Line, Mangroves, Sand Dunes, Salt Marshes			

Sr. No.	*Aspect to look*	*Yes*	*No*	*Remark*
6	Within Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance			
7	Within 500m from Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance			
8	Within Important Bird Areas			
9	Within 500m from Important Bird Areas			
10	Within Natural Habitats as defined by OP 4.04 and Critical Natural Habitats as defined by OP 4.04/ by the Bank or an authoritative source determined by the Regional environment sector unit (RESU)/ Environmental Cell			
11	Within 500m from Natural Habitats as defined by OP 4.04 and Critical Natural Habitats as defined by OP 4.04/ by the Bank or an authoritative source determined by the Regional environment sector unit (RESU)/ Environmental Cell			
12	Within Physical Cultural Resources site as defined by OP 4.11 or as recognized by the Sustainable Development Unit			
13	Within 500 m. from Physical Cultural Resources site as defined by OP 4.11 or as recognized by the Sustainable Development Unit			
14	Within Archaeological Properties as defined by Archaeological Survey of India			
15	Within 500 m. from Archaeological Properties as defined by Archaeological Survey of India			
16	Within National/local level pilgrimages/ mass gatherings considered as part of local culture by communities/Local Bodies (LB) both urban and rural/Sustainable Development Unit			
17	Within 500 m. from National/local level pilgrimages/ mass gatherings considered as part of local culture by communities/LB/Sustainable Development Unit			
18	Within Urban areas with unique urban design or features as identified by LB/Sustainable Development Unit			
19	Within 1km upstream of any important water body			

Table 5.4: Environmental Sensitivity Checklist SLNP

Sr. No.	***Aspect to look***	***Yes***	***No***	***Remark***
Project Siting - Putting a new luminary, pole and storage area				
1	Within Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves			
2	Within Eco Sensitive Zone of Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves			
3	Within 500m from the boundary of Protected Forest, Eco Sensitive Zone			
4	In coastal areas within Mangroves, Sand Dunes Salt Marshes			
5	Within 500 m from High Tide Line, Mangroves, Sand Dunes, Salt Marshes			
6	Within Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance			
7	Within 500m from Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance			
8	Within Important Bird Areas			
9	Within 500m from Important Bird Areas			
10	Within Natural Habitats as defined by OP 4.04 and Critical Natural Habitats as defined by OP 4.04/ by the Bank or an authoritative source determined by the Regional environment sector unit (RESU)/ Environmental Cell			
11	Within 500m from Natural Habitats as defined by OP 4.04 and Critical Natural Habitats as defined by OP 4.04/ by the Bank or an authoritative source determined by the Regional environment sector unit (RESU)/ Environmental Cell			
12	Within Physical Cultural Resources site as defined by OP 4.11 or as recognized by the Sustainable Development Unit			
13	In the vicinity (distance up to 3times the height of the pole from edge of the property) from Physical Cultural Resources site as defined by OP 4.11 or as recognized by the Sustainable Development Unit			
14	Within Archaeological Properties as defined by Archaeological Survey of India			
15	Within 500m from Archaeological Properties as defined by Archaeological Survey of India			
16	Within National/local level pilgrimages/ mass gatherings considered as part of local culture by communities/LB/Sustainable Development Unit			

Sr. No.	***Aspect to look***	***Yes***	***No***	***Remark***
17	In the vicinity (distance up to 3 times the height of the pole from edge of the property) from National/local level pilgrimages/ mass gatherings considered as part of local culture by communities/LB/Sustainable Development Unit			
18	Within Urban areas with unique urban design or features as identified by LB/Sustainable Development Unit			
19	Within 5 km from Aerodrome/ Airport			
20	Within 1 km upstream of any important water body			
Laying of cables and erecting poles				
1	New cabling work is crossing or touching natural water course			
2	Cutting/ pruning of trees is involved			
3	Passing near Physical / Cultural Properties			

6 Impacts of Project Components on the Environment

The project components under these two projects are presented in the Chapter 2 with sub-activities. The UJALA covers transportation from manufacturing site to warehouse, and from warehouse to local kiosks. It does not cover the actual installations by end consumer. While in SLNP, the installations of LED lamps, poles and removing existing bulbs and luminaries are also covered.

6.1 Identification of Environmental Aspects

The key environmental aspects related to various components under these programs are identified in Table 2.1 and Table 2.2 in Chapter 2.

6.2 Assessment of Environmental Impacts

The impact assessment is presented in this section. The general impacts are classified in to direct, indirect, long term, short term types for better understanding. See Table 6.1.

Table 6.1: General Impacts of UJALA and SLNP

Type of Impacts	UJALA	SLNP
Positive Impacts	• Energy Saving • Cost saving for consumers • Better illumination for every household • Minimise the load of electricity demand on grid	• Energy Saving • No investment or infrastructure requirement for municipality • Better illumination on streets is good for traffic • Minimise the load of electricity demand on grid
Negative Impacts	• Generation of Waste from replaced CFL/ICL Lamps • Generation waste from faulty or broken LED bulbs, Ceiling fans and tube lights during transport and handling • Air and noise pollution from the distribution vehicles • Depletion of fuel reserves due to use of fuel in distribution vehicles across country • Safety issues during distribution, storage and installation.	• Generation of Waste from replaced Lamps • Generation waste from faulty LED lamps or broken lamps during transport and handling • Air pollution from the distribution vehicles • Noise pollution from activities • Acceptance issue at certain areas • Impact of illumination on ecosystem and biodiversity • Depletion of fuel reserves due to use of fuel in distribution vehicles across country • Safety issues at the distribution, storage and installation sites • Impact on heritage and cultural values due to change in illumination
Direct Impacts	• Environmental pollution (Air and Solid waste generation) • Initial investment from EESL	• Environmental pollution (Air and Solid waste generation);

Type of Impacts	UJALA	SLNP
Indirect Impacts	• Depletion of fuel reserves; • Impacts of nesting grounds; • Accidental scenarios during transportation and storage;	• Depletion of fuel reserves; • Impact of bird migratory paths; • Impacts of nesting grounds; • Accidental scenarios during transportation, storage, installation and maintenance;
Cumulative Impacts	• Addition of vehicles to existing traffic issues	• Addition of vehicles to existing traffic issues
Immediate Impacts	• Energy Saving • Cost saving for consumers • Minimise the load of electricity demand on grid • Degradation of air quality • Impact of illumination on people and ecosystem	• Energy Saving • No investment or infrastructure requirement for municipality • Better illumination on streets is good for traffic • Minimise the load of electricity demand on grid
Long-term Impacts	• Energy Saving • Cost saving for consumers • Minimise the load of electricity demand on grid • Impact on cultural values • Impacts on ecosystems	• Energy Saving • Cost saving for consumers • Minimise the load of electricity demand on grid • Impact on cultural values • Change in migratory paths on birds • Other impacts on ecosystems

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6.3 Assessment of Environmental Impacts

This section mainly focuses on various phases of the project such as Planning, transportation, storage, installation and maintenance. Before assessing the impacts from each of these project phases, it is necessary to understand the various types of impacts from this projects in general. Following table presents the summary of general impacts anticipated from the proposed projects under EESL. After understanding the project components following impacts are identified for various stages for UJALA and SLNP in Table 6.2 and Table 6.3.

Table 6.2: Environmental Impact Matrix – UJALA

Parameter	Impacts
Project Planning	
Air Emissions	Wrong or overlapping routes creating air pollution
Noise	Noise from the vehicles on various sensitive receptors during transportation
Water	Oil spillage, fuel spillage during vehicle washing
Ecology and Biodiversity	Oil spillage, waste created after accidents in ecologically sensitive areas in route
Resource usage	Use of fuel
Occupational Health and Safety	Safety considerations during transportation, warehousing and local kiosks
Transportation	
Air Emissions	1. Gaseous emissions per litre of fuel combusted per kilometre of vehicle travelled; 2. Dust emission because of vehicle
Noise	Noise from the vehicles on various sensitive receptors during transportation
Soil	Disposal of removed oils and spillage of fuel from vehicle during maintenance
Water	Oil spillage, fuel spillage during vehicle washing
Waste	1. Broken LED bulbs, Ceiling fans and tube lights during transport 2. Vehicle accident causing LED bulbs, Ceiling fans and tube lights west on roads or in water bodies
Ecology and Biodiversity	Disposal of used oil and other waste near to sensitive receptors (such as rivers, estuaries, mangroves etc.)
Sensitive areas	Impact of project activities on sensitive areas, public places
Warehousing	
Air Emissions	1. Use of back up diesel generator for the facility;

Parameter	Impacts
	2. Air emissions from the burning of PCBs due to the accidental fire event;
Noise	1. The noise generation is expected as a result of vehicle movement, loading-unloading activities 2. Use of DG set for power back up
Soil and Water	1. The soil / water may get contaminated due to oil spill or leakage of fuel from vehicles and Diesel storage areas; 2. Sewage generated by workers
Waste	Waste generation from faulty LED bulbs, Ceiling fans and tube lights, maintenance of DG set
Occupational Health and Safety	Injury due to the accidental fire event; handing of broken lamps Fire risk due to storage of diesel for the back-up DG set;
Temporary Storage at local Kiosks/Distribution Centres	
Air Emissions	In the event of fire, the releases of toxic material from burning of PCBs used in lamps
Water and Waste	1. The faulty/broken LED bulbs, Ceiling fans and tube lights during logistics; 2. Sewage generated by workers/ consumers
Ecology and Biodiversity	Impact of kiosk activity on ecology and biodiversity
Occupational Health and Safety	Fire safety; Workers health

Environmental Impact Matrix for SLNP is provided in the Table 6-3, below.

Table 6-3: Environmental Impact Matrix – SLNP

Parameter	Impacts
Project Planning	
Air Emissions	Wrong or overlapping routes creating air pollution
Noise	Noise from the vehicles on various sensitive receptors during transportation
Water	Oil spillage, fuel spillage during vehicle washing
Ecology and Biodiversity	1. Tree cutting/pruning during installations of LED lamps/ poles; 2. Impact of illumination on the ecologically sensitive areas (Bird migratory paths, wetlands, nesting areas, breeding areas) 3. Light pollution
Socio-economy	1. Location of warehouse may affect daily life of community

Parameter	Impacts
	2. Impact of project activities on daily life of community, public places, 3. Impact on functioning other governmental agencies like Airport, Port or Railways
Heritage and Culture	Impact of project activities on historical and culturally important places and cultural values
Resource usage	Use of fuel
Occupational Health and Safety	Safety considerations during transportation, warehousing and local kiosks
Transportation	
Air Emissions	1. Gaseous emissions per litre of fuel combusted per kilometre of vehicle travelled; 2. Dust emission because of vehicle
Noise	Noise from the vehicles on various sensitive receptors during transportation
Soil	Disposal of removed oils and spillage of fuel from vehicle during maintenance
Water	Oil spillage, fuel spillage during vehicle washing
Waste	1. Broken LED during transport 2. Vehicle accident causing LED bulb and luminaries/ other bulbs and luminaries west on roads or in water bodies
Ecology and Biodiversity	Disposal of used oil and other waste near to sensitive receptors (such as rivers, estuaries, mangroves etc.)
Other Sensitive areas	Impact of project activities on other sensitive areas, public places
Warehousing	
Air Emissions	1. Use of back up diesel generator for the facility; 2. Air emissions from the burning of PCBs due to the accidental fire event;
Noise	1. The noise generation is expected as a result of vehicle movement, loading-unloading activities 2. Use of DG set for power back up
Soil and Water	1. The faulty/broken LED lamps during logistics or faulty lamps returned by consumers; 2. Sewage generated by workers/ consumers
Waste	Waste generation from faulty LED, maintenance of DG set
Occupational Health and Safety	1. Injury due to the accidental fire event; handing of broken lamps 2. Fire risk due to storage of diesel for the back-up DG set; 3. Fire and hazards due to storage of old LED/Other lamps which has potential for toxic release due to heavy metal and other hazardous material content;
Installation and Maintenance	
Air Emissions	1. Construction activities would result in release of pollutants like NOx, SO2 gases and Particulate Matters including tail pipe emissions of construction vehicles and machineries;

Parameter	Impacts
	2. Diesel based power generator (DG Set) used on site would be a potential source of air emissions; 3. Open burning of solid waste on-site by labours;
Noise	1. Noise from the vehicles on various sensitive receptors during transportation 2. Noise from DG set operation during pole erection
Soil	Disposal of removed oils and spillage of fuel from vehicle during maintenance
Water	1. Oil spillage, fuel spillage during vehicle washing 2. Lose soil may enter water bodies during rainy days
Waste	1. Generation of Hazardous wastes (due to mercury/heavy metals/toxic gas content of old lamps); 2. Generation of hazardous waste in the form paint/ solvent container and rags 3. Generation of e-waste from broken/faulty LED lamps while replacement 4. Potential generation of excavated soil, demolition waste, waste wood, waste metals, cables, insulations, plastic, other demolished utilities if any, removal of parts of existing structures etc.
Ecology and Biodiversity	The potential disturbance to tree species. In some cases, the tree cutting or pruning may be required for access of existing street lights and the replacement activity.
Socio-economy	1. The additional vehicles coming to the site may affect existing traffic patterns. The noise and air emissions may affect nearby communities; 2. The safety of the existing road users may get affected due to installation activities
Heritage and Culture	During activities, there might be disturbance to heritage structures and cultural values of the area due to vehicle movement, small scale laying of cables etc; (which might be undertaken only in few areas), and creating short access etc. This varies from site to site depending on the site conditions and the proposed activities
Occupational Health and Safety	1. Working at heights, electric safety during lamp replacement/installation; 2. Exposure of workers to dust emissions and gaseous emissions from site activities; 3. Workplace exposure to noise; 4. Workplace exposure to toxic gases from broken old lamps; 5. Hazard from handling of broken lamps

6.4 Project Screening

Depending on location and the extent of the program, activities will have varying impacts on environment. In this case, environmental screening is required to identify and mitigate the impacts largely based on location sensitivities while the program and its activities are fixed.

Screening checklists developed for UJALA and SLNP are provided in Table 6.4 and Table 6.5 respectively.

Table 6.4: Screening Checklist for UJALA

Site Sensitivity	Applicability	Category
Putting a new Kiosk or setting up Warehouse[10]		
Protected Forests, Biosphere reserves	Within the protected forest area boundary	Ea (Avoid)*
	Within Eco Sensitive Zone (declared Eco- sensitive zone by MoEFCC)	Eb
	Up to 500 m from boundary (In absence of declared Eco- sensitive zone by MoEFCC)	Eb
	Up to 500 m from ESZ	Ec
	In absence of eco-sensitive zone, by default 10 km eco-sensitive zone from the boundary	Ec
Coastal Areas - Sand Dunes, Mangroves, Salt Marshes	Within Sand Dunes, Mangroves, Salt Marshes	Ea (Avoid)
	Up to 500 m from HTL	Ec
Wetlands as defined by the wetland atlas of India and Wetlands of International Importance	Within wetland	Ea (Avoid)
	Up to 500 m	Ec
Important Bird Areas	Within	Ea (Avoid)
	500 m	Ec
Other Natural Habitats as defined by OP 4.04 and Critical Natural Habitats as defined by OP 4.04/ by the Bank or an authoritative source determined by the Regional environment sector unit (RESU)/ Environmental Cell	Within	Ea (Avoid)
	Up to 500 m	Ec
Physical Cultural Resources site as defined by OP 4.11 or as recognized by the Sustainable Development Unit (including (a) and (b) below:	Within	Eb
	In the vicinity (distance up to 3times the height of the pole from edge of the property)	Ec
(a) Archaeological Properties as defined by Archaeological Survey of India	Within	Eb
	In the vicinity (distance up to 500 m from edge of property)	Ec
	Within	Ec

[10] If the area is identified as Indigenous People's habitat, then EESL shall follow recommendations of the Indigenous Peoples Planning Framework (IPPF) prepared for this program

Site Sensitivity	Applicability	Category
(b) National/local level pilgrimages/ mass gatherings considered as part of local culture by communities/Local Body/Sustainable Development Unit	In the vicinity (distance up to 3 times the height of the pole from edge of the property)	Ec
Urban areas with unique urban design or features as identified by Local Body/Sustainable Development Unit	Within	Ec
Aerodrome	Within 5 km radius of an Aerodrome	Ec
Railways, docks and near local water channels	Within	Eb
	Up to 500 m distance	Ec

*Note: If the area is identified as Indigenous People habitat then EESL shall follow recommendations of the Indigenous Peoples Planning Framework prepared for this project.

Table 6.5: Screening Checklist for SLNP

Site Sensitivity	Applicability	Category
Putting a new luminary or Setting up Warehouse [11]		
Protected Forests, Biosphere reserves	Within the protected forest area boundary	Ea (Avoid)*
	Within Eco Sensitive Zone (declared Eco- sensitive zone by MoEFC)	Eb
	Up to 500 m from boundary (In absence of declared Eco-sensitive zone by MoEFC)	Eb
	Up to 500 m from ESZ;	Ec
	In absence of eco-sensitive zone, by default 10 km eco-sensitive zone from the boundary	Ec
Coastal Areas - Sand Dunes, Mangroves, Salt Marshes	Within Sand Dunes, Mangroves, Salt Marshes	Ea (Avoid)
	Up to 500 m from HTL	Ec
Wetlands as defined by the wetland atlas of India and Wetlands of International Importance	Within wetland	Ea (Avoid)
	Up to 500 m	Ec
Important Bird Areas	Within	Ea (Avoid)
	500 m	Ec
Other Natural Habitats as defined by OP 4.04 and Critical Natural	Within	Ea (Avoid)
	Up to 500 m	Ec

[11] If the area is identified as Indigenous People's habitat, then EESL shall follow recommendations of the Indigenous Peoples Planning Framework (IPPF) prepared for this Program

Site Sensitivity	Applicability	Category
Habitats as defined by OP 4.04/ by the Bank or an authoritative source determined by the Regional environment sector unit (RESU)/ Environmental Cell		
Physical Cultural Resources site as defined by OP 4.11 or as recognized by the Sustainable Development Unit (including (a), (b) below)	Within	Eb
	In the vicinity (distance up to 3times the height of the pole from edge of the property)	Ec
(a) Archaeological Properties as defined by Archaeological Survey of India	Within	Eb
	In the vicinity (distance up to 500 m from edge of property)	Ec
(b) National/local level pilgrimages/ mass gatherings considered as part of local culture by communities/LB/Sustainable Development Unit	Within	Eb
	In the vicinity (distance up to 3times the height of the pole from edge of the property)	Ec
Urban areas with unique urban design or features as identified by Local Body/Sustainable Development Unit	Within	Ec
Aerodrome	Within 5 km radius of an Aerodrome	Ec
Railways, docks and Near Local waterways	Within	Eb
	Up to 500 m distance	Ec

*Note: If the area is identified as Indigenous People habitat then EESL shall follow recommendations of the Indigenous Peoples Planning Framework prepared for this project.

7 Proposed Mitigation Measures

This chapter covers general mitigation measures identified for all activities in the project as per different phases. It also suggests what kind of submission from the contractor would be useful to monitor the implementation of these mitigation measures. For projects screened as Ea and Eb, specific mitigation measures will be suggested in the environmental assessment report carried out for particular project. The mitigation measures mentioned in Proposed mitigation measures for Projects under UJALA are presented in the Table 7.1 below.

Table 7.1 and Table 7.2 are applicable for all projects screened as category Ec and all other projects.

7.1 Impacts and Proposed Mitigation Measures

Proposed mitigation measures for Projects under UJALA are presented in the Table 7.1 below.

Table 7.1: Proposed Mitigation Measures – UJALA

Parameter	Impacts	Mitigation Measures	Submission by contractor
Project Planning			
Air Emissions	1. Wrong or overlapping routes creating air pollution	1. Prepare Logistics Plan: Optimised selection of route reduces the distance, time, fuel and hence the total gaseous emission and dust emissions to air/noise;	1. Logistics Plan : showing shortest route and appropriate locations of warehouses and kiosks
Noise	1. Noise from the vehicles on various sensitive receptors during transportation	1. Prepare Logistics plan: for optimised selection of route that reduces the distance, time, fuel and hence the noise levels;	**1.** Logistics Plan : showing shortest route and appropriate locations of warehouses and kiosks
Water	1. Oil spillage, fuel spillage during vehicle washing	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations;	**1.** Vehicle Maintenance Plan: with Manufacturer Authorised Service Stations receipts

Parameter	Impacts	Mitigation Measures	Submission by contractor
Ecology and Biodiversity	1. Oil spillage, waste created after accidents in ecologically sensitive areas in route	1. Prepare Logistics Plan: identify ecologically sensitive areas in route using checklist given in Table 5.2, keeping emergency standby vehicle for support and recovery of waste material from the site 2. Provide Training for drivers: to identify such locations and drive carefully, to have waste disposal, communication and emergency protocols during accident	1. Logistics Plan: identified ecological sensitive areas, location of standby vehicle 2. Training Program: Agenda of training program showing incorporation of said points and Photographs
Resource usage	1. Use of fuel	1. Prepare Logistics Plan: Optimised selection of route reduces the distance, time, fuel and hence the total gaseous emission and dust emissions to air/noise	1. Logistics Plan : showing shortest route and appropriate locations of warehouses and kiosks
Occupational Health and Safety	1. Safety considerations during transportation, warehousing and local kiosks	1. Worker Training : OHS Training to be part of the training provided to all workers before starting the operations especially in handling broken LED bulbs, Ceiling fans and tube lights; 2. Design of kiosk: The kiosk should be designed as per local climatic conditions especially in extreme weather locations with fire safety precautions. The kiosk should have waste bins for storing returned LED bulbs, Ceiling fans and tube lights, paper and packaging waste.	1. Training Program: Agenda of training program showing incorporation of said points and Photographs 2. Design of kiosk : Typical design showing weather protection, fire safety and waste storage space
Transportation			

Parameter	Impacts	Mitigation Measures	Submission by contractor
Air Emissions	1. Gaseous emissions per litre of fuel combusted per kilometre of vehicle travelled; 2. Dust emission because of vehicle	1. Selection of Vehicles: Deploy vehicle which meet with the latest emissions norms; 2. Design vehicle route to avoid unpaved roads OR design traffic movement to avoid movement of vehicles on unpaved roads during non-peak hours of traffic;	1. Vehicle Specification Report: Vehicle Registration Year (Vehicle should not be more than 15 years old), Pollution Under Control Certificate 2. Logistics Plan: showing unpaved roads with suggested timing of vehicle movement.
Noise	1. Noise from the vehicles on various sensitive receptors during transportation	1. Deploy vehicle not older than 15 years 2. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations; 3. Provide Training for Drivers: trainings to drivers on precautions to be taken while driving near the sensitive areas (school, residential area, eco-sensitive areas, no-honking zones etc.), Vehicle to operate avoiding night time operation near residential areas and traffic congestion time on busy routes	1. Vehicle Specification Report: Vehicle Registration Year (Vehicle should not be more than 15 years old), Pollution Under Control Certificate 2. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts 3. Training Program: Agenda of training program showing incorporation of said points and Photographs
Soil	1. Disposal of removed oils and spillage of fuel from vehicle during maintenance	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations;	1. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts
Water	1. Oil spillage, fuel spillage during vehicle washing	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations	1. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts

Parameter	Impacts	Mitigation Measures	Submission by contractor
Waste	1. Broken LED bulbs, Ceiling fans and tube lights during transport 2. Vehicle accident causing LED bulbs, Ceiling fans and tube lights bulb west on roads or in water bodies	1. Cushioning to be provided inside the vehicle to prevent damage during transport. 2. Training for drivers : Waste disposal, communication and emergency protocols for waste disposal; 3. Prepare Logistic Plan :keeping emergency standby vehicle for support and recovery of waste material from the site	1. Vehicle Specification Report: specifying cushioning/ measures to prevent damage during transport 2. Training Program : Agenda of training program showing incorporation of said points Photographs, 3. Logistic Plan : showing location and numbers of standby vehicles
Ecology and Biodiversity	1. Disposal of used oil and other waste near to sensitive receptors (such as rivers, estuaries, mangroves etc.)	1. Prepare Logistics Plan: identify ecologically sensitive areas in route using checklist given in Table 5.2, keeping emergency standby vehicle for support and recovery of waste material from the site 2. Provide Training for drivers: to identify such locations and drive carefully, to have waste disposal, communication and emergency protocols during accident	1. Logistics Plan: identified ecological sensitive areas, location of standby vehicle 2. Training Program: Agenda of training program showing incorporation of said points and Photographs
Socio-economy	1. Impact of project activities on other sensitive areas, public places	1. Prepare Logistics Plan: identify local restrictions at residential areas, no-parking areas, schools, hospitals, silent zones, no-honking timings etc.	1. Logistics Plan: showing residential areas, no-parking areas, schools, hospitals, silent zones, no-honking timings etc and measures to avoid them.
Warehousing			
Air Emissions	3. Use of back up diesel generator for the facility;	1. Prepare warehouse management plan : by location of DG set at a location that provides sufficient height for the Chimney	1. Warehouse Management Plan: showing DG sets capacity,

Parameter	Impacts	Mitigation Measures	Submission by contractor
	4. Air emissions from the burning of PCBs due to the accidental fire event;	as per Central Pollution Control Board norms; 2. Prepare warehouse management plan : to keep the DG set fuel away from all electrical equipment and sockets, providing space for equipment as per Fire NOC obtained and emergency response procedures	location and vent (Chimney) height 2. Warehouse Management Plan : showing fire prevention measures, separate storage of DG set fuel, space for equipment, Fire NOC from respective authority and emergency response mechanism
Noise	3. The noise generation is expected as a result of vehicle movement, loading-unloading activities 4. Use of DG set for power back up	1. Prepare warehouse management plan : to design optimum vehicular movement and parking space for vehicle to avoid honking and idling ; 2. Prepare warehouse management plan : identifying DG set acoustic enclosure or use of silent DG sets;	1. Warehouse Management Plan: showing vehicular movement, parking space for vehicle to avoid honking and idling 2. Warehouse Management Plan: showing DG set acoustic enclosure or use of silent DG sets;
Soil and Water	1. The soil / water may get contaminated due to oil spill or leakage of fuel from vehicles and Diesel storage areas; 2. Sewage generated by workers	1. Avoid vehicle parking on mother earth/ soil. Providing dedicated hard covered space for vehicle parking. Provide DG set fuel store on impervious surface (preferably Plain Cement Concrete 75mm to 100mm thick) covered with 150 mm of sand which can be washed afterwards to remove oil from it in oil and grease trap. The collected oil will be sold to authorised Oil Recyclers. 2. Ensure that the sewage generated by the workers is drained in to sewage line provided by Local Body, if the site does	1. Warehouse Management Plan : showing location and specification of impervious layer, provision of Oil and Grease trap and tie up with authorised oil recyclers 2. Warehouse Management Plan : showing tapping point of Local Body sewage line for the warehouse plot OR location and capacity of septic tank/ soak pit

Parameter	Impacts	Mitigation Measures	Submission by contractor
		not have sewage line then provide septic tank/ soak pit for the required capacity	
Waste	1. Waste generation from faulty LED bulbs, Ceiling fans and tube lights, maintenance of DG set	1. Prepare warehouse management plan: providing specific instruction for safe handling of LED bulbs, Ceiling fans and tube lights (mentioned in the SOP). The warehouse to provide dedicated space for collection of broken/ returned LED bulbs, Ceiling fans and tube lights which would be collected in labelled containers/ boxes.	1. Warehouse Management Plan : showing storage for broken/ returned LED bulbs, Ceiling fans and tube lights, giving weekly reporting format for inventory of LED bulbs, Ceiling fans and tube lights broken in transit, bulbs returned by consumers, LED bulbs, Ceiling fans and tube lights in stock and bulbs sent to supplier
Occupational Health and Safety	1. Injury due to the accidental fire event; handing of broken lamps 2. Fire risk due to storage of diesel for the back-up DG set;	1. Prepare warehouse management plan : with procedure and Personal Protection Equipment to handle broken lamps 2. Prepare warehouse management plan : to keep the DG set fuel away from all electrical equipment and sockets, providing space for equipment as per Fire NOC obtained and emergency response procedures and emergency response procedures;	1. Warehouse Management Plan : with procedure and PPE for handling broken lamps, 2. Warehouse Management Plan : showing fire prevention measures, separate storage of DG set fuel, space for equipment, Fire NOC from respective authority and emergency response mechanism; 3. Obtain Building permit, Fire NOC and Trade License for warehouse
Temporary Storage at local Kiosks/Distribution Centres			
Air Emissions	1. In the event of fire, the releases of toxic material from burning of PCBs used in lamps	1. Design of kiosk: The kiosk should be designed as per local climatic conditions especially in extreme weather locations with fire safety precautions.	1. Design of kiosk : Typical design showing weather protection, fire safety and waste storage space

Parameter	Impacts	Mitigation Measures	Submission by contractor
		2. In case Discom office is working as a distribution kiosk then it should be ensured that the office has required Fire NOC from the authority and fire prevention measures are in place	2. Design of kiosk: In case of Discom office working as distribution kiosk then Fire NOC and audit of Discom office for fire prevention measures.
Waste and Water	1. The faulty/broken LED bulbs, Ceiling fans and tube lights during logistics or faulty lamps returned by consumers; 2. Sewage generated by workers/ consumers	1. Design of kiosk: The kiosk should be designed so as the supplied LED bulbs, Ceiling fans and tube lights do not get damaged due to handling or moisture, separate bins are to be provided for collecting paper waste, recyclable waste and broken/ returned LED bulbs, Ceiling fans and tube lights 2. Ensure that the sewage generated by the workers/ consumers is drained in to sewage line provided by Local Body, if the site does not have sewage line then identify nearest toilet that workers/ consumers can use and obtain permission for the usage from the owner OR provide septic tank/ soak pit for the required capacity	1. Design of kiosk: Typical design showing LED bulbs, Ceiling fans and tube lights protection from handling and moisture, showing location and capacity of bins for paper waste, recyclable waste and broken/ returned bulbs. giving daily reporting format for inventory of LED bulbs, Ceiling fans and tube lights broken in transit/ returned by consumers, and sent to warehouse 2. Design of kiosk : showing tapping point of Local Body sewage line for the warehouse plot OR location of nearest toilet that is connected to Local Body sewage line along with permission to use OR location and capacity of septic tank/ soak pit
Ecology and Biodiversity	1. Impact of kiosk activity on ecology and biodiversity	1. Avoid putting kiosk in ecological sensitive locations using checklist given in Table 5.2	1. Submission of affidavit saying none of the kiosks are located in the areas given in checklist given in Table 5.2.

Parameter	Impacts	Mitigation Measures	Submission by contractor
Occupational Health and Safety	1. Fire safety; 2. Workers health	2. Design of kiosk: The kiosk should be designed as per local climatic conditions especially in extreme weather locations with fire safety precautions. 3. In case Discom office is working as a distribution kiosk then it should be ensured that the office has required Fire NOC from the authority and fire prevention measures are in place	3. Design of kiosk : Typical design showing weather protection, fire safety and waste storage space 4. Design of kiosk: In case of Discom office working as distribution kiosk then Fire NOC and audit of Discom office for fire prevention measures.

7.2 Proposed Mitigation Measures – SLNP

Proposed mitigation measures for Projects under SLNP are presented in the Table 7.2 below.

Table 7.2: Proposed Mitigation Measures - SLNP

Parameter	Impacts	Mitigation Measures	Submission by Contractor
Project Planning			
Air Emissions	1. Wrong or overlapping routes creating air pollution	1. Prepare Logistics Plan: Optimised selection of route reduces the distance, time, fuel and hence the total gaseous emission and dust emissions to air/noise	1. Logistics Plan : showing shortest route and appropriate locations of warehouses and kiosks
Noise	1. Noise from the vehicles on various sensitive receptors during transportation	1. Prepare Logistics plan: for optimised selection of route that reduces the distance, time, fuel and hence the noise levels;	1. Logistics Plan : showing shortest route and appropriate locations of warehouses and kiosks

Parameter	Impacts	Mitigation Measures	Submission by Contractor
Water	1. Oil spillage, fuel spillage during vehicle washing	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations;	**1.** Vehicle Maintenance Plan: with Manufacturer Authorised Service Stations receipts
Ecology and Biodiversity	4. Tree cutting/pruning during installations of LED lamps/ poles; 5. Impact of illumination on the ecologically sensitive areas (Bird migratory paths, wetlands, nesting areas, breeding areas) 6. Light pollution	1. Avoid cutting/ pruning of trees by proper planning of new poles 2. If unavoidable then required permission needs to be taken before hand from the authority 3. Avoid putting new poles in sensitive areas 4. Use amber colour or Lower LED Colour Temperature (ideally as low as 3000 K, i.e. radiations below wavelength of 500 nm should be avoided) as studies have shown that this light does not interfere with activities of certain animals 5. Use Full Cut Off luminary (no light emitted above horizontal) as defined in BIS 1981 so as the light does not disperse and cause light pollution. Also install the Full Cut Off luminary is as specified in the code i.e. ensuring that the luminary is placed exactly horizontal to the surface of the street below and not at an angle. 6. Use provided checklist in Table 5.3 to identify various environmental conditions. Details of applicability of	1. Submission of affidavit confirming the mitigation measures as given in Table 7.3 are provided. The affidavit should also have a table giving inventory of Amber Lights and Full Cut Off Luminaries, type of environmental conditions (as given in Table 7.3) and locational details.

Parameter	Impacts	Mitigation Measures	Submission by Contractor
		the above given mitigation measures for the mentioned environmental conditions is provided in Table 7.3	
Socio-economy	4. Location of warehouse may affect daily life of community 5. Impact of project activities on daily life of community, public places, 6. Impact on functioning other governmental agencies like Airport, Port or Railways	1. Plan Material Storage Areas/ warehouse in such a way that it storage will not affect daily life of surrounding community. 2. Avoid disturbance to the vehicle moment on the roads where the luminaries are being changed or new poles are being erected. Avoid disturbance to the community during the activity 3. Take require permissions from the relevant bodies as given in Table 7.3	1. Construction Management Plan: Prepare and submit construction management plan showing material storage area in relevance to the surrounding roads, common property resources etc. 2. Traffic management plan: prepare and submit traffic management plan for the operations using SOP given in Chapter 8. 3. Submit the relevant permissions before commencing the work.
Heritage and Culture	1. Impact of project activities on historical and culturally important places and cultural values	1. Avoid putting new poles within the premises of an historically and culturally important place 2. Acquire required permissions from the Local Body/ the Trust looking after the operations or any relevant authority before putting new poles/ luminaries 3. After discussions with the relevant authority provide LED bulb/ luminary to maintain the same light colour as previously existed 4. Use Full Cut Off luminary (no light emitted above horizontal) as defined in BIS 1981 so as the light does not disperse and cause light pollution. Also	1. Submission of affidavit confirming the mitigation measures as given in Table 7.3 are provided. The affidavit should also have a table giving inventory of same colour LED bulb/ luminary and Full Cut Off Luminaries, type of cultural conditions (as given in Table 7.3) and locational details.

Parameter	Impacts	Mitigation Measures	Submission by Contractor
		install the Full Cut Off luminary is as specified in the code i.e. ensuring that the luminary is placed exactly horizontal to the surface of the street below and not at an angle. 5. Use provided checklist in Table 5.3 to identify various cultural conditions. Details of applicability of the above given mitigation measures for the mentioned cultural conditions is provided in Table 7.3	
Resource usage	1. Use of fuel	1. Prepare Logistics Plan: Optimised selection of route reduces the distance, time, fuel and hence the total gaseous emission and dust emissions to air/noise	1. Logistics Plan : showing shortest route and appropriate locations of warehouses and kiosks
Occupational Health and Safety	1. Safety considerations during transportation, warehousing and local kiosks	1. Worker Training: OHS Training to be part of the training provided to all workers before starting the operations especially in handling broken LED bulbs/ removed Halogen/ Metal halide etc. bulbs and luminaries	1. Training Program: Agenda and Photographs
Transportation			
Air Emissions	1. Gaseous emissions per litre of fuel combusted per kilometre of vehicle travelled; 2. Dust emission because of vehicle;	1. Selection of Vehicles: Deploy vehicle which meet with the latest emissions norms; 2. Design vehicle route to avoid unpaved roads OR design traffic movement to avoid movement of vehicles on	1. Vehicle Specification Report: Vehicle Registration Year (Vehicle should not be more than 15 years old), Pollution Under Control Certificate.

Parameter	Impacts	Mitigation Measures	Submission by Contractor
		unpaved roads during non-peak hours of traffic;	2. Logistics Plan: showing unpaved roads with suggested timing of vehicle movement.
Noise	1. Noise from the vehicles on various sensitive receptors during transportation	1. Deploy vehicle not older than 15 years 2. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations; 3. Provide Training for Drivers: trainings to drivers on precautions to be taken while driving near the sensitive areas (school, residential area, eco-sensitive areas, no-honking zones etc.), Vehicle to operate avoiding night time operation near residential areas and traffic congestion time on busy routes	1. Vehicle Specification Report: Vehicle Registration Year (Vehicle should not be more than 15 years old), Pollution Under Control Certificate 2. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts 3. Training Program: Agenda and Photographs
Soil	1. Disposal of removed oils and spillage of fuel from vehicle during maintenance	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations;	1. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts
Water	1. Oil spillage, fuel spillage during vehicle washing	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations;	1. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts
Waste	1. Broken LED during transport 2. Vehicle accident causing LED bulb and luminaries/ other bulbs and luminaries	1. Cushioning/ measures to be provided inside the vehicle to prevent damage during transport.	1. Vehicle Specification Report: specifying cushioning/ measures to prevent damage during transport 2. Training Program Photographs,

Parameter	Impacts	Mitigation Measures	Submission by Contractor
	west on roads or in water bodies	2. Training for drivers: Waste disposal, communication and emergency protocols for waste disposal; 3. Prepare Logistic Plan: keeping emergency standby vehicle for support and recovery of waste material from the site	3. Logistic Plan: showing location and numbers of standby vehicles
Ecology and Biodiversity	1. Disposal of used oil and other waste near to sensitive receptors (such as rivers, estuaries, mangroves etc.)	1. Prepare Logistics Plan: identify ecologically sensitive areas in route using checklist given in Table 5.2, keeping emergency standby vehicle for support and recovery of waste material from the site 2. Provide Training for drivers: to identify such locations and drive carefully, to have waste disposal, communication and emergency protocols during accident	1. Logistics Plan: identified ecological sensitive areas, location of standby vehicle 2. Training Program: Agenda and Photographs
Other sensitive areas	1. Impact of project activities on other sensitive areas, public places	1. Prepare Logistics Plan: identify local restrictions at residential areas, no-parking areas, schools, hospitals, silent zones, no-honking timings etc.	1. Logistics Plan: showing residential areas, no-parking areas, schools, hospitals, silent zones, no-honking timings etc and measures to avoid them.
Warehousing			
Air Emissions	1. Use of back up diesel generator for the facility;	1. Prepare warehouse management plan : by location of DG set at a location that provides sufficient height for the	1. Warehouse Management Plan: showing DG sets capacity, location and vent (Chimney) height

Parameter	Impacts	Mitigation Measures	Submission by Contractor
	2. Air emissions from the burning of PCBs due to the accidental fire event;	Chimney as per Central Pollution Control Board norms; 2. Prepare warehouse management plan : to keep the DG set fuel away from all electrical equipment and sockets, providing space for equipment as per Fire NOC obtained and emergency response procedures	2. Warehouse Management Plan : showing fire prevention measures, separate storage of DG set fuel, space for equipment, Fire NOC from respective authority and emergency response mechanism
Noise	1. The noise generation is expected as a result of vehicle movement, loading-unloading activities 2. Use of DG set for power back up	1. Prepare warehouse management plan : to design optimum vehicular movement and parking space for vehicle to avoid honking and idling ; 2. Prepare warehouse management plan : identifying DG set acoustic enclosure or use of silent DG sets;	1. Warehouse Management Plan : showing vehicular movement, parking space for vehicle to avoid honking and idling 2. Warehouse Management Plan : showing DG set acoustic enclosure or use of silent DG sets;
Soil and Water	1. The soil / water may get contaminated due to oil spill or leakage of fuel from vehicles and Diesel storage areas; 2. Sewage generated by workers	1. Avoid vehicle parking on mother earth/ soil. Providing dedicated hard covered space for vehicle parking. Provide DG set fuel store on impervious surface (preferably Plain Cement Concrete 75mm to 100mm thick) covered with 150 mm of sand which can be washed afterwards to remove oil from it in oil and grease trap. The collected oil will be sold to authorised Oil Recyclers. 2. Ensure that the sewage generated by the workers is drained in to sewage line provided by Local Body, if the site does not have sewage line then provide	1. Warehouse Management Plan : showing location and specification of impervious layer, provision of Oil and Grease trap and tie up with authorised oil recyclers 2. Warehouse Management Plan : showing tapping point of Local Body sewage line for the warehouse plot OR location and capacity of septic tank/ soak pit

Parameter	Impacts	Mitigation Measures	Submission by Contractor
		septic tank/ soak pit for the required capacity	
Waste	1. Waste generation from faulty LED, maintenance of DG set and general waste	1. Prepare warehouse management plan: The warehouse to provide dedicated space for collection of broken/ returned LED bulbs/ other replaced bulbs and luminaries which would be collected in labelled containers/ boxes.	1. Warehouse Management Plan : showing storage for broken/ returned LED bulbs, giving weekly reporting format for inventory of bulbs broken in transit, bulbs returned by consumers, bulbs in stock, other replaced bulbs and luminaries and bulbs sent to supplier
Occupational Health and Safety	1. Injury due to the accidental fire event; handing of broken lamps 2. Fire risk due to storage of diesel for the back-up DG set; 3. Fire and hazards due to storage of old LED/Other lamps which has potential for toxic release due to heavy metal and other hazardous material content;	1. Prepare warehouse management plan: with procedure and Personal Protection Equipment to handle broken lamps 2. Prepare warehouse management plan: to keep the DG set fuel away from all electrical equipment and sockets, providing space for equipment as per Fire NOC obtained and emergency response procedures and emergency response procedures; 3. Warehouse should have indoor air quality monitoring system which can monitor the exposure of workers to potential toxic gas release from the waste storage areas	1. Warehouse Management Plan : with procedure and PPE for handling broken lamps, 2. Warehouse Management Plan : showing fire prevention measures, separate storage of DG set fuel, space for equipment, Fire NOC from respective authority and emergency response mechanism 3. Warehouse Management Plan : showing indoor air quality monitoring arrangement 4. Obtain Building permit, Fire NOC and Trade License for warehouse
Installation and Maintenance			

Parameter	Impacts	Mitigation Measures	Submission by Contractor
Air Emissions	1. Construction activities would result in release of pollutants like NOx, SO2 gases and Particulate Matters including tail pipe emissions of construction vehicles and machineries; 2. Diesel based power generator (DG Set) used on site would be a potential source of air emissions; 3. Open burning of solid waste on-site by labours;	1. Selection of Vehicles: Deploy vehicle and machinery which meet with the latest emissions norms; 2. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations; check emissions from the vehicles/ machinery through regular Pollution Under Control Certificate 3. Spraying of water during vehicle moment/ pole erection to reduce the duct emissions; 4. Use of DG set only as emergency power back up purpose; 5. Open burning of solid waste is to be strictly prohibited on site	1. Vehicle Specification Report: Vehicle Registration Year (Vehicle should not be more than 15 years old), Pollution Under Control Certificate 2. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts 3. Construction Management Plan: Prepare and submit construction management plan incorporating mentioned mitigation measures
Noise	1. Noise from the vehicles on various sensitive receptors during transportation 2. Noise from DG set operation during pole erection	1. Deploy vehicle not older than 15 years 2. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations; 3. Provide Training for Drivers: trainings to drivers on precautions to be taken while driving near the sensitive areas (school, residential area, eco-sensitive areas, no-honking zones etc.), Vehicle to operate avoiding night time operation near residential areas and traffic congestion time on busy routes	1. Vehicle Specification Report: Vehicle Registration Year (Vehicle should not be more than 15 years old), Pollution Under Control Certificate 2. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts 3. Training Program: Agenda and Photographs 4. Construction Management Plan: prepare and submit construction management plan showing minimum

Parameter	Impacts	Mitigation Measures	Submission by Contractor
		4. Use of DG set only as emergency power back up purpose	usage of DG set in pole erection activity.
Soil	1. Disposal of removed oils and spillage of fuel from vehicle during maintenance	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations;	1. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts
Water	1. Oil spillage, fuel spillage during vehicle washing 2. Lose soil may enter water bodies during rainy days	1. Prepare Vehicle Maintenance Plan: for the regular maintenance of the vehicles deployed at Manufacturer Authorised Service Stations; 2. If erecting pole/ excavation for cabling work is crossing or touching natural water body avoid construction during rainy days and use silt fencing/ geotextile to prevent lose soil entering water bodies	1. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts 2. Construction Management Plan: prepare and submit construction management plan showing avoidance of work in rainy days and quantifying erosion prevention measures.
Waste	1. Generation of Hazardous wastes (due to mercury/heavy metals/toxic gas content of old lamps); 2. Generation of hazardous waste in the form paint/ solvent container and rags 3. Generation of e-waste from broken/faulty LED lamps while replacement 4. Potential generation of excavated soil, demolition waste, waste wood, waste metals, cables, insulations,	1. At the construction site waste segregated in Hazardous, E – Waste, Reusable (old bulbs/ luminaries), Recyclable and Inert types must be stored in 5 separate bins/ boxes. Hazardous waste must be stored in HDPI drums as per the applicable rules. 2. The management of hazardous and non-hazardous waste generated from activities should be done through designated/authorised agency 3. Fate of old bulbs and luminaries must be defined (going Local Body/ being	1. Construction Management Plan: prepare and submit construction management plan showing how 5 bins/ boxes for different types of waste will be carried by the working crew and the streams of waste will be kept isolated from each other. Agreement with waste management agency for all types of waste to be furnished. Also define chain of custody of the old bulbs and luminary along with inventory maintained on daily basis.

Parameter	Impacts	Mitigation Measures	Submission by Contractor
	plastic, other demolished utilities if any, removal of parts of existing structures etc.	taken back by lighting agency) and labelled	
Ecology and Biodiversity	1. The potential disturbance to tree species. In some cases, the tree cutting or pruning may be required for access of existing street lights and the replacement activity.	1. Avoid tree cutting/pruning; 2. Obtain relevant permissions where the tree cutting/pruning can't be avoided;	1. Construction Management Plan: Prepare and submit construction management plan identifying areas with trees to be avoided OR provide with permission from relevant authority.
Socio-economy	1. The additional vehicles coming to the site may affect existing traffic patterns. The noise and air emissions may affect nearby communities; 2. The safety of the existing road users may get affected due to installation activities	1. Traffic management plan specific to the site conditions to be prepared; 2. The local restrictions should be assessed before commencing the activities;	1. Traffic management plan: prepare and submit traffic management plan for the operations using SOP given in Chapter 8. 2. Submit the relevant permissions before commencing the work.
Heritage and Culture	1. During activities, there might be disturbance to heritage structures and cultural values of the area due to vehicle movement, cable laying, and creating short access etc. This varies from site to site depending on the site conditions and the proposed activities;	1. Local restrictions for traffic movement, festival timing, influx of people, noise, dust and gaseous emissions to be considered; 2. Permissions from the relevant authorities to be obtained before commencing the work near heritage and cultural sites and standard procedure shall be followed for chance finds.	1. Construction Management Plan: Prepare and submit construction management plan showing timeline of the activity not conflicting with local traffic, festival timings. Permissions from relevant bodies to be submitted before starting work near heritage and cultural sites.

Parameter	Impacts	Mitigation Measures	Submission by Contractor
			Chance find procedures to be followed when applicable.
Occupational Health and Safety	1. Working at heights, electric safety during lamp replacement/installation; 2. Exposure of workers to dust emissions and gaseous emissions from site activities; 3. Workplace exposure to noise; 4. Workplace exposure to toxic gases from broken old lamps; 5. Hazard from handling of broken lamps	1. Use of adequate personal protective equipment (PPEs) such as hard hats, ear plugs, safety boots, hand gloves, safety glasses, safety harness for working at heights; 2. Safety procedures for working at confined spaces, safety procedures for handling of hazardous materials; 3. Use of suitable masks for reducing exposure to dust emissions and toxic fumes on site; 4. Providing training to the workers for handling hazardous material and exposure to toxic gases	1. Construction Management Plan: Provide and submit construction management plan showing implementation methodology for safety procedures as mentioned in Chapter 8 SOP. 2. Training of workers: Training agenda showing incorporation of said points and photographs.

Table 7.3: Special Conditions

Site Sensitivity	Applicability	Mitigation
Light Pollution – location of luminary *		
Protected Forests, Biosphere reserves	Within the protected forest area boundary	Avoid *
	Within Eco Sensitive Zone (declared Eco-sensitive zone by MoEFCC)	Amber Lights
	Up to 500 m from boundary (In absence of declared Eco- sensitive zone by MoEFCC)	Use full cut-off lighting fixtures
	Up to 500 m from ESZ;	Use full cut-off lighting fixtures
	In absence of eco-sensitive zone, by default 10 km eco-sensitive zone from the boundary	Use full cut-off lighting fixtures
Coastal Areas - Sand Dunes, Mangroves, Salt Marshes	Within Sand Dunes, Mangroves, Salt Marshes	Avoid*
	Up to 500 m from HTL	Amber Lights/Full Cut-off lighting fixtures
Wetlands as defined by the wetland atlas of India and Wetlands of International Importance	Within wetland	Avoid
	Up to 500 m	Amber Lights/Full Cut-off lighting fixtures
Important Bird Areas	Within	Avoid
	500 m	Amber Lights with Full Cut-off lighting fixtures
Other Natural Habitats as defined by OP 4.04 and Critical Natural Habitats as defined by OP 4.04/ by the Bank or an authoritative source determined by the Regional environment sector unit (RESU)/ Environmental Cell	Within	Avoid
	Up to 500 m	Amber Lights/Full Cut-off lighting fixtures
Physical Cultural Resources site as defined by OP 4.11 or as recognized by the Sustainable Development Unit (including (a) and (b) below)	Within	Special study as E_b category (Environmental Assessment)
	In the vicinity (distance up to 3times the height of the pole from edge of the property)	Full cut-off Lighting fixtures OR As per discussion with Local Body/ stakeholders
(a) Archaeological Properties as defined by	Within	Avoid putting new poles OR

Site Sensitivity	Applicability	Mitigation
Archaeological Survey of India		as per interdepartmental discussion between EESL and Archaeological Survey of India.
	In the vicinity (distance up to 500 m from edge of property)	Avoid/maintain the earlier colour temperature/ wavelength; OR as per interdepartmental discussion between EESL and Archaeological Survey of India.
(b) National/local level pilgrimages/ mass gatherings considered as part of local culture by communities/Local Body/Sustainable Development Unit	Within	Avoid/maintain the earlier colour temperature/ wavelength OR As per discussion with stakeholders
	In the vicinity (distance up to 3times the height of the pole from edge of the property)	Full cut-off lighting fixtures/ as per discussion with stakeholders
Urban areas with unique urban design or features as identified by Local Body/Sustainable Development Unit	Within	Avoid/maintain the earlier colour temperature/ wavelength/ OR As per discussion Local Bodys
Aerodrome	Within 5 km radius of an Aerodrome	As per discussion with Airport Authority of India or relevant authority
Railways, docks and local navigable waterways	Within Up to 500 m distance	Environmental Assessment or As per detailed planning after discussion with Airport Authority of India or relevant authority

*** Note: If the area is identified as Indigenous People habitat then EESL shall follow recommendations of the Indigenous Peoples Planning Framework prepared for this project.**

7.3 Chance Find Procedure

All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest discovered on the site shall be the property of the Government and shall be dealt with as per provisions of the relevant legislation. The contractor will take reasonable precautions to prevent his workmen or any other persons from removing and damaging any such article or thing. He will, immediately upon discovery thereof and

before removal acquaint the Engineer (Regional Officer in Charge of the site) of such discovery and carry out the SC's instructions for dealing with the same, waiting which all work shall be stopped. The Engineer will seek direction from the Archaeological Survey of India (ASI) before instructing the Contractor to recommence the work in the site.

7.4 Cost for Mitigation Measures

UJALA and SLNP programs work on bulk purchase of LED bulbs, Ceiling fans and tube lights and luminaries. The logistics of taking the LED bulbs, Ceiling fans and tube lights to the consumer or changing the street light involves use of workers, vehicles, warehouses and kiosks. The number of LED lamps, luminaries, vehicles, warehouses and kiosks vary as per size of the particular project taken up in the program. Thus it is not possible to work out cost of the mitigation measures for the entire scale of the program. Any and all measurable (at the time of DPR preparation) physical costs essential for environmental mitigation measures, will form a part of the sub-project capital costs. Provisions for such costs shall be reflected in the Bid document and proposals received by EESL.

The EMP will be integrated into the Detailed sub-Project Report (DPR) and sub-project bid documents.

8 Environmental, Occupational Health & Safety and Social (EHSS) (EHSS) Manual

8.1 Introduction to the EHSS Manual

EESL has prepared an Environmental, Occupational Health & Safety and Social (EHSS) manual covering mainly UJALA and SLNP, to guide their operations. It is important to note that EESL has recently designated an EHSS officer to align their programs with the provisions of the Manual. EESL has started incorporating environmental considerations in their program operations as evidenced by the newly amended contract conditions. EESL is also planning to organise training programs for the contractors and employees on EHSS. There is scope for improving the existing EHSS Manual including its Standard Operating Protocols (SOPs) and Documentation Formats (DFs) and ensuring full coverage of all programs and activities under EESL, through careful updating and internalizing mechanisms for program planning, capacity building, supervision and monitoring.

8.2 Need for Updating of the Manual

It is pertinent to modify and upgrade the existing EHSS Manual to ensure full coverage of environmental impacts and measures to avoid and mitigate the issues. Mechanisms to disseminate its provisions among the staff, vendors and supporting agencies and procedures to operationalize the EHSS are expected to be in place at the earliest considering the fast roll out of EESLs operations. Arrangements for on-site monitoring shall be undertaken at the earliest. Systems and procedures for continuously updating the EHSS Manual during the initiation of each future program are required to be prepared. Plan and schedule to train the program staff and contractor/vendors and associated agencies on these guidelines will also be required on priority.

8.3 Objectives of the updated EHSS Manual

The main objective of this manual is to identify and mitigate EHSS risks both in office and on-site operations. This pertains to EESL operations and operations of vendors and their sub-contractors thereof. The identification and mitigation of EHSS risks are also interlinked with their integration into company's decision-making processes.

Another objective of the manual is that, the EHSS requirements must be adhered to by EESL, vendors and their sub-contractors thereof, as a minimum. Over and above this, EESL, vendors and their sub-contractors should meet all the national and local regulatory requirements, as applicable from time to time.

One of the objectives of this manual is also to prescribe the monitoring mechanism for its operationalization and also to provide methodology and framework for its updation.

8.4 Methodology and Framework for Updation

8.4.1 Guiding Principles

1. Comply with all environmental, health and safety (EHS) laws and regulations as the minimum acceptable level of compliance,
2. Maintain a safe and healthy work environment. Reduce accidents and injuries by researching, implementing, and institutionalizing EHSS principles,

3. Periodically revise and update the site-specific workplace plans and practices to maintain all the operations free from internal and external threats,
4. Embrace sustainable practices in operations, communities, suppliers and customers to maximize stakeholders benefit,
5. Evaluate all potential environmental impacts to conserve energy and water, preserve the natural resources, prevent pollution, and utilize environment friendly materials and processes in the operations,
6. Strive to improve EHSS performance beyond compliance,
7. Ensure that suppliers, vendors and contractors share the same values of EHSS performance,
8. Commit to a continual improvement process. Strive to learn and implement best practices.

8.4.2 Methodology

1. Comply with all Environmental, Health and Safety (EHS) laws and regulations as the minimum acceptable level of compliance:
    - Assessment of applicable regulatory framework (National and World Bank) pertaining to environment, health and safety as applicable to the activities under the projects;
    - Assess the gaps in the existing EHSS Manual with respect to the applicable regulations;
    - Update the list of compliance requirements;
    - Update the roles, responsibilities and institutional mechanism to ensure the compliance.
2. Maintain a safe and healthy work environment. Reduce accidents and injuries by researching, implementing, and institutionalizing EHSS principles.
    - Assessment of activities under the program from EHSS point of view;
    - Assess the current EHS logbook for reportable/non-reportable/near miss accidents;
    - Review and revise the operational control procedures/safety instructions;
    - Update the roles, responsibilities and institutional mechanism to ensure the implementation;
    - Ensure the communication to all the stakeholders;
    - Update the EHSS Manual;
3. Periodically revise and update the site-specific workplace plans and practices to maintain all the operations free from internal and external threats.
    - Define the activity specific EHS parameters for workplace/operations;

- Revise the workplace plans accordingly;
- Update the risk management protocol and procedures in the EHSS Manual

4. Embrace sustainable practices in operations, communities, suppliers and customers to maximize stakeholders benefit.
    - Assessment of environmental performance of the program;
    - Assessment of potential for adopting sustainable practices during various phases of the program and Prepare the benchmarks;
    - Prepare the process for communication with all stakeholders and feedback mechanism;
    - Update the EHSS manual with roadmap for implementation of sustainable practices for all Programs of EESL
5. Evaluate all potential environmental impacts to conserve energy and water, preserve the natural resources, prevent pollution, and utilize environment friendly materials and processes in the operations:
    - Assessment of additional activities under the program;
    - Assessment of environmental impacts from new activities;
    - Identify the measures to prevent environmental impacts or to reduce their effects through implementable and auditable mitigation measures;
    - Adopt the best practices to conserve the water, energy, fuel and other natural resources;
6. Strive to improve EHSS performance beyond compliance;
    - Identification of EHSS impacts that are not covered under existing legislations;
    - Prioritise issues based on significance;
    - Identify and adopt the best practices and set goals to improve EHSS performance;
7. Ensure that suppliers, vendors and contractors share the same values of EHSS performance.
    - Prepare the EHSS performance indicators and framework for stakeholder communication;
8. Commit to a continual improvement process. Strive to implement best practices.
    - Define the frequency for internal and external audits of EHSS performance;
    - Define methodology for implementation of audit recommendations;
    - Prepare the procedure for corrective and preventive actions.

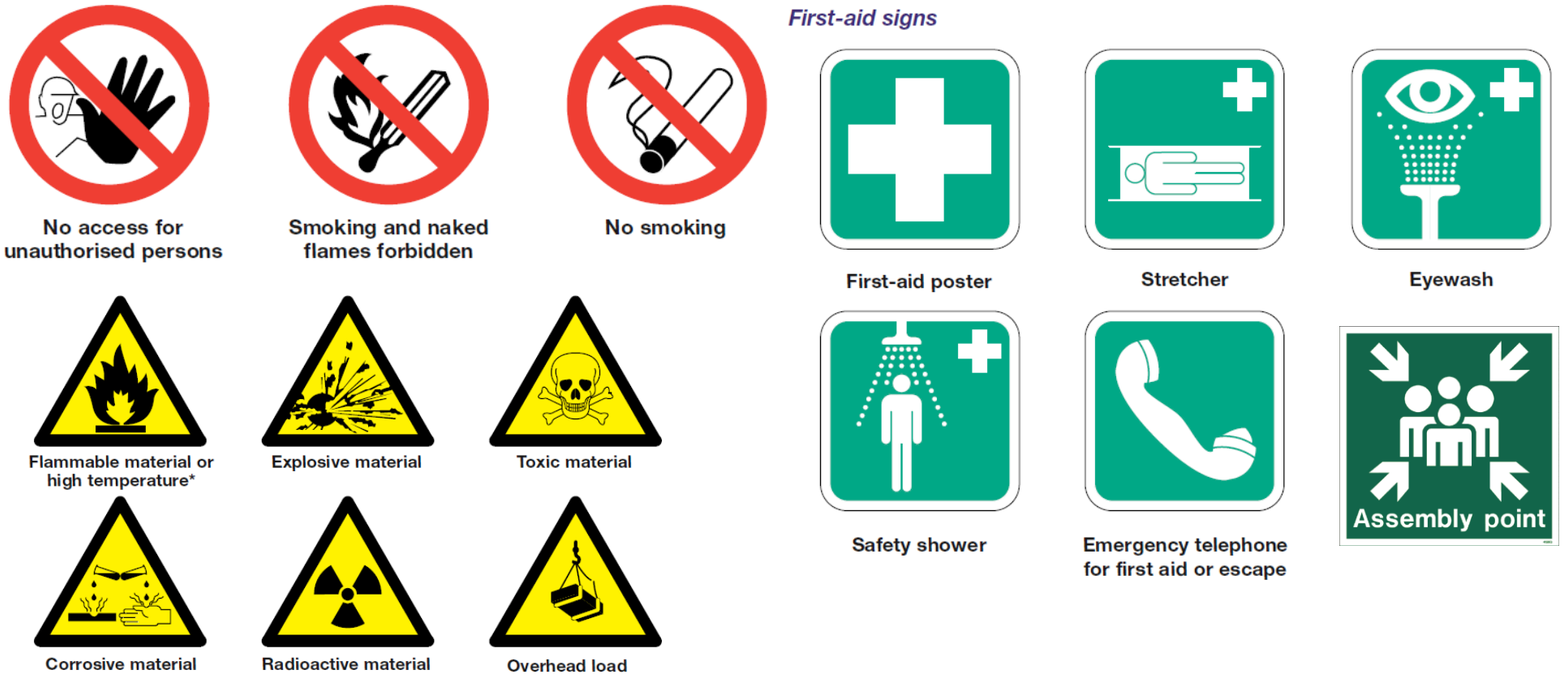
8.5 Updated EHSS Standard Operating Protocols

As part of this EMF, the SOPs of the EHSS Manual have been updated and attached. EESL may in future, while upscaling or staring new programs update it further following the procedure outlined above and comply with the same; with adequate guidance from the Sustainable Development Unit which is proposed to be set up to duly integrate environmental considerations in program planning, implementation and operations.

8.5.1 SOP 1: Risk Management

SOP 01	EHSS Risk Management	
Index No:	**Head**	**Description**
SOP_01. 1	Purpose	To ensure EHS-related risks are managed in an effective manner and that EESL adopts a rigorous risk analysis process to make informed and proactive decisions
SOP_01. 2	Coverage: Program / Region	UJALA, SLNP Applicable to work sites throughout the country (Transportation, Warehouse, Local Storage, and Installation and maintenance activities)
SOP_01. 3	References	Guidance Note - IFC Available at: https://siteresources.worldbank.org/INTRANETENVIRONMENT/Resources/244351-1279901011064/OccupationalHealth.pdf Accessed on November 2017. EHSS Manual The Health and Safety (Safety Signs and Signals) Regulations 1996 (http://www.hse.gov.uk/pUbns/priced/l64.pdf)
SOP_01. 4	Hazard Mapping / Assessment	Risk from various activities under Transportation, Warehouse, Local Storage, and Installation and maintenance: Building and Grounds Conditions – floors, walls, ceilings, exits, stairs, walkways, ramps, platforms, driveways, aisles Chemicals – storage, handling, transportation, spills, disposals, amounts used, labelling, toxicity or other harmful effects, warning signs, supervision, training, protective clothing and equipment, hazard communication requirement Electricity – equipment, switches, breakers, fuses, switch-boxes, junctions, special fixtures, circuits, insulation, extensions, tools, motors, grounding, national electric code compliance Evacuation Plan – establish and practice procedures for an emergency evacuation in response to a fire, chemical/biological incident, bomb threat; include escape procedures and routes, critical plant operations, employee accounting following an evacuation, rescue and medical duties, ways to report emergencies Fire Prevention – extinguishers, alarms, sprinklers, smoking rules, exits, personnel assigned, separation of flammable materials and dangerous operations, explosion-proof fixtures in hazardous locations, waste disposal, training First Aid Program/Supplies – medical care facilities locations, posted emergency numbers, accessible first aid kits Hand and Power Tools – purchasing standards, inspection, storage, repair, maintenance, grounding, use, handling Heating and Ventilation – type, effectiveness, temperature, humidity, controls, natural and artificial ventilation, exhausting Housekeeping Program – waste disposal, tools, objects, materials, leakage and spillage, cleaning methods, schedules, work areas, remote areas, storage areas Lighting – type, intensity, controls, conditions, diffusion, location, glare and shadow control Machinery – points of operation, flywheels, gears, shafts, pulleys, key ways, belts, couplings, sprockets, chains, frames, controls, lighting for tools and equipment, brakes, exhausting, feeding, oiling, adjusting, maintenance, lockout/tagout, grounding, work space, location, purchasing standards Maintenance – provide regular and preventive maintenance on all equipment used at the worksite, record all work performed on the machinery and train personnel to properly care for and service the equipment Personnel – training, including hazard identification training; experience; methods of checking machines before use; type of clothing to be worn; use of guards; tool storage; work practices; methods for cleaning, oiling, adjusting machinery Processing, Receiving, Shipping, and Storage – equipment, job planning, layout, heights, floor loads, projection of materials, material handling and storage methods, training for material-handling equipment Provide Personal Protective Equipment (PPE) – type, size, maintenance, repair, age, storage, assignment of responsibility, purchasing methods, standards observed, training in care and use, rules of use, method of assignment Transportation – motor vehicle safety, seat belts, vehicle maintenance, safe driver programs
SOP_01. 5	Incident Categorisation (may be Classification/ levels)	Classification of Risk based on the significance and frequency of occurrence: Risk management processes, including identification and evaluation, at EESL and EESL operations shall meet requirements of the IFC Performance Standard 1 – Assessment and Management of Social and Environmental Risks and Impacts. This includes: – having an effective management system in place appropriate to the nature and scale of EESL operations and commensurate with the level of its sustainability risks and impacts; – identifying and evaluation of risks within the area of influence of EESL operations; – Identifying risks related to all stages of the operation lifecycle including pre-construction, construction, operations, and decommissioning or closure. The scope of the identification process will be consistent with international good practice and will determine the appropriate and relevant methods and assessment tools; – consideration of emissions of greenhouse gases and potential transboundary effects (e.g. pollution of air or international waterways) during the identification process; – development of an action plan; – Establishing and managing a programme of mitigation and performance improvement measures and actions that address the identified social and environmental risks and impacts.

SOP 01	EHSS Risk Management	
Index No:	**Head**	**Description**
		This should include, where appropriate, consideration to involving representatives from affected communities to complement or verify monitoring activities; and consulting and communicating with local communities on identified risks and how they are being managed on an on-going basis.
SOP_01. 6	Suitability and Intended use of the activity, tool or material	Applies to: (i) all activities as identified in SOP 01.4 ii) all emergency cases predicted during hazard mapping
SOP_01. 7	General Operating Procedures and Best Practices	Most of the procedures suggested in current SOPs will fall in this Each EESL operation shall ensure that it complies with the requirements of this standard. Performance against the requirements of this Standard shall be assessed periodically, documented and, where required, reported to EESL. The evaluation of performance shall include, as a minimum, confirmation that: – Stakeholders/ sub-contractors have been identified and engaged with; – Both corporate and programs EHS risk registers are in place and these have been reviewed and updated; – EHS Manager at the operation level has been assigned with ultimate responsibility and accountability for EHS risk management issues; – Risk assessments are conducted, documented, available and accessible; – Risk assessments are reviewed by competent personnel; – An action plan is in place to implement control measures where these have been identified; – Hazards, risks and control measures have been communicated to affected personnel;
SOP_01. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_01. 9	Compliance to regulations/permits	Fire NOC, Building Permit, Trade License, Requirements under Disaster Management Plan and other permits depends on site location
SOP_01. 10	Safety Precautions	Implementation of recommendations as under Disaster Management Plan (DMP)
SOP_01. 11	Emergency Preparedness and Response (including PPE/First aid)	Ensure the availability of first Aid Kits on Site and in Inspection Vehicles Contact List of Health units, Rescue Vehicles within easy reach of all sites
SOP_01. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	NA

SOP 01	EHSS Risk Management	
Index No:	**Head**	**Description**
SOP_01. 13	Signage systems and symbols or coding	General Warning Signages, Assembly Points, Evacuation Guidance Map, Emergency Exit Indicators, first aid, material storage, PPEs, Restricted areas etc.:  (i) **prohibition sign** – a sign prohibiting behaviour likely to increase or cause danger (eg 'no access for unauthorised persons');  (iii) **mandatory sign** – a sign prescribing specific behaviour (eg 'eye protection must be worn');  (ii) **warning sign** – a sign giving warning of a hazard or danger (eg 'danger: electricity');  (iv) **emergency escape or first-aid sign** – a sign giving information on emergency exits, first aid, or rescue facilities (eg 'emergency exit/escape route'; 
SOP_01. 14	Details on competent users	This SOP is to be used by EESL site teams for all projects, Regional Manager and Contractors, vehicle operators, distribution and installation teams
SOP_01. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel, drivers, labours on site

SOP 01	EHSS Risk Management	
Index No:	**Head**	**Description**
SOP_01. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - UJALA, Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials:
SOP_01. 17	Inspection Procedures and Documentation required	Internal Audit (Monthly): (Risk Assessment Reports on Site) Site engineer, Contractor - Interview with site employees, Discussions on risk assessment reports availability on site. The disaster management report shall be prepared and made available on site. The training to the employees and contractors are provided and they are well aware about the potential risks during the activity DOCUMENTS: (i) Risk Assessment Report, Disaster Management Plan, Emergency Response Plan and Protocols (ii) List of subcontractors and major material suppliers including address, telephone number, and name of contact person, (iii) Training Records (iv) mock-drill plans and records v) Records of communication with external agency
SOP_01. 18	Disposal of scraps and process wastes	As per above procedures & agreed Contract Conditions Suitable receptacles shall be kept on site with signages, without hindrance to movement or traffic; for segregated storage of different types of wastes and construction materials
SOP_01. 19	Site management	HOUSEKEEPING STANDARDS (Cover all the aspects as per checklist in SOP_01.4) A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection. B. Protection and Control: 1. Fire Protection (a) Store volatile waste removed during final cleaning in covered metal containers and remove from premises in accordance with local, state and central regulations. (b) Gasoline and fuel oil storage facilities shall be located offsite and maintained in full compliance with local, state and central regulations. 2. Pollution Control: Conduct clean up and disposal operations as required by local, state and central regulations. C. Cleaning Materials: 1. Use only cleaning materials recommended by manufacturer on surfaces to be cleaned., 2. Use cleaning materials only on surfaces and as recommended by the cleaning material manufacturer. D. Scope of Final Clean-Up: 1. General (a). Use experienced workers or professional cleaners for final cleaning activities, (b) Maintain clean work spaces without sharps, rejects and wastes; 2. Remove grease, dirt, dust, stains, labels, fingerprints and other foreign materials from interior and exterior surfaces, 3. Repair, patch and touch up marred surfaces to match surfaces to adjacent finishes, 4. Clean surfaces of equipment; remove excess lubrication. 5. Clean light fixtures and lamps., 6. Remove waste, foreign matter and debris from footpaths, drainage systems and dispose in appropriate points suggested by the local body in closed/covered containers. Ensure proper waste containment at disposal points 7. Remove waste, debris and surplus materials from site. Clean grounds; remove stains, spills and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.
SOP_01. 20	Info and Instructions to be passed on to communities	- To Alert on various equipment, sharps, wires abandoned on site - To be aware of the risks associated with project activities - Special issues in case of emergencies - Suggested Grievance Reporting Mechanisms, - To be aware of assembly points and emergency response protocols to be followed
SOP_01. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.2 SOP 2: Waste Management

SOP 02	Waste Management	
Index No:	**Head**	**Description**
SOP_02. 1	Purpose	To set out a procedure for disposal of waste from transportation, warehousing, installation and maintenance activities under the programs in an environmental sound manner by complying with regulatory requirements.
SOP_02. 2	Coverage: Program / Region	UJALA, SLNP Applicable to installation work sites, warehouse and transportation vehicles throughout the country
SOP_02. 3	References	CPCB Guidelines on hazardous waste management - PROCEDURE FOR MANAGEMENT OF HAZARDOUS AND OTHER WASTES Available at: http://www.cpcb.nic.in/HWM_Rules_2016.pdf Accessed on November 2017, - EHSS Manual
SOP_02. 4	Hazard Mapping / Assessment	Hazards from Handling of waste, transportation of waste, storage conditions, disposal protocols and regulations; Broken LED during transportation, Vehicle Accidents, Waste generation from faulty LED, maintenance of DG set, sewage generation from warehouse/kiosks; Generation of Hazardous wastes (due to mercury/heavy metals/toxic gas content of old lamps), Generation of hazardous waste in the form paint/ solvent container and rags, Generation of e-waste from broken/faulty LED lamps while replacement, Potential generation of excavated soil, demolition waste, waste wood, waste metals, cables, insulations, plastic, other demolished utilities if any, removal of parts of existing structures etc.
SOP_02. 5	Incident Categorisation (may be Classification/ levels)	NA
SOP_02. 6	Suitability and Intended use of the activity, tool or material	Applicable to waste generations from i) Transportation, ii) storage (warehouse and kiosks), iii) installation and maintenance activities ((a) prevention; (b) minimization; (c) reuse, (d) recycling; (e) recovery, utilisation including co-processing; (f) safe disposal.
SOP_02. 7	General Operating Procedures and Best Practices	**A. Procedure for hazardous waste** The procedure for disposal of two key hazardous waste categories are described here. These are dismantled street lights and used oil. However, it is the responsibility of the EHSS department to ensure that all applicable hazardous waste is disposed in an authorised manner. i) Collection, transportation, storage, and disposal of dismantled lights The following procedure has been extracted from regulatory requirements, national and state level guidelines. The following steps must be followed: – At the assembly point where the replacement of lights is taking place, there must be designated storage boxes for collecting the damaged luminaries. The damaged and undamaged lights should never be collected in the same box. – While transporting these old lights from the assembly points to the warehouse, it must be stored separately in a covered container and should not be mixed with other waste materials. – At the warehouse there must be designated area for storing hazardous materials, and segregation between damaged and undamaged luminaries must be maintained. – There must be adequate PPEs provided to the workers engaged in the collection, storage, loading and unloading work to prevent the exposure of workers with the toxic materials. – Warehouse must have adequate ventilation arrangement to prevent the accumulation of toxic gases from the damaged bulbs and tubes – There must be a legal agreement for the safe disposal or recycling of hazardous waste material between the vendor and the SPCB authorized hazardous waste recycling/disposal units – The management must ensure that all the necessary records are maintained as per the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 ii) Collection, transportation, storage, and disposal of used oil The following procedure has been extracted from regulatory requirements, national and state level guidelines. The following steps must be followed: – Only authorized and trained personnel must remove used oil from the DG sets – The used oil should be stored in separate containers, meant for the purpose. Storage in inappropriate containers should be strictly avoided

SOP 02	Waste Management	
Index No:	**Head**	**Description**
		– The used oil should be stored in a cool, shady place, away from smoking areas, sources of ignition and fire – There must be a legal agreement for the safe disposal or recycling of hazardous waste material between the vendor and the SPCB authorized hazardous waste recycling/disposal units – Only SPCB authorized vendors should transport the used oil from one location to another – The management must ensure that all the necessary records are maintained as per the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 – Measures to be taken in case of hazardous oil spill – The following measures must be taken in the case of a hazardous oil spill: – Assess the spill and categorize as major (>=500 ml) or minor (<500 ml). For minor spill, the following remedial actions can be implemented by the site team. For major spills, external experts must be summoned with the help of EHSS department – Inform the site representative and EHS coordinator immediately – Cordon off the area (preferably using warning tape) and establish a no-smoking/fire zone in the vicinity – Use appropriate Personal Protective Equipment and ensure that oil does not enter storm water drains, rivers or run into the sea – If the spill has occurred on soft ground, dig the contaminated earth and refill with fresh earth – Bund the area of spill immediately using sand, cloth or other appropriate material, as per availability on site – The used absorbent material (contaminated earth, cloth, cotton or sand) should be treated as hazardous waste and be disposed in the applicable manner **B. Non-hazardous waste segregation** In EESL's office and project operations, significant quantities of non-hazardous waste are also generated. This waste consists of the metal body parts of luminaries, glass cover, plastic parts, broken glasses, wires, paper, food, cloth etc. Due to the large scale of the project, the quantity of the waste generated is high and it needs to be disposed or recycled in an environmentally sound manner. i) Collection, Transportation, Storage, and Disposal of non-hazardous waste The following procedure has been extracted from regulatory requirements, national and state level guidelines and industry best practices. The following steps must be followed: – At the assembly point where the replacement of lights is taking place, there must be separate and designated storage boxes for collecting non-hazardous waste generated during the replacement process. Non-hazardous waste should not be mixed with the hazardous waste generated at the site. – The colour of the boxes for storing hazardous and non-hazardous waste must be different, and workers must be aware to store the replaced items in the correct boxes. – While transporting these old bulbs and lighting materials from the assembly points to the warehouse, it must be stored separately for the hazardous materials to avoid the segregation at the warehouse. – At the warehouse there must be designated area for storing non-hazardous materials, and segregation between damaged and undamaged luminaries must be maintained. – There must be adequate PPEs provided to the workers engaged in the collection, storage, loading and unloading work to prevent the injuries from the broken glass pieces present in the waste. – There must be a legal agreement for the safe disposal or recycling of waste material between the vendor and the PCB authorized hazardous waste recycling/disposal units. – It should be ensured by the EHS coordinator and labour contractor that no waste is being disposed at the assembly point. Entire waste generated at the site must be brought back to the warehouse and then sent for the recycling or disposal via approved vendors. **C. E-waste** E-waste to be disposed in line with the e-waste (Management and Handling) Rules, 2010. E-waste consumers should: – Ensure that e-waste generated by them is channelized to authorized collection centre (s) or registered dismantler (s) or recycler (s) or is returned to the pick-up or take back services provided by the producers; – Maintain records of e-waste generated by them in Form 2; **D. Batteries** Batteries to be sent back to the manufacturer or disposed in line with the Batteries (Management and Handling) Rules, 2001. The battery consumers should: – Ensure that used batteries are disposed only through dealer/manufacturer/registered recycler/importer/reconditioned or at the designated collection centres – File half-yearly return in Form VIII to the SPCB
SOP_02. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices, Submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices

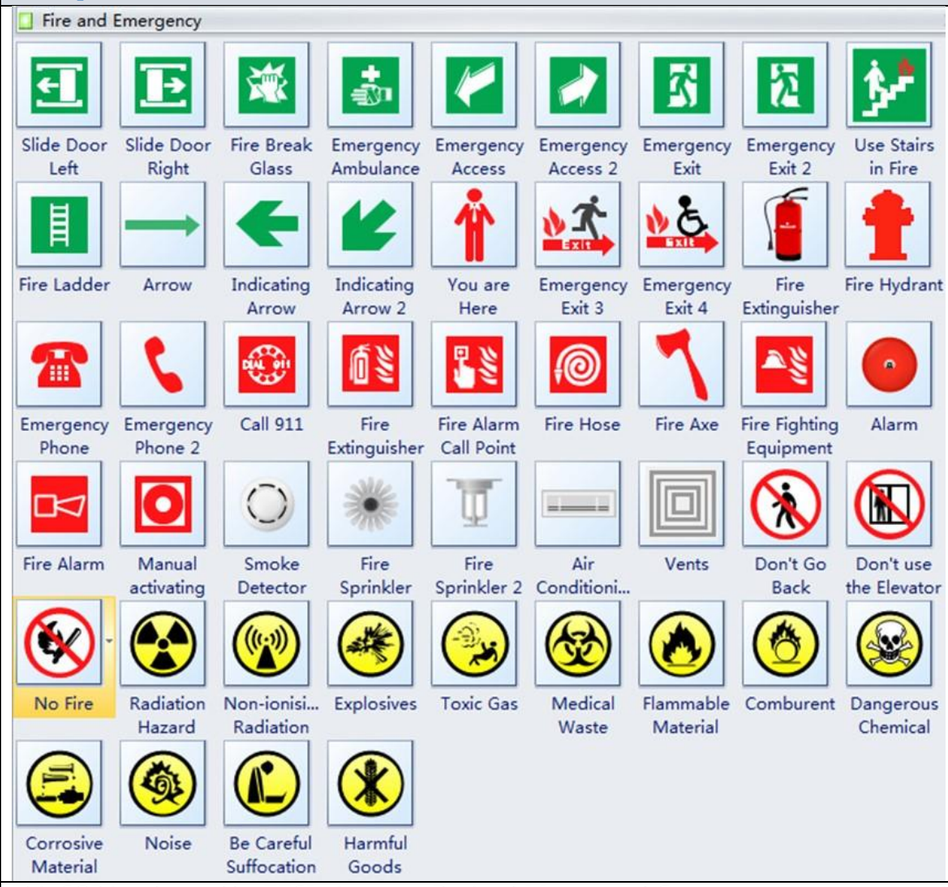
SOP 02	Waste Management	
Index No:	**Head**	**Description**
SOP_02. 9	Compliance to regulations/permits	All permits and regulations for generation, handling, transportation and disposal of waste
SOP_02. 10	Safety Precautions	Handling of waste, transportation of waste, storage conditions, disposal protocols and regulations
SOP_02. 11	Emergency Preparedness and Response (including PPE/First aid)	Ensure the availability of first Aid Kits on Site and in Inspection Vehicles Contact List of Health units, Rescue Vehicles within easy reach
SOP_02. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	NA
SOP_02. 13	Signage systems and symbols or coding	Dedicated storage for each type of waste, labelling, consignment notes, authorisation documentation etc.;  
SOP_02. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors, waste transportation and disposal contractors;
SOP_02. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,
SOP_02. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - UJALA, Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials

SOP 02	Waste Management	
Index No:	**Head**	**Description**
SOP_02. 17	Inspection Procedures and Documentation required	Internal Audit (Monthly): (Waste Generation Log on site) Site engineer, Contractor - Interview with site employees, Discussions on waste generation and management records and reports availability on site. The waste management report availability on site. The training to the employees and contractors are provided and they are well aware about the potential risks during the handling and storage and transportation protocols for various types of wastes and disposal requirements and responsibilities; DOCUMENTS: (i) Waste classification report, waste generation reports Disaster Management Plan, Emergency Response Plan and Protocols (ii) List of subcontractors, Local Body, Scrap Dealers selected by Local Body and major material suppliers including address, telephone number, and name of contact person, (iii) Training Records; iv) Daily total number of luminaries replaced at the assembly point and the number of luminaries getting damaged during the changing process, v) SPCB authorization for Hazardous waste generation, storage, & disposal vi) Total quantity of waste stored in the warehouse on each day and the percentage of waste sent for reuse, recycle and disposal, categorized as per type of waste vii) Records of the work permit issued by the EHS coordinator issued at the site viii) Manifest (Form-13) of disposed hazardous waste ix) Annual return (Form-iv) to SPCB by 30th June each year x) Half-yearly return in Form VIII to the SPCB xi) E-waste generation record in Form 2 xii) Agreement with the PCB authorized hazardous waste recycling/ reuse/ disposing unit xiii) Records of the injuries to the workers during the waste segregation, storage, loading and unloading process
SOP_02. 18	Disposal of scraps and process wastes	Waste Generation Records, Waste Segregation, Storage, and Disposal Plan (agency names and schedule of disposal)
SOP_02. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection. B. Protection and Control: waste storage as per waste management plan C. Pollution Control: Containment at storage locations, Spill prevention and clean-up plan. D. Scope of Final Disposal: to authorised agency/designated agency as per waste management plan and institutional mechanism
SOP_02. 20	Info and Instructions to be passed on to communities	- to classify the waste - to ensure dedicated storage location for various types of waste - storage conditions and control measures for pollution prevention - final disposal plan
SOP_02. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.3 SOP 3: Fire and Emergency Procedures

SOP 03	Fire and Emergency Procedures	
Index No:	**Head**	**Description**
SOP_03. 1	Purpose	To set out a procedure to establish the procedures to ensure safety of EESL operations from fire incidences
SOP_03. 2	Coverage: Program / Region	UJALA, SLNP Applicable to installation work sites, warehouse and transportation vehicles throughout the country
SOP_03. 3	References	Guidance Note - IFC Available at: https://siteresources.worldbank.org/INTRANETENVIRONMENT/Resources/244351-1279901011064/OccupationalHealth.pdf Accessed on November 2017; - EHSS Manual;
SOP_03. 4	Hazard Mapping / Assessment	Fire risk during Transportation, warehousing, temporary storage at kiosks, installation and maintenance activities and also from Handling of waste, transportation of waste, and storage sites; Injury due to the accidental fire event; handling of broken lamps, Fire risk due to storage of diesel for the back-up DG set;
SOP_03. 5	Incident Categorisation (may be Classification/ levels)	Fires are classified in the following categories: Class A Fires: Involving combustible materials of organic nature, such as wood, paper, rubber and many plastics etc. where the cooling effect of water is essential for extinction of fires. Class B Fires: Involving flammable liquids, petroleum products or the like, where a blanketing effect is essential Class C Fires: Involving flammable gases under pressure including liquefied gases, where it is necessary to inhibit the burning gas at fast rate with an inert gas, powder or vaporising liquid for extinguishers Class D Fires: Involving combustible metals, such as magnesium, aluminium, zinc, sodium, potassium, etc. when the burning metals are reactive to water and water containing agents and in certain cases to carbon dioxide, halogenated hydrocarbons and ordinary dry powders.
SOP_03. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites, transportation vehicles, waste storage and transportation activity, installation and maintenance sites
SOP_03. 7	General Operating Procedures and Best Practices	Most of the procedures suggested in current SOPs will fall in this
SOP_03. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_03. 9	Compliance to regulations/permits	All permits and regulations: The following IS and BIS standards and codes should be adhered: - 1641:1988 – Code of practice for fire safety of buildings (general): General principles of fire grading and classification - 2171:1999 – Specification for portable fire extinguishers, dry powder (cartridge type) - 2546:1974 – Specification for galvanized mild steel fire buckets - 2878:2004 – Fire extinguisher, carbon dioxide type (portable and trolley mounted) – specification - 4308:2003 – Dry chemical powder for fighting B and C class fires - specification - 7673:2004 – Firefighting equipment - 10204:2001 – Specification for portable fire extinguisher, mechanical foam type - 14609:1999 – Dry chemical powder fighting A, B, C class fires – specification - IS 2190:2010 – Selection, installation and maintenance of first aid fire extinguishers – code of practice - IS 15683: 2006 – Portable fire extinguishers – performance and construction
SOP_03. 10	Safety Precautions	Detection and Prevention mechanism in place; Warehouse Plan - to keep the DG set fuel away from all electrical equipment and sockets, providing space for equipment as per Fire NOC obtained and emergency response procedures;

SOP 03	Fire and Emergency Procedures	
Index No:	**Head**	**Description**
SOP_03. 11	Emergency Preparedness and Response (including PPE/First aid)	Depending on the size of the facility, locality and type of work being undertaken, the requirement of firefighting equipment changes. It is essential for all facilities to obtain No Objection Certification from the state or local Fire Department. This certification prescribes the appropriate firefighting equipment to be installed at the facility. These could include: - Fire hose reel - Fire extinguishers - Sand buckets - Fire extinguishers are the most common type of firefighting equipment being installed at office facilities, warehouses and sales offices. They should be selected based on the type of fire hazard, as depicted below: - Class A fires – Water, foam, ABC dry powder and halocarbons - Class B fires – Foam, dry powder, clean agent and carbon dioxide - Class C fires – Dry powder, clean agent and carbon dioxide extinguishers - Class D fires – Extinguishers with special dry powder for metal fires; - Fire Prevention – extinguishers, alarms, sprinklers, smoking rules, exits, personnel assigned, separation of flammable materials and dangerous operations, explosion-proof fixtures in hazardous locations, waste disposal, training First Aid Program/Supplies – medical care facilities locations, posted emergency numbers, accessible first aid kits
SOP_03. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Placement of the extinguishers at appropriate locations and heights - Identification of a fire safety team, comprising of security guards and fire marshals (typically employees comprising of EHSS department personnel and nominated people from other departments) - Training and capacity building of fire safety team on the usage of fire extinguishers. External training must be sought for all security guards on the usage of these equipment - Mock drills to train employees on emergency evacuation - Regular inspection of fire extinguishers to identify leakage, discharge, breakage, etc. Refilling them wherever required

SOP 03	Fire and Emergency Procedures	
Index No:	**Head**	**Description**
SOP_03. 13	Signage systems and symbols or coding	
SOP_03. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors, waste transportation and disposal contractors;
SOP_03. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,
SOP_03. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - UJALA, Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials
SOP_03. 17	Inspection Procedures and Documentation required	The following general safety precautions must be ensured to avoid fire accidents: - Smoke only in designated areas. Extinguish matches, tobacco products and place them in approved containers - Close containers of flammable liquids when not in use - Only operate equipment that you have been trained on. Before operating new equipment, read the instructions carefully - In case of emergency evacuation, do not panic or run. Do not use elevators. Use the staircase to evacuate and stand in the safe assembly area till instructed by the site EHSS coordinator or security supervisor to resume work - In case you spot fire first, inform the site EHSS supervisor or security and sound the emergency alarm - Follow the precautions issued by the local government in case of earthquake or other natural disasters
SOP_03. 18	Disposal of scraps and process wastes	Waste Generation Records, Waste Segregation, Storage, and Disposal Plan (agency names and schedule of disposal) shall be in place. Quick removal of flammable wastes from site (preferably within 1 hour of generation). Leave fire exits free of wastes

SOP 03	Fire and Emergency Procedures	
Index No:	**Head**	**Description**
SOP_03. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection. B. Protection and Control: waste storage as per waste management plan C. the fire prevention and control measures as covered in SOP 03.11 and SOP 03.17; D. OHS Training to be part of the training provided to all workers
SOP_03. 20	Info and Instructions to be passed on to communities	fire risks from the facility, the evacuation plan, emergency information and signal types and meaning, emergency response and control provisions on site;
SOP_03. 21	Amendment Record (Version No: Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.4 SOP 4: Electric Safety

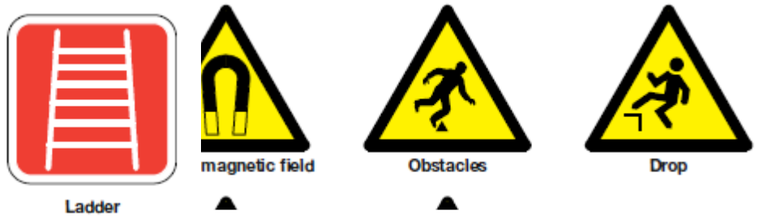
SOP 04	Electrical Safety	
Index No:	**Head**	**Description**
SOP_04. 1	Purpose	To set out a procedure to establish the procedures to ensure safety of EESL operations from electrical risks (electrical hazards can cause burns, shocks and electrocution)
SOP_04. 2	Coverage: Program / Region	UJALA, SLNP Applicable mainly to installation and maintenance works on sites in SLNP program and partly applicable to warehouse and temporary storage activities in UJALA and SLNP throughout the country;
SOP_04. 3	References	– IFC - Environmental, Health, and Safety (EHS) Guidelines – EHSS Manual: Controlling Electrical Hazards - OSHA 3075 – The Health and Safety (Safety Signs and Signals) Regulations 1996 (http://www.hse.gov.uk/pUbns/priced/l64.pdf)
SOP_04. 4	Hazard Mapping / Assessment	Electric risk during installation and maintenance activities on site, from electrical installations in the warehouse and kiosks;
SOP_04. 5	Incident Categorisation (may be Classification/ levels)	Burns, shocks and electrocution;
SOP_04. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under the programs;
P_04. 7	General Operating Procedures and Best Practices	Workers may get exposed to safety hazards from contact with live power lines during on-site work. The prevention and control measures associated with live power lines/cables includes: - Only trained and certified workers shall be allowed to install, maintain, or repair electrical equipment. - Deactivate and properly ground live power cables before work is performed on, or in close proximity to the lines. - Ensure that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards. Qualified or trained employees working on transmission or distribution systems shall: 1. Distinguish live parts from other parts of the electrical system. 2. Determine the voltage of live parts. 3. Understand the minimum approach distances outlined for specific live line voltages. 4. Ensure proper use of special safety equipment and procedures when working near, or on, exposed energized parts of an electrical system - Workers shall not approach an exposed, energized or conductive part even if properly trained unless: 1. The worker is properly insulated from the energized part with gloves or other approved insulation; 2. The energized part is properly insulated from the worker and any other conductive object; or 3. The worker is properly isolated and insulated from any other conductive object (live-line work); - Strict procedures for de-energizing and checking of electrical equipment shall be in place before any maintenance work is conducted. If de-energizing is not possible, electrical installations should be moved or insulated to minimize the hazardous effects; - In order to protect workers from electric shock in case of a faulted circuit to conductive equipment, all non-current carrying conductive components must be bonded together with a conductor of sufficient size. The impedance of the complete ground-fault circuit (phase conductor and bonding conductor) should be low enough to ensure sufficient flow of ground-fault current for fast operation of the proper circuit protective devices, and to minimize the potential for stray ground currents on solidly grounded systems. § Assume that all overhead wires are energized at lethal voltages. Never assume that a wire is safe to touch even if it is down or appears to be insulated. - Never touch a fallen overhead power line. Call the electric utility company to report fallen electrical lines. § Stay at least 10 feet (3 meters) away from overhead wires during on-site activities. If working at heights or handling long objects, survey the area before starting work for the presence of overhead wires. § Never operate electrical equipment while you are standing in water. § If working in damp locations, inspect electric cords and equipment to ensure that they are in good condition and free of defects, and use a ground-fault circuit interrupter (GFCI).
SOP_04. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices, Submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_04. 9	Compliance to regulations/permits	All permits and regulations: § Indian Electricity Act 2003 - Indian Electricity Rules 2005

SOP 04	Electrical Safety	
Index No:	**Head**	**Description**
SOP_04. 10	Safety Precautions	Avoid working during rains, 'Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding transmission towers, particularly in urban areas), and education / public outreach to prevent public contact with potentially dangerous equipment; ·Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock - Detection and Prevention mechanism in place; Other precautions are mentioned in SOP 04.7;
SOP_04. 11	Emergency Preparedness and Response (including PPE/First aid)	Employees who work directly with electricity should Use the personal protective equipment required for the jobs they perform. This equipment may include rubber insulating gloves, hoods, sleeves, matting, blankets, line hose, and industrial protective helmets designed to reduce electric shock hazard. All help reduce the risk of electrical accidents.
SOP_04. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Audit for faulty cables and electrical equipment; Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work;
SOP_04. 13	Signage systems and symbols or coding	Buddy system for working at heights; Signages for public during the installation and maintenance plan;  Signs for marking obstacles and dangerous locations  
SOP_04. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors
SOP_04. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,
SOP_04. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - UJALA, Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials
SOP_04. 17	Inspection Procedures and Documentation required	Preventive maintenance at Warehouse/Kiosks; The inspection reports to be in place with Corrective actions and preventive actions taken;
SOP_04. 18	Disposal of scraps and process wastes	NA

SOP 04	Electrical Safety	
Index No:	**Head**	**Description**
SOP_04. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; B. Protection and Control: risk areas demarcation, avoid; C. Prevention and control measures as covered in SOP 03.11 and SOP 03.17; -Marking all energized electrical devices and lines with warning signs ·Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance ·Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools ·Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits ·Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas ·Appropriate labelling of service rooms housing high voltage equipment (‘electrical hazard’) and where entry is controlled or prohibited (see also Section 3 on Planning, Siting, and Design); ·Establishing “No Approach” zones around or under high voltage power lines ·Rubber tired construction or other vehicles that come into direct contact with, or arcing between, high voltage wires may need to be taken out of service for periods of 48 hours and have the tires replaced to prevent catastrophic tire and wheel assembly failure, potentially causing serious injury or death; ·Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work
SOP_04. 20	Info and Instructions to be passed on to communities	emergency response plan, electrical safety instructions on the cables, transformers sets and other installations outside the site/work boundary where people can come in contact with these equipment, emergency information and signal types and meaning, emergency response and control provisions on site
SOP_04. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.6 SOP 5: Work at Height and Fall Prevention

SOP 05	**Work at Height and Fall Prevention**	
Index No:	**Head**	**Description**
SOP_05. 1	Purpose	To set out a procedure to prevent injury and property damage when conducting work at height.
SOP_05. 2	Coverage: Program / Region	SLNP Applicable mainly to installation and maintenance works on sites in SLNP program throughout the country;
SOP_05. 3	References	IFC - Environmental, Health, and Safety (EHS) Guidelines - EHSS Manual;
SOP_05. 4	Hazard Mapping / Assessment	during installation and maintenance activities on site,
SOP_05. 5	Incident Categorisation (may be Classification/ levels)	High - due to potential risk involved
SOP_05. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under the programs for installations and maintenance
SOP_05. 7	General Operating Procedures and Best Practices	The following precautions are to be taken: ·Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area ·Proper use of ladders and scaffolds by trained employees ·Use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard area, or fall protection devices such as full body harnesses used in conjunction with shock absorbing lanyards or self retracting inertial fall arrest devices attached to fixed anchor point or horizontal life-lines ·Appropriate training in use, serviceability, and integrity of the necessary PPE ·Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrested fall Prior to initiating work, the equipment and location must be verified for safety and appropriateness using the following steps - For all work of more than 1 day in duration, a systematic verification of the satisfactory implementation of this procedure must carried out by Competent Person, at a frequency appropriate the duration and risk of the task. - On completion of the work it must be formally verified by a Competent Person, that the work place has been left in a satisfactory condition and that all persons have safely returned from the workplace. Note: Many accidents occur because floor gratings have been removed and not replaced, or superfluous materials are left in elevated positions causing slip, trip and fall hazards
SOP_05. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_05. 9	Compliance to regulations/permits	The Public Liability Insurance Act, 1991, amended 1992 - for compensations to victims; February 2009, the National Policy on Safety, Health and Environment at Work Place;
SOP_05. 10	Safety Precautions	Fall prevention and protection measures should be implemented whenever a worker is exposed to the hazard of falling more than two meters; into operating machinery; into water or other liquid; into hazardous substances; or through an opening in a work surface. Fall prevention / protection measures may also be warranted on a case-specific basis when there are risks of falling from lesser heights.

SOP 05	Work at Height and Fall Prevention	
Index No:	**Head**	**Description**
SOP_05. 11	Emergency Preparedness and Response (including PPE/First aid)	Install fall protection devices such as full body harnesses; Usage of the approved (type and rating) fall protection equipment is mandatory. - Fall Protection Equipment must be inspected by the user & trained person daily. - Double hook full body Safety harnesses that have been used in a fall arrest situation must be withdrawn from service and not reused/issued until after a full examination. - Records of the results of thorough examinations must be kept on site - Lifelines fall arrestor used for the attachment of Double hook full body Safety harnesses must be: − Horizontal lifelines must be made of steel rope 12 mm diameter (min) − Installed at waist height or above − Tensioned by use of a turnbuckle or similar − Designed to support the maximum number of workers − Securely anchored at both ends with triplicate wire rope clamps at points able to withstand the dynamic load generated by a fall - All lanyards must be made of flame resistant materials. Inertia reels may be used to enable more safe movement around certain areas.
SOP_05. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Monthly Safety Audits at installation site;
SOP_05. 13	Signage systems and symbols or coding	buddy system for working at heights; Signages for public during the installation and maintenance plan;  Signs for marking obstacles and dangerous locations 
SOP_05. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors
SOP_05. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel, Safety procedures for working at confined spaces, safety procedures for handling of hazardous materials; Use of suitable masks for reducing exposure to dust emissions and toxic fumes on site; Providing training to the workers for handling hazardous material and exposure to toxic gases
SOP_05. 16	Duties / Responsibilities (with contact details)	EESL- Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials

SOP 05	Work at Height and Fall Prevention	
Index No:	**Head**	**Description**
SOP_05. 17	Inspection Procedures and Documentation required	The inspection of procedures, PPEs, Usage and Trainings on site; Incident Reporting Records, Event Logs, PPE inventory, Work plan, Manpower details to be maintained by safety officer;
SOP_05. 18	Disposal of scraps and process wastes	NA
SOP_05. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; B. Protection and Control: risk areas demarcation, follow the safe work procedures and close out;
SOP_05. 20	Info and Instructions to be passed on to communities	Emergency response plan, emergency information and signal types and meaning, emergency response and control provisions on site;
SOP_05. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

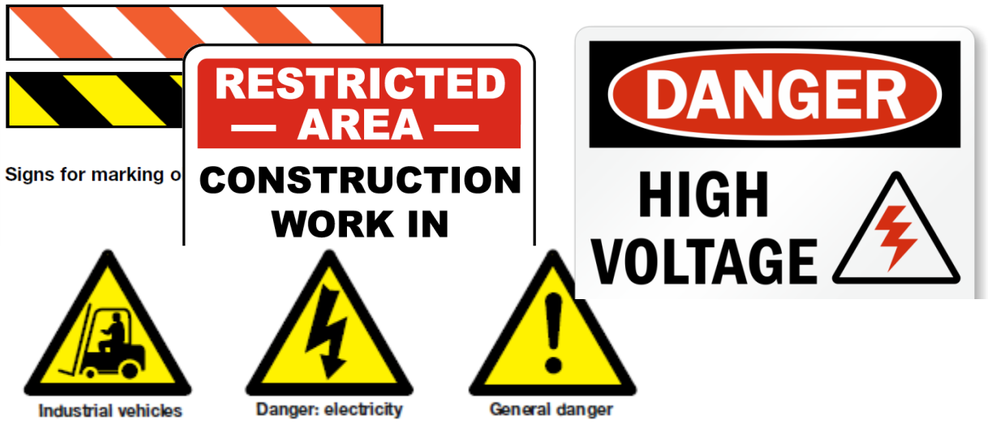
8.5.7 SOP 6: Portable Tools and Equipment

SOP 06	**Portable Tools and Equipment**	
Index No:	**Head**	**Description**
SOP_06. 1	Purpose	to describe the steps while using, maintaining and storing portable tools and portable equipment
SOP_06. 2	Coverage: Program / Region	SLNP and UJALA Applicable for all activities throughout the country;
SOP_06. 3	References	IS/ISO 6789 (2003): Assembly tools for screws and nuts – Hand torque tools – Requirements and test methods for design conformance testing, quality conformance testing and recalibration procedure - IS 841:1983 – Specification for steel hammers - IS 844:1979 (Part 1, 2 & 3) – Technical supply conditions, dimensions, dimensions for screw drivers for recessed head screws - IS 2027:1992 – Spanners and sockets – width across flats - IS 6131:1980 – Technical requirements for hand operated wrenches (spanners) and sockets - IS 6586:1989 – Claw hammers – specification - IS 9065: 1979 – Specification for Aluminium hammers - IS 12453:1988 – Specification for nut drivers - EHSS Manual
SOP_06. 4	Hazard Mapping / Assessment	Hazards during the use of tools and equipment;
SOP_06. 5	Incident Categorisation (may be Classification/ levels)	Medium to High - due to various types of tools and equipment involved
SOP_06. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under the programs;
SOP_06. 7	General Operating Procedures and Best Practices	- All tools and equipment will be maintained in good working condition and have current certificates as required by law - Equipment and tools used on site (by EESL employees or contractors) will be inspected on a daily basis by the site supervisor - Equipment and tools approved by the supervisor on a daily basis can only be used - Any tool or equipment that is found to be unsafe or not in safe working condition must immediately be set aside for service, repair or replacement - Only the right tools should be used for the job - Users of tools must have received training on the tools they are meant to use. The training has to be provided by the supervisor or safety in charge of that programme - Tools and equipment must be disconnected prior to service or maintenance - Contractors and sub-contractors (irrespective of levels of sub-contracting) must take ownership of the hand tools provided by them and be responsible for the safe upkeep of the tools
SOP_06. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices; PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_06. 9	Compliance to regulations/permits	The Public Liability Insurance Act, 1991, amended 1992 - for compensations to victims; February 2009, the National Policy on Safety, Health and Environment at Work Place;

SOP 06	Portable Tools and Equipment	
Index No:	**Head**	**Description**
SOP_06. 10	Safety Precautions	Personal protective equipment approved for the selected hand tools must be used while operating with the hand tools - All portable electrically powered tools need to be grounded and insulated to prevent electrical shock - Power tools should not be lifted or carried using its cord - Pocket knives, utility knives, swiss knives or any other self-assembled tools shall not be used for stripping wires - All fuel powered tools shall be stopped and disconnected at the time of refuelling, servicing and maintaining - Safety goggles with side shields should be used to prevent eye injuries from particles/pieces - Sharp edges of the tools should be covered with appropriate material prior to storage - Tools should not be carried in pockets or unassigned bags - Tools should not be modified informally, extended, sharpened or twisted in an unauthorized manner - While drilling, cutting, striking or breaking, it should be ensured that any electrical wiring in the vicinity, especially wiring that can come in contact with the hand tool is not live - Special safety requirements while using striking tools or hammers: o Always hit with a striking face of the hammer o Do not modify the hammer on your own o Ensure that if the hammer head is loose, please set it aside and use an alternate hammer o Choose the appropriate hammers for drilling nails or strike steel or concrete chisels o The striking face must not be cracked or mushroomed, as there is a likelihood of the hammer chipping, leading to small particles moving around the place
SOP_06. 11	Emergency Preparedness and Response (including PPE/First aid)	First Aid Program/Supplies – medical care facilities locations, posted emergency numbers, accessible first aid kits; Provide Personal Protective Equipment (PPE) – type, size, maintenance, repair, age, storage, assignment of responsibility, purchasing methods, standards observed, training in care and use, rules of use, method of assignment;
SOP_06. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Monthly Safety Audits at installation site;
SOP_06. 13	Signage systems and symbols or coding	Signage system to be in place for storage of tools, usage areas, list of Dos and Don'ts at work areas, markings on tools/equipment
SOP_06. 14	Details on competent users	This SOP is to be used by EESL site teams, safety officer, Regional Manager and Contractors
SOP_06. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,
SOP_06. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials
SOP_06. 17	Inspection Procedures and Documentation required	The inspection of procedures, PPEs, Usage and Trainings on site; Incident Reporting Records, Event Logs, PPE inventory, Work plan, Manpower details to be maintained by safety officer;
SOP_06. 18	Disposal of scraps and process wastes	NA
SOP_06. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; B. Protection and Control: risk areas demarcation, follow the safe work procedures and close
SOP_06. 20	Info and Instructions to be passed on to communities	emergency response plan, emergency information and signal types and meaning, emergency response and control provisions on site;
SOP_06. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.8 SOP 7: Traffic Safety

SOP 07	Traffic Safety	
Index No:	**Head**	**Description**
SOP_07. 1	Purpose	To set out a procedure to be adopted by the site management team to ensure the safe and efficient movement of traffic and also to ensure the safety of workmen at construction sites.
SOP_07. 2	Coverage: Program / Region	UJALA, SLNP Applicable to vehicles at installation work sites, warehouse and transportation vehicles throughout the country
SOP_07. 3	References	IFC - Environmental, Health, and Safety (EHS) Guidelines - EHSS Manual;
SOP_07. 4	Hazard Mapping / Assessment	Hazard to workplace from heavy vehicles and access roads traffic, hazard to community
SOP_07. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_07. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under the programs - During transportation, loading-unloading at warehouse/storage kiosks and also the traffic of construction vehicles at the installation/maintenance sites;
SOP_07. 7	General Operating Procedures and Best Practices	1) Traffic at Construction Site: All construction workers should be provided with high visibility jackets with reflective tapes as most of viaduct /tunnelling and station works or either above or under right-of-way. The conspicuity of workmen at all times shall be increased so as to protect from speeding vehicular traffic. - Warn the road user clearly and sufficiently in advance. - Provide safe and clearly marked lanes for guiding road users. - Provide safe and clearly marked buffer and work zones - Provide adequate measures that control driver behaviour through project's operational zones. - Traffic management plans shall include provision for traffic diversion and selection of alternative routes for transport of equipment. If necessary, the contractor shall carry out road widening before commencement of works to accommodate the extra load - The primary traffic control devices used in work zones shall include signs, delineators, barricades, cones, pylons, pavement markings and flashing lights. 2) Traffic on Roads: In EESL operations, there are projects which require workers to undertake work on/beside roads where traffic flow is ongoing. This could include main roads, street roads and roads in commercial and residential areas. Therefore, it is extremely important to follow this SOP for reducing traffic related accidents while working on roads - Traffic cones of 500mm, 750mm and 1000mm high and 300mm to 500mm in diameter or in square shape at base and are often made of plastic or rubber and normally have retro-reflectorized red and white band shall be used wherever required. - Drums about 800mm to 1000mm high and 300mm in diameter can be used either as channelizing or warning devices. These are highly visible, give the appearance of being formidable objects and therefore command the respect of drivers. - Full height fence, barriers, barricades etc. shall be erected around the site in order to prevent the working area from the risk of accidents due to speedy vehicular movement. In the same way barricades protect the road users from the danger due to equipment and other temporary structures falling off from height. - All barricades shall be erected as per the design requirements of the Employer, numbered, painted and maintained in good condition and also Barricade in-charge maintains a barricade register in site. - The contractor shall not undertake loading and unloading at carriageways obstructing the free flow of vehicular traffic and encroachment of existing roads by the contractor applying the excuse of work execution. - The contractor shall ensure the cleanliness of roads and footpaths by deploying proper manpower for the same. The contractor shall have to ensure proper sweeping, cleaning washing of roads and footpaths on all the time throughout the entire stretch till the currency of the contract including disposal of sewerage.

SOP 07	Traffic Safety	
Index No:	**Head**	**Description**
SOP_07. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices; PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_07. 9	Compliance to regulations/permits	The motor vehicle act 1988 and its amendments till date; The National Road Safety Policy; Vehicle Safety Standards; and other local rules and regulations at concerned areas; The Public Liability Insurance Act, 1991, amended 1992 - for compensations to victims; February 2009, the National Policy on Safety, Health and Environment at Work Place; Pollution Under Control Certificate, 2. Vehicle Maintenance Plan with Manufacturer Authorised Service Stations receipts,
SOP_07. 10	Safety Precautions	1) General Safety: driving safety, traffic rules, vehicle maintenance routine, community areas, accident preventions measures by speed limits and lane restrictions for heavy vehicles, construction vehicles with speed restrictions and work procedures, trained drivers for each activity; 2) Traffic Management: - Traffic management plans shall include provision for traffic diversion and selection of alternative routes for transport of equipment. If necessary, the contractor shall carry out road widening before commencement of works to accommodate the extra load - The primary traffic control devices used in work zones shall include signs, delineators, barricades, cones, pylons, pavement markings and flashing lights.
SOP_07. 11	Emergency Preparedness and Response (including PPE/First aid)	Accident response plan, first aid procedures, rescue operations plan, data of nearest hospitals on the vehicle route (Contact Details, Emergency Numbers, Insurance Coverage)
SOP_07. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Monthly Safety Audits of vehicle contractors and drivers; PUC Check of vehicles; Drivers trainings schedule and vehicle maintenance program;
SOP_07. 13	Signage systems and symbols or coding	Signages for vehicle parking, moving, no-parking areas, traffic flow direction, work-in-progress instructions, congestion areas, signal system for traffic control; Warehouse Management Plan: showing vehicular movement, parking space for vehicle to avoid honking and idling 
SOP_07. 14	Details on competent users	This SOP is to be used by EESL site teams and Contractors,
SOP_07. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,

SOP 07	Traffic Safety	
Index No:	**Head**	**Description**
		Provide Training for Drivers: trainings to drivers on precautions to be taken while driving near the sensitive areas (school, residential area, eco-sensitive areas, no-honking zones etc.), Vehicle to operate avoiding night time operation near residential areas and traffic congestion time on busy routes
SOP_07. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials, Traffic controller;
SOP_07. 17	Inspection Procedures and Documentation required	Vehicle inspection for emissions, maintenance records, traffic routes, selection of optimised routes by transportation vehicle, fuel consumption trends; Vehicle records, Registrations, Insurance, Driver details, PUC records
SOP_07. 18	Disposal of scraps and process wastes	NA
SOP_07. 19	Site management	NA
SOP_07. 20	Info and Instructions to be passed on to communities	emergency response plan, emergency information and signal types and meaning, emergency response and control provisions on site;
SOP_07. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.9 SOP 8: Personal Protective Equipment

SOP 08	Personal Protective Equipment (PPEs)	
Index No:	**Head**	**Description**
SOP_08. 1	Purpose	To set out a procedure to describe the requirements of Personal Protective Equipment (PPE) for the on-site operations. The purpose of this Standard is to describe the requirements of Personal Protective Equipment (PPE) for the on-site operations. PPEs are intended to be worn or held by a person at work which protects them against one or more risks to their health and safety.
SOP_08. 2	Coverage: Program / Region	UJALA, SLNP Applicable to vehicles at installation work sites, warehouse and transportation vehicles throughout the country
SOP_08. 3	References	IFC - Environmental, Health, and Safety (EHS) Guidelines - EHSS Manual; - OSHA Personal Protective Equipment (PPE) Standards - OSHA Safety and Health Topic "Personal Protective Equipment" - OSHA Technical Manual, Section VIII: Personal Protective Equipment - NIOSH Safety and Health Topic: "Protective Clothing and Ensembles" - OSHA 29 CFR 1926.1050Stairways and Ladders - OSHA Non Mandatory Compliance Guidelines for Hazard - Assessment and Personal Protective Equipment Selection 1910 Subpart I App B - NIOSH Personal Protective Equipment Checklist
SOP_08. 4	Hazard Mapping / Assessment	At all workplaces (Installation sites, warehouse and kiosks and waste handling on vehicles) Hazard assessment shall be conducted separately. In addition to the PPEs required for general hazards associated with UJALA, SLNP; PPEs shall be chosen to take care of special location / activity based hazards as well
SOP_08. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_08. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under the programs; To be able to choose the right type of PPE, the hazards involved in the task or work environment shall be carefully considered by EESL. PPE must also meet the needs of the individual. The following factors should be considered when assessing the suitability of PPE: - Is the PPE appropriate for the risk involved and conditions at the place where exposure may occur? e.g. goggles are not suitable when full-face protection is required - Does the PPE prevent or adequately control the risks involved without increasing the overall risk? e.g. gloves should not be worn when using a pillar drill, due to the increased risk of entanglement - Can the PPE be adjusted to fit the wearer correctly? e.g. if a person wears glasses, ear defenders may not provide a proper seal to protect against noise hazards - Has the state of health of those using it been taken into account? - What are the needs of the job and the demands it places on the wearer? How long will the PPE need to be worn? What are the requirements for visibility and communication? - If more than one item of PPE is being worn, are they compatible? For example, does a particular type of respirator make it difficult for eye protection to fit properly?
SOP_08. 7	General Operating Procedures and Best Practices	Safety requires proper planning of work, proper usage of safety tools, exercise of good judgment and intelligent supervision. Experience proves that majority of the accidents are preventable. Working unsafely such as throwing materials or tools, at another worker should be prohibited. The following are the minimum requirements of safety devices and special tools: - Safety Helmets - Gloves - Safety Belts - Well supported ladders - Hand Tools kit Personal protective equipment is available for different purposes and to protect various functions of the human body. It is essential to pick the appropriate PPE for the hazard type. The following PPE have been suggested keeping EESL's operations in mind. There are three main types of hearing protection: 1) Hearing Protection: · earmuffs/defenders, which completely cover the ear - earplugs, which are inserted into the ear canal, · Semi-inserts (also called canal-caps), which cover the entrance to the ear canal. Hearing protection must be worn by

SOP 08	Personal Protective Equipment (PPEs)	
Index No:	**Head**	**Description**
		anyone who is likely to be exposed to noise at or above the Exposure Action Level set by The Control of Noise at Work Regulations 2005. 2) Head protection There are three widely used types of head protection: - industrial safety helmets (hard hats), which are designed to protect against materials falling from height and swinging objects - industrial scalp protectors (bump caps), which are designed to protect from knocking against stationary objects - caps/hair nets, which protect against entanglement Tasks where head protection may be required include: - construction, · building repair, · work in excavations and tunnels, · work with bolt driving tools - driving motorcycles and all-terrain vehicles, etc. Turban-wearing Sikhs are exempt from the requirement to wear hard hats on construction sites by virtue of The Employment Act 1989. 3) Eye protection There are several types of eye protection: - safety spectacles: these are similar to regular glasses but have a tougher lens. They can include side shields for additional protection. - eye shields: a frame-less one-piece moulded lens, often worn over normal prescription glasses - safety goggles: these are made with flexible plastic frames and an elastic headband - face shields: heavier and bulkier than other type of eye protector, face shields protect the face, but do not fully enclose the eyes so do not protect against dusts, mists or gases. Tasks where eye protection may be required include: - handling hazardous substances where there is a risk of splashing - work with power driven tools where materials are likely to be propelled - welding operations, · work with lasers, · using any gas or vapour under pressure. 4) Foot protection There are a number of types of safety footwear: - safety boots or shoes. Normally have steel toe-caps but can have other safety features (e.g. steel mid-soles, slip resistant soles, insulation against heat and cold) - Wellington boots, which can be supplied with steel toe-caps - anti-static and conductive footwear. These protect against the build-up of static electricity. Tasks where foot protection may be required include: construction, demolition, building repair, manual handling where there is a risk of heavy objects falling on the feet, work in extremely hot or cold environments, work with chemicals and forestry. If there is a risk of slipping that cannot be avoided or controlled by other measures, attention must be given to the slip resistance of soles and replacement before the tread pattern is overly worn. 5) Hand and arm protection Hand and arm protection comes in a variety of forms, including: - gloves and gauntlets (leather, nitrile, latex, plastic coated, chain mail, etc.) - wrist cuffs and armlets, e.g. used in glass cutting and handling - barrier cream may sometimes be used, where gloves cannot practicably be used. Tasks where hand and arm protection may be required include: the manual handling of abrasive, sharp or pointed objects, work with vibrating equipment such as pneumatic drills and chainsaws, construction and outdoor work, work with chemicals and other hazardous substances (e.g. bodily fluids) and work with hot or cold materials. 6) Body protection: Types of body protection include: - overalls, aprons and coveralls (protection against hazardous substances) - clothing for cold, heat and bad weather - high visibility clothing (e.g. jackets, vests) - harnesses - back supports - life jackets. 7) Respiratory protection There are two main types of respiratory protective equipment: - respirators that filter contaminated air or clean it as it is breathed in - respirators that supply clean air from an independent source. Work with harmful dusts, fumes, vapours can require respiratory protective equipment. Tasks where respiratory protection may be required include; work with harmful substances, work in areas where large amounts of nuisance dust is present, work that creates dust (e.g. disc cutters) Special Tools: - Well protected Hand tools - Well supported ladders for Work at height

SOP 08	Personal Protective Equipment (PPEs)	
Index No:	**Head**	**Description**

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or ear muffs).
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection against moving & falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits, aprons etc. of appropriate materials.

Table: Summary of Recommended PPEs according to Hazard

Reference: International Finanjce Corporation (IFC). 2007. Environmental, Health, and Safety (EHS) Guidelines

Available at : https://www.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2B Occupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES

Accessed on: 30 November 2017

Table 2.7.1. Summary of Recommended PPEs according to Hazard

SOP_08. 8	Use, Storage of Tools and Records maintenance	Maintenance of PPE - An effective system of maintenance of PPE is essential to make sure the equipment continues to provide the degree of protection for which it is designed. Therefore, the manufacturer's maintenance schedule (including recommended replacement periods and shelf lives) must always be followed. - Maintenance may include; cleaning, examination, replacement, repair and testing. The wearer may be able carry out simple maintenance (e.g. cleaning), but more intricate repairs must only be carried out by competent personnel. - The costs associated with the maintenance of PPE are the responsibility of the EESL/ contractor. - Worn out or ineffective PPEs shall be replaced at the earliest. - Employer shall maintain additional spares (at least 10 percent of actual required stock) on site. Storage for PPE - It is very important to appropriately store PPE to ensure they can be used for a long time - Where PPE is provided, adequate storage facilities for PPE must be provided for when it is not in use, unless the employee may take PPE away from the workplace (e.g. footwear or clothing). PPEs and Tools associated with the procedures to be stored at Site Offices. Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate - Accommodation may be simple (e.g. pegs for safety helmets) and it need not be fixed (e.g. a case for safety glasses or a container in a vehicle). - Storage should be adequate to protect the PPE from contamination, loss, damage, damp or sunlight.

SOP 08	Personal Protective Equipment (PPEs)	
Index No:	**Head**	**Description**
SOP_08. 9	Compliance to regulations/permits	Each EESL operation shall ensure that it complies with the requirements of this Standard. Performance against the requirements of this Standard shall be assessed periodically, documented and, where required, reported to EESL. The evaluation of performance shall include, as a minimum, confirmation that: - Correct usage of PPE for different types of work carried on the sites. - EHS manager is aware of the hazards related to the work and same is conveyed to the contractors. - The EHS manager has the ultimate responsibility for action tracking and close-out; - Awareness shall be created among the workers and the contractors via daily tool box meetings.
SOP_08. 10	Safety Precautions	Employer must institute all feasible engineering and work practice controls to eliminate and reduce hazards before using PPE to protect against hazards through (i) Engineering Controls (Initial design specifications, Change in Work procedures, Use of appropriate tools and safe work practices such as machine guards, Ventilation, Substitution with less harmful material, Enclosure of process, Isolation of process, Change the process etc.) and (ii) Work Process Controls (remove employees from exposure by Job rotation of workers, Wet methods, Personal hygiene, Housekeeping and maintenance) Where PPE is provided, employees must be provided with adequate information, instruction and/or training on its use. The extent of information, instruction and/or training will vary with the complexity and performance of the kit. Information and instruction should cover: - the risk(s) present and why the PPE is needed - the operation (including demonstration), performance and limitations of the equipment - use and storage (including how to put it on, how to adjust and remove it) - any testing requirements before use, especially flammability tests - any user maintenance that can be carried out (e.g. hygiene/cleaning procedures) - factors that can affect the performance of the equipment (e.g. working conditions, personal factors, defects and damage) - how to recognise defects in PPE, and arrangements for reporting them - where to obtain replacement PPE The following are guidelines which an employer can use to begin the selection of the appropriate PPEs. The site information may suggest the use of combinations of PPE selected from the different protection levels (i.e., A, B, C, or D) as being more suitable to the hazards of the work. PPE is divided into four categories based on the degree of protection afforded: 1. Level A – Level 'A' PPEs are selected when the greatest level of skin, respiratory, and eye protection is required. - Positive pressure, full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH). - Totally-encapsulating chemical-protective suit. - Coveralls. - Long underwear - Gloves, outer, chemical-resistant. - Gloves, inner, chemical-resistant. - Boots, chemical-resistant, steel toe and shank. - Hard hat (under suit) - Disposable protective suit, gloves and boots (depending on suit construction, may be worn over totally-encapsulating suit) 2. Level B – Level B PPE are used when highest level of respiratory protection is necessary but a lesser level of skin protection is needed. - Positive pressure, full-face piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved). - Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls). - Coveralls. - Gloves, outer, chemical-resistant. - Gloves, inner, chemical-resistant. - Boots, outer, chemical-resistant steel toe and shank. - Boot-covers, outer, chemical-resistant (disposable). - Hard hat. - Face shield

SOP 08	Personal Protective Equipment (PPEs)	
Index No:	**Head**	**Description**
		3. Level C - The concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met - Full-face or half-mask, air purifying respirators (NIOSH approved). - Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls). - Coveralls. - Gloves, outer, chemical-resistant. - Gloves, inner, chemical-resistant. - Boots (outer), chemical-resistant steel toe and shank. - Boot-covers, outer, chemical-resistant (disposable). - Hard hat. - Escape mask. - Face shield. 4. Level D - A work uniform affording minimal protection: used for nuisance contamination only - Coveralls - Gloves - Boots/shoes, chemical-resistant steel toe and shank - Boots, outer, chemical-resistant (disposable) - Safety glasses or chemical splash goggles - Hard hat - Escape mask - Face shield
SOP_08. 11	Emergency Preparedness and Response (including PPE/First aid)	- First aid box containing antiseptic liquid and cream, bandage, cotton, painkiller pills. - Quick to access On-call medical aid and transport to nearby hospital; Display of emergency numbers on site - Trained First Aid Providers among works
SOP_08. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Monthly safety audit to ensure adequate PPEs are in place, training programs on PPE usage, Training to First Aid Providers and PPE maintenance records If your workers refuse to wear the required PPE, they should be re-deployed to a less dangerous job or area, or if necessary disciplined. Disobeying safety instructions should be at least as serious as other rule breaking. Contractual terms and conditions should treat failure to follow reasonable Health & Safety instructions as potential gross misconduct.
SOP_08. 13	Signage systems and symbols or coding	Signages at workplace about suitable PPEs to wear, signages at PPE Storage areas   

SOP 08	Personal Protective Equipment (PPEs)	
Index No:	**Head**	**Description**
SOP_08. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors
SOP_08. 15	Training needs	Initial training and engagement of workers on workers shall include (i) Consultation on the best PPEs (ii) Education on why it's needed (iii) Given input on its use Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel where PPE is provided, employees must be provided with adequate information, instruction and/or training on its use. The extent of information, instruction and/or training will vary with the complexity and performance of the kit. Information and instruction should cover: - the risk(s) present and why the PPE is needed - the operation (including demonstration), performance and limitations of the equipment - use and storage (including how to put it on, how to adjust and remove it) - any testing requirements before use - any user maintenance that can be carried out (e.g. hygiene/cleaning procedures) - factors that can affect the performance of the equipment (e.g. working conditions, personal factors, defects and damage) - how to recognise defects in PPE, and arrangements for reporting them - where to obtain replacement PPE, In addition to initial training, refresher training may be required from time to time. Supervisor checks on the use of PPE may help determine when refresher training is required.
SOP_08. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials; The workers shall ensure that PPE provided is properly used. - PPE must be worn and used in accordance with the instructions provided to them - workers must take all reasonable steps to ensure that PPE is returned to the accommodation provided for it after it has been used (unless the employee may take PPE away from the workplace e.g. footwear or clothing) - PPE must be examined before use, § any loss or obvious defect must be immediately reported to their supervisor, § employees must take reasonable care for any PPE provided to them and not carry out any maintenance unless trained and authorized. While the responsibility of implementing the procedure lies on all EESL personnel, employees of the vendor, contractor and their supply chain actors, specific responsibilities have been allotted, keeping the significance of the standard in mind. 1) EHSS department Apart from the responsibility of implementing the entire EHSS manual and SOPs, the EHSS department has the following specific responsibilities for this SOP - Must ensure that appropriate PPEs are used for different types of work carried on the sites., § Should be aware of the hazards related to the work and same is conveyed to the contractors. - Shall conduct surprise site inspections to assure the compliance with the appropriate use of PPEs., § Has the ultimate responsibility for action tracking and close-out; 2) EHS Officer of Contractor Apart from the responsibility of implementing the entire EHSS manual and SOPs, the EHSS officer of the vendor/contractor/sub-contractor has the following specific responsibilities for this SOP - EHS officer must ensure that appropriate PPEs are used for different types of work carried on the sites., § EHS officer should be aware of the hazards related to the work and same is conveyed to the workers. - Awareness shall be created among the workers and the contractors via daily tool box meetings., § Must ensure that PPEs used by workers are in good condition and expiry date is not passed. - In case of non-compliance, report should be made to EHS officer of EESL., § Conduct regular checks twice a day to ensure compliance with the appropriate use of PPEs 3) Workers All workers have a duty to: - Follow instructions from EHS officer of contractor/ EESL.,

SOP 08	Personal Protective Equipment (PPEs)	
Index No:	**Head**	**Description**
		- In case of any problem related to their PPE, workers should immediately inform to the EHS officer of contractor and get replacement. There should be facility on site for the worker to request new PPE§ Follow trainings and instructions (unless they think that would be unsafe, in which case they should seek further instructions before continuing)
SOP_08. 17	Inspection Procedures and Documentation required	The inspection reports to be in place with Corrective actions and preventive actions taken;
SOP_08. 18	Disposal of scraps and process wastes	There should be special suitably labelled storage receptacles on site and labour camps to dispose-off worn out or PPEs or Use and Throw PPEs (Receptacles themselves should not be an impediment to safety and should be kept away from circulation areas and emergency ingress/egress)
SOP_08. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; No PPE shall be left around unattended at site in such a manner that it hampers the general work or community safety. B. Protection and Control: risk areas demarcation, avoid; C. It is very important to appropriately store PPE to ensure they can be used for a long time - Where PPE is provided, adequate storage facilities for PPE must be provided for when it is not in use, unless the employee may take PPE away from the workplace (e.g. footwear or clothing). - Accommodation may be simple (e.g. pegs for safety helmets) and it need not be fixed (e.g. a case for safety glasses or a container in a vehicle). - Storage should be adequate to protect the PPE from contamination, loss, damage, damp or sunlight.
SOP_08. 20	Info and Instructions to be passed on to communities	- Immediate host communities shall be informed about the type of hazards assessed for the site and the type of PPEs suggested for workers. - Communities shall be advised top follow PPE protocols and use suitable PPEs while traversing near the work sites. They shall be provided with the information on suitable PPEs and where to access / buy these.
SOP_08. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.10 SOP 9: Work Permit system

SOP 09	Work Permit system	
Index No:	**Head**	**Description**
SOP_09. 1	Purpose	To ensure that a safe system of work has been defined for the task so that work may be accomplished in a legal, safe environmentally acceptable and efficient way.
SOP_09. 2	Coverage: Program / Region	UJALA, SLNP Applicable to vehicles at installation work sites, warehouse and transportation vehicles throughout the country. It applies to all installation, storage, construction, demolition as well as non-routine high-risk process activities like electrical maintenance, and any non-routine activity in a high-risk area like fuel storage area or hazardous waste collection and storage area
SOP_09. 3	References	- IFC - Environmental, Health, and Safety (EHS) Guidelines - EHSS Manual;
SOP_09. 4	Hazard Mapping / Assessment	Hazard from working without authorisation, working without training, the operation procedures of each equipment, unauthorised access to site;
SOP_09. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_09. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under UJALA and SLNP programs
SOP_09. 7	General Operating Procedures and Best Practices	Only persons who have been trained and authorised shall issue, authorize or accept Work Permit (WP). - Only work, which is specified on the WP, shall be undertaken. - For jobs of long duration, as far as practicable, the WP shall cover only a particular phase of the task at a time, that can be fully specified and to be completed within the duration mentioned in the Permit. - If work requires isolation across operating boundaries, a separate isolation WP shall be issued as evidence that the task can proceed. - The period of validity for a WP in defined areas within a site shall be the estimated time for the completion of the job, but no more than 8 hours or the period during which the Issuer / Eng. Officer is present at site. Work beyond this period shall be re-authorised by the respective Reliever(s) after re-assessment of the job location. - An Acceptor needing to continue with the job into the next shift/period must be asked to contact the Issuing Plant in the next shift and ensure the validity is extended provided that no change has taken place in the conditions stipulated in the permit. - The permit issued on a particular day may be extended, if required, only for the shifts on that particular day. For work extending beyond the day and to continue on the next day(s) a fresh permit shall be issued. - In accepting a WP the Acceptor must: a) understand the scope of work to be carried out, read the permit and b) understand the isolations/preparations made c) visit the Site with the issuer/engineering officer if necessary d) sign the permit and retain the first COPY Special hot work precautions: Special hot work and fire prevention precautions and Standard Operating Procedures (SOPs) should be implemented if welding or hot cutting is undertaken outside established welding work stations, including ‘Hot Work Permits, stand-by fire extinguishers, stand-by fire watch, and maintaining the fire watch for up to one hour after welding or hot cutting has terminated. Special procedures are required for hot work on tanks or vessels that have contained flammable materials Confined Spaces: A “permit-required” confined space is one that also contains physical or atmospheric hazards that could trap or engulf the person.77 Confined spaces can occur in enclosed or open structures or locations. Serious injury or fatality can result from inadequate preparation to enter a confined space or in attempting a rescue from a confined space. Recommended management approaches include: ·Engineering measures should be implemented to eliminate, to the degree feasible, the existence and adverse character of confined spaces. ·Permit-required confined spaces should be provided with permanent safety measures for venting, monitoring, and rescue operations, to the extent possible. The area adjoining an access to a confined space should provide ample room for emergency and rescue operations. - Prior to entry into a permit-required confined space: • Process or feed lines into the space should be disconnected or drained, and blanked and locked-out. • Mechanical equipment in the space should be disconnected, de-energized, locked-out, and braced, as appropriate.

SOP 09	Work Permit system	
Index No:	**Head**	**Description**
		• The atmosphere within the confined space should be tested to assure the oxygen content is between 19.5 percent and 23 percent, and that the presence of any flammable gas or vapor does not exceed 25 percent of its respective Lower Explosive Limit (LEL). • If the atmospheric conditions are not met, the confined space should be ventilated until the target safe atmosphere is achieved, or entry is only to be undertaken with appropriate and additional PPE. ·Safety precautions should include Self Contained Breathing Apparatus (SCBA), life lines, and safety watch workers stationed outside the confined space, with rescue and first aid equipment readily available. Before workers are required to enter a permit-required confined space, adequate and appropriate training in confined space hazard control, atmospheric testing, use of the necessary PPE, as well as the serviceability and integrity of the PPE should be verified. Further, adequate and appropriate rescue and / or recovery plans and equipment should be in place before the worker enters the confined space. Lone and Isolated Workers A lone and isolated worker is a worker out of verbal and line of sight communication with a supervisor, other workers, or other persons capable of providing aid and assistance, for continuous periods exceeding one hour. The worker is therefore at increased risk should an accident or injury occur. ·Where workers may be required to perform work under lone or isolated circumstances, Standard Operating Procedures (SOPs) should be developed and implemented to ensure all PPE and safety measures are in place before the worker starts work. SOPs should establish, at a minimum, verbal contact with the worker at least once every hour, and ensure the worker has a capability for summoning emergency aid. ·If the worker is potentially exposed to highly toxic or corrosive chemicals, emergency eye-wash and shower facilities should be equipped with audible and visible alarms to summon aid whenever the eye-wash or shower is activated by the worker and without intervention by the worker.
SOP_09. 8	Use, Storage of Tools and Records maintenance	- Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate - PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_09. 9	Compliance to regulations/permits	
SOP_09. 10	Safety Precautions	- Fall prevention and protection measures should be implemented whenever a worker is exposed to the hazard of falling more than two meters; into operating machinery; into water or other liquid; into hazardous substances; or through an opening in a work surface. - Fall prevention / protection measures may also be warranted on a case-specific basis when there are risks of falling from lesser heights.
SOP_09. 11	Emergency Preparedness and Response (including PPE/First aid)	
SOP_09. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	System Audit for checking effectiveness of the WP system It is very essential to understand the effectiveness of the work permit system and this can be achieved through regular system audits. - The Site Safety representative or EHSS department shall conduct formal audit of WP system covering all defined areas at site, at least once in a month, to confirm its appropriateness and full compliance to all provisions of this Standard. - The audit shall be carried out using a checklist developed based on this Standard. Formal audit reports shall be prepared and appropriate corrective actions identified - The EHSS department head and project head shall personally carry out random checks of Work permits records.
SOP_09. 13	Signage systems and symbols or coding	Signages various work permit requirements at certain location of workplace;
SOP_09. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors;
SOP_09. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,

SOP 09	Work Permit system	
Index No:	**Head**	**Description**
SOP_09. 16	Duties / Responsibilities (with contact details)	Responsibility for implementing the work permit system: While the responsibility of implementing the procedure lies on all EESL personnel, employees of the vendor, contractor and their supply chain actors, specific responsibilities have been allotted, keeping the significance of the standard in mind. 1) Project head/in-charge/owner The project owner will have the following specific responsibilities - Nominate managers (department or functional heads) who have authority to appoint persons who may issue or accept WP in their areas of responsibility - Define the plant area boundaries within which their teams will issue WP - Issue a register of any specific tasks exempted from this procedure in their areas of responsibility, after consultation with the Safety representative and concerned managers - Carry out random checks on WP issued 2) Vendor/Contractor Safety Representative The EHSS officer or the safety representative of the vendor/contractor should -Be responsible for imparting the training on WP system and upkeep of the training packages. The training packages must be based on this Standard. - Conduct internal system audits on WP at least once two months and report findings to the management team at site. 3) Issuer of Work Permit The issuer of the work permit should: - Be responsible for determining the nature and extent of the job to be carried out, possible hazards and the necessary precautionary measures to be taken prior to issuing the permit, - Ensure that necessary isolations are carried out, - Provide acceptor with necessary Method Statements / Risk Assessments (where applicable) - Take assistance of maintenance manager/officer in carrying out above responsibilities in case of an engineering job, § Ensure that necessary precautionary measures are taken prior to authorizing the permit., - For jobs directly under charge of the Issuer, the Issuer of WP shall: a) Select competent people for the job b) Be responsible for explaining the safe Work Method to the persons carrying out the job provide them with proper tools / PPE c) Be overall responsible for the job. 4) Acceptor (& the Contractor Supervisor) of the Work Permit The acceptor of the work permit should - Assist the issuer / maintenance officer in hazard identification and developing Method Statement (if required) - Provide the issuer / maintenance officer the names of all persons carrying out the job - Be responsible for explaining fully to his subordinates the nature of the hazards involved in carrying out the task and any precautions necessary to protect others who may be in the area - Ensure that the nature and extent of the work does not differ from that described in the permit and that all persons under his control understand the precautions that they are required to take
SOP_09. 17	Inspection Procedures and Documentation required	
SOP_09. 18	Disposal of scraps and process wastes	NA
SOP_09. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; B. Protection and Control: risk areas demarcation, avoid
SOP_09. 20	Info and Instructions to be passed on to communities	emergency response plan, emergency information and signal types and meaning, emergency response and control provisions on site;

SOP 09	Work Permit system	
Index No:	**Head**	**Description**
SOP_09. 21	Amendment Record (Version No, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.11 SOP 10: Safe Lifting Operations

SOP 10	**Safe Lifting Operations**	
Index No:	**Head**	**Description**
SOP_10. 1	Purpose	To ensure effective management on Lifting Operation and Lifting Accessories to minimize risk due to the material handling operation.
SOP_10. 2	Coverage: Program / Region	UJALA, SLNP Applicable to vehicles at installation work sites, warehouse and transportation vehicles throughout the country. It applies to all installation, storage, construction, demolition as well as non-routine high-risk process activities like electrical maintenance, and any non-routine activity in high risk areas like fuel storage area or hazardous waste collection and storage area
SOP_10. 3	References	IFC - Environmental, Health, and Safety (EHS) Guidelines - EHSS Manual;
SOP_10. 4	Hazard Mapping / Assessment	Hazard from lifting operations
SOP_10. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_10. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under the programs Any custom-made lifting device must be: - Designed by a qualified person - Designed with a safety factor of 5 - Proof tested to 125% of rated capacity - Marked with the rated capacity - Certified by a competent body - Inspected every 6 months
SOP_10. 7	General Operating Procedures and Best Practices	1) Category of Lifting Operations: Lifting operations are categorized as routine operations if they involve the following: - Regular shop floor material movement - Fork-lift trucks in a warehouse - Construction site hoist - Mobile elevated work platform (MEWP) used for general maintenance - A vehicle tail lift; 2) A risk assessment must be prepared for all lifting operations. - For routine lifting operations an initial risk assessment and lifting plan is required but need not be repeated i.e. generic risk assessments and lifting plans may be used. However, they must be subject to regular documented reviews (at least annually) to ensure that they are still valid. - Every lifting operation is planned and controlled by the concerned supervisor who ensures that safe procedures are undertaken. Factors to be considered when planning lifting operation include the following: a) Identification of lifting operations to be performed and load characteristics; determine the load characteristics e.g. weight, centre of gravity, stability, and physical size. b) Making ample allowances for unknown factors, and determine the available capacity of the equipment being used. In cases where the assessment of load weight is difficult, safe load indicators of weighing devices must be fitted. It is equally important to rig the load so that it is stable. Unless the centre of gravity of the load is below the hook, the load will shift. - Identification and positioning of equipment to be used: a) Determine lifting equipment position i.e. where it is to be sited to make the lift b) Determine suitability of ground to ensure equipment stability i.e. is the ground sufficiently competent to support the predicted ground loading imposed by the lifting equipment and the load
SOP_10. 8	Use, Storage of Tools and Records maintenance	Records of testing of Lifting Tools and Accessories Safety and preventive Training Records.

SOP 10	Safe Lifting Operations	
Index No:	**Head**	**Description**
		Records to be maintained at Regional Office of EESL and site offices, Submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices Handling and Storage of lifting devices: Proper handling of lifting devices is essential to ensure long-term usability of the equipment - Wire ropes must never be allowed to lie on the ground for any length of time or on damp or wet surface, rusty steel or near corrosive substances. They must be stored in a clean dry place; wire rope slings must be cleaned after use, inspected and hung on pegs to prevent corrosion and kinking - Lifting accessories must be stored in conditions that do not lead to damage or deterioration.
SOP_10. 9	Compliance to regulations/permits	
SOP_10. 10	Safety Precautions	Hire of Lifting Equipment and Services The following precautions must be taken while hiring equipment for lifting operations - All mobile cranes and lifting equipment brought onto Site must have valid test certificates to demonstrate they have been inspected before being allowed to operate on site. - If lifting equipment of services are to be hired / purchased, responsibilities for supply of equipment, personnel and documentation must be agreed in the contract. - Slings must be hung up to prevent damage - Chain blocks, turn buckles, chains and similar tackle should be hung up and Lightly oiled - All rope must be kept away from flame cutting and electric welding operations - Avoid contact between any sling and solvents and chemicals. - Suitable precautions should be taken to prevent any sharp edges of loads coming into contact with slings Lifts utilizing cranes, hoists, or other mechanical lifting devices will not commence unless: - An assessment of the lift has been completed and the lift method and equipment has been determined by a competent person; - Operators of powered, lifting devices are trained and certified for that equipment; - Rigging of the load is carried out by a competent person; - Lifting devices and equipment has been certified for use within the last six (6) months (at a minimum); - Load does not exceed dynamic and/or static capacities of the lifting equipment; - Any safety devices installed on lifting equipment are operational; - All lifting devices and equipment have been visually examined before each lift by a competent person. - Ensure no one standing or working below suspended load.
SOP_10. 11	Emergency Preparedness and Response (including PPE/First aid)	Install fall protection devices such as full body harnesses; Usage of the approved (type and rating) fall protection equipment is mandatory. - Fall Protection Equipment must be inspected by the user & trained person daily. - Double hook full body Safety harnesses that have been used in a fall arrest situation must be withdrawn from service and not reused/issued until after a full examination. - Records of the results of thorough examinations must be kept on site - Lifelines fall arrestor used for the attachment of Double hook full body Safety harnesses must be: - Horizontal lifelines must be made of steel rope 12 mm diameter (min), - Installed at waist height or above - Tensioned by use of a turnbuckle or similar, - Designed to support the maximum number of workers - Securely anchored at both ends with triplicate wire rope clamps at points able to withstand the dynamic load generated by a fall - All lanyards must be made of flame resistant materials. Inertia reels may be used to enable more safe movement around certain areas.
SOP_10. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Inspection every 3 months
SOP_10. 13	Signage systems and symbols or coding	Signages for public during the installation and maintenance plan;
SOP_10. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors
SOP_10. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,

SOP 10	Safe Lifting Operations	
Index No:	**Head**	**Description**
SOP_10. 16	Duties / Responsibilities (with contact details)	While the responsibility of implementing the procedure lies on all EESL personnel, employees of the vendor, contractor and their supply chain actors, specific responsibilities have been allotted, keeping the significance of the standard in mind. 1) Project head/in-charge/owner Ensures that the procedure is followed during Lifting Operation 2) EHSS Representative Apart from the responsibility of implementing the entire EHSS manual and SOPs, the following specific responsibilities should be undertaken - Ensures that only trained personnel are engaged. - Conducts awareness programme for the personnel engaged on such jobs - Monitor and audit implementation of this procedure 3) Operational Managers / Maintenance Managers - Responsible for proper deployment of trained personnel. - Ensure proper lifting accessories are present. 4) Competent Person Responsible for periodic checking of lifting tools and accessories as per legal requirement. 5) Employees engaged in lifting operations must: - Never put any part of their body under a suspended load, - Never ride a load while it is being lifted, - Be aware of suspended loads, signals of the operators and any lifting equipment supports, - Use lifting equipment as instructed and report any defects
SOP_10. 17	Inspection Procedures and Documentation required	1) Any new equipment that has not been used before are accompanied by a test certificate/declaration of conformity, which confirms that the equipment has undergone a thorough examination (not more than 12 months previously) and specifying the Safe Working Load, prior to first use. 2) A thorough examination is to be performed following the repair or replacement of a structural component. 3) All other lifting Equipment must undergo a thorough examination at least every 12 months. For passenger lift in Administrative Building, it is ensured that the passenger lift is safe to use and that it receives periodic thorough examinations and inspections, in accordance with local regulations. 4) Lifting accessories / attachments must be visually inspected on each occasion before use.
SOP_10. 18	Disposal of scraps and process wastes	NA
SOP_10. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; B. Protection and Control: risk areas demarcation, avoid
SOP_10. 20	Info and Instructions to be passed on to communities	Emergency response plan, emergency information and signal types and meaning, emergency response and control provisions on site;
SOP_10. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.12 SOP 11: Safety Audit Procedure

SOP 11	Safety Audit Procedure	
Index No:	**Head**	**Description**
SOP_11. 1	Purpose	To describe safety audit for EESL onsite operations and for its office
SOP_11. 2	Coverage: Program / Region	UJALA, SLNP Applicable to offices, vehicles at installation work sites, warehouse and transportation vehicles throughout the country.
SOP_11. 3	References	IFC - Environmental, Health, and Safety (EHS) Guidelines - EHSS Manual; OSHA Safety Audit Checklist - British Standards Institutions (BSI) – Occupational Health and Safety management System - International Organization for Standardization – Guidelines for auditing quality system and Environmental Management System - Workplace Regulations 1992
SOP_11. 4	Hazard Mapping / Assessment	Hazard from unsafe procedures, Injury due to the accidental fire event; handing of broken lamps, Fire risk due to storage of diesel for the back-up DG set; Fire and hazards due to storage of old LED/Other lamps which has potential for toxic release due to heavy metal and other hazardous material content;
SOP_11. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_11. 6	Suitability and Intended use of the activity, tool or material	Applicable to all sites under the programs;
SOP_11. 7	General Operating Procedures and Best Practices	1) Audit Types: Safety audit shall be done to ensure safety of workers and EESL employees. Two types of safety audit can be conducted: - Internal Audit - External Audit 2) Audit Requirements: The following requirements should be adhered to - The EHS Officer shall ensure that periodic safety audits are conducted to verify that the system is working as planned and is facilitating achievement of the EESL objectives and targets. - The Safety audits will be completed in accordance with the checklist attached. - Auditors will conduct the safety audits using the audit guidelines in annex B as a guide. - Auditors will record audit findings using notes, the internal audit report, and safety audit work sheet forms as appropriate. - Each area supervisor will review audit findings: - Develop corrective action or rebuttal to non-conformances. - Implement response actions within one week of their submittal, unless circumstances specified in writing prevent such response. - The EHS Officer will determine which findings will be referred to the formal corrective action review system. - Summarize and present the results of the safety audits to management on a quarterly basis at the Management Review Board meeting. - Collect and file safety audit reports. - Prior to an on-site audit, an auditor is to obtain copies of all documented procedures and training records and arrange a pre-audit interview with the area supervisor. - Each member of an audit team will meet once they have each completed their assigned audit task to compile all notes and complete an audit report. - The safety officer will meet with the area supervisor to hand over the audit report and answer any questions he or she may have at that time.
SOP_11. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices, Submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_11. 9	Compliance to regulations/permits	NA
SOP_11. 10	Safety Precautions	NA
SOP_11. 11	Emergency Preparedness and Response (including PPE/First aid)	NA
SOP_11. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Monitor the corrective actions; Monitor the effectiveness of the audit procedures

SOP 11	Safety Audit Procedure	
Index No:	**Head**	**Description**
		Use Annex A: Inspection Checklist provided in EHSS: SOP 11
SOP_11. 13	Signage systems and symbols or coding	NA
SOP_11. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors
SOP_11. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,
SOP_11. 16	Duties / Responsibilities (with contact details)	1) EHSS department - EHS officer shall conduct safety audit for on-site operations every month and document it properly. - EESL employees shall conduct monthly office inspection and findings shall be escalated to the higher management. - EHS officer shall ensure that findings of both office inspection and on-site operations hall be followed and mitigated through appropriate measures. 2) EHS Officer of Contractor - EHS officer of contractor shall conduct safety audit daily and document it. Immediate actions shall be taken for the findings. - Every day before start of work, EHS officer shall ensure that findings of previous day are closed. - In case of any critical finding, EHS officer of contractor shall immediately inform EHS officer of EESL.
SOP_11. 17	Inspection Procedures and Documentation required	Inspection procedures for auditing methods and results; Inspection of corrective actions;
SOP_11. 18	Disposal of scraps and process wastes	NA
SOP_11. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; B. Protection and Control: risk areas demarcation, avoid;
SOP_11. 20	Info and Instructions to be passed on to communities	NA
SOP_11. 21	Amendment Record (Version No:, Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.13 SOP 12: Criteria for Selection of Warehouses

SOP 12	**Criteria for Selection of warehouses**	
Index No:	**Head**	**Description**
SOP_12. 1	Purpose	to describe the environment, health, safety and social aspects to be considered while selected temporary and permanent project/company warehouses
SOP_12. 2	Coverage: Program / Region	UJALA, SLNP Applicable to warehouse selection throughout the country.
SOP_12. 3	References	IFC - Environmental, Health, and Safety (EHS) Guidelines - EHSS Manual; - The Warehouse (Development and Regulation) Act, 2007 - National Building Code of India, Part 4 (Fire and life safety)
SOP_12. 4	Hazard Mapping / Assessment	Hazard from warehouse operations, Environmental sensitivities in the vicinity of selected site as per Table 5.3 and Table 5.4 of ESMF
SOP_12. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_12. 6	Suitability and Intended use of the activity, tool or material	Applicable to all warehouse locations under the programs;
SOP_12. 7	General Operating Procedures and Best Practices	The warehouse should be constructed as per Bureau of Indian Standards - The warehouse should have adequate number of firefighting extinguishers of appropriate type, fire buckets with sand and water. - Warehouse shall ensure that addresses and telephone numbers of Fire Station, Police Station and warehouseman shall be displayed at conspicuous places so that in case of emergency, the concerned authorities may be contacted without any delay - Wherever material handling equipment are used the warehouse in charge shall maintain a list of equipment which require calibration. The equipment would be calibrated at least once in a year by the approved calibration laboratories/institutions. A separate registrar for such equipment with details of calibrations would be maintained in the warehouses. A certificate of calibration for a particular equipment indicating the name of the calibrating agency, date of calibration, validity of calibration etc. should be maintained in the file for records. In case of in house calibration, details of calibration procedure, error between standard procedure of calibration and equipment reading should be maintained - The warehouse in charge and other staff of the warehouse should get training on the basic principles and general procedure of fire fighting in a warehouse. Warehouse official from time to time shall ensure that all the firefighting equipment and devices installed in the premises are in working condition. A separate register to this effect should be maintained in the warehouse and mock firefighting drills at frequent intervals should be carried out. - Warehouses should have at least two separate entry/exit doors for evacuation of personnel in case of emergency. Both the doors should open from inside to out and should be unlocked at all times - Adequate ventilation, along with emergency lights should be provided in the warehouse, § All warehouses must have an emergency evacuation plan which is displayed at prominent places inside and outside the warehouse: - The warehouse in charge may choose to have different size depending upon span of warehouse for optimum space utilization. - Stack plan shall be prepared in such a manner that the stacks shall not obstruct light and free flow of air into godowns. Besides, the stacks may be covered with fumigation covers for curative treatment. - A minimum of 0.75 m wide space between stacks, 0.6 m between wall and stack and 1.20 m between door points as haulage alleyway shall be provided for operational purpose. Stacking - Stacking of commodities in bags / containers / packages shall be done in the identified stacks on a suitable available dunnage material viz, bamboo mats, polythene sheet, wooden crates, poly pallets, etc. - Stacks shall be built in straight line uniformly within the stack area earmarked by stack lines. - Stack card with necessary entries shall be provided on every stack on haulage alleyways side Stack lines. - Each stack shall be identified by drawing a 5cm width stack line in yellow or white colour on all four sides of the floor of the godown as per stack plan. - Each stack shall be given stack number neatly painted on the floor / wall / pillar in front of each stack.
SOP_12. 8	Use, Storage of Tools and Records maintenance	Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate PPEs and Tools associated with the procedures to be stored at Site Offices

SOP 12	Criteria for Selection of warehouses	
Index No:	**Head**	**Description**
SOP_12. 9	Compliance to regulations/permits	Compliance depends on the site selection. The local regulations, NOCs, building permits, Fire NOC, Trade licence needs to be obtained and compliance under which needs to be followed;
SOP_12. 10	Safety Precautions	Fire safety, accident safety;
SOP_12. 11	Emergency Preparedness and Response (including PPE/First aid)	Whenever there is a disaster, the warehouseman shall proceed as under: - In case of fire, the following steps would be taken immediately: - Put out the fire by using appropriate fire extinguishers / fire buckets - Take steps to avoid loss of other adjacent stocks by removing it from burning stock. - Call Fire Brigade, § In case of flood, cyclone, arrange for draining out of water and take necessary help of local civil authorities. - Arrange photographs of the incidents on the same day - For the fire, theft, burglary and misappropriation, lodge a FIR with the local Police Station and obtain a copy on prescribed format of Police Department. - Inform the details of the incident to the Insurer (In case Goods are insured by more than one Insurance company to the Lead Insurer) - Carryout the activity of salvaging and segregation of the damaged stocks. - Communicate following to Insurance Companies / their surveyor to claim the loss on prescribed Claim Form: • Copy of initial intimation, Copy of FIR, Brief Incident Record • Location of the Godown / Site • Details of loss (This shall be based on valuation of the Goods as per records of the warehouse minus disposal of damaged goods and expenses of salvaging with necessary evidences). • Copy of the insurance policy. • Photographs of the incident. • Newspaper cutting, if any • Certification of Fire Brigade, Police, other local author
SOP_12. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	Annual safety audit
SOP_12. 13	Signage systems and symbols or coding	NA
SOP_12. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors
SOP_12. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,
SOP_12. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials
SOP_12. 17	Inspection Procedures and Documentation required	Preventive maintenance at Warehouse/Kiosks; The inspection reports to be in place with Corrective actions and preventive actions taken;
SOP_12. 18	Disposal of scraps and process wastes	NA
SOP_12. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection; B. Protection and Control: risk areas demarcation, avoid;
SOP_12. 20	Info and Instructions to be passed on to communities	Emergency response plan, emergency information and signal types and meaning, emergency response and control provisions on site;
SOP_12. 21	Amendment Record (Version No: Link)	Version 1: EHSS Manual of EESL, Available at https://eeslindia.org/writereaddata/EHSS%20Manual%20for%20EESL.pdf Accessed on October 2017 Version 2: This version, updated on Nov 30, 2017

8.5.14 SOP 13: Special Conditions of Use of New Generation Heavy Equipment and Vehicles

SOP 13	SPECIAL CONDITIONS OF USE OF NEW GENERATION HEAVY EQUIPMENTS	
Index No:	**Head**	**Description**
SOP_13. 1	Purpose	Ensure the operations carried out using New Generation Heavy Equipment and Vehicles are safe for the workers and the communities
SOP_13. 2	Coverage: Program / Region	UJALA (warehouse / transport related), SLNP (site work including lifting operations, site clearing, support in construction, dewatering and drain maintenance if required) Applicable to work sites throughout the country
SOP_13. 3	References	OSHA Safety and Health Regulations for Construction, Part No; 1926, Motor Vehicles, Mechanized Equipment, and Marine Operations https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10767 Accessed on November 2017
SOP_13. 4	Hazard Mapping / Assessment	High Hazard to Communities A job hazard analysis (JHA) must be prepared for these operations. The written document reminds the operator of hazards associated with equipment use and also serves as a teaching tool during job training.
SOP_13. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_13. 6	Suitability and Intended use of the activity, tool or material	These protocols apply to: (i) all heavy equipment used including vehicles, cranes, desilting / dewatering equipment before, during construction or for maintenance and operations
SOP_13. 7	General Operating Procedures and Best Practices	- All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment. - A safety tire rack, cage, or equivalent protection shall be provided and used when inflating, mounting, or dismounting tires installed on split rims, or rims equipped with locking rings or similar devices. - Heavy machinery, equipment, or parts thereof, which are suspended or held aloft by use of slings, hoists, or jacks shall be substantially blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between them. Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment, shall be either fully lowered or blocked when being repaired or when not in use. All controls shall be in a neutral position, with the motors stopped and brakes set, unless work being performed requires otherwise. - Whenever the equipment is parked, the parking brake shall be set. Equipment parked on inclines shall have the wheels chocked and the parking brake set. - The use, care and charging of all batteries shall conform to the requirements set out in the equipment /vehicle instruction manual - All cab glass shall be safety glass, or equivalent, that introduces no visible distortion affecting the safe operation of any machine covered by this subpart. - All equipment covered by this subpart shall comply with the following requirements when working or being moved in the vicinity of power lines or energized transmitters, except where electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines: - For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet; - For lines rated over 50 kV, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than 10 feet; - In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 kV, and 10 feet for voltages over 50 kV, up to and including 345 kV, and 16 feet for voltages up to and including 750 kV; - Whenever visibility conditions warrant additional light, all vehicles, or combinations of vehicles, in use shall be equipped with at least two headlights and two taillights in operable condition. - All vehicles, or combination of vehicles, shall have brake lights in operable condition regardless of light conditions. All vehicles shall be equipped with an adequate audible warning device at the operator's station and in an operable condition. - All vehicles with cabs shall be equipped with windshields and powered wipers. Cracked and broken glass shall be replaced. Vehicles operating in areas or under conditions that cause fogging or frosting of the windshields shall be equipped with operable defogging or defrosting devices.

SOP 13	SPECIAL CONDITIONS OF USE OF NEW GENERATION HEAVY EQUIPMENTS	
Index No:	**Head**	**Description**
		- All haulage vehicles, whose pay load is loaded by means of cranes, power shovels, loaders, or similar equipment, shall have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.
SOP_13. 8	Use, Storage of Tools and Records maintenance	- Usage, Accident and Near Miss - Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate - PPEs and Tools associated with the procedures to be stored at easily accessible locales near Site
SOP_13. 9	Compliance to regulations/permits	- All permits and regulations for Transporting the heavy equipment / machinery to site, work on site during traffic conditions, stowage and parking, Site Work, Electrical - Works to be complied with
SOP_13. 10	Safety Precautions	- Pre-inspection discussion with site team regarding precautions, Training to users and awareness to communities - Appropriate signages / warnings on site
SOP_13. 11	Emergency Preparedness and Response (including PPE/First aid)	- Ensure the availability of first Aid Kits on Site and in Inspection Vehicles - Contact List of Health units, Rescue Vehicles within easy reach - Employees engaged in site clearing shall be protected from hazards of irritant and toxic plants and suitably instructed in the first aid treatment available.
SOP_13. 12	Monitoring procedures (or protocol for replacement / refurbishment)	- Proper inspection and maintenance are required to prevent injury, and they can prolong the life of equipment. Only qualified personnel shall perform inspections. - A schedule of inspections and maintenance should be established by site team, based on local sensitivities (during Walkthrough Inspection 1) and meticulously followed - All vehicles in use shall be checked at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use: service brakes, including trailer brake connections; parking system (hand brake); emergency stopping system (brakes); tires; horn; steering mechanism; coupling devices; seat belts; operating controls; and safety devices. All defects shall be corrected before the vehicle is placed in service. -These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.
SOP_13. 13	Signage systems and symbols or coding	General Traffic Warning Signages on parking, crossing, danger, instructions. OSHA sign for heavy Equipment. Roads around should be marked regarding whether entry is allowed for heavy equipment on not; considering road conditions and manageability.
SOP_13. 14	Details on competent users	This SOP is to be used by Workers / Labourers/ Drivers of Heavy Equipment or Vehicles, EESL site teams, Regional Manager and Contractors Only designated, qualified and licenced personnel are allowed to operate. • Operators must have good hearing, vision, and depth perception. • Operators should not operate this equipment if they have a known physical condition that would prevent them from acting quickly in case of an emergency. • Operators who are taking prescribed medication should make sure that the medication will not impair the ability to operate these equipment / vehicles safely. Use of alcohol or drugs is strictly prohibited in the workplace. If anyone suspect an operator's ability to be impaired for this or any other reason, notify a supervisor immediately.
SOP_13. 15	Training needs	Training to Drivers, workers and labourers on site, Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel, Awareness to Communities
SOP_13. 16	Duties / Responsibilities (with contact details)	Drivers / Labourers, Workers, Site Supervisors (Give Contact Details), EHSS Officials
SOP_13. 17	Inspection Procedures and Documentation required	Walkthrough inspection 1: (At the beginning of site work) Site engineer, Contractor - Interview with site employees, Discussions on permits/certificates required from various agencies, Receptacles and special considerations required for wastes, general and emergency situations, singes and barricading requirements, information to be passed on to the communities regarding the work, contact persons, emergency situations, warnings Walkthrough inspection 2: (Daily Site engineer, Contractor - Work Status and daily work completion, check all items stowage off site safely, barricading and signages, reporting near miss-out incidents, waste management, imminent danger. Inspection and Maintenance programs must be based on the manufacturer's recommendations. Signed documentation is required. Periodic inspection must be inspected every 12 months and every month as required. Signed documentation is required.
SOP_13. 18	Disposal of scraps and process wastes	As per above procedures & agreed Contract Conditions Suitable receptacles shall be kept on site, without hinderance to movement or traffic; for segregated storage of different types of wastes and construction materials

SOP 13	SPECIAL CONDITIONS OF USE OF NEW GENERATION HEAVY EQUIPMENTS	
Index No:	**Head**	**Description**
SOP_13. 19	Site management	- A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means; - Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not alter the requirements of any other regulation of this part even if such device is required by law or regulation; - Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded; - Prior to work near transmitter towers where an electrical charge can be induced in the equipment or materials being handled, the transmitter shall be de-energized or tests shall be made to determine if electrical charge is induced on the crane. The following precautions shall be taken when necessary to dissipate induced voltages: - The equipment shall be provided with an electrical ground directly to the upper rotating structure supporting the boom; and Ground jumper cables shall be attached to materials being handled by boom equipment when electrical charge is induced while working near energized transmitters. Crews shall be provided with nonconductive poles having large alligator clips or other similar protection to attach the ground cable to the load. - Combustible and flammable materials shall be removed from the immediate area prior to operations. - Employees engaged in site clearing shall be protected from hazards of irritant and toxic plants and suitably instructed in the first aid treatment available.
SOP_13. 20	Info and Instructions to be passed on to communities	- To alert on any perceived dangers or near misses due to use of heavy equipment, machinery - To be aware of the dangers associated with heavy equipment, machinery on site - Special issues in case of emergencies - Suggested Grievance Reporting Mechanisms
SOP_13. 21	Amendment Record (Version No:, Link)	Version 1 (Original) Dated: 30 November 2017

8.5.15 SOP 14: Emergency Responses

SOP 14	EMERGENCY RESPONSES AGAINST DISASTERS, ACCIDENTS, BREAKAGES AND COLLAPSE ON SITE/TRANSPORT/STORAGE	
Index No:	**Head**	**Description**
SOP_14. 1	Purpose	Ensure that EESL can deal with emergency situations effectively by planned and co-ordinated response procedures
SOP_14. 2	Coverage: Program / Region	UJALA, SLNP Applicable to work sites and offices, facilities throughout the country
SOP_14. 3	References	1) OSHA Principal Emergency Response and Preparedness Requirements and Guidance Available at: https://www.osha.gov/Publications/osha3122.pdf Accessed on November 2017 2) OSHA's Walking-Working Surfaces Standard (1910.22(a))
SOP_14. 4	Hazard Mapping / Assessment	High Hazard to Workers, Communities - Conduct a Process Hazard Analysis (PHA) for each covered process, and update and revalidate the PHA every 5 years. - Incorporate emergency shutdown actions and operations into the written operating procedures for each process. Include conditions that require emergency action and the qualified operator responsible for performing these procedures.
SOP_14. 5	Incident Categorisation (may be Classification/ levels)	High
SOP_14. 6	Suitability and Intended use of the activity, tool or material	Applies to: (i) all instances of natural or manmade emergencies, accidents during planning, design, construction, operation and maintenance activities till full work close out
SOP_14. 7	General Operating Procedures and Best Practices	EXIT ROUTES - Ensure that the number of exit routes is adequate based on the number of employees, the size of the building, its occupancy, and the arrangement of the workplace. - Separate an exit route from other workplace areas with materials that have the proper fire resistance-rating for the number of stories the route connects. - Ensure that exit routes meet width and height requirements. The width of exit routes must be sufficient to accommodate the maximum permitted occupant load of each floor served by the exit route. - Ensure that doors used to access exit routes have side hinges and swing in the direction of travel (depending on occupancy and hazard areas). - Design exit routes that lead to an outside area with enough space for all occupants. - An outdoor exit route is permitted but may have additional site-specific requirements. - Ensure that required exit routes and fire protections are available and maintained, especially during repairs and alterations. - Ensure that employee alarm systems are installed, operable. - Direct employees through exit routes using clearly visible signs. These signs must meet the required letter height and illumination specifications. - When openings could be mistaken for an exit, post appropriate signs stating "NOT AN EXIT." - Arrange exit routes so that employees are not exposed to the dangers of high hazard areas. - Exit routes must be free and unobstructed. Prevent obstructions, such as decorations, furnishings, locked doorways, and dead-ends within exit routes. FIRE EXTINGUISHERS - Provide only approved portable fire extinguishers. - Maintain fire extinguishers. Maintenance includes monthly visual inspections, hydrostatic testing, annual internal examinations, and all associated documentation. - Ensure that the travel distance from employee to the nearest extinguisher is appropriate for the fire class. EMERGENCY ALARMS - Provide a distinctive and perceivable alarm system for emergency action or safe evacuation. - Specific requirements may apply if the alarm system includes telephones/manual operations, the workplace has 10 or fewer employees, or alarms serve more than one purpose. - Ensure that all equipment used for alarm systems is approved and spare components are available. - Test alarms at the frequency required. Follow special safety requirements for testing or restoring alarms.
SOP_14. 8	Use, Storage of Tools and Records maintenance	- Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate - PPEs and Tools associated with the procedures to be stored at Sites/ Site Offices

SOP 14	EMERGENCY RESPONSES AGAINST DISASTERS, ACCIDENTS, BREAKAGES AND COLLAPSE ON SITE/TRANSPORT/STORAGE	
Index No:	**Head**	**Description**
SOP_14. 9	Compliance to regulations/permits	NA
SOP_14. 10	Safety Precautions	- Pre-inspection discussion with site team regarding precautions for emergencies - Appropriate PPEs shall be used for site visits and stock taking
SOP_14. 11	Emergency Preparedness and Response (including PPE/First aid)	- Ensure the availability of first Aid Kits on Site and in Inspection Vehicles - Contact List of Health units, Rescue Vehicles within easy reach - Ensure that medical personnel are ready and available for advice and consultation on the overall employee safety and health condition in the workplace. - Provide trained personnel and adequate first aid supplies to render first aid when a medical facility is not in near proximity to the workplace. - Provide suitable facilities for immediate emergency use if exposure to injurious or corrosive materials is possible.
SOP_14. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	NA
SOP_14. 13	Signage systems and symbols or coding	- General Warning Signages, - Also posters on response mechanisms can be placed, with contact details (in local language and Hindi) 
SOP_14. 14	Details on competent users	This SOP is to be used by EHSS officials, EESL site teams, Regional Manager and Vendors
SOP_14. 15	Training needs	- Adequately train personnel expected to administer first aid. Provide education specific to any equipment employees are expected to use as part of an emergency action plan. Provide training upon initial assignment and at least annually thereafter. - Establish procedures and instruct employees on when and how to sound an alarm and notify emergency personnel, and what each alarm type means. - Review the emergency action plan with each employee when the plan is developed, responsibilities shift, or the emergency procedures change. - Provide training to employees who are expected to assist in the evacuation. - As a host employer, EESL shall clearly communicate emergency action plans with contractors. Contract employers must ensure that their employees are instructed in potential fire, explosion, or toxic release hazards related to their jobs. - Train employees in emergency procedures applicable to their work, such as pole top and manhole rescue. -Train sufficient employees in first aid and CPR, when working on or near exposed lines or equipment at 50 volts or more.
SOP_14. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - UJALA, Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials
SOP_14. 17	Inspection Procedures and Documentation required	Identify possible emergency scenarios based on the nature of the workplace and its surroundings. • Prepare a written emergency action plan. The plan does not need to be written and may be communicated orally if there are 10 or fewer employees (like UJALA kiosks). At a minimum, the plan must include: • The fire and emergency reporting procedures; • Procedures for emergency evacuation, including the type of evacuation and exit routes; • Procedures for those who remain to operate critical operations prior to evacuation; • Procedures to account for employees after evacuation; • Procedures for employees performing rescue and medical duties; and • Names of those to contact for further information or explanation about the plan.
SOP_14. 18	Disposal of scraps and process wastes	As per above procedures & agreed Contract Conditions Suitable receptacles shall be kept on site, without hinderance to movement or traffic; for segregated storage of different types of wastes and construction materials

SOP 14	EMERGENCY RESPONSES AGAINST DISASTERS, ACCIDENTS, BREAKAGES AND COLLAPSE ON SITE/TRANSPORT/STORAGE	
Index No:	**Head**	**Description**
SOP_14. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately B. Protection and Control: 1. Fire Protection (a) Store volatile waste removed during final cleaning in covered metal containers and remove from premises in accordance with local, state and central regulations. (b) Gasoline and fuel oil storage facilities shall be located offsite and maintained in full compliance with local, state and central regulations. 2. Pollution Control: Conduct clean up and disposal operations as required by local, state and central regulations. C. Cleaning Materials: 1. Use only cleaning materials recommended by manufacturer on surfaces to be cleaned., 2. Use cleaning materials only on surfaces and as recommended by the cleaning material manufacturer. D. Scope of Final Clean-Up: 1. General (a). Use experienced workers or professional cleaners for final cleaning activities, (b) Maintain clean work spaces without sharps, rejects and wastes; 2. Remove grease, dirt, dust, stains, labels, fingerprints and other foreign materials from interior and exterior surfaces, 3. Repair, patch and touch up marred surfaces to match surfaces to adjacent finishes, 4. Clean surfaces of equipment; remove excess lubrication. 5. Clean light fixtures and lamps., 6. Remove waste, foreign matter and debris from footpaths, drainage systems and dispose in appropriate points suggested by the local body in closed/covered containers. Ensure proper waste containment at disposal points 7. Remove waste, debris and surplus materials from site. Clean grounds; remove stains, spills and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces. 8. All workplaces should be kept clean and orderly and in a sanitary condition including passageways, storerooms and service rooms. Floors should be clean and dry. 9. Drainage should be present where wet processes are used. 10. Prevent trips, slips and falls especially during emergency operations; by maintaining good housekeeping standards around work spaces, kiosks and ware houses. 11. Eliminate fire hazards, control dust, avoid tracking materials, prevent falling objects, clear clutter 12. Maintain emergency evacuation support vehicle easily accessible to work site, discuss with employees and arrange safe assembly point in case of emergencies
SOP_14. 20	Info and Instructions to be passed on to communities	- To Alert the staff, vendors, site personnel on various emergency situations - To be aware of the mock drills and procedures on site - Special issues in case of emergencies occurring prior to close out like Flooding and Drainage problems (Electrical), heavy winds, stampedes near around areas of installation or operations
SOP_14. 21	Amendment Record (Version No:, Link)	Version 1 (Original) Dated: 30 November 2017

8.5.16 SOP 15: Work Close-out Procedures

SOP 15	WORK CLOSE OUT PROCEDURES	
Index No:	**Head**	**Description**
SOP_15. 1	Purpose	Ensure all work is completed satisfactorily, required documentation is completed and/or received in accordance with contract requirements and effect the project's transition to the Client / Employer
SOP_15. 2	Coverage: Program / Region	UJALA, SLNP Applicable to work sites throughout the country
SOP_15. 3	References	OSHA Field Inspection Reference Manual Available at: https://www.osha.gov/Firm_osha_data/100005.html Accessed on November 2017
SOP_15. 4	Hazard Mapping / Assessment	High Hazard to Communities
SOP_15. 5	Incident Categorisation (may be Classification/ levels)	NA
SOP_15. 6	Suitability and Intended use of the activity, tool or material	Work Close out procedures applies to: (i) all instances of work completion (ii) all instances of emergency close out by the contractor due to various reasons
SOP_15. 7	General Operating Procedures and Best Practices	Prepare and Schedule Work Closeout related meetings and activities as per proposed timetable and adhere
SOP_15. 8	Use, Storage of Tools and Records maintenance	- Records to be maintained at Regional Office of EESL and site offices, submitted to the Client in duplicate - PPEs and Tools associated with the procedures to be stored at Site Offices
SOP_15. 9	Compliance to regulations/permits	All permits and regulations for Transport of Materials and Wastes, Ware House Maintenance, Site Work, Electrical Works to be checked
SOP_15. 10	Safety Precautions	- Pre-inspection discussion with site team regarding precautions - Appropriate PPEs shall be used for site visits and stock taking
SOP_15. 11	Emergency Preparedness and Response (including PPE/First aid)	- Ensure the availability of first Aid Kits on Site and in Inspection Vehicles - Contact List of Health units, Rescue Vehicles within easy reach
SOP_15. 12	Usage monitoring procedures (or protocol for replacement / refurbishment)	NA
SOP_15. 13	Signage systems and symbols or coding	General Warning Signages
SOP_15. 14	Details on competent users	This SOP is to be used by EESL site teams, Regional Manager and Contractors
SOP_15. 15	Training needs	Training to Regional Manager, Site Staff and EHSS Personnel on Inspection Procedures, Discussions & format instructions for Contractors Personnel,
SOP_15. 16	Duties / Responsibilities (with contact details)	EESL: Unit Head - UJALA, Unit Head - SLNP; Respective Regional Managers, Site Supervisors (Give Contact Details), EHSS Officials

SOP 15	WORK CLOSE OUT PROCEDURES	
Index No:	**Head**	**Description**
SOP_15. 17	Inspection Procedures and Documentation required	Walkthrough inspection 1: (Baseline for Closeout: At the beginning of site work) Site engineer, Contractor - Interview with site employees, Discussions on permits/certificates required from various agencies for work initiation, operation and closeout, Prepare schedule and list of items to be removed from various sites during various stages (Daily, weekly, end of work), Inventorying the materials, List of materials to be collected, and wastes types to be removed, Receptacles and special considerations required for general and emergency situations, signages and barricading requirements, information to be passed on to the communities regarding the work, contact persons, emergency situations, warnings Walkthrough inspection 2: (Daily Closeout) Site engineer, Contractor - Work Status and close out daily; check all items stowage off site safely, barricading and signages for any materials or works on site, check items on various sites, Inventorising the materials, reporting near miss-out incidents - Preparation of Punch List: The EESL site team (EESL site supervisor and PMC) shall prepare a punch list before 15 days of work closeout from each site/local body; on determining that the Contractor's work has progressed to the point of Substantial Completion. Punch list of the Contractor's work which shall include items of work remaining to be performed by the Contractor to bring its work into compliance with the requirements of the drawings and/or specifications. Contractor shall proceed promptly to complete and correct items within thirty (15) days of its receipt of the punch list from EESL site team. The site teams failure to include an item of deficiency on the punch list shall not relieve the Contractor of its responsibility to perform its work in accordance with the project drawings and/or specifications. - O&M Instructions: Contractor shall pass on to the Client - on site & in writing: Before 5 days of Work Closeout A. Contractor shall start up, test, adjust, balance and otherwise place in a satisfactory working condition all components of structural, mechanical and electrical systems, and shall fully instruct representatives of Client regarding the care and operation of such systems. B. Contractor shall instruct the Clients Maintenance Supervisor, proper methods of cleaning and maintaining all parts and equipment and replacement of consumable items. - Walkthrough Inspection with Employer / Client 3: (Final Closeout) Regional Manager, Contractors Engineer, Client: Closeout interview with Sub Contractors, Contractors; Check all items and wastes are inventorised, safely and securely stowed, all materials and equipment are removed from the site including screws, nails, ladders, loose wires, construction material, batteries, packaging wastes; and that all records are maintained. Installed poles and systems will be inspected by a licensed professional engineer (PE) or a state or city certified special inspection agency. If deficiencies are found during the inspection, the contractor shall remediate the deficiencies at its cost until satisfying all requirements set forth by the PE or certified special inspection agency and got certified. Check that all operations and maintenance instructions are passed on and assimilated by the authorised clients personal. V. CONTRACT CLOSEOUT DOCUMENTS Conduct Contract Closeout Meeting with the Client and pass on: (i) All documents, certificates, permits, licences as per Contract Conditions, (ii) List of subcontractors and major material suppliers including address, telephone number, and name of contact person, (iii) Validated warranties and notarized copies of all guarantees for equipment and materials specifically called for in the Contract Document (iv) Conformed Construction Drawings (As-Built) including (a) As-Built drawings that reflect all completed construction work shall be provided. These drawings shall incorporate all changes due to addenda modifications, change orders, field conditions and record actual locations of all items on the tracings, clearly and neatly. To be provided in print and AutoCAD 2010 or higher., (b) For all buried construction, three (3) bid sets of blue line prints, checked with licenced engineer, with recorded changes or as specified in the contract. (iv) Three (3) sets of any operating manual, assembled and bound, each containing: a. Explanatory brochures of all equipment, b. Catalogue cut, c. Wiring diagrams, d. Instruction sheets for operation and maintenance.
SOP_15. 18	Disposal of scraps and process wastes	As per above procedures & agreed Contract Conditions Suitable receptacles shall be kept on site, without hinderance to movement or traffic; for segregated storage of different types of wastes and construction materials
SOP_15. 19	Site management	HOUSEKEEPING STANDARDS A. General Housekeeping: Each Contractor shall clean all areas of site and structure (exterior and interior) involved in its respective contract work immediately before final inspection. B. Protection and Control: 1. Fire Protection (a) Store volatile waste removed during final cleaning in covered metal containers and remove from premises in accordance with local, state and central regulations.

SOP 15	WORK CLOSE OUT PROCEDURES	
Index No:	**Head**	**Description**
		(b) Gasoline and fuel oil storage facilities shall be located offsite and maintained in full compliance with local, state and central regulations. 2. Pollution Control: Conduct clean up and disposal operations as required by local, state and central regulations. C. Cleaning Materials: 1. Use only cleaning materials recommended by manufacturer on surfaces to be cleaned., 2. Use cleaning materials only on surfaces and as recommended by the cleaning material manufacturer. D. Scope of Final Clean-Up: 1. General (a). Use experienced workers or professional cleaners for final cleaning activities, (b) Maintain clean work spaces without sharps, rejects and wastes; 2. Remove grease, dirt, dust, stains, labels, fingerprints and other foreign materials from interior and exterior surfaces, 3. Repair, patch and touch up marred surfaces to match surfaces to adjacent finishes, 4. Clean surfaces of equipment; remove excess lubrication. 5. Clean light fixtures and lamps., 6. Remove waste, foreign matter and debris from footpaths, drainage systems and dispose in appropriate points suggested by the local body in closed/covered containers. Ensure proper waste containment at disposal points 7. Remove waste, debris and surplus materials from site. Clean grounds; remove stains, spills and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.
SOP_15. 20	Info and Instructions to be passed on to communities	- To alert on various equipment, sharps, wires abandoned on site - To be aware of the dangers associated with strewn materials and wastes on site - Special issues in case of emergencies occurring prior to close out like Flooding and Drainage problems (Electrical), heavy winds, stampedes near around areas of installation or operations - Suggested Grievance Reporting Mechanisms
SOP_15. 21	Amendment Record (Version No:, Link)	Version 1 (Original) Dated: 30 November 2017

9 Guidance on Projects which need Specific EAs

The projects components under UJALA and SLNP are categorised as E_b and E_c as explained in Chapter 3 of this report. All the identified impacts for E_c category are manageable through various mitigation measures outlined in Chapter 7. As per the screening, project identified in E_b category will carry out Environmental Assessment as per give process below.

9.1 Environmental Assessment Procedure

As identified in the earlier sections, EA for sub-projects shall be prepared by independent consultants other than DPR consultants for E_b category sub-projects, the EA shall be prepared as part of the DPR preparation. The key elements of EA shall include,

- Evaluation of project's potential environmental risks and impacts in the project area of influence, examines the alternatives, and identifies measures to mitigate the environmental impacts and improvement of benefits throughout project implementation. Wherever feasible, preventive measures would be undertaken.
- The opinion of the stakeholders and public shall be incorporated in the project through specific public consultations with prior notice.
- In addition, the draft EA shall be made available in a public place accessible to affected groups and local NGOs.
- Implications of the available legislations and regulatory requirements and the requirements of the operational policies of the World Bank are also to be reviewed as part of the EA. The EA report shall meet the requirements of national and state level legislations. All necessary clearances shall be obtained for EA, as applicable. The EA report shall include an Executive summary, Introduction / Project background, Project Description including review of alternatives, Review of Legislations, Baseline environmental conditions, Impact Evaluation, Public consultation details, and Environmental Management Plan.

9.2 Guidance on Preparation of Environmental Management Plan

The management measures identified shall be made part of the project components and shall be included in the bid documents appropriately. The EMP will be integrated into the Detailed Project Report and Sub-project bid documents. Apart from addressing the issues, management measures shall also explore enhancement opportunities and their inclusion in project components would be ensured.

The management plan shall consider various activities proposed under the project and provide management measures to be followed for different phases of implementation, along with the responsibility allocation for implementation and Monitoring plan. Generic Environmental Management Plan is provided in Chapter 7 which can be used as guideline. The cost for implementation of the management measures, the institutional arrangements for monitoring are to be included in the budgeted project cost.

10 Institutional Mechanism

10.1 Existing Institutional Setup for Environmental Aspects: UJALA and SLNP

Program-wise institutional responsibility and management procedures for Environmental aspects is presented in Table 10.1 below. It indicates that (i) EESL undertakes bulk procurement, incorporating certain conditions regarding product quality and worker safety during installations in its agreements with direct vendors, (ii) makes the disposal of replaced products the responsibility of the producer or vendor and (iii) arranges replacements and grievance redressal and (iv) arranges the services of a Project Management Unit at State level to coordinate and oversee the implementation and O&M.

Table 10.1: Institutional responsibility and Management

Program	Responsibility	Present Role in Environment management
UJALA Program	EESL	Bulk procurement and distribution of energy efficient appliances Specific lighting quality related clauses for products and random checks Started incorporating general Bid/contract conditions on replacement of defective bulbs, tube lights and ceiling fans, waste disposal, work safety Grievance redressal Permits and regulatory compliance
	State, PCBs or DISCOM	Nil. (No permissions, licences taken)
	Bulk Supplier/ Selected bidder for supply of appliances	Replaces defective stock, Agreement with CPCB registered Common Hazardous Waste Disposal units for disposal of such waste
	Distribution Agency (who is usually an authorized dealer of the selected bidder) and (who in most cases acts through a Sub-contractor (Man Power Consultant))	Nil
	Replacement Agency (sometimes the distribution agency itself)	Stores packaging wastes and defective bulbs, tube lights and ceiling fans till further collection by Bulk supplier
	Consumers	Storage and end of life disposal
SLNP	EESL	Bulk procurement and distribution of energy efficient appliances Specific lighting quality related clauses for products and random checks (including pole to pole distances) Started incorporating general Bid/contract conditions on waste disposal, work safety Grievance redressal.
	Local Body (Urban or Rural)	Stores and Disposes all metal and scrap wastes through auction organized through recyclers or Material and Scrap Trading Corporation

Program	Responsibility	Present Role in Environment management
		(MSTC) of India[12]. As per the latest arrangements, EESL mandates their vendors (through contract conditions) to buy back the replaced street lights. The vendors in turn recycle these as per EPR provisions under E-waste rules, 2016. This arrangement is found to be revenue generating for the vendors.
	State	Agreement on deemed savings
	Bulk Producer/ Selected bidder for supply of appliances	General Bid/contract conditions on replacement waste disposal, work safety
	Vendor / Contractors for Installation, Maintenance and Repairs (who is usually an authorized dealer of the selected bidder) and Sub contractors if any	Arranges safety equipment and PPEs for workers, Transports wastes to the storage area suggested by the Local body
	Project implementation Support Unit	Oversees installation, maintenance, grievance redressal

10.2 Proposed Institutional Arrangements

Currently, EESL has designated two of their technical staff; one a trained environmental professional and another a technical (electrical engineer) professional with good background

[12] Under SLNP, wastes are managed by Local Bodies. As per Twelfth Schedule: Article 243 of Indian Constitution, Public Amenities including street lighting is the responsibility of Local Bodies. Street lights are installed by Local bodies and are under their listed assets. Hence, after replacing the streetlights with LEDs, the original light is returned to the owner (Local body). As per E-Waste rules; **Responsibilities of consumer or bulk consumer:** Consumers or bulk consumers of electrical and electronic equipment shall ensure that e-waste generated by them is channelised through collection centre or dealer of authorized producer or dismantler or recycler or through the designated take back service provider of the producer to authorised dismantler or recycler (Refer Page 8 of E-Waste Rules 2016)

In addition, the E-Waste Rules also directs Urban Local Bodies (Municipal Committee or Council or Corporation) (i) To ensure that e-waste if found to be mixed with Municipal Solid Waste is properly segregated, collected and is channelised to authorised dismantler or recycler, (ii) To ensure that e-waste pertaining to orphan products is collected and channelised to authorised dismantler or recycler. However, this will not be applicable under the project as the project does not allow orphan products.

As per the latest arrangements, EESL mandates their vendors (through contract conditions) to buy back the replaced street lights (please refer Table 2, Page 34 of ESSA on institutional arrangements for various operations of EESL). The vendors in turn recycle these as per EPR provisions under E-waste rules, 2016. This arrangement is found to be revenue generating for the vendors.

on environment related aspects of EESL operations as EHSS officials. This EMF has been prepared based on discussions with the EHSS officials, in addition to site and office program staff. These officials shall be capacitated to take on the implementation of environment management framework initially with handholding and training. EESL has already entrusted a short-term consultant to disseminate EHSS among their staff, vendors and contractors with immediate effect (first quarter of 2018). EESL has also proactively incorporated suitable EHSS clauses in contract documents to ensure effective management of environmental risks and impacts.

Considering the specialised technical aspects required to monitor the environmental aspects a Sustainable Development Unit is suggested to be part of the EESL setup. The SDU is proposed to staffed with one Environmental Expert, one Social Expert and one Training and Capacity Building Expert. The SDU is expected to be in place by third quarter of 2018 itself.

This unit would be primarily responsible for coordinating, streamlining and mainstreaming environment aspects in EESL's various operations, and regularly reporting to EESL management on key issues. It is essential that this department is adequately staffed by professionals of relevant academic and professional experience, such as environmental sciences, environmental law, development and community outreach.

Tasks or activities which would fall under the purview of such a department would include:

- Update EHSS Guidelines and manuals to ensure full coverage of all EESL various programs. EHSS, which is currently a static document covering some of the Environmental issues associated with UJALA and Street Lighting Program of EESL, shall be updated to cover all environmental risks and mitigation plans for each, and transforming it into a "living document."
- Develop plans for operationalization of EHSS Guidelines. Prepare Program Implementation Plan for Streamlining environmental aspects for each Program in co-ordination with experts, Local Bodies, consumers, line departments and other stakeholders (as applicable) with Rapid Environmental Screening, Contingency Plan & Emergency Response mechanism prior to initiating the works. This would also include the incorporation of key environmental provisions and implementation responsibility into the contractual framework with EESL contractors, vendors and implementation partners.
- Development of staff and contractor capacity in relation to EHSS. The department would develop and deliver training EESL program, operational, technical and contractual staff. Provide or arrange Information, Education and Communication (IEC) and Training to all levels of staff, communities, Local Bodies and contractors on Safe Handling and Disposal Practices. Train officials at site for optimal operations minimizing multiple levels of sub- contracting and time delays. Monitor staff awareness of EHSS with periodic surveys.
- Monitor the implementation of EHSS guidelines, and prepare bi-annual report on implementation performance, strengths, weaknesses and to be delivered directly to EESL.
- Periodical reporting to EESL management on key EHSS implementation, compliance, training actions and any challenges related to specific programs or institutional capacity.
- Co-ordinate various regulatory procedures (also for new greenfield projects involving land based activities) and ensure support from Producers Associations, Certified Recyclers even during emergencies

- Include site specific Contract conditions to Vendors/Suppliers / Contractors to ensure compliance with all applicable Rules and Laws.
- Check permits and ensure tender conditions on safe storage, handling, transporting, recycling and disposal to Suppliers, Recyclers and Disposal agencies
- Check permits at warehouse – building permit, fire NOC, trade license;
- Incorporate considerations related to environmental Issues due to the, operations, Wastes and placement decisions into the Grievance Redressal Mechanism
- Introduce Supervision and Monitoring Mechanisms and Ratings on Environmental
- Aspects including, facilities & housekeeping, labour facilities and safety, noise & vibration
- Prepare Maintenance and Service Charters and supervising its implementation
- Improve outreach to socio-economically vulnerable groups and locations, coordinating with various regional and site offices of EESL.
- Monitor the implementation of corporate diversity and inclusion targets, and track diversity and inclusion performance within the organization (opportunities, facilities). This may also include monitoring, facilitating and encouraging employment of women by vendors and contractors where feasible.

For the above recommended tasks, the following Professionals are required. Specific skillsets or functional areas required are also mentioned in the Figure 10.1 below.

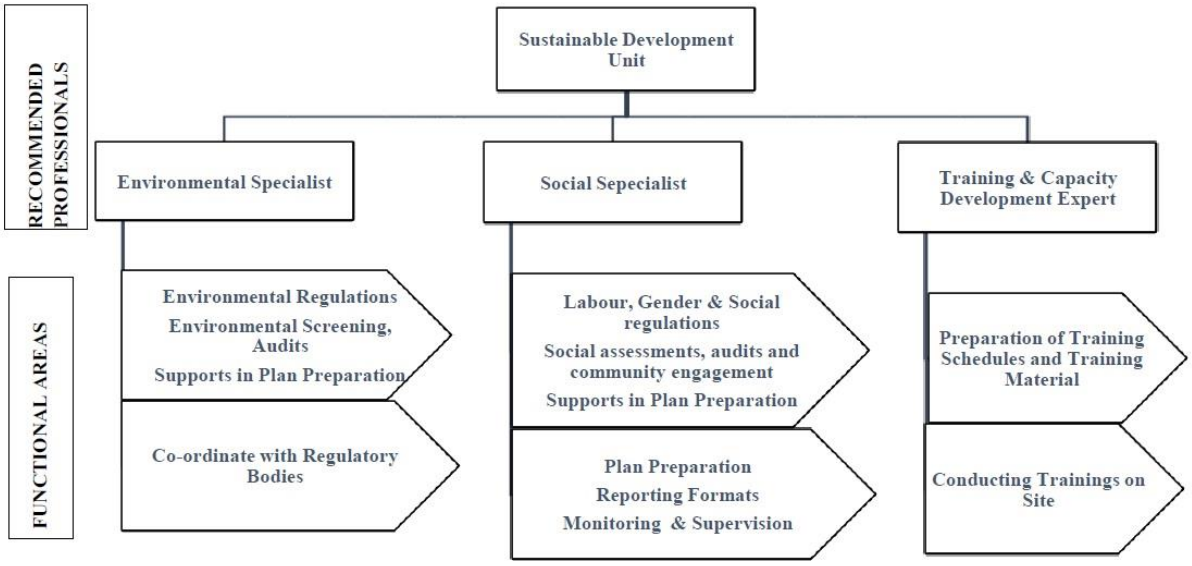


Figure 10.1: Outline of the proposed SDU

10.3 Budgetary provision

For establishing and maintaining the SDU, budgetary provisions for various activities will be required. These activities include: manpower, capacity-building & training, services of advisers/consultants/ experts for specific tasks and any special studies that need to be done to influence the municipal reform process. This is going to cost to EESL

The costs for measurable quantities in EMP shall be added into the capital costs of respective sub-projects. However, costs of un-measurable items and Resettlement and rehabilitation if any, will be reflected in the BoQ as the case may be and implementation of environmental

mitigation measures will be included in the capital cost of respective sub project. The cost give in Table 10.2 is excluding staff salaries and expense of SDU unit.

Table 10.2: Proposed Budget

Activity	Level of participants	Proposed budget (INR)	
Training and Orientation Program	SDU, Project Engineers of EESL, Project Managers of Each Contract	One workshop with two external experts and 50 participants, in each state once in a year	20[13] x 3 Lakhs = 60 Lakhs
Environmental Audit	Biannual audit of each subprojects	Assuming 10 projects a year	20 x 5 lakhs = 100 lakhs
Exposure visits/ Experience sharing workshops	EESL staff / selected contractors	20 participants in 2 groups in a year	2 x 15 lakhs = 30 lakhs
Total		INR 190.00 lacs	

10.4 Auditing EMP Implementation

10.4.1 Auditing Guidelines

In case E_b category projects the EA study would highlight the mitigation measures and methodology for auditing. In case of E_c category the Table 7.1 and 7.2 provides with general mitigation measures and type of reporting to be submitted by the contractor. There are total four types of reports expected from contractor in UJALA namely a. Logistics Plan, b. Vehicle Management Plan, c. Warehouse Management Plan and d. Kiosk Design. In SLNP program four types of reports expected from contractor namely a. Logistics Plan, b. Vehicle Management Plan, c. Warehouse Management Plan and d. Construction Management Plan.

Depending upon the component to be audited auditing frequency is mentioned for each component. The detailed contains of the plan and auditing requirement is provided in Annexure V and VI for UJALA and SLNP respectively.

10.4.2 Auditing Procedures

A separate auditing agency would be hired by SDU for supervision of implementation of the environmental management plan. The above mentioned reports would be submitted to the auditing agency and SDU at the given frequency. Auditing agency would be responsible to check the accuracy and consistency of the reports through document verification and if needed site visit. SDU can choose to do random check through site visit.

[13] Although there are 29 states and 7 union territories it is assumed that in a year around 20 of them would be active.

ANNEXURES

Annexure I: List of Environmental Sensitive Areas

State	Environmental sensitivities [14] [15] [16] [17] [18]											List of critically polluted areas as per CPCB
	National Parks	Wildlife Sanctuaries	Core Biosphere reserve	Ramsar sites	Major estuaries in coastal areas	Elephant Reserves	Marine protected areas	Potential Important Bird Areas	Gangetic Dolphin Sanctuary	Gharial Wildlife Sanctuary	Tiger reserves	
Andaman and Nicobar	9	96	1									
Andhra Pradesh	6	21		1	3	1	3	1			1	2
Arunachal Pradesh	2	11	1			2		5			1	
Assam	5	18	2	1		5		10			3	
Bihar	1	12						4	1		1	
Chhattisgarh	3	11	1					2			3	1
Dadar and Nagar Haveli	0	1					1					
Daman and Diu	0	1					1					
Delhi	0	1										
Goa	1	6						3				
Gujarat	4	23		1	14		3					6
Haryana	2	8						1				2
Himachal Pradesh	5	32		3				5				
Jammu and Kashmir	4	15						7				
Jharkhand	1	11				1		4			1	1
Karnataka	5	22	1		2	1		4			4	2

[14] Protected area network in India published by MoEF and CC
[15] Centre for Coastal Zone Management and Coastal Shelter Belt
[16] ENVIS Centre on Wildlife & Protected Areas
[17] National Tiger Conservation Authority
[18] ENVIS Centre on Control of Pollution Water, Air and Noise

State	Environmental sensitivities [14 15 16 17 18]											List of critically polluted areas as per CPCB
	National Parks	Wildlife Sanctuaries	Core Biosphere reserve	Ramsar sites	Major estuaries in coastal areas	Elephant Reserves	Marine protected areas	Potential Important Bird Areas	Gangetic Dolphin Sanctuary	Gharial Wildlife Sanctuary	Tiger reserves	
Kerala	6	16	1	3	1	4	1	9			2	1
Lakshadweep	0	1						1				
Madhya Pradesh	9	25	3	1				2		1	6	1
Maharashtra	6	35			2		2	7			4	5
Manipur	1	1						2			1	
Meghalaya	2	3	1			1						
Mizoram	2	8						1			1	
Nagaland	1	3				1		1				
Odisha	2	18	1	2	1	3	5	1			2	3
Pondicherry	0	1										
Punjab	0	12		3				1				2
Rajasthan	5	25		2				8			2	3
Sikkim	1	7	1									
Tamil Nadu	5	21	1	1	3	4	3	5			3	4
Telangana	0	0										
Tripura	2	4		1				1				
Uttar Pradesh	1	23		1				6			1	6
Uttarakhand	6	6	1			1		4			1	
West Bengal	5	15	1	1	1	2	5				2	3

Annexure II: List of Archaeological Properties

State	Archaeological monuments	State	Archaeological monuments
Andhra Pradesh	8	Madhya Pradesh	292
Arunachal Pradesh	5	Maharashtra	217
Assam	55	Manipur	1
Bihar	70	Meghalaya	8
Chhattisgarh	47	Mizoram	1
Dadar and Nagar Haveli	0	Nagaland	4
Daman and Diu	12	Odisha	78
Delhi	174	Pondicherry	7
Goa	21	Punjab	33
Gujarat	202	Rajasthan	163
Haryana	91	Sikkim	3
Himachal Pradesh	40	Tamil Nadu	413
Jammu and Kashmir	69	Tripura	8
Jharkhand	12	Uttar Pradesh	742
Karnataka	506	Uttarakhand	44
Kerala	26	West Bengal	134

Annexure III: E-waste and hazardous waste handling infrastructure

State	No. of CHWTSDF	No. of CPCB/ SPCB registered E Waste recyclers
Maharashtra	4	32
Madhya Pradesh	1	3
Chhattisgarh	0	2
Gujarat	8	12
Haryana	0	16
Karnataka	1	57
Odisha	0	1
Punjab	1	1
Rajasthan	1	10
Tamil Nadu	1	14
Telangana	0	4
Uttar Pradesh	3	22
Uttarakhand	1	3
West Bengal	1	1
Kerala	1	0
Andaman and Nicobar	0	0
Assam	0	0
Meghalaya	0	0
Sikkim	0	0
Arunachal Pradesh	0	0
Andhra Pradesh	2	0
Bihar	0	0
Jharkhand	0	0
Mizoram	0	0
Goa	0	6[19]
Himachal Pradesh	12	0
Jammu and Kashmir	0	0
Manipur	0	0
Nagaland	0	0
Tripura	0	0
Dadra and Nagar Haveli	0	0
Lakshadweep	0	0
Daman and Diu	1	0
Delhi	0	29[20]
Puducherry	0	3[21]

[19] http://goaspcb.gov.in/Media/Default/uploads/Registration_under_E-waste.pdf
[20] https://www.dpcc.delhigovt.nic.in/ewaste-action.html
[21] http://dste.puducherry.gov.in/Details_E-Waste_Collection_Centres_Puducherry.pdf

Annexure IV: Notable Natural Disasters[22]

S. No.	Name of Event	Year	State & Area	Fatalities
1	Flood and Heavy Rains	July -15	Rajasthan	38 people died
2.	Flood and heavy rains	June ,July -15	Gujarat	71 people died in July 80 people died in June
3	Lightning	Oct -15	Maharashtra	32 people died
4	Flood and Heavy Rains	Nov15 to Dec-15	Tamil Nadu	350 people died
5	Flood and Heavy Rains	June-15 to July -15	Sikkim	41 people died
6	Thunderstorm Earthquake	April -15	Bihar	65 people died 50 people died
7	Flood and heavy rains	Aug -15 to Sept -15	Assam	41 people died
8	Flood and heavy rains	July-15 to Aug-15	West Bengal	70 people died
9	Lightning Heat Wave	Apr-15 to Aug-15 May-15	Odisha	240 people died 36 people died
10	Heat Wave	May-15 to June -15	Telangana	580 people died
11	Heat Wave Flood and Heavy Rains	May-15 to June-15 Nov -15 to Dec-15	Andhra Pradesh	1400 people died 50 people died
12	Floods	Oct-14	Jammu & Kashmir	
13	Cyclone Hud Hud	Sep-14	Andhra Pradesh & Odisha	
14	Odisha Floods	Oct-13	Odisha	21
15	Andhra Floods	Oct-13	Andhra Pradesh	53
16	Cyclone Phailin	Oct-13	Odisha and Andhra Pradesh	23
17	Floods/Landslides	Jun-13	Uttarakhand and Himachal Pradesh	4,094
18	Cyclone Mahasen	May-13	Tamil Nadu	8

[22] http://www.ndma.gov.in/en/disaster-data-statistics.html and http://www.imdpune.gov.in/Links/annual%20summary%202015.pdf

S. No.	Name of Event	Year	State & Area	Fatalities
19	Cyclone Nilam	Oct-12	Tamil Nadu	65
20	Uttarakhand Floods	Aug – Sep 2012	Uttarkashi, Rudraprayag and Bageshwar	52
21	Assam Floods	July – Aug 2012	Assam	---
22	Cyclone Thane	Dec-11	Tamil Nadu, Puducherry	47
23	Sikkim Earthquake	Sep-11	Sikkim, West Bengal, Bihar	60
24	Odisha Floods	Sep-11	19 Districts of Odisha	45
25	Sikkim Earthquake	2011	North Eastern India with epicentre near Nepal Border and Sikkim	97 people died (75 in Sikkim)
26	Cloudburst	2010	Leh, Ladakh in J&K	257 people died
27	Drought	2009	252 Districts in 10 States	-----
28	Krishna floods	2009	Andhra Pradesh, Karnataka	300 people died
29	Kosi Floods	2008	North Bihar	527 deaths, 19,323 livestock perished, 2,23,000 houses damaged, 3.3 million persons affected
30	Cyclone Nisha	2008	Tamil Nadu	204 deaths
31	Maharashtra Floods	Jul-05	Maharashtra State	1094 deaths
				167 injured
				54 missing
32	Kashmir	2005	Mostly Pakistan, Partially Kashmir	1400 deaths in Kashmir (86,000 deaths in total)
33	Tsunami	2004	Coastline of Tamil Nadu, Kerala, Andhra Pradesh, Pondicherry and Andaman and Nicobar Islands of India	10,749 deaths
				5,640 persons missing
				2.79 million people affected
				11,827 hectares of crops damaged
				300,000 fisher folk lost their livelihood
34	Gujarat Earthquake	2001		13,805 deaths

S. No.	Name of Event	Year	State & Area	Fatalities
			Rapar, Bhuj, Bhachau, Anjar, Ahmedabad and Surat in Gujarat State	6.3 million people affected
35	Orissa Super Cyclone	1999	Orissa	Over 10,000 deaths
36	Cyclone	1996	Andhra Pradesh	1,000 people died, 5,80,000 housed destroyed, Rs. 20.26 billion estimated damage
37	Latur Earthquake	1993	Latur, Marathwada region of Maharashtra	7,928 people died
				30,000 injured
38	Cyclone	1990	Andhra Pradesh	967 people died, 435,000 acres of land affected
39	Drought	1987	15 States	300 million people affected
40	Cyclone	1977	Andhra Pradesh	10,000 deaths
				hundreds of thousands homeless
				40,000 cattle deaths
41	Drought	1972	Large part of the country	200 million people affected

Annexure IV: Audit Program for UJALA

Logistics Plan	**Audit Frequency**
Selection of shortest routes for transportation	Once, within one month from award of contract
Warehouses and kiosks to be placed in appropriate locations	
Ecological sensitive areas***** to be identified in route (*****Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves, Eco Sensitive Zone of Protected Forests, coastal areas within Mangroves, Sand Dunes Salt Marshes, High Tide Line ,Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance, Important Bird Areas, Natural Habitats, Critical Natural Habitats as defined by OP 4.04 Regional environment sector unit (RESU)/ Environmental Cell, Physical Cultural Resources site, Archaeological Properties as defined by Archaeological Survey of India, National/local level pilgrimages/ mass gatherings, 1km upstream of any important water body, Urban areas with unique urban design or features as identified by Local Body/Environment Cell)	
Placing of emergency standby vehicle for support and recovery of waste material from the site	
Transportation Plan	
Ecological sensitive areas***** to be identified in route (*****Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves, Eco Sensitive Zone of Protected Forests, coastal areas within Mangroves, Sand Dunes Salt Marshes, High Tide Line ,Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance, Important Bird Areas, Natural Habitats, Critical Natural Habitats as defined by OP 4.04 Regional environment sector unit (RESU)/ Environmental Cell, Physical Cultural Resources site, Archaeological Properties as defined by Archaeological Survey of India, National/local level pilgrimages/ mass gatherings, 1km upstream of any important water body, Urban areas with unique urban design or features as identified by Local Body/Environment Cell)	
Placing of emergency standby vehicle for support and recovery of waste material from the site	
Local restrictions at residential areas, no-parking areas, schools, hospitals, silent zones, no-honking timings etc to be identified	

Vehicle Management Plan	Audit Frequency
Vehicle Specification Report including ❖ Vehicle Registration Year (Vehicle should not be more than 15 years old) ❖ Deployment of vehicle to meet with the latest emissions norms ❖ Pollution Under Control Certificate ❖ Manufacturer Authorised Service Stations receipts	Monthly
Vehicle to operate avoiding night time operation near residential areas and traffic congestion time on busy routes	

Warehouse Management Plan	Audit Frequency
Fire NOC from concerned authority	Yearly
Emergency response mechanism & fire prevention measures	6 Monthly EHS Audit
Equipment to be placed as per Fire NOC obtained and emergency response procedures	
Use of silent DG sets of adequate capacity or DG sets to be placed in acoustic enclosure at a location that provides sufficient height for the Chimney as per Central Pollution Control Board norms	
DG set fuel storage to be placed separately keeping away from all electrical equipment and sockets	
Provision of Oil and Grease trap	
Collected oil to be sold to authorised Oil Recyclers (Tie up with authorised oil recyclers)	Monthly Basis audit to be arranged to check if waste has been handling properly
Adequate parking space for vehicle to be provided to avoid honking and idling as per vehicle movement plan	Monthly
Provision of dedicated space for vehicle parking and DG set fuel store on impervious surface (preferably Plain Cement Concrete 75mm to 100mm thick) covered with 150 mm of sand which can be washed afterwards to remove oil from it in oil and grease trap	
Dedicated storage space for collection of broken/ returned LED bulbs, tube lights and ceiling fans which would be collected in labelled containers/ boxes	
Specific instruction for safe handling of LED bulbs, tube lights and ceiling fans to be prepared	6 Monthly EHS Audit

Warehouse Management Plan	Audit Frequency
Daily reporting format for inventory of bulbs, tube lights and ceiling fans broken in transit bulbs returned by consumers, bulbs, tube lights and ceiling fans in stock and bulbs, tube lights and ceiling fans sent to supplier	Weekly Basis inventory to be maintained
Procedure for handling broken lamps	
PPE for handling broken lamps	6 Monthly EHS Audit

Kiosk Design	Audit Frequency
The kiosk should be designed as per local climatic conditions especially in extreme weather locations with fire safety precautions	Once
The kiosk should have waste bins for storing returned LED bulbs, tube lights and ceiling fans, paper and packaging waste	Daily Basis inventory to be maintained
The kiosk should be designed so as the supplied LED bulbs, tube lights and ceiling fans do not get damaged due to handling or moisture	Daily Basis inventory to be maintained
Separate bins are to be provided for collecting storing returned LED bulbs, tube lights and ceiling fans, paper and packaging waste, recyclable waste and broken/ returned bulbs and its capacity	
Inventory of bulbs, tube lights and ceiling fans broken in transit, bulbs, tube lights and ceiling fans returned by consumers, and bulbs, tube lights and ceiling fans sent to warehouse	
Fire NOC from the concerned authority	Yearly
Kiosk should not be located in ecological sensitive* locations (*****Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves, Eco Sensitive Zone of Protected Forests, coastal areas within Mangroves, Sand Dunes Salt Marshes, High Tide Line ,Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance, Important Bird Areas, Natural Habitats, Critical Natural Habitats as defined by OP 4.04 Regional environment sector unit (RESU)/ Environmental Cell, Physical Cultural Resources site, Archaeological Properties as defined by Archaeological Survey of India, National/local level pilgrimages/ mass gatherings, 1km upstream of any important water body, Urban areas with unique urban design or features as identified by Local Body/Environment Cell)	Affidavit confirming the mitigation measures of Ecology and Biodiversity in a tabular format including inventory of Amber Lights and Full Cut Off Luminaries, type of environmental conditions and locational details to be submitted within one month of awarded contract
Audit of Discom office for fire prevention measures (In case Discom office is working as a distribution kiosk)	6 monthly or as per Discom's procedure

Annexure V: Audit Program for SLNP

Logistics Plan	**Audit Frequency**
Selection of shortest routes for transportation	Once, Within one month from award of the contract
Warehouses to be placed in appropriate locations	
Ecological sensitive areas***** to be identified in route (*****Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves, Eco Sensitive Zone of Protected Forests, coastal areas within Mangroves, Sand Dunes Salt Marshes, High Tide Line ,Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance, Important Bird Areas, Natural Habitats, Critical Natural Habitats as defined by OP 4.04 Regional environment sector unit (RESU)/ Environmental Cell, Physical Cultural Resources site, Archaeological Properties as defined by Archaeological Survey of India, National/local level pilgrimages/ mass gatherings, 1km upstream of any important water body, Urban areas with unique urban design or features as identified by Local Body/Environment Cell)	
Placing of emergency standby vehicle for support and recovery of waste material from the site	
Transportation should include	
Ecological sensitive areas***** to be identified in route (*****Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves, Eco Sensitive Zone of Protected Forests, coastal areas within Mangroves, Sand Dunes Salt Marshes, High Tide Line ,Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance, Important Bird Areas, Natural Habitats, Critical Natural Habitats as defined by OP 4.04 Regional environment sector unit (RESU)/ Environmental Cell, Physical Cultural Resources site, Archaeological Properties as defined by Archaeological Survey of India, National/local level pilgrimages/ mass gatherings, 1km upstream of any important water body, Urban areas with unique urban design or features as identified by Local Body/Environment Cell)	
Placing of emergency standby vehicle for support and recovery of waste material from the site	
Local restrictions at residential areas, no-parking areas, schools, hospitals, silent zones, no-honking timings etc. to be identified	

Vehicle Maintenance Plan	Audit Frequency
Vehicle Specification Report including ❖ Vehicle Registration Year (Vehicle should not be more than 15 years old) ❖ Deployment of vehicle to meet with the latest emissions norms ❖ Pollution Under Control Certificate ❖ Manufacturer Authorised Service Stations receipts ❖ Vehicle Maintenance Plan to be prepared for the regular maintenance of the vehicles ❖ Cushioning to be provided inside the vehicle to prevent damage during transport	Monthly Traffic Audit Monthly Traffic Audit
Vehicle to operate avoiding night time operation near residential areas and traffic congestion time on busy routes	
Vehicle Specification Report: ❖ Vehicle Registration Year (Vehicle should not be more than 15 years old) ❖ Deployment of vehicle to meet with the latest emissions norms ❖ Pollution Under Control Certificate ❖ Manufacturer Authorised Service Stations receipts ❖ Vehicle Maintenance Plan to be prepared for the regular maintenance of the vehicles ❖ Site specific Traffic management plan to be prepared for the operations using SOP ❖ Cushioning to be provided inside the vehicle to prevent damage during transport	

Warehouse Management Plan	Audit Frequency
Fire NOC from concerned authority	Yearly
Emergency response mechanism & fire prevention measures	6 Monthly EHS Audit
Equipment to be placed as per Fire NOC obtained and emergency response procedures	
Use of silent DG sets of adequate capacity or DG sets to be placed in acoustic enclosure at a location that provides sufficient height for the Chimney as per Central Pollution Control Board norms	
DG set fuel storage to be placed separately keeping away from all electrical equipment and sockets	
Provision of dedicated space for vehicle parking and DG set fuel store on impervious surface (preferably Plain Cement Concrete 75mm to 100mm thick) covered with 150 mm of sand which can be washed afterwards to remove oil from it in oil and grease trap	
Provision of Oil and Grease trap	

Warehouse Management Plan	Audit Frequency
Collected oil to be sold to authorised Oil Recyclers (Tie up with authorised oil recyclers)	Monthly Basis audit to be arranged to check if waste has been handling properly
Adequate parking space for vehicle to be provided to avoid honking and idling as per vehicle movement plan	Monthly Audit
Dedicated storage space for collection of broken/ returned LED bulbs which would be collected in labelled containers/ boxes	
Specific instruction for safe handling of LED bulbs to be prepared	6 Monthly EHS Audit
Weekly reporting format for inventory of bulbs broken in transit bulbs returned by consumers, bulbs in stock and bulbs sent to supplier	Weekly Basis inventory to be maintained
Procedure for handling broken lamps	
PPE for handling broken lamps	6 Monthly EHS Audit

Construction Management Plan	Audit Frequency
Material storage area to be located in relevance to the surrounding roads, common property resources etc	6 Monthly EHS Audit
Restricted vehicle moment on the roads where the luminaries are being changed or new poles are being erected to avoid disturbance to the community during the activity	
Safety procedures to be prepared for working at confined spaces, safety procedures for handling of hazardous materials	
Use of adequate personal protective equipment (PPEs) such as hard hats, ear plugs, safety boots, hand gloves, safety glasses, safety harness for working at heights	
Use of suitable masks for reducing exposure to dust emissions and toxic fumes on site	
Site specific Traffic management plan to be prepared for the operations using SOP	Monthly
Locations or areas to be identified prior commencement of work to avoid to cut / transplant of trees	Once, within one month of the contract award
Permission from relevant authority regarding Tree Cutting	
Avoid putting new poles within the premises of an historically and culturally important place	
Permission from Local Body, trust looking after the operations or any relevant authority before putting new poles/ luminaries	
Provision of LED bulb/ luminary to maintain the same light colour as previously existed	
Installation of Full Cut Off luminary (no light emitted above horizontal) as defined in BIS 1981 to ensure ensuring that the luminary is placed exactly horizontal to the surface of the street below and not at an angle	

Construction Management Plan	Audit Frequency
Installation of Full Cut Off luminary type of cultural conditions and locational details* (*****Reserve Forest, Protected Forests, National Parks, Wild Life Sanctuaries, Core Biosphere reserves, Eco Sensitive Zone of Protected Forests, coastal areas within Mangroves, Sand Dunes Salt Marshes, High Tide Line ,Wetlands as defined by the Wetland Atlas of India and Wetlands of International Importance, Important Bird Areas, Natural Habitats, Critical Natural Habitats as defined by OP 4.04 Regional environment sector unit (RESU)/ Environmental Cell, Physical Cultural Resources site, Archaeological Properties as defined by Archaeological Survey of India, National/local level pilgrimages/ mass gatherings, 1km upstream of any important water body, Urban areas with unique urban design or features as identified by Local Body/Environment Cell)	
Location to be provided for collection bins (5 separate bins/ boxes) of categorised waste like Hazardous, E – Waste, Reusable (old bulbs/ luminaries), Recyclable and Inert types	Monthly basis audit to be arranged to check if waste has been handling properly
Provision of in HDPI drums for Hazardous waste	
Agreement with waste management agency for all types of waste	
Chain of custody ((going Local Body/ being taken back by lighting agency) of the old bulbs and luminary along with inventory maintained	Daily Basis inventory to be maintained
Working in rainy days should be avoided if erecting pole/ excavation for cabling work is crossing or touching natural water body	During pole erection
Silt fencing/ geotextile to be used to prevent lose soil entering water bodies	
Reduction or minimization of usage of DG set in pole erection activity	
Water sprinklers to be provided to Spray water during vehicle moment/ pole erection	Daily basis water sprinkling activity