

**ENVIRONMENTAL MANUAL**  
**FOR ENERGY SAVING**  
**STREETLIGHTING PROJECT**  
  
**FOR**  
  
**AJMER MUNICIPAL**  
**CORPORATION**

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## **1.1 EXECUTIVE SUMMARY**

The existing HPSV & HPMV fixtures that light the roads are provided by the multi company and do not light the walkway sufficiently enough to meet Corporation safety standards .

In support of the much required energy conservation measures the Municipal Corporation of Ajmer decided to replace old Sodium Vapour & FTL lamps with new T-5 energy saving street lighting fixtures in entire city.

No significant long-term losses or impacts to resources are anticipated with this project.

While this project will be located near historic structures, no structures or other historic resources are expected to be significantly impacted.

Disturbance of existing trees and shrubs will be avoided. Impacts to vehicle traffic in the area are expected to be moderate during installation and care already had been taken for that.

The directions of traffic flow through the site during installation were coordinated with the City of Ajmer. After completion, there will be no vehicle traffic impacts.

The proposed project will not generate significant demands on natural resources of the immediate or surrounding area.

This area is also not a significant wildlife habitat as it consists of paved streets and walkways, and lawn and landscaped areas.

AEL will incorporate the Commonwealth's pollution prevention policies in the construction of this project. During construction, the contractor will take the necessary measures to limit the short-term impacts. This will include noise, storm water, sediment, and erosion controls. The disposal of any hazardous wastes generated is managed by AEL and/or its subcontractors in compliance with pertinent Municipal and State regulations.

## **1.2 PROJECT OVERVIEW & DESCRIPTION OF THE PROJECT ACTIVITY:**

The purpose of the project activity is to implement street lighting improvements as a Demand-side Management (DSM) strategy to save electricity consumption and reduce municipalities' energy budget using performance contracting under ESCO business.

Public street lighting represents a significant load for India. It is the responsibility of the municipal Corporations and the state electricity boards to provide this service to the country. In several municipalities, the electricity required for this service is not metered, providing little incentive for system improvement. Street lighting has to be invoiced at a preferred rate by most of the utilities. This incurs large financial losses to the state electricity board. With a demand of more than 1,000 MW, public lighting represents approximately 1% of the total electricity consumed in India. Even if this represents a small percentage of the total consumption, it is an interesting segment due to its high potential for energy savings (average of 33% of the consumption).

The project will rely on an approach that was demonstrated by Econoler International and Asian Electronics Ltd in two pilot projects in India (at Indore and Ujjain) that received a financial support from the Canadian International Development Agency (CIDA). This route has yielded measured savings of close to 60% without reduction in lux levels. These two Projects established the validity of the concept, processes and formats for record and reporting for those to follow.

The present CDM Project replicates the scheme in 15 municipalities spread in India. The technology was changed to full replacement of existing FTL / HID fittings by energy-saving T5 lamp-based fittings with electronic ballast and load management system.

- Replacement of low efficiency T12 FTL (40W) driven by magnetic ballast with high efficiency T5 FTL ( 28W) driven by electronic ballast
- Replacement of low efficiency single lamp HPS/MV/MH 70/125/150/250W driven by magnetic ballast with high efficiency multi-lamp T5 (14/24W) driven by constant wattage electronic ballast.
- Installation of Load Management System (LMS) panels at the Switching Points (SP)<sup>1</sup> to improve energy consumption of all fixture types including the T5 Fluorescent Tube Light installed at the respective SP.

Before implementation of the project, the municipalities had a lot of difficulties to maintain a good street lighting service for citizens. About 10 to 20% of fixtures were not operating because of an illegal connection, burned tube light or broken fixtures. The only way of upgrading the service to an acceptable level was to replace more and more fixtures with the same technology that the municipalities were used to. Another issue related to street lighting in India is the improper energy metering where monthly energy bills are not made as per the tariff based on the actual meter readings or energy bills for non-metered are based on the connected load and the monthly operating hours.

The project proponent had been able to convince the municipalities to choose more expensive, but more efficient, equipment using the following arguments:

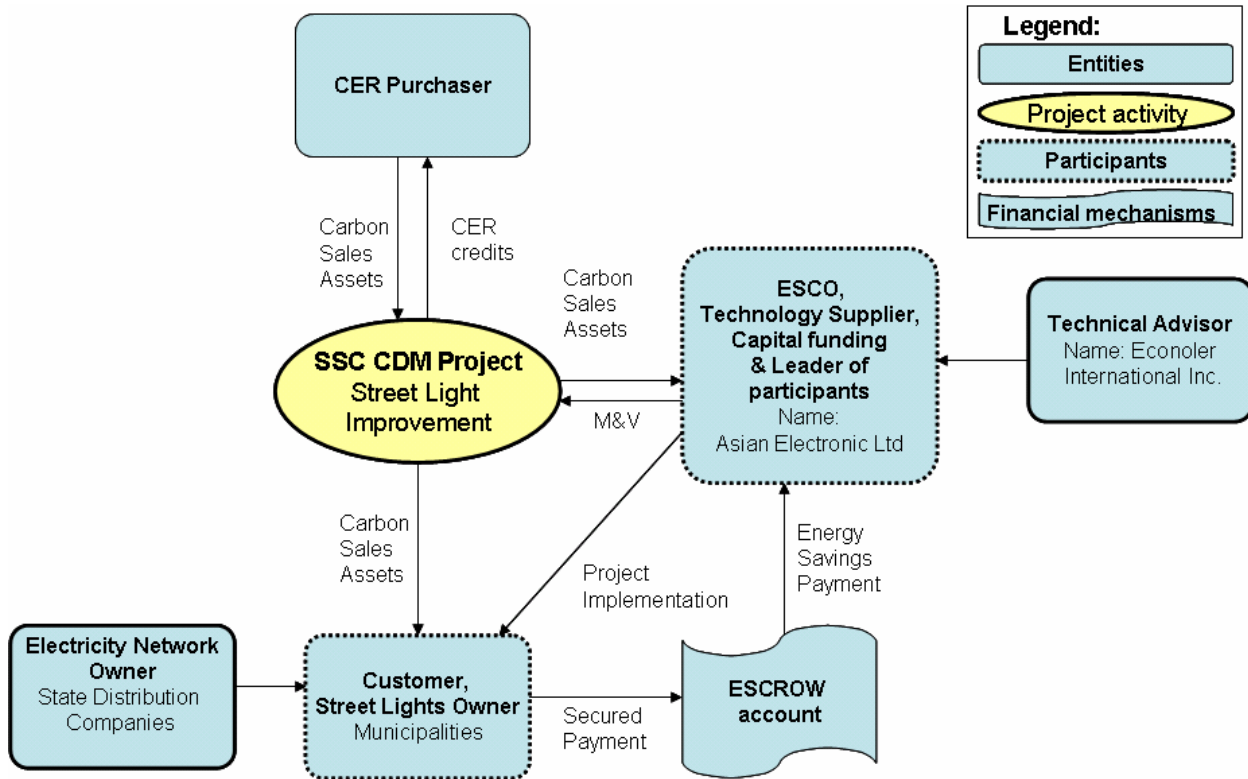
- It would be financed through a third party and implemented using a performance contracting concept. This means it provided the technology, entire funding and Monitoring & Verification (M&V) after the construction. If there is no saving, the project promoter will not get paid.
- The opportunity exists to leverage a portion of the required financing through the sale of Certified Emission Reduction (CER).
- The revenues generated by energy savings and CER will be shared between AEL and the participating municipalities after deduction of expenses.
- Revenue and costs will be allocated to the set of ESCO projects covered in proportion to the CERs generated by the respective project to the total of CERs generated by all projects.

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<sup>1</sup> A switching point is a metering point in the street light electricity network.

### Project structure

The project structure and relations between the project entities are presented in the following figure.



**Figure 1: Energy Efficient Street Lighting CDM Project Activity Structure**

**Asian Electronic Limited:** AEL is a private international company and was the lead participant of this SSC CDM project. As an ESCO, AEL signed a performance contract with its customers (the municipalities) and guaranteed the savings. AEL assumed the entire project implementation for its customers. This means it provided the technology, entire funding and Monitoring & Verification (M&V) after the construction. It also provided M&V for the CER accreditation procedure. It was furthermore responsible for maintaining the service to an acceptable level by ensuring a minimum number of fixtures turned off.

**Municipalities:** The Municipalities were the project sponsors. They are public entities. The Municipalities were AEL’s customers. They pay AEL’s services after the construction based on energy savings achieved. The typical payment is

secured in an escrow account that will cover the monthly bills, but allow the municipalities to utilize any potential saving from reduced consumption. This provides the municipalities with incentive to adopt the projects and ensure they are maintained.

**Distribution Companies:** Distribution companies are wholly owned by State Electricity Boards (SEB). SEBs are state Government owned companies responsible for the electricity production. They are stakeholders in the energy savings project and could provide support for upgrading the metering system for this DSM project.

**Econoler International:** EII is a Canadian private company and acted as the project developer. EII was a technical advisor for the implementation of the Street Light Improvement Program and also provided carbon consulting.

**Technology and Measures** The replacement of existing fixtures by efficient T5 fluorescent tube lights leads to significant reduction in the power usage. Also, both Sodium and Mercury Vapour HID fittings can be replaced with new design multi-tube T5 streetlights which have been working successfully in pilot installations for the last two years and more. This option has yielded energy savings up to 60% and power factor (PF) better than 0.95 compared to 0.6 to 0.7 normally observed in old installations. A new dimming technology could also be integrated to the street lighting system to further reduce their energy usage during low traffic hours (usually after midnight). However, for public security reasons, this dimming is often limited to about 20%. These modifications to the existing street lighting system will also result in the reduction of power demand and distribution line losses in the network. With energy saving of 60% and PF improvement from 0.7 to 0.95, the KVA demand could reduce by as much as 70%. System measurements revealed that the wiring of the street lighting system is often stretched to the limit with significant overheating and high line losses associated with the connected load and power factor. Using a more efficient technology will significantly allow reducing line losses of the street lighting system. The combination of the technology change, and reduced line losses also effectively reduces or eliminates system saturation, thus doing away with overloading &/or making available capacity for additional fittings without requiring a complete rewiring of the system.

In the framework of this project, these two measures have been carried out:

**(a) Replacement of low efficiency T12 Fluorescent Tube Light (40W) with magnetic ballast with high efficiency T5 Fluorescent Tube Light (28W) with electronic ballast**

The high efficiency devices installed can save electricity up to 40-45% without reducing light level if they replace T12 fixtures because of the following characteristics. The luminous efficiency is 104 lumens/W (T5 triphosphor on electronic ballast) and even more if considering the retrofit shield effect. In comparison, the T12 efficiency is about 70 lumens/W.

**(b) Replacement of low efficiency single lamp HPS/MV/MH 70/125/150/250W driven by magnetic ballast with high efficiency multi-lamp T5 (14/24W) driven by constant wattage electronic ballast.**

The high efficiency devices installed can save electricity up to 60% with the required light level if they replace HID fixtures. T5 FTLs have a much longer lamp life of around 20 000 hrs which is much higher than the average HID lamps having life of nearly 10 000 hrs under field conditions and electronic ballast yields to power factors higher than 0.95 as compared with 0.6 to 0.7 of HID lamp driven by magnetic ballast.

**(c) Installation of Load Management System (LMS) panels at the switching points to improve the energy consumption of all other fixture types.**

This incidentally will also improve the consumption of the T5 Fluorescent Tube Light installed at the respective switching point. The LMS can save electricity up to 35% when it is installed on a SP:

- Controlled operation of the fixtures through advanced microprocessor technology (like dimming light during low traffic hours).
- Maintains the input voltage wave form without inducing any noise and harmonics.
- Equipped with a voltage monitor to protect the fixtures from operating at too low or too high voltage.

The fixtures types found in significant number in municipalities are presented in the following table.

**Table 1 : Types of Fixtures and Energy Efficiency Measure Related to each Type**

Low-efficiency Fixture Description, Before Project Implementation	High-efficiency Fixture Description AND/OR Energy Efficiency	Savings Forecast
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	<b>Measure Taken During Project Implementation</b>	
<b>1x40W T12, 4' T12 Tube light with magnetic ballast</b>	<b>1x24W, 4' T5 tube with Electronic ballast</b>	<b>53%</b>
<b>70W SVL/80WMVL with magnetic ballast</b>	<b>2x14W 2' (or 1x24W 4') T5 Streetlight, with electronic ballasts</b>	<b>69%</b>
<b>150W SVL/125W MVL with magnetic ballast</b>	<b>5x14W or 4x14W 2' T5 Streetlight</b>	<b>71%</b>
<b>250W SVL/MVL with Magnetic Ballast</b>	<b>4x24W 2' T5 Streetlight</b>	<b>64%</b>
<b>HID lamps of all types</b>	<b>Controlled Load Management Panel</b>	<b>35%</b>

## 2. DESCRIPTION OF PROJECT AREAS:

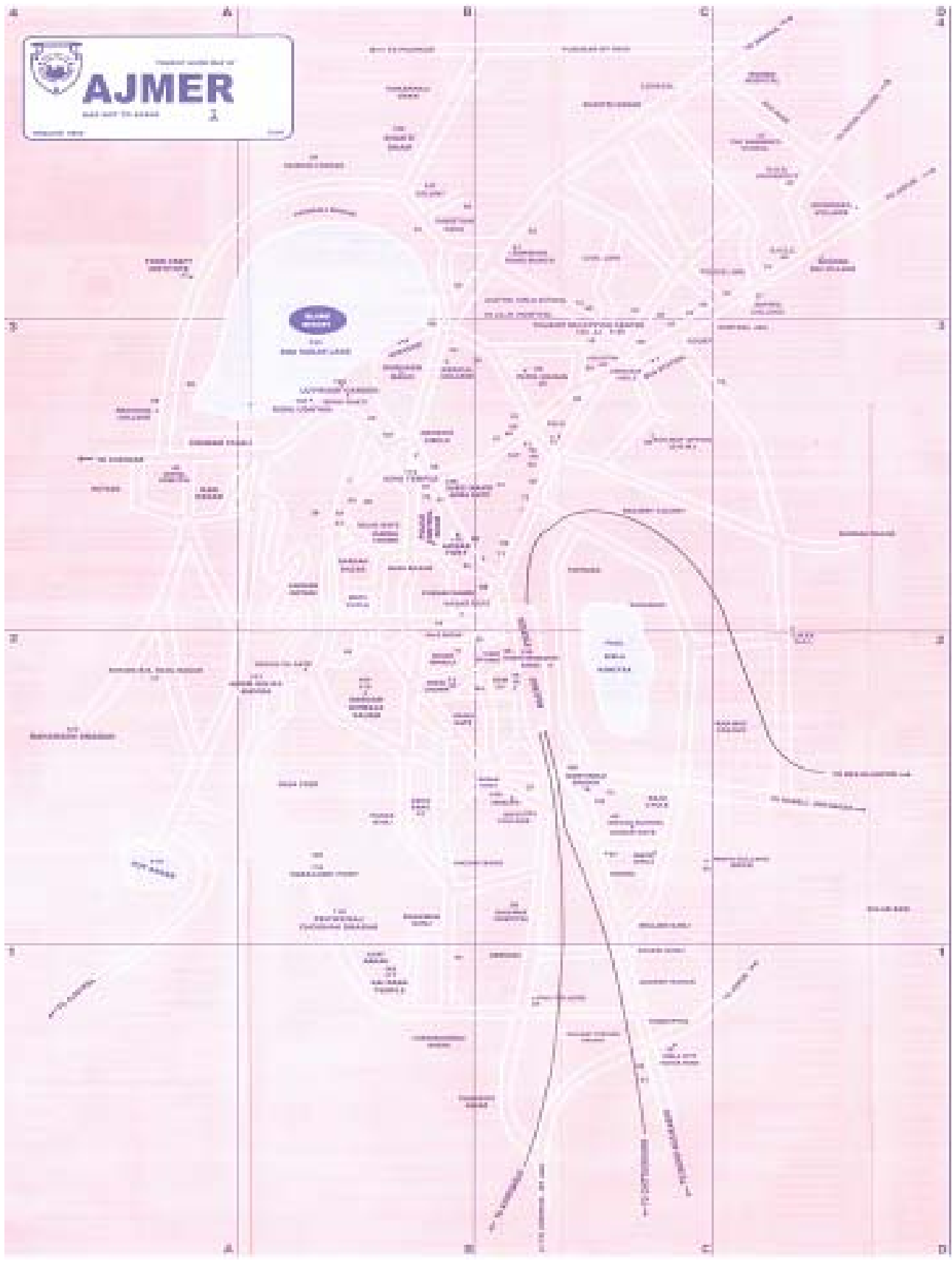
The project boundary is the physical, geographical location of each measure (each piece of equipment) installed.

In case of the project, the project boundary is the physical, geographical location of each replaced fixture so the project boundary has the same limit than the municipalities. The project boundaries were precisely defined during the baseline measurement campaign performed along with an Investment Grade Energy Audit. For this purpose, a complete list of all fixtures actually replaced is prepared. The project excludes all equipment that is out of this list. The following figure illustrates an example of the project in Ajmer.

### **Figure 2: Boundaries of Street Lighting Project in Ajmer.**

1. Proposed Plan of Action for the Project on Environmental aspects (will cover all the three issues as highlighted above) including responsible persons, budget if any required.
2. **Handling / Storing used/damaged light bulbs** (replaced or installed under the project as well as rejects) put out of use – proper storage before ultimate disposal in line with guidelines being developed by BEE.
3. **Safety of Workers** – Provision of personal protective equipment, traffic arrangements during installation of equipment, and emergency procedures in case of shocks, falls or other accidents.

4. **Installation and Removal of electric poles** – precautions to be taken to avoid any impact on locally important cultural resources such as shrines, temples or any important items found accidentally during excavation.



### 3. PROJECT IMPACTS AND MITIGATION OF IMPACT

Normally, these impacts can be divided into short-term installation related impacts and long-term impacts; however, with this project there are no significant long term detrimental impacts. The short-term impacts include installation traffic and noise, dust, increased sediment transport from the site, and disruption of vehicle and pedestrian traffic. The AEL and the Municipal Council of Ajmer has worked with the State and local governments to ensure that all ordinances and laws are complied with during installation and operation of the facility. The specific impacts and mitigation measures are detailed below:-

#### 3.1 Short-Term Installation Impacts and Mitigation

The impacts related to installation will likely include local increases in traffic, noise, dust, and sediment transport from the site, and disruption of vehicle and pedestrian traffic. These items will be addressed by the AEL to installation the facility and will include the following:

**(a) Traffic** – For traffic control and safety, installation vehicles will enter and leave the site at controlled points only. Workers will be used to direct vehicles and pedestrians to facilitate the movement of installation vehicles. Installation barriers will be erected for safety and to direct pedestrian traffic safely around the installation site. Traffic flow through the site will be coordinated with the City of Ajmer as necessary.

**(b) Noise** - Site work activities are restricted to daytime operations. Attempts are also be made to limit unnecessary noises during the day so as to limit impact to the adjoining buildings containing offices, classroom, and residences. This is a short-term impact that will cease when the installation is completed.

**(c) Dust** – As the project involves only replacement of streetlights, no digging activity takes place , thus no dust is generated.

**(d) Particulates in Air** - Particulate emissions will be controlled by the off-site disposal of installation and removal debris. Burning of such materials will not be allowed on the site. Any lead, mercury and plastic containing materials will be removed by licensed abatement contractors using appropriate means to limit particulate emissions.

**(e) Generated Wastes** - Environmentally deleterious materials generated by the replacement activities, such as old or broken lamps will be stored separately & disposed in an appropriate, legal, and safe manner. In the event that hazardous wastes are generated during elimination, the contractor will properly dispose of them off site in accordance with appropriate disposal regulations

#### 3.2 Long-Term Impacts and Mitigation

There is a potential for historic facility impacts, however, these are not expected to be significant.

**1. Wastes:** The operation of these lighting fixtures will not generate waste except failed lamps which will be stored separately and disposed as per the BEE guidelines.

**2. Vegetation and Habitat Loss:** Careful coordination will occur so as not to disturb any existing landscaping.

**3. Water Consumption:** This project will not result in any change in water consumption at Municipal Council Area of Ajmer.

**4. Water Quality:** No water quality impacts are anticipated.

**5. Noise:** The operation of these lighting fixtures will not generate any noise.

**6. Historic Facility Impacts:** The Site is located near historic structures; for example, it is located directly across Nehru Garden. However, this project will improve the view of the Garden Street by eliminating HPSV/HPMV and installing T-5 energy efficient light fixtures.

**7.** Parks, rivers, and other recreational areas will not be impacted.

**8. Traffic:** No long term impacts to local traffic are anticipated.

**9.** Wildlife refuges, wetlands, wilderness areas, and other important natural areas will not be impacted.

**10.** Public or private water supplies and/or significant water supply watersheds will not be impacted.

**11.** Endangered, threatened, or rare plants, animals or insects will not be measurably impacted by this project. No unique or other important terrestrial vegetation will be impacted. The site consists of a paved road, walkways, and lawn areas.

**12.** This project will not impact geologic or mineral resources. There are no significant geologic or mineral resources at the Site.

<b>4. PROPOSED PLAN OF ACTION FOR PROJECT ON ENVIRONMENTAL ASPECTS:</b>
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**Handling / Storing of used / damaged light bulbs:****4.1 Old lamps removed during installation**

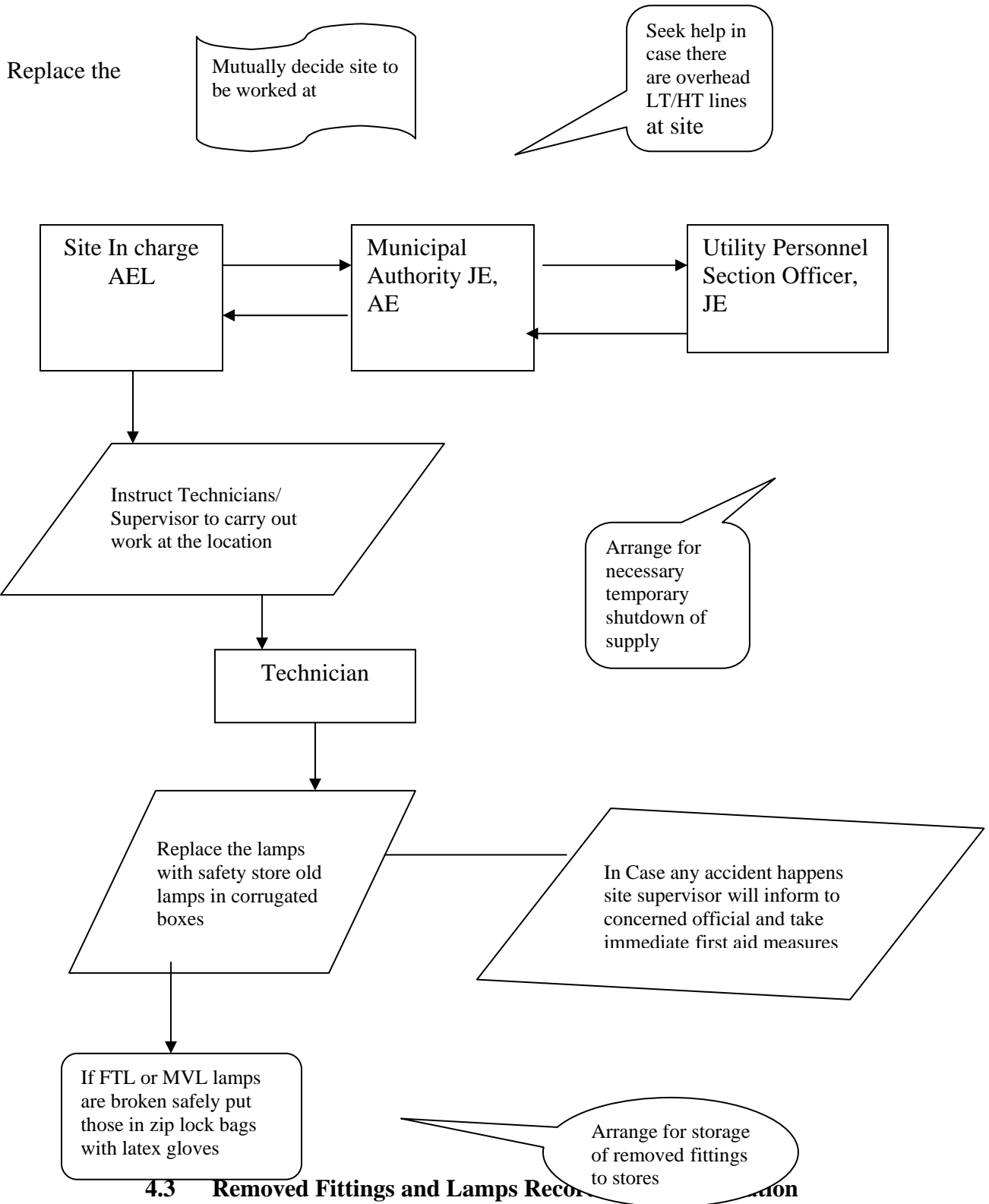
During installation of new energy saving streetlights, old streetlights are removed and stored in the corrugated box along with the lamps fitted into the old fittings in case of sodium vapor lamps. In case of replacement of old fluorescent tube light fittings, the lamps are carefully removed first followed by the fitting. The lamps are kept in a separate box. A record sheet (given below) is maintained while removing the old fittings mentioning the number of lamps removed.

These old removed fittings & lamps are transported daily to the place of storage ( store depots / ward office stores ) given by the Council. The old fittings are then kept in a proper store room under lock & key. The units are not allowed to be used for re- installation.

Any lamps broken during the removal, transportation or storage of the old fittings are carefully collected and kept in a separate corrugated box for further disposal. The box is kept properly in the stores.

The responsibility of the old fittings and lamps stored rests with the respective Jr.E./ A.E. stores in-charge / J.E/ A.E. (ward office) in-charge in the respective municipal Councils. Data format from site is being given below for reference:-

**4.2 A flow-chart is being given below which shows the significance role while carrying out installation & maintenance work at site:**



**Energy Saving Streetlight Project: Ajmer Municipal Corporation**

Sl. No.	Panal Id No	Switch Point Name & Location	GSM Cap	Date of Installation	Type Of Fittings				Remark
					T-5 Retrofit 24 w	2x14 w Polelite	4x14 w ASL	4x24 w ASL	
1	00001	MD Colony, Naka Madar	16 Amp	15/04/08	65	4	10	3	
2	00002	Shrinagar,Nr.Reliance Petrol Pump.	16 Amp	11/4/2008	115	5	26	12	
3	00003	BajanGanj, Tanaji Ngr.	16 Amp	17/04/08	323	4	26	0	
4	00004	Khanpura	16 Amp	12/5/2008	59	2	9	0	
5	00005	Kundan Ngr.(Toshniwal Banglow)	16 Amp	7/5/2008	165	3	50	9	
6	00006	Alwar Gate , Nr. Nala	16 Amp	12/4/2008	101	2	26	30	
7	00007	Gulabwadi Nayaghar	16 Amp	24/04/08	324	7	22	0	
8	00008	Tanga Stand	16 Amp	22/01/08	0	0	0	12	
9	00009	Asha Ganj (Goushala)	16 Amp	6/5/2008	250	26	39	0	
10	00010	Jatiya Colony-1 (Pahad Ganj)	16 Amp	6/5/2008	103	6	44	0	
11	00011	Dhola Bata (Tea Stall , Nr. Nala)	16 Amp	12/4/2008	125	2	19	2	
12	00012	J.L.N. Hospital	16 Amp	10/4/2008	15	1	5	39	
13	00013	Jaipur Road, Opp.Bus Stand	16 Amp	24/01/08	4	0	22	23	
14	00014	G-Block Makadwali Rd.	16 Amp	7/5/2008	120	18	37	0	
15	00015	Savitry Chauraha	16 Amp	24/01/08	56	5	20	27	
16	00016	Jatiya Colony-2 (Ward No7)	16 Amp	6/5/2008	89	2	15	0	
17	00017	PNB (Punjab National Bank) Byawer Rd.	16 Amp	17/04/08	0	0	0	24	
18	00018	Dhola Bata Tempo Stand	16 Amp	23/04/08	269	4	20	4	
19	00019	Madar Gate	16 Amp	25/04/08	90	0	11	28	
20	00020	Subhash Udyan, Sundar Vilas	16 Amp	17/04/08	84	0	9	26	

21	00021	Bhopo Ka Wada	16 Amp	23/04/08	104	5	15	0
22	00022	Subhash Nagar( Narishala)	16 Amp	4/5/2008	191	11	17	0
23	00023	Jawahar Rang Manch	16 Amp	24/04/08	115	15	44	38
24	00024	Shaastrri Nagar, Shiv Mandir	16 Amp	13/04/08	91	7	57	39
25	00025	Subhash Ngr Ward No.13	16 Amp	5/5/2008	122	8	10	0
26	00026	Gulabwadi	16 Amp	24/04/08	144	6	26	6
27	00027	J.P. Ngr-1	16 Amp	25/04/08	108	8	19	0
28	00028	Ajay Ngr ( Nr.Janata Welding Works)	16 Amp	4/5/2008	137	2	20	0
29	00029	Govt. College, Byawer Rd.	16 Amp	9/4/2008	0	0	0	54
30	00030	Prithviraj Marg, Khaelang Market	16 Amp	23/01/08	37	0	1	0
31	00031	Naka Madar, Shoping Center	16 Amp	14/04/08	87	5	9	9
32	00032	Porwal Chauraha Divider.	16 Amp	26/04/08	58	6	23	0
33	00033	Fire Station, Azad Park	16 Amp	10/4/2008	6	1	7	25
34	00034	Gulabwadi, Kalanipura	16 Amp	24/04/08	88	6	7	0
35	00035	RamGanj-2 (Nr. Balaji Mandir)	16 Amp	4/5/2008	0	0	0	18
36	00036	Madhav Ngr.	16 Amp	13/05/08	170	7	46	0
37	00037	Vigyan Ngr.	16 Amp	22/04/08	119	4	3	0
38	00038	Porwal Chauraha	16 Amp	26/04/08	0	0	0	45
39	00039	Dhola Bhata, Mayo Link Rd. Nr. Peshab Ghar	16 Amp	7/5/2008	224	7	42	4
40	00040	New Kesari Colony	16 Amp	16/04/08	139	5	23	0
41	00041	Palbisla, Adheri Puliya	16 Amp	11/4/2008	90	5	22	0
42	00042	Kacheri Road	16 Amp	24/01/08	22	0	9	16
43	00043	Gulmohar Colony	16 Amp	8/5/2008	70	10	30	0

44	00044	Gandhi Ngr.,Naka Madar	16 Amp	15/04/08	49	0	18	0	
45	00045	RamGanj-1 (Opp. EYE Hospital)	16 Amp	4/5/2008	31	0	7	32	
46	00046	PWD, Civil Line	16 Amp	13/04/08	73	3	30	0	
47	00047	Topdhada, Nr. Nala.	16 Amp	11/4/2008	117	12	48	0	
48	00048	Shastri Ngr Extention	16 Amp	23/04/08	82	2	39	15	
49	00049	Kalu ki Dhani	16 Amp	14/04/08	81	6	20	2	
50	00050	Topdada Medan, Dhobighat	16 Amp	24/04/08	156	17	9	0	
51	00051	Madhav Dwar, Adarsh Ngr.	16 Amp	16/04/08	227	15	23	18	
52	00052	Ghanta ghar	16 Amp	22/01/08	0	0	0	30	
53	00053	Saint FrancisSchool, Alwargate	16 Amp	22/04/08	215	12	3	27	
54	00054	Naka Madar Rly Fatak	16 Amp	15/04/08	70	2	8	5	
55	00055	9 No. Petrol Pump.	16 Amp	12/4/2008	111	5	11	17	
56	00056	Shiv Nagar, Bihari Ganj.	16 Amp	16/04/08	100	1	8	10	
57	00057	Ajay Ngr ( Infront of Milk Dairy)	16 Amp	5/5/2008	134	8	13	0	
58	00058	Patel Stadium	16 Amp	21/01/08	0	0	0	38	
59	00059	Parbatpura	16 Amp	16/05/08	64	1	9	0	
60	00060	Patti Catala, Ganesh Chawk	16 Amp	25/04/08	109	7	9	15	
61	00061	Makupura	16 Amp	7/5/2008	96	4	9	9	
62	00062	Telephone Exchange, Soniji Ki Nasia	16 Amp	25/04/08	76	4	14	21	
63	00063	Collector Banglow	16 Amp	13/04/08	72	4	48	8	
64	00064	Palbisla Vinay Ngr.	16 Amp	24/04/08	184	10	22	0	
65	00065	Bata show-room	16 Amp	23/01/08	15	0	3	22	
66	00066	Karni Vihar, Vrindavan Garden	40 Amp	7/6/2008	15	0	1	0	

67	00067	Chaurasiya Gaon	40 Amp	7/6/2008	24	1	0	0
68	00068	Jummu ki Hotel	40 Amp	15/04/08	22	1	13	18
69	00069	Badhir Vidyalaya	40 Amp	30/08/08	63	2	23	0
70	00070	Sarpanch Ka Kothada	40 Amp	7/6/2008	9	2	3	0
71	00071	Chandra Ngr.(Byawar Rd.)	40 Amp	5/5/2008	68	3	11	0
72	00072	Kundan Ngr. Chauraha	40 Amp	14/04/08	7	0	10	17
73	00073	Ashok Ngr. Narishala Rd.	16 Amp	19/07/08	75	3	6	0
74	00074	Khanij Ngr, Pani Ki Tanki.	40 Amp	16/04/08	91	1	4	0
75	00075	Tarasha Ngr. Naisadak	40 Amp	7/6/2008	40	1	0	0
76	00076	Chamunda Mandir	40 Amp	7/6/2008	26	3	20	0
77	00077	Meer Shah Ali Colony	40 Amp	26/04/08	88	9	19	0
78	00078	Ganesh Ngr. Taragarh Rd.	40 Amp	4/6/2008	44	4	10	0
79	00079	Kayasth Mohalla	40 Amp	7/6/2008	0	0	0	0
80	00080	Sambhaya Ayukt.	40 Amp	23/04/08	42	4	8	0
81	00081	Vikas Ngr. Nasirabad Rd.	40 Amp	22/04/08	16	1	8	0
82	00082	Ratidang Gaon	40 Amp	4/6/2008	80	4	1	0
83	00083	Baldev Ngr.	40 Amp	30/08/08	94	6	6	0
84	00084	Harsh Vihar Colony, Nr Maya Mandir	40 Amp	26/04/08	9	1	0	0
85	00085	Kundan Ngr. Mali Mohalla	40 Amp	14/04/08	66	2	9	0
86	00086	T.T. College	40 Amp	26/04/08	55	3	8	0
87	00087	Ganpati Ngr. Tara Nagar Road	40 Amp	4/6/2008	43	2	7	0
88	00088	Khailand Market	40 Amp	31/08/08	19	2	9	5
89	00089	Ambedkar Chauraha	40 Amp	24/01/08	0	0	5	14

90	00090	Chisti Ngr.(Khanpura Rd.)	40 Amp	5/5/2008	75	3	7	0
91	00091	Nayawada, Civil Line	40 Amp	13/04/08	117	5	11	3
92	00092	Shivsagar Colony	40 Amp	4/6/2008	39	6	6	0
93	00093	Banz Imli	40 Amp	23/04/08	22	0	7	20
94	00094	CPWD, Infront of Collector office	40 Amp	10/4/2008	19	0	5	6
95	00095	Ramganj, New Govind Colony	40 Amp	4/6/2008	78	1	16	0
96	00096	Keshav Ngr.Janta Colony( Vaishali Ngr)	40 Amp	13/05/08	25	3	8	0
97	00097	RPSC Ratidang Colony	40 Amp	4/6/2008	32	0	3	0
98	00098	Abhiyanta Ngr. (Vaishali Ngr.)	40 Amp	15/05/08	52	4	7	0
99	00099	Fakira Kheda	16 Amp	20/07/08	26	2	9	0
100	00100	Kripal Ngr.	40 Amp	25/04/08	91	6	9	0
101	00101	Badbab Inderkot	16 Amp	19/07/08	51	3	12	0
102	00102	Tripoliya Gate	16 Amp	19/07/08	47	8	49	0
103	00103	Kesar Ganj-1, Sabjee Mandi	16 Amp	9/7/2008	78	11	30	0
104	00104	St.Ansalam School	16 Amp	9/7/2008	0	0	0	40
105	00105	Dhai Din Ka Zopda	16 Amp	19/07/08	141	0	17	0
106	00106	Adarsh Nagar, Shalimar Colony	16 Amp	14/07/08	37	0	1	0
107	00107	Lohakhan	16 Amp	11/7/2008	256	6	25	1
108	00108	Rambul Rd. Kishanganj	16 Amp	11/7/2008	185	6	41	0
109	00109	Utar Ghaseti, Dargah Bzr.	16 Amp	31/08/08	139	4	14	0
110	00110	Kalpana Colony.	16 Amp	14/07/08	131	6	13	0
111	00111	Adarsh Nagar, Ajaypal Ngr.	16 Amp	14/07/08	127	0	7	0
112	00112	Foy-Sagar Police Chauki	16 Amp	16/07/08	175	11	73	0

113	00113	Lohagal	16 Amp	17/07/08	195	4	22	0
114	00114	Rajsthan Hospital	16 Amp	14/07/08	49	0	9	22
115	00115	Pooja Marg.	16 Amp	14/07/08	156	2	10	0
116	00116	Mitra Ngr. Ratidang.	16 Amp	15/07/08	228	11	19	0
117	00117	Dwarka Ngr.	16 Amp	15/07/08	128	2	24	0
118	00118	Ram Nagar	16 Amp	16/07/08	0	0	13	0
119	00119	Data Ngr.	16 Amp	15/07/08	83	1	15	0
120	00120	Narsingpura	16 Amp	16/07/08	173	6	8	2
121	00121	Bramhapuri,	16 Amp	13/07/08	84	2	13	2
122	00122	Kishan Gurnani Mohalla	16 Amp	17/07/08	194	9	30	0
123	00123	Delhi Gate	16 Amp	17/07/08	81	5	18	0
124	00124	Prem Nagar	16 Amp	16/07/08	159	15	27	0
125	00125	Chamarghati	16 Amp	16/07/08	96	11	49	0
126	00126	H.H. Moter	16 Amp	15/07/08	69	3	17	18
127	00127	Surat Ram Ka Choke	16 Amp	17/07/08	70	7	5	0
128	00128	Lakhan Kothadi	16 Amp	17/07/08	129	9	13	0
129	00129	Kothada	16 Amp	17/07/08	151	11	36	6
130	00130	Bhagvan ganj	16 Amp	26/08/08	238	17	47	0
131	00131	Ajay Ngr. Frouitwala	16 Amp	26/08/08	179	20	24	0
132	00132	Faridabad Colony	16 Amp	28/08/08	67	2	15	0
133	00133	Usari Gate / Ravan Ki Bagichi	16 Amp	27/08/08	169	16	25	0
134	00134	Pannigram Chauk	16 Amp	28/08/08	68	0	26	0
135	00135	Nausar Ghati / Pushkar Ghati	16 Amp	30/08/08	40	1	39	0

136	00136	Diggi Bazar	16 Amp	27/08/08	120	3	44	0
137	00137	Holydhada / Dhobi Mohalla	16 Amp	28/08/08	89	0	8	0
138	00138	Chunpachan / Kayast Mohalla	16 Amp	28/08/08	117	9	11	12
139	00139	Shishakhan	16 Amp	27/08/08	150	9	12	0
140	00140	Khari Kui	16 Amp	27/08/08	100	9	7	0
141	00141	Rajiv Colony	16 Amp	25/08/08	58	0	3	0
142	00142	J.p. Ngr-2 Sector-3	16 Amp	31/08/08	58	2	5	1
143	00143	Gujjar Dharati	16 Amp	26/08/08	129	0	7	0
144	00144	Padav	16 Amp	27/08/08	90	9	20	36
145	00145	Idgah Madjid	16 Amp	25/08/08	71	1	13	0
146	00146	Shastri Ngr.Police Chauki	16 Amp	25/08/08	28	1	1	0
147	00147	Kamla Nehru Hospital/ Agra Sen Chauraha	16 Amp	20/07/08	0	0	0	13
148	00148	Azad Ngr.	16 Amp	20/07/08	84	3	11	0
149	00149	Santoshi Mata Mandir	16 Amp	25/08/08	108	8	41	0
150	00150	Moti Katala	16 Amp	19/07/08	30	3	7	21
151	00151	Trambe Station	16 Amp	28/08/08	292	13	47	0
152	00152	Nagfani	16 Amp	29/08/08	294	16	25	0
153	00153	MDS University	16 Amp	31/08/08	51	1	0	0
154	00154	Naya Bzr. Chaupad	16 Amp	29/08/08	118	10	18	21
155	00155	Sole Thamba	16 Amp	29/08/08	102	2	34	11
156	00156	Hathibhata	16 Amp	29/08/08	83	4	11	0
157	00157	Dr. Brijesh Mathur	16 Amp	30/08/08	49	7	19	0
158	00158	L.I.C Colony	16	30/08/08	204	5	47	9

			Amp						
159	00159	Jhalara	16 Amp	31/08/08	57	2	18	0	
160	00160	Jyotiba Fule	16 Amp	31/08/08	0	0	0	21	
161	00161	Janana Hospital	16 Amp	31/08/08	50	0	2	0	
162	00162	Martin Bridge-2	16 Amp	31/08/08	0	0	0	24	
163	00163	Taragarh Chauk	16 Amp	31/08/08	22	9	32	5	
164	00164	Javahar Ki Nadi	40 Amp	31/08/08	100	4	8	0	
165	00165	Central Jail	40 Amp	31/08/08	59	5	29	1	
166	11111	Ajmer Club	40 Amp	28/01/08	42	4	11	24	
167	11112	Dayanad College-1	16 Amp	8/6/2008	0	0	0	18	
168	11113	John's Ganj	16 Amp	10/6/2008	270	7	20	0	
169	11114	Dayanad College-2	16 Amp	12/6/2008	0	0	0	12	
170	11115	Sabjee Mandi Byawer Rd.	16 Amp	4/7/2008	0	0	0	27	
171	11116	Bhunabhai, Jaipur Rd.	16 Amp	5/7/2008	0	0	0	24	
172	11117	Ghungat & Zayaka Restaurant	16 Amp	5/7/2008	0	0	0	22	
173	11118	Police Mahanirishkak	16 Amp	5/7/2008	0	0	0	24	
174	11119	Rashtradoot	16 Amp	5/7/2008	0	0	0	26	
175	11120	Mayamandir	16 Amp	5/7/2008	0	0	0	24	
176	11121	Dome's Compound	16 Amp	6/7/2008	2	0	1	23	
177	11122	Civil Line Police Thana	16 Amp	6/7/2008	0	0	0	24	
178	11123	T.T College-1	16 Amp	6/7/2008	25	1	2	4	
179	11124	Ghugara Ghati	16 Amp	6/7/2008	0	0	0	20	
180	11125	Raju Ki Hotel	16 Amp	6/7/2008	0	0	0	30	

181	11126	Ajmer Dairy, Dairy Fatak	16 Amp	6/7/2008	0	0	0	24
182	11127	H.M.T. Byawer Rd.	16 Amp	14/07/08	6	0	0	24
183	11128	Bhaghchand Ki Kothi.	16 Amp	16/07/08	0	0	0	10
184	11129	Ramprasad ghat/ Lav-Kush Garden	16 Amp	16/07/08	0	0	13	0
185	11130	Martin Bridge-1	16 Amp	20/07/08	0	0	0	13
186	11131	Nagpal Petrol Pump	16 Amp	20/07/08	0	0	0	9
187	11132	Taragarh Rd.	16 Amp	31/08/08	0	0	69	0
188	Direct Point	Ramdev Mandir Dhan nadi Road	Nil	Nil	24	0	6	0
189	Cut Point	Alakhnanda Colony	Nil	Nil	15	0	0	0
190	Cut Point	Aanand Nagar, Hanuman Mandir	Nil	Nil	37	2	11	0
191	Direct Point	Badiya	Nil	Nil	20	0	2	0
192	Cut Point	Bajrang garh Mandir	Nil	Nil	6	0	5	0
193	Cut Point	Meena Colony Ajay Nagar	Nil	Nil	37	2	3	0
194	Cut Point	MPS Power House	Nil	Nil	22	0	1	0
195	Cut Point	Roadways Work Shop	Nil	Nil	0	0	0	37
196	Cut Point	Sant Leela Shah Colony	Nil	Nil	16	1	1	0
197	Cut Point	Shamshan Ghat, Gughra Jail	Nil	Nil	0	0	0	46
198	Cut Point	Surya Nagri	Nil	Nil	14	0	0	1
199	Cut Point	Swami Vivekanand Smriti, Patrkar Colony	Nil	Nil	0	0	0	14
200	Cut Point	Virat Ngr	Nil	Nil	29	0	0	0
201	Cut Point	Vodra Colony	Nil	Nil	7	0	0	0
202	Cut Point	Gahloto Ka Bera	Nil	Nil	6	0	4	0
203	Cut Point	Dillo Ka Bera	Nil	Nil	12	0	3	0

Store Incharge  
AMC, Ajmer

Site-Incharge  
Asian Electronics Ltd

#### 4.4 High Mast Fittings and Lamps Record during installation

##### Energy Saving Streetlight Project: Ajmer Municipal Corporation

Sl. No.	Switching Point	High Mast Capacity	Installation Date	Completion Date
1	Gandhi Bhawan Choraha	20 Amp	14/06/08	14/06/08
2	Regional College Choraha	20 Amp	10/09/08	10/08/08
3	Janana Hospital	20 Amp	12/09/08	12/08/08
4	Ashok Udhyan, Opp Jaipur Road	20 Amp	17/06/08	17/06/08
5	Ambedkar Cercril, Opp Bus Stand	20 Amp	05/07/08	05/07/08
6	Martindal Bridge	20 Amp	20/06/08	20/06/08
7	Alwar gate Chouraha	20 Amp	13/09/08	13/08/08
8	Parbatpura Bypass, Nasirabad Road	20 Amp	09/07/08	09/07/08
9	Shubash Nagar, Beawar Road	20 Amp	16/06/08	16/06/08
10	Gole Chakkar, Sabji Mandi, Kesar Ganj	20 Amp	05/07/08	05/07/08
11	Bजारंग Garh Choraha	20 Amp	15/06/08	15/06/08
12	Clock Tower Opp Railway Station	20 Amp	16/06/08	16/06/08
13	Tara Garh Dargah Sharif	20 Amp	13/06/08	13/06/08

#### 4.4 Lamps failed during the O & M period:

During the O & M (operation & maintenance) period of the project, the fittings are being monitored for failures in lamps. The faulty lamps are replaced with new lamps. The faulty lamps are brought back to the maintenance depot / office and stored safely in corrugated box. These lamps are stored until further instructions of disposal as per BEE norms are received.

The responsibility of storage of these lamps rests with the Service in-charge of the company in the respective cities. A data format is being attached for reference that is being maintained at site.

#### 4.5 Monitoring and reporting mechanism for replaced lamps during maintenance

##### Energy Saving Streetlight Project: Ajmer Municipal Council

Month	No of lamps changed		No of fixtures lamp missing/damaged		Remarks
	2Ft	4Ft	2ft	4ft	
March- 07	2	209	0	17	2Nos. Fixtures Broken
April - 07	11	83	2	0	

May- 07	83	55	1	6	
June- 07	58	53	0	0	5 Nos. of Diffusers Broken
July- 07	334	229	4	12	1Nos. Fixtures Broken & 3 Nos. of Diffusers Broken
Aug- 07	259	106	1	0	17 Nos. of Diffusers Broken
Sept- 07	162	78	0	3	1Nos. of Diffusers Broken
Oct- 07	289	156	0	5	
Nov- 07	252	60	2	0	
Dec- 07	90	26	0	0	

Service In charge

#### 5. SAFETY OF WORKERS :

The installation of the new fittings is done by workers as per the safety guidelines given. Firstly the installation is done during the day-time with the entire power supply to the fittings shut OFF. This is done by removing the fuse from the feeder points. Before the start of installation the concerned Council officials are informed about the exact location of the work, in order to avoid any accidental switching ON of the power by another maintenance team.

While installation the workers are provided with helmet, rubber gloves, rubber shoes, insulated tools and safety belts.

Proper care is taken to divert the traffic while carrying on the installation. Sign boards indicating “Work in progress” are put on the road where necessary. One worker is always standing on the road ahead of the ladder & diverting the traffic.

The workers are provided with proper extension type ladders for installation of streetlights above 7 meters. The ladders are provided with safety platforms covered from all sides for safety of the worker. At lower heights wooden ladder is used for removing the fittings for repairs.

Proper medical kit is carried containing bandages & medicines. Wooden ladders/ bamboos are kept handy in case of any emergency of shock.

All the workers are covered under state insurance scheme. This gives them free medical treatment in case of any accident or illness in their dedicated hospitals. In case of any accident the workers are given first aid at the nearest medical center / hospital. If required the worker is then taken to the ESIC hospitals for further treatment.

## **5.1 SAFETY MEASURES FOR INSTALLATION AND MAINTENANCE OF STREETLIGHTS**

**A. 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.

- (i) Prevention of accidents requires the wholehearted co-operation of all employees of the organization. A capable mentally alert employee will avoid accidents.
- (ii) A careless man is a liability to the Organization. He is dangerous to himself, his fellow workers, the public and the Organization.
- (iii) Accidents do not just happen. Accidents are the result of unsafe acts or unsafe conditions or a combination of both.

**B. Unsafe Acts:** Which may cause accidents, include the following:

- (i) Opening and Closing of switches without authority or warning, Pushing ladders on road without giving attention towards traffic, failure to place warning signs or signals where needed.
- (ii) Working unsafely such as throwing materials or tools, at another worker, jumping from vehicles and platforms, or unnecessary haste.
- (iii) Not using the safety tools provided.
- (iv) Using unsafe equipment, wrong tools for the job, or using hands instead of hand tools.
- (v) Working on live electrical equipment unless necessary (with safety precautions) in cases of energy meter installations at switching points.
- (vi) Working while ladder is in unsafe/tilted position.
- (vii) Distracting, teasing, practical joking, horseplay, quarrelling or annoying.
- (viii) Failure to use safe clothing or protective equipment such as failure to use rubber gloves, helmet.

**C. Unsafe conditions:** Which may result in accidents include the following:

- (i) While working with ladder on roads, which are skewed, widthwise from center it is always possible the ladder itself will tilt and it will be unsafe to climb on it to replace a fixture on pole.
- (ii) There can be overhead utility LT/HT lines while the fixture on pole might be at few inches from those lines. All anticipated hazards should be pointed out to workers.

#### **D. General Instructions for Safety**

##### **(i) Responsibility of Individuals:**

Definite responsibility of individuals is to act so as to provide

- Safety to himself.
- Safety to his fellow employees.
- Protection to the Public.
- Protection to the Organization property.
- Every employee is expected to study the Safety Manual, familiarize himself with its contents and apply them to work. Ignorance of Rules and Regulations will result in accidents to himself and his co-workers.
- Whenever in doubt regarding any rules and regulations, he should consult his Supervisor.
- Before attempting any work under conditions that he considers to be unsafe, he is required to bring them to the attention of the person-in-charge of the work and seek his advice.
- It will be the duty of every employee to report promptly to his Supervisors any dangerous or improper condition of equipment he notices.

##### **(ii) Personal Conduct:**

- Use of intoxicating liquor while on job is strictly prohibited. No employee shall report for work while he is under the influence of liquor and no supervisor shall knowingly permit a man to go to work while he is under the influence of liquor.
- Practical joking and horseplay while on the job is strictly prohibited.
- No employees shall distract the attention of another worker from his job unless he thinks that the worker is doing something, which is dangerous.
- Any employee who endangers his own or other's safety by violating the foregoing requirements of personal conduct shall render himself liable to disciplinary action.

##### **(iii) Always Be Careful (A B C):**

The workman should place himself in a safe position while working to avoid falling, stumbling, or moving backwards against live parts.

The workman should satisfy himself regarding the safe working conditions before starting the work. The care exercised by others should be checked.

## 5.2 FIRST AID

### (a) Removal from Contact

If the person is still in contact with the apparatus that has given the shock, switch off the electric circuit at once, if there is switch, fuse or circuit breaker close at hand, if not, lose no time from proceeding to remove the body from contact with the live conductor.

- Do not touch the victim's body with bare hands, but if rubber gloves are not at hand, pull him off the live conductor by his coat, shirt, etc., if they are not wet or fold your coat, or some dry article such as a news- paper into three or more folds/ thickness, and using this as a pad, take hold of the body and pull it away from the circuit. An operating rod or a broom handle may be used to raise the body or to detach the wires from it. A good plan is to stand on a dry board or stool or on a few layers of thick newspaper or bundle of dry sacking and remove the victim away from the live apparatus.

### (b) Treatment from Electric Shock, Asphyxiation

- In most of the cases of electric shock and collapse, it is the lungs and the diaphragm (the thin sheet of muscles which lies below the lungs) that have stopped working and there is a very good chance of revival by applying artificial respiration quickly.
- In case of severe shock, respiration is seldom established under one hour while three to four hours or more might be found necessary to restore normal breathing. It is therefore, essential that in all cases of electric shock where the condition of the patient is doubtful or the patient is unconscious or not breathing, artificial resuscitation should be continued until the patient breathes normally or until the doctor has pronounced life extinct.

## 5.3 SAFETY GUIDELINES FOR WORKMEN

- While working for installation or maintenance, first ensure that the power is switched OFF to the network of streetlights by removing the fuses on load side.
- Carry all the safety tools and always uses a safety belt when climbing on the ladder or pole. Clamp the safety belt on the ladder or the main pole while changing the fitting.
- Wear rubber gloves or gauntlets for touching any electrical parts inside or near switching point.
- During maintenance work with the switching point e.g. timer, contactor maintenance, ensures that is accompanied by an assistant with an effective torch light if working at night.
- Before a technician undertakes any work on a pole or any other line support, he should first make a complete inspection from the ground of the position of all live wires, in order to determine the amount of precautions to be adopted and should inspect his insulating equipment and operating tools and tackles for their good condition before he attempts to do the actual work.

- Usually pushing type aluminum ladders tend to become vulnerable due to vibrations they encounter on uneven roads as the nut bolts get loosened so it is needful to have through checkup periodically say after one weeks use and necessary steps are to be taken so that ladder can be used without any risk to anybody.
- While climbing on ladder he should have his hands free and after reaching the work platform he should wear the safety belt tied to the ladder.

#### 5.4 SAFETY DEVICES & TOOLS

The following are the minimum requirements of safety devices and special tools:

- a. Safety Helmets
- a. Rubber Gloves
- b. Safety Belts
- e. Ladders
- f. Ropes
- g. Hand Tools kit
- h. First aid box containing Dettol, bandage, burnol, cotton, painkiller pills .

#### 5.5 Daily records of Safety Kit distribution during installation

##### Energy Saving Streetlight Project: Ajmer Municipal Council

Safety Kit includes: helmet, rubber gloves, rubber shoes, insulated tools, safety belts & first aid box given to five teams.

Date	Site Location	No. Of Technicians	Safety Equipments Used	Duration Of use	
				From Time	To Time
21.11.06	Chandekar Chowk	18	Safety Kit ( 5 nos)	8.00 am	5.00p m
22.11.06	Near Collector Banglow	23	Safety Kit ( 5 nos)	8.30 am	5.00p m
24.11.06	NaiGaon	20	Safety Kit ( 5 nos)	8.00 am	5.30p m
25.11.06	Near Quality Saw Mill	26	Safety Kit ( 5 nos)	9.00 am	5.30p m
26.11.06	Haji Nagar	22	Safety Kit ( 5 nos)	9.00 am	5.30p m

26.11.06	Govt Rest House	24	Safety Kit ( 5 nos)	8.40 am	5.00p m
27.11.06	Bapu Nagar	22	Safety Kit ( 5 nos)	8.30 am	5.00p m
28.11.06	Apatapa Road	21	Safety Kit ( 5 nos)	8.30 am	5.00p m
28.12.06	Ajmer Cricket Club(Tower)	23	Safety Kit ( 5 nos)	8.30 am	5.00p m
29.11.06	Keruba (Bhim Chowk)	23	Safety Kit ( 5 nos)	8.30 am	5.00p m
02.12.06	Jathar Peth	23	Safety Kit ( 5 nos)	8.30 am	5.00p m
04.12.06	Birla 1 No Gate	23	Safety Kit ( 5 nos)	8.30 am	5.00p m
05.12.06	Near Tople	24	Safety Kit ( 5 nos)	8.30 am	5.00p m
09.12.06	SBI Colony	24	Safety Kit ( 5 nos)	9.00 am	5.30p m
09.12.06	Umari Lahan	25	Safety Kit ( 5 nos)	9.00 am	5.30p m
10.12.06	Jawahar Nagar	21	Safety Kit ( 5 nos)	9.00 am	5.30p m
11.12.06	Sawant Wadi	23	Safety Kit ( 5 nos)	9.00 am	5.30p m
12.12.06	Professor Colony	24	Safety Kit ( 5 nos)	9.00 am	5.30p m
13.12.06	Krishi Nagar	21	Safety Kit ( 5 nos)	9.00 am	5.30p m
13.12.06	Sudhir Colony	19	Safety Kit ( 5 nos)	9.00 am	5.30p m
14.12.06	Kriti Nagar	19	Safety Kit ( 5 nos)	8.40 am	5.00p m
14.12.06	Datta Colony	23	Safety Kit ( 5 nos)	8.40 am	5.00p m
15.12.06	Sahkar Nagar	24	Safety Kit ( 5 nos)	8.40 am	5.00p m
15.12.06	Azad Colony	26	Safety Kit ( 5 nos)	8.40 am	5.00p m
16.12.06	Gorakshan Road	26	Safety Kit ( 5 nos)	8.40 am	5.00p m
19.12.06	Sanjay Gandhi nagar	24	Safety Kit ( 5 nos)	8.30 am	5.00p m
20.12.06	Tukaram Chowk	25	Safety Kit ( 5 nos)	8.30 am	5.00p m
21.12.06	Kaulkhed	23	Safety Kit ( 5 nos)	8.30 am	5.00p m

22.12.06	Sharda Nagar- 3	21	Safety Kit ( 5 nos)	8.30 am	5.00p m
21.11.06	Chandekar Chowk	18	Safety Kit ( 5 nos)	8.00 am	5.00p m
22.11.06	Near Collector Banglow	23	Safety Kit ( 5 nos)	8.30 am	5.00p m
24.11.06	NaiGaon	20	Safety Kit ( 5 nos)	8.00 am	5.30p m
25.11.06	Near Quality Saw Mill	26	Safety Kit ( 5 nos)	9.00 am	5.30p m
26.11.06	Haji Nagar	22	Safety Kit ( 5 nos)	9.00 am	5.30p m
26.11.06	Govt Rest House	24	Safety Kit ( 5 nos)	8.40 am	5.00p m
27.11.06	Bapu Nagar	23	Safety Kit ( 5 nos)	8.00 am	5.00p m
28.11.06	Apatapa Road	24	Safety Kit ( 5 nos)	8.30 am	5.00p m

## Site In charge -----

Date	Site Location	No. Of Technicians	Safety Equipments Used	Duration Of use	
				From Time	To Time
28.12.06	Ajmer Cricket Club(Tower)	20	Safety Kit ( 5 nos)	8.00 am	5.30pm
29.11.06	Keruba (Bhim Chowk)	26	Safety Kit ( 5 nos)	9.00 am	5.30pm
22.12.06	Krushna Nagari	22	Safety Kit ( 5 nos)	9.00 am	5.30pm
23.12.06	Hingna Road	25	Safety Kit ( 5 nos)	8.40 am	5.00pm
29.12.06	Pole NoSR 23 Station Rd	24	Safety Kit ( 5 nos)	8.00 am	5.30pm
29.12.06	Alsi Plot Jail Square	18	Safety Kit ( 5 nos)	8.00 am	5.30pm
30.12.06	Khadan Dhor Bazar	24	Safety Kit ( 5 nos)	8.00 am	5.30pm
01.01.07	Panchashil Nagar	26	Safety Kit ( 5 nos)	8.00 am	5.30pm
01.01.07	Gita Nagar	23	Safety Kit ( 5 nos)	9.00 am	5.30pm
02.01.07	Modke Wadi	24	Safety Kit ( 5 nos)	8.40 am	5.00pm
03.01.07	Lokmanaya Nagar	24	Safety Kit ( 5 nos)	8.40 am	5.00pm
05.01.07	Harihar Peth	26	Safety Kit ( 5 nos)	8.40 am	5.00pm
06.01.07	Ganga Nagar	22	Safety Kit ( 5 nos)	8.40 am	5.00pm
06.01.07	Shiv Sena Washahat	23	Safety Kit ( 5 nos)	8.00 am	5.30pm
09.01.07	Deluxe	23	Safety Kit ( 5 nos)	8.00 am	5.30pm
11.01.07	Dabki Road Bus Stop	24	Safety Kit ( 5 nos)	8.00 am	5.30pm

13.01.07	Durga Chowk	26	Safety Kit ( 5 nos)	8.00 am	5.30pm
13.01.07	Jathar Peth	24	Safety Kit ( 5 nos)	9.00 am	5.30pm
13.01.07	ST Stand	24	Safety Kit ( 5 nos)	9.00 am	5.30pm
13.01.07	Main Hospital	23	Safety Kit ( 5 nos)	9.00 am	5.30pm
14.01.07	Bhagwat Plot	23	Safety Kit ( 5 nos)	9.00 am	5.30pm
14.01.07	Kediya Plot	24	Safety Kit ( 5 nos)	8.40 am	5.00pm
14.01.07	Renuka Nagar	21	Safety Kit ( 5 nos)	8.40 am	5.00pm
15.01.07	Old Panchayat Samittee	21	Safety Kit ( 5 nos)	8.40 am	5.00pm
20.01.07	Sharif Nagar	22	Safety Kit ( 5 nos)	8.00 am	5.00pm
21.01.07	Najagin	25	Safety Kit ( 5 nos)	8.30 am	5.00pm
23.01.07	Washim (Akot Bus Stand)	23	Safety Kit ( 5 nos)	8.00 am	5.30pm
24.01.07	Near ST Work-Shop	25	Safety Kit ( 5 nos)	9.00 am	5.30pm
25.01.07	Near Ladaniya I/F Khadki Rd	23	Safety Kit ( 5 nos)	9.00 am	5.30pm
26.01.07	caltex(Agrasen)	24	Safety Kit ( 5 nos)	8.40 am	5.00pm
27.01.07	Deshmukhfile	21	Safety Kit ( 5 nos)	8.30 am	5.00pm
28.01.07	Ketkar Chowk	23	Safety Kit ( 5 nos)	8.30 am	5.00pm
30.01.07	Civil Line	23	Safety Kit ( 5 nos)	8.30 am	5.00pm
30.01.07	Gandhi Road Gandhi Chowk	24	Safety Kit ( 5 nos)	8.30 am	5.00pm
01.02.07	Near Govt Garden	25	Safety Kit ( 5 nos)	8.30 am	5.00pm
02.02.07	Nehru Park	25	Safety Kit ( 5 nos)	8.30 am	5.00pm
02.02.07	Ward No 19	21	Safety Kit ( 5 nos)	8.30 am	5.00pm
03.02.07	Police Chowki Sindhi Camp	19	Safety Kit ( 5 nos)	9.00 am	5.30pm
04.02.07	Adarsha Colony	18	Safety Kit ( 5 nos)	9.00 am	5.30pm
11.02.07	Komati Pura(Salkute)	20	Safety Kit ( 5 nos)	9.00 am	5.30pm

Site Incharge -----

Date	Site Location	No. Of Technicians	Safety Equipments Used	Duration Of use	
				From Time	To Time
13.02.07	Nimwadi	21	Safety Kit ( 5 nos)	9.00 am	5.30pm
13.02.07	Jaihind Chowk	23	Safety Kit ( 5 nos)	9.00 am	5.30pm
15.02.07	Mohd. Ali Road	24	Safety Kit ( 5 nos)	9.00 am	5.30pm
22.02.07	Mohata Mill Chawl	23	Safety Kit ( 5 nos)	9.00 am	5.30pm
12.03.07	Komti Pura (Bhim Nagar)	24	Safety Kit ( 5 nos)	8.30 am	5.00pm

16.03.07	Sriwastava Chowk (Dabki Road)	20	Safety Kit ( 5 nos)	8.30 am	5.00pm
18.03.07	Old Cotton Market	18	Safety Kit ( 5 nos)	8.30 am	5.00pm
19.03.07	Shanti Nagar	17	Safety Kit ( 5 nos)	8.30 am	5.00pm
20.03.07	Pola Chowk	16	Safety Kit ( 5 nos)	8.30 am	5.00pm
06.04.07	Sri Hari nagar(kabra colony)	16	Safety Kit ( 5 nos)	8.30 am	5.00pm

Site Incharge -----

## 6. INSTALLATIONS AND REMOVAL OF ELECTRIC POLES :

The nature of work involves only removal of old streetlight fittings & installation of new fittings. We do not remove any electric poles; no digging work is involved during the course of the work.

The nature of our work , removal of old fittings & replacement with new energy saving fittings does not affect the lighting at night for any areas including local cultural areas, as the work is completed only during the daytime.