



**KENYA ELECTRICITY GENERATING COMPANY LIMITED**

**KGN-SBP-02-2018**

**TENDER FOR DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SMART SOLAR GRID-TIE SYSTEM FOR KIPEVU OFFICE BLOCK, INTEGRATED SOLAR STREET LIGHTING AND LED RETROFIT MAST LIGHTING AT KIPEVU POWER STATIONS**

**9<sup>th</sup> April 2018**

**CLARIFICATION No .2**

In accordance with the Tender for Design, Supply, Installation, Testing and Commissioning of Smart Solar Grid-Tie System for Kipevu Office Block, Integrated Solar Street Lighting and LED Retrofit Mast Lighting at Kipevu hereby issues Clarification No.2

**EMERGING QUESTIONS/ISSUES**

No.	Bidders Questions	KenGen Response
<b>Schedule I</b>		
1	Clarify the number of streetlights that are new and the number of existing streetlights.	<p>i) There shall be <b>Forty (40)</b> pieces of completely <b>new</b> floodlights whose scope of work shall include supply, installation, testing and commissioning of Integrated solar street lights complete with supply and installation new poles and including all civil works</p> <p>ii) There shall be <b>Sixty (60)</b> pieces of existing floodlights whose scope of work shall include supply, installation, testing and commissioning of Integrated Solar Streetlights to be fitted onto the existing poles. Bidders shall include the cost of modifying the existing poles to ensure proper installation of the Integrated Solar Streetlights.</p>
2	What is the capacity and lifetime of the Battery in the Integrated Solar Streetlights	The Battery capacity shall be of a rating sufficient to sustain <b>2 days of autonomy</b> with a lifetime of not less than <b>5yrs</b>
3	Characteristics of poles and foundation concrete for existing street lights to be retrofitted with integrated solar street lights.	See Appendix 6
<b>Schedule II</b>		
1	What is the total roof area? What is the slope of the roof? Have the load bearing tests been done on the roof?	Drawing of the roof is attached in Appendix 1 Yes. The roof can bear the weight of the panels as the roof iron sheets are mounted on steel H-beam frames
2	What are the specifications of the Ladder	Specifications of the Ladder are attached in Appendix 2

3	What is the height of the Office block building	The height of the roof is 7780mm See appendix 1
4	What is the Capacity of the grid-tie system	The grid-tie systems shall be 40kw
5	What is the expected consumption trend of the office block and what is the nature of the appliances	The expected power consumption trend is provided in the power quality analysis data is attached in Appendix 3. The list of appliances is provided in Appendix 4
6	What is the rating and specification of the main Breakers?	The main breakers are 800A, whose specifications are given in Appendix 5. Bidders shall provide adequate protection scheme for the system
7	Is a zero export controller needed?	No. A zero export controller is not required since excess solar generation will find use in other installations within the Kipevu plant
8	How long is the defects liability period and how much is retained during DLP?	Refer to Section IV: Special Conditions of Contract, clauses 3.13.1, 3.13.2, 3.17.1. Reliability period shall be <b>Six (6) months</b> <b>10%</b> of contact price shall be retained during DLP
<b>Schedule III</b>		
1	Is the LED retrofit for mast lighting only for the bulb? (Using existing fittings)	No. The mast lighting LED retrofit shall be for the complete unit (LED Floodlights complete with Fittings) to replace the current metal halide floodlights. Bidders shall ensure that the LED floodlights perfectly fit on the available slots on the frame.

**ACKNOWLEDGEMENT OF CLARIFICATION NO. 2**

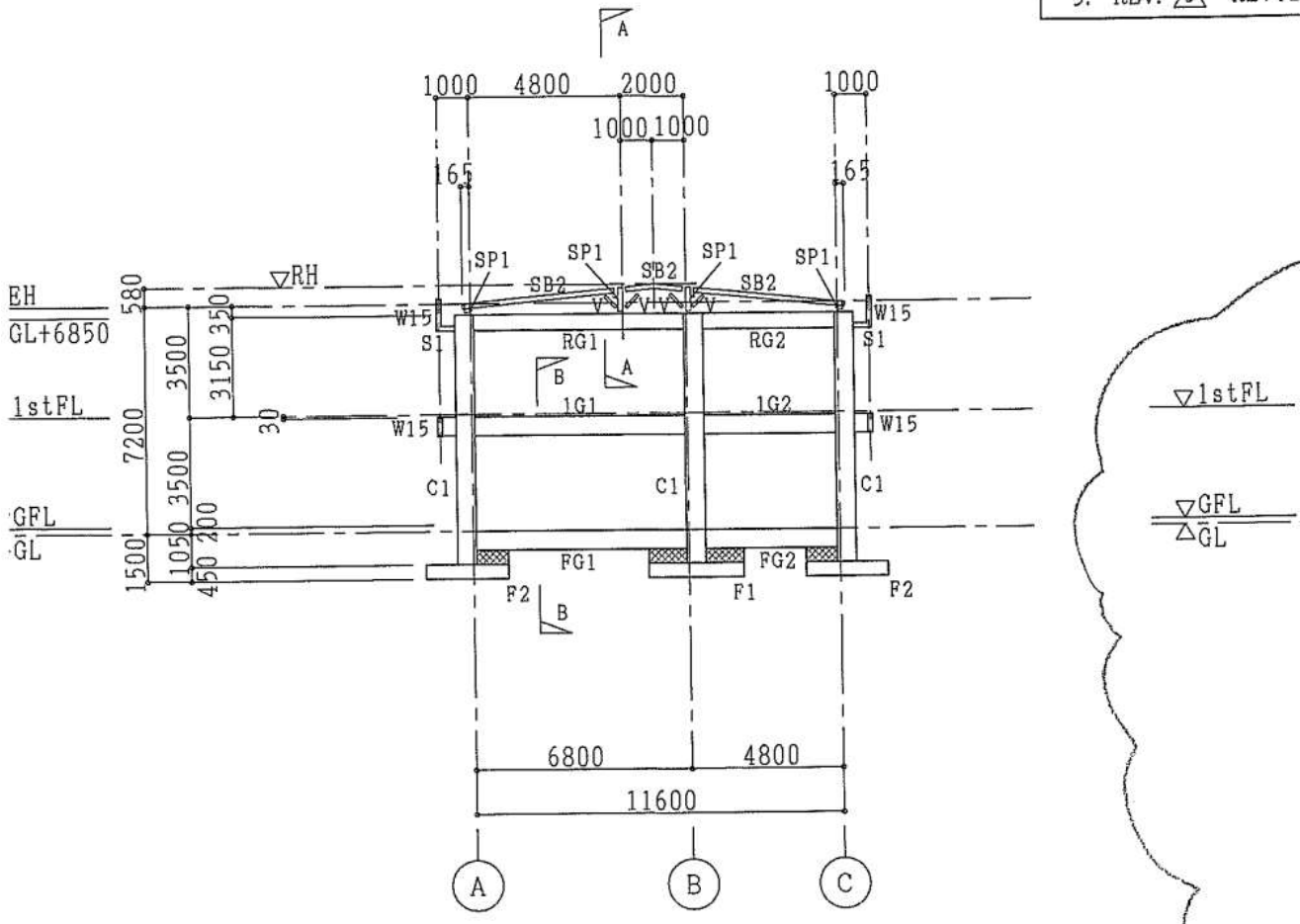
We, the undersigned hereby certify that the addendum is an integral part of the document and the alterations set out in the Addendum have been incorporated in the tender proposal.

Signed.....

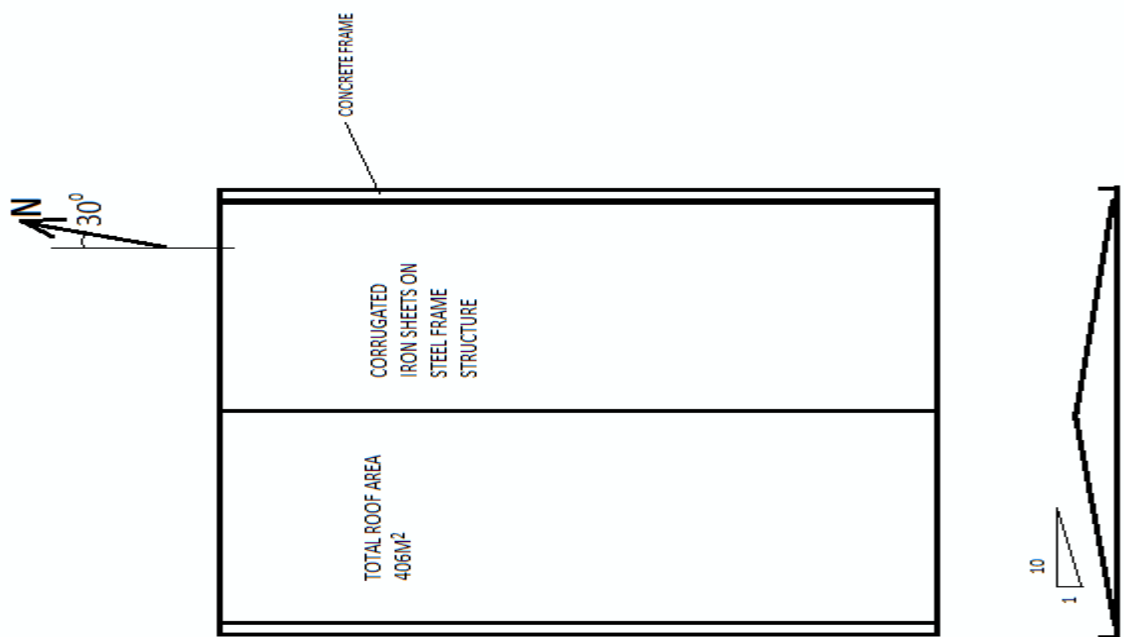
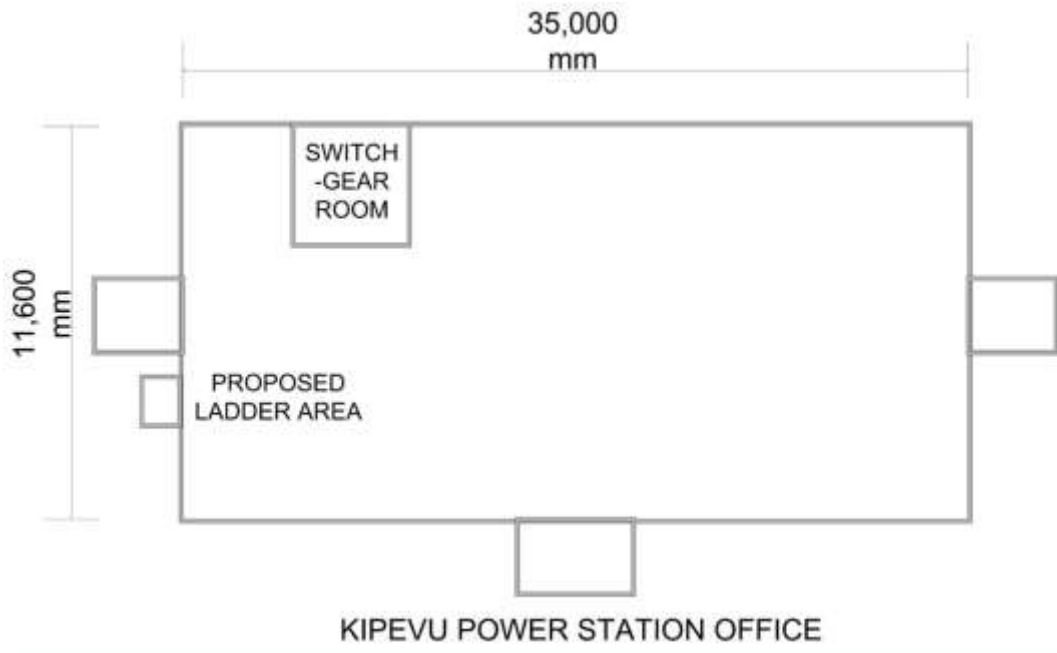
Tenderer.....

# Appendix 1: Layout of the roof

PLAN RECORD		
1. REV.	△1	REVIS
2. REV.	△2	REVIS
3. REV.	△3	REVIS



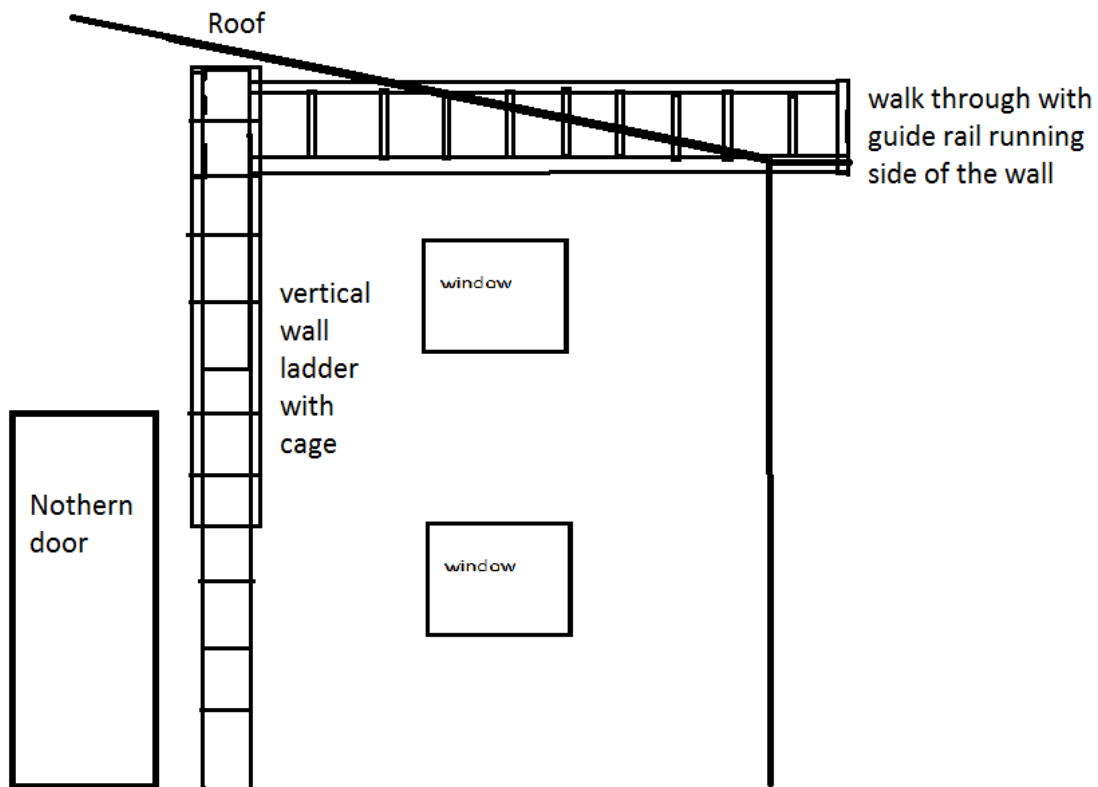
Side profile with dimensions



ROOF ORIENTATION AND SLOPE

## Appendix 2: Specifications of the Ladder

- Wall fixed Vertical roof access ladder complete with cage and horizontal walk-through with guide rail.
- made of hot galvanized steel of yield and tensile strength of at least 210MPa and 330MPa respectively
- For dimensions of the walls check Appendix 1
- see sketch and artistic render below

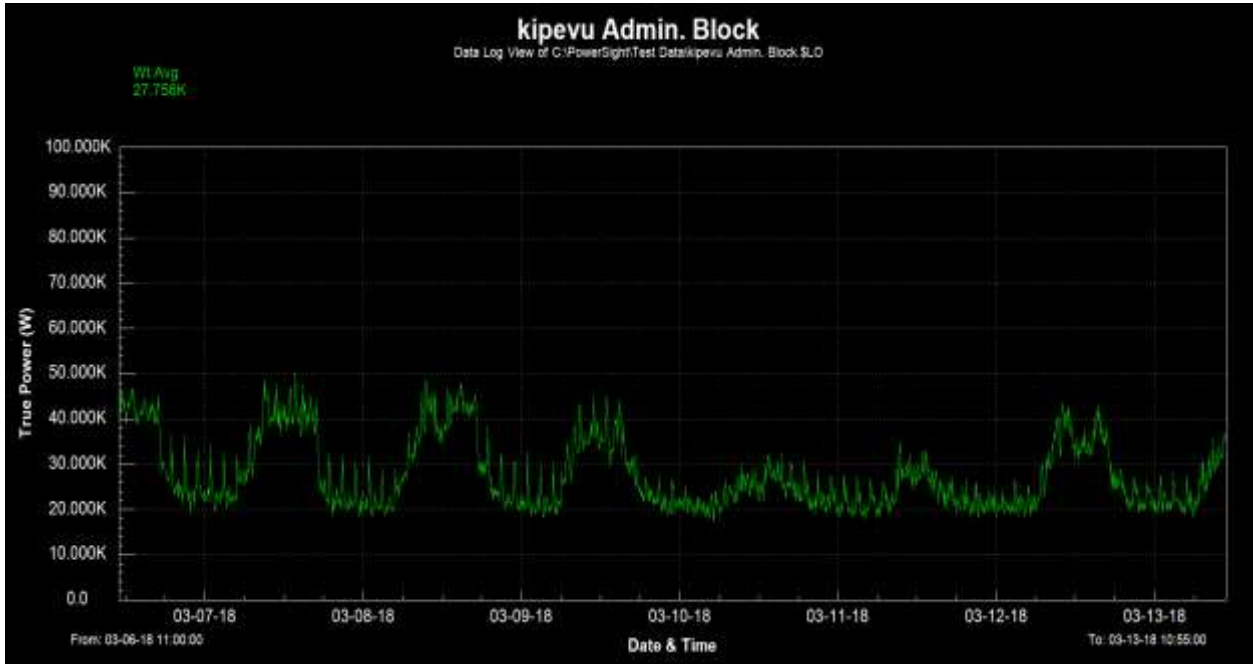




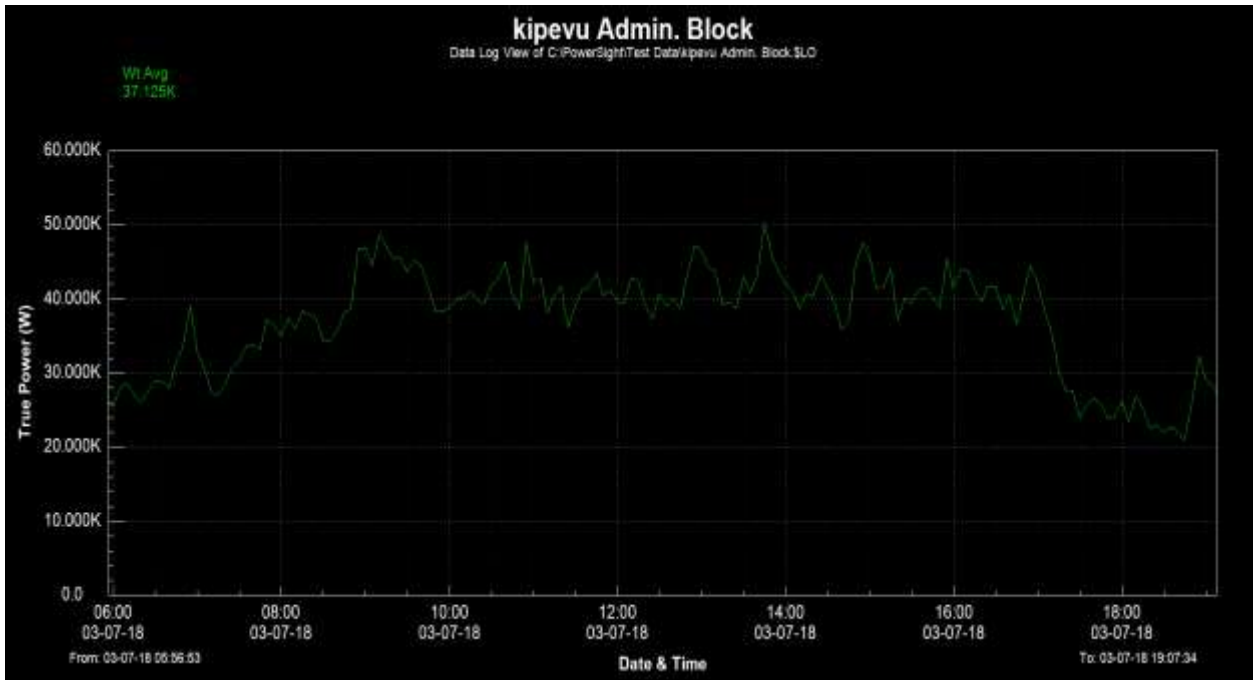
Artistic rendering of a wall ladder with cage

## Appendix 3: KIPEVU ADMINISTRATION BLOCK - POWER CONSUMPTION TRENDS

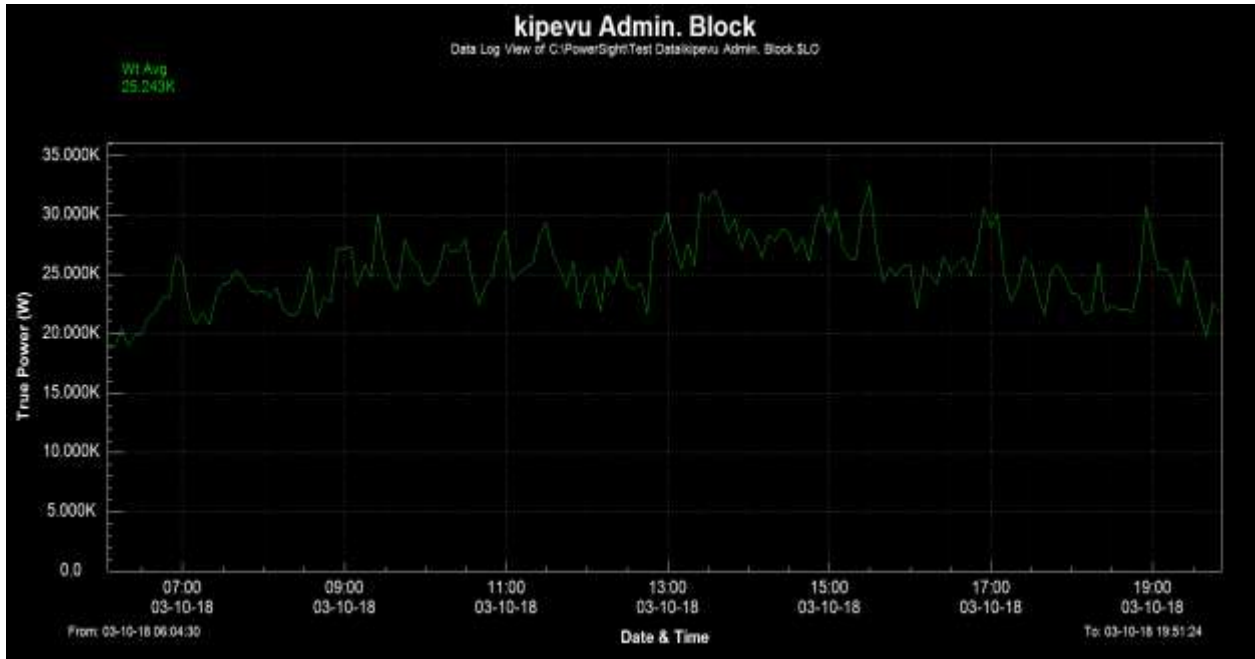
### 1. ONE WEEK LOAD PROFILE



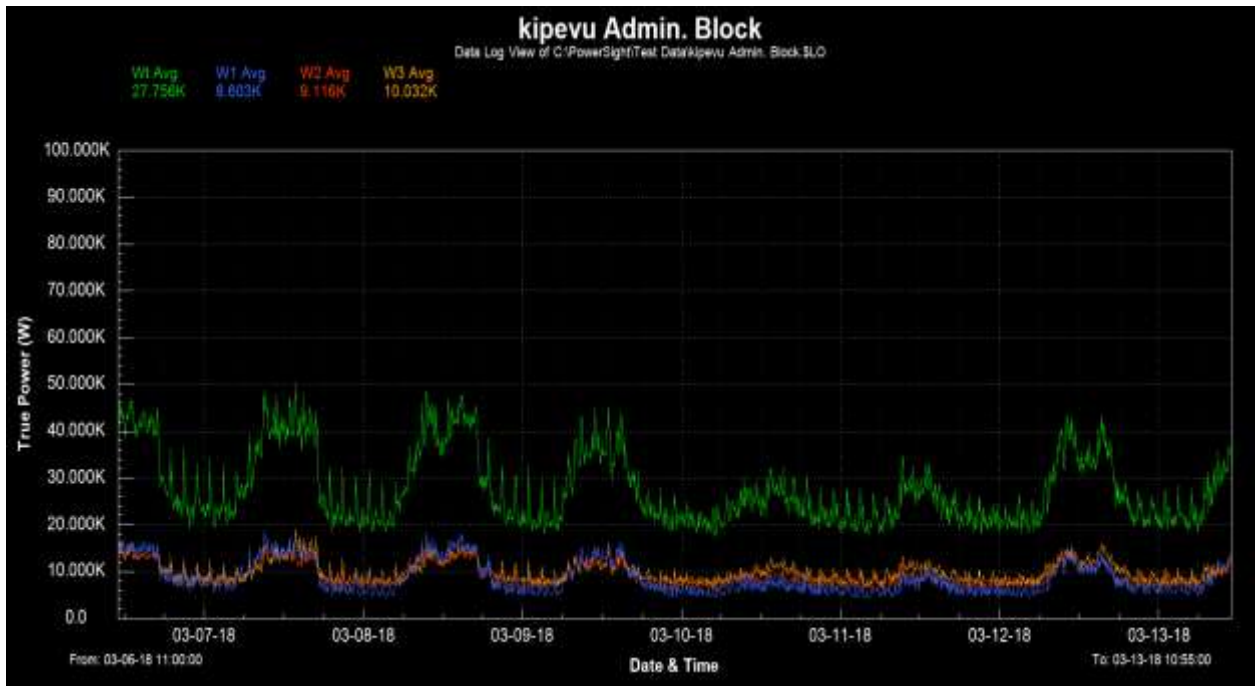
### 2. TYPICAL WEEKDAY PROFILE – DAYTIME



### 3. TYPICAL WEEKEND PROFILE - DAYTIME

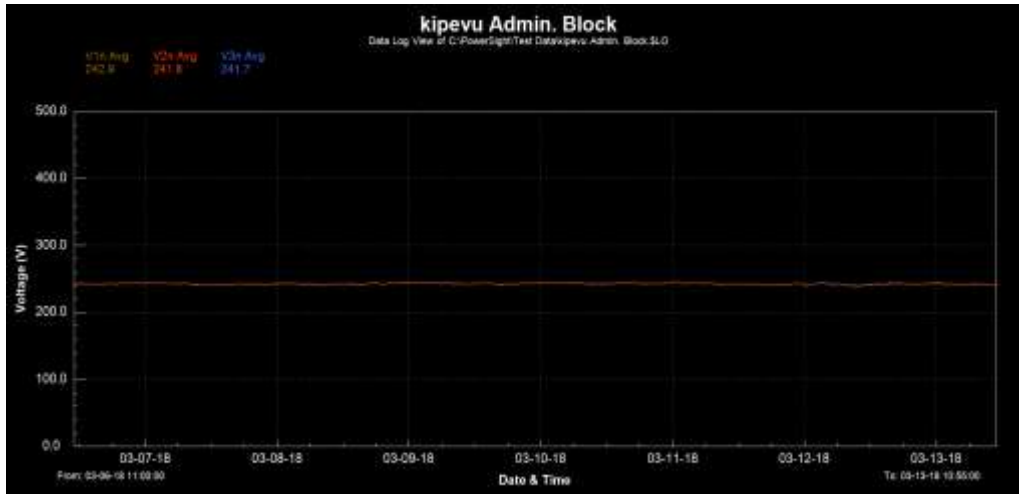


#### 4. PER PHASE POWER LOGS

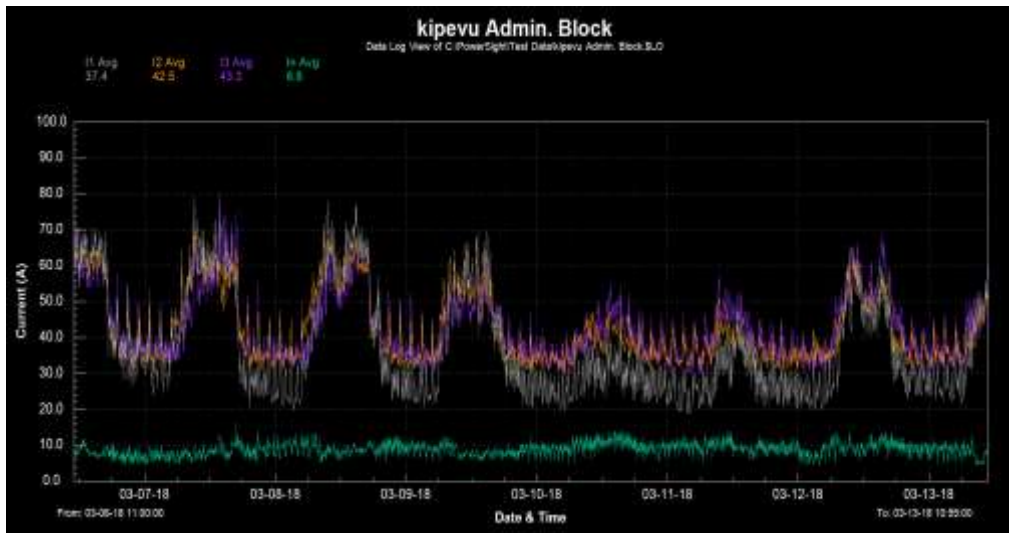


#### 5. VOLTAGE PROFILE

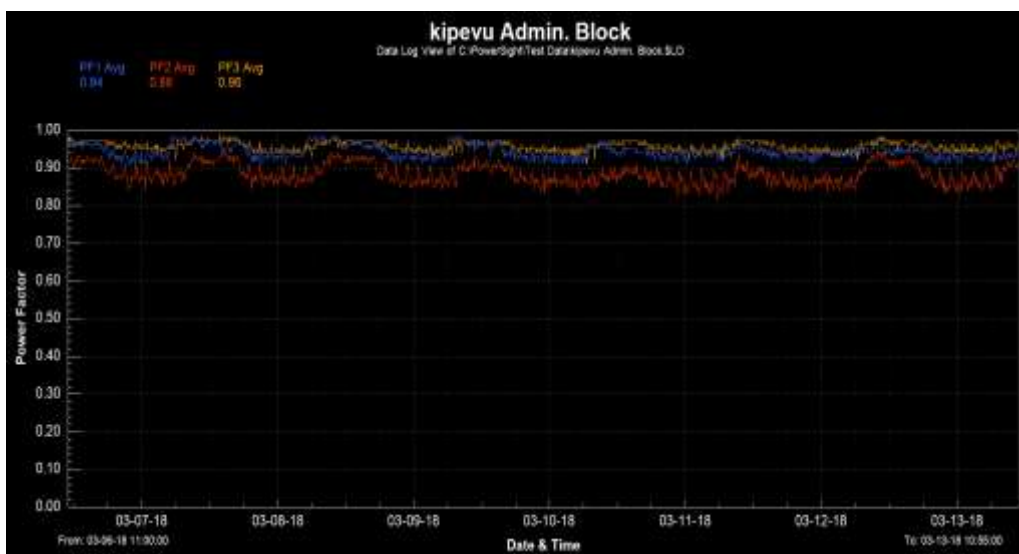




## 6. CURRENT PROFILE



## 7. PF PROFILE



## Appendix 4: List and Rating of Appliances

Ref	Description	Number		Installed Capacity (W)
1	Fluorescent Tubes/LED Lamps	207	1748	10530
2	Air conditioning Units (24,000 BTU/Hr)	4	9520	9520
3	Printers	10	10500	10500
4	Computers	38	9200	15200
5	Desk Phones	38	1250	1850
6	51" Video Conferencing Set-up.	1	1500	1500
7	Fridges	4	3270	4770
8	Shredder	1	670	670
9	Extraction Fans	6	2290	2425
10	Projector	1	700	700
11	Water Dispensers	4	1650	2200
12	Electric Cooker	1	4000	4000
13	Rotisserie	1	2000	2000
14	Dough Mixer	1	5000	5000
15	Freezers	3	4000	6000
16	Television Set	1	500	500
17	Central UPS	1	1000	1000
18	Power Stabilizer	1	400	400
19	Servers	1	1570	1570
20	Switches	1	800	800
21	Central Air-Conditioning Units	2	16700	33400

## Appendix 5: Specifications of the existing circuit breakers

Product name: Moulded Case Circuit Breaker

Manufacturer: ABB

Product Type: SACE S6H

Rated Short –circuit current ( $I_{cs}$ ): 100% of  $I_{cu}$

Rated Ultimate Short-Circuit Breaking Capacity ( $I_{cu}$ ):

(380	V	AC)	65	kA
(230	V	AC)	100	kA
(690	V	AC)	25	kA
(220	V	AC)	100	kA
(660	V	AC)	25	kA
(500	V	AC)	40	kA
(440 V AC) 50 kA				

Rated Current ( $I_n$ ): 800 A

Current range: 320 – 800A, set at 800A

Connection: lugs

Version: Fixed

Standards: EC-947-2

## Appendix 6: characteristics of existing street lights

	<p>Information from civil volume 5, Electrical layout Drawing no. <b>7284/HY/PH/013</b></p> <p>1000 x 1000 x 600 R.C Lighting poles foundation, height 8M.</p> <p>2" Galvanized pipe</p> <p>3" galvanized pipe gauge 4.5mm</p> <p>4" galvanized pipe, gauge 4.5mm</p> <p><b>NOTE:</b> CLASS of the pipe not specified</p>
	<p>For 1200 x 1200 x 600 R.C Lighting pole foundation, height 11M.</p> <p>The lower part is 6" pipe in diameter,</p> <p>2" Galvanized pipe</p> <p>3" galvanized pipe gauge 4.5mm</p> <p>4" galvanized pipe, gauge 4.5mm</p> <p><b>NOTE:</b> CLASS of the pipe not specified</p>

