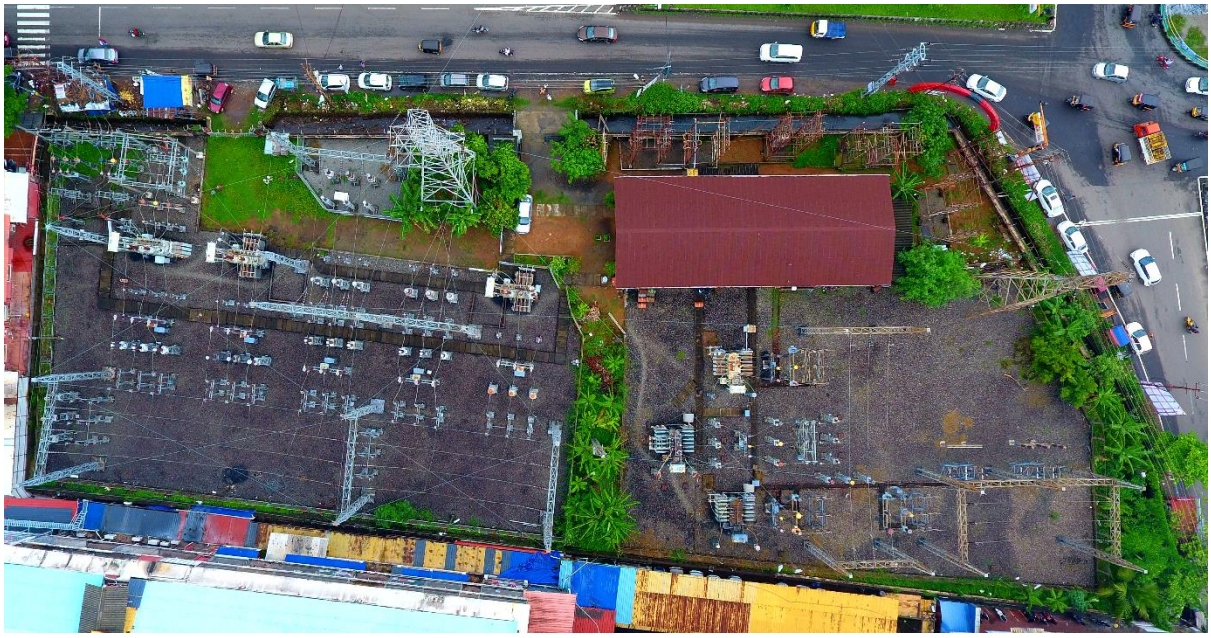
Annual Energy Audit Report

FY 2022-23



Thrissur Corporation Electricity Department

(TCED)

Reg No. DIS0070KL

Thrissur, Kerala.

Prepared by

Centre for Energy Environment & Productivity

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July 2023

ACKNOWLEDGEMENTS

Bureau of Energy Efficiency (BEE) through its extraordinary gazette notification on 06th October 2021 made the regulation: Manner and Intervals for Conduct of Energy Audit in electricity distribution companies) Regulations, 2021. Through this every electricity distribution company shall conduct an annual energy audit for every financial year and submit the annual energy audit report to the Bureau and respective State Designated Agency (Energy Management Centre, Govt of Kerala) within a period of four months from the expiry of the relevant financial year.

Centre for Energy Environment and Productivity (CEEP) places on record its sincere thanks to M/s Thrissur Corporation Electricity Department (TCED) for entrusting the task of conducting Energy audit for its DISCOM during August – September 2023.

We would also like to thank the following officials of M/s Thrissur Corporation Electricity Department (TCED), Thrissur District-Kerala - 680001. for their proactive support and courtesy extended to the AEC team during the study and all other staff, especially the Assistant Engineers and sub staffs of each section, for their cooperation and support given during the whole process.

Mr. Jose T Simon	*Electrical Engineer*
Ms. Jayasree V S	*Finance Manager*
Mr. Nikhil B	*Assistant engineer/Energy Auditor*
Ms. Deepa S	*IT Manager*

04/11/2023

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ENERGY AUDIT TEAM

Table 1: Energy audit team

Sr No	Name	Qualification	EM/EA/AEA/ Registration No	Experience (In Years)
Team Leader				
1	Mr. J Nagesh Kumar	• Accredited Energy Auditor	AEA-0133	30
Team Members				
2	Mr. Sunil kumar V K	• Certified Energy Auditor • Sector Expert	EA - 3642	32
3	Mr. Ashok K M P	• Certified Energy Auditor • M. E. (Energy Engineering)	EA- 34760/22	8
4	Ms. Della David	• Certified Energy Auditor • M. Tech (Power electronics)	EA -34867/22	12
5	Ms. Keerthana K	• Project Engineer	NIL	3
6	Ms. Neema Joy P	• Project Engineer	NIL	2

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TABLE 2: SUMMARY OF DISCOM – FORM-1

Performance Summary of Electricity Distribution Companies			
1	Period of Information Year of (FY) information including Date and Month (Start & End)	1st Apr, 2022 - 31st March, 2023	
2	**Technical Details**		
(a)	**Energy Input Details**		
(i)	Input Energy Purchase (From Generation Source)	Million kWh	159.665
(ii)	Net input energy (at DISCOM Periphery including sale outside periphery)	Million kWh	159.665
(iii)	Total Energy billed (is the Net energy billed, adjusted for energy traded)	Million kWh	148.36
(b)	Transmission and Distribution (T&D) loss (Billing efficiency)	Million kWh	11.305
		%	7.08
	Collection Efficiency	%	97.36%
(c)	Aggregate Technical & Commercial Loss	%	9.54%

2. ENERGY CONSERVATION MEASURES SUMMARY

The TCED can consider several possible measures for energy conservation to reduce their distribution loss to their best value as summarised in the executive summary.

TABLE 3: ENERGY CONSERVATION MEASURES

ECM No	**Energy Efficiency Measures**	**Annual Electricity Savings**	**Annual Financial Savings**	**Investment**	**Fixed interest rate**	**Cash inflow**	**Net present value**	**Internal rate of return**
		MU	**(Rs)**	**(Rs)**	**%**	**Years**	**Rs**	**%**
1	Replacing HT & LT overhead lines with UG cables***	0.987	64,19,547	1,75,45,800	8	5	37,16,553	17.19%
2	Replacing Two nos of Old Transformers with Energy Efficient transformers	0.01205	78,336	14,00,000	8	20	-6,30,888	1.10%
3	Power Factor Improvement in Feeders – installation of 420 kVAr total	-	2,45,15,506	37,50,000	8	1	1,89,49,542	553.75%

***At 11 kV = 8.273 km & at 415 V = 20.97 km

3. GENERAL OBSERVATIONS AND SUGGESTIONS

TABLE 4: GENERAL OBSERVATIONS AND SUGGESTIONS

Observation	Suggestions	Benefits
Collection efficiency of the DISCOM has been improved to 97.36% from 93.79%. As per the TCED availed data, the major dues are from the Government departments, urban local bodies, street light and corporation owned buildings.	Collection drives should be placed in the DISCOM area. Awareness shall be provided for the proper billing in due time. Energy cell can give awareness in the DSM and various energy efficiency measures to help them in reducing the consumption.	Collection efficiency of the DISCOM is 97.36% which resulted in improvement of AT & C loss from 11.23 %(FY-2021-22) to 9.54% (FY-2022-23) As per the TCED availed data, the major dues are from the Government departments, urban local bodies, street light and corporation owned buildings.
As the back-feed units from one feeder to another were not available in the DISCOM, exact loss analysis was unable to calculate from the existing data.	Feeder boundary energy meter is suitable option to have the back-feed data and records shall be maintained properly.	As the back-feed units from one feeder to another were not available in the DISCOM, exact loss analysis was unable to calculate from the existing data.

4. COMPLIANCE TO RENEWABLE PURCHASE OBLIGATIONS

TCED purchasing the 99.34% of the power consumed through KSEBL. As the KSEBL is on the verge of meeting the RPO obligation, the same can consider for the TCED.

Table 5: Solar generation share

Total Energy Consumption FY 2022-23 (MU)	**159.665**	
Details	**Solar generation**	**Non-solar generation**
Present status - MU	1.06	0
Present status - %	0.66%	0

BACKGROUND

1. ABOUT BEE

The Government of India has set up Bureau of Energy Efficiency (BEE) on 1st March 2002 under the provision of the Energy Conservation Act, 2001. The mission of Bureau of Energy Efficiency is to assist in developing policies and strategies with a thrust on self-regulation and market principles with the primary objective of reducing energy intensity of the Indian economy within the overall framework of the Energy Conservation Act, 2001. This will be achieved with active participation of all stakeholders, resulting into accelerated and sustained adoption of energy efficiency in all sectors.

2. EXTANT OF REGULATIONS - DISCOM

Under the notification S.O. 3445 (E) dated 28 Sept 2020, all entities having distribution license are notified as Designated Consumers. Notification is read as "All entities having issued distribution license by State/Joint Electricity Regulatory Commission under the Electricity Act, 2003 (36 of 2003)" are notified as Designated Consumers (DCs). After this notification, all the DISCOMs will be governed under the various provisions of Energy Conservation Act, such as Appointment of Energy Manager, Energy Accounting & Auditing, identification of Energy Losses Category wise, Implementation of energy conservation & efficiency measures etc.

The amendment is expected to help DISCOMs to monitor their performance parameters and bring in transparency in the Distribution sector through professional inputs. It will also assist in developing projects for reducing the electricity losses by DISCOMs and implementing effective solutions. The amendment is expected to improve the financial state of the DISCOMs.

In exercise of the powers conferred by clause (g) of sub-section (2) of section 58, read with clause (q) of sub-section (2) of section 13 of the Energy Conservation Act, 2001 (52 of 2001), the Bureau of Energy Efficiency, thus made the following regulations:

3 **Named as** Bureau of Energy Efficiency (Manner and Intervals for Conduct of Energy Audit in electricity distribution companies) Regulations, 2021.

4 These regulations shall apply to all electricity distribution companies specified as designated consumer.

5 They shall come into force on the date of their publication in the Official Gazette. (No: CG-DL-E-08102021-230245 Dated 06 October 2021).

3. PURPOSE OF AUDIT AND ACCOUNTING REPORT

Energy accounting and a consequent annual energy audit would help to identify areas of high loss and pilferage, and thereafter focus efforts to take corrective action. Energy Accounting means accounting of all energy inflows at various voltage levels in the distribution periphery of the network, including renewable energy generation and open access consumers, and energy consumption by the end consumers.

Owing to the impact of energy auditing on the entire distribution and retail supply business and absence of an existing framework with dedicated focus on the same, it was imperative to develop a set of comprehensive guidelines that all Distribution utilities across India can follow and adhere to.

4. PERIOD OF ENERGY AUDIT AND ACCOUNTING

The table below shows the frequency of energy audit and energy accounting as per the BEE guidelines.

Table 6: Period of Energy Audit & Accounting – as per BEE guidelines

Particulars	Frequency	Submission date	Whom to submit	Who should submit
Energy audit	Every year	Within a period of 4 months from the expiry of the relevant financial year	BEE & SDA	Accredited energy auditor
Energy accounting	Quarterly	45 days from the quarter	BEE & SDA	Certified energy manager

TCED has initiated the energy audit in the month of July 2023 in order to submit the Energy audit report. Thus, the TCED entrusted the work to CEEP as per the wor order no: BEE/DISCOM–219/23 dated 16th August 2023 and the latter started the field study by first week of September - field study for 18 days - and draft report submitted on 12th October 2023.

5. PROGRESS IN COMPLIANCE TO PREREQUISITES TO ENERGY ACCOUNTING

Table 7: Progress in energy accounting

Quarter	Submission date	Ref no
1st Quarter – 1st April 2022 to 30th June 2022	26th July 2022	BEE-DISCOM/6506/21
2nd quarter – 1st July 2022 to 30th Sept'2022	11th Nov 2022	BEE-DISCOM/6506/21
3rd Quarter - 1st Oct'2022 to 31st Dec'2022	16th Feb 2023	BEE-DISCOM/6506/21
4th Quarter – 1st Jan 2023 to 31st Mar 2023	21th Aug 2023	BEE-DISCOM/6506/21

DISCOM INTRODUCTION AND OVERVIEW

1. NAME AND ADDRESS OF DESIGNATED CONSUMER

Table 8: Name and address of designated consumer

General Details	Description
Registered Office address with telephone, fax nos. & e-mail	**M/s Thrissur Corporation Electricity Department (TCED),** Thrissur Corporation, MO Road, Thrissur District-Kerala - 680001. Ph: 0487 2422470
Company Chief executive name & details	**Assistant Secretary** **M/s Thrissur Corporation Electricity Department (TCED),** Thrissur Corporation, MO Road, Thrissur District-Kerala -680001. Ph: 0487 2422470 Email: electricitydepartment@yahoo.co.in
Authorized signatory of DC (Nodal Officer)	**Mr. Jose T S** **Electrical Engineer** **M/s Thrissur Corporation Electricity Department (TCED),** Thrissur Corporation, MO Road, Thrissur District-Kerala - 680001. Ph: 0487 2423559
Energy Manager's Name, (Designated) Designation, Registration No., Address, Mobile, Telephone, Fax nos. & e-mail	**Mr. Nikhil B** Assistant Engineer/CEA 24811 **M/s Thrissur Corporation Electricity Department (TCED),** Thrissur Corporation, MO Road, Thrissur District-Kerala - 680001. Mob: 9037192013

2. ENERGY AUDIT CELL

Table 9: Energy audit cell

Sr	Member of EAC	Name	Designation	Mobile number	Email
1	Nodal officer	Mr. Jose T Simon	Electrical Engineer	9446019795	electricitydepartment@yahoo.co.i
2	Energy Auditor	Mr. Nikhil B	Assistant engineer/Energy Auditor CEA 24811	9037192013	
3	IT manager	Ms. Deepa S	System Administrator	9048267195	
4	Financial manager	Ms. Jayasree V S	Senior Superintend Accounts	8089580455	

3. SUMMARY PROFILE OF DISCOM – FORM-1

The performance summary of TCED as DISCOM as per the FY 2022-23 is given in the following table.

Table 10: Summary of DISCOM – Form-1

Performance Summary of Electricity Distribution Companies			
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(b)	Transmission and Distribution (T&D) loss (Billing efficiency)	Million kWh	11.305
		%	7.08
	Collection Efficiency	%	93.48%
(c)	Aggregate Technical & Commercial Loss	%	13.14%

The feeder wise T&D loss of the TCED distribution system is calculated based on the annual unit consumption for 11 feeders and summarized in the following table:

Table 11: T & D loss – Summarised – feeder wise

Sl. No	**Feeder**	**Net energy sales - annual**	**LT Overhead line loss**	**LT Cable loss**	**Transformer Loss**	**HT overhead & cable line loss**	**Estimated Consumption at feeder level**	**T&D Loss**	
		MU	**MU**	**MU**	**MU**	**MU**	**MU**	**MU**	**%**
1	Bini	5.663	0.115	0.005	0.094	0.001	5.88	0.21	3.65
2	Chembukkavu	7.999	0.618	0.014	0.122	0.003	8.75	0.76	8.64
3	Shoranur Road	9.757	0.656	0.026	0.214	0.002	10.65	0.90	8.43
4	Ramanilayam	6.241	0.150	0.006	0.093	0.002	6.49	0.25	3.86
5	JMC	8.118				0.003	8.12	0.003	0.04
6	Vivekodhayam	6.764	0.672	0.020	0.107	0.001	7.56	0.80	10.58
7	Veleyannor	7.611	0.608	0.014	0.106	0.002	8.34	0.73	8.74
8	East Fort	9.880	1.099	0.024	0.172	0.004	11.18	1.30	11.63
9	Mission Quaters	8.980	0.950	0.017	0.185	0.002	10.13	1.15	11.39
10	Paravattany	7.536	1.084	0.041	0.147	0.005	8.81	1.28	14.48
11	Keralavarma	8.555	0.872	0.024	0.210	0.007	9.67	1.11	11.51
	Total	**87.103**	**6.824**	**0.191**	**1.448**	**0.033**	**95.60**	**8.50**	**8.89**

Note:

- ***Sampled 11 feeders for the T&D loss analysis out of 18 feeders as the feeder wise LT line length, consumer numbers, types and transformer details were not present for the remaining feeders during the audit period.***
- *The DISCOM is mapping the consumers and its assets in the due process under the RDSS.*

Energy flow diagram is given below in figure:

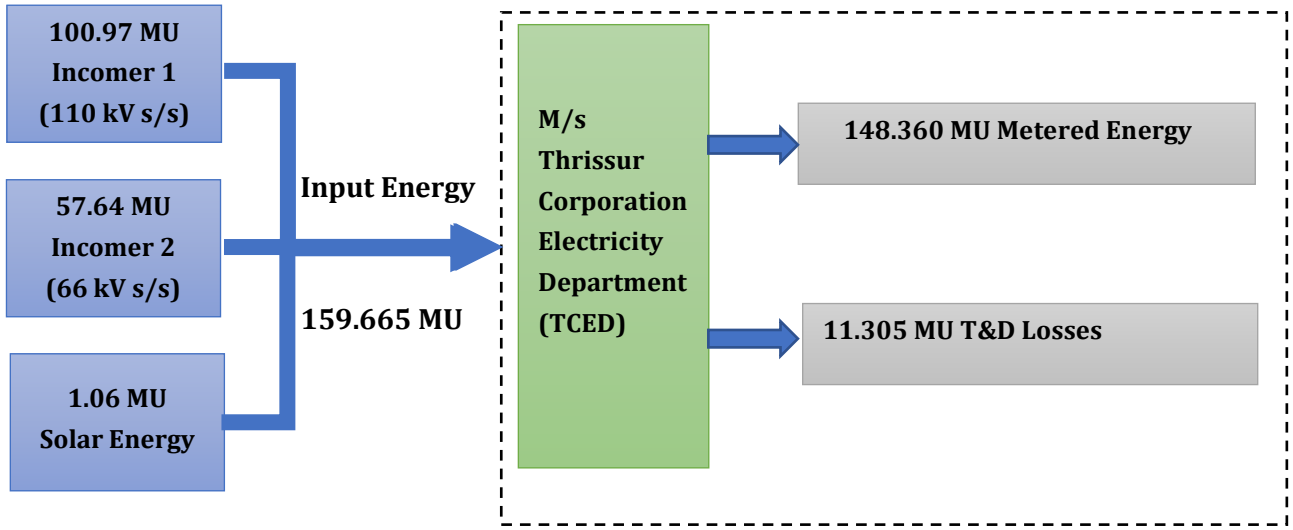

Figure 1: Energy flow diagram - TCED

- *Input energy = the energy received at the TCED for distribution.*
- *Metered energy = energy metered at the consumer end*
- *T&D losses = Net losses*

FORM INPUT ENERGY

The table below shows the **major energy parameters for the FY 2022-23**

Table 12: Major energy parameters – TCED DISCOM

Form-Input energy (Details of Input energy & Infrastructure)			
A. Summary of energy input & Infrastructure			
S. No	**Parameters**	**Period from April 2022 to March 2023**	**Remarks (Source of data)**
A.1	Input Energy purchased (MU)	159.665	Electricity bill & solar export
A.2	Transmission loss (%)	0%	
A.3	Transmission loss (MU)	0	
A.4	Energy sold outside the periphery (MU)	0.00	
A.5	Open access sale (MU)	0	
A.6	EHT sale	0	
A.7	Net input energy (received at DISCOM periphery or at distribution point)-(MU)	159.665	Total net input
A.8	Is 100% metering available at 66/33 kV (Select yes or no from list)	Yes	
A.9	Is 100% metering available at 11 kV (Select yes or no from list)	Yes	
A.10	% of metering available at DT	62.6%	293 out of 468 transformers
	Total number of DT (Nos)	468	
A.11	Total number of consumers (Nos)	41831	
	Number of HT consumers (Nos)	134	
	Number of LT consumers (Nos)	41697	
A.12	% of metering available at consumer end	100%	
A.13	No of feeders at 66kV voltage level	0	
A.14	No of feeders at 33kV voltage level	0	
A.15	No of feeders at 11kV voltage level	18	
A.16	No of LT feeders' level	0	Not available
A.17	Line length (ckt. km) at 66kV voltage level	0	
A.18	Line length (ckt. km) at 33kV voltage level	4.2	Measured through HT line mapping
A.19	Line length (ckt. km) at 11kV voltage level	115.13	Measured through HT line mapping
A.20	Line length (km) at LT level	285.675	Measured through LT line mapping
A.21	Length of Aerial Bunched Cables	1.85	Measured through HT line mapping
A.22	Length of Underground Cables	78.92	Site measurement
A.23	HT/LT ratio	1/2.36	

Table 13: Metered reading of input energy

B. Meter reading of Input energy at injection points																
S. No	**Zone**	**Circle**	**Voltge Level (KV)**	**Feeder Name**	**Feeder Metering Status (Metered/ unmetered/ AMI/AMR)**	**Status of Meter (Functional/Non-functional)**	**Metering Date**	**Feeder Type (Agri/ Industrial/ Mixed)**	**Status of Communication**			**Period from April 2022 to March 2023**				**Remarks (Source of data)**
							Date of last actual meter reading/ communication		**% data received through automatically if feeder AMR**	**Number of hours when meter was unable to communicate in period**	**Total Number of hours in the period**	**Meter S.No**	**CT/ PT ratio**	**Import (MU)**	**Export (MU)**	
B. 1	TCED	TCED	110	VIPL	Metered	Functioning	01-04-2022	Mixed	0	0	NA	X2005320	200/1	100.97	-	110 kV s/s
B. 2	TCED	TCED	66	OLVI	Metered	Functioning	01-04-2022	Mixed	0	0	NA	17052040	200/1	57.64	-	66 kV s/s
B. 3	TCED	TCED	0.415	Multiple feeders	Metered	Functioning	01-04-2022	Mixed	0	0	NA	-	-	0.510		Consumer bills
B. 4	TCED	TCED	11	Multiple feeders	Metered	Functioning	01-04-2022	Mixed	0	0	NA	-	-	0.550		Consumer bills
Total (MU)														**159.665**	**0.00**	
Net input energy at DISCOM periphery (MU)														**159.665**		

4. ASSET MAPPING OF DISCOM

MAPPING – DT & 11 KV OH LINE

Mapping of the transformer, pole and 11 kV consumers were done to evaluate the distance which helps to calculate the HT line loss in TCED.

GPS mapping was made using the Google map/ GPS meter collecting the latitude and longitude, and later projected into the relevant free software by naming the specific pole, DT and 11 kV consumer with serial numbers. The GPS mapping of HT lines done for 18 feeders and the details are analyzed in this section.

Feeder wise HT line mapping is given below in charts in representation purpose and the distance of the DT from each substation is given in the table below.

FEEDER WISE MAPPING

There are 18 mapped feeders, and the new distribution transformers (DTs) on the line have been updated and mapped as well. The feeders are listed below.

Table 14: Feeder List

Sl No	Feeder Number	Feeder	No: of Transformer
1	8	Bini	17
2	14	Chembukavu	24
3	17	East Fort	27
4	6	Jubilee Mission College	Dedicated feeder HT
5	3	Koorkenchery	22
6	11	Ramanilayam	18
7	15	Shornur Road	42
8	2	Veliyanoor	18
9	7	Vivekodhayam	21
10	16	District Hospital	34
11	5	Arnattukkara	31
12	13	Kottappuram	38
13	18	Vanchikulam	22
14	10	Keralavarma	36
15	1	Mission Quarters	30
16	12	M O Road	31
17	4	Paravattany	24
18	9	Poonkunam	33
		Total	**468**

Feeder-wise high-tension (HT) line mapping is provided in the charts for representation purposes. The distance of the DT from the switching station is detailed in the table below.

1 BINI FEEDER

The following table shows the HT line distance of the 11 kV lines.

Table 15: HT line distance – Bini feeder

From Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
SS	2P	2P	10.535256	76.214482	**UG**	XLPE	300		10	10
2P	P1	Post	10.535166	76.214903	**UG**	XLPE	300	56.45	8	64.45
P1	P19	Post	10.531830	76.215107	**OH**	Racoon				0
P19	P2	Post	10.534960	76.215040	**OH**	Racoon		374.22		374.22
P2	RMU-30801	RMU-30801	10.531838	76.215015	**UG**	XLPE	300		10	10
RMU-30801	2	TT Devassy	10.531879	76.214960	**UG**	XLPE	300	18.02	2	20.02
P2	P3	Post	10.531335	76.215078	**OH**	Racoon				0
P3	P4	Post	10.531049	76.215114	**OH**	Racoon				0
P4	P5	Post	10.529577	76.214890	**OH**	Racoon		251.84		251.84
P5	P6	Post	10.529488	76.215092	**OH**	Racoon				0
P6	P20	Post	10.52926	76.21616	**OH**	Racoon				0
P20	P7,29	Vadakke chira	10.529356	76.216230	**OH**	Racoon		159.34		159.34
P7	P8	Post	10.529546	76.216378	**OH**	Racoon		26.45		26.45
P8	4	Lake View	10.529449	76.216594	**UG**	XLPE	300	25.78	5	30.78
P7	ABI-50802	ABI-50802	10.529068	76.216227	**OH**	Racoon				0
P7	P9	Post	10.528870	76.216152	**OH**	Racoon				0
P9	P10	Post	10.527645	76.215877	**OH**	Racoon		193.79		193.79
P10	5	Seethal Apartment	10.527505	76.216275	**UG**	XLPE	300	46.05	5	51.05
P10	P10-1	Post	10.527543	76.216062	**OH**	Racoon		22.6		22.6
P10-1	6	Kalyan Jewellers	10.527462	76.216232	**UG**	XLPE	240	21.37	50	71.37
P5	P11	Post	10.529458	76.214614	**OH**	Racoon		33.69		33.69
P11	P12	Post	10.529484	76.214194	**OH**	Racoon		46.27		46.27
P12	1	Mangala Tower	10.529553	76.214261	**UG**	XLPE	185	10.92	10	20.92
P12	P21	Post	10.52949	76.21346	**OH**	Racoon				0
P21	P13	Post	10.529547	76.213178	**OH**	Racoon		111.57		111.57

From Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P13	3	Paliyam Road	10.529485	76.213167	**OH**	Racoon		7.4		7.4
P13	P13-1	Post	10.529615	76.213168	**OH**	Racoon		7.6		7.6
P13-1	26	Ashiana Apartments	10.529910	76.213040	**UG**	XLPE	240	35.64	20	55.64
P11	P14	Post	10.529163	76.214639	**OH**	Racoon				0
P14	ABL-50803	ABL-50803	10.528369	76.214367	**OH**	Racoon		125.93		125.93
ABL-50803	10	Pallithammam	10.528262	76.213578	**UG**	XLPE	240	87.23	5	92.23
10	LBS,16	SBI- Pallithammam	10.528090	76.213650	**UG**	XLPE	185	20.13	2	22.13
LBS	12	Elite Supermarket (Pallithammam)	10.528137	76.213650	**UG**	XLPE	185	5.2	1	6.2
LBS	11	Pallithammam (Indoor)	10.528185	76.213651	**UG**	XLPE	185	5.31	10	15.31
10	LBS,14	LBS, Kairali Sree Theatre 2	10.528141	76.213761	**UG**	XLPE	240	12.99	3	15.99
LBS	13	Kairali Sree Theatre 1	10.528073	76.213925	**UG**	XLPE	240	19.46	35	54.46
ABL-50803	P15	Post	10.528289	76.214548	**OH**	Racoon		21.7		21.7
P15	7	AGS Office	10.528266	76.214609	**OH**	Racoon		7.15		7.15
7	8	Cochin Dewasm Board	10.528197	76.214594	**OH**	Racoon		7.81		7.81
ABL-50803	P17	Post	10.528113	76.214334	**OH**	Racoon		28.55		28.55
P17	P16	Post	10.527645	76.214347	**OH**	Racoon				0
P16	P16-1	Post	10.527677	76.214684	**OH**	Racoon				0
P16-1	P16-2	Post	10.527742	76.215051	**OH**	Racoon		129.44		129.44
P16-2	9	Kailasam	10.527841	76.215127	**UG**	XLPE	300	14.11	28	42.11
P17	P16	Post	10.527645	76.214347	**OH**	Racoon		51.79		51.79
P16	P16-3	Post	10.527616	76.214282	**OH**	Racoon		7.8		7.8
P16-3	25	Bini Tourist Home	10.527769	76.214029	**UG**	XLPE	185	32.45	25	57.45
P17	G1	Ground	10.527570	76.214301	**UG**	XLPE	300		7	7
G1	G2	Ground	10.526835	76.212525	**UG**	XLPE	300			0
G2	24	Vegetable	10.527160	76.212504	**UG**	XLPE	300	303.92	5	308.92
24	G2				**UG**	XLPE				
G2	17	Dhanalakshmi Bank	10.52686	76.212190	**UG**	XLPE	300	74		74
24	P18	Post	10.527319	76.212319	**OH**	Racoon		26.71		26.71
P18	15	Chemmannur	10.52732	76.212100	**UG**	XLPE	240	23.97	40	63.97
24	G2	Ground	10.526835	76.212525	**UG**	XLPE	300			0

From Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G2	G3	Ground	10.526539	76.212193	**UG**	XLPE	300			0
G3	G4	Ground	10.526090	76.212030	**UG**	XLPE	300			0
G4	G5	Ground	10.524329	76.212023	**UG**	XLPE	300			0
G5	G6	Ground	10.524184	76.211864	**UG**	XLPE	300			0
G6	G7	Ground	10.524039	76.21133	**UG**	XLPE	300	438.02		438.02
G7	21	Naduvilal(Pooma)	10.523870	76.211293	**UG**	XLPE	300	15.66	6	21.66
21	20	Pooma Complex	10.523813	76.211424	**UG**	XLPE	150	15.66	15	30.66
P25-1	P25	Post	10.523930	76.21127	**OH**	Racoon		7.51		7.51
P25	P23	Post	10.523980	76.21168	**OH**	Racoon				0
P23	23, P23-1	Naduvial Shopping complex, Post	10.524120	76.21164	**OH**	Racoon		61.03		61.03
P23-1	19	Sidish Complex	10.52425	76.21153	**OH**	ABC		18.57		18.57
P23-1	G6	Ground	10.524184	76.211864	**UG**	XLPE	300			
G6	G5	Ground	10.524329	76.212023	**UG**	XLPE	300			
G5	G8	Ground	10.52468	76.212010	**UG**	XLPE	300			
G8	AB-Ayodhya	AB	10.52466	76.211960	**UG**	XLPE	300	92.68		92.68
AB-Ayodhya	18	Ayodhya centre	10.52467	76.211780	**UG**	XLPE	150	20.72	12	32.72
P25	P24	Post	10.52383	76.21069	**OH**	Racoon		65.54		65.54
P24	AB-Chungath	AB	10.52398	76.21069	**OH**	Racoon		17.39		17.39
AB-Chungath	22	P22,Chugath Jewellery	10.52398	76.21069	**UG**	XLPE	300		10	10
P24	RMU-30802, 28	RMU-30802, National Lodge	10.5237	76.21069	**UG**	XLPE	300	13.75	35	48.75
P24	P26	Post	10.52377	76.21028	**OH**	Racoon		45.37		45.37
P26	27	Maheswari Apartment	10.52369	76.210190	**UG**	XLPE	300	12.47	17	29.47

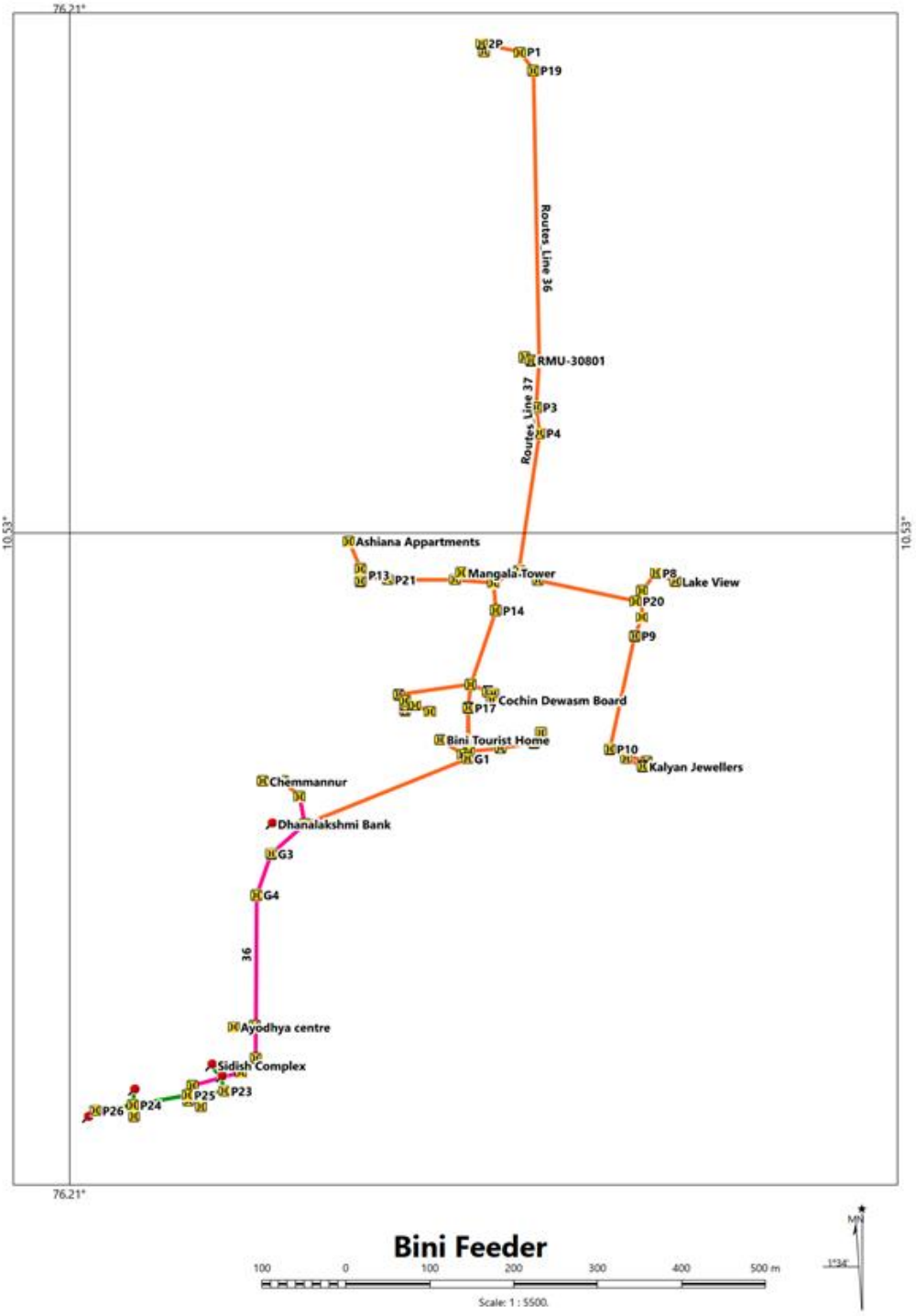

Figure 2: Bini feeder

2 CHEMBUKAVU FEEDER

The following table shows the 11-kV line distance in the Chembukavu feeder.

Table 16: HT line distance – Chembukavu feeder

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation feeder		10.53517	76.21455						
S-S	P1	Post		10.535240	76.214603	**UG**	XLPE	300		30	30
P1	G1	Ground		10.535189	76.214889	**UG**	XLPE	300			0
G1	P2	Post		10.534928	76.215162	**UG**	XLPE	300	81.76		81.76
P2	AB bb	AB Big Bazar		10.534974	76.215234	**OH**	Racoon		9.38		9.38
AB bb	1	Big Bazar	HT	10.534844	76.215636	**UG**	XLPE	300	46.23	7	53.23
P2	G2	Ground		10.53519	76.215239	**UG**	XLPE	300			0
G2	G3	Ground		10.535286	76.215405	**UG**	XLPE	300			0
G3	G4	Ground		10.535349	76.216771	**UG**	XLPE	300			0
G4	G5	Ground		10.535251	76.216929	**UG**	XLPE	300			0
G5	P3	Post		10.534976	76.216992	**UG**	XLPE	300	253.99		253.99
P3	RMU31401, 2	Jawahar	LT	10.533837	76.217074	**UG**	XLPE	300	126		126
RMU31401	RMUn	RMU- Asset Galleria		10.534907	76.216971	**UG**	XLPE	300	119		119
RMUn	G31	Ground		10.534829	76.216398	**UG**	XLPE	300			
G31	Asset Galleria	Asset Galleri		10.535123	76.216265	**UG**	XLPE	300	99	5	104
RMUn	G6	Ground		10.534987	76.217098	**UG**	XLPE	240			0
G6	G7	Ground		10.534900	76.217125	**UG**	XLPE	240			0
G7	11	Swathy Residency	LT	10.535036	76.217486	**UG**	XLPE	240	64	20	84
RMUn	G6	Ground		10.534987	76.217098	**UG**	XLPE	280			0
G6	G7	Ground		10.534900	76.217125	**UG**	XLPE	280			0
G7	11	Swathi Residency	LT	10.535036	76.217486	**UG**	XLPE	280	64.01	20	84.01

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
RMU31401	G8	Ground		10.533219	76.217274	**UG**	XLPE	300		4	4
G8	P4	Post		10.532999	76.217193	**UG**	XLPE	300			0
P4	G9	Ground		10.533104	76.217351	**UG**	XLPE	300			0
G9	G10	Ground		10.532870	76.219178	**UG**	XLPE	300			0
G10	G11	Ground		10.532621	76.219306	**UG**	XLPE	300			0
G11	ABL51402	AB		10.532394	76.219318	**UG**	XLPE	300	382.14		382.14
ABL51402	P5	Post		10.532375	76.219396	**OH**	Racoon				0
P5	P6	Post		10.531637	76.219399	**OH**	Racoon		90.42		90.42
P6	AB KSFE	AB		10.531489	76.219285	**OH**	Racoon		20.58		20.58
AB KSFE	15	KSFE	HT	10.531484	76.219105	**UG**	XLPE	240	19.71	7	26.71
P6	P7	Post		10.531032	76.219422	**OH**	Racoon				0
P7	P8	Post		10.530808	76.219429	**OH**	Racoon		91.76		91.76
P8	ABI51105	AB		10.530816	76.218397	**OH**	Racoon		112.96		112.96
P8	ABI51403	AB		10.529985	76.219392	**OH**	Racoon		91.12		91.12
P8	P9	Post		10.530807	76.219894	**OH**	Racoon		50.9		50.9
P9	AB Central Hotel	AB		10.530901	76.219834	**OH**	Racoon		12.3		12.3
AB Central Hotel	10	Central Hotel	HT	10.531321	76.219899	**UG**	XLPE	240	47	7	54
P8, AB Agro Bazar	G12	Ground		10.530807	76.219895	**UG**	XLPE	300			0
AB Agro Bazar	G13	Ground		10.530797	76.220654	**UG**	XLPE	300			0
G13	RMU31402	RMU		10.530761	76.220646	**UG**	XLPE	300			0
RMU31402	13	Agro	LT	10.530756	76.220664	**UG**	XLPE	300	140.21	5	145.21
P9	P10	Post		10.530809	76.221516	**OH**	Racoon		177.54		177.54
P10	G14	Ground		10.530814	76.22142	**UG**	XLPE	240			0
G14	G15	Ground		10.529275	76.221392	**UG**	XLPE	240			0
G15	4	Exchange 1	HT	10.529062	76.221863	**UG**	XLPE	240	237.46	7	244.46

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G15	5	Exchange 2	HT	10.529062	76.221863	**UG**	XLPE	240	237.46	7	244.46
P10	9	Museum	LT	10.530829	76.221687	**OH**	Racoon		18.85		18.85
P10	ABL51404	AB		10.530897	76.223431	**OH**	Racoon				0
ABL51404	ABL51405	AB		10.530910	76.224284	**OH**	Racoon		284.47		284.47
ABL51405	G16	Ground		10.530589	76.224176	**UG**	XLPE	300			0
G16	G17	Ground		10.530093	76.224199	**UG**	XLPE	300			
G17	G18	Ground		10.529944	76.224188	**UG**	XLPE	300			
G18	G19	Ground		10.529764	76.224177	**UG**	XLPE	300			
G19	G20	Ground		10.529615	76.223911	**UG**	XLPE	300			
G20	G21	Ground		10.529547	76.223655	**UG**	XLPE	300			
G21	G22, 3	Co-operative Road	LT	10.529555	76.223553	**UG**	XLPE	300	202.48	7	209.48
ABL51405	P11	Post		10.531048	76.224375	**OH**	Racoon				
P11	P12, 14	Mana Line	LT	10.531945	76.22436	**OH**	Racoon		117.46		117.46
P12	P13	Post		10.532084	76.224351	**OH**	Racoon		15.41		15.41
P13	G23	Ground		10.532116	76.224258	**UG**	XLPE	300		5	5
G23	G24	Ground		10.532425	76.224301	**UG**	XLPE	300			
G24	6	Sougandhika	LT	10.532419	76.224316	**UG**	XLPE	300	47.05	7	54.05
P13	AB Navani	AB		10.532341	76.222739	**OH**	Racoon		178.72		178.72
AB Navani	12	Navani Holy View	LT	10.532599	76.222672	**UG**	XLPE	185	29.46	7	36.46
AB Navani	P14	Mana Line	LT	10.532444	76.221984	**OH**	Racoon		83.42		83.42
P14	AB KMP	AB		10.532354	76.221943	**OH**	Racoon		10.92		10.92
AB KMP	30	KMP Swapnapuri	LT	10.532223	76.221895	**UG**	XLPE	185	15.42	20	35.42
ABL51405	P15	Post		10.530937	76.224358	**OH**	XLPE				
P15	P16	Post		10.530953	76.22567	**OH**	XLPE		152.25		152.25
P16	AB Caza		LT	10.531038	76.225556	**OH**	XLPE		15.62		15.62
AB Caza	7	Cheloor Cazeblanka	LT	10.531311	76.225649	**UG**	XLPE	185	31.87	12	43.87

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P16	P17	Post		10.530955	76.226264	**OH**	Racoon				
P17	P18, 8	Southern	LT	10.530926	76.22625	**OH**	Racoon		68.57		68.57
P18	AB Atreya	AB		10.528705	76.226187	**OH**	Racoon		245.76		245.76
AB Atreya	RMU31403	RMU		10.528705	76.226680	**UG**	XLPE	300			0
RMU31403	16	Divya Ram Hospital (Atreya)	HT	10.528705	76.226680	**UG**	XLPE	300	53.96	7	60.96
AB Atreya	P19	Post		10.527482	76.226134	**OH**	Racoon		135.4		135.4
P19	AB Bishop Palace	AB		10.527476	76.226151	**UG**	XLPE	300	1.98		1.98
AB Bishop Palace	RMU 31404, 17	Bishop Palace	HT	10.527635	76.226238	**UG**	XLPE	300	20	7	27
P19	ABL51406	AB		10.527103	76.22612	**OH**	Racoon				0
ABL51406	AB BP, 28	Bishop Palace	LT	10.526115	76.226065	**OH**	Racoon		151.4		151.4
AB BP	P20	Post		10.525691	76.226041	**OH**	Racoon		46.97		46.97
P20	18	Kings fort	LT	10.525695	76.225917	**OH**	ABC		13.58		13.58
P20	P21	Post		10.525335	76.226022	**OH**	Racoon		39.43		39.43
P21	ABI51410	AB		10.524497	76.225966	**OH**	Racoon				0
P21	P22	Post		10.525432	76.226059	**OH**	Racoon				0
P22	ABL51407	AB		10.525533	76.226316	**OH**	Racoon				0
ABL51407	P23	Post		10.525941	76.227409	**OH**	Racoon				0
P23	P24	Post		10.526431	76.228472	**OH**	Racoon		297.96		297.96
P24	AB Sky Line	AB		10.526609	76.228458	**UG**	XLPE	300			0
AB Sky Line	G25	Ground		10.526875	76.228303	**UG**	XLPE	300			0
AB Sky Line	23	Skyline Garland	LT	10.526894	76.22833	**UG**	XLPE	300	57.34	7	64.34
P24	AB Soda varky, 20	Soda varky	LT	10.526630	76.228808	**OH**	Racoon		42.86		42.86
AB Soda varky	P25	Post		10.526696	76.229089	**OH**	Racoon		31.61		31.61

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P25	21	Sarayu Apartment	LT	10.527064	76.228926	**OH**	Racoon		44.44		44.44
P25	P26	Post		10.526895	76.229619	**OH**	Racoon				0
P26	P27	Post		10.527108	76.230063	**OH**	Racoon				0
P27	ABL51409	AB		10.52733	76.23044	**OH**	Racoon		164.27		164.27
ABL51409	AB Kollanur Oriental	AB		10.527431	76.230394	**OH**	Racoon		12.25		12.25
AB Kollanur Oriental	G26	Ground		10.527670	76.23025	**UG**	XLPE	300			0
G26	24	Kollanur Oriental	LT	10.527703	76.230158	**UG**	XLPE	300	41.49	40	81.49
ABL51409	P28	Post		10.527652	76.230830	**OH**	Racoon				0
P28	P29	Post		10.527749	76.230871	**OH**	Racoon				0
P29	P30	Post		10.527888	76.231176	**OH**	Racoon				0
P30	P31	Post		10.528096	76.231451	**OH**	Racoon		140.02		140.02
P31	ABI50409, 22	Panmukkumpilly Sastha Temple	LT	10.528261	76.231702	**OH**	Racoon		33.51		33.51
P21	ABL51408	AB		10.525272	76.225681	**OH**	Racoon				0
ABL51408	P31	Post		10.525176	76.22527	**OH**	Racoon				0
P31	P32	Post		10.524753	76.224435	**OH**	Racoon				0
P32	P33	Post		10.52467	76.224341	**OH**	Racoon		206.83		206.83
P33	P34	Post		10.524940	76.224318	**OH**	Racoon		32.36		32.36
P34	AB CTR	AB		10.525019	76.224222	**OH**	Racoon		14.86		14.86
AB CTR	19	Cheloor Tudoor Rose	LT	10.525106	76.224062	**UG**	XLPE	300	19.98	7	26.98
P34	P35	Post		10.525685	76.224243	**OH**	Racoon		82.58		82.58
P35	AB Gayathri	AB Gayathri		10.525663	76.224283	**OH**	Racoon		6.04		6.04
AB Gayathri	26	Gayathri Apartment	LT	10.525638	76.224343	**UG**	XLPE	300	7.13	20	27.13
P35	P36	Post		10.526207	76.224215	**OH**	Racoon				0

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P36	25	Keeramkulangara	LT	10.526226	76.224118	**OH**	Racoon		66.33		66.33
P33	P37	Post		10.524628	76.224362	**OH**	Racoon				0
P37	P38	Post		10.524441	76.224230	**OH**	Racoon		34.27		34.27
P38	AB Sreyas	AB		10.524423	76.224250	**OH**	Racoon		2.96		2.96
AB Sreyas	G27	Ground		10.524223	76.224260	**UG**	XLPE	300			0
G27	27	Sreyas Apartment	LT	10.524157	76.224478	**UG**	XLPE	300	50.68	7	57.68
P38	G28	Ground		10.524239	76.22398	**UG**	XLPE	300	35.33		35.33
G28	G29	Ground		10.523659	76.222731	**UG**	XLPE	300			0
G29	G30	Ground		10.523352	76.221706	**UG**	XLPE	300			0
G30	RMU31405	RMU		10.523778	76.221623	**UG**	XLPE	300			0
RMU31405	29	Forus Apartment	LT	10.523746	76.221569	**UG**	XLPE	300	323.19	7	330.19

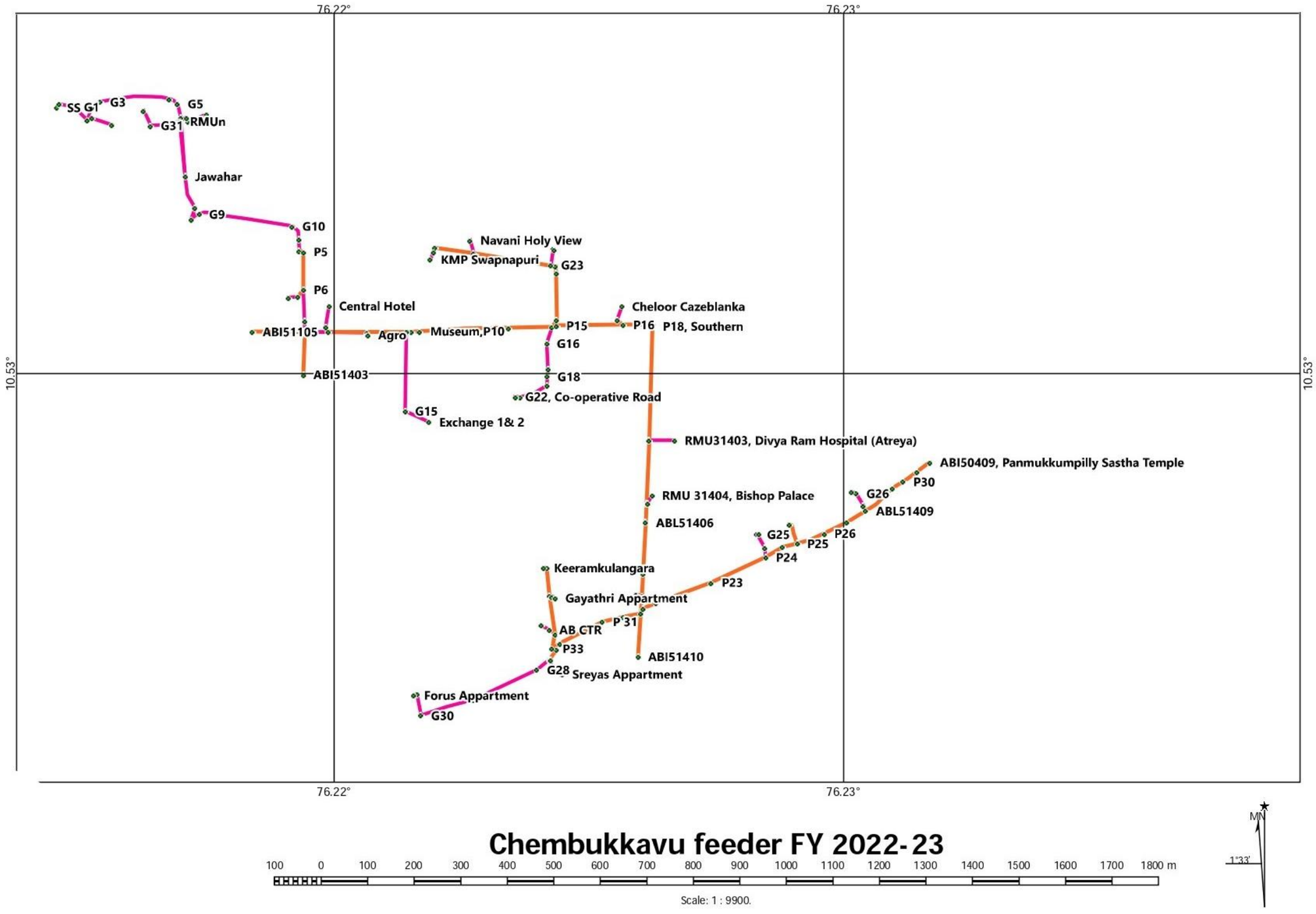

Figure 3: Chembukavu feeder

3 EAST FORT FEEDER

The following table shows the 11-kV line distance in the East fort feeder.

Table 17: HT line distance – East fort feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
SS	2P	Substation feeder		10.535185	76.214764	**UG**	300		25	25
2P	G1	Ground		10.534967	76.215221	**UG**				0
G1	G2	Ground		10.533556	76.215243	**UG**				0
G2	G2-1	Ground		10.533400	76.21523	**UG**				0
G2-1	G2-2	Ground		10.53342	76.21589	**UG**				0
G2-2	G2-3	Ground		10.53323	76.21627	**UG**				0
G2	G3	Ground		10.532946	76.216472	**UG**				0
G3	P1	Post (2 Pole)		10.532962	76.216747	**UG**	300		10	10
P1	G4	Ground		10.532924	76.217225	**UG**				0
G4	G4-1	Ground		10.53312	76.21738	**UG**				0
G4-1	G4-2	Ground		10.53287	76.2191	**UG**				0
G4-2	G4-3	Ground		10.53274	76.21957	**UG**				0
G4-3	P2	Post (2 Pole)		10.532900	76.219594	**UG**	300		10	10
P2	G4-4	Ground		10.53283	76.21958	**UG**				0
G4-4	G5	Ground		10.532100	76.224381	**UG**				0
G5	G6	Ground		10.531829	76.226241	**UG**				0
G6	P3	Post(2 Pole)		10.530592	76.226214	**UG**	300		10	10
P3	G6-1	Ground		10.529120	76.22618	**UG**				0
G6-1	AB1	ABL 51702		10.521957	76.225890	**UG**	300	2590	55	2645
AB1	P4	Post		10.521644	76.225868	**OH**		35.07		35.07
P4	AB2	ABI50104		10.521295	76.225861	**OH**		38.45		38.45
ABI50104	G12	Ground		10.521256	76.225075	**UG**				0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G12	RMU1/22	RMU31708, East Avenue	LT	10.521319	76.225052	**UG**	300	93.55		93.55
RMU1	G13	Ground		10.521291	76.225548	**UG**				0
G13	RMU2/15	RMU31709, Navya Bakery	HT	10.521329	76.225487	**UG**	300	57.58		57.58
P4	AB3	ABL51705		10.521868	76.225349	**OH**		64.38		64.38
ABL51705	10	Sun Tower	LT	10.522057	76.225372	**UG**	300	21.06	7	28.06
ABL51705	32	E P Jose Commercial Building	LT	10.521747	76.225340	**OH**		13.42		13.42
ABL51705	G7	Ground		10.521932	76.225158	**UG**				0
G7	G8	Ground		10.522397	76.224891	**UG**				0
G8	P16	ABL Selex Mall		10.522444	76.224764	**UG**				0
P16	Selex Mall			10.522863	76.224550	**UG**	300	150.01	7	157.01
ABL51705	AB6	ABL 51706		10.521605	76.224235	**OH**		125.85		125.85
ABL 51706	G11	Ground		10.522369	76.224089	**UG**				0
G11	11	Sindhooram Apartment	LT	10.522313	76.223704	**UG**	300	131.97	5	136.97
ABL 51706	P11	Post		10.521541	76.223908	**OH**		36.49		36.49
P11	1	Thomson Casa	LT	10.521514	76.223921	**UG**	300	3.31	10	13.31
P11	P12, 12	Pallikulam	LT	10.521295	76.22264	**OH**		141.44		141.44
P12	P13	Post		10.521248	76.221944	**OH**		76.36		76.36
P13	P23,33	AB-Chaldian, Chaldian	LT	10.521223	76.22196	**OH**		3.52		3.52
P13	P13-1	Post		10.521246	76.221521	**OH**				0
P13-1	34	Brothers Lane	LT	10.520909	76.221433	**OH**		85.79		85.79
P13	P14	Post		10.521225	76.220351	**OH**				0
P14	P14-1, 13	Sakthan Tower	LT	10.521234	76.220207	**OH**		190.14		190.14
P14-1	AB7	ABL51707		10.521199	76.219330	**OH**		92.24		92.24
AB7	P15	Post		10.521578	76.218757	**OH**				0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P15	P15-1, 14	Post/Puthenpally	LT	10.521453	76.218811	**OH**		134.02		134.02
P15-1	RMU7,17	RMU31707, P I Babu	LT	10.521527	76.218937	**UG**	300	24.38		24.38
ABL51707	AB8	ABI 51611		10.521603	76.219432	**UG**		44.99		44.99
ABL 51702	P5	Post		10.522575	76.225910	**OH**		74.53		74.53
P5	AB4/04	ABL51704/Spoon (City Castle)	LT	10.522825	76.225582	**OH**		40.88		40.88
ABL51704	G9	Ground		10.522925	76.225207	**UG**	300			0
G9	6,5	Reliance-2(City Palace-2), Reliance-1(City Palace-1)	LT	10.522600	76.225175	**UG**	300	75.24	25	100.24
ABL51704	P6	Post		10.522925	76.22507	**OH**				0
P6	P7	Post		10.523061	76.225125	**OH**		54.48		54.48
P7	P21, 24	AB- Fort Street, Fort Street	LT	10.523125	76.225360	**OH**		18.69		18.69
P21	7	Fort City	LT	10.523202	76.225611	**OH**		28.76		28.76
P7	P17	AB-Bharathakshemam		10.523251	76.224112	**OH**		122.07		122.07
P17	8	Bharathakshemam	LT	10.523825	76.223926	**UG**	300	66.68	5	71.68
AB-Bharathakshemam	P8	Post		10.523121	76.222649	**OH**		161.71		161.71
P8	P18	AB-Emmatty Tower		10.522751	76.222719	**OH**		40.14		40.14
P18	9	Emmatty Tower	LT	10.522778	76.222897	**UG**	400	21.45	5	26.45
P18	P19	AB-Candela		10.522713	76.222713	**OH**		5.83		5.83
P19	RMU3	RMU31706		10.522709	76.222770	**UG**	185			0
RMU3	16	Candela Apartment	LT	10.522545	76.222937	**UG**	185	31.47	6	37.47
P8	P20	AB St-Thomas		10.523305	76.220894	**OH**		199.2		199.2
P20	25	St-Thomas College	HT	10.523294	76.220941	**UG**	300	11.02	5	16.02
AB St-Thomas	26/ABI 51604	Iyyunni	LT	10.523312	76.220588	**OH**		27.82		27.82

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P5	P22	AB-Seemas		10.522861	76.226168	**OH**		49.98		49.98
P22	2	Seemas	HT	10.523156	76.22624	**UG**	300	33.57	20	53.57
P22	P10	Post		10.522819	76.226316	**OH**		16.98		16.98
P10	23	Kings Way Project	LT	10.523318	76.226419	**UG**	300	60.18	30	90.18
P10	AB5	ABL 51708		10.522765	76.226348	**OH**		6.27		6.27
ABL 51708	3	Honest Bakery	LT	10.522603	76.226276	**OH**		19.58		19.58
ABL 51708	RMU4, 20	RMU31703, Angelic Tower	LT	10.522515	76.226922	**UG**	300	70.72	10	80.72
ABL 51708	G10	Ground		10.522163	76.227959	**UG**				0
G10	RMU5, 19	RMU 31704, Lorde Pally	HT	10.522281	76.227955	**UG**	300	200.15		200.15
RMU5	G10	Ground		10.522163	76.227959	**UG**				0
G10	RMU6	RMU31705		10.52219	76.227216	**UG**				0
RMU6	18	East Fort Tower	LT	10.522085	76.227209	**UG**	300	111.34		111.34
P5	AB9	ABL51703		10.524137	76.225960	**OH**		170.23		170.23
ABL51703	RMU8	RMU31701		10.52449	76.225809	**UG**	300	51.38		51.38
RMU8	30/31	E Forts Unlimited (HT), E Forts (LT)	HT, LT	10.524479	76.225461	**UG**	150	42.91	30	72.91
RMU8	RMU9	RMU31702		10.524017	76.225757	**UG**	300			
RMU9	21	Rappai & Sons	LT	10.524231	76.225612	**UG**	300	94.61	210	304.61

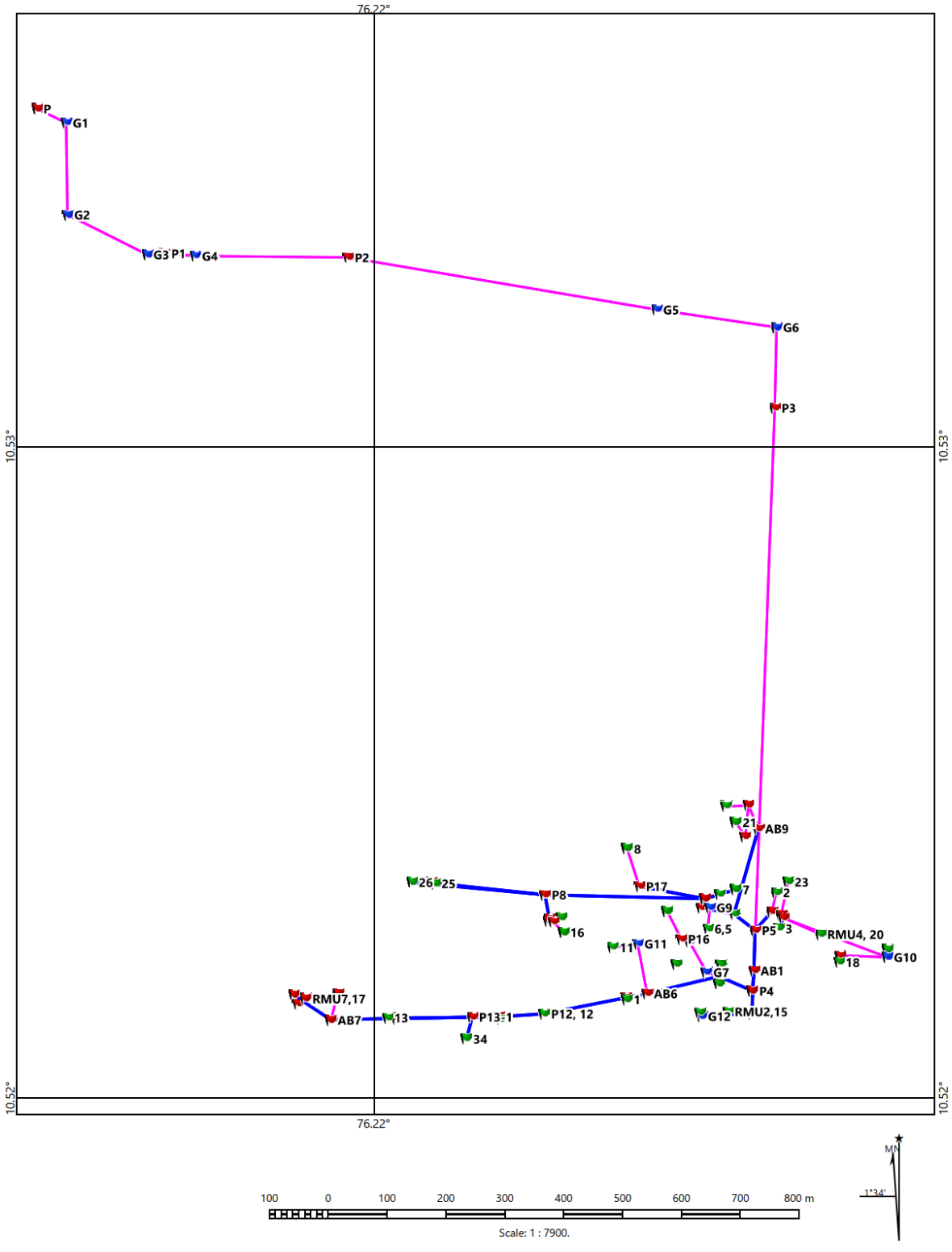

Figure 4: East fort feeder

4 JUBILEE MISSION FEEDER

Jubilee mission feeder is the only dedicated feeder inside the DISCOM. The supply provided from the 66-kV substation in the Aswini. The detail of mapping of the feeder is given in the table below.

Table 18: HT line distance – Jubilee mission feeder

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
SS		Substation feeder		10.535185	76.214764	**UG**	XLPE	300		10	10
SS	P1	Post		10.535247	76.214725	**UG**	XLPE	300			0
P1	G1	Ground		10.535184	76.214900	**UG**	XLPE	300			0
G1	G2	Ground		10.534978	76.215035	**UG**	XLPE	300			0
G2	G3	Ground		10.533455	76.215075	**UG**	XLPE	300			0
G3	G4	Ground		10.533382	76.216132	**UG**	XLPE	300			0
G4	G5	Ground		10.533006	76.216531	**UG**	XLPE	300			0
G5	G6	Ground		10.532984	76.217128	**UG**	XLPE	300			0
G6	G7	Ground		10.533180	76.217414	**UG**	XLPE	300			0
G7	G8	Ground		10.532808	76.219361	**UG**	XLPE	300			0
G8	G9	Ground		10.532399	76.222235	**UG**	XLPE	300			0
G9	G10	Ground		10.531810	76.226219	**UG**	XLPE	300			0
G10	G11	Ground		10.531020	76.226247	**UG**	XLPE	300			0
G11	G12	Ground		10.530896	76.226196	**UG**	XLPE	300			0
G12	G13	Ground		10.527708	76.226094	**UG**	XLPE	300			0
G13	G14	Ground		10.525349	76.225990	**UG**	XLPE	300			0
G14	G15	Ground		10.523079	76.225892	**UG**	XLPE	300			0
G15	G16	Ground		10.521214	76.225809	**UG**	XLPE	300			0
G16	G17	Ground		10.520915	76.225789	**UG**	XLPE	300			0
G17	01, 02 - Jubilee Mission	Jubilee Mission	HT	10.520737	76.226735	**UG**	XLPE	300	2806.34	5	2811.34

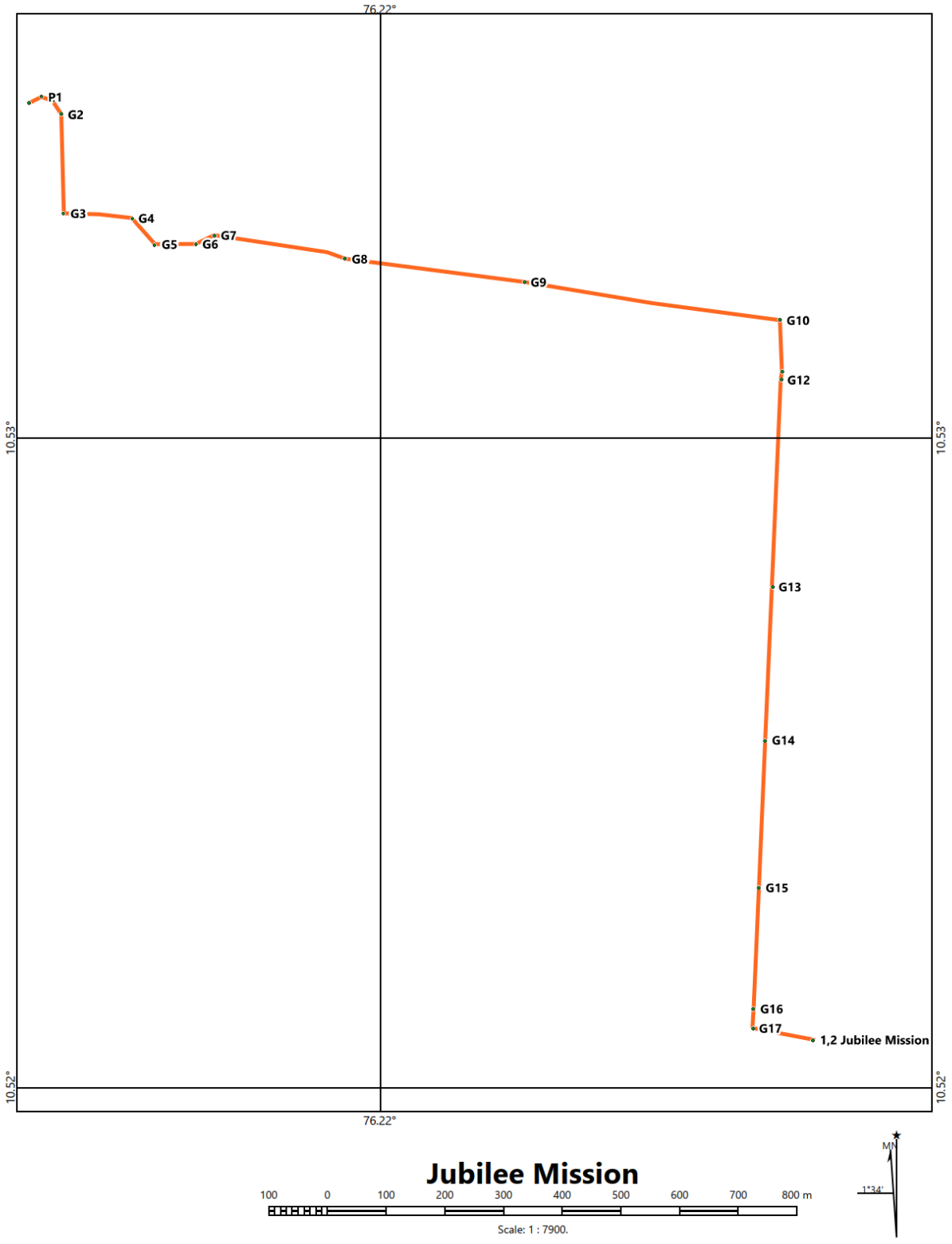

Figure 5: Jubilee mission feeder

5 KOORKANCHERY FEEDER

The following table shows the 11-kV line distance in the Koorkanchery feeder.

Table 19: HT line distance – Koorkanchery feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation feeder		10.517135	76.219407					
S-S	P1	Post		10.517229	76.219394	UG	300	10.74		10.74
P1	P2	Post		10.516079	76.217681	OH		216.87		216.87
P2	RMU1	RMU-30301		10.515940	76.217541	UG	300	21.71		21.71
RMU1	G11	Ground		10.516020	76.21746	UG	300	12.85		12.85
G11	RMU2	RMU-30201		10.516002	76.217265	UG	300	21.57	10	31.57
RMU1	G12	Ground		10.5159	76.2176	UG	300	8.32		8.32
G12	G1	Ground		10.515281	76.217852	UG	300		5	5
G1	G2	Ground		10.514711	76.217816	UG	300			0
G2	G13	Ground		10.51448	76.21773	UG	300			0
G13	G14	Ground		10.51412	76.2175	UG	300	210.82		210.82
G14	G3	Ground		10.513983	76.217229	UG	300	33.69		33.69
G3	P3	Post		10.513975	76.216334	UG	300	98.52	3	101.52
P3	P4	Post		10.513948	76.215683	UG	300	69.7	2	71.7
P4	G15	Ground		10.51401	76.21548	UG	300	23.96		23.96
G15	G16	Ground		10.51409	76.21315	UG	300	254.48		254.48
G16	G17	Ground		10.51393	76.21249	UG	300	74.71		74.71
G17	AB1, 1	ABL-50302, Commercial	LT	10.513734	76.211497	UG	300	112.76	15	127.76
AB1	G4	Ground		10.513728	76.211744	UG	300	30.74		30.74
G4	2	Casino	HT	10.513226	76.211783	UG	240	57.28	10	67.28
AB1	P5	Post		10.513803	76.210648	OH		92.93		92.93
P5	AB2	ABI-50208		10.513877	76.210741	OH		13.06		13.06
P5	P23	Post		10.51373	76.21073	OH		12.44		12.44
P23	P6	Post		10.513250	76.210612	OH		54.71		54.71
P6	G5	Ground		10.513396	76.209860	UG	300			0
G5	3	Smart Centre	LT	10.513500	76.209873	UG	300	98.37	5	103.37

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P6	P7	Post		10.512421	76.210760	OH		93.2		93.2
P7	G6	Ground		10.512229	76.210821	UG	300		10	10
G6	4	Sree Sailam	LT	10.511936	76.210050	UG	300	115.91		115.91
P8	P9	Post		10.510568	76.211192	OH		213.63		213.63
P9	P9-1	Post		10.510568	76.211075	OH		12.81		12.81
P9-1	5	Metro	HT	10.510538	76.210265	UG	185	94.41	10	104.41
P9	P10	Post		10.510099	76.211150	OH		52.08		52.08
P10	RMU3	RMU-30303		10.509968	76.211192	UG	300		10	10
RMU3	26	CK Plaza	LT	10.510005	76.211451	UG	300	43.85	10	53.85
P10	6	Alumkulam	LT	10.509821	76.211194	OH		27.23		27.23
6	G7	Ground		10.508329	76.211218	UG	240			0
G7	10	Thankamani	LT	10.508311	76.210904	UG	240	198.69		198.69
10	P11	Post		10.508220	76.210012	OH		98.16		98.16
P11	P11-1	Post		10.508349	76.210006	OH		14.28		14.28
P11-1	8	Skyline	LT	10.508474	76.210213	UG	300	26.54	5	31.54
P11	P12	Post		10.508144	76.209292	OH				0
P12	P13	Post		10.508169	76.208953	OH		116.47		116.47
P13	P13-1	Post		10.508270	76.208858	OH		15.16		15.16
P13-1	9	Love-Shore	LT	10.508759	76.208660	UG	150	58.27	50	108.27
P13	7	Kaja	LT	10.508194	76.208521	OH		47.37		47.37
6	P14	Post		10.508329	76.211218	OH		165.57		165.57
P14	P15	Post		10.507600	76.211206	OH		80.78		80.78
P15	RMU4	RMU-30304		10.507486	76.211638	UG	300		30	30
RMU4	11	Mannanthara Agencies	LT	10.507486	76.211638	UG	300	52.33	5	57.33
P15	P16	Post		10.505500	76.211316	OH		233.02		233.02
P16	P17	Post		10.505174	76.211337	OH		36.13		36.13
P17	15	Smart City	LT	10.505162	76.211205	OH		14.51		14.51
15	24	I-Vision	HT	10.504276	76.211012	UG	300	136.81	5	141.81
P17	P18	Post		10.504101	76.211411	OH		118.96		118.96
P18	17	Hi-Life	LT	10.504280	76.212928	UG	300	167.51	5	172.51
P18	AB3	ABL-50310		10.503620	76.211479	OH		53.48		53.48
AB3	RMU5	RMU-30306		10.503614	76.211526	UG	300		15	15
RMU5	25	Shangri-La-Fortune	LT	10.503609	76.211899	UG	300	48.07	5	53.07

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB3	P19	Post		10.503380	76.211524	OH				0
P19	AB4	ABL-50311		10.503186	76.211440	OH				0
AB4	16	Sun City	LT	10.503186	76.211440	OH		50.8		50.8
P16	P20	Post		10.505332	76.210463	OH		95.21		95.21
P20	P21	Post		10.505025	76.210402	OH				0
P21	13	Kanjirangadi	LT	10.503952	76.209568	OH		184.34		184.34
13	P22	Post		10.502503	76.208480	OH				0
P22	AB5	AB		10.502738	76.208187	OH		209.19		209.19
AB5	G8	Ground		10.502661	76.207606	UG	300			0
G8	14	Q-Apartment	LT	10.502879	76.207473	UG	300	92.34	5	97.34
P20	12	Kinar	LT	10.505326	76.210208	OH		27.92		27.92
P5	18	Veterinary	LT	10.513811	76.210537	OH		12.18		12.18
18	19	Dee Pee Plaza	LT	10.513914	76.209943	OH		66.01		66.01
19	P21	Post		10.514150	76.208370	OH				174.15
P21	20	Dhanya	LT	10.514088	76.208363	OH				6.9
P21	P21-1	Post		10.514143	76.208116	OH		27.81		27.81
P21-1	22,23	Railway	HT,HT	10.515153	76.208195	UG	185	117.75	10	127.75
P21-1	RMU6	RMU-30302		10.514273	76.207036	UG	300	119.09	10	129.09
20	AB6	ABL-50308		10.513104	76.208221	OH		109.95		109.95
AB6	21	Ice Plant	LT	10.512922	76.208477	OH		34.5		34.5
AB6	G9	Ground		10.511743	76.207351	UG	300			0
G9	G10	Ground		10.508494	76.206378	UG	300			0
G10	RMU7	RMU-30305		10.508207	76.207788	UG	300	718.81		718.81
RMU7	27	Forus Apartment	LT	10.508007	76.207782	UG	150	22.13		22.13

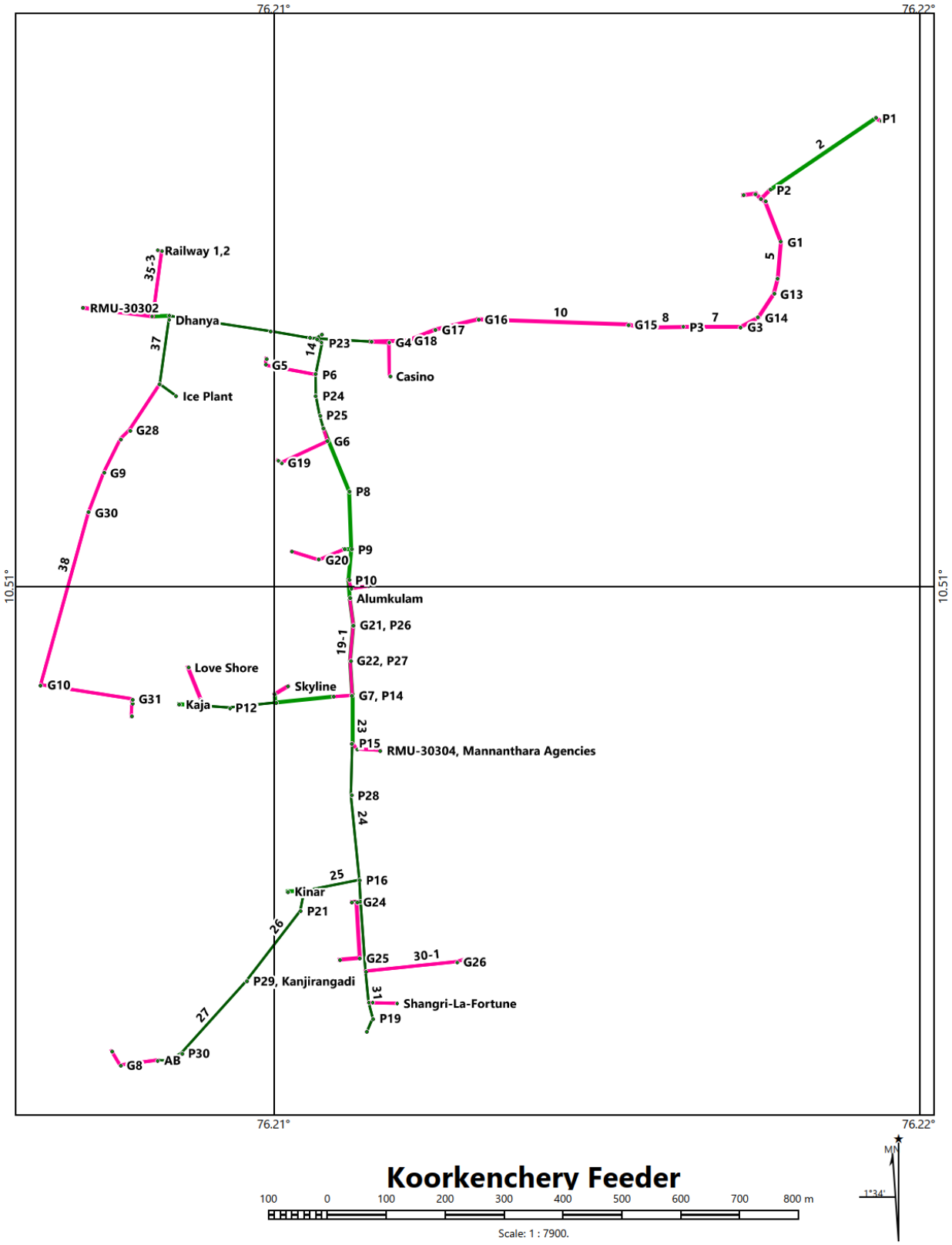

Figure 6: Koorkanchery feeder

6 RAMANILAYAM FEEDER

The following table shows the 11-kV line distance in the Ramanilayam feeder.

Table 20: HT line distance – Ramanilayam feeder

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation feeder		10.535182	76.21455						
S-S	P1	Post		10.535115	76.214826	**UG**	XLPE	300		37	37
P1	P2	Post		10.534981	76.215004	**UG**	XLPE	300	10	15	25
P2	ABL51102	ABl51102		10.534982	76.215185	**OH**	Racoon				0
ABL51102	P3	Post		10.533549	76.215227	**OH**	Racoon				0
P3	P4	Post		10.53397	76.215342	**OH**	Racoon		202.2		202.2
P4	1	Stadium West	LT	10.533257	76.215292	**OH**	Racoon		10.33		10.33
P4	P5	Post		10.533420	76.215841	**OH**	Racoon				
P5	P6	Post		10.533401	76.216003	**OH**	Racoon				
P6	P7	Post		10.533325	76.216275	**OH**	Racoon				
P7	P8	Post		10.532954	76.216447	**OH**	Racoon				
P8	2, ABL51103	Stadium East	LT	10.532928	76.21671	**OH**	Racoon		189.16		189.16
ABL51103	G1	Ground		10.532945	76.216659	**UG**	XLPE	300			0
G1	23	Indoor Stadium	HT	10.532891	76.216673	**UG**	XLPE	300		10.02	10.02
ABL51103	G2	Ground		10.532986	76.217108	**UG**	XLPE	300			0
G2	P9	Post		10.531025	76.217042	**UG**	XLPE	300		192.4	192.4
P9	P10	Post		10.530901	76.217115	**OH**	Racoon				0
P10	P11	Post		10.530852	76.217868	**OH**	Racoon			96.89	96.89
P11	ABL51104	ABL51104		10.530848	76.218143	**OH**	Racoon				0
ABL51104	P12	Post		10.530847	76.218303	**OH**	Racoon			49.2	49.2
P12	AB Ramanilayam	AB		10.531074	76.2183	**OH**	Racoon				0

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB Ramanilayam	3	Ramanilayam	LT	10.531143	76.218297	**OH**	Racoon			32.75	32.75
P12	ABI51105	ABI51105		10.530836	76.218591	**OH**	Racoon			12.47	12.47
P11	ABL51106	ABL51106		10.529097	76.217916	**OH**	Racoon		196.57		196.57
ABL51106	AB Pulimoottil	AB		10.529117	76.217892	**OH**	Racoon		3.43		3.43
AB Pulimoottil	4	Pulimoottil	HT	10.529174	76.217798	**UG**	XLPE	300	12.7	25	37.7
ABL51106	P13	Post		10.528838	76.217967	**OH**	Racoon		29.19		29.19
P13	AB Kaliyath, Chungath	AB		10.528519	76.218008	**OH**	Racoon		35.26		35.26
AB Chungath	11	Chungath Jewellery	HT	10.528557	76.217719	**UG**	XLPE	150	30.29	20	50.29
AB Kaliyath	10	Kaliyath	LT	10.528383	76.217532	**UG**	XLPE	150	52.72		52.72
AB Kaliyath	AB-YMCA	AB		10.528555	76.218122	**OH**	Racoon		14.61		14.61
AB-YMCA	8	YMCA	HT	10.528522	76.218248	**UG**	XLPE	150	14.27	56	70.27
AB Kaliyath	AB Chiriyan Kandath	AB		10.528363	76.218016	**OH**	Racoon		12.03		12.03
AB Chiriyan Kandath	12	Chiriyan Kandath	LT	10.528236	76.217919	**UG**	XLPE	150	17.61	28	45.61
AB Chiriyan Kandath	AB Kalyan	AB		10.528002	76.218023	**OH**	Racoon		41		41
AB-YMCA	9	Josco	HT	10.528522	76.218248	**UG**	XLPE	150	14.27	56	70.27
AB Kalyan	RMU31103, 14, 13	Kalyan Silks	HT	10.527997	76.217974	**UG**	XLPE	185	6.7	15	21.7
AB Kalyan	AB Vrindhavan	AB		10.5277180	76.2180790	**OH**	Racoon		30.77		30.77
AB Vrindhavan	G3	Ground		10.527808	76.218060	**UG**	XLPE	150			0
G3	G4	Ground		10.527792	76.217670	**UG**	XLPE	150			0
G4	15	Vrindhavan Apartment	LT	10.527757	76.217654	**UG**	XLPE	150	57.14	5	62.14

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB Vrindhavan	P13-1, 25	AB Josco, AB Kalanikethan, Kalanikethan	LT	10.527250	76.218086	**OH**	Racoon		51.77		51.77
P13-1	G5	Ground		10.526945	76.218110	**UG**	XLPE	185			0
G5	G6	Ground		10.526774	76.218067	**UG**	XLPE	185			0
G6	19	New Josco	HT	10.526655	76.218267	**UG**	XLPE	185	81.87	22	103.87
P13-1	P14	Post		10.526928	76.218102	**OH**	Racoon				0
P14	P15	Post		10.526621	76.218002	**OH**	Racoon		72.13		72.13
P15	P16, 16	Swapana Theatre	LT	10.526400	76.217896	**OH**	Racoon		24.42		24.42
P16	ABL51107	AB Kollanur		10.526172	76.217769	**OH**	Racoon		31.38		31.38
AB Kollanur	24	Kollanur	LT	10.526363	76.217829	**UG**	XLPE	150	22.83	5	27.83
ABL51107	P17	Post		10.525925	76.217624	**OH**	Racoon				
P17	P18	Post		10.52568	76.217467	**OH**	Racoon		63.62		63.62
P18	21	Paremekkavu(Neeranjali)	LT	10.525591	76.217623	**OH**	Racoon		20.97		20.97
P18	AB Statue& Alukkas, 17	Statue	LT	10.525351	76.217298	**OH**	Racoon		37.49		37.49
AB Statue	P19	Post		10.525196	76.217228	**OH**	Racoon		21.85		21.85
P19	AB Paramekavu Temple	AB		10.524878	76.217206	**OH**	Racoon		36.2		36.2
AB Pt	G7	Ground		10.524458	76.217412	**UG**	XLPE	300			0
G7	G8	Ground		10.524189	76.217556	**UG**	XLPE	300			0
G8	G9	Ground		10.524185	76.217676	**UG**	XLPE	300			0
G9	20	Paramekavu Temple	LT	10.523848	76.217592	**UG**	XLPE	300	134.32		134.32
AB PT	P20	Post		10.524444	76.216941	**OH**	Racoon				0
P20	ABI51108	Post		10.523784	76.216893	**OH**	Racoon		128.57		128.57
AB Statue	G10	Ground		10.525409	76.217312	**UG**	XLPE	300			0

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G10	G11	Ground		10.525497	76.217342	**UG**	XLPE	300			0
G11	G12	Ground		10.525525	76.217061	**UG**	XLPE	300			0
G12	18	Alukkas	LT	10.526008	76.217048	**UG**	XLPE	300	88.82	20	108.82
P13	AB BVB	AB		10.528943	76.21796	**OH**	Racoon		14.85		14.85
AB BVB	RMU31102	RMU		10.528833	76.217238	**UG**	XLPE	150			
G9	28	Paramekavu SBI	HT	10.523848	76.217592	**UG**	XLPE	300	134.32		134.32
RMU31102	27	Bharatiyar Vidhya Kendra	HT	10.528617	76.216965	**UG**	XLPE	150	138.13	10	148.13
AB BVB	AB SNDP	AB		10.528883	76.217151	**OH**	Racoon		82.58		82.58
AB SNDP	RMU31101, 26	SNDP	LT	10.528929	76.217222	**UG**	XLPE	185	7.22	20	27.22
AB SNDP	P21	Post		10.528919	76.216847	**OH**	Racoon		35.26		35.26
P21	ABI50802	AB		10.529136	76.216338	**OH**	Racoon		61.17		61.17
P21	P22	Post		10.528642	76.216753	**OH**	Racoon				0
P22	P23	Post		10.528149	76.216669	**OH**	Racoon		87.42		87.42
P23	AB Capital Legend	AB		10.528101	76.216744	**OH**	Racoon		8.69		8.69
AB Capital Legend	7	Capital Legend	LT	10.528040	76.216870	**UG**	XLPE	150	15.35	10	25.35
ABL51106	G13	Ground		10.528943	76.21796	**UG**	XLPE	150			0
G13	G14	Ground		10.528820	76.216780	**UG**	XLPE	150			0
G14	G15	Ground		10.527667	76.216618	**UG**	XLPE	150			0
G15	AB ESI, 5	ESI	LT	10.527679	76.216584	**UG**	XLPE	150	279.1	5	284.1
AB ESI	P24	Post		10.527667	76.216618	**OH**	Racoon				0
P24	P24-1	Post		10.527733	76.216695	**OH**	Racoon				0
P24-1	AB Capital City	AB		10.527742	76.216957	**OH**	Racoon		43.57		43.57
AB Capital City	22	Capital City	LT	10.527424	76.216993	**UG**	XLPE	150	36.47	5	41.47

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB ESI	P24	Post		10.527667	76.216618	**OH**	Racoon				0
P24	P25	Post		10.527478	76.21657	**OH**	Racoon				0
P25	AB Perinchery	AB		10.527403	76.216597	**OH**	Racoon		33.12		33.12
AB Perinchery	6	Perinchery	LT	10.527259	76.216628	**UG**	XLPE	185	24.13	44	68.13

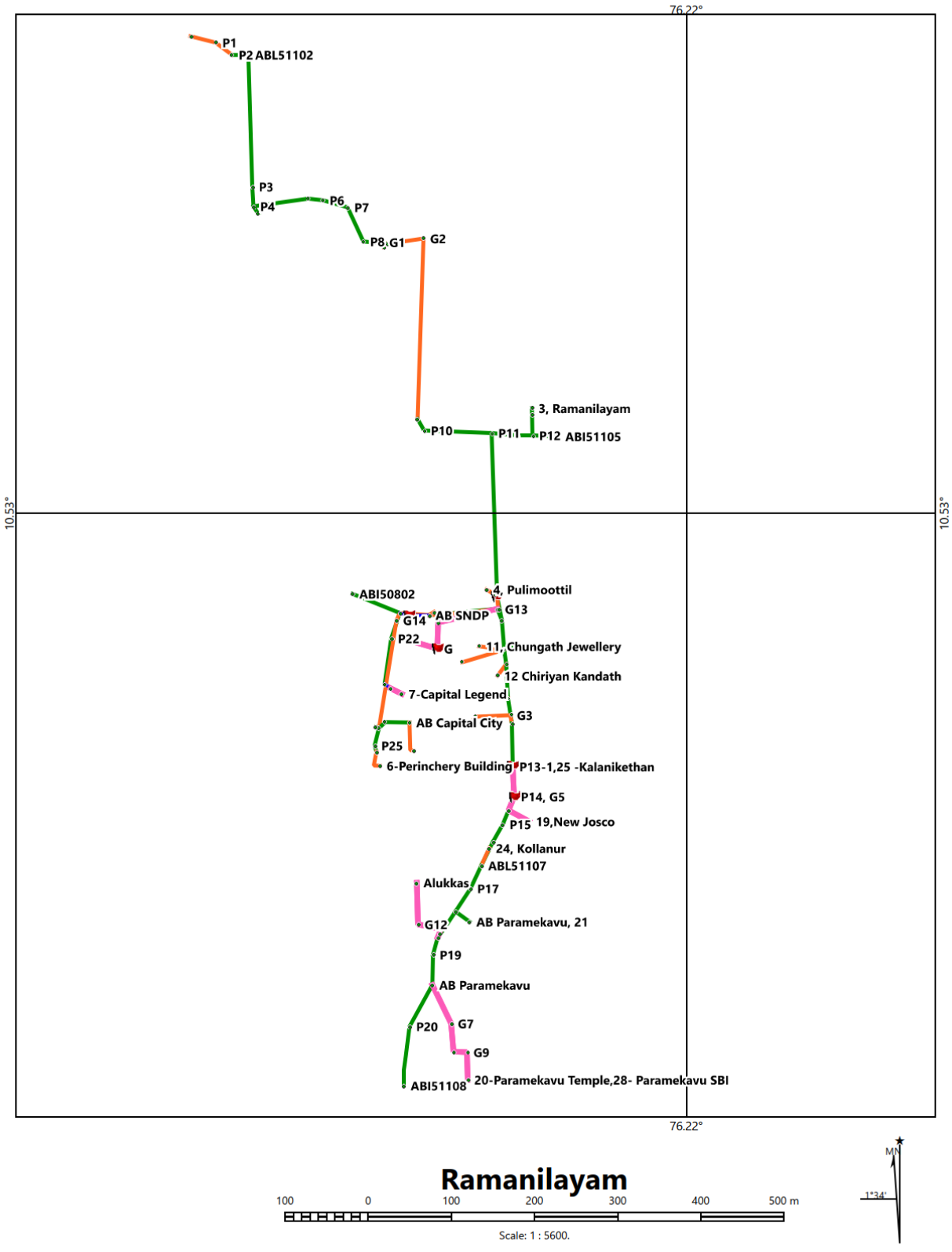

Figure 7: Ramanilayam feeder

7 SHORNUR ROAD FEEDER

The following table shows the 11-kV line distance in the Shornur road feeder

Table 21: HT line distance – Shornur road feeder

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
ss		Substation		10.535032	76.214680						
SS	2P	Post		10.535226	76.214462	**UG**	XLPE	300			0
2P	G1	Ground		10.535310	76.214458	**UG**	XLPE	300			0
G1	ABL51502	AB		10.535327	76.213772	**UG**	XLPE	300	95.79	30	125.79
ABL51502	RMU31501, 35-Bismi	RMU31501, Bismi	HT	10.535520	76.213630	**UG**	XLPE	300	26.41	3	29.41
RMU31501	36- Bismi	Bismi	LT	10.535688	76.213811	**UG**	XLPE	300	27.16	20	47.16
RMU31501	G2	Ground		10.535438	76.213605	**UG**	XLPE	300			0
G2	G3	Ground		10.535432	76.213177	**UG**	XLPE	300			0
G3	RMU31502, 45-Pranavam Apartment	Pranavam Apartment	LT	10.535874	76.213136	**UG**	XLPE	300	111		111.04
RMU31502	G4	Ground		10.536289	76.213188	**UG**	XLPE	185			0
G4	RMU31503	RMU		10.536289	76.213296	**UG**	XLPE	185			0
RMU31503	46 - Top Orchid Apartment	Top Orchid Apartment	LT	10.536466	76.213430	**UG**	XLPE	185	85.83	30	115.83
ABL51502	P3	Post		10.535355	76.213445	**OH**	Racoon		36.38		36.38
P3	G7	Ground		10.535344	76.213345	**UG**	XLPE	300			0
G7	G8	Ground		10.534936	76.213325	**UG**	XLPE	300			0
G8	G9	Ground		10.534944	76.213137	**UG**	XLPE	300			0
G9	01- Sree Hari Apartments	Sree Hari Apartments	LT	10.534460	76.213069	**UG**	XLPE	300	128.59	10	138.59
P3	P1	Post		10.535361	76.213138	**OH**	Racoon		32.88		32.88

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P1	AB-Sree	AB-Sree Lakshmi		10.535280	76.213127	**OH**	Racoon		6.33		6.33
AB-Sree	2-Sreelakshmi Silks	Sreelakshmi Silks	LT	10.535189	76.213059	**UG**	XLPE	150	12.52	40	52.52
P1	P2	Post		10.535441	76.213146	**OH**	Racoon				0
P2	AB-Daffodils	AB		10.536055	76.213150	**OH**	Racoon		79.58		79.58
AB-Daffodils	G5	Ground		10.536081	76.213142	**UG**	XLPE	150			0
G5	G6	Ground		10.536057	76.212907	**UG**	XLPE	150			0
G6	03- Daffodils	Daffodils	LT	10.536280	76.212880	**UG**	XLPE	150	53.14		53.14
P1	AB-Rukmani1	AB		10.535360	76.212459	**OH**	Racoon		74.51		74.51
AB-Rukmai1	G10	Ground		10.535359	76.212212	**UG**	XLPE	300			0
G10	AB-Rukmani2	AB		10.534427	76.212201	**UG**	XLPE	300	132.19	5	137.19
AB-Rukmani2	26 - Rukmani Temple Park	Rukmani Temple Park	LT	10.534266	76.212454	**UG**	XLPE	150	32.92	15	47.92
AB-Rukmai1	P5, 4- Karthayani	Post, Karthayani	LT	10.535365	76.212067	**OH**	Racoon		43.21		43.21
P5	AB, 23- K.R Bakery	K.R Bakery	LT	10.535502	76.212076	**OH**	Racoon		16.52		16.52
P5	G11	Ground		10.535356	76.211946	**UG**	XLPE	150			0
G11	G12	Ground		10.535035	76.211949	**UG**	XLPE	150			0
G12	5-Pazhoor Arcades	Pazhoor Arcades	LT	10.534924	76.212057	**UG**	XLPE	150	64.81		64.81
P5	ABL51503	AB		10.535290	76.211750	**OH**	Racoon		34.81		34.81
ABL51503	P6-1	Post		10.535363	76.211656	**OH**	Racoon				0
P6-1	P6	Post		10.535337	76.211394	**OH**	Racoon		47.69		47.69
P6	P7	Post		10.535305	76.211192	**OH**	Racoon				0
P7	P8	Post		10.535304	76.210928	**OH**	Racoon		46.8		46.8
P8	G13	Ground		10.535326	76.210625	**UG**	XLPE				0
G13	21-Saraswathy	Saraswathy	LT	10.535447	76.210615	**UG**	XLPE	300	49.95		49.95

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P8	P9	Post		10.535319	76.209827	**OH**	Racoon			125.36	125.36
P9	22 -Unique Ardent	Unique Ardent	LT	10.535463	76.209744	**UG**	XLPE	150	23.24	5	28.24
P9	ABI50903	AB		10.535324	76.209518	**OH**	Racoon		28.53		28.53
P6	AB-Panikath, RMU31504	AB, RMU		10.535694	76.211515	**OH**	Racoon		44.75		44.75
RMU31504	49-Panikath Mall	Panikath Mall	LT	10.535755	76.211320	**UG**	XLPE	185	22.38	25	47.38
AB-Panikath	P39	Post		10.536430	76.211975	**OH**	Racoon				0
P39	P40	Post		10.536711	76.212055	**OH**	Racoon				0
P40	P41, 18-Varnam	Post/Varnam	LT	10.537105	76.212019	**OH**	Racoon		171.77		171.77
P41	P42	Post		10.537232	76.212017	**OH**	Racoon		14.05		14.05
P42	19-Omega Panthlon	Omega Panthlon	LT	10.537190	76.211716	**UG**	XLPE	185	33.27	10	43.27
P42	P43	Post		10.537421	76.212006	**OH**	Racoon		20.94		20.94
P43	RMU31505	RMU		10.537422	76.211972	**UG**	XLPE	300	3.72		3.72
RMU31505	43-Prasad Arcade	Prasad Arcade	LT	10.537428	76.211929	**UG**	XLPE	300	4.76	25	29.76
RMU31505	RMU31506	RMU		10.537224	76.212110	**UG**	XLPE	300			0
RMU31506	48-CKM Heights	CKM Heights	LT	10.537127	76.212224	**UG**	XLPE	300	55.06	30	85.06
P43	P45	Post		10.538000	76.212016	**OH**	Racoon		64.05		64.05
P45	G46	Ground		10.538033	76.211330	**UG**	XLPE	300			0
G46	G47	Ground		10.538166	76.211151	**UG**	XLPE	300			0
G47	G48	Ground		10.538509	76.211107	**UG**	XLPE	300			0
G48	G49	Ground		10.538548	76.210785	**UG**	XLPE	300			0
G49	G50	Ground		10.539008	76.210873	**UG**	XLPE	300			0
G50	20-Nandhanam	Nandhanam	LT	10.539011	76.210180	**UG**	XLPE	300	301.95	10	311.95
ABL51503	P10	Post		10.535146	76.211513	**UG**	XLPE	300			0
P10	G14	Ground		10.534919	76.211464	**UG**	XLPE	300			0

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G14	G15	Ground		10.534555	76.211461	**UG**	XLPE	300			0
G15	P11	Post		10.534539	76.211384	**UG**	XLPE	300	106.31	80	186.31
P11	P38	Post		10.534848	76.211409	**OH**	Racoon				0
P38	6-Kasturi	Kasturi (Bhramasam Madam)	LT	10.534838	76.211515	**OH**	Racoon		45.94		45.94
P11	G16	Ground		10.534562	76.211042	**UG**	XLPE				0
G16	G17	Ground		10.534500	76.210738	**UG**	XLPE				0
G17	7-Sreepriya	Sreepriya	LT	10.534474	76.210642	**UG**	XLPE	300	82.63	27	109.63
P11	P12	Post		10.534044	76.211321	**OH**	Racoon		55.07		55.07
P12	RMU31507	RMU		10.534086	76.211424	**UG**	XLPE	300	11.25	10	21.25
RMU31507	42-Thrissur Service Coperative Bank	Thrissur Service Coperative Bank	HT	10.534001	76.211658	**UG**	XLPE	185	27.28	5	32.28
P12	P13	Post		10.533857	76.211321	**OH**	Racoon		21.86		21.86
P13	AB-Krishna	AB		10.533834	76.211275	**OH**	Racoon		3.74		3.74
AB-Krishna	51-Capital Krishna	Capital Krishna	LT	10.533834	76.211030	**UG**	XLPE	150	26.82	7	33.82
P13	P14	Post		10.533494	76.211287	**OH**	Racoon		39.19		39.19
P14	P15	Post		10.533371	76.211138	**OH**	Racoon				0
P15	P16	Post		10.533361	76.210934	**OH**	Racoon		44.78		44.78
P16	9-Forus Mathura	Forus Mathura	LT	10.533326	76.210930	**OH**	Racoon		2.78		2.78
P16	G18	Ground		10.533345	76.210194	**UG**	XLPE				0
G18	G19	Ground		10.533335	76.209948	**UG**	XLPE				0
G19	AB-MRG	AB-MRG Sree Valstam		10.533346	76.209556	**UG**	XLPE	300	151.01	17	168.01
AB-MRG	40 - MRG Sree Valstam	MRG Sree Valstam	LT	10.533188	76.209505	**UG**	XLPE	150	18.35	7	25.35
P14	P17	Post		10.533027	76.211313	**OH**	Racoon		51.73		51.73
P17	AB-AR	AB-AR Tower		10.533183	76.211270	**OH**	Racoon		17.89		17.89
AB-AR	27-A.R. Tower	A R Tower	LT	10.533111	76.211209	**UG**	XLPE	150	10.39	10	20.39
P17	P18	Post		10.532747	76.211321	**OH**	Racoon		30.98		30.98

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P18	8-Krishna(Thiruvambadi-2)	Krishna(Thiruvambadi-2)	LT	10.532713	76.211394	**OH**	Racoon		8.83		8.83
P18	P19	Post		10.532410	76.211320	**OH**	Racoon		37.28		37.28
P19	28-Friends Mall	Friends Mall	LT	10.532439	76.211428	**OH**	Racoon		12.25		12.25
P19	ABL51504	AB		10.532204	76.211308	**OH**	Racoon		22.82		22.82
ABL51504	RMU31508	RMU		10.531837	76.211354	**UG**	XLPE	300			0
RMU31508	47-Oushadhi Panchakarma	Oushadhi Panchakarma	HT	10.531810	76.211423	**UG**	XLPE	300	60.62	20	80.62
ABL51504	P20	Post		10.531825	76.211261	**OH**	Racoon				0
P20	P21	Post		10.531502	76.211285	**OH**	Racoon		78.06		78.06
P21	P22	Post		10.531118	76.211380	**OH**	Racoon		44.69		44.69
P22	P23, 11-Oushadhi	Oushadhi	LT	10.531137	76.211653	**OH**	Racoon		31.54		31.54
P23	RMU31509	RMU		10.531134	76.211604	**UG**	XLPE	300	5.37	12	17.37
RMU31509	G20	Ground		10.531110	76.211372	**UG**	XLPE	300			0
G20	G21	Ground		10.531420	76.211300	**UG**	XLPE				0
G21	G22	Ground		10.531624	76.211243	**UG**	XLPE				0
G22	41-Top Tower	Top Tower	LT	10.531572	76.210898	**UG**	XLPE	300	125.97	20	145.97
RMU31509	G29	Ground		10.531147	76.213005	**UG**	XLPE	300			0
G29	G30	Ground		10.531152	76.214519	**UG**	XLPE	300			0
G30	RMU31510	RMU		10.531392	76.214558	**UG**	XLPE	300			0
RMU31510	44-Kalyan Hypermarket	Kalyan Hypermarket	HT	10.531569	76.214622	**UG**	XLPE	300	372.87	30	402.87
P23	G20	Ground		10.531110	76.211372	**UG**	XLPE	300			0
G20	G21	Ground		10.531420	76.211300	**UG**	XLPE				0
G21	G23	Ground		10.531849	76.211248	**UG**	XLPE				0
G23	G24	Ground		10.532051	76.210712	**UG**	XLPE				0

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G24	G25	Ground		10.532151	76.210608	**UG**	XLPE				0
G25	G26	Ground		10.532276	76.210085	**UG**	XLPE				0
G26	G27	Ground		10.532309	76.210146	**UG**	XLPE				0
G27	P24	Post		10.533034	76.210120	**UG**	XLPE	300	331.79	10	341.79
P24	10	Thiruvambadi(Lekshmi)	LT	10.533034	76.210133	**OH**	Racoon		1.42		1.42
P24	G28	Ground		10.532486	76.210111	**UG**	XLPE	300			0
G28	24-Narayani	Narayani	LT	10.532437	76.210025	**UG**	XLPE	300	74.28	27	101.28
P22	P25	Post		10.530537	76.211480	**OH**	Racoon		63.17		63.17
P25	34- K.A Kumaran	K.A Kumaran	LT	10.530561	76.211584	**OH**	Racoon		9.55		9.55
P25	P26	Post		10.529469	76.211775	**OH**	Racoon				0
P26	P27	Post		10.529221	76.211838	**OH**	Racoon		151.68		151.68
P27	G31	Ground		10.529309	76.211808	**UG**	XLPE	300			0
G31	AB-Saroja	AB		10.529252	76.211497	**UG**	XLPE				0
AB-Saroja	25- Saroja	Saroja	HT	10.529209	76.211353	**UG**	XLPE	300	59.31	30	89.31
P27	P28	Post		10.528352	76.212106	**OH**	Racoon				0
P28	P29	Post		10.527754	76.212235	**OH**	Racoon				0
P29	ABL51505	AB		10.527750	76.212203	**OH**	Racoon		171.71		171.71
ABL51505	P30	Post		10.527691	76.211899	**UG**	XLPE	300	33.91	12	45.91
P30	12-Suharsha	Suharsha	LT	10.527802	76.211990	**UG**	XLPE	150	15.81	10	25.81
P30	G32	Ground		10.527776	76.211485	**UG**	XLPE	300			0
G32	RMU31511	RMU		10.527492	76.211395	**UG**	XLPE	300	72.82	15	87.82
RMU31511	50-Coperative Hospital	Coperative Hospital	HT	10.527558	76.211451	**UG**	XLPE	300	9.53	30	39.53
RMU31511	AB-Coperative	AB		10.527447	76.211388	**UG**	XLPE	300	5.04	10	15.04
AB-Coperative	13	Coperative Hospital	LT	10.527462	76.211391	**OH**	Racoon		1.69		1.69

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB-Coperative	G33	Ground		10.527325	76.211332	**UG**	XLPE	300			0
G33	P31	Post		10.526755	76.211249	**UG**	XLPE	300	81.82	20	101.82
P31	P32	Post		10.526681	76.211499	**OH**	Racoon		27.81		27.81
P32	AB-Athulya	AB		10.526493	76.211527	**UG**	XLPE	300			0
AB-Athulya	16-Athulya Chundari	Athulya Chundari	LT	10.526437	76.211437	**UG**	XLPE	300	32.82		32.82
P32	P33	Post		10.526654	76.211652	**OH**	Racoon		17.01		17.01
P33	G34	Ground		10.526620	76.211739	**UG**	XLPE	300			0
G34	G35	Ground		10.526438	76.211747	**UG**	XLPE	300			0
G35	G36	Ground		10.526376	76.211712	**UG**	XLPE	300			0
G36	G37	Ground		10.526357	76.211587	**UG**	XLPE	300			0
G37	G38	Ground		10.525998	76.211592	**UG**	XLPE	300			0
G38	G39	Ground		10.525996	76.211637	**UG**	XLPE	300			0
G39	LBS	LBS		10.525804	76.211084	**UG**	XLPE	300	166.19		166.19
LBS	14-City Centre 1	City Centre 1	LT	10.525785	76.211087	**UG**	XLPE	150	2.68		2.68
LBS	15-City Centre 2	City Centre 2	LT	10.525840	76.211080	**UG**	XLPE	150	4.42	8	12.42
P31	ABL51506	AB		10.526780	76.210751	**OH**	Racoon		54.84		54.84
ABL51506	G40	Ground		10.527703	76.210718	**UG**	XLPE	300			0
G40	G41	Ground		10.528060	76.210860	**UG**	XLPE				0
G41	39-Alukkas Nest	Alukkas Nest	LT	10.527986	76.210965	**UG**	XLPE	300	159.31		159.31
ABL51506	33-Malabar Eye Clinic	Malabar Eye Clinic	LT	10.526870	76.210444	**OH**	Racoon		35.05		35.05
ABL51506	G42	Ground		10.526747	76.210648	**UG**	XLPE	300			0
G42	G43	Ground		10.526233	76.210630	**UG**	XLPE				0
G43	G44	Ground		10.525134	76.210667	**UG**	XLPE	300			0
G44	AB-Shivam	AB		10.525158	76.210847	**UG**	XLPE	300	207.78	10	217.78
AB-Shivam	17-Shivam	Shivam		10.525080	76.210919	**UG**	XLPE	300	11.69	30	41.69

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB-Shivam	P34	Post		10.525152	76.210670	**UG**	XLPE	300	19.39	10	29.39
P34	P35	Post		10.524674	76.210693	**OH**	Racoon		52.93		52.93
P35	29-Ramdas Theatre	Ramdas Theatre	HT	10.524432	76.210736	**UG**	XLPE	300	30.92	5	35.92
P35	AB-Peninsula	AB		10.524647	76.210686	**OH**	Racoon		3.08		3.08
AB-Peninsula	30-Peninsula	Peninsula	HT	10.524161	76.210655	**UG**	XLPE	150	53.86	75	128.86
P35	G45	Ground		10.524632	76.210242	**UG**	XLPE	300			0
G45	ABI50808	AB		10.523928	76.210241	**UG**	XLPE	300	130.61	7	137.61
P34	P36	Post		10.525399	76.210645	**OH**	Racoon		27.46		27.46
P36	P36-1	AB		10.525436	76.210713	**OH**	Racoon		8.49		8.49
P36-1	31-Wintage Royal	Wintage Royal	LT	10.525355	76.210795	**UG**	XLPE	185	12.68	50	62.68
P36	P37	Post		10.525881	76.210646	**OH**	Racoon		53.31		53.31
P37	37-Top Heritage	Top Heritage	LT	10.525845	76.210826	**UG**	XLPE	150	20.1	20	40.1
P37	P37-1	AB		10.525819	76.210579	**OH**	Racoon		10.04		10.04
P37-1	38-Forus Cosynest	Forus Cosynest	LT	10.525893	76.210456	**UG**	XLPE	150	15.76	20	35.76

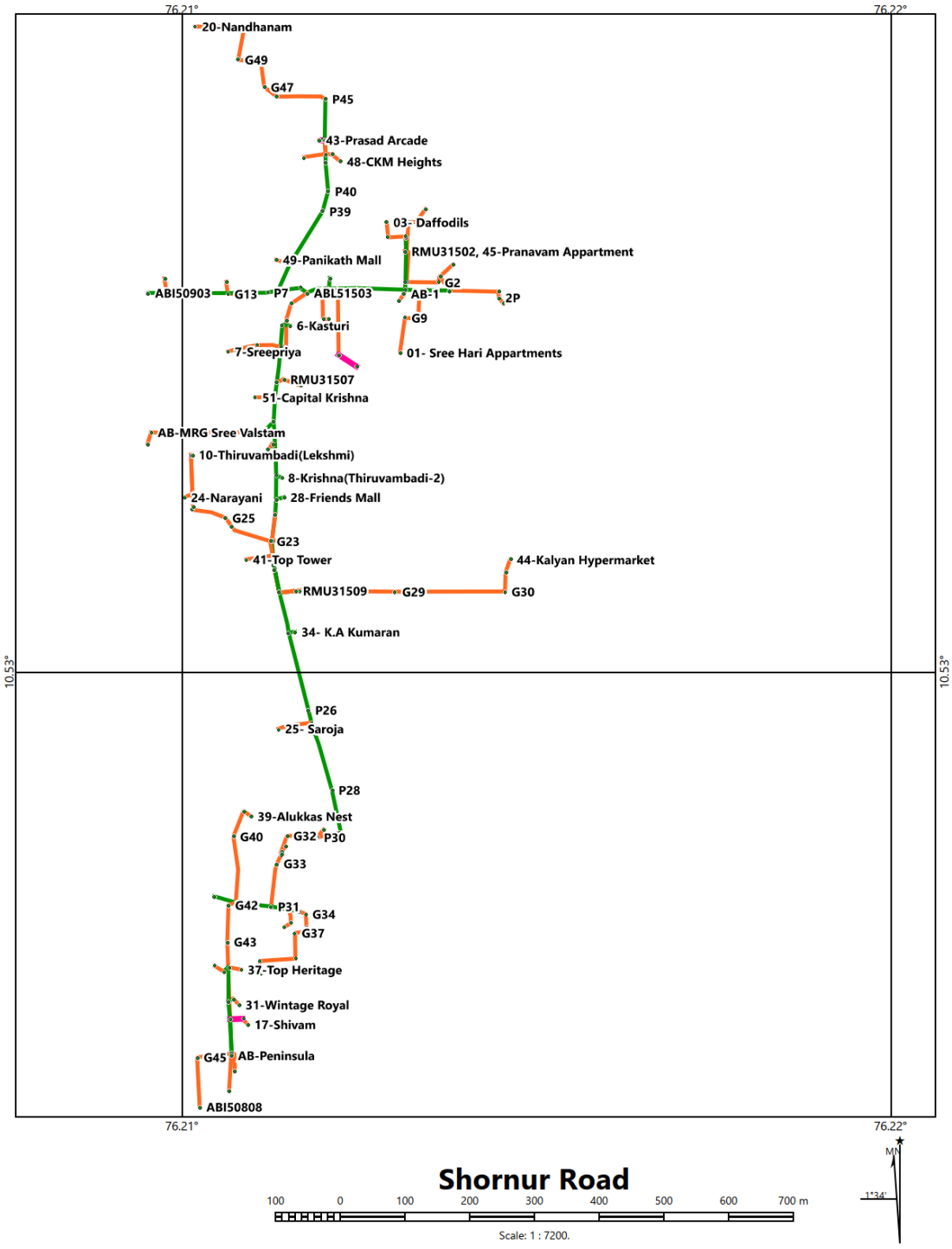

Figure 8: Shornur road feeder

8 VELIYANOOR

The following table shows the 11-kV line distance in the Veliyanoor feeder

Table 22: HT line distance – Veliyanoor feeder

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation feeder		10.517355	76.219663						
S-S	P1	Post		10.517120	76.219563	**UG**	XLPE	300	28.2	32	60.2
P1	P2	Post		10.517085	76.219594	**OH**	Racoon		7.68		7.68
P2	1	Assay Hall Marking	LT	10.517240	76.219773	**OH**	Racoon		26.7		26.7
P1	P3, 21	Airtel Tower	LT	10.517268	76.219442	**OH**	Racoon		19.76		19.76
P3	P24	AB Manorama		10.517096	76.219261	**OH**	Racoon		21.27		21.27
P24	2	Manorama	HT	10.516767	76.219534	**UG**	XLPE	300	48	7	55
P2	G14-1	Ground		10.517000	76.219530	**UG**	XLPE	300			0
G14-1	G14-2			10.517180	76.219360	**UG**	XLPE	300			0
G14-2	G14			10.516906	76.218968	**UG**	XLPE	300			0
G14	22	Chicago	LT	10.516700	76.218968	**UG**	XLPE	300	117.95	10	127.95
P24	P25	Post		10.516706	76.218659	**OH**	Racoon		78.25		78.25
P25	3	C J Tower	LT	10.516875	76.218557	**OH**	Racoon		24.38		24.38
P25	P26	Post		10.516106	76.217811	**OH**	Racoon		114.59		114.59
P26	P27	Post		10.516010	76.217036	**UG**	XLPE	300	326.13	10	336.13
P27	RMU30201	RMU		10.515988	76.217010	**UG**	XLPE	300	5.67	9	14.67
P27	AB Sakthan Market, 4	Sakthan Market	LT	10.515958	76.216764	**OH**	Racoon		30.32		30.32
AB Sakthan Market	RMU30206	RMU		10.515919	76.216744	**UG**	XLPE	300	4.84		4.84
RMU30206	26	Edu Mart	HT	10.515732	76.216878	**UG**	XLPE	240	25.36	7	32.36
P27	P28	Post		10.516006	76.217500	**OH**	Racoon				
P28	ABL50203	AB		10.516365	76.217354	**OH**	Racoon				

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
ABL50203	P29	Post		10.517367	76.217196	**OH**	Racoon				
P29	P30	Post		10.517411	76.217316	**OH**	Racoon				
P30	P31	Post		10.517614	76.217937	**OH**	Racoon				
P31	P31-1	Post		10.518050	76.217844	**OH**	Racoon		25		25
RMU30201	G15	Ground		10.516405	76.217503	**UG**	XLPE	300			
G15	G16	Ground		10.517390	76.217294	**UG**	XLPE	300			
G16	G17	Ground		10.517614	76.217937	**UG**	XLPE	300			
G17	G18	Ground		10.518070	76.217907	**UG**	XLPE	300			
G18	RMU30202	RMU		10.518060	76.217850	**UG**	XLPE	300			
RMU30202	14	Latin Palli		10.518050	76.217844	**UG**	XLPE	300	323.63		323.63
RMU30202	G19	Ground		10.518082	76.217924	**UG**	XLPE	300			0
G19	G20	Ground		10.518431	76.218937	**UG**	XLPE	300			0
G20	RMU30203, 24	Vivid Press	LT	10.517753	76.219192	**UG**	XLPE	300	209.44	10	219.44
RMU30202	G24	Ground		10.517670	76.217912	**UG**	XLPE	300			0
G24	G25	Ground		10.517456	76.217245	**UG**	XLPE	300			0
G25	G26	Ground		10.517981	76.216941	**UG**	XLPE	300			0
G26	G27	Ground		10.518525	76.216588	**UG**	XLPE	300			0
G27	G28	Ground		10.519618	76.216723	**UG**	XLPE	300			0
G28	RMU30204	RMU		10.520465	76.216858	**UG**	XLPE	300	488.48		488.48
RMU30204	G31	Ground		10.520568	76.216720	**UG**	XLPE	300			0
G31	G32	Ground		10.520477	76.216184	**UG**	XLPE	300			0
G32	RMU30205, 25	Sakunthala	HT	10.520222	76.215997	**UG**	XLPE	300	141.99		141.99
RMU30204	G29	Ground		10.520481	76.216802	**UG**	XLPE	300			0
G29	G30	Ground		10.521385	76.216822	**UG**	XLPE	300			0
G30	RMU31606	RMU		10.522609	76.216895	**UG**	XLPE	300	245.44		245.44
AB Sakthan	P4	Post		10.515999	76.216432	**OH**	Racoon		36.62		36.62

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P4	G1	Ground		10.515939	76.215913	**UG**	XLPE	300			0
G1	RMU30207	RMU		10.515870	76.215930	**UG**	XLPE	300			0
RMU30207	G2	Ground		10.515853	76.215567	**UG**	XLPE	300			0
G2	G3	Ground		10.516028	76.215361	**UG**	XLPE	300			0
G3	AB OWC	AB		10.516210	76.214917	**UG**	XLPE	300	186.3		186.3
AB OWC	20	OWC Plant	LT	10.516223	76.214920	**OH**	Racoon		4.02		4.02
AB OWC	AB Police	AB		10.516574	76.214587	**UG**	XLPE	300	53.71		53.71
AB Police	G21	Ground		10.516240	76.215451	**UG**	XLPE	300			0
G21	G22	Ground		10.516392	76.215671	**UG**	XLPE	300			0
G22	G23	Ground		10.518324	76.215873	**UG**	XLPE	300			0
G23	RMU30208	RMU		10.518371	76.215651	**UG**	XLPE	300			0
RMU30208	27	Office of commissioner of Police	HT	10.518777	76.215659	**UG**	XLPE	300	416.45	50	466.45
AB Police	P5	Post		10.517182	76.213144	**OH**	Racoon				0
P5	P6	Post		10.517245	76.212674	**OH**	Racoon				0
P6	ABL50204, 05	Ramanchira madom	LT	10.517227	76.212519	**OH**	Racoon		240.67		240.67
ABL50204	G2-1	Ground		10.517629	76.212579	**UG**	XLPE	300			0
G2-1	G3-1	Ground		10.517600	76.212537	**UG**	XLPE	300			0
G3-1	G4	Ground		10.518388	76.212586	**UG**	XLPE	300			0
G4	RMU31211	RMU		10.518355	76.212265	**UG**	XLPE	300	169.98		169.98
ABL50204	G5	Ground		10.517096	76.212591	**UG**	XLPE	300			
G5	P7	Post		10.516916	76.212593	**UG**	XLPE	300			
P7	P8	Post		10.516703	76.212606	**UG**	XLPE	300	60.01	40	100.01
P8	13	Hari Sree Apartment	LT	10.516706	76.212583	**OH**	Racoon			2.54	2.54
P8	G7	Ground		10.515926	76.212675	**UG**	XLPE	300			0
G7	G8	Ground		10.515914	76.213156	**UG**	XLPE	300			0
G8	G9	Ground		10.515340	76.213290	**UG**	XLPE	300			0

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G9	G10	Ground		10.514978	76.213209	**UG**	XLPE	300			0
G10	ABL50207, 7	Rashtra Deepika	LT	10.515052	76.212532	**UG**	XLPE	300	321.88		321.88
ABL50207	RMU30209	RMU		10.515076	76.212603	**UG**	XLPE	300	8.21		8.21
RMU30209	16	Rastra Deepika Press	HT	10.515136	76.212605	**UG**	XLPE	185	6.64		6.64
ABL50207	P19	Post		10.515046	76.212713	**OH**	Racoon				0
P19	AB Joys palace	AB		10.514975	76.212697	**OH**	Racoon		27.87		27.87
AB Joys palace	8	Joy palace	HT	10.514889	76.212808	**UG**	XLPE	185	15.43	15	30.43
ABL50207	P20	Post		10.515069	76.212060	**OH**	Racoon		51.7		51.7
P20	9	MRG Flat	LT	10.514961	76.212087	**OH**	Racoon		12.31		12.31
P20	P21	Post		10.515140	76.211393	**OH**	Racoon		73.1		73.1
P21	G11	Ground		10.515177	76.211227	**UG**	XLPE	300			
G11	G12	Ground		10.515603	76.211381	**UG**	XLPE	300			
G12	RMU30210	RMU		10.515593	76.211409	**UG**	XLPE	300			
RMU30210	23	New Jwala Diamond Jewellery	HT	10.515598	76.211671	**UG**	XLPE	300	101.3	45	146.3
P21	P22	Post		10.515052	76.211590	**OH**	Racoon				0
P22	P23	Post		10.514674	76.210980	**OH**	Racoon		73.35		73.35
P23	AB Inland	AB		10.514677	76.210917	**OH**	Racoon		6.9		6.9
AB Inland	G13	Ground		10.514686	76.210722	**UG**	XLPE	185			0
G13	10	inland	LT	10.514755	76.210960	**UG**	XLPE	185	34.44	6	40.44
P23	ABI50208	AB		10.513886	76.210747	**OH**	Racoon		90.82		90.82
ABL50204	P9	Post		10.517186	76.212176	**OH**	Racoon				0
P9	P10	Post		10.517253	76.211889	**OH**	Racoon				0
P10	P11	Post		10.517364	76.211622	**OH**	Racoon		104.99		104.99
P11	P12	Post		10.517145	76.211564	**OH**	Racoon		23.55		23.55
P12	P13	Post		10.517039	76.211527	**OH**	Racoon				0

From Map no	Map no	Pole/transformer/ AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P13	AB PPY	AB PP Yohanan		10.517024	76.211514	**OH**	Racoon		15.32		15.32
AB PPY	15	P P Yohanan				**UG**	XLPE	240	Not Connected		
P12	ABL50206	AB		10.517170	76.211392	**UG**	XLPE	300	16.4		16.4
ABL50206	AB Jwala 1	AB		10.517155	76.211030	**OH**	Racoon		39.93		39.93
AB Jwala 1	G6	Ground		10.516730	76.210961	**UG**	XLPE	300			0
G6	AB Jwala 2, 11	Jwala Diamond	LT	10.516670	76.211082	**UG**	XLPE	300	65.9	12	77.9
AB Jwala 1	P14	Post		10.517166	76.210722	**OH**	Racoon				0
P14	P15	Post		10.517160	76.210540	**OH**	Racoon				0
P15	P16	Post		10.517056	76.209794	**OH**	Racoon		134.8		134.8
P16	AB Malabar Tower	AB		10.517035	76.209804	**OH**	Racoon		4.09		4.09
AB Malabar Tower	12	Malabar Tower	LT	10.516946	76.209910	**UG**	XLPE	185	10.32	50	60.32
P16	AB Emerald	AB		10.517213	76.209596	**OH**	Racoon		30.9		30.9
AB Emerald	18, 19	Emerald 1, Emerald 2	HT, LT	10.517180	76.209539	**UG**	XLPE	300	7.23	30	37.23
P11	P17	Post		10.517725	76.211781	**OH**	Racoon		45.34		45.34
P17	AB Mani	AB		10.517658	76.211842	**OH**	Racoon		11.93		11.93
AB Mani	6	Manichitra Arcades	LT	10.517661	76.212197	**UG**	XLPE	300	38.86	5	43.86
P17	P17-1	Post		10.517876	76.211815	**OH**	Racoon				
P17-1	AB EMK	AB		10.518064	76.211849	**OH**	Racoon		37.56		37.56
AB EMK	17	EMKE Silks	HT	10.517785	76.211397	**UG**	XLPE	300	69.52	10	79.52
P17	P17-1	Post		10.517876	76.211815	**OH**	Racoon				
P17-1	P18	Post		10.518412	76.211925	**OH**	Racoon		77.22		77.22

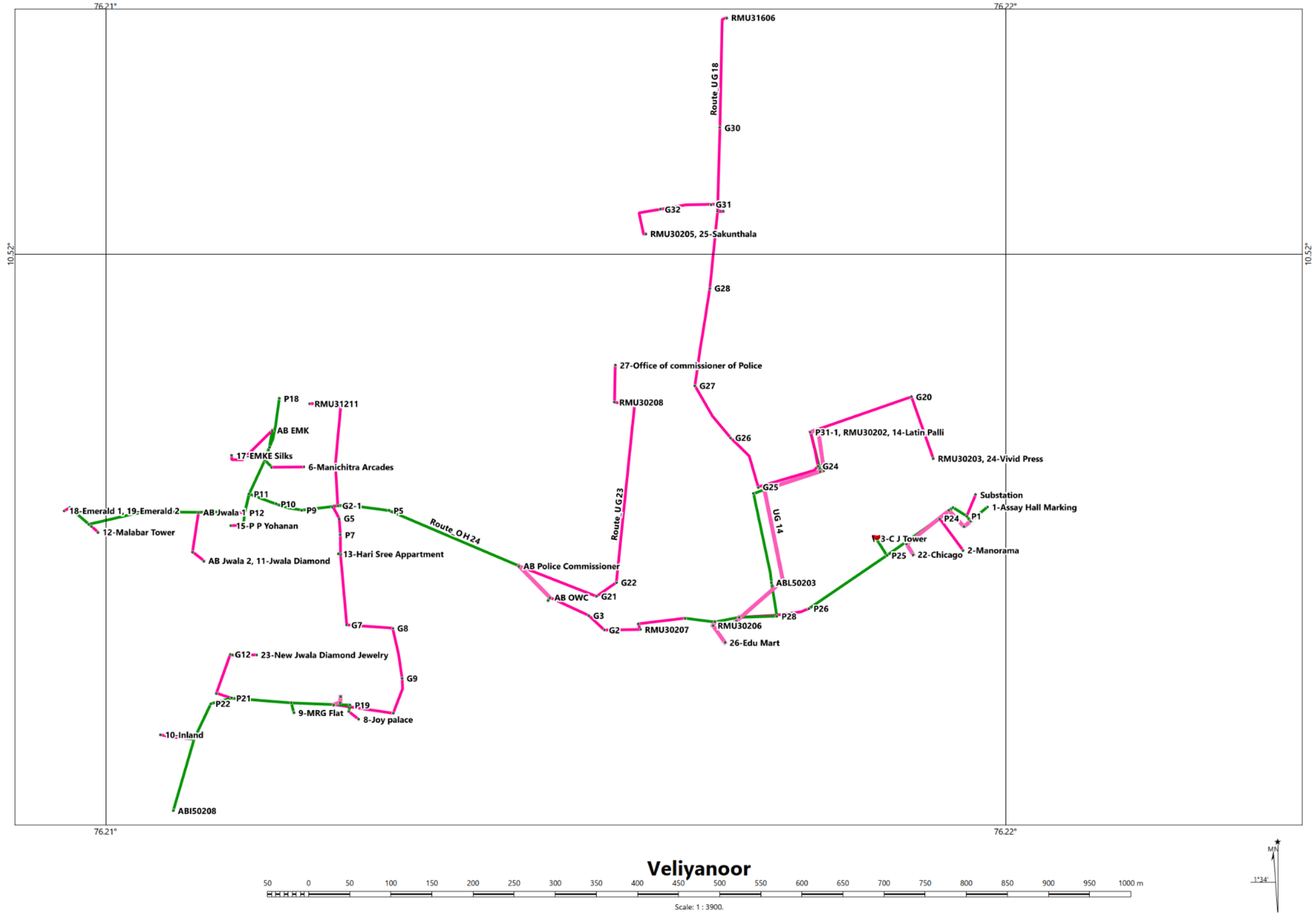

Figure 9: Veliyanoor feeder

9 VIVEKODAYAM FEEDER

The following table shows the 11-kV line distance in the Vivekodayam feeder

Table 23: HT line distance –Vivekodayam feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
SS		Substation		10.535194	76.214591							
SS	P1	Substation feeder		10.535198	76.214825	**UG**	XLPE	300	1	25.62	55	80.62
P1	P2	Post		10.535236	76.214901	**OH**	Racoon			9.32		9.32
P2	P3	Post		10.534813	76.214965	**OH**	Racoon			47.31		47.31
P3	P4	Post		10.534748	76.215028	**OH**	Racoon			9.96		9.96
P4	P29	AB aswani		10.534517	76.215031	**OH**	Racoon			25.55		25.55
P29	31	Aquatic (Sai)	LT	10.534494	76.21496	**OH**	Racoon			8.18		8.18
P29	G1	Ground		10.534560	76.215007	**UG**	XLPE	300	1			
G1	G2	Ground		10.534597	76.214725	**UG**	XLPE					
G2	LBS	Aswini Hospital		10.534563	76.214736	**UG**	XLPE	300	1	41.36		41.36
LBS	01,02	Aswini Hospital	HT			**UG**	XLPE	150	2		40	40
P29	P5	Post		10.533255	76.215052	**OH**	Racoon			134.68		134.68
P5	P30	AB SG Complex		10.531338	76.215073	**OH**	Racoon			217		217
P30	G3	Ground		10.531405	76.215063	**UG**	XLPE	240	1			0
G3	15	SG Complex	HT	10.531427	76.214973	**UG**	XLPE	240		17.52		17.52
P30	P5-1	Post		10.531050	76.215095	**OH**	Racoon			31.95		31.95
P5	P6	Post		10.533251	76.214487	**OH**	Racoon			62.6		62.6
P6	P7	Post		10.533346	76.213460	**OH**	Racoon					0
P7	P7-1	Post		10.533444	76.213114	**OH**	Racoon					0
P7-1	P31	AB Govind Apartment		10.533484	76.213114	**OH**	Racoon			156.85		156.85
P31	G4	Ground		10.533604	76.213125	**UG**	XLPE	240	1			0
G4	3	Govind Apartment	LT	10.533616	76.213024	**UG**	XLPE	240	1	24.46		24.46

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P6	AB1,P32, P32'29	AB Swimming pool, AB silver rox, ABL50702, Swimming Pool TR	LT	10.532844	76.214458	**OH**	Racoon			49.23		49.23
P32'	G5	Ground		10.532888	76.213808	**UG**	XLPE	300	1			0
G5	RMU1	RMU30701		10.532755	76.213804	**UG**	XLPE	300	1	86.03		86.03
RMU1	28	Silver Roxx	LT	10.532661	76.213848	**UG**	XLPE	240	1	11.46		11.46
P32'	P8	Post		10.532428	76.214427	**OH**	Racoon			46.14		46.14
P8	P33	AB Kalindi		10.532444	76.214264	**OH**	Racoon			17.93		17.93
P33	14	Kalindi	LT	10.532383	76.214074	**UG**	XLPE	300	1	21.86	35	56.86
AB1	G6	Ground		10.532239	76.214421	**UG**	XLPE	300	1			0
G6	G7	Ground		10.532109	76.214662	**UG**	XLPE					0
G7	G8	Ground		10.531113	76.214438	**UG**	XLPE					0
G8	P34	AB Bhima		10.531109	76.214133	**UG**	XLPE	300	1	243.12		**243.12**
P34	G19	Ground				**UG**	XLPE	300				0
G19	4	Bhima	HT	10.530717	76.213987	**UG**	XLPE	300	1	61.77		61.77
P34	P9	Post		10.531108	76.212977	**OH**	Racoon			126.53		126.53
P9	P9-1	Post		10.530778	76.212920	**OH**	Racoon					0
P9-1	P35	AB vanvita		10.530742	76.212816	**OH**	Racoon			49.09		49.09
P35	5	Vanvita	HT	10.530800	76.212816	**UG**	XLPE	300	1	6.42	25	31.42
P9	AB2,AB3	ABI50703,ABL50704		10.531138	76.211802	**OH**	Racoon			128.65		128.65
AB2	G9	Ground		10.531077	76.211470	**UG**	XLPE	300	1	16.92		16.92
G9	G10	Ground		10.529868	76.211727	**UG**	XLPE			141.47		141.47
G10	G11	Ground		10.529850	76.211628	**UG**	XLPE			11.02		11.02
G11	P10	Post		10.529501	76.211025	**UG**	XLPE	300	1	76.46		76.46
P10	6	Capital Manner	LT	10.529441	76.211055	**OH**	Racoon			7.4		7.4
P10	P11	Post		10.529294	76.210639	**OH**	Racoon			49.57		49.57
P11	P12	Post		10.529927	76.210698	**OH**	Racoon					0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P12	P13	Post		10.530257	76.210091	**OH**	Racoon					0
P13	P14	Post		10.530857	76.209991	**OH**	Racoon					0
P14	P14-1	Post		10.530990	76.209990	**OH**	Racoon					
P14-1	P36	AB1 sreekrishna		10.531005	76.210070	**OH**	Racoon			234.55		234.55
P36	G12	Ground		10.531012	76.210437	**UG**	XLPE	300	1			0
G12	G13	Ground		10.530867	76.210518	**UG**	XLPE					0
G13	P37	AB2 sreekrishna		10.530883	76.210721	**UG**	XLPE	300	1			0
P37	11	Sree Krishna Apartment	LT	10.530753	76.210736	**UG**	XLPE	300	1	92.48	16	108.48
P11	P15	Post		10.528695	76.210305	**OH**	Racoon			72.99		72.99
P15	P38,07	AB-Souparnika, Souparnika	LT	10.528683	76.210264	**OH**	Racoon			3.57		3.57
P38	G22	Ground		10.52834	76.210220	**UG**	XLPE					0
G22	G22-1	Ground		10.52809	76.209960	**UG**	XLPE					0
G22-1	G22-2	Ground		10.527890	76.209830	**UG**	XLPE					0
G20-2	AB4	ABL50705		10.526901	76.209650	**UG**	XLPE	300	1	213.31		213.31
AB4	AB5	ABL50706		10.526969	76.209495	**OH**	Racoon			13.28		13.28
AB5	G12-1	Ground		10.52695	76.20954	**UG**	XLPE	300	1			0
G12-1	G12	Ground		10.527281	76.209642	**UG**	XLPE					0
G12	RMU2, 16	RMU30702, Mukundha Apartment	LT	10.527293	76.209615	**UG**	XLPE	300	1	45.93	2	47.93
AB5	G12-1	Ground		10.52695	76.20954	**UG**	XLPE					
G12-1	G12	Ground		10.527281	76.209642	**UG**	XLPE					
G12	G12-2	Ground		10.52764	76.20974	**UG**	XLPE					
G12-2	P39	AB satyam		10.527662	76.209686	**UG**	XLPE	300	1	87.27		87.27
P39	8	Satyam	LT	10.527851	76.209558	**UG**	XLPE	300	1	28.23	20	48.23
P39	LBS(G)	Ground(LBS)		10.527433	76.209679	**UG**	XLPE	300	1			0
LBS(G)	12	Shivam	LT	10.527509	76.209558	**UG**	XLPE	300	1	39.37		39.37

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB4	P16	Post		10.526846	76.209493	**OH**	Racoon					0
P16	P16-1	Post		10.52664	76.20958	**OH**	Racoon					
P16-1	P17	Post		10.526361	76.209679	**OH**	Racoon					0
P17	P18	Post		10.525921	76.209726	**OH**	Racoon			122.07		122.07
P18	P40	AB sreehari		10.525945	76.209758	**OH**	Racoon			2.65		2.65
P40	9	Sree Hari	LT	10.525937	76.210051	**UG**	XLPE	240	1	32.08		32.08
P18	P19	Post		10.525819	76.209586	**OH**	Racoon					0
P19	P20	Post		10.524283	76.209863	**OH**	Racoon					0
P20	P20-1	Post		10.524239	76.209763	**OH**	Racoon			202.93		202.93
P20-1	13	Mannath Lane(NP Tower)	LT	10.524206	76.209846	**OH**	Racoon			6.58		6.58
P20-1	P41	AB-Ambika Arcades		10.523845	76.209846	**OH**	Racoon			42.71		42.71
P41	24	Ambika Arcades	LT	10.523921	76.209577	**UG**	XLPE	300	1	30.62	30	60.62
P41	P27	Post		10.523688	76.209783	**OH**	Racoon			18.6		18.6
P27	P45, 23	AB-Music Park, Music Park	LT	10.523625	76.209808	**OH**	Racoon			7.09		7.09
P27	P46	AB-Anamya Tower		10.523638	76.209755	**OH**	Racoon			6.55		6.55
P46	G19-1	Ground		10.52361	76.20962	**UG**	XLPE					0
G19-1	25	Anamya Tower	LT	10.523412	76.20964	**UG**	XLPE	300	1	37.27	15	52.27
P27	P28, 26	Post, Karuvan	LT	10.523523	76.209204	**OH**	Racoon			73.52		73.52
P27	G28-1	Ground		10.52357	76.2092	**UG**	XLPE					
G28-1	RMU4,30	RMU30703, Brahmasam Madom	LT	10.523343	76.209189	**UG**	XLPE	300	1	33.52	15	48.52
P28	AB6	ABI50504		10.523420	76.208130	**OH**	Racoon			110.55		110.55
P27	P21	Post		10.523664	76.209784	**OH**	Racoon			40.31		40.31
P21	G20	Ground		10.523410	76.210170	**UG**	XLPE					
G20	P47	AB-Capital Heritage		10.523416	76.210200	**UG**	XLPE	300	1	38.79		38.79
P47	22	Capital Heritage	LT	10.523399	76.210428	**UG**	XLPE	300	1	11.61	15	26.61

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P47	G20	Ground		10.523410	76.210170	**UG**	XLPE					
G20	G20-1	Ground		10.523190	76.2102	**UG**	XLPE					
G20-1	P48, AB7	AB-Temple Tree, ABL50707		10.523157	76.210224	**UG**	XLPE	300	1	31.55		31.55
P48	G21	Ground		10.52321	76.21048	**UG**	XLPE					
G21	21	Temple Tree	LT	10.522941	76.210513	**UG**	XLPE	300	1	57.72	30	87.72
AB7	AB8,P49	ABL50708, AB-Karthiayini1		10.523022	76.210176	**OH**	Racoon			15.83		15.83
P49	G14	Ground		10.522815	76.210240	**UG**	XLPE	300	1			0
G14	P50	AB-Karthiayini 2		10.522852	76.210672	**UG**	XLPE	300	1			0
P50	19	Karthiayini	LT	10.522676	76.210571	**UG**	XLPE	185	1	93.8	30	123.8
AB7	G15	Ground		10.522792	76.210359	**UG**	XLPE	300	1			0
G14	P51	AB-Leo Enterprises		10.523217	76.211669	**UG**	XLPE	300	1	200.51		200.51
P51	20	Leo Enterprises	HT	10.523058	76.211697	**UG**	XLPE	300	1	18.45	32	50.45
P51	P52	AB-Hall Mark		10.523250	76.211843	**OH**	ABC			18.02		18.02
P52	18	Cochin Hall Mark	HT	10.523162	76.211928	**UG**	XLPE	300	1	16.26	5	21.26
AB8	G14	Ground		10.522805	76.210311	**UG**	XLPE					
G14	G15	Ground		10.522792	76.210359	**UG**	XLPE					
G15	G16	Ground		10.522205	76.210385	**UG**	XLPE					
G16	G16-1	Ground		10.521597	76.210125	**UG**	XLPE					
G16-1	G16-2			10.52175	76.21023	**UG**	XLPE					
G16-2	G17			10.52158	76.21012	**UG**	XLPE					
G17	G18	Ground		10.521044	76.210204	**UG**	XLPE					
G18	G18-1			10.52115	76.21065	**UG**	XLPE					
G18-1	RMU5, 17	RMU30704,Thiruvambadi Devasm	HT	10.521188	76.211064	**UG**	XLPE	300	1	337.27		337.27
RMU5	27	Vrindavan Hotel	HT	10.521279	76.211033	**UG**	XLPE	300	1	10.62	40	50.62

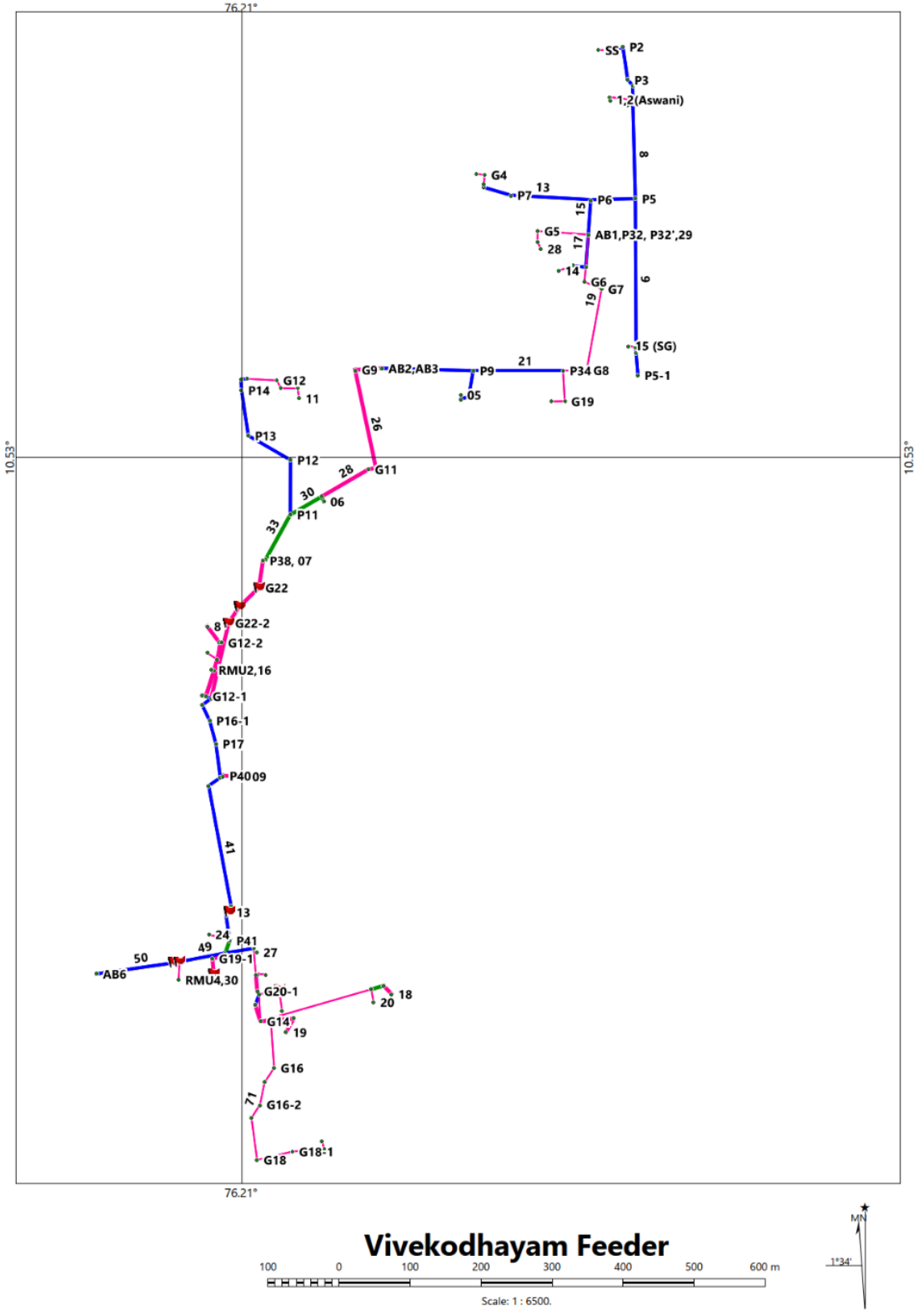

Figure 10: Vivekodayam feeder

10 DISTRICT HOSPITAL FEEDER

The following table shows the 11-kV line distance in the District Hospital feeder

Table 24: HT line distance –District Hospital feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
ss		Substation		10.535032	76.21468							
ss	P1	Post		10.535169	76.21482	**UG**	XLPE	300	1		32	32
P1	G1	Ground		10.535167	76.214897	**UG**	XLPE	300	1			0
G1	G2	Ground		10.534993	76.215005	**UG**	XLPE	300	1			0
G2	P2	Post		10.533756	76.215037	**UG**	XLPE	300	1			0
P2	G3	Ground		10.533433	76.21523	**UG**	XLPE	300	1			0
G3	G4	Ground		10.533434	76.215886	**UG**	XLPE	300	1			0
G4	G5	Ground		10.533072	76.216439	**UG**	XLPE	300	1			0
G5	P3	Post		10.532964	76.216742	**UG**	XLPE	300	1		20	20
P3	G6	Ground		10.53297	76.217114	**UG**	XLPE	300	1			0
G6	G7	Ground		10.530994	76.217077	**UG**	XLPE	300	1			0
G7	G8	Ground		10.530878	76.21771	**UG**	XLPE	300	1			0
G8	G9	Ground		10.530907	76.217979	**UG**	XLPE	300	1			0
G9	G10	Ground		10.5308143	76.218087	**UG**	XLPE	300	1			0
G10	P4	Post		10.530785	76.218877	**UG**	XLPE	300	1		20	20
P4	G11	Ground		10.530781	76.219309	**UG**	XLPE	300	1			0
G11	ABL51602	ABL		10.529775	76.219311	**UG**	XLPE	300	1	1047.65	30	1077.7
ABL51602	37	Kerala Water Authority	LT	10.529766	76.21927	**UG**	XLPE	300	1	5.28	10	15.28
ABL51602	P5	Post		10.529734	76.219399	**OH**	Racoon			7.77		7.77
P5	ABI51403	ABI		10.529898	76.219402	**OH**	Racoon			18.14		18.14
P5	P6	Post		10.529543	76.219389	**OH**	Racoon					0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P6	P7	Post		10.52894	76.219413	**OH**	Racoon			87.91		87.91
P7	AB Vyapari	AB		10.528954	76.219332	**OH**	Racoon			9		9
AB Vyapari	RMU31601	RMU		10.528751	76.219349	**UG**	XLPE	300	1	22.53	7	29.53
RMU31601	36	Vyapari Vyavasai	LT	10.528773	76.219132	**UG**	XLPE	150	1	23.88	9	32.88
AB Vyapari	G12	Ground		10.52893	76.218989	**UG**	XLPE	300	1			0
G12	31-Good Will	Good Will	HT	10.528682	76.218984	**UG**	XLPE	300	1	66.33	5	71.33
P7	P8	Post		10.528216	76.219522	**OH**	Racoon			80.97		80.97
P8	P9	Post		10.528208	76.220178	**OH**	Racoon					0
P9	AB Cheloor	AB		10.528206	76.220254	**OH**	Racoon			80.27		80.27
AB Cheloor	1	Cheloor Golden Enclave	LT	10.527912	76.220332	**UG**	XLPE	150	1	34.71	36	70.71
AB Cheloor	AB Fortune, 42-Classic Fortune	Classic Fortune	LT	10.528243	76.220823	**OH**	Racoon			62.21		62.21
AB Cheloor	AB Forus	AB		10.528220	76.220244	**OH**	Racoon			16.07		16.07
AB Forus	RMU Azalia	RMU		10.528220	76.220244	**UG**	XLPE	300			20	20
RMU Azalia	Forus Azalia	Forus Azalia(NEW T /F)	LT	10.528096	76.220131	**UG**	XLPE	300		18.47	15	33.47
AB Fortune	G13	Ground		10.528235	76.221326	**UG**	XLPE	300	1			0
G13	G14	Ground		10.529097	76.221347	**UG**	XLPE	300	1			0
G14	G15	Ground		10.529258	76.221347	**UG**	XLPE	300	1			0
G15	5-Exchange	Exchange (Chembukavu Feeder)		10.529155	76.221823	**UG**	XLPE	300	1	212.25	5	217.25
P8	P9-1	Post		10.527585	76.219584	**OH**	Racoon					0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P9-1	AB Menachery	AB		10.527106	76.219684	**OH**	Racoon			124.23		124.23
AB Menachery	G16	Ground		10.527007	76.219705	**UG**	XLPE	300	1			0
G16	3-Menachery	Menachery	LT	10.527015	76.219974	**UG**	XLPE	300	1	40.65	10	50.65
AB Menachery	P10	Post		10.52655	76.219774	**OH**	Racoon			62.28		62.28
P10	P11	Post		10.526486	76.219836	**OH**	Racoon					0
P11	P12	Post		10.526488	76.220605	**OH**	Racoon			93.98		93.98
P12	AB Cheloor	AB		10.526434	76.2206	**OH**	Racoon			6		6
AB Cheloor	4	Cheloor Platinum Heights	LT	10.526155	76.220659	**UG**	XLPE	300	1	31.53	10	41.53
P12	G17	Ground		10.526523	76.220969	**UG**	XLPE	300	1			0
G17	G18	Ground		10.526588	76.221401	**UG**	XLPE	300	1			0
G18	G19	Ground		10.526474	76.22142	**UG**	XLPE	300	1			0
G19	G20	Ground		10.526153	76.221338	**UG**	XLPE	300	1			0
G20	G21	Ground		10.525393	76.221108	**UG**	XLPE	300	1			0
G21	G22	Ground		10.525372	76.220707	**UG**	XLPE	300	1			0
G22	RMU31602	RMU		10.525277	76.220728	**UG**	XLPE	300	1	279.23		279.23
RMU31602	41-Alfa Breeza	Alfa Breeza	LT	10.525274	76.220582	**UG**	XLPE	150	1	15.98	15	30.98
P10	P13	Post		10.526119	76.219886	**OH**	Racoon					0
P13	P14	Post		10.525563	76.219987	**OH**	Racoon					0
P14	P15	Post		10.525247	76.220039	**OH**	Racoon			147.12		147.12
P15	AB Navani	AB		10.525252	76.220062	**OH**	Racoon			2.58		2.58
AB Navani	5-Navani	Navani	LT	10.52513	76.220258	**UG**	XLPE	150	1	25.35	35	60.35

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P15	P16	Post		10.524683	76.220058	**OH**	Racoon					0
P16	ABL51603, P17	ABL		10.524238	76.220063	**OH**	Racoon			111.64		111.64
P17	AB CSB, 6-CSB	CSB		10.52423	76.219961	**OH**	Racoon			11.2		11.2
ABL51603	P18	Post		10.523344	76.220114	**OH**	Racoon					0
P18	P19	Post		10.523339	76.220133	**OH**	Racoon			101.2		101.2
P19	ABI51604	ABI		10.523315	76.220583	**OH**	Racoon			49.33		49.33
ABI51604	G23	Ground		10.52332	76.220634	**UG**	XLPE	300	1			0
G23	AB Skyline	AB		10.523988	76.220769	**UG**	XLPE	300	1	82.72	7	89.72
AB Skyline	9-Sky line	Sky line	LT	10.524008	76.220519	**UG**	XLPE	185	1	27.45	40	67.45
AB Skyline	P20	Post		10.524006	76.220825	**OH**	Racoon					0
P20	P20-1	Post		10.524272	76.22098	**OH**	Racoon					0
P20	P21	Post		10.52442	76.22103	**OH**	Racoon					0
P21	AB Lalitha	AB		10.524462	76.221069	**OH**	Racoon			63.98		63.98
AB Lalitha	10-Lalitha Heights	Lalitha Heights	LT	10.524604	76.221079	**UG**	XLPE	150	1	15.74	15	30.74
P19	P22	Post		10.523354	76.219751	**OH**	Racoon					0
P22	P23	Post		10.523375	76.219537	**OH**	Racoon			65.39		65.39
P23	RMU st. Thomas	RMU		10.523439	76.21953	**UG**	XLPE	300	1	7.12	5	12.12
RMU st. Thomas	St. Thomas	St. Thomas	HT	10.523412	76.219395	**UG**	XLPE	300	1	15.08	9	24.08
RMU st. Thomas	P24	Post		10.523463	76.219564	**UG**	XLPE	300	1	4.57	10	14.57
P24	P25	Post		10.52379	76.219537	**OH**	Racoon			36.29		36.29
P25	AB CSB	AB		10.523717	76.219634	**OH**	Racoon			13.34		13.34
AB CSB	32- CSB	CSB	HT	10.523723	76.220002	**UG**	XLPE	150	1	40.29	5	45.29

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P25	P26	Post		10.524066	76.219449	**OH**	Racoon					0
P26	P27	Post		10.524635	76.219249	**OH**	Racoon			98.65		98.65
P27	AB Navani	AB		10.524644	76.219215	**OH**	Racoon			3.85		3.85
AB Navani	8-Navani	Navani	LT	10.524701	76.21875	**UG**	XLPE	150	1	51.29	100	151.29
P27	P28	Post		10.524851	76.219216	**OH**	Racoon					0
P28	P29	Post		10.525396	76.219117	**OH**	Racoon					0
P29	AB St.mary's	AB		10.525391	76.219075	**OH**	Racoon			90.04		90.04
AB St.mary's	7- St. Mary's College	St. Mary's College	HT	10.52544	76.219054	**UG**	XLPE	150	1	5.89	25	30.89
P23	ABL51606	ABL		10.523428	76.217766	**OH**	Racoon			194.03		194.03
ABL51606	RMU31603	RMU		10.523277	76.217551	**UG**	XLPE	300	1	28.86	60	88.86
RMU31603	11-DH College Road	DH College Road	LT	10.523287	76.217569	**UG**	XLPE	300	1	3	10	13
RMU31603	39- DH Solar	DH Solar	LT	10.523288	76.217547	**UG**	XLPE	300	1	3.44	10	13.44
ABL51606	ABL51605	ABL		10.52341	76.217018	**OH**	Racoon					0
ABL51605	P30	Post		10.523441	76.216915	**OH**	Racoon					0
P30	ABI51108	ABI		10.523708	76.216893	**OH**	Racoon			124.23		124.23
RMU31603	RMU31604	RMU		10.522605	76.216937	**UG**	XLPE	300	1	139.26		139.26
RMU31604	RMU31605	RMU		10.522602	76.216913	**UG**	XLPE	300	1	2.65		2.65
RMU31605	12-Dt.HS Palakkal	Dt.HS Palakkal	LT	10.522598	76.216952	**UG**	XLPE	300	1	4.29		4.29
RMU31605	13-Dt.HS Palakkal	Dt.HS Palakkal	LT	10.522602	76.216966	**UG**	XLPE	300	1	5.8		5.8
RMU31604	35-Josco	Josco	HT	10.522375	76.217179	**UG**	XLPE	300	1	36.73	20	56.73

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
RMU31604	ABL51607	ABL(8-Pole)		10.522852	76.216642	**UG**	XLPE	300	1	50.3	20	70.3
ABL51607	ABL51609	ABL		10.52289	76.21661	**OH**	Racoon			8.84		8.84
ABL51609	RMU31606	RMU		10.522594	76.216883	**UG**	XLPE	300	1		70	70
RMU31606	40- DH	DH	HT	10.522681	76.217206	**UG**	XLPE	300	1	81.58	20	101.58
RMU31605	G45	Ground		10.522541	76.216843	**UG**	XLPE	300	1		20	20
G45	P41	Post		10.52212	76.216784	**UG**	XLPE	300	1			0
P41	G46	Ground		10.522067	76.215925	**UG**	XLPE	300	1			0
G46	RMU31607	RMU		10.522099	76.215927	**UG**	XLPE	300	1			0
RMU31607	19- Chemmanur coperative Office	Chemmanur coperative Office	HT	10.522215	76.215907	**UG**	XLPE	300	1	174.98	20	194.98
RMU31604	AB SIB	AB		10.522871	76.216577	**UG**	XLPE	240	1			0
AB SIB	18- SIB	SIB	HT	10.522302	76.216145	**UG**	XLPE	240	1	128.05	70	198.05
ABL51607	15-8 Pole 2	8 Pole 2	LT	10.52286	76.21662	**OH**	Racoon			7.81		7.81
ABL51607	16-8 Pole 3	8 Pole 3	LT	10.522866	76.216585	**OH**	Racoon			4.3		4.3
ABL51607	14-8 Pole 1, ABL51608	8 Pole 1	LT	10.522861	76.216566	**OH**	Racoon			2.22		2.22
ABL51607	17-8 Pole 4	8 Pole 4	LT	10.522867	76.216524	**OH**	Racoon			2.25		2.25
ABL51607	ABI51203	ABI		10.52286	76.21662	**OH**	Racoon			7.81		7.81
ABL51608	G47	Ground		10.522667	76.216523	**UG**	XLPE	300	1			0
G47	G48	Ground		10.52254	76.214984	**UG**	XLPE	300	1			0
G48	G49	Ground		10.522604	76.214463	**UG**	XLPE	300	1			0
G49	G50	Ground		10.522413	76.214479	**UG**	XLPE	300	1			0
G50	G51	Ground		10.522065	76.214515	**UG**	XLPE	300	1			0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
G51	AB fashion, 21- Fashion Fabrics	Fashion Fabrics	LT	10.521462	76.214623	**UG**	XLPE	300	1	373.52		373.52
AB fashion	AB Elite	AB		10.5215	76.214596	**OH**	Racoon			5.47		5.47
AB Elite	20- Elite Saree	Elite Saree	HT	10.521528	76.214767	**UG**	XLPE	300	1	18.97	15	33.97
RMU31604	G24	Ground		10.522571	76.216859	**UG**	XLPE	300	1			0
G24	G25	Ground		10.522487	76.216841	**UG**	XLPE	300	1			0
G25	G26	Ground		10.521876	76.216855	**UG**	XLPE	300	1			0
G26	G27	Ground		10.521967	76.217535	**UG**	XLPE	300	1			0
G27	P31, 22- Ariyagadi	Ariyagadi	LT	10.521823	76.217562	**UG**	XLPE	300	1	179.3	10	189.3
P31	G28	Ground		10.521535	76.217579	**UG**	XLPE	300	1			0
G28	G29	Ground		10.521246	76.217578	**UG**	XLPE	300	1			0
G29	G30	Ground		10.52116	76.217545	**UG**	XLPE	300	1			0
G30	G34	Ground		10.521	76.217406	**UG**	XLPE	300	1			0
G34	G35	Ground		10.520539	76.217434	**UG**	XLPE	300	1			0
G35	G36	Ground		10.519356	76.217582	**UG**	XLPE	300	1			0
G36	P39, 23- Kuttans, ABL51612	Kuttans, ABL	LT	10.519303	76.21768	**UG**	XLPE	300	1	299.44		299.44
P39	G37	Ground		10.5194343	76.217882	**UG**	XLPE	300	1			0
G37	RMU31609, 3	Holy Space Shopping Complex	LT	10.519158	76.21792	**UG**	XLPE	300	1	43.58	10	53.58
P39	G38	Ground		10.519421	76.218297	**UG**	XLPE	300	1			0
G38	AB Holy ht	AB		10.519382	76.218312	**UG**	XLPE	300	1			0
AB holy ht	24	Holy Heights	LT	10.519074	76.218121	**UG**	XLPE	300	1	131.14	10	141.14
P39	G39	Ground		10.519279	76.217585	**UG**	XLPE	300	1			0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
G39	G40	Ground		10.51921	76.21702	**UG**	XLPE	300	1			0
G40	P40	Post		10.51909	76.217043	**UG**	XLPE	300	1	85.76	10	95.76
P40	25	Erinjeri Ariyangadi 2	LT	10.518624	76.21708	**OH**	Racoon			49.91		49.91
P40	G41	Ground		10.519222	76.217034	**UG**	XLPE	300	1		10	10
G41	G42	Ground		10.519246	76.217	**UG**	XLPE	300	1			0
G42	G43	Ground		10.519732	76.216994	**UG**	XLPE	300	1			0
G43	G44	Ground		10.520466	76.216991	**UG**	XLPE	300	1			0
G44	ABL51613, 26	High Road	LT	10.520467	76.216897	**UG**	XLPE	300	1	166.77	10	176.77
ABL51613	RMU30204	RMU		10.520471	76.216853	**UG**	XLPE	300	1	4.84	20	24.84
P31	P32	Post		10.521971	76.217591	**OH**	Racoon					0
P32	P33	Post		10.522064	76.2182	**OH**	Racoon					0
P33	P34	Post		10.522192	76.218879	**OH**	Racoon					0
P34	P35	Post		10.522335	76.219574	**OH**	Racoon			237.57		237.57
P35	ABI51610	ABI		10.521651	76.219472	**UG**	XLPE	300	1	76.48		76.48
P35	P36	Post		10.522419	76.220107	**OH**	Racoon			59.08		59.08
P36	LBS	LBS		10.52246	76.220099	**UG**	XLPE	300	1	4.62	10	14.62
LBS	29	CT Plaza	LT	10.522719	76.22011	**UG**	XLPE	150	1	28.67	15	43.67
P36	AB east	AB		10.52233	76.220224	**OH**	Racoon			16.15		16.15
AB east	27	East end plaza	LT	10.52179	76.220317	**UG**	XLPE	300	1	60.59	10	70.59
P36	P37	Post		10.522512	76.220607	**OH**	Racoon					0
P37	AB adam	AB		10.522553	76.220863	**OH**	Racoon			84.07		84.07
AB adam	28	Adam bazar	LT	10.521881	76.22077	**UG**	XLPE	300	1	88.94	10	98.94
AB adam	AB Sadanan	AB		10.522576	76.221005	**OH**	Racoon			15.75		15.75
AB Sadanan	33	Sadanadhan	LT	10.522869	76.220986	**UG**	XLPE	300	1	32.48	20	52.48
AB Sadanan	P38	Post		10.522729	76.221508	**OH**	Racoon			57.6		57.6

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P38	AB Park	AB		10.522643	76.221542	**OH**	Racoon			10.21		10.21
AB Park	30	Park Land	LT	10.522555	76.221681	**UG**	XLPE	240	1	18.06	40	58.06
P38	G31	Ground		10.522848	76.221787	**UG**	XLPE	300	1			0
G31	G32	Ground		10.522762	76.221833	**UG**	XLPE	300	1			0
G32	RMU31608, 38	Shalimar Shopping Complex	LT	10.522423	76.221956	**UG**	XLPE	300	1	85.8	10	95.8

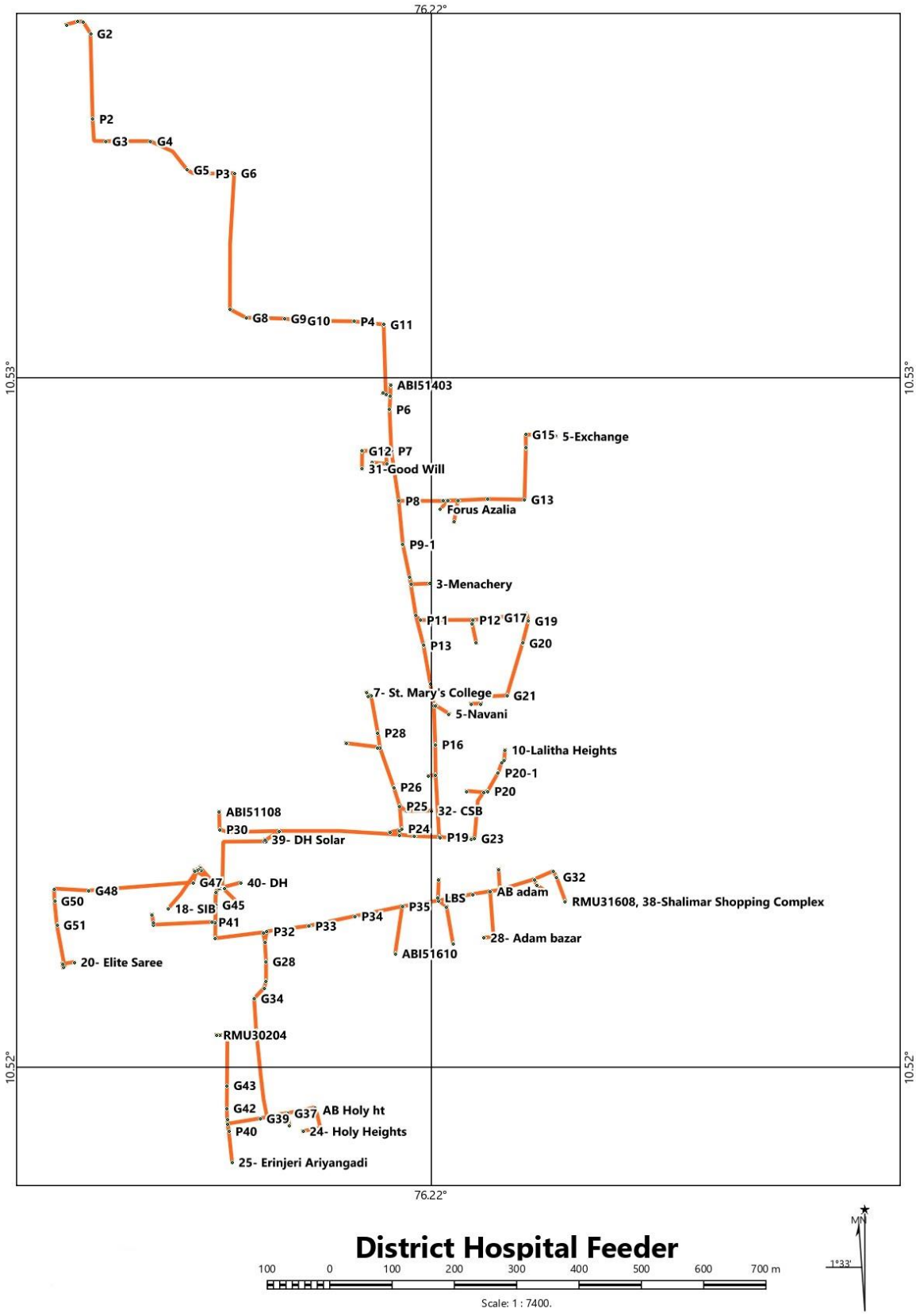

Figure 11: District Hospital feeder

11 ARANATTUKARA FEEDER

The following table shows the 11-kV line distance in the Aranattukara feeder

Table 25: HT line distance – Aranattukara feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
SS	2P	Post		10.535215	76.214668	**UG**	XLPE	300	1		21	21
2P	G1	Ground		10.535163	76.215006	**UG**	XLPE	300	1			0
G1	P1	Post		10.531559	76.215286	**UG**	XLPE	300	1		21	21
P1	P2	Post		10.530001	76.215078	**UG**	XLPE	300	1		21	21
P2	G2	Ground		10.529472	76.214997	**UG**	XLPE	300	1			0
G2	G3	Ground		10.529214	76.216235	**UG**	XLPE	300	1			0
G3	G4	Ground		10.527413	76.215903	**UG**	XLPE	300	1			0
G4	G5	Ground		10.526990	76.216700	**UG**	XLPE	300	1			0
G5	8P	Post		10.522750	76.216537	**UG**	XLPE	300	1		21	21
8P	G6	Ground		10.522704	76.213044	**UG**	XLPE	300	1			0
G6	G7	Ground		10.522216	76.212836	**UG**	XLPE	300	1			0
G7	P3	Post		10.522260	76.212540	**UG**	XLPE	300	1		21	21
P3	G8	Ground		10.522255	76.212205	**UG**	XLPE	300	1			0
G8	G9	Ground		10.521833	76.212192	**UG**	XLPE	300	1			0
G9	G10	Ground		10.521627	76.211648	**UG**	XLPE	300	1			0
G10	G11	Ground		10.521122	76.211478	**UG**	XLPE	300	1			0
G11	RMU1	RMU 30501		10.521182	76.211154	**UG**	XLPE	300	1	2385.97	6	2391.97
RMU1	G12	Ground		10.521037	76.210189	**UG**	XLPE	300	1			0
G12	G13	Ground		10.521635	76.210142	**UG**	XLPE	300	1			0
G13	P4	Post		10.521565	76.209426	**UG**	XLPE	300	1		15	15

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P4	G14	Ground		10.521475	76.208831	**UG**	XLPE	300	1			0
G14	G15	Ground		10.522062	76.208758	**UG**	XLPE	300	1			0
G15	RMU2, 1	RMU30502, Mothimahal	HT	10.522028	76.208538	**UG**	XLPE	300	1	411.81	7	418.81
RMU2	G16	Ground		10.523465	76.208386	**UG**	XLPE	300	1			0
G16	P5	Post		10.523450	76.208140	**UG**	XLPE	300	1	210.95	6	216.95
P5	AB1	ABI-50504		10.523503	76.208362	**OH**	Racoon			23.75		23.75
P5	P6	Post		10.523345	76.207798	**OH**	Racoon			38.55		38.55
P6	RMU3, 3	RMU30503, Ambilikala arcade	LT	10.523092	76.20785	**UG**	XLPE	240	1	36.79	10	46.79
P6	P7	Post		10.523351	76.207419	**OH**	Racoon			42.47		42.47
P7	AB2	ABI-50505		10.523530	76.207403	**OH**	Racoon			21.89		21.89
P7	P8	Post		10.523301	76.207227	**OH**	Racoon			21.01		21.01
P8	G17	Ground		10.523400	76.207214	**UG**	XLPE	300	1	1	5	5
G17	G18	Ground		10.523458	76.207695	**UG**	XLPE	300	1	1		0
G18	RMU4, 5	RMU30504, VRM tower	LT	10.523568	76.207642	**UG**	XLPE	240	1	1	5	82.56
P8	AB3, 16	ABL50506, Krishnamani	LT	10.523132	76.206512	**OH**	Racoon			80.46		80.46
AB3	G19	Ground		10.522531	76.206568	**UG**	XLPE	300	1	1	5	5
G19	G20	Ground		10.521615	76.206271	**UG**	XLPE	300	1	1		0
G20	G21	Ground		10.521444	76.206117	**UG**	XLPE	300	1	1		0
G21	G22	Ground		10.520914	76.206188	**UG**	XLPE	300	1	1		0
G22	AB4	AB		10.520901	76.206123	**UG**	XLPE	300	1	1		261.49
AB4	17	Pentarc	LT	10.520835	76.205969	**UG**	XLPE	240	1	1	6	31.51
AB4	P9	Post		10.520544	76.206294	**OH**	Racoon			42.54		42.54

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P9	7	Ashtapati Apartment	LT	10.520564	76.206686	**UG**	XLPE	240	1	1	10	52.97
P9	P10	Post		10.519624	76.206359	**OH**	Racoon			103.04		103.04
P10	G23	Ground		10.519842	76.207483	**UG**	XLPE	300	1	1		0
G23	G24	Ground		10.519936	76.207573	**UG**	XLPE	300	1	1		0
G24	P11	Post		10.519851	76.208238	**UG**	XLPE	300	1	1	7	7
P11	10, 14	Routh Tower1,2	HT,LT	10.519273	76.208162	**UG**	XLPE	300	1	1	20	297.57
AB3	P12	Post		10.523073	76.206092	**OH**	Racoon			46.43		46.43
P12	P12-1	Post		10.522999	76.206074	**OH**	Racoon			8.41		8.41
P12-1	18, 19, 20	Centre Point 1, 2, 3	HT, HT, LT	10.522742	76.206013	**UG**	XLPE	300	1	1	25	54.2
P12	P13	Post		10.522936	76.205722	**OH**	Racoon			43.24		43.24
P13	P13-1	Post		10.523000	76.205729	**UG**	XLPE	300				0
P13-1	RMU	RMU-PCK		10.523205	76.20594	**UG**	XLPE	300				0
RMU	PCK	PCK - NewTransformer	LT	10.523276	76.205962	**UG**	XLPE	300		47.7	10	57.7
P13	RMU5	RMU		10.523216	76.205909	**UG**	XLPE	300	1	1		0
P13	P14	Post		10.522925	76.205646	**OH**	Racoon			8.41		8.41
P14	P14-1	Post		10.523083	76.205618	**OH**	Racoon			17.74		17.74
P14-1	22	Kochu Bhavan	LT	10.523412	76.205606	**OH**	Racoon			36.41		36.41
P14-1	21	HDFC	LT	10.523152	76.205462	**UG**	XLPE	300	1	1	15	33.7
P14	P15	Post		10.522848	76.205287	**OH**	Racoon			40.21		40.21
P15	23	Colour House	HT	10.523379	76.205255	**UG**	XLPE	300	1	1	6	64.84
P15	AB5,9	ABL50507, Spoon	LT	10.522442	76.205269	**UG**	XLPE	300	1	1	3	47.95
AB5	P16	Post		10.522219	76.205282	**OH**	Racoon			24.71		24.71
P16	P16-1	Post		10.522207	76.205119	**OH**	Racoon					0
P16-1	11	Income Tax Office	HT	10.522135	76.205009	**UG**	XLPE	300	1	1	15	47.33

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P16	P17	Post		10.5217	76.2052	**OH**	Racoon			57.69		57.69
P17	42	P17-1, Parayil Lane	LT	10.521738	76.205124	**OH**	Racoon			9.55		9.55
P17-1	24	Presidency	LT	10.521691	76.205091	**OH**	Racoon			6.33		6.33
P17	P18	Post		10.521047	76.205065	**OH**	Racoon					0
P18	P18-1	Post		10.521012	76.205132	**OH**	Racoon			84.06		84.06
P18-1	41	Jaya Lakshmi Silks	HT	10.520846	76.205440	**UG**	XLPE	300	1	1	20	58.39
P15	P19	Post		10.522612	76.204097	**OH**	Racoon			132.85		132.85
P19	P19-1	Post		10.522820	76.204111	**OH**	Racoon			23.06		23.06
P19-1	25	Malabar Gold	HT	10.523029	76.204109	**UG**	XLPE	300	1	1	30	53.12
P19	P20	4P		10.522539	76.203786	**OH**	Racoon			34.99		34.99
P20	G25	Ground		10.522279	76.202415	**UG**	XLPE	300	1	1		0
G25	AB6	ABL-50508		10.521607	76.201725	**UG**	XLPE	300	1	1		260.22
AB6	AB7	ABI-50509		10.521668	76.201755	**OH**	Racoon			7.5		7.5
AB6	P21	Post		10.520268	76.200788	**OH**	Racoon			180.2		180.2
P21	P21-1	Post		10.520191	76.200923	**OH**	Racoon			17.06		17.06
P21-1	8	Link Offset	HT	10.519930	76.201387	**UG**	XLPE	300	1	58.42	10	68.42
P21	P22	Post		10.519674	76.200391	**OH**	Racoon			78.77		78.77
P22	30	MRG Samyuktha Apartment	LT	10.519657	76.200526	**OH**	Racoon			14.9		14.9
30	31	VIP Apartment	LT	10.519698	76.200590	**OH**	Racoon			8.35		8.35
P22	29	Mental Hospital	LT	10.518809	76.199680	**OH**	Racoon			128.47		128.47
29	6	Nethaji Ground	LT	10.518756	76.199638	**OH**	Racoon			7.45		7.45
6	P23	Post		10.518716	76.199710	**OH**	Racoon					0
P23	AB8	ABL-50510		10.515662	76.197337	**OH**	Racoon					0
AB8	32	Toppin Moola	LT	10.515453	76.197162	**OH**	Racoon			465.19		465.19

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P24	G26	Ground		10.515538	76.197057	**UG**	XLPE	300	1		7	7
G26	RMU6	RMU-30505		10.516758	76.197205	**UG**	XLPE		1			0
RMU6	G27	Ground		10.516049	76.197107	**UG**	XLPE		1			0
G27	RMU7	RMU-30506		10.516053	76.196997	**UG**	XLPE		1			0
RMU7	2	Confident Gemini	LT	10.515849	76.196713	**UG**	XLPE	300	1	280.34	10	290.34
P24	P25, AB9	ABL-50512		10.515273	76.196968	**OH**	Racoon					0
P25	P26	Post		10.513641	76.196896	**OH**	Racoon					0
P26	AB10	ABL-50513		10.513643	76.195624	**OH**	Racoon			349.04		349.04
AB10	33	Malayalam School	LT	10.513620	76.195484	**OH**	Racoon			15.53		15.53
AB10	P27,34	Arnattukkara market	LT	10.511747	76.195637	**OH**	Racoon			209.36		209.36
P27	G28	Ground		10.511771	76.194854	**UG**	XLPE		1			0
G28	G29	Ground		10.510590	76.194788	**UG**	XLPE		1			0
G29	P28	Post		10.510578	76.194679	**UG**	XLPE		1	236.01	7	243.01
P28	P29, 35	Laloor	LT	10.510596	76.194569	**OH**	Racoon			12.2		12.2
P24	AB11	ABL-50511		10.515429	76.197368	**OH**	Racoon					0
AB11	P30	Post		10.515287	76.198153	**OH**	Racoon			110.06		110.06
P30	RMU8, 38	RMU-30507, Global Plaza	LT	10.515342	76.198183	**UG**	XLPE	300	1	6.91	3	9.91
RMU8	G30	Ground		10.515149	76.198557	**UG**	XLPE		1			0
G30	RMU9	RMU-30508		10.515246	76.198603	**UG**	XLPE		1			0
RMU9	39	Le-shore	LT	10.515318	76.198633	**UG**	XLPE	300	1	67.98		67.98
P30	P31, 37	Maani	LT	10.514893	76.199786	**OH**	Racoon			183.99		183.99
P31	RMU10	RMU-30509		10.514864	76.199485	**UG**	XLPE		1			0
RMU10	40	Govind Green Apartment	LT	10.514641	76.199411	**UG**	XLPE	300	1	59.07	3	62.07

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P31	AB12	ABL-50514		10.514480	76.201325	**OH**	Racoon					0
AB12	P32	Post		10.514363	76.201952	**OH**	Racoon			244.26		244.26
P32	AB13	AB		10.514243	76.201924	**OH**	Racoon					0
AB	P32-1	Post		10.513617	76.201764	**OH**	Racoon					0
P32-1	P32-2	Post		10.513538	76.201674	**OH**	Racoon					0
P32-2	P32-3	Post		10.510629	76.200810	**OH**	Racoon					0
P32-3	15	Kizhakkepuram	LT	10.510575	76.200007	**OH**	Racoon			530.27		530.27
P32	P33	Post		10.514337	76.202154	**OH**	Racoon			22.3		22.3
P33	36	AAZ Complex	LT	10.514248	76.202092	**OH**	ABC			11.96		11.96
P33	P34,	AB14		10.513776	76.204230	**OH**	Racoon					
P34	P35, 13	Excise	LT	10.513751	76.204350	**OH**	Racoon			249.12		249.12
P35	P36	Post		10.513684	76.204492	**OH**	Racoon			17.22		17.22
P34	G31	Ground		10.513999	76.203284	**UG**	XLPE	300	1		5	5
G31	27	Sai Service	HT	10.513457	76.203194	**UG**	XLPE		1	201.58		201.58
P36	P36-1	Post		10.514265	76.204405	**OH**	Racoon			64.97		64.97
P36-1	12	Cheloor	LT	10.514544	76.203703	**UG**	XLPE	300	1	82.81	7	89.81
P37	P38	Post		10.513720	76.204846	**OH**	Racoon			1.92		1.92
P38	28	C A Arcade	LT	10.513666	76.204990	**UG**	XLPE	300	1	16.86	7	23.86
P36	P37	Post		10.513729	76.204831	**OH**	Racoon			37.66		37.66
P37	P37-1	Post		10.513586	76.204770	**OH**	Racoon			17.17		17.17
P37-1	26	Excise Acadamy	HT	10.513397	76.204839	**UG**	XLPE	300	1	22.23	21	43.23
P38	P39	Post		10.513800	76.205778	**OH**	Racoon					0
P39	P40,4	P&T Poothole	LT	10.514221	76.206040	**OH**	Racoon			157.78		157.78
P40	RMU11	RMU-30302		10.514276	76.207032	**UG**	XLPE	300	1	112.17	5	117.17

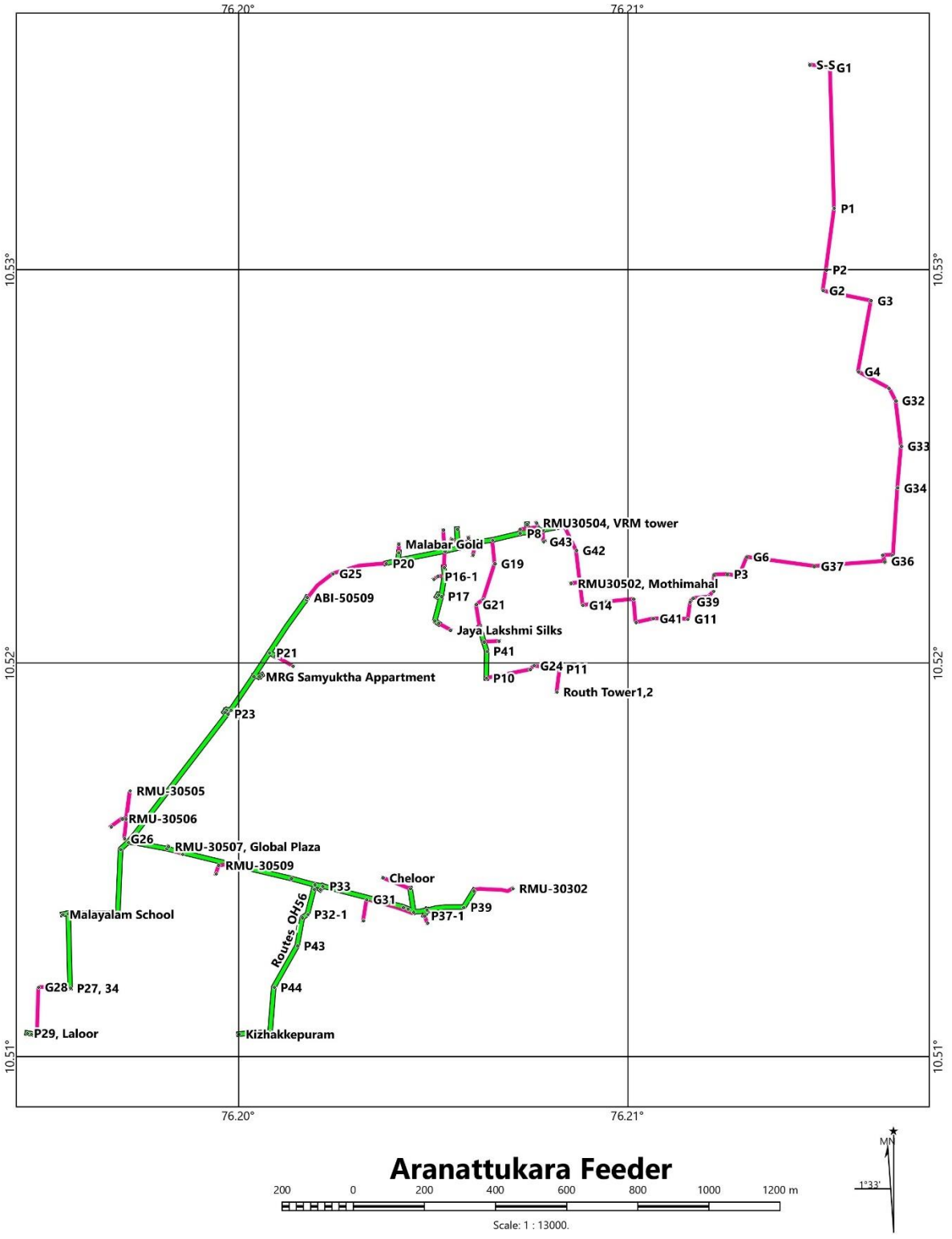

Figure 12: Arnattukara feeder

12 KOTTAPURAM FEEDER

The following table shows the 11-kV line distance in the Kottapuram feeder

Table 26: HT line distance –Kottapuram feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation feeder		10.53517	76.21455							
SS	2P	Post		10.535262	76.214493	**UG**	XLPE	300	1		16	16
2P	G1	Ground		10.535309	76.214497	**UG**	XLPE	300	1			0
G1	P1	Post		10.535347	76.211859	**UG**	XLPE	300	1	306.02	10	316.02
P1	ABL51302	ABL		10.535252	76.211305	**OH**	Racoon		1	61.54		61.54
ABL51302	G2	Ground		10.535342	76.211239	**UG**	XLPE	300	1		7	7
G2	ABL50906	ABL		10.535331	76.207935	**UG**	XLPE	300	1		7	7
ABL50906	G3	Ground		10.535289	76.205362	**UG**	XLPE	300	1			0
G3	ABL51305	ABL		10.535203	76.205368	**UG**	XLPE	300	1	665.14	7	672.14
ABL51305	P2	Post		10.535047	76.205354	**OH**	Racoon			17.12		17.12
P2	AB ARikkariya	AB		10.535052	76.205424	**OH**	Racoon			7.68		7.68
AB Arikkariya	1	Arikkariya	LT	10.534980	76.205692	**UG**	XLPE	300	1	30.4	7	37.4
P2	P9, ABL51306	ABL		10.533987	76.205074	**OH**	Racoon			121.19		121.19
ABL51306	2	Rama Devi	LT	10.533919	76.205709	**OH**	Racoon			69.91		69.91
2	P3	Post		10.533871	76.206127	**OH**	Racoon			46.06		46.06
P3	P4	Post		10.533967	76.20618	**OH**	Racoon			12.1		12.1
P4	AB Mookambika	AB		10.533993	76.206134	**OH**	Racoon			5.8		5.8

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB Mookambika	3	Mookambika	LT	10.534021	76.206123	**UG**	XLPE	150	1	3.32	40	43.32
P4	RMU31301	RMU		10.534310	76.206270	**UG**	XLPE	300	1			0
RMU31301	57	Tangerine	LT	10.53429	76.206290	**UG**	XLPE	300	1	43.25	10	53.25
P3	4	Rama Devi 3	LT	10.533827	76.206238	**OH**	Racoon			13.09		13.09
4	P5	Post		10.533748	76.206853	**OH**	Racoon			68.3		68.3
P5	15	Vigneshwara	LT	10.532767	76.206776	**UG**	XLPE	300	1	108.84	5	113.84
P5	ABL51307	ABL		10.533700	76.207387	**OH**	Racoon		1	58.7		58.7
ABL51307	G4	Ground		10.534289	76.207404	**UG**	XLPE	300	1			0
G4	RMU31302	RMU		10.534287	76.207566	**UG**	XLPE	300	1	82.91		82.91
RMU31302	52	Maithree Apartment	LT	10.534294	76.207746	**UG**	XLPE	185	1	19.72	5	24.72
RMU31302	RMU31303	RMU		10.534267	76.207355	**UG**	XLPE	300	1			0
RMU31303	64	MRG Sabari	LT	10.534170	76.207164	**UG**	XLPE	300	1	46.7		46.7
ABL51307	P6	Post		10.533629	76.207678	**OH**	Racoon			32.99		32.99
P6	P7, ABL51308	ABL		10.533174	76.207687	**OH**	Racoon			50.37		50.37
P7	AB Kayson	AB		10.533137	76.207609	**OH**	Racoon			9.47		9.47
AB Kayson	5	Kayson Apartmemnt	LT	10.533200	76.207395	**UG**	XLPE	185	1	24.44	7	31.44
ABL51308	RMU31305	RMU		10.533070	76.207253	**UG**	XLPE	300	1	53.97		53.97
RMU31305	50	Samruthi Apartment	LT	10.533116	76.207013	**UG**	XLPE	185	1	26.76	10	36.76
RMU31305	G5	Ground		10.532483	76.207279	**UG**	XLPE	300	1			0
G5	RMU31306	RMU		10.532488	76.207234	**UG**	XLPE	300	1	69.95		69.95
RMU31306	51	Sree Ram Apartment	LT	10.532283	76.207158	**UG**	XLPE	300	1	24.15	15	39.15
RMU31306	G6	Ground		10.531985	76.207244	**UG**	XLPE	300	1			0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
G6	G7	Ground		10.531891	76.207096	**UG**	XLPE	300	1			0
G7	RMU31307	RMU		10.531845	76.206929	**UG**	XLPE	300	1			0
RMU31307	56	Indivar	LT	10.531922	76.206980	**UG**	XLPE	300	1	104.06	15	119.06
P6	P8	Post		10.53362376	76.207765	**OH**	Racoon		1	9.54		9.54
P8	19	Vykundam	LT	10.533540	76.20777	**UG**	XLPE	300	1	9.29		9.29
P6	RMU31304	RMU		10.533765	76.208144	**UG**	XLPE	300	1			0
RMU31304	66	Kalyan Heritage	LT	10.533979	76.208074	**UG**	XLPE	300	1	69.21		69.21
P9	P10	Post		10.533612	76.205038	**OH**	Racoon			41.87		41.87
P10	AB Omega	AB		10.533536	76.204918	**OH**	Racoon			15.59		15.59
AB Omega	6	Omega royal	LT	10.533446	76.204785	**UG**	XLPE	300	1	17.64	15	32.64
P10	7	Prarthana	LT	10.533234	76.205020	**OH**	Racoon			41.87		41.87
7	P11	Post		10.532472	76.204971	**OH**	Racoon			84.81		84.81
P11	RMU31308	RMU		10.532427	76.204994	**UG**	XLPE	300	1			0
RMU31308	44	IRA Apartment	LT	10.532450	76.205137	**UG**	XLPE	300	1	21.44	40	61.44
P11	P12	Post		10.531041	76.204957	**OH**	Racoon					0
P12	P13	Post		10.530996	76.203989	**OH**	Racoon			264.36		264.36
P13	P14	Post		10.531333	76.203826	**OH**	Racoon					0
P14	ABL51309	ABL		10.531577	76.203536	**OH**	Racoon					0
ABL51309	P15	Post		10.531666	76.202435	**OH**	Racoon			203.9		203.9
P15	18	Aldebaren	LT	10.531978	76.202557	**UG**	XLPE	300	1	37		37
P15	AB Athira	AB		10.531560	76.202466	**OH**	Racoon			12.21		12.21
AB Athira	17	Athira Abode	LT	10.531127	76.202366	**UG**	XLPE	300	1	49.13		49.13
P15	P16	Post		10.531697	76.201994	**OH**	Racoon			48.39		48.39
P16	21	Cheloor Citadel	LT	10.531095	76.202126	**UG**	XLPE	300	1	68.14	20	88.14
P13	ABL51310	ABL		10.529424	76.205071	**OH**	Racoon					0
ABL51310	P17	Post		10.529078	76.205285	**OH**	Racoon			255.25		255.25

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P17	RMU31309	RMU		10.529081	76.205175	**UG**	XLPE	300	1	12.04		12.04
RMU31309	68	Top Crystal Apartment	LT	10.528966	76.205109	**UG**	XLPE	150	1	14.63	5	19.63
P17	P18	Post		10.528186	76.205505	**OH**	Racoon					0
P18	8	Kottappuram Vyduthi Bhavan	LT	10.527899	76.205496	**OH**	Racoon			135.64		135.64
8	AB Sreesakthi	AB		10.527837	76.205551	**OH**	Racoon			9.13		9.13
AB Sreesakthi	14	Sreesakthi	LT	10.52792	76.205702	**UG**	XLPE	300	1	18.91	30	48.91
8	P19	Post		10.527675	76.205462	**OH**	Racoon			25.05		25.05
P19	G8	Ground		10.527695	76.206803	**UG**	XLPE	300	1			0
G8	G9	Ground		10.527816	76.206865	**UG**	XLPE	300	1			0
G9	G10	Ground		10.527889	76.207354	**UG**	XLPE	300	1			0
G10	G11	Ground		10.527813	76.207395	**UG**	XLPE	300	1			0
G11	G12	Ground		10.528062	76.207874	**UG**	XLPE	300	1			0
G12	G13	Ground		10.528313	76.207821	**UG**	XLPE	300	1			0
G13	9	Ragamalikapuram	LT	10.528318	76.207778	**UG**	XLPE	300	1	319.01		319.01
P19	P20	Post		10.527153	76.205667	**OH**	Racoon			61.95		61.95
P20	AB Zodiac	AB		10.527163	76.205516	**OH**	Racoon			16.57		16.57
AB Zodiac	13	Zodiac	LT	10.527070	76.205368	**UG**	XLPE	185	1	19.19	15	34.19
P20	ABL51311	ABL		10.526909	76.205723	**OH**	Racoon			27.68		27.68
ABL51311	AB Vintage, AB Heights	AB		10.526971	76.20585	**OH**	Racoon			15.5		15.5
AB Vintage	10	Cheloor Vintage	LT	10.527029	76.205899	**UG**	XLPE	185	1	8.36	25	33.36
AB Heights	20	Cheloor Heights	LT	10.526924	76.206308	**UG**	XLPE	185	1	51.82	15	66.82

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
ABL51311	P21	Post		10.52669	76.204511	**OH**	Racoon			134.86		134.86
P21	P22	Post		10.526675	76.20447	**OH**	Racoon			4.78		4.78
P22	G14	Ground		10.527135	76.204398	**UG**	XLPE	185	1			0
G14	RMU31310	RMU		10.527117	76.204354	**UG**	XLPE	185	1			0
RMU31310	55	Vaigai	LT	10.527256	76.204299	**UG**	XLPE	185	1	73.21	7	80.21
P21	48	Swetha	LT	10.527805	76.204279	**UG**	XLPE	185	1	125.92		125.92
P22	ABI51803	ABI		10.526442	76.204098	**OH**	Racoon			48.19		48.19
ABL51311	P23, AB Achuthan	AB		10.526418	76.205919	**OH**	Racoon			58.39		58.39
AB Achuthan	49	Achutan	LT	10.526395	76.206129	**UG**	XLPE	300	1	23.13	7	30.13
P23	P23-1	Post		10.526237	76.206023	**OH**	Racoon		1	23.03		23.03
P23-1	G17	Ground		10.526357	76.206363	**UG**	XLPE	300	1			0
G17	RMU31311	RMU		10.526423	76.20638	**UG**	XLPE	300	1			0
RMU31311	65	Civanta Apartment	LT	10.526538	76.206395	**UG**	XLPE	300	1	59.87	10	69.87
P23-1	P24	Post		10.525827	76.206114	**OH**	Racoon			46.43		46.43
P24	AB Sivapuri	AB		10.525818	76.206156	**OH**	Racoon			4.7		4.7
AB Sivapuri	G15	Ground		10.526031	76.207069	**UG**	XLPE	300	1		7	7
G15	G16	Ground		10.526211	76.207058	**UG**	XLPE	300	1			0
G16	RMU31312	RMU		10.526294	76.207482	**UG**	XLPE	300	1			0
RMU31312	60	SivaPuri	LT	10.526182	76.207508	**UG**	XLPE	300	1	182.4	35	217.4
P24	P25	Post		10.525516	76.206109	**OH**	Racoon					0
P25	P26	Post		10.525294	76.206139	**OH**	Racoon			59.18		59.18
P26	AB Pankaj	AB		10.525298	76.206247	**OH**	Racoon			11.83		11.83
AB Pankaj	16	Pankaj	LT	10.525285	76.206324	**UG**	XLPE	300	1	8.55	7	15.55
P26	AB Velan, 11	Vellan	LT	10.524298	76.206639	**OH**	Racoon			130.58		130.58

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB Velan	P26	Post		10.524327	76.206729	**OH**	Racoon			10.36		10.36
P26	AB Love Dale	AB		10.524357	76.206794	**OH**	Racoon			7.85		7.85
AB Love Dale	12	Love Dale	LT	10.524454	76.206703	**UG**	XLPE	185	1	14.64	7	21.64
AB Velan	G18, P27	Ground, Post		10.524344	76.206840	**UG**	XLPE	300	1			0
G18	RMU31313	RMU		10.524019	76.207042	**UG**	XLPE	300	1			0
RMU31313	63	Nandana Plaza	LT	10.524007	76.206946	**UG**	XLPE	300	1	75.38	15	90.38
AB Love Dale	P27	Post		10.524344	76.206840	**OH**	Racoon					0
P27	ABI50505	ABI		10.523436	76.207412	**OH**	Racoon			128.07		128.07

Figure 13: Kottapuram feeder

13 VANCHIKULAM FEEDER

The following table shows the 11-kV line distance in the Vanchikulam feeder

Table 27: HT line distance –Vanchikulam feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No: of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation feeder		10.535141	76.214580							
S-S	2P	Post		10.535240	76.214450	**UG**	XLPE	300	1		21	21
2P	G1	Ground		10.535338	76.214386	**UG**	XLPE	300	1			0
G1	ABL51801	ABL		10.535333	76.208329	**UG**	XLPE	300	1	693.81	7	700.81
ABL51801	P1	Post		10.535269	76.205362	**OH**	ABC				35	35
P1	P2	Post		10.531027	76.204970	**OH**	ABC				7	7
P2	P3	Post		10.530969	76.203991	**OH**	ABC				7	7
P3	P4	Post		10.528711	76.205460	**OH**	ABC					0
P4	P5	Post		10.527897	76.205469	**OH**	ABC					0
P5	P6	Post		10.526910	76.205759	**OH**	ABC					0
P6	ABL	ABL51802, ABL51805, ABI51804, ABI51803		10.526442	76.204098	**OH**	ABC			1593.17		1593.17
ABL51802	P7	Post		10.525726	76.202361	**OH**	Racoon					0
P7	P8	Post		10.525438	76.202443	**OH**	Racoon			239.06		239.06
P8	1-Raya Complex	Transformer	LT	10.525474	76.202501	**OH**	Racoon			7.49		7.49
P8	P9	Post		10.524369	76.202870	**OH**	Racoon					0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No: of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P9	2-Shankaraiyar Road	Transformer	LT	10.524188	76.202998	**OH**	Racoon				151.58	151.58
2	ABL51806	ABL		10.522871	76.203785	**OH**	Racoon			169.24		169.24
ABL51806	3, 4-Modern	Transformer	LT, HT	10.522873	76.203578	**UG**	XLPE	300	1	22.66	7	29.66
ABL51806	ABL	ABL		10.522549	76.203789	**OH**	Racoon			35.62		35.62
ABL	RMU31802	RMU		10.522452	76.203724	**UG**	XLPE	300	1			0
RMU31802	11-WestPlaza	Transformer	HT	10.522330	76.203834	**UG**	XLPE	300	1	30.96	30	60.96
ABL	P10	Post		10.522545	76.203552	**OH**	Racoon			25.95		25.95
P10	8, 7-Grand mall	Transformer	LT,HT	10.522147	76.203596	**UG**	XLPE	300	1	44.29		44.29
P10	ABL51807	ABL		10.522497	76.203414	**OH**	Racoon			16.01		16.01
ABL51807	G2	Ground		10.522465	76.203329	**UG**	XLPE	300	1			0
G2	AB Maruthi	Transformer		10.521939	76.203324	**UG**	XLPE	300	1	71.63	7	78.63
AB Maruthi	9-Bhuvari Tower	Transformer	HT	10.522290	76.203373	**UG**	XLPE	300	1	39.7		39.7
ABL	G2	Ground		10.522465	76.203329	**UG**	XLPE	300	1			0
G2	AB Maruthi, 10	Transformer-Maruthi Apartment	LT	10.521939	76.203324	**UG**	XLPE	300	1	71.63		71.63

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No: of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
ABL51807	G3	Ground		10.522356	76.202578	**UG**	XLPE	300	1			0
G3	RMU31801	RMU		10.522315	76.202581	**UG**	XLPE	300	1			0
RMU31801	6-K K Tower	Transformer	HT	10.522103	76.202473	**UG**	XLPE	300	1	123.64	20	143.64
ABL	P11	Post		10.522476	76.203000	**OH**	Racoon					0
P11	AB Salfloa	AB		10.522604	76.202982	**OH**	Racoon			59.67		59.67
AB Salfloa	5-Salfloa	Transformer	HT	10.522735	76.202979	**UG**	XLPE	240	1	14.49	7	21.49
ABL	P12	Post		10.522446	76.204041	**OH**	Racoon					0
P12	P13	Post		10.522052	76.204270	**OH**	Racoon			80.12		80.12
P13	14-Fimat	Transformer	LT	10.522134	76.204357	**OH**	Racoon			13.15		13.15
14	RMU31803	RMU		10.522177	76.204343	**UG**	XLPE	300	1		7	7
RMU31803	12, 13 Sunny Diamonds	Transformer	LT,HT	10.522283	76.204424	**UG**	XLPE	300	1	19.7		19.7
P13	P13-1	ABL		10.520997	76.204906	**OH**	Racoon			135.88		135.88
P13-1	15-Hawa	Transformer	LT	10.520798	76.204829	**OH**	Racoon			23.57		23.57
15	ABL51809	ABL		10.520762	76.204816	**OH**	Racoon					0
ABL51809	AB Fathima, RMU31804	RMU		10.520552	76.204744	**OH**	Racoon			28.76		28.76
RMU31804	16-Fathima	Transformer	HT	10.520512	76.204599	**UG**	XLPE	300	1	16.48	30	46.48
AB Fathima	AB	AB		10.519734	76.204899	**OH**	Racoon			92.79		92.79

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No: of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB	G3-1	Ground		10.519725	76.203984	**UG**	XLPE	300	1			0
G3-1	AB Bhavani	AB		10.519334	76.204054	**UG**	XLPE	300	1	144.08	7	151.08
AB Bhavani	17-Bhavani	Transformer	LT	10.519385	76.204207	**UG**	XLPE	150	1	17.67	15	32.67
AB	P14	Post		10.519521	76.204974	**OH**	Racoon			24.95		24.95
P14	AB Sudharsan	AB		10.519561	76.205042	**OH**	Racoon			8.66		8.66
AB Sudharsan	18-Sudharsan	Transformer	LT	10.519421	76.205210	**UG**	XLPE	150	1	24.04	10	34.04
P14	P15	Post		10.519135	76.205074	**OH**	Racoon			44.08		44.08
P15	AB Commercial	AB		10.519124	76.205162	**OH**	Racoon			9.71		9.71
AB Commercial	19-Commercial	Transformer	HT	10.519285	76.205441	**UG**	XLPE	240	1	35.35		35.35
P15	P15-1	Post		10.518561	76.205318	**UG**	XLPE	300		64.89		64.89
P15-1	RMU TBPL	RMU		10.518533	76.20532	**UG**	XLPE	300				0
RMU TBPL	TBPL RIO	Transformer	LT	10.518664	76.205022	**UG**	XLPE	300		42.69	11	53.69
P15	P16	Post		10.518308	76.205355	**OH**	Racoon					0
P16	20-Kaveri Apartment	Transformer	LT	10.518277	76.204844	**OH**	Racoon			152.64		152.64
P13-1	AB Level10	AB		10.520339	76.205264	**OH**	Racoon			82.66		82.66
AB Level10	RMU31805	RMU		10.520305	76.205232	**UG**	XLPE	240	1			0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No: of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
RMU31805	22-Level10	Transformer	HT	10.520343	76.205077	**UG**	XLPE	240	1	22.62	10	32.62
AB Level10	ABL51810	ABL		10.519831	76.205564	**OH**	Racoon			65.08		65.08
ABL51810	AB Art	AB		10.519933	76.205627	**OH**	Racoon			13.22		13.22
AB Art	21-Art of living	Transformer	LT	10.520020	76.205730	**UG**	XLPE	240	1	14.98	30	44.98
ABL51810	23-Refrigeration	Transformer	LT	10.519344	76.205920	**OH**	Racoon			67.64		67.64
23-Refrigeration	P17	Post		10.519135	76.206029	**OH**	Racoon			26.02		26.02
P17	24-Sainic Gas	Transformer	LT	10.519319	76.206364	**OH**	ABC			41.94	15	56.94
P17	P18	Post		10.518286	76.206461	**OH**	Racoon			108.92		108.92
P18	AB LIC	AB		10.518274	76.206422	**UG**	XLPE	300	1	4.47		4.47
AB LIC	25-LIC	Transformer	LT	10.518275	76.206237	**UG**	XLPE	240	1	20.25	30	50.25
P18	RMU31806, 26-	RMU, South Plaza	LT	10.518208	76.206365	**UG**	XLPE	300	1	13.6		13.6
P18	ABL51811	ABL		10.517656	76.206858	**OH**	Racoon					0
ABL51811	AB Sitaram, P19	Post		10.516947	76.207224	**OH**	Racoon			172.73		172.73
AB Sitaram	G4	Ground		10.517037	76.207175	**UG**	XLPE	185	1		10	10
G4	G5	Ground		10.515960	76.205012	**UG**	XLPE	185	1			0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No: of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
G5	27-Sitharam Heritage	Transformer	LT	10.515834	76.205024	**UG**	XLPE	185	1	290.35	10	300.35
P19	RMU31807, 28-KMJ	Transformer	LT	10.516881	76.207142	**UG**	XLPE	300	1	11.57	15	26.57
P19	P20	Post		10.516740	76.207317	**OH**	Racoon			25.06		25.06
P20	AB Merlin	AB		10.516799	76.207389	**OH**	Racoon			10.23		10.23
AB Merlin	29-Merlin Hotel	Transformer	HT	10.517279	76.207969	**UG**	XLPE	150	1	82.76	15	97.76
P20	P21	Post		10.516293	76.207464	**OH**	Racoon					0
P21	P22, 31-State Hotel	Transformer	LT	10.515777	76.207415	**OH**	Racoon			109.32		109.32
P22	G6	Ground		10.515717	76.206668	**UG**	XLPE	300	1		7	7
G6	30-Global Plaza/Global Tower	Transformer	LT	10.515624	76.206674	**UG**	XLPE	300	1	94.61	10	104.61
P22	G7	Ground		10.515433	76.207315	**UG**	XLPE	300	1		7	7
G7	32-Love shore	Transformer	HT	10.515640	76.206920	**UG**	XLPE	300	1	88.52	15	103.52
P22	P23	Post		10.514557	76.207085	**OH**	Racoon			139.7		139.7
P23	RMU30302	RMU		10.514212	76.207012	**UG**	XLPE	300	1	38.99	10	48.99
P23	P24	Post		10.514299	76.206926	**OH**	Racoon			33.49		33.49

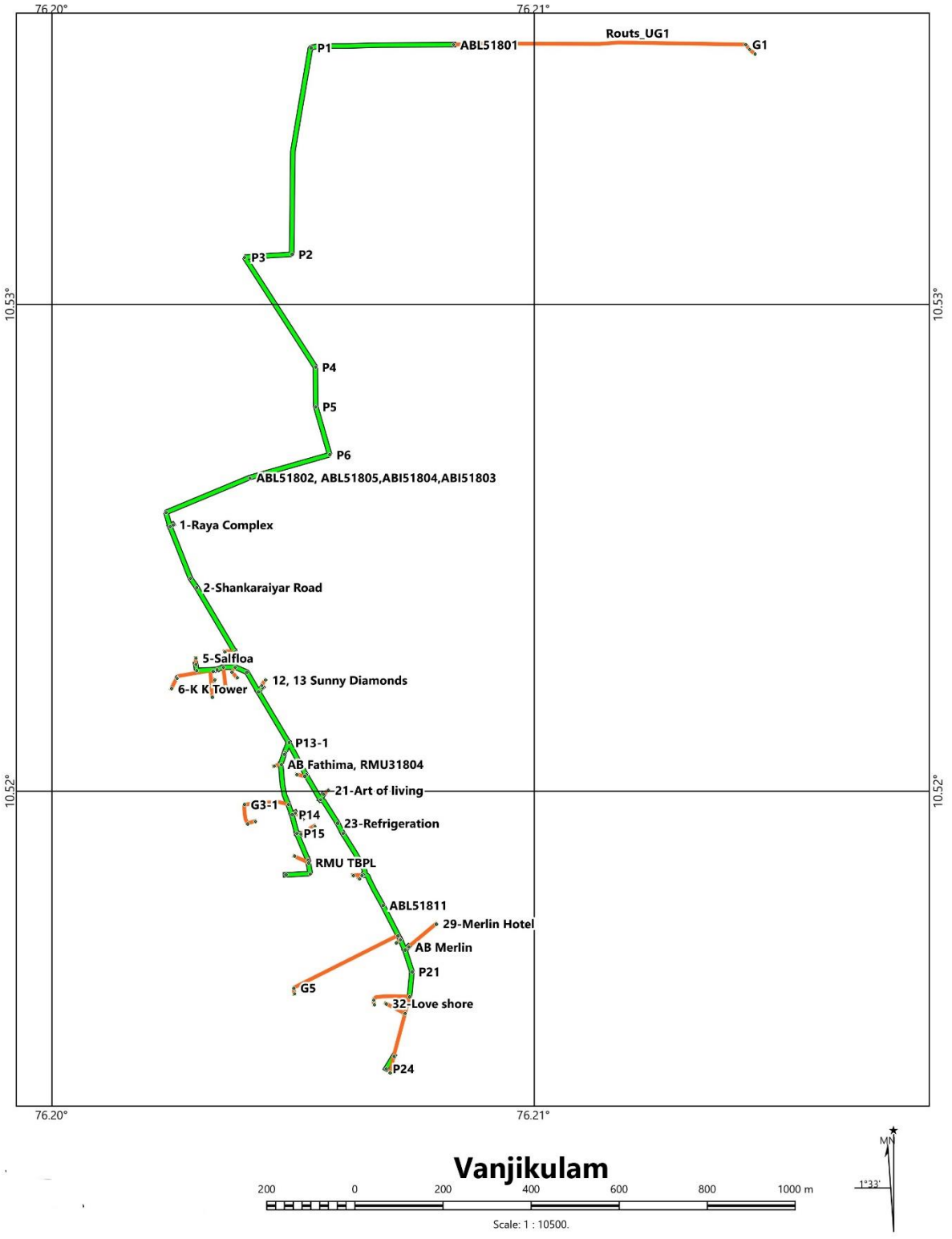

Figure 14: Vanchikulam feeder

14 KERALAVARMA FEEDER

The following table shows the 11-kV line distance in the Keralavarma feeder

Table 28: HT line distance –Keralavarma feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation		10.535170	76.214550							
SS	2P	post		10.535273	76.214431	**UG**	XLPE	300	1		10	10
2P	G1	Ground		10.535321	76.214428	**UG**	XLPE	300	1			
G1	G2	Ground		10.535355	76.211746	**UG**	XLPE	300	1			
G2	G3	Ground		10.535278	76.211385	**UG**	XLPE	300	1			
G3	G4	Ground		10.535441	76.211058	**UG**	XLPE	300	1		3	3
G4	G5	Ground		10.535456	76.2083	**UG**	XLPE	300	1		2	2
G5	G6	Ground		10.535456	76.208774	**UG**	XLPE	300	1			
G6	P1	post		10.535296	76.208826	**UG**	XLPE	300	1		5	5
P1	G7	Ground		10.534716	76.208730	**UG**	XLPE	300	1			
G7	P2	post		10.534159	76.208607	**UG**	XLPE	300	1		3	3
P2	G8	Ground		10.533560	76.208529	**UG**	XLPE	300	1			
G8	G9	Ground		10.533887	76.206057	**UG**	XLPE	300	1			
G9	G10	Ground		10.534050	76.205080	**UG**	XLPE	300	1			
G10	RMU31001	RMU31001		10.533613	76.20502	**UG**	XLPE	300	1			
RMU31001	G11	Ground		10.533568	76.204931	**UG**	XLPE	300	1			
G11	G12	Ground		10.533644	76.202802	**UG**	XLPE	300	1			
G12	G13	Ground		10.533517	76.202757	**UG**	XLPE	300	1			
G13	G14	Ground		10.533178	76.202847	**UG**	XLPE	300	1			
G14	G15	Ground		10.532570	76.203092	**UG**	XLPE	300	1			
G15	G16	Ground		10.532547	76.203424	**UG**	XLPE	300	1			
G16	G17	Ground		10.531540	76.203547	**UG**	XLPE	300	1			
G17	RMU31002	RMU31002		10.531752	76.201493	**UG**	XLPE	300	1		5	5
RMU31002	ABL51002	ABL51002, ABI50914		10.531832	76.201586	**UG**	XLPE	300	1	2052.75	5	2057.75
ABL51002	P3	post		10.531583	76.201615	**OH**	Racoon			27.72		27.72
P3	G18	Ground		10.531674	76.201509	**UG**	XLPE	300	1			
G18	G19	Ground		10.531656	76.200733	**UG**	XLPE	300	1	27.72		27.72
G19	ABL51003	ABL51003		10.531623	76.200701	**UG**	XLPE	300	1	108.74	3	111.74
ABL51003	1	Omega genting palace	LT	10.531660	76.200679	**UG**	XLPE	240	1	4.75	30	34.75
ABL51003	P3-1	post		10.531660	76.200679	**OH**	Racoon			4.75		4.75
P3-1	P3-2	post		10.531755	76.20052	**UG**	XLPE	300	1	20.33		20.33
P3-2	2	CIDBI	LT	10.532144	76.200547	**UG**	XLPE	185	1	43.13	30	73.13
P3-1	P3-3	post		10.531666	76.200055	**UG**	XLPE	300	1	68.3		68.3
P3-3	3	Sreesankari	LT	10.532120	76.200172	**UG**	XLPE	240	1	51.82		51.82
P3	P4	post		10.531031	76.201756	**OH**	Racoon					
P4	P5	post		10.530401	76.201802	**OH**	Racoon			132.84		132.84
P5	RMU,37	Zudio	LT	10.530508	76.20192	**UG**	XLPE	185	1	17.52	7	24.52

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
RMU Zudio	RMU TM tower	RMU		10.530858	76.202006	UG	XLPE	300				
RMU TM tower	TM Towers	T M Tower-Transformer		10.530853	76.202041	UG	XLPE	300		55	11	66
P5	P6	post		10.530007	76.201851	**OH**	Racoon			43.91		43.91
P6	RMU31003,34	MC TOWER	LT	10.529942	76.202264	**UG**	XLPE	300	1	45.77	4	49.77
P6	P7	post		10.529175	76.201897	**OH**	Racoon			92.28		92.28
P7	P7-1	post		10.529238	76.202011	**OH**	Racoon			14.29		14.29
P7-1	4	CA arcade	LT	10.529465	76.202074	**UG**	XLPE	240	1	26.04	10	36.04
P7	ABL51004	ABL51004		10.528715	76.20191	**OH**	Racoon			50.9		50.9
ABL51004	25	falkland	LT	10.528476	76.202179	**UG**	XLPE	300	1	50.53	10	60.53
P7	P8	post		10.528516	76.201906	**OH**	Racoon			22.02		22.02
P8	RMU31004	RMU		10.528547	76.20182	**UG**	XLPE	300	1			
RMU31004	27	chirang Apartment	LT	10.528627	76.201409	**UG**	XLPE	300	1	55.87	3	58.87
P8	P9	post		10.528181	76.20196	**OH**	Racoon					
P9	P10	post		10.527614	76.201998	**OH**	Racoon			100.38		100.38
P10	P10-1	post		10.527568	76.202117	**OH**	Racoon			13.98		13.98
P10-1	P10-2	post		10.527451	76.202367	**UG**	XLPE	300		30.96	6	36.96
P10-2	5	Coral Apartment	LT	10.527455	76.202467	**UG**	XLPE	185	1	10.95	8	18.95
P10	P11,6	Kerala Varma Bus stop	LT	10.527363	76.201997	**OH**	Racoon			27.76	3	30.76
P11	ABL51005	ABL51005		10.527208	76.201618	**OH**	Racoon					
ABL51005	P12	post		10.527178	76.201078	**OH**	Racoon					
P12	P13	post		10.527310	76.200046	**OH**	Racoon			217.99		217.99
P13	RMU31005	RMU31005		10.527402	76.20003	**UG**	XLPE	300	1	10.33	5	15.33
RMU31005	31	Palaise Grande App	LT	10.527763	76.199901	**UG**	XLPE	150	1	53.91	20	73.91
P13	7	Kerala Varma Hostel	LT	10.527503	76.198852	**OH**	Racoon			132.42		132.42
7	P14	post		10.527591	76.198841	**OH**	Racoon					
P14	P15	post		10.528925	76.199064	**OH**	Racoon					
P15	P16	post		10.529118	76.198656	**OH**	Racoon			214.61		214.61
P16	P16-1	post		10.529044	76.198722	**OH**	Racoon			11.52		11.52
P16-1	9	Temple Tower	LT	10.528974	76.198634	**UG**	XLPE	185	1	12.36	50	62.36
P16	P17	post		10.529191	76.198272	**OH**	Racoon					
P17	P18	post		10.529810	76.19877	**OH**	Racoon					
P18	P19	post		10.530158	76.198865	**OH**	Racoon			168.65		168.65
P19	10	Mahamaya App	LT	10.530146	76.198903	**OH**	Racoon			3.79		3.79
P19	ABL57007	ABL57007		10.530292	76.198939	**OH**	Racoon			16.06		16.06
ABL57007	11	Sreedurga App	LT	10.530169	76.197773	**UG**	XLPE	300	1	139.82	3	142.82
11	P20	post		10.530245	76.197214	**OH**	Racoon			63.56		63.56
P20	P20-1	post		10.530012	76.197097	**UG**	XLPE	300	1	35.54	3	38.54
P20-1	12	Blue Hills	LT	10.529952	76.197095	**UG**	XLPE	185	1	6.64	25	31.64
7	RMU31006, 30	Capital Green App	LT	10.527630	76.198371	**UG**	XLPE	300	1	54.49	50	104.49
RMU31006	RMU31007	RMU31007		10.527821	76.197864	**UG**	XLPE	300	1	59.38		59.38
RMU31007	32	Forus	LT	10.527645	76.197919	**UG**	XLPE	150	1	20.38	10	30.38

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
7	G20	Ground		10.527928	76.19761	**UG**	XLPE	300	1			
G20	G21	Ground		10.529028	76.196268	**UG**	XLPE	300	1			
G21	G22	Ground		10.528845	76.196066	**UG**	XLPE	300	1			
G22	G23	Ground		10.528300	76.195804	**UG**	XLPE	300	1			
G23	ABL51009, 09	Kerala Varma	LT	10.528325	76.195724	**UG**	XLPE	300	1	441.91		441.91
ABL51009	G24	Ground		10.528316	76.195396	**UG**	XLPE	300	1			
G24	G25	Ground		10.528107	76.19512	**UG**	XLPE	300	1			
G25	G26	Ground		10.527212	76.194933	**UG**	XLPE	300	1			
G26	G27	Ground		10.525713	76.195284	**UG**	XLPE	300	1			
G27	G28	Ground		10.525824	76.195593	**UG**	XLPE	300	1			
G28	G29	Ground		10.525274	76.195974	**UG**	XLPE	300	1			
G29	G30	Ground		10.524536	76.196625	**UG**	XLPE	300	1			
G30	G31	Ground		10.523815	76.197061	**UG**	XLPE	300	1			
G31	22	Chungam	LT	10.522532	76.197060	**UG**	XLPE	300	1	803.93		803.93
22	P21	Post		10.521655	76.197131	**OH**	Racoon					
P21	35	Model Road	LT	10.521872	76.19881	**OH**	Racoon			285.88		285.88
35	G32	Ground		10.522016	76.198822	**UG**	XLPE	300	1			
G32	21	Central Park	LT	10.522294	76.198713	**UG**	XLPE	300	1	60.46	10	70.46
P11	P22	post		10.526862	76.202089	**OH**	Racoon					
P22	P23	post		10.526415	76.202184	**OH**	Racoon					
P23	P24	post		10.526066	76.202263	**OH**	Racoon					
P24	ABL51012	ABL51012		10.526051	76.202096	**OH**	Racoon			148.25		148.25
ABL51012	G33	Ground		10.526074	76.202315	**UG**	XLPE	300	1			
G33	G34	Ground		10.525730	76.202417	**UG**	XLPE	300	1			
G34	interlink	interlink post		10.526188	76.203761	**UG**	XLPE	300	1	225.69		225.69
ABL51012	ABL51015	ABL51015		10.525713	76.202148	**OH**	Racoon			37.82		37.82
ABL51015	P25	post		10.525741	76.201921	**OH**	Racoon					
P25	P26	post		10.525771	76.201614	**OH**	Racoon			58.81		58.81
P26	13	NP Tower	LT	10.525840	76.201408	**OH**	Racoon			23.81		23.81
P26	P27	post		10.525817	76.201075	**OH**	Racoon			59.22		59.22
P27	P27-1	post		10.525773	76.20105	**OH**	Racoon			5.58		5.58
P27-1	15	Capital Symphony	LT	10.525637	76.201109	**UG**	XLPE	300	1	16.37	20	36.37
P27	P28	post		10.525852	76.200729	**OH**	Racoon			38.07		38.07
P28	14	Bhadra App	LT	10.525886	76.200621	**UG**	XLPE	150	1	12.41	40	52.41
ABL51015	24	Bindhu Theatre	LT	10.524793	76.202208	**UG**	XLPE	300	1	101.97	10	111.97
24	RMU31008	RMU31008		10.524722	76.201983	**UG**	XLPE	300	1		10	10
RMU31008	33	Ansari Complex	LT	10.524792	76.201871	**UG**	XLPE	300	1	40.35		40.35
24	P29	post		10.524095	76.202237	**UG**	XLPE	300	1	77.27	10	87.27
P29	P29-1	post		10.524079	76.202011	**UG**	ABC			22.99		22.99
P29-1	16	Westfort Hospital	HT	10.524132	76.201775	**UG**	XLPE	300	1	28.02	5	33.02
P29	P30	post		10.523434	76.202214	**OH**	Racoon			73.16		73.16
P30	17	Haya Tower	LT	10.523369	76.201730	**UG**	XLPE	300	1	53.46		53.46
P30	P31	post		10.522859	76.20223	**OH**	Racoon					

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	No of runs	Mapping distance (m)	Loose distance (m)	Total distance (m)
P31	ABL51017	ABL51017		10.522849	76.202314	**OH**	Racoon					
ABL51017	P32	post		10.522568	76.202344	**OH**	Racoon			104.14		104.14
P32	P32-1	post		10.522565	76.202482	**OH**	Racoon			15.11		15.11
P32-1	29	Jyothi Tower	LT	10.52272	76.202394	**UG**	XLPE	300	1	19.67	16	35.67
P32	P33	post		10.522264	76.202388	**OH**	Racoon					
P33	18	Westfort	LT	10.522170	76.202276	**OH**	Racoon			50.04		50.04
18	P34	post		10.521989	76.202110	**OH**	Racoon			27.04		27.04
P34	P34-1	post		10.521962	76.202223	**OH**	Racoon					
P34-1	ABL51018	ABL51018		10.521754	76.202236	**OH**	Racoon			35.78		35.78
ABL51018	G35	Ground		10.522013	76.202211	**UG**	XLPE	300	1			
G35	RMU31009	RMU31009		10.522180	76.201763	**UG**	XLPE	300	1		15	15
RMU31009	26	PV Arcade	LT	10.522630	76.2019	**UG**	XLPE	300	1	133.17	15	148.17
ABL51018	P34-2	post		10.521698	76.202191	**OH**	Racoon			7.91		7.91
P34-2	23	TipTop	HT	10.521642	76.202055	**UG**	XLPE	185	1	16.12	20	36.12
ABL51018	P39	post		10.520272	76.202306	**OH**	Racoon					
P39	P40	post		10.519783	76.20243	**OH**	Racoon					
P40	P41	post		10.519296	76.202584	**OH**	Racoon					
P41	P42	post		10.518333	76.202673	**OH**	Racoon					
P42	19	Calvary	LT	10.517971	76.202628	**OH**	Racoon			423.08		423.08
P34	interlink	Interlink		10.521759	76.201829	**OH**	Racoon			39.92		39.92
P34	P35	post		10.522017	76.201874	**OH**	Racoon					
P35	P36	post		10.522245	76.201772	**OH**	Racoon					
P36	P37	post		10.522194	76.201273	**OH**	Racoon					
P37	P38	post		10.522378	76.201250	**OH**	Racoon			122.36		122.36
P38	20	Westfort Tower	LT	10.522547	76.201335	**UG**	XLPE	185	1	27.75		27.75
P38	G36	Ground		10.522273	76.200862	**UG**	XLPE	300	1			
G36	RMU31010	RMU31010		10.522309	76.200842	**UG**	XLPE	300	1	46.1		46.1
RMU31010	28	Chowallur Tower	LT	10.522631	76.201078	**UG**	XLPE	300	1	44	20	64
RMU31010	G37	Ground		10.522122	76.200852	**UG**	XLPE	300	1			
G37	RMU31011	RMU31011		10.522047	76.200636	**UG**	XLPE	300	1			
RMU31011	36	Puthenpurakal Tower	LT	10.521984	76.200575	**UG**	XLPE	300	1	62.35	10	72.35

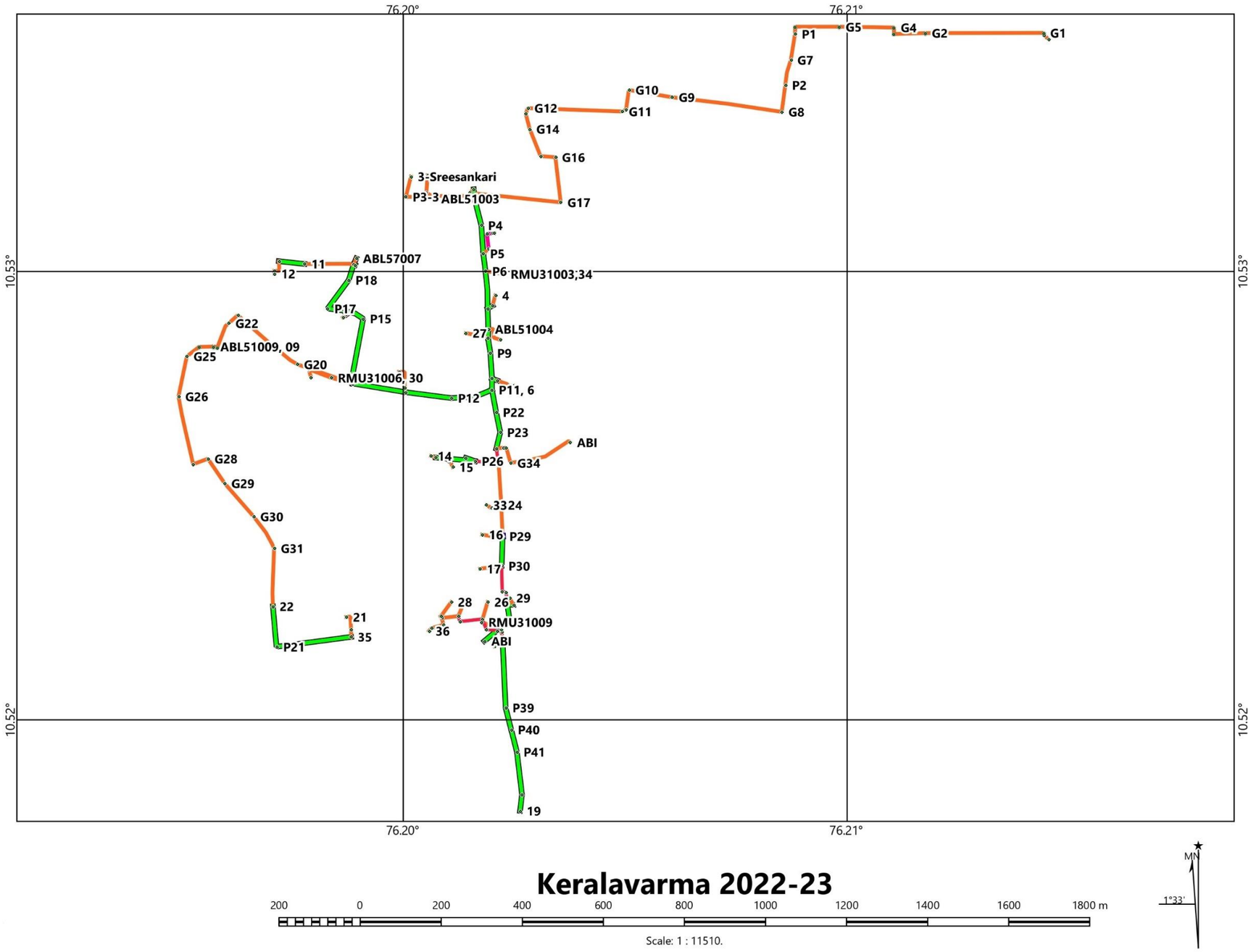

Figure 15: Keralavarma feeder

15 MISSION QUARTERS FEEDER

The following table shows the 11-kV line distance in the Mission quaters feeder

Table 29: HT line distance –Mission quarters feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
	SS	Substation Feeder		10.517368	76.219734	**UG**	XLPE	300			
SS	P1	Post		10.517291	76.219765	**UG**	XLPE	300	9	10	19
P1	AB1	New Millenium Kuries		10.51727	76.219783	**OH**	Racoon		3		3
AB1	G1	Ground		10.51702	76.219535	**UG**	XLPE	300			0
G1	G2	Ground		10.517205	76.219359	**UG**	XLPE	300			0
G2	G3	Ground		10.517306	76.219262	**UG**	XLPE	300			0
G3	G4	Ground		10.517625	76.219598	**UG**	XLPE	300			0
G4	G5	Ground		10.517799	76.219449	**UG**	XLPE	300			0
G5	G6	Ground		10.51785	76.219466	**UG**	XLPE	300			0
G6	25	Millenium Kuries	LT	10.517831	76.219504	**UG**	XLPE	300	169	20	189
P1	G7	Ground		10.517559	76.21972	**UG**	XLPE	300	30		30
G7	G8	Ground		10.520088	76.222571	**UG**	XLPE	300	419		419
G8	RMU1	RMU30101		10.519931	76.222671	**UG**	XLPE	300	20		20
RMU1	G9	Ground		10.520251	76.222543	**UG**	XLPE	300			0
G9	G10	Ground		10.520454	76.222912	**UG**	XLPE	300	84		84
G10	RMU2	RMU30102		10.520485	76.222842	**UG**	XLPE	300	8		8
RMU2	27	Alice Legacy	LT	10.520596	76.222759	**UG**	XLPE	300	15	45	60
RMU2	G10	Ground		10.520454	76.222912	**UG**	XLPE	300	8		8
G10	G11	Ground		10.519577	76.221687	**UG**	XLPE	300			0
G11	RMU3	RMU30103		10.519438	76.221832	**UG**	XLPE	300			0
RMU2	11	Sky Tower	LT	10.519334	76.221878	**UG**	XLPE	300	200		200
RMU1	G12	Ground		10.519007	76.223046	**UG**	XLPE	300			0
G12	AB2	ABL50102		10.519669	76.225781	**UG**	XLPE	300	426		426

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB2	AB3,02(D)	ABI50103, Fathima Nagar, (ABFN)	LT	10.520148	76.225806	**OH**	Racoon		53		53
ABFN	AB4	ABI50104		10.521428	76.225855	**OH**	Racoon		142		142
AB2	P2	Post		10.519653	76.22553	**OH**	Racoon				0
P2	P3	Post		10.519569	76.225014	**OH**	Racoon		85		85
P3	P4	Post		10.519533	76.224732	**OH**	Racoon				0
P4	AB5	AB Navani Garden		10.519505	76.224719	**OH**	Racoon		35		35
AB5	1	Navani Heights(C)	LT	10.519414	76.224792	**UG**	XLPE	300	13	12	25
P3	AB6	AB Navani Garden		10.518907	76.225036	**OH**	Racoon		73		73
AB6	21 (c)	Navani Garden	LT	10.519082	76.224872	**UG**	XLPE	240	26	5	31
AB2	P5, AB7	Post,AB Jos		10.519408	76.225764	**OH**	Racoon		29		29
AB7	RMU4,31	RMU 30104, Jos Alukkas	HT	10.519162	76.225578	**UG**	XLPE	400	34	5	39
P5	P6	Post		10.518977	76.22575	**OH**	Racoon				0
P6	P7	Post		10.517783	76.225704	**OH**	Racoon		180		180
P7	AB8	AB-Muttichuokaran		10.517792	76.225084	**OH**	Racoon				0
AB8	3	Muttichuokaran (C/D)	LT	10.517813	76.225082	**OH**	Racoon		70		70
P7	AB9, AB10, 04	ABL50105, AB joy, Kallu Shapp (D) 250	LT	10.516503	76.225666	**OH**	Racoon		142		142
AB10	G13	Ground		10.51711	76.225689	**UG**	XLPE	300			0
G13	G14	Ground		10.517211	76.225683	**UG**	XLPE	300			0
G14	RMU5	RMU30105		10.517217	76.225746	**UG**	XLPE	300			0
RMU5	28	RMU30105, Joy Alukkas	HT	10.517157	76.225887	**UG**	XLPE	300	102	20	122
AB9	AB11	ABL50113,AB Kalyan		10.516411	76.225257	**OH**	Racoon		46		46
AB11	G15	Ground		10.516519	76.225209	**UG**	XLPE	300			0
G15	RMU7,30	RMU30107,Kalyan Hyper Market (c)	LT	10.517014	76.225236	**UG**	XLPE	300	68	8	76
AB11	P8	Post		10.516209	76.224508	**OH**	Racoon				0
P8	AB12	AB-Precious Home		10.51598	76.223846	**OH**	Racoon		162		162
AB12	G16	Ground		10.516075	76.223766	**UG**	XLPE	300			0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
G16	G17	Ground		10.51751	76.22343	**UG**	XLPE	300			0
G17	G18	Ground		10.517008	76.222249	**UG**	XLPE	300			0
G18	RMU8	RMU30108		10.51696	76.222253	**UG**	XLPE	300			0
RMU8	32 (C)	Precious Home 315	LT	10.51685	76.22168	**UG**	XLPE	300	387	25	412
AB12	08 (D), P9	Post, Cemetery(D)	LT	10.515753	76.223291	**OH**	Racoon		66		66
P9	P10	Post		10.515613	76.22265	**OH**	Racoon				0
P10	P11	Post		10.515162	76.221407	**OH**	Racoon				0
P11	P12	Post		10.514403	76.221485	**OH**	Racoon		302		302
P12	P13	Post		10.513815	76.221737	**OH**	Racoon				0
P13	P14	Post		10.51349	76.221871	**OH**	Racoon		109		109
P14	AB13	AB-Pleasant hill		10.513453	76.221812	**OH**	Racoon		8		8
AB13	23 (c)	Pleasant hill	LT	10.51337	76.221527	**UG**	XLPE	150	33	10	43
P14	09,AB14	AB-Microwave, Microwave (D) 150kVA	LT	10.513288	76.221966	**OH**	Racoon		24		24
AB14	10(c)	BSNL Microwave (C)	HT	10.513163	76.222021	**OH**	Racoon		40		40
P12	P15	Post		10.514295	76.221027	**OH**	Racoon				0
P15	P16	Post		10.51408	76.220986	**OH**	Racoon				0
P16	P17	Post		10.51373	76.220738	**OH**	Racoon				0
P17	P18, AB15	Post , AB Chem		10.513664	76.220599	**OH**	Racoon		140		140
AB15	12 (c)	Chemmannam 160	LT	10.513213	76.220624	**UG**	XLPE	300	50	50	100
P18	P19	Post		10.513623	76.220136	**OH**	Racoon				0
P19	AB16	ABL50110		10.513571	76.219903	**OH**	Racoon				0
AB16	P20	Post		10.513913	76.219561	**OH**	Racoon		130		130
P20	AB17	ABL50111		10.513915	76.218859	**OH**	Racoon		78		78
AB17	AB18	AB ESAF		10.513917	76.218495	**OH**	Racoon		40		40
AB18	RMU10	RMU30110		10.513822	76.218574	**UG**	XLPE	300			0
RMU10	34 (C)	ESAF Jazz Tower (C)	LT	10.513847	76.218741	**UG**	XLPE	300	32	20	52
AB18	P21	Post		10.513939	76.217947	**OH**	Racoon		60		60

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P21	14 (D), AB19	AB SIB,SIB (D), 500	LT	10.513903	76.21795	**OH**	Racoon		4		4
AB19	15 (C)	SIB2 (c) HT Meter	HT	10.513581	76.217949	**UG**	XLPE	300	36	5	41
P21	P22	Post		10.513951	76.21728	**OH**	Racoon				0
P22	P23	Post		10.513957	76.217162	**OH**	Racoon		86		86
P23	AB20	AB Vasan		10.514099	76.21716	**OH**	Racoon		16		16
AB20	16 (c)	Vasan Eye Care (HT)	HT	10.514294	76.217137	**UG**	XLPE	300	22	10	32
P23	P24	Post		10.51398	76.216753	**OH**	Racoon		45		45
P24	AB21	AB Das		10.514044	76.216747	**OH**	Racoon		7		7
AB 21	17 (c)	Das Continental HT	HT	10.514522	76.216668	**UG**	XLPE	300	54	20	74
P24	AB22	ABL 50112,RMU WP		10.513951	76.216266	**OH**	Racoon		54		54
AB22	G28	Ground		10.513984	76.216053	**UG**	XLPE	300			0
G28	G29	Ground		10.514279	76.215883	**UG**	XLPE	300			0
G29	RMU12	RMU30207		10.515646	76.215875	**UG**	XLPE	300	213		213
AB17	G19	Ground		10.513965	76.219473	**UG**	XLPE	300			0
G19	G20	Ground		10.514548	76.218934	**UG**	XLPE	300			0
G20	G21	Ground		10.515071	76.218169	**UG**	XLPE	300			0
G21	G22	Ground		10.515362	76.217812	**UG**	XLPE	300			0
G22	G23	Ground		10.515951	76.217601	**UG**	XLPE	300			0
G23	RMU11	RMU 30301		10.515947	76.217538	**UG**	XLPE	300	384		384
P20	P32	Post		10.514119	76.219365	**OH**	Racoon		31		31
P32	13(D)	St. Joseph's (D) 315	LT	10.514157	76.219435	**OH**	Racoon		9		9
P32	P31	Post		10.514586	76.218886	**OH**	Racoon				0
P31	P30	Post		10.514793	76.218647	**OH**	Racoon		108		108
P30	P26	Post		10.515147	76.218054	**OH**	Racoon		76		76
P26	P27	Post		10.515181	76.218181	**OH**	Racoon				0
P27	P28	Post		10.515448	76.21854	**OH**	Racoon				0
P28	P29	Post		10.515844	76.21918	**OH**	Racoon				0
P29	20 (c)	Retreat appartment	LT	10.515835	76.219187	**OH**	Racoon		147		147
P26	P25	Post		10.515816	76.217635	**OH**	Racoon		91		91

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P20	P33	Post		10.513334	76.220144	**OH**	Racoon				0
P33	P34	Post		10.512227	76.220738	**OH**	Racoon		230		230
P34	P35	Post (AB)		10.512239	76.220891	**OH**	ABC		17		17
P35	G24	Ground		10.512486	76.221466	**UG**	XLPE	300			0
G24	22 (c)	Skyline Infinity (Mundupalam)	LT	10.512246	76.221472	**UG**	XLPE	300	95	50	145
P34	P36	Post AB Asset)		10.511977	76.220815	**OH**	Racoon		29		29
P36	G24-1	Ground		10.51197	76.220906	**UG**	XLPE	300			0
G24-1	G25	Ground		10.511543	76.221088	**UG**	XLPE	300			0
G25	RMU9	RMU 30109		10.51158	76.221359	**UG**	XLPE	300	98		98
RMU9	26 (C)	Asset 400	LT	10.511676	76.221426	**UG**	XLPE	185	13	10	23
RMU9	G26	Ground		10.511534	76.221394	**UG**	XLPE	300			0
G26	G27	Ground		10.511865	76.223916	**UG**	XLPE	300			0
G27	AB23, 07	ABL 50108, Avenue road	LT	10.511926	76.22389	**UG**	XLPE	300	309		309
AB9	P37	Post		10.515065	76.226485	**OH**	Racoon		183		183
P37	P38	Post		10.51502	76.226537	**OH**	Racoon				0
P38	5	Xavy Thekkath 05 (L)	LT	10.515292	76.22687	**OH**	Racoon		55		55
P37	P39	Post		10.514399	76.226872	**OH**	Racoon		85		85
P39	P40	Post		10.51445	76.226902	**OH**	Racoon				0
P40	AB25	AB Aquatic		10.51472	76.22776	**OH**	Racoon		105	15	120
AB25	RMU6, 29	RMU30106, Aquatic 16	LT	10.514335	76.227915	**UG**	XLPE	300	46	2	48
AB25	P41	Post		10.514913	76.228523	**OH**	Racoon				0
P41	AB26	AB Federal		10.514856	76.228613	**OH**	Racoon		98		98
AB26	19(C)	Federal Residency 500	LT	10.514686	76.228834	**UG**	XLPE	300	31	30	61
P39	P42	Post		10.513846	76.227205	**OH**	Racoon				0
P42	P43	Post		10.513339	76.227349	**OH**	Racoon				0
P43	06 , P43-1	Post Swimming Pool	LT	10.512828	76.227428	**OH**	Racoon		187		187
P43-1	P44	Post		10.512534	76.227328	**OH**	Racoon				0

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
P44	P45	Post (to Avenue)		10.512158	76.227353	**OH**	Racoon		76		76
P45	P46	Post		10.512067	76.22779	**OH**	Racoon				0
P46	P47	Post		10.512074	76.228123	**OH**	Racoon				0
P47	P48	Post		10.512218	76.228852	**OH**	Racoon				0
P48	P49	Post		10.512434	76.229155	**OH**	Racoon		208		208
P49	P50	Post		10.512659	76.229431	**OH**	Racoon				0
P50	33 , P 50-1	Mulberry Department	LT	10.512922	76.229849	**OH**	Racoon		93		93
P50-1	P51	Post		10.513116	76.230183	**OH**	Racoon				0
P51	P52	AB SN Temp		10.513142	76.230226	**OH**	Racoon		48		48
P52	AB27	AB Mulberry		10.513095	76.230234	**OH**	Racoon		5		5
AB27	18	Mulberry	LT	10.512673	76.230443	**UG**	XLPE	150	52	40	92
P52	G30	Ground		10.513255	76.230704	**UG**	XLPE	300			0
G30	G31	Ground		10.513521	76.231284	**UG**	XLPE	300			0
G31	G32	Ground		10.51369	76.232611	**UG**	XLPE	300			0
G32	24 , P52-1	SN Temple 250	LT	10.513636	76.23268	**UG**	XLPE	300	280	10	290
P52-1	G33	Ground		10.513729	76.232789	**UG**	XLPE	300			0
G33	G34	Ground		10.51375	76.233389	**UG**	XLPE	300			0
G34	G35	Ground		10.513538	76.23439	**UG**	XLPE	300			0
G35	G36	Ground		10.513231	76.236005	**UG**	XLPE	300			0
G36	AB28	ABI 50107,		10.514016	76.236231	**UG**	XLPE	300	465		465
P45	P53	Post		10.512289	76.226992	**OH**	Racoon				0
P53	P54	Post		10.512218	76.225872	**OH**	Racoon				0
P54	P55	Post		10.512037	76.225043	**OH**	Racoon				0
P55	AB23	ABL 50108		10.511926	76.22389	**OH**	Racoon		383		383
AB23	RMU	RMU-Skyline Avenue		10.511965	76.224103	**UG**	XLPE	300		20	20
RMU	Skyline Avenue	Skyline Avenue Suites (Tr-1& 2)	LT	10.512826	76.224128	**UG**	XLPE	300	102		102

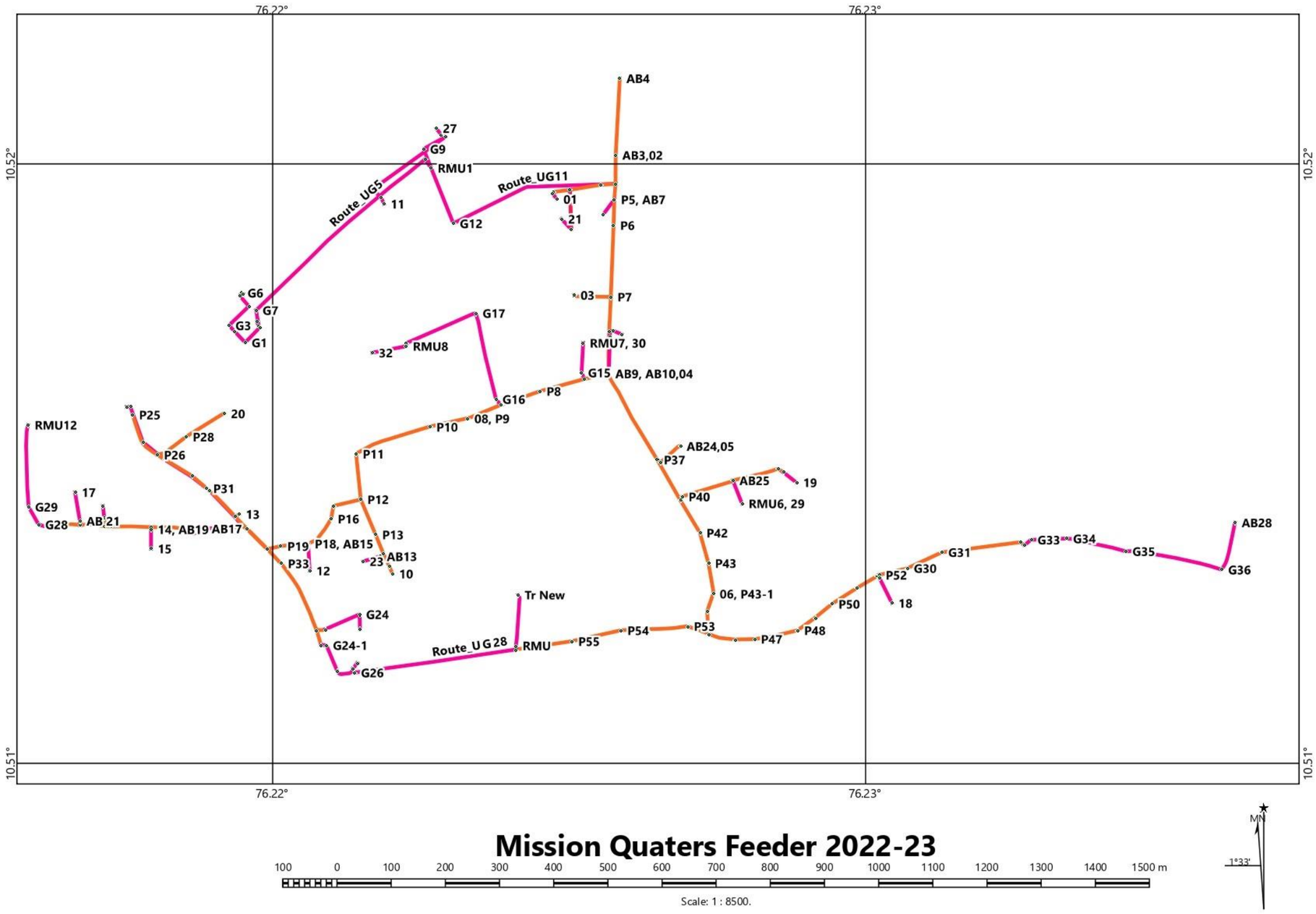

Figure 16: Mission quarters feeder

16 M O ROAD FEEDER

The following table shows the 11-kV line distance in the M O Road feeder

Table 30: HT line distance –M O Road feeder

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Total distance (m)
SS				10.535032	76.214680				
S-S	G1	Ground		10.534981	76.215007	**UG**	XLPE	300	36.21
G1	G2	Ground		10.531530	76.215136	**UG**	XLPE	300	
G2	P1	Post		10.531540	76.215200	**UG**	XLPE	300	5
P1	G3	Ground		10.529519	76.215011	**UG**	XLPE	300	
G3	P2	Post		10.529268	76.216105	**UG**	XLPE	300	
P2	G31	Ground		10.52907	76.216170	**UG**	XLPE	300	
G31	P3	Post		10.528782	76.216140	**UG**	XLPE	300	5
P3	G4	Ground		10.527338	76.215871	**UG**	XLPE	300	
G4	G32	Ground		10.526698	76.216763	**UG**	XLPE	300	
G32	G5	Ground		10.526698	76.216763	**UG**	XLPE	300	
G5	G33	Ground		10.52548	76.216930	**UG**	XLPE	300	
G5	P4	Post		10.524905	76.216880	**UG**	XLPE	300	1283.54
P4	49	Exhibition	LT	10.524908	76.216807	**UG**	XLPE	185	15
P4	G34	Ground		10.522970	76.216750	**UG**	XLPE	300	
G34	8P	ABI51203		10.522848	76.216595	**UG**	XLPE	300	5
8P	G6	Ground		10.522520	76.213958	**UG**	XLPE	300	
G6	AB1	ABL-51205		10.522069	76.213954	**UG**	XLPE	300	604.41
AB1	11	Pathans	LT	10.522245	76.214085	**UG**	XLPE	185	74.18
AB1	RMU1	RMU-31201		10.522181	76.213901	**UG**	XLPE	185	33.68
RMU1	53	Ragam Theatre	HT	10.522171	76.213797	**UG**	XLPE	185	25
RMU1	RMU2	RMU-31202		10.521768	76.213947	**UG**	XLPE	150	48.96
RMU2	50	Baby Paul	LT	10.521681	76.213874	**UG**	XLPE	150	12.51
AB1	P5	Post		10.521932	76.213976	**OH**	Racoon		15.34
P5	P5-1	Post		10.521924	76.213946	**OH**	Racoon		3.4
P5-1	17	Elite Hotel	HT	10.521741	76.213605	**UG**	XLPE	185	70
P5	P6	Post		10.521421	76.214022	**OH**	Racoon		56.75
P6	10	Manshire	HT	10.521364	76.214104	**UG**	XLPE	185	10.97
P6	P7	Post		10.521207	76.214034	**OH**	Racoon		23.71
P7	P7-1	Post		10.521220	76.213958	**OH**	Racoon		8.44
P7-1	16	Bharath Hotel	HT	10.521370	76.213755	**UG**	XLPE	150	27.73
RMU2	RMU3	RMU-31203		10.520982	76.214061	**UG**	XLPE	300	87.83
RMU3	54	White Palace	HT	10.520982	76.214061	**UG**	XLPE	300	0
P7	P8	Post		10.520820	76.214034	**OH**	Racoon		42.81
P8	P8-1	Post		10.520913	76.213386	**OH**	Racoon	300	71.67
P8-1	15	Lavish	LT	10.521101	76.213528	**UG**	XLPE	300	25.96
P8	AB2	ABL-51206		10.520540	76.214071	**OH**	Racoon		31.23
AB2	9	Store	LT	10.520540	76.214071	**UG**	XLPE	300	
AB2	AB3	Post		10.520014	76.214121	**OH**	Racoon		58.44
AB3	55	MK	HT	10.519291	76.214328	**UG**	XLPE	300	80
AB3	P9	Post		10.519953	76.214128	**OH**	Racoon		6.79
P9	P10	Post		10.520023	76.214316	**OH**	Racoon		21.99
P10	P10-1	Post		10.520083	76.214310	**OH**	Racoon		6.67
P10-1	Tr-1	Lamex(Not marked)	LT	10.52040	76.214309	**OH**	Racoon		35.29
P10	AB Fameel	AB Fameel		10.520237	76.214670	**OH**	Racoon		45.41
AB Fameel	RMU Fameel	RMU Fameel		10.520293	76.214645	**UG**	XLPE		
RMU Fameel	Tr- Fameel	Fameel	LT	10.520405	76.214686	**UG**	XLPE	300	19.95
P10	AB4	ABL-51208		10.520102	76.214511	**OH**	Racoon		23.06
AB4	RMU4,8	RMU-31204, Janardhanan Complex	LT	10.520135	76.214506	**UG**	XLPE	300	3.69
AB4	P11	Post		10.520317	76.215025	**OH**	Racoon		61.08
P11	AB5	ABL51208		10.520366	76.215044	**OH**	Racoon		5.81
AB5	1	Corporation Office	LT	10.520735	76.214975	**OH**	Racoon		41.51
P11	P12	Post		10.520404	76.215202	**OH**	Racoon		21.63
P12	2	BSNL CTD 1	LT	10.520765	76.215087	**UG**	XLPE	300	41.87
P12	3	BSNL CTD 2	LT	10.520765	76.215087	**UG**	XLPE	300	41.87
P12	G36	Ground		10.5203	76.21524	**UG**	XLPE	300	
G36	G37	Ground		10.52039	76.21554	**UG**	XLPE	300	
G37	G38	Ground		10.51995	76.21575	**UG**	XLPE	300	
G38	P12-1	Post		10.519929	76.215364	**UG**	XLPE	300	143.14
P12-1	4	BSNL Pattalam Exchange	HT	10.519805	76.215452	**UG**	XLPE	95	56.76
P12-1	5	BSNL Pattalam Exchange	HT	10.519805	76.215452	**UG**	XLPE	95	56.76
P12-1	6	BSNL Pattalam Exchange	HT	10.519805	76.215452	**UG**	XLPE	95	56.76
AB5	G7	Ground		10.520531	76.216110	**UG**	XLPE	300	
G7	G8	Ground		10.520710	76.216084	**UG**	XLPE	300	
G8	G9	Ground		10.520687	76.215796	**UG**	XLPE	300	
G9	RMU5	RMU-31205		10.521204	76.215696	**UG**	XLPE	300	
RMU5	52	Jai Hind Market	LT	10.521204	76.215696	**UG**	XLPE	300	227.96
RMU5	18	Jai Hind Solar	LT	10.521204	76.215696	**UG**	XLPE	300	227.96

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Total distance (m)
P9	P13	Post		10.519422	76.213076	**OH**	Racoon		129.27
P13	P13-1	Post		10.519320	76.213013	**OH**	Racoon		
P13-1	AB6	ABL-51209		10.519221	76.213037	**OH**	Racoon		24.48
AB6	13	CP Tower	LT	10.519241	76.213103	**UG**	XLPE	300	67.56
P13	P14	Post		10.519215	76.212470	**OH**	Racoon	300	70.17
P14	20	Jonsons	LT	10.519370	76.212283	**UG**	XLPE	300	76.7
AB6	G10	Ground		10.519044	76.213073	**UG**	XLPE	300	
G10	G11	Ground		10.518932	76.212894	**UG**	XLPE	300	
G11	G12	Ground		10.518410	76.212888	**UG**	XLPE		
G12	RMU6	RMU-31211		10.518353	76.212233	**UG**	XLPE		
RMU6	46	Mathrubhumi	HT	10.518091	76.212196	**UG**	XLPE	300	242.46
AB6	G13	Ground		10.519310	76.212945	**UG**	XLPE		
G13	G14	Ground		10.519103	76.212119	**UG**	XLPE		
G14	G15	Ground		10.519990	76.21217	**UG**	XLPE		
G15	P15	Ground		10.520063	76.211764	**UG**	XLPE		250.79
P15	21	Manappuram Hotel	HT	10.519746	76.211848	**UG**	XLPE	300	36.25
	22	Manappuram Hotel	LT	10.519746	76.211848	**UG**	XLPE		5
P15	P16	Post		10.520083	76.211627	**OH**	Racoon		15.16
P16	P16-1	Post		10.520030	76.211616	**OH**	Racoon		5.98
P16-1	29	Kuriland	LT	10.520030	76.211616	**UG**	XLPE	250	15
P16	G16	Ground		10.520075	76.211494	**UG**	XLPE		
G16	RMU7	RMU31208		10.520309	76.211478	**UG**	XLPE		
RMU7	45	Vattekkat Arcade	LT	10.520342	76.211602	**UG**	XLPE	300	79.58
P16	P17	Post		10.520121	76.211405	**OH**	Racoon		24.66
P17	14	Jose Alukas	HT	10.520400	76.211418	**UG**	XLPE	300	50.89
P17	31	New Manshire	HT	10.519552	76.211518	**UG**	XLPE	300	75.14
P17	AB7	ABL-51213		10.520064	76.210882	**OH**	Racoon		57.59
AB7	G19	Ground		10.518936	76.210834	**UG**	XLPE		
G19	RMU8	RMU-31209		10.518793	76.210390	**UG**	XLPE	300	
RMU8	43	Sapphire Hotel	HT	10.518743	76.210353	**UG**	XLPE	300	212.84
RMU8	RMU9	RMU-31210		10.518743	76.210353	**UG**	XLPE	185	50
RMU9	47	TCR Fashion	HT	10.518382	76.210324	**UG**	XLPE	185	
AB7	P18	Post		10.520059	76.210762	**OH**	Racoon		13.15
P18	G17	Ground		10.520064	76.210882	**UG**	XLPE	300	
G17	G18	Ground		10.519531	76.210882	**UG**	XLPE	300	
G18	26	Alukkas Seafort	HT	10.519455	76.210769	**UG**	XLPE	300	87.06
AB7	P19	Post		10.519656	76.210917	**OH**	Racoon		45.29
P19	25	Ammus Regency	HT	10.519614	76.210981	**UG**	XLPE	185	30
P18	P20	Post		10.519997	76.210429	**OH**	Racoon		37.09
P20	P20-1	Post		10.520283	76.210387	**OH**	Racoon		31.97
P20-1	23	Lafame(Sayooja Apartment)	LT	10.520283	76.210387	**OH**	Racoon		
P20-1	P20-2	Post		10.520300	76.210309	**OH**	Racoon		8.74
P20-2	24	Omega Paradise	LT	10.520341	76.210147	**UG**	XLPE	185	30
P20	AB8	ABL-51214		10.519991	76.210033	**OH**	Racoon		43.35
AB8	30	Kovilakam	LT	10.519842	76.210023	**UG**	XLPE	240	37
AB8	P21	Post		10.519938	76.209686	**OH**	Racoon		38.43
P21	P21-1	Post		10.520465	76.209721	**OH**	Racoon		58.42
P21-1	G19	Ground		10.520548	76.209546	**UG**	XLPE	300	
G19	27	Sagara Apartment	LT	10.520896	76.209356	**UG**	XLPE	300	64.99
P21	P22	Post		10.519553	76.209716	**OH**	Racoon		
P22	51	Pearl Dept.	LT	10.519553	76.209716	**OH**	Racoon		42.71
P22	P22-1	Post		10.519583	76.209668	**OH**	Racoon		6.21
P22-1	28	Pearl Regency	HT	10.519613	76.209390	**UG**	XLPE	240	30.61
P15	G20	Ground		10.520081	76.211476	**UG**	XLPE	300	
G20	G21	Ground		10.521663	76.211608	**UG**	XLPE		
G21	G22	Ground		10.521725	76.212136	**UG**	XLPE		
G22	G23	Ground		10.522263	76.212179	**UG**	XLPE		324.72
G23	G24	Ground		10.522255	76.212579	**UG**	XLPE		
G24	AB9, 32	ABL-51212, Kuruppam Road 1	LT	10.522392	76.212581	**UG**	XLPE	300	43.97
G24	AB9, 33	ABL-51212, Kuruppam Road 2	LT	10.522392	76.212581	**UG**	XLPE	300	43.97
AB9	7	Jaya Palace	LT	10.522434	76.212576	**UG**	XLPE	240	15
AB9	G24	Ground		10.522255	76.212579	**UG**	XLPE	300	
G24	G23	Ground		10.522263	76.212179	**UG**	XLPE		
G23	34	Enark Appartment	LT	10.522138	76.211791	**UG**	XLPE	300	53.9
AB9	P23	Post		10.522271	76.212578	**OH**	Racoon		9.15
P23	AB10	ABL-50503		10.522269	76.212192	**OH**	Racoon		42.25
AB10	G25	Ground		10.522273	76.211561	**UG**	XLPE	300	
G25	19	Luciya Palace	HT	10.522009	76.211332	**UG**	XLPE		107.55
AB10	P24	Post		10.522311	76.212319	**OH**	Racoon		14.66
P24	35	Nest Shopping	LT	10.522466	76.212239	**UG**	XLPE	250	25
P23	G26	Ground		10.522188	76.212754	**UG**	XLPE		
G26	G27	Ground		10.521456	76.212532	**UG**	XLPE		
G27	P25	Post		10.521469	76.212468	**UG**	XLPE		117.87
P25	36	Trade Centre1	HT	10.521388	76.212244	**UG**	XLPE	240	27

From Map no	Map no	Pole/transformer/AB	Metering point	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Total distance (m)
P25	37	Trade Centre 2	LT	10.521388	76.212244	**UG**	XLPE	240	27
P25	G27	Ground		10.521456	76.212532	**UG**	XLPE	300	
G27	G28	Ground		10.520672	76.212301	**UG**	XLPE		
G28	P26	Post		10.520660	76.212381	**UG**	XLPE		98.89
P26	38	Grand Park Hotel1	HT	10.520526	76.212598	**UG**	XLPE	150	30
P26	39	Grand Park Hotel 2	HT	10.520526	76.212598	**UG**	XLPE	150	30
P26	P27	Post		10.520557	76.212276	**OH**	Racoon		16.18
P27	P28	Post		10.520296	76.212243	**OH**	Racoon		29.09
P28	RMU10	RMU-31207		10.520243	76.212347	**UG**	XLPE	300	19.2
RMU10	42	Hotel Garuda	HT	10.520216	76.212513	**UG**	XLPE	240	29.41
P28	P29	Post		10.519984	76.212160	**OH**	Racoon		34.6
P29	RMU11, 44	RMU31206, TSR Dist. Cop. Bank	HT	10.519818	76.212369	**UG**	XLPE	300	30
P29	P30	Post		10.518497	76.211951	**OH**	Racoon		168.32
P27	P31	Post		10.521545	76.212556	**OH**	Racoon		113.5
P31	RMU12, 6	Not Marked, Fridge Hosue	HT	10.521305	76.212595	**UG**	XLPE	300	30
P31	P32	Post		10.522188	76.212749	**OH**	Racoon		74.19
P32	P33	Post		10.522245	76.212883	ABC			25.97
P33	40	Pooram Residency1	HT	10.522222	76.213272	**UG**	XLPE	240	30
P33	41	Pooram Residency 2	LT	10.522222	76.213272	**UG**	XLPE	240	30
AB1	G29	Ground		10.522499	76.213876	**UG**	XLPE	185	
G29	G30	Ground		10.522614	76.213349	**UG**	XLPE	185	
G30	12	Pathayyapura	LT	10.522421	76.21327	**UG**	XLPE	185	141.43

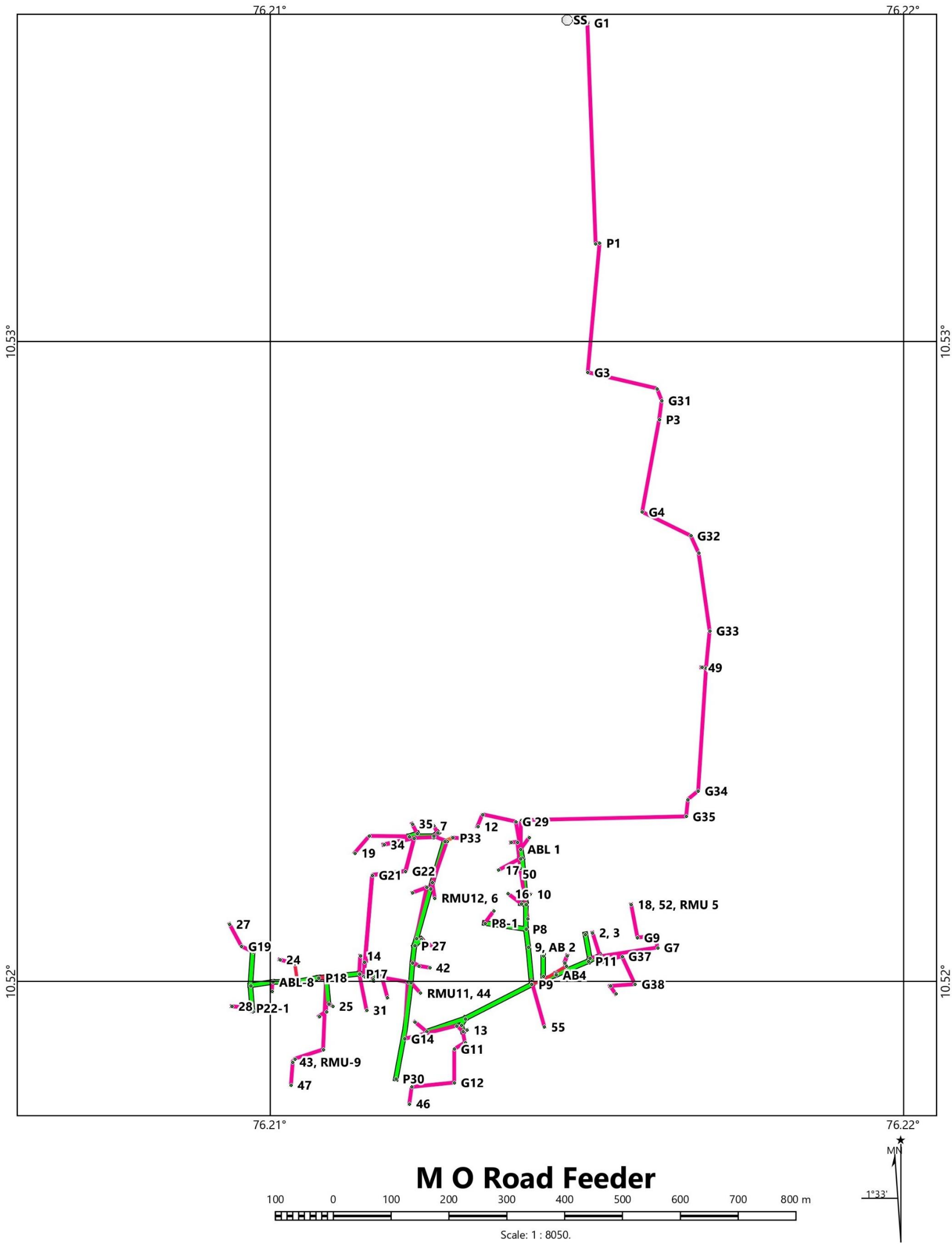

Figure 17: M O Road feeder

17 PARAVATTANI FEEDER

The following table shows the 11-kV line distance in the Paravattani feeder

Table 31: HT line distance –Paravattani Feeder

Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
	S-S	Substation feeder	10.517316	76.219691						
S-S-2	2P	Post	10.517261	76.219740	**UG**	XLPE	300			-
2P	G1	Ground	10.517380	76.219910	**UG**	XLPE	300			-
G1	G2	Ground	10.517550	76.219750	**UG**	XLPE	300			-
G2	2P1	Post	10.520059	76.222618	**UG**	XLPE	300			-
2P1	G3	Ground	10.518950	76.223060	**UG**	XLPE	300			-
G3	G4	Ground	10.519730	76.225720	**UG**	XLPE	300			-
G4	AB1	ABL-50402	10.519805	76.225852	**UG**	XLPE	300	931	30	961
AB1	AB2	ABI-50103	10.520153	76.225758	**OH**	Racoon		40		40
AB1	P1	Post	10.519774	76.226122	**OH**	Racoon		30		30
P1	P1-1	AB-Jose Pottukaran	10.519736	76.226126	**OH**	Racoon		4		4
P1-1	11	Jose pottokoran	10.519489	76.226056	**UG**	XLPE	300	35	5	40
P1-1	Life Scan	Lifescan (315 kVA)	10.519645	76.226092	**UG**	XLPE	300	13	21	34
P1	P2	Post	10.519691	76.226866	**OH**	Racoon		82		82
P2	ABn, Fathima	ABL New, Fathima (250 kVA)	10.519206	76.226741	**OH**	Racoon		55		55
Abn	P2-1	AB-Manjali	10.519227	76.226835	**OH**	Racoon		9		9
P2-1	9	Manjali Enclave	10.518991	76.226882	**UG**	XLPE	185	35	5	40
P2	P3	Post	10.519375	76.228599	**OH**	Racoon		193		193
P3	P3-1	AB YAS	10.519321	76.228596	**OH**	Racoon		6		6
P3-1	1	YAS Residency/TT Complex	10.518962	76.228605	**UG**	XLPE	300	40	11	51
P3	P4	Post	10.519059	76.230379	**OH**	Racoon				198
P4	P4-1	AB Cedar	10.518746	76.230430	ABC	XLPE				34
P4-1	12	Cedar Appartment	10.518602	76.230057	**UG**	XLPE	300	49	5	54
P4	AB3	ABL-50403	10.518796	76.231426	**OH**	Racoon		118		118
AB3	2	Andrews	10.518745	76.231455	**OH**	Racoon		6		6
2	P6	Post	10.517758	76.231749	**OH**	Racoon		114		114
P6	AB9	ABL-50410	10.517628	76.231785	**OH**	Racoon		15		15
AB9	G5	Ground	10.516416	76.232005	**UG**	XLPE	300	136		136
G5	G6	Ground	10.516348	76.231082	**UG**	XLPE	300	104		104
G6	P7	AB Fortune	10.516424	76.231044	**UG**	XLPE	300	9		9
P7	10	In Land/Fortune Appartment	10.516509	76.230933	**UG**	XLPE	300	15		15
P7	G7	Ground	10.517747	76.230668	**UG**	XLPE	300	153		152
G7	RMU10	RMU-30410	10.517859	76.230545	**UG**	XLPE	300	17		17
RMU10	23	CIDBI Appartment	10.518134	76.230545	**UG**	XLPE	185	38	32	70
AB9	P7-1	Post	10.516998	76.232545	**OH**	Racoon		109		109
P7-1	P8	Post	10.516937	76.232844	**OH**	Racoon		33		33
P8	P8-1	AB Pentark	10.516403	76.232943	**UG**	XLPE	300	73	10	83
P8-1	25	Pentark East Park	10.516314	76.233337	**UG**	XLPE	150	49	12	61
P8	P9	Post	10.516856	76.233670	**OH**	Racoon	300	91		91
P9	P10	Post	10.516966	76.233621	**OH**	Racoon	300	13		13
P10	P10-1	AB Wheel	10.517526	76.233629	**OH**	Racoon		60		60
P10-1	8	Wheels Appartment	10.517627	76.233602	**UG**	XLPE	150	22	5	27
AB3	RMU1, 24	RMU30401, SNA	10.51873	76.23211	**UG**	XLPE	300	80	70	150
AB3	G8	Ground	10.518810	76.232177	**UG**	XLPE	300	82		82
G8	AB4	ABL-50404	10.520351	76.232312	**UG**	XLPE	300	173		173

Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
AB4	P5, 3	Post, Unnimossa	10.5204394	76.2323586	**OH**	Racoon	300	11		11
AB4	RMU2, 14	RMU30402, Sundale Appartment	10.5200728	76.2326466	**UG**	XLPE	300	58	10	68
RMU2	RMU3, 27	RMU30403, Able Tower	10.5208145	76.2315234	**UG**	XLPE	300	158		158
P5	16	Homeo	10.5196024	76.2335907	**OH**	Racoon				163
16	P5-1	Post	10.519423	76.234441	**OH**	Racoon	300			95
P5-1	P5-2	Post	10.519573	76.235103	**OH**	Racoon	300	75		75
P5-2	AB6	ABL-50411, ABL50412	10.5197139	76.2353868	**OH**	Racoon	300	35		35
AB6	5	Paravattani Park	10.520350	76.2362215	**OH**	Racoon	300	115		115
5	P11	Post	10.520809	76.236897	**OH**	Racoon	300	90		90
P11	RMU7	RMU30407	10.520510	76.2367836	**UG**	XLPE	300	46		46
RMU7	15	GEM Hospital(315 kVA)	10.5204513	76.2369888	**UG**	XLPE	300	30	25	55
P11	P12	Post	10.521832	76.2387516	**OH**	Racoon	300	232		232
P12	P13	Post	10.5219379	76.2390057	**UG**	XLPE	300	30	20	50
P13	6	Paravattani	10.5226186	76.240308	**OH**	Racoon	300	161		161
6	P14	Post	10.5229869	76.2414791	**OH**	Racoon	300	135		135
P14	P14-1	Post	10.521050	76.2417765	**OH**	Racoon		217		217
P14-1	18	Store	10.520876	76.240876	**UG**	XLPE	300	100	10	110
AB6	17	Double Horse	10.518408	76.236069	**OH**	Racoon		163		163
17	P15	Post	10.517034	76.236371	**OH**	Racoon		157		157
P15	P16	Post, AB-Asset	10.516418	76.236443	**OH**	Racoon		69		69
P16	RMU8	RMU30408	10.5164168	76.2366303	**UG**	XLPE	300	21		21
RMU8	26	Asset Precious	10.5160357	76.2365593	**UG**	XLPE	300	43		43
P16	AB7	ABL-50413	10.514729	76.236411	**OH**	Racoon		187		187
AB7	13	Deepak Tom(Jewelima Diamonds)	10.515494	76.235448	**UG**	XLPE	300	166	20	166
13	RMU9, 22	RMU30409, Sisters	10.515087	76.235637	**UG**	XLPE	300	61		61
AB7	AB8, 7	Kankapadan, ABI-50107	10.514019	76.236277	**OH**	Racoon		80		80
P5	AB5	ABL50405	10.520894	76.232395	**UG**	XLPE	300		20	50
AB5	G9	Ground	10.521738	76.232354	**UG**	XLPE	300			93
G9	G10	Ground	10.521817	76.233048	**UG**	XLPE	300	77		77
G10	P17	Post	10.522846	76.233721	**UG**	XLPE	300	137	10	147
P17	G12	Ground	10.526317	76.23423	**UG**	XLPE	300	397		397
G12	AB10, 4	ABL-50407/ABL-50408, Ottu company	10.526291	76.234257	**UG**	XLPE	300	4	20	24
AB10	G12	Ground	10.526317	76.23423	**UG**	XLPE	300	4		4
G12	P18	Post	10.527272	76.234004	**UG**	XLPE	300	109	20	109
P18	G13	Ground	10.5272238	76.2330394	**UG**	XLPE	300	107		107
G13	G14	Ground	10.527921	76.232895	**UG**	XLPE	300	79		79
G14	G15	Ground	10.527969	76.232653	**UG**	XLPE	300	27		27
G15	G16	Ground	10.528381	76.232501	**UG**	XLPE	300	49		49
G16	AB11	ABI-50409	10.528336	76.231755	**UG**	XLPE	300	82	10	92
AB10	G12	Ground	10.526317	76.23423	**UG**	XLPE	300	4		4
G12	G17	Ground	10.525700	76.234197	**UG**	XLPE	300	74		74
G17	RMU2, 19	RMU-30404, Pookuzhypadam	10.525326	76.233055	**UG**	XLPE	300	139	5	144
RMU2	G18	Ground	10.524669	76.229320	**UG**	XLPE	300	415		415
G18	G19	Ground	10.5241494	76.2295816	**UG**	XLPE	300	82		82
G19	RMU3	RMU-30405	10.524144	76.229747	**UG**	XLPE	300	22		22
RMU3	20	Mystic Rose(Mulberry)	10.524170	76.229983	**UG**	XLPE	150	36	10	46
RMU3	G20	Ground	10.524173	76.229377	**UG**	XLPE	300			
G20	RMU4	RMU-30406	10.5233967	76.229539	**UG**	XLPE	300			128
RMU4	21	Nirmalamatha	10.5233762	76.2294951	**UG**	XLPE	150	134	5	139

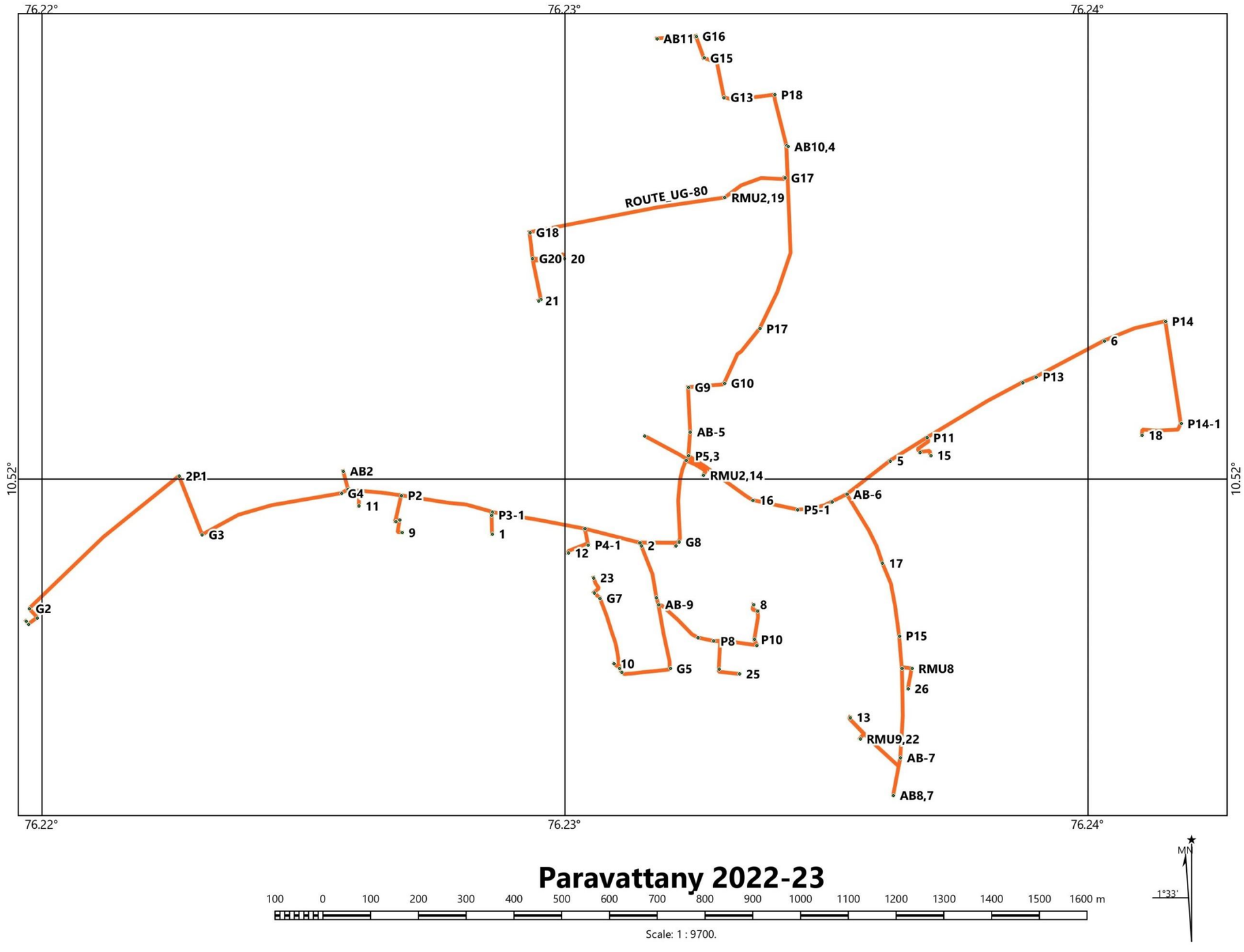

Figure 18: Paravattani feeder

18 POONKUNAM FEEDER

The following table shows the 11-kV line distance in the Poonkunam feeder

Table 32: HT line distance – Poonkunam Feeder

From Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
	ss	Substation Feeder	10.535157	76.214636						
SS	2P	Post	10.535272	76.214564	**UG**	XLPE	300			
2P	AB1	ABL50902, ABI50903	10.535345	76.209502	**UG**	XLPE	300			
AB1	AB2	ABl50904	10.535358	76.208746	**UG**	XLPE	300	678	5	683
AB2	G1	Ground	10.535476	76.208639	**UG**	XLPE	300			
G1	01, AB4	Omega Swami Saranam, ABL 50905	10.536126	76.208427	**UG**	XLPE	300	93	5	98
ABL4	RMU1, 28	Sarong Homes Appartment, RMU30901	10.536473	76.208404	**UG**	XLPE	300	98		98
RMU1	G2	Ground	10.536492	76.208432	**UG**	XLPE	300	4		4
G2	G3	Ground	10.536125	76.208450	**UG**	XLPE	300	41		41
G3	RMU2	RMU30902	10.536110	76.207299	**UG**	XLPE	300	130		130
RMU2	31	Pallissery Appartment	10.535922	76.207287	**UG**	XLPE	300	21		21
AB2	AB3	ABl50906	10.535331	76.208117	**OH**	Racoon		69		69
AB3	P1	Post	10.535337	76.207504	**OH**	Racoon		67		67
P1	2	Classic Park	10.535526	76.207404	**OH**	Racoon		25		25
P1	P2	Post	10.535304	76.206774	**OH**	Racoon		80		80
P2	P2-1	AB-Falkland Square	10.535254	76.206772	**OH**	Racoon		6		6
P2-1	25	Falkland Square	10.535232	76.206838	**UG**	XLPE	300	33		33
P2	P3	Post	10.536618	76.206981	**OH**	Racoon		147		147
P3	P3-1	AB-Inland	10.536831	76.207147	**UG**	XLPE	300	35		35
P3-1	21	Westend Krishna Appartment	10.536820	76.207213	**UG**	XLPE	300	60		60
P2	P4	Post	10.535243	76.206020	**OH**	Racoon		83		83
P4	P4-1	AB-Capital	10.535454	76.205994	**OH**	Racoon		24		24
P4-1	3	Capital Harmony	10.535525	76.206123	**UG**	XLPE	185	51		51
P4	P5, ABL5	Post,ABL-50907	10.535254	76.205839	**OH**	Racoon		20		20
P5	P5-1	AB-Omega	10.535439	76.205829	**OH**	Racoon		20		20
P5-1	4	Omega Crown	10.535629	76.205702	**UG**	XLPE	150	75		75
P5	5	Ramadevi-1	10.535208	76.205801	**UG**	XLPE	300	32		32
P5	RMU3	RMU-30903	10.535207	76.205801	**UG**	XLPE	300	27		27
RMU3	29	Aricaria Jyothi Nest Appartment	10.535158	76.205617	**UG**	XLPE	300	82		82
P5	P6	Post	10.535264	76.204846	**OH**	Racoon		109		109
P6	P7	AB-Ephta	10.535643	76.204863	**OH**	Racoon		44		44
P7	RMU4	RMU-30904	10.535526	76.204854	**UG**	XLPE	300	51		51
RMU4	32	Ephatha	10.5356289	76.204669	**UG**	XLPE	185	73		73
P7	6	Lakshmi Appartment	10.535965	76.204842	**OH**	Racoon		39		39
P6	P8	Post	10.535254	76.204113	**OH**	Racoon		80		80
P8	P8-1	AB-Kalyan	10.535333	76.204113	**OH**	Racoon		9		9
P8-1	7	Kalyan	10.535955	76.204283	**UG**	XLPE	300	91		91
P8	P9	Post	10.535229	76.203339	**OH**	Racoon		85		85
P9	8	Sitaram Mill	10.535476	76.203305	**OH**	Racoon		28		28
8	AB6	ABL-50908	10.535485	76.203321	**OH**	Racoon		2		2
AB6	9	Dhanalaxmi Office	10.535641	76.202980	**UG**	XLPE	300	54		54
AB6	RMU5	RMU-30905	10.537322	76.203749	**UG**	XLPE	300	244		244
RMU5	27	Gulmohar Appartment	10.537170	76.203781	**UG**	XLPE	150	17		17
RMU5	RMU6	RMU-30906	10.538101	76.203319	**UG**	XLPE	300	134		134

From Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
RMU6	30	Ground Water	10.538101	76.203319	**UG**	XLPE	300		10	10
RMU6	G4	Ground	10.538531	76.203326	**UG**	XLPE	300			
G4	G7	Ground	10.53903	76.20271	**UG**	XLPE	300			
G7	AB7	ABL-50912	10.538397	76.202109	**UG**	XLPE	300	314	10	324
AB7	RMU7	RMU-30907	10.538407	76.202027	**UG**	XLPE	300	9	5	14
RMU7	33	SreeRam Temple	10.538407	76.202027	**UG**	XLPE	300		10	10
RMU7	RMU8	RMU-30908	10.538041	76.202094	**UG**	XLPE	300	49		49
RMU8	34	Top Tulip	10.537873	76.202005	**UG**	XLPE	300	29		29
AB7	12	Ram Nikethan	10.538360	76.202494	**UG**	XLPE	300	60		60
P9	P10	Post	10.535232	76.202978	**OH**	Racoon				-
P10	AB8	ABl-50909	10.535048	76.202957	**OH**	Racoon		60		60
AB8	P10-1	AB-Sree Sailam	10.534688	76.203694	**OH**	Racoon		90		90
P10-1	10	Sree Sailam	10.534067	76.203037	**UG**	XLPE	300	130		130
AB8	P11	Post	10.535057	76.201372	**UG**	XLPE	300	183	10	193
P11	AB9	ABL-50913	10.535326	76.201445	**OH**	Racoon		31		31
AB9	AB10	ABL-50190	10.535455	76.2014455	**OH**	Racoon		14		14
AB10	RMU10	RMU-30910	10.535455	76.201382	**UG**	XLPE	300	7		7
RMU10	37	Sayooj Haridas	10.535620	76.201270	**UG**	XLPE	185	33		33
AB10	P11-1	AB-Neelambari	10.536391	76.201307	**OH**	Racoon		105		105
P11-1	22	Neelambari Appartment	10.536426	76.201412	**UG**	XLPE	300	12		12
P11-1	P11-2	AB-Capital Horizon	10.536946	76.201169	**OH**	Racoon		63		63
P11-2	11	Capital Horizon	10.537095	76.201838	**UG**	XLPE	300	97		97
P11-2	P12	Post	10.537055	76.201185	**OH**	Racoon		12		12
P12	26	Ramachandra Appartment	10.537054	76.201158	**OH**	Racoon		3		3
P12	P13	Post	10.538293	76.201026	**OH**	Racoon		126		126
P13	RMU13	RMU-Hanuman Statue	10.538644	76.200985	**UG**	XLPE	300	39		39
RMU13	13	Pushpagiri	10.538662	76.201049	**UG**	XLPE	300	7		7
RMU13	14	Vijay Sai	10.537736	76.200734	**UG**	XLPE	150	104		104
RMU13	G9	Ground	10.539111	76.201148	**UG**	XLPE	300			
G9	G10	Ground	10.539146	76.201389	**UG**	XLPE	300			
G10	G11	Ground	10.539852	76.201437	**UG**	XLPE	300			
G11	G12	Ground	10.540326	76.201436	**UG**	XLPE	300			
G12	RMU9	RMU30909	10.540342	76.201309	**UG**	XLPE	300	227		227
RMU9	35	Krishna Saketh	10.540339	76.201276	**UG**	XLPE	300	4	10	14
AB9	P14	Post	10.535622	76.200737	**OH**	Racoon				-
P14	P15	Post	10.536081	76.200141	**OH**	Racoon		167		167
P15	P15-1	AB-Capital Garden	10.536045	76.200017	**OH**	Racoon		19		19
P15-1	15	Capital Garden	10.535728	76.199796	**UG**	XLPE	150	43	7	50
P15	P15-2	AB-Asset	10.536252	76.199975	**OH**	Racoon		27		27
P15-2	23	Asset Mid Town Poonkunnam	10.535524	76.199172	**UG**	XLPE	300	138	13	151
P15-2	RMU11	RMU-30911	10.536403	76.199537	**UG**	XLPE	300			
RMU11	36	SAFA Tower	10.536403	76.199537	**UG**	XLPE	300	63	16	79
P11	P11-3	AB-Dhanalaxmi	10.535035	76.201303	**OH**	Racoon		7		7
P11-3	RMU12	RMU-30912	10.534944	76.201292	**UG**	XLPE	300	11		11
RMU12	38	Dhanalakshmi Bank	10.534944	76.201292	**UG**	XLPE	300		10	10
P11	P16	ABL	10.534466	76.201393	**OH**	Racoon		65		65
P16	P16-1	ABL Capital Village	10.53452	76.199145	**UG**	XLPE	300	324		324
P16-1	16	Capital Village	10.534929	76.199266	**UG**	XLPE	300	47	10	57
P16	17	Ushas	10.534124	76.201454	**OH**	Racoon		38		38

From Map no	Map no	Pole/transformer/ AB	Latitude	Longitude	Cable	Cable type	Cable size (sq mm)	Mapping distance (m)	Loose distance (m)	Total distance (m)
17	P17	Post	10.533884	76.201471	**OH**	Racoon		27		27
P17	18	Palissery Tower	10.53385	76.2017	**OH**	Racoon		25		25
P17	P18	Post	10.532924	76.201467	**OH**	Racoon		106		106
P18	P18-1	AB Kingsway	10.532924	76.201735	**OH**	Racoon		29		29
P18-1	19	Kingsway	10.532927	76.202019	**UG**	XLPE	300	31	30	61
P18	P19	AB Vincent Tower	10.532287	76.201529	**OH**	Racoon		71		71
P19	24	Vincent Tower	10.532218	76.201449	**UG**	XLPE	185	12	30	42
P19	P19-1	AB Cheloor	10.531996	76.201557	**OH**	Racoon		28		28
P19-1	20	Cheloor Appartment	10.531784	76.201361	**UG**	XLPE	185	47	50	97
P19-1	AB11	ABI-50914	10.531759	76.201555	**OH**	Racoon		45		45

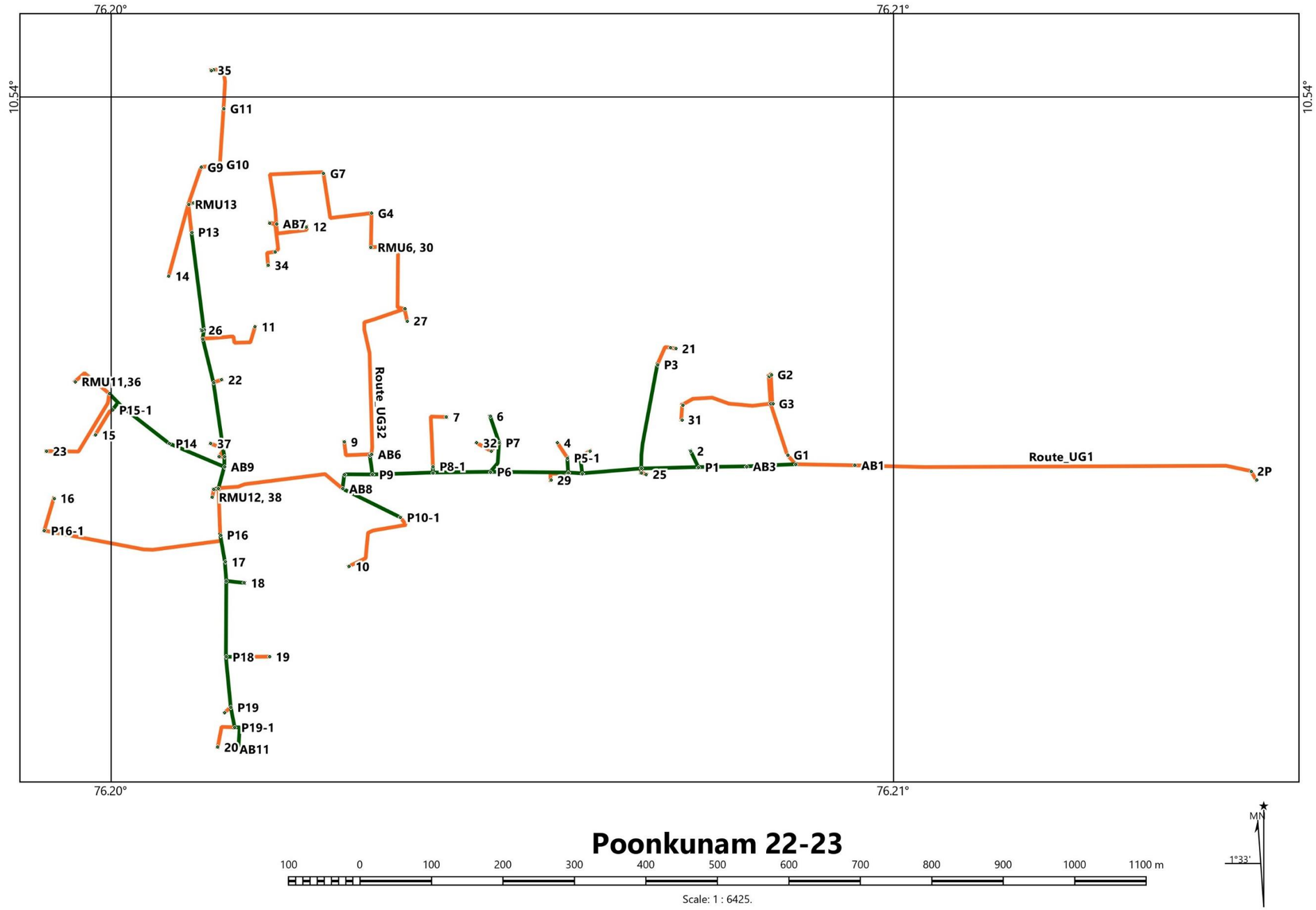

Figure 19: Poonkunam feeder

5. ENERGY CONSERVATION MEASURES SUMMARY

LIST OF ENERGY CONSERVATION PROPOSED FOR FUTURE

The TCED can consider following possible measures for energy conservation to reduce their distribution loss to their best value as summarised below.

- **Replacing HT & LT overhead lines with UG cables**

  Even though TCED has initiated the replacement of overhead lines with underground cables, there are still areas in the distribution network with overhead lines. Sample analysis has been done for 04 number of feeders which were audited for the viability of replacing overhead lines with UG cables. Resistance per kilometre of the UG cables is less than the overhead lines which is Racoon type for HT and Rabbit type for LT in TCED. The replacement of HT & LT overhead lines with UG cables will result in reduction in energy losses in the distribution network and hence will lead to financial savings. The summary of the proposal in given in the table below.

Particulars	Units	Values
Annual Energy savings	MU	0.987
Annual financial savings	Rs in lakhs	64.19
Estimated investment	Rs in lakhs	175.46
Simple payback period	Months	33

- **Replacing Old Transformers with Energy Efficient transformers**

  Among the 11 number of feeders audited, there were two number of old transformers in the Shoranur Road feeder which were aged more than 30 years and therefore these transformers are proposed to replace with energy efficient transformers as sample basis. This will result in the reduction in energy losses for the specified loading level of the transformer.

  The details are summarized in the table below.

Particulars	Units	Values
Annual Energy savings	MU	0.01205
Annual financial savings	Rs in lakhs	0.78
Estimated investment	Rs in lakhs	14.0
Simple payback period	Years	18
	Months	214

- **Power Factor Improvement in Feeders**

The average power factor during the measurement period (5-hour logging) at 110kV incomer was 0.97 lagging. During the feeder level measurement, the PF was found to be less than 0.98 for 6 numbers of feeders for which power factor improvement can be done by installing capacitors of 60kVAr capacity each (in the secondary side of 5 distribution transformers in the feeders mentioned under 66kV incomer) and 120kVAr (in the secondary side of 15 distribution transformers in the feeders mentioned for feeders under 110kV incomer).

The annual financial savings occur via demand reduction, PF incentives and avoiding penalty. The summary of the savings is given in the table below.

Particulars	Units	Values
Average reduction in monthly demand based on FY 22-23 data	kVA/month	950.7
Annual financial savings	Rs in lakhs	245.16
Estimated investment	Rs in lakhs	37.5
Simple payback period	Months	2

- **Summary of energy conservation measures**

Table 33: Energy conservation measures - summary

ECM No	Energy Efficiency Measures	Annual Electricity Savings	Annual Financial Savings	Investment	Fixed interest rate	Cash inflow	Net present value	Internal rate of return
		MU	(Rs)	(Rs)	%	Years	(Rs)	%
1	Replacing HT & LT overhead lines with UG cables***	0.987	64,19,547	1,75,45,800	8	5	37,16,553	17.19%
2	Replacing Two nos of Old Transformers with Energy Efficient transformers	0.01205	78,336	14,00,000	8	20	-6,30,888	1.10%
3	Power Factor Improvement in Feeders – installation of 420 kVAr total	-	2,45,15,506	37,50,000	8	1	1,89,49,542	553.75 %

***At 11 kV = 8.273 km & at 415 V = 20.97 km

- **General observations and suggestions**

Observation	Suggestions
Collection efficiency of the DISCOM is 97.36% which resulted in reducing AT & C loss from 11.23 %(FY-2021-22) to 9.54% (FY-2022-23) As per the TCED availed data, the major dues are from the Government departments, urban local bodies, street light and corporation owned buildings.	Collection drives should be placed in the DISCOM area. Awareness shall be provided for the proper billing in due time. Energy cell can give awareness in the DSM and various energy efficiency measures to help them in reducing the consumption.
As the back-feed units from one feeder to another were not available in the DISCOM, exact loss analysis was unable to calculate from the existing data.	Feeder boundary energy meter is suitable option to have the back-feed data and records shall be maintained properly.

LIST OF ENERGY CONSERVATION MEASURES ADOPTED/TAKEN

- **Feeder bifurcation: -** Previously, **Kottapuram feeder** supplied an average unit of 16.94 MU/month. It was subsequently bifurcated into **Kottapuram and Vanjikulam**, leading to the replacement of the overhead (OH) line (Racoon) with an ABC cable for a distance of 1.7 km. This replacement resulted in an annual loss reduction of 0.171 MU. Detailed calculations are provided in the table below.

Table 34: Energy Conservation measures adopted/taken

Particulars	Unit	Value
D&T losses of HT Racoon OH line cable before feeder bifurcation	kWh/annum	2,30,355
D&T losses of HT ABC OH line cable loss after feeder bifurcation	kWh/annum	58,752
Net Annual Unit Savings	**kWh/annum**	**1,71,603**
HT line Distance reconductored with ABC cable	m	1,700
Energy charges	Rs/kWh	6.50
Investment cost	**Rs**	**50,00,000**
Net Annual Financial Savings	**Rs/annum**	**11,15,418**
Simple payback period	**Months**	**54**

NOTE: Resistance of HT Racoon OH line cable = 0.3712 Ω/km
Resistance of HT ABC OH line = 0.25 Ω/km

ENERGY FLOW ANALYSIS

1. ENERGY FLOW

The basic energy flow in the DISCOM is given in the chart below.

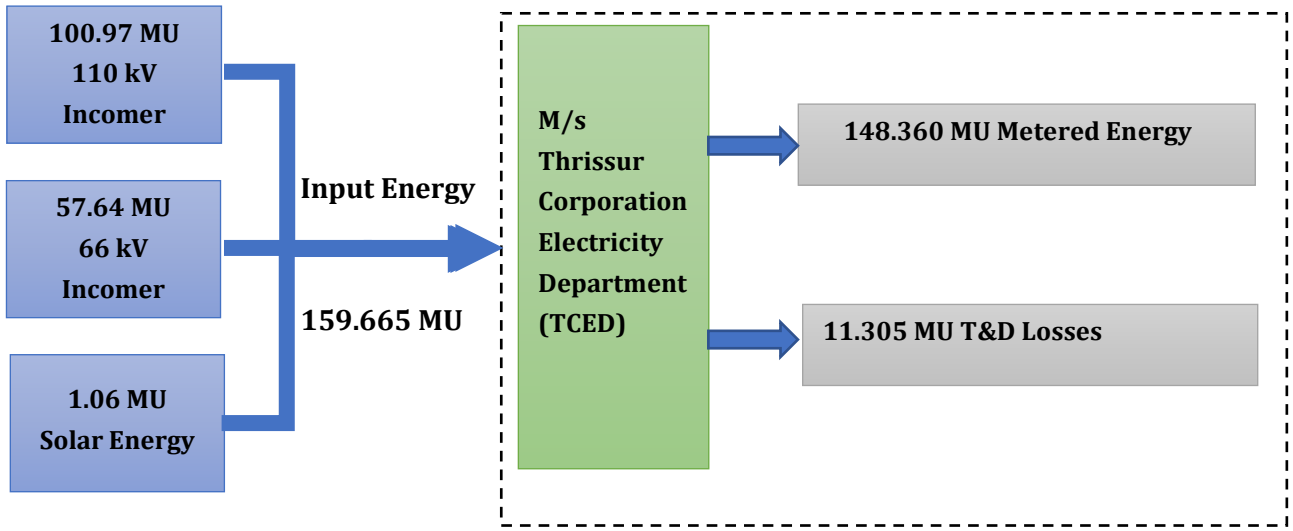

Figure 20: Energy flow diagram - TCED

- *Input energy = the energy received at the TCED for distribution.*
- *Metered energy = energy metered at the consumer end*
- *T&D losses = Net losses*

2. VALIDATION OF METERED DATA

The validation of data includes the KSEBL metering and feeder meters in the switching station of the TCED. The following tables will provide the validation of the metering by comparing with the calibrated power analysers.

COMMERCIAL LOSSES

The auditors could not able to ascertain commercial losses/non-technical losses in the DISCOM during the FY 2022-23 due to the following factors.

1. Back feeding of one feeder to another during any failure in service, resulted in mixing up of consumption at the Feeder meter.
2. The record of meter errors was not readily available in section office to ascertain the losses caused in each feeder.
3. There is no theft reported in any sections during the audit period thus if any loss occurs in the commercial it could be due to the meter errors or damage.

Metering deviation was done in feeder incomer in order to derive an energy balance between purchase and sale. The energy meters at feeder incomer were cross checked using calibrated meters like Krykard ALM 35/ ALM 31.

DEVIATION OF METERING

- **Deviation of incomer meters**

  The TCED incomer energy meters at the 110-kV substation were verified with power quality analysers and given in the table below.

Table 35: TCED incomer meter – deviation with PQ analyser

Sl no	Meter	Hours of measurement	KSEBL meter	Power analyser reading	KSEBL meter vs Power analyser
		Hours	kWh	kWh	%
1	110kV incomer	5	84.75	83.88	**1.04**

- **Deviation of feeder meters**

Table 36: Deviation of feeder meters

Sl no	Feeder name	Hours of measurement	Panel reading	Average PF	Power analyser reading	Difference in consumption	% of error
		Hours	**kWh**		**kWh**	**kWh**	**%**
1	Bini	4.34	8000	1	8207	207	**2.52**
2	Poonkunnam	4	4000	0.93	3823	-177	**-4.63**
3	Keralavarma	3.5	4000	0.94	3886	-114	**-2.93**
4	Vivekodayam	1	1200	0.98	1187	-13	-1.10
5	Jubilee Medical College	4	4500	0.98	4469	-31	-0.69
6	District Hospital	2	2110	0.98	2120	10	0.47
7	East fort	1.5	3200	0.98	3140	-60	-1.91
8	**Shornur Road**	**2**	**4380**	**0.98**	**3916**	**-464**	**-11.85**
9	Chembukavu	1.25	660	0.99	659	-1	-0.15
10	Kottappuram	1	700	0.91	712	12	1.69
11	M.O Road	2	4270	0.99	4290	20	0.47
12	Ramanilayam	1.5	1815	0.98	1813	-2	-0.11
13	Aranattukkara	1.5	2400	0.97	2476	76	**3.07**
14	Mission Quarters	1.5	1920	0.97	1915	-5	-0.26
15	Veliyanoor	2	2880	0.98	2884	4	0.14
16	Koorkanchery	1.5	1490	0.97	1491	1	0.07
17	Paravattani	1.5	2190	0.97	2185	-5	-0.23
18	Vanjikulam	4	6000	0.98	6086	86	1.41
	Summary		**55715**		**55259**	**-456**	**-0.83**

- *Considering the CT class variation among the Feeder meter and power analyzer, the errors observed are minimal.*
- *The overall difference between feeder panel meter and the power analyzer is 0.83% which is good.*
- *However, observed a variation 1.04% difference between the KSEBL and power analyzer meter in the 110-kV incomer. This could be due to the CT class difference variation with our power analyzer (1s) and the KSEBL meter (0.2s). Considering this, the difference is negligible and the meters are ok.*
- *Also, a mismatch observed in the energy meter readings for KSEBL and TCED feeder-wise meters. However, when we checked the TOD meter by bypassing the Potential Transformer (PT) and Current Transformer (CT), the values matched.*
- *Verify the CTs with periodic calibration and replace them if necessary.*

3. VALIDATION OF ENERGY FLOW DATA

The section provides the details of energy purchased and saled in the DISCOM

INCOMER – AT SWITCHING STATION

TCED procures electricity from KSEB Ltd for the supply to its consumers and for its own consumption. TCED receives the power as 110 kV and 66kV from the KSEBL (Kerala state electricity board limited) as **Part-C: BULK SUPPLY – EHT TARIFF APPLICABLE TO SMALL LICENSEES** category. The rates specified in this schedule (Part C) are exclusive of Electricity Duty and/or surcharge, other cess, taxes, minimum fees, duties and other impositions. Thus, only the demand and energy charges are applicable for the electricity cost.

- **BASELINE DATA**

The basic details of the bill and TCED distribution are as follows:

Base Line Data – FY 2022-23			
1	Electricity provider	KSEBL	
2	Supply Voltage	110 kV	66 kV
3	Tariff	Licensee: Thrissur Corporation– EHT TARIFF	
4	Consumer number	LCN: 21/Thr.Corp	LCN :21/1029
5	Section office	110 KV Sub Station, Viyyur	
6	Contract demand (kVA)	Can access unlimited demand as per the agreement signed between KSEBL and Thrissur municipality on 1949.	
7	Maximum demand registered (kVA)	26,012	16,510
8	Average monthly electricity consumption (MU)	8.41	4.80
9	Annual unit consumption (MU)	100.97	57.64
10	Average power factor	0.96	0.96
11	Tariff Rate of energy charges (Rs / kWh)	6.05	
12	Revised tariff Rate of energy charges (Rs / kWh) from June 2022	6.5	
13	Demand charge (Rs / kVA)	340	
14	Revised demand charge (Rs/ kVA) from June 2022	380	
	Other details		
15	Number of incoming feeders – From KSEBL - 110 kV and 66 kV (Nos)	02	
16	Number of substations and voltage level	110 kV – Aswini – 01 no 66 kV Aswini – 01 no 33 kV Ikkanda warrier – 01 no	
17	Number of TCED Distribution Feeders – 11 kV (Nos)	18	
18	Feedback points – To KSEBL (Nos)	NIL	
19	Number of transformers under TCED	468	
20	Number of DT at 415V level	468	
21	Number of s/s transformers at 33 kV level	01	
22	Number of s/s transformers at 11 kV level	07	
23	Line length at 33 kV voltage level (km)	4.2	
24	Line length at 11 kV voltage level (km)	115.13	
25	Line length at LT voltage level (km)	285.675	
26	HT/LT ratio	01:2.36	
27	Number of consumers - as of March 2023	41831	
28	Connected load (MW) - as of March 2023	231.55	
29	Number of HT consumers	134	
30	Number of LT consumers	41697	

- **DEMAND ANALYSIS**

DEMAND TARIFF STRUCTURE

As per the Kerala State Electricity regulatory comission (KSERC) tariff order dated 16/03/2020, Billing Demand (BD) shall be the Recorded Maximum Demand (RMD) for the month in kVA or 75% of Contract Demand (CD) whichever is higher in 30 minutes interval period.

TCED can access unlimited demand as per the agreement signed between KSEBL and Thrissur municipality on 1949.

The demand calculation for the TCED as per the KSERC order is given below. However this is not followed in the TCED billing as there is no mention of contract demand.

Recorded maximum demand (RMD)	•Maximum Demand registered in Normal, Peak, and Off-peak periods
Billing demand - BD	•BD = RMD or •75% of contract demand
Billing demand charge	•Demand charges = BD x 380 Rs/kVA

DEMAND REGISTERED - FY 2022-23

The registered or billed demand thus applied to the TCED and the consumption during the FY 2022-23 is given in the figure below.

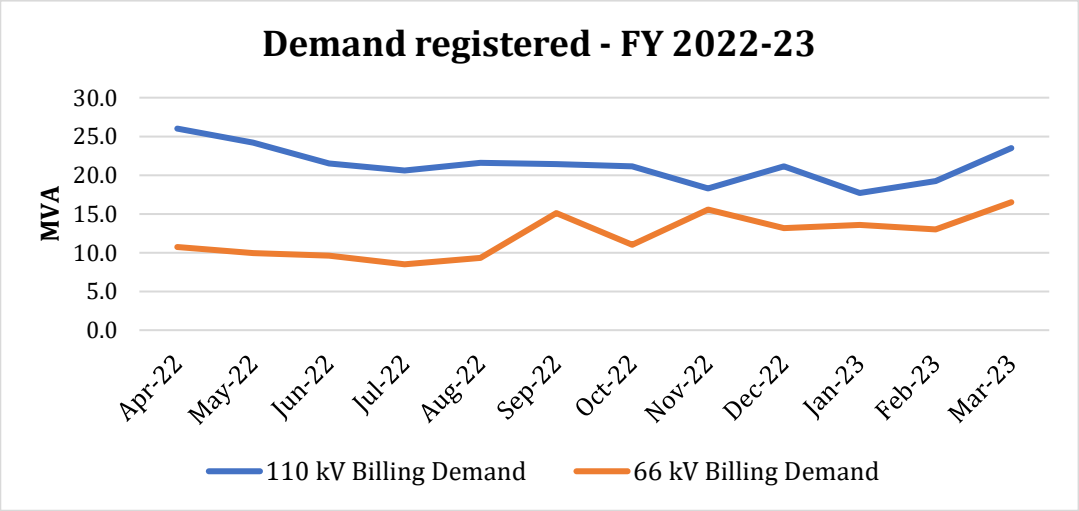

Figure 21: Demand variation – FY 2022-23

- **ENERGY CONSUMPTION ANALYSIS**

Energy Calculation Method

As per the Kerala State Electricity regulatory comission (KSERC) tariff order dated 16/03/2020, TOD tariff is applicable to Bulk consumer - Small licensees. The calculation method for the energy charges is mentioned below.

The calculation method for the energy charges is mentioned below.

Energy consumption	•Unit consumption in Normal Period (A) •Unit consumption in Peak Period (B) •Unit consumption in Off-Peak Period (C)
Chargeable energy	•D = A + B +C
Energy charges	•Energy charges = D x 6.5 Rs/kWh

Unit Consumed – FY 2022-23

This section analyses the trend for the unit consumption by the TCED over the period FY 2022-23. A total of 158.605 MU consumed by TCED during FY 2022-23.

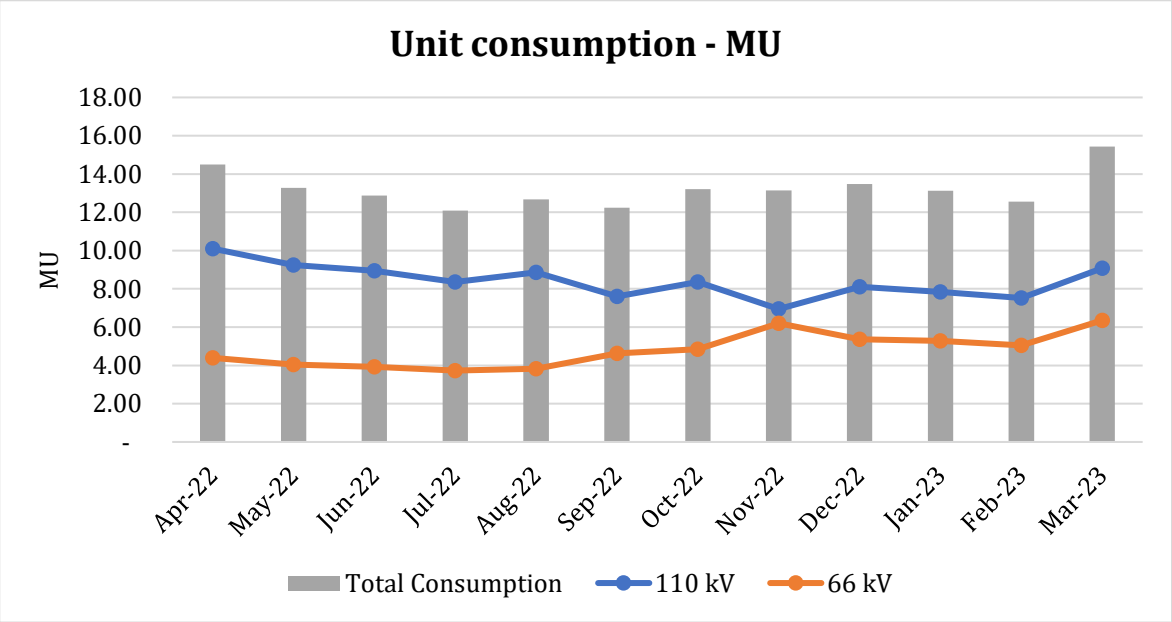

Figure 22: Energy consumption analysis

- **POWER FACTOR ANALYSIS**

Power factor calculation method

As per the Kerala State Electricity regulatory comission (KSERC) tariff order no: 0476/DD(T)/2020/KSERC dated 24/03/2022, power factor incentive/disincentives were applicable to Bulk consumer - Small licensees. The calculation method for the Power factor is mentioned below.

Active Energy consumption	•Denoted as (A)
Apparent Energy consumption	•Denoted as (B)
Power factor	•PF = A ÷ B
Power factor incentive	•For every increase of 0.01 from the 0.95 lagging, 0.5% of the energy charge will be provided as incentive.
PF disincentive	•For every decrease of 0.01 in the range of 0.95 to 0.90, 0.5% of the energy charge. •Less than 0.90 1% of energy charge.

During the audit period as per the new tariff the TCED is entitled to get PF incentive if it maintains above 0.95.

However, KSEB temporarily disapproved the PF incentive and presently in dispute.

Power factor registered in FY 2022-23

This section analyses the trend for the Power factor over the period FY 2022-23

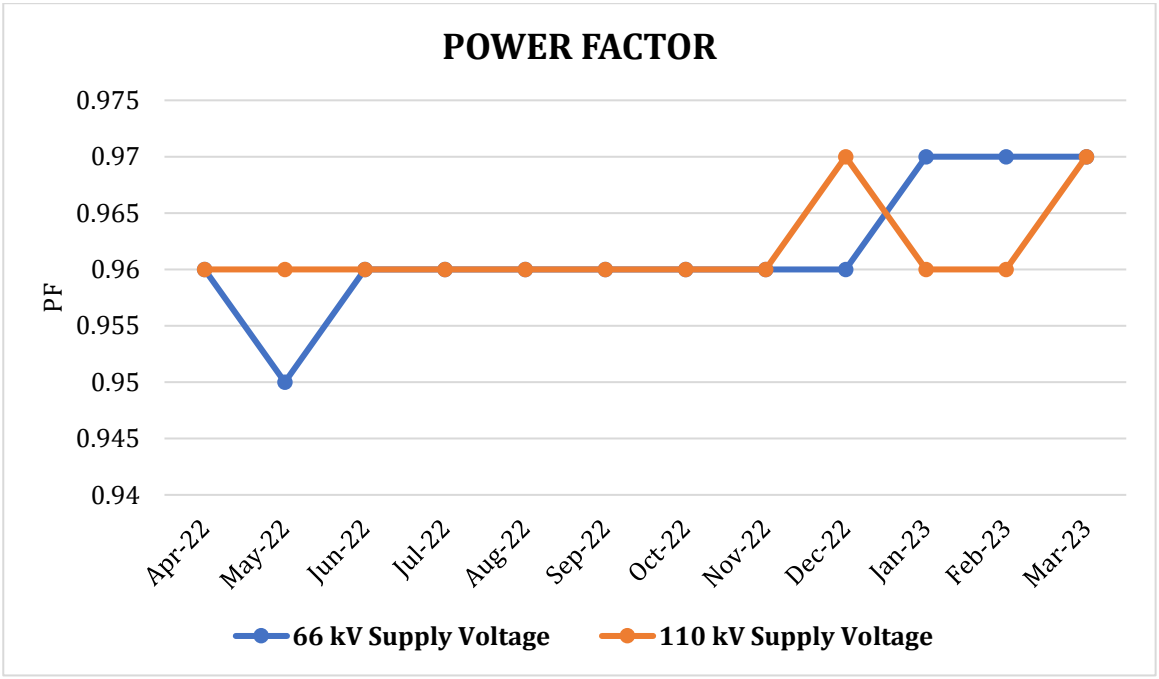

Figure 23: Power factor – FY 2022-23

- **OBSERVATIONS AND RECOMMENDATION – ENERGY CONSUMPTION PROFILE**

Table 37: Observations & Recommendation – Energy Consumption Profile

Observation	Recommendation	Benefit
Contract demand		
As per the 1947 agreement signed between TCED and KSEBL, unlimited supply warranty given for the former, meanwhile the TCED own generation was stopped as per the agreement.	• TCED is entitled to have unlimited Demand as per this agreement.	No excess demand charges prevails in the DISCOM.
Power factor		
Average power factor during 2022-23 is 0.96. Demand charges will reduce by ensuring the PF at near unity. The detailed calculation for the PF improvement is mentioned below in conclusion and action plans section. During the audit period as per the new tariff dated 25-06-2022 the TCED is entitled to get PF incentive if it maintains above 0.95. However, as KSEB temporarily disapproved the same and in dispute	• Awareness shall be given to all the HT consumers for improving the PF near to unity. • Install capacitors for the distribution transformers (DT) in the 11 kV feeders wherever possible. • The selection of DT for reactive power compensation shall be based on their average loading. Choose the DT with an average loading of 40% and above.	• The net annual savings by the PF improvement is 245.16 lakhs • In addition, the distribution line losses and transformer losses will get reduced.
Unit consumption analysis		
The overall unit purchased by the TCED during FY 2022-23 increased by 16.04% from the FY 2021-22 (FY 2021-22-unit purchased was 137.59 MU).	NIL	• NIL

FEEDER WISE SALES DATA

The following table presents the units sold by the DISCOM during the fiscal year 2022-23, depicting the energy consumption of consumers categorized by feeder.

NOTE: Only data of 11 feeders out of 18 feeders was available during the audit period from the DISCOM

Table 38: Feeder wise sales data FY 2022-23

Sl no	Feeder Name	No: of Consumers	Connected load	Energy sold by DISCOM	
		Nos	kW	kWh/year	kWh/month
1	Bini	1,007	6,887	56,62,728	4,71,894
2	Chembukkavu	2,501	13,293	79,98,742	6,66,562
3	Shoranur Road	2,920	16,037	97,56,504	8,13,042
4	Ramanilayam	682	6,524	62,40,656	5,20,055
5	JMC	2	7,476	81,17,928	6,76,494
6	Vivekodhayam	1,895	10,713	67,64,088	5,63,674
7	Veleyannor	1,941	9,738	76,10,891	6,34,241
8	East Fort	2,096	12,649	98,80,189	8,23,349
9	Mission Quarters	2,264	16,076	89,80,113	7,48,343
10	Paravattany	3,028	14,823	75,36,127	6,28,011
11	Keralavarma	3,314	15,840	85,55,177	7,12,931
	Total	**21,650**	**1,30,055**	**8,71,03,143**	**72,58,595**

LOSS & SUBSIDY COMPUTATION

1. ENERGY ACCOUNTS ANALYSIS FOR PREVIOUS YEARS- FY 2021-22

The performance summary of TCED as DISCOM as per the FY 2021-22 is given in the following table.

Table 39: Summary of DISCOM – FY 2021-22

Performance Summary of Electricity Distribution Companies			
1	Period of Information Year of (FY) information including Date and Month (Start & End)	1st Apr, 2021 - 31st March, 2022	
2	**Technical Details**		
(a)	**Energy Input Details**		
(i)	Input Energy Purchase (From Generation Source)	Million kWh	137.59
(ii)	Net input energy (at DISCOM Periphery including sale outside periphery)	Million kWh	137.59
(iii)	Total Energy billed (is the Net energy billed, adjusted for energy traded)	Million kWh	129.05
(b)	Transmission and Distribution (T&D) loss	Million kWh	8.54
		%	6.21
	Collection Efficiency	%	94.65%
	Billing Efficiency	%	93.79%
(c)	Aggregate Technical & Commercial Loss	%	11.23%

As the collection efficiency is 94.65% the AT&C loss of TCED registered was 11.23% during the FY 2021-22.

Table 40: AT & C loss – FY 2021-22

Name of circle	**Period from April 2021 to March 2022**									
	Consumer profile	**Energy parameters**			**Losses**		**Commercial Parameter**			**AT & C loss (%)**
	Consumer category	**Input energy (MU)**	**Metered energy**	**% Of energy consumption**	**T&D loss (MU)**	**T&D loss (%)**	**Billed Amount in Rs. Crore**	**Collected Amount in Rs. Crore**	**Collection Efficiency**	
TCED	Residential	137.59	41.55	32%	8.540	6.21%	27.019	26.537	98.21%	
	Agricultural		0.053	0.04%			0.0246	0.0196	79.79%	
	Commercial/ Industrial-LT		49.48	38%			54.786	51.219	93.49%	
	Commercial/ Industrial-HT		36.80	29%			37.343	35.523	95.13%	
	Others		1.17	1%			0.532	0.000	0.00%	
Total		**137.59**	**129.05**	**100%**	**8.540**	**6.21%**	**119.705**	**113.298**	**94.65 %**	**11.23 %**

2. ENERGY ACCOUNTS ANALYSIS FOR PRESENT YEAR- FY 2022-23

CATEGORY OF DIVISION WISE LOSSES – FY 2022-23

The consumer details, energy parameter and the overall circle wise T&D Losses are mentioned in the table below:

Table 41: Division wise losses

Division Wise Losses												
Name of circle	Period From 1st April 2022 to 31st March 2023											
	Consumer profile					Energy parameters					Losses	
	Consumer category	No of connection metered (Nos)	No of connection Un-metered (Nos)	Total Number of connections (Nos)	% of number of connections	Input energy (MU)	Billed energy (MU)			% of energy consumption	T&D loss (MU)	T&D loss (%)
							Metered energy	Unmetered/ assessment energy	Total energy			
TCED	Residential	22526	0	22526	54%	159.665	40.10	0	40.10	27.00%	11.305	7.08%
	Agricultural	187	0	187	0.45%		0.0538	0	0.0538	0.04%		
	Commercial/ Industrial-LT	18692	0	18692	45%		62.16	0	62.16	41.86%		
	Commercial /Industrial-HT	134	0	134	0.32%		44.84	0	44.84	29.98%		
	Others + Feedback	292	0	292	1%		1.212	0	1.212	1.12%		
Sub-total		**41831**	**0**	**41831**	**100%**	**159.665**	**148.36**	**0**	**148.36**	**100%**	**11.305**	**7.08%**

Methodology for T&D loss computation:

- $T\&D\ Losses\ (MU) of\ a\ circle = Sum\ of\ Input\ Energy\ of\ the\ circle\ (MU) - Sum\ of\ Metered\ energy\ of\ all\ categories\ within\ the\ circle\ (MU) - Feedabck\ Energy\ (MU)$
- $T\&D\ Losses\ in\ \% = \frac{T\&D\ Losses\ (MU)}{Input\ Energy\ to\ the\ circle\ (MU)} * 100$
- $T\&D\ Losses\ (MU) of\ a\ DISCOM = \frac{Sum\ of\ circlewise\ T\&D\ Losses\ (MU)}{Cummulative\ Sum\ of\ Input\ Energy\ (MU)\ to\ all\ circle} * 100$

AGGREGATE TECHNICAL & COMMERCIAL (AT&C) LOSS

Aggregate Technical & Commercial Loss (AT&C Loss) is defined as the summation of all technical as well as commercial power loss that occurs due to electrical power flow through sub-transmission and distribution network.

Technical Loss is defined as the summation of power loss through 33 kV, 11 kV line and LT line loss including transformer loss and others.

Commercial Loss is defined as the summation of power loss occurring due to theft/ pilferage, deficient meter, inefficiency in billing & unrealized revenue due to collection inefficiency.

Computation of AT& C Loss:

Aggregate Technical & Commercial Loss (AT&C) is computed from the actual meter readings of the meter installed at various locations in the system.

- **Overall Billing Efficiency (%)** = Total Sale in MU/ Total input in MU
- **Overall Collection Efficiency (%)** = Total Collection Received (Rs. in Crs.) / Total Billing to Consumers (Rs. in Crs.)

- **AT & C Loss (%)** = 1- {Billing Efficiency % x Collection efficiency %}

As the collection efficiency is 93.48% the AT&C loss of TCED registered was 13.93% during the FY 2022-23.

Table 42: AT & C loss – FY 2022-23

S.No	Name of circle	Period From 1st April 2022 to 31st March 2023									
		Consumer profile	Energy parameters			Losses		Commercial Parameter			AT & C loss (%)
		Consumer category	Input energy (MU)	Metered energy	% Of energy consumption	T&D loss (MU)	T&D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	
1	TCED	Residential	159.665	40.10	27.00%	11.305	7.08%	26.93	26.57	98.66%	9.54
		Agricultural		0.0538	0.04%			0.03	0.02	66.67%	
		Commercial/ Industrial-LT		62.16	41.86%			69.10	66.25	95.88%	
		Commercial/ Industrial-HT		44.84	29.98%			46.75	46.75	100.00%	
		Others		1.212	1.12%			0.57	0.00	0.00%	
Sub-total			**159.665**	**148.36**	**100%**	**11.305**	**7.08%**	**143.38**	**139.59**	**97.36%**	**9.54 %**

3. TECHNICAL LOSSES

Technical losses are subdivided into Four categories:

1. HT OH line & cable losses
2. Transformer loading & losses
3. LT OH line loss &
4. LT cable losses

The detailed calculation and the loss evaluation for 11 feeders is given in the sections below.

FEEDERWISE LINE LOSS CALCULATION

The details of OH lines used in the TCED distribution system is given in the table below. The HT line length was measured using the GPS mapping and LT line length was taken from the RDSS data.

Table 43: TCED Distribution –line details

Sl.No	Feeder	HT								LT
		OH Line Length	UG Cable length							OH line Length
			95 sq.mm	150 sq.mm	185 sq.mm	240 sq.mm	300 sq.mm	400 sq.mm	ABC - 120 sq mm	
		m	m	m	m	m	m	m	m	m
1	Bini	1838		63	122	354	1258.91		19	1710
2	Chembukavu	3,435		-	170	409	2,281		14	6,730
3	East Fort	2,119		73	47		4,381	56		9,900
4	Koorkenchery	2,782		130	232	266	2,759			NA
5	Ramanilayam	1,811		878	221		680			3,000
6	Veliyanoor	1,493			138	32	3,703			5,580
7	Vivekodhayam	2,120		40	124	86	2,398		20	5,500
8	Shornur Road	2,118		572	301		3,950			8,960
9	District Hospital	2,325		497	67	256	4,637			NA

Sl.No	Feeder	HT								LT
		OH Line Length	UG Cable length							OH line Length
			95 sq.mm	150 sq.mm	185 sq.mm	240 sq.mm	300 sq.mm	400 sq.mm	ABC - 120 sq mm	
		m	m	m	m	m	m	m	m	m
10	Jubilee Mission						2,821			NA
11	Arnattukkara	4,079				214	5,631		12	NA
12	Kottappuram	2,582		63	455		2,856			NA
13	Vanjikulam	2,173		164	310	185	1,849		1,728	NA
14	Keralavarma	2,918		157	274	123	5,242		28	8,950
15	M O Road	1,736	170	149	480	266	4,959		26	NA
16	Mission Quarters	4,507		135	23	31	4,531	39		10,150
17	Paravattani	3,163		272	111		4,781			10,450
18	Poonkunam	2,095		230	296		3,831			NA
Total		**43295**	**170**	**3423**	**3373**	**2221**	**62548**	**95**	**1846**	**70930**

FEEDER WISE LINE LOSS

Feeder wise line loss calculation is given in the tables below. The calculations are based on month wise unit consumption and converted to yearly in the summary section.

The detailed calculation and the loss evaluation for 11 feeders is given in the sections below.

3.1 BINI FEEDER

Table 44: Loss analysis – Bini feeder

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	kWh/ month
SS	2P	2P			UG	10										
P2	RMU-30801	RMU-30801			UG	10										
RMU-30801	2	TT Devassy	Client	HT	UG	20										
					UG	104	13,110	0.05								
					OH	374	13,110	0.49								
P4	P5	Post			OH	252										
P20	P7,29	Vadakke chira	Department	LT	OH	159										
					UG	74	16,937	0.04	15,388	1,112	16,501	9.90	16,514	250	0.71	423
					OH	785	16,937	1.28			16,501	3.27				
P7	P8	Post			OH	26										
P8	4	Lake View	Client	LT	UG	31										
					UG	105	4,398	0.00			4,120	0.29	4,120	160	0.46	278
					OH	812	4,398	0.09								
P9	P10	Post			OH	194										
P10	5	Seethal Appartment	Client	LT	UG	51										
					UG	126	6,755	0.01			6,348	2.34	6,350	250	0.68	405
					OH	979	6,755	0.25								
P10	P10-1	Post			OH	23										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	kWh/ month
P10-1	6	Kalyan Jewellers	Client	HT	UG	71										
					UG	71	26,032	0.16								
					UG	74	26,032	0.13								
					OH	1,002	26,032	5.13								
P5	P11	Post			OH	34										
P11	P12	Post			OH	46										
P12	1	Mangala Tower	Client	HT	UG	21										
					UG	21	21,769	0.04								
					UG	74	21,769	0.09								
					OH	454	21,769	1.63								
P21	P13	Post			OH	112										
P13	3	Paliyam Road	Department	LT	OH	7										
					UG	74	51,081	0.39	42,006	8,399	50,405	73.90	50,479	250	1.00	602
					OH	573	51,081	8.47								
P13	P13-1	Post			OH	8										
P13-1	26	Ashiana Appartments	Client	LT	UG	56										
					UG	56	11,104	0.02								
					UG	74	11,104	0.02			10,555	2.01	10,557	315	0.91	547
					OH	573	11,104	0.40								
ABL-50803	10	Pallithammam	Department	LT	UG	92										
					UG	92	23,506	0.12								
					UG	74	23,506	0.08		-	23,042	10.79	23,062	250	0.74	444

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	kWh/ month
					OH	786	23,506	2.46			23,042	9.01				
10	LBS,16	SBI- Pallithammam	Client	HT	UG	22										
					UG	22	10,706	0.01								
					UG	92	10,706	0.03								
					UG	74	10,706	0.02								
					OH	786	10,706	0.68								
LBS	12	Elite Supermarket(Pallithammam)	Client	HT	UG	6										
					UG	6	30,191	0.02								
					UG	92	30,191	0.27								
					UG	74	30,191	0.18								
					OH	786	30,191	5.41								
LBS	11	Pallithammam(Indoor)	Client	LT	UG	15										
					UG	15	19,852	0.02								
					UG	92	19,852	0.09								
					UG	74	19,852	0.06			19,277	13.51	19,290	315	0.94	562
					OH	786	19,852	1.75								
10	LBS,14	LBS, Kairali Sree Theatre 2	Client	HT	UG	16										
					UG	15	33,969	0.08								
					UG	16	33,969	0.06								
					UG	74	33,969	0.23								
					OH	786	33,969	6.85								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	kWh/ month
LBS	13	Kairali Sree Theatre 1	Client	LT	UG	54										
					UG	15	1,823	0.00								
					UG	16	1,823	0.00								
					UG	74	1,823	0.00			1,522	0.35	1,523	200	0.50	300
					OH	786	1,823	0.01								
P15	7	AGS Office	Department	LT	OH	7										
					UG	74	9,481	0.01			9,197	1.09	9,198	100	0.47	283
					OH	807	9,481	0.41								
7	8	Cochin Dewasm Board	Department	LT	OH	8										
					UG	74	40,432	0.24	39,393	97	39,490	192.96	39,711	500	1.20	721
					OH	815	40,432	7.55			39,490	28.08				
P16-2	9	Kailasam	Client	LT	UG	42										
					UG	117	2,960	0.00			2,682	0.22	2,682	160	0.46	277
					OH	944	2,960	0.05								
P16-3	25	Bini Tourist Home	Client	HT	UG	57										
					UG	57	1,400	0.00								
					UG	74	1,400	0.00								
					OH	874	1,400	0.01								
G2	24	Vegetable	Department	LT	UG	309										
					UG	390	41,104	1.31			40,433	33.21	40,466	315	1.06	638
					OH	814	41,104	7.79								
24	G2				UG											

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	kWh/ month
G2	17	Dhanalakshmi Bank	Client	HT	UG	74										
					UG	464	2,354	0.01								
					OH	814	2,354	0.03								
24	P18	Post			OH	27										
P18	15	Chemmannur	Client	HT	UG	64										
					UG	64	8,783	0.02								
					UG	390	8,783	0.08								
					OH	841	8,783	0.49								
24	G7	Ground			UG	438										
G7	21	Naduvilal(Pooma)	Department	LT	UG	22										
					UG	850	41,625	2.92			41,082	9.35	41,091	250	0.89	534
					OH	814	41,625	7.99								
21	20	Pooma Complex	Client	LT	UG	31										
					UG	31	16,116	0.03								
					UG	881	16,116	0.45			15,556	5.45	15,561	315	0.92	554
					OH	814	16,116	1.20								
P23	23, P23-1	Naduvial Shopping complex, Post	Department	LT	OH	61										
					UG	850	8,184	0.11			7,776	1.84	7,778	250	0.68	407
					OH	883	8,184	0.34								
P23-1	19	Sidish Complex	Client	LT	ABC	19										
					ABC	19	2,600	0.00			2,340	0.58	2,340	100	0.43	260
					UG	850	2,600	0.01								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	kWh/ month
					OH	883	2,600	0.03								
AB-Ayod	18	Ayodhya centre	Client	LT	UG	33										
					UG	33	20,852	0.06								
					UG	943	20,852	0.81			20,284	3.76	20,288	315	0.94	565
					OH	883	20,852	2.17								
AB-Chungath	22	P22,Chugath Jewellery	Client	HT	UG	10										
					UG	860	8,592	0.17								
					OH	905	8,592	0.50								
P24	RMU-30802, 28	RMU-30802, National Lodge	Client	HT	UG	49										
					UG	909	9,788	0.23								
					OH	887	9,788	0.64								
P26	27	Maheswari Appartment	Client	HT	UG	29										
					UG	880	4,201	0.04								
					OH	933	4,201	0.12								
	NET SUM							**72.99**		**9,608**		**401.92**				**7,799**

3.2 RAMANILAYAM FEEDER

Table 45: Loss analysis – Ramanilayam feeder

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/ transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/month	kWh/ Month	kWh/ month	kWh/ month	kWh /month	kWh/month	kVA	kW	kWh /month
S-S	P1	Post			UG	37										
P3	P4	Post			OH	202										
P4	1	Stadium West	Department	LT	OH	10										
					UG	62	2164	0.001			1761	0.03	1761	250	0.67	402
					OH	213	2164	0.01			1761	0.33				
P8	2, ABL51103	Stadium East	Department	LT	OH	189										
					UG	62	33796	0.14	27931	5,277	33207	77	33307	250	0.81	489
					OH	391	33796	2.53			33207	22				
ABL51103	G1	Ground			UG	-										
G1	23	Indoor Stadium	Client	HT	UG	10										
					UG	72	9795	0.02								
					OH	391	9795	0.28								
AB Ramanilayam	3	Ramanilayam	Department	LT	OH	33										
					UG	254	4700	0.01			4420	1	4420.79	150	0.47	279
					OH	570	4700	0.07								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/ transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted to consumer**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kWh/month**	**kVA**	**kW**	**kWh/month**
AB Pulimoottil	4	Pulimoottil	Client	HT	UG	38										
					UG	292	52139	0.70								
					OH	688	52139	4.71								
AB Chungath	11	Chungath Jewellery	Client	HT	UG	50										
					UG	50	11754	0.04								
					UG	254	11754	0.09								
					OH	749	11754	0.78								
AB Kaliyath	10	Kaliyath	Client	LT	UG	53										
					UG	53	10234	0.01			9569	1	9570.67	400	1.11	664
					UG	254	10234	0.11			9569	1				
					OH	749	10234	0.44								
AB-YMCA	8	YMCA	Client	HT	UG	70										
					UG	70	4334	0.01								
					UG	254	4334	0.01								
					OH	764	4334	0.11								
AB Chiriyan Kandath	12	Chiriyan Kandath	Client	LT	UG	46										
					UG	254	20964	0.22			20602	16	20618	200	0.58	346
					UG	46	20964	0.08								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/ transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/month	kWh/ Month	kWh/ month	kWh/ month	kWh/month	kWh/month	kVA	kW	kWh/month
					OH	761	20964	1.90								
AB-YMCA	9	Josco	Client	HT	UG	70										
					UG	70	1081	0.0004								
					UG	254	1081	0.001								
					OH	802	1081	0.01								
AB Kalyan	RMU3110 3, 14, 13	Kalyan Silks	Client	HT	UG	22										
					UG	22	107325	1.07								
					UG	254	107325	7.75								
					OH	802	107325	69.81								
G4	15	Vrindhavan Appartment	Client	LT	UG	62										
					UG	62	10450	0.03			10035	5	10040	250	0.68	410
					UG	254	10450	0.06								
					OH	833	10450	0.52								
AB Vrindhavan	P13-1, 25	AB Josco, AB Kalanikethan, Kalanikethan	Department	LT	OH	52										
					UG	254	17655	0.19	16987	331	17318	8	17326	160	0.55	329
					OH	885	17655	1.91								
G6	19	New Josco	Client	HT	UG	104										
					UG	104	26290	0.31								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/ transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/month	kWh/ Month	kWh/ month	kWh/ month	kWh/month	kWh/month	kVA	kW	kWh/month
					UG	254	26290	0.47								
					OH	885	26290	4.62								
P15	P16, 16	Swapana Theatre	Department	LT	OH	24										
					UG	254	23415	0.25	22386	578	22964	11	22975	250	0.73	440
					OH	981	23415	2.81								
AB Kollanur	24	Kollanur	Client	LT	UG	28										
					UG	28	14780	0.02			14435	39	14474	160	0.51	306
					UG	254	14780	0.11								
					OH	1,013	14780	1.25								
P18	21	Paremekkavu (Neeranjali)	Client	LT	OH	21										
					UG	254	18517	0.17			18050	39	18089	250	0.71	428
					OH	1,097	18517	2.13								
P18	AB Statue& Alukkas, 17	Statue	Department	LT	OH	37										
					UG	254	25413	0.30	22648	2,300	24947	19	24966	250	0.74	446
					OH	1,114	25413	3.69								
G9	20	Paramekavu Temple	Client	LT	UG	134										
					UG	389	5667	0.02			5262	1	5263	250	0.67	404
					OH	1,172	5667	0.21								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/ transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/month	kWh/ Month	kWh/ month	kWh/ month	kWh /month	kWh/month	kVA	kW	kWh /month
G12	18	Alukkas	Department	LT	UG	109										
					UG	363	43212	1.35	39293	3,154	42448	199	42681	250	0.89	531
					OH	1,114	43212	11.78			42448	34				
G9	28	Paramekavu SBI	Client	HT	UG	134										
					UG	134	14530	0.03								
					OH	472	14530	0.25								
RMU31102	27	Bharatiyar Vidhya Kendra	Client	HT	UG	148										
					UG	148	2919	0.002								
					UG	254	2919	0.002								
					OH	729	2919	0.02								
AB SNDP	RMU31101, 26	SNDP	Client	LT	UG	27										
					UG	27	2857	0.001			2579	1	2580	160	0.46	277
					UG	254	2857	0.004								
					OH	811	2857	0.04								
AB Legend	7	Capital Legend	Client	LT	UG	25										
					UG	25	1656	0.0003			1397	0.06	1397	100	0.43	259
					UG	254	1656	0.001								
					OH	943	1656	0.01								
G15	AB ESI, 5	ESI	Department	LT	UG	284										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/ transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted to consumer**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kWh/month**	**kVA**	**kW**	**kWh/month**
					UG	284	20597	0.49	19265	885	20149	12	20166	250	0.72	431
					UG	254	20597	0.21			20149	5				
					OH	685	20597	1.65								
AB Capital	22	Capital City	Client	LT	UG	41										
					UG	326	25435	0.85			24847	11	24858	315	0.96	577
					UG	254	25435	0.33								
					OH	728	25435	2.67								
AB Perincher	6	Perinchery	Client	LT	UG	68										
					UG	68	30013	0.20			29299	20	29319	400	1.16	695
					UG	284	30013	1.03								
					UG	254	30013	0.45								
					OH	718	30013	3.66								
	NET SUM									**12,524**		**523**				**7,713**

3.3 SHORNUR ROAD FEEDER

Table 46: Loss analysis – Shornur road feeder

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/ month	kWh/ Month	kWh/month	kWh/ month	kWh/ month	kWh/month	kVA	kW	kWh/ month
SS	2P	Post			UG	-										
ABL51502	RMU31501, 35	RMU31501, Bismi	Client	HT	UG	29										
					UG	155	31,809	0.38								
RMU31501	36	Bismi	Client	LT	UG	47										
					UG	202	902	0.0003			242	0.005	242	400	1.10	660
G3	RMU31502, 45	Pranavam Appartment	C/D	LT	UG	111										
					UG	266	21,396	0.24	19856.42	1015.65	20872	88	20960	250	0.73	436
RMU31503	46	Top Orchid Appartment	Client	LT	UG	116										
					UG	116	6,410	0.02			6128	1	6129	160	0.47	281
					UG	266	6,410	0.02								
G9	01	Sree Hari Appartments	Client	LT	UG	139										
					UG	264	1,588	0.001			1329	0.03	1330	100	0.43	259
					OH	36	1,588	0.001			1329	0.28				
AB-Sree	2	Sreelakshmi Silks	Client	LT	UG	53										
					UG	53	12,435	0.03			12090	30	12119	200	0.53	316

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
					UG	126	12,435	0.04								
					OH	76	12,435	0.07								
G6	03	Daffodils	Client	LT	UG	53										
					UG	53	3,312	0.002			3034	0.1	3034	160	0.46	277
					UG	126	3,312	0.003								
					OH	149	3,312	0.01								
AB-Rukmani2	26	Rukmani Temple Park	Client	LT	UG	48										
					UG	48	3,401	0.002			3100	0.1	3100	200	0.50	301
					UG	263	3,401	0.006								
					OH	144	3,401	0.01								
AB-Rukmai 1	P5, 4	Post, Karthayani	Department	LT	OH	43										
					UG	126	72,516	1.29	64418	7126.21	71544	176	71720	250	1.33	796
					OH	187	72,516	5.46								
P5	AB, 23	K.R Bakery	Department	LT	OH	17										
					UG	15										
					UG	141	40,115	0.44	35552	2868.35	38421	21	39396	500	1.20	719
					OH	204	40,115	1.82			38421	53				
											38421	901				
G12	5	Pazhoor Arcades	Client	LT	UG	65										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
					UG	65	6,384	0.01			6109	5	6115	100	0.45	269
					UG	126	6,384	0.01			6109	2				
					OH	187	6,384	0.04								
G13	21	Saraswathy	Client	LT	UG	50										
					UG	176	3,180	0.00			2771	1	2778	250	0.67	403
					OH	316	3,180	0.02			2771	0.05				
											2771	6				
P9	22	Unique Ardent	Department	LT	UG	28										
					UG	29	7,701	0.01	7130	146.53	7276	1	7295	250	0.68	406
					UG	126	7,701	0.01			7276	1				
					OH	442	7,701	0.15			7276	17				
RMU31504	49	Panikath Mall	Client	LT	UG	47										
					UG	47	22,054	0.07			21480	7	21487	315	0.95	567
					UG	136	22,054	0.13								
					OH	314	22,054	0.85								
P40	P41, 18	Post/Varnam	Department	LT	OH	172										
					UG	126	71,935	1.26	59961	11025.56	70987	91	71100	315	1.39	835
					OH	486	71,935	14			70987	22				
P42	19	Omega Panthlon	Client	LT	UG	43										
					UG	43	4,088	0.002			3785.8	0.2	3786	200	0.50	302

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
					UG	126	4,088	0.004								
					OH	500	4,088	0.05								
RMU31505	43	Prasad Arcade	Client	LT	UG	30										
					UG	159	9,891	0.03			9473	1	9482	250	0.68	409
					OH	521	9,891	0.28			9473	9				
RMU31506	48	CKM Heights	Client	LT	UG	85										
					UG	215	332	0.00005			74.0	0.0002	74	100	0.43	258
					OH	521	332	0.0003								
G50	20	Nandhanam	Client	LT	UG	312										
					UG	438	2,199	0.004			1922	0.36	1922	160	0.46	277
					OH	585	2,199	0.02			1922	0.02				
P38	6	Kasturi (Bhramasam Madam)	Client	LT	OH	46										
					UG	312	2,991	0.01			2730	1	2731	100	0.43	260
					OH	268	2,991	0.01								
G17	7	Sreepriya	Client	LT	UG	110										
					UG	422	3,185	0.01			2883	1	2884	200	0.50	301
					OH	222	3,185	0.01								
RMU31507	42	Thrissur Service Coperative Bank	Client	HT	UG	32										
					UG	32	5,198	0.003								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
					UG	333	5,198	0.02								
					OH	277	5,198	0.05								
AB-Krishna	51	Capital Krishna	Client	LT	UG	34										
					UG	34	2,758	0.001			2481	0.1	2481	160	0.46	277
					UG	312	2,758	0.005								
					OH	302	2,758	0.01								
P16	9	Forus Mathura	Client	LT	OH	3										
					UG	312	3,276	0.01			2998	1	2999	160	0.46	277
					OH	385	3,276	0.02								
AB-MRG	40	MRG Sree Valstam	Client	LT	UG	25										
					UG	25	6,927	0.005			6521	1	6522	250	0.68	405
					UG	480	6,927	0.04								
					OH	383	6,927	0.10								
AB-AR	27	A R Tower	Client	LT	UG	20										
					UG	20	5,464	0.002			5198	1	5199	100	0.44	265
					UG	312	5,464	0.02								
					OH	408	5,464	0.06								
P18	8	Krishna(Thiruvambadi-2)	Department	LT	OH	9										
					UG	312	4,580	0.01	4132	44.31	4176	0.3	4177	250	0.67	403
					OH	429	4,580	0.05			4176	0.1				
											4176	0.2				

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
P19	28	Friends Mall	Client	LT	OH	12										
					UG	312	2,356	0.003			1953	1	1954	250	0.67	402
					OH	470	2,356	0.01								
RMU31508	47	Oushadhi Panchakarma	Client	HT	UG	81										
					UG	393	11,638	0.13								
					OH	481	11,638	0.45								
P22	P23, 11	Oushadhi	Department	LT	OH	32										
					UG	312	45,352	1.27	40715	3841.47	44556	62	44693	315	1.10	659
					OH	635	45,352	7.40			44556	74				
G22	41	Top Tower	Client	LT	UG	146										
					UG	475	3,946	0.01			3644	0.4	3644	200	0.50	301
					OH	635	3,946	0.05								
RMU31510	44	Kalyan Hypermarket	Client	HT	UG	403										
					UG	1,055	84,795	18								
					OH	635	84,795	31								
P24	10	Thiruvambadi(Lekshmi)	Department	LT	OH	1										
					UG	654	81,161	9	63513	16422.19	79936	319	80254	250	1.51	906
					OH	636	81,161	24								
G28	24	Narayani	Client	LT	UG	101										
					UG	755	2,388	0.01			2111	0.1	2111	160	0.46	277

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
					OH	635	2,388	0.02								
P25	34	K.A Kumaran	Department	LT	OH	10										
					UG	312	15,313	0.15	14599	266.97	14866	20	14893	250	0.70	419
					OH	676	15,313	0.90			14866	7				
AB-Saroja	25	Saroja	Client	HT	UG	89										
					UG	401	23,597	0.54								
					OH	818	23,597	3.13								
P30	12	Suharsha	Client	LT	UG	26										
					UG	26	22,728	0.05			22027	22	22049	400	1.13	680
					UG	358	22,728	0.37								
					OH	990	22,728	2.90								
RMU31511	50	Coperative Hospital	Client	HT	UG	40										
					UG	485	36,537	1.56								
					OH	990	36,537	9.06								
AB-Coperative	13	Coperative Hospital	Department	LT	OH	2										
					UG	461	83,425	6	70796	11614.59	82410	153	82563	500	1.44	862
					OH	992	83,425	39								
AB-Athulya	16	Athulya Chundari	Client	LT	UG	33										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
					UG	596	4,277	0.02			3999	0.4	3999	160	0.46	278
					OH	1,018	4,277	0.11								
G39	LBS	LBS			UG	166										
LBS	14	City Centre 1	Client	LT	UG	3										
					UG	3	38,132	0.02					37336	800	1.33	796
					UG	729	38,132	2.10								
					OH	1,035	38,132	8.53								
LBS	15	City Centre 2	Client	LT	UG	12										
					UG	12	3,296	0.001			3019	0.2	3019	160	0.46	277
					UG	729	3,296	0.02								
					OH	1,035	3,296	0.06								
G41	39	Alukkas Nest	Client	LT	UG	159										
					UG	722	7,286	0.08			6950	1	6951	215	0.56	335
					OH	1,045	7,286	0.31								
ABL51506	33	Malabar Eye Clinic	Department	LT	OH	35										
					UG	563	13,332	0.18	12611	266.00	12877	1	12918	250	0.69	414
					OH	1,080	13,332	1.00			12877	3				
											12877	36				
AB-Shivam	17	Shivam			UG	42										
					UG	822	5,291	0.05			4887	0.2	4888	250	0.67	404
					OH	1,045	5,291	0.17								
P35	29	Ramdas Theatre	Client	HT	UG	36										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted to consumer	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/Month	kWh/month	kWh/Month	kWh/month	kWh/month	kWh/month	kWh/month	kVA	kW	kWh/month
					UG	846	16,051	0.52								
					OH	1,098	16,051	1.94								
AB-Pen	30	Peninsula	Client	HT	UG	129										
					UG	129	18,138	0.21								
					OH	1,101	18,138	2.48								
P36-1	31	Wintage Royal	Client	LT	UG	63										
					UG	63	7,074	0.01			6769	1	6769	200	0.51	305
					UG	810	7,074	0.08								
					OH	1,081	7,074	0.31								
P37	37	Top Heritage	Client	LT	UG	40										
					UG	40	2,101	0.00			1824	0.1	1824	160	0.46	276
					UG	810	2,101	0.01								
					OH	1,126	2,101	0.03								
P37-1	38	Forus Cosynest	Client	LT	UG	36										
					UG	36	3,407	0.00			3130	0.3	3130	160	0.46	277
					UG	810	3,407	0.02								
					OH	1,136	3,407	0.07								
		NET SUM								54638		2,138				17,829

3.4 CHEMBUKAVU FEEDER

Table 47: Loss analysis - Chembukavu

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Trasformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh / month
S-S	P1	Post			UG	30										
AB bb	1	Big Bazar	Client	HT	UG	53										
					UG	165	51,638	1.16								
					OH	9	51,638	0.19								
P3	RMU31 401, 2	Jawahar	Department	LT	UG	126										
					UG	492	52,328	2.67	49,943	1,562	51,506	171	51,717	250	1.02	611
G31	Asset Galleria	Asset Galleria(new TR)			UG	104										
					UG	715										
G7	11	Swathy Residency	Client	LT	UG	84										
					UG	84	5,339	0.01								
					UG	119	5,339	0.01			4,934	1	4,936	250	0.67	404
AB KSFE	15	KSFE	Client	HT	UG	27										
					UG	27	11,817	0.01								
					UG	874	11,817	0.32								
					OH	111	11,817	0.12								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kVA**	**kW**	**KWh / month**
AB Central Hotel	10	Central Hotel	Client	HT	UG	54										
					UG	54	12,964	0.03								
					UG	874	12,964	0.39								
					OH	245	12,964	0.31								
RMU31402	13	Agro	C/D	LT	UG	145										
					UG	1,019	47,131	4.49	38,573	7,828	46,401	159	46,560	250	0.95	572
					OH	182	47,131	2.29								
G15	4, 5	Exchange 1& 2	Client	HT	UG	244										
					UG	244	82,389	5.40								
					UG	874	82,389	15.70								
					OH	411	82,389	21.06								
P10	9	Museum	Department	LT	OH	19										
					UG	874	64,725	7.27	45,471	18,129	63,601	299	63,942	315	1.31	784
					OH	429	64,725	10.19			63,601	42				
G21	G22, 3	Co-operative Road	Department	LT	UG	209										
					UG	1,084	32,759	2.31	27,724	4,573	32,297	35	32,332	160	0.71	427
					OH	714	32,759	4.34								
P11	P12, 14	Mana Line	Department	LT	OH	117										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh / month
					UG	874	24,085	1.01	22,311	1,403	23,714	14	23,727	160	0.60	357
					OH	831	24,085	2.73								
G24	6	Sougandhika	Client	LT	UG	54										
					UG	933	1,283	0.003			1,024	0	1,025	100	0.43	258
					OH	847	1,283	0.01								
AB Navani	12	Navani Holy View	Client	LT	UG	36										
					UG	36	3,739	0.00								
					UG	874	3,739	0.02			3,334	2	3,337	250	0.67	403
					OH	1,026	3,739	0.08								
AB KMP	30	KMP Swapnapuri	Client	LT	UG	35										
					UG	35	2,979	0.00								
					UG	874	2,979	0.02			2,702	0.3	2,702	160	0.46	277
					OH	1,120	2,979	0.06								
AB Caza	7	Cheloor Cazeblanka	Client	LT	UG	44										
					UG	44	3,984	0.00								
					UG	874	3,984	0.03			3,705	0.3	3,706	160	0.46	278
					OH	882	3,984	0.08								
P17	P18, 8	Southern	Department	LT	OH	69										
					UG	874	28,789	1.44	24,565	3,742	28,307	18	28,325	250	0.77	465
					OH	935	28,789	4.39								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kVA**	**kW**	**KWh / month**
RMU31403	16	Divya Ram Hospital (Atreya)	Client	HT	UG	61										
					UG	935	59,536	8.77								
					OH	1,181	59,536	31.61								
AB Bishop Palace	RMU 31404, 28	Bishop Palace	Client	HT	UG	27										
					UG	903	13,707	0.45								
					OH	1,316	13,707	1.87								
ABL51406	AB BP, 17	Bishop Palace	Department	LT	OH	151										
					UG	874	50,269	4.38	46,754	2,738	49,492	90	49,583	315	1.14	686
					OH	1,467	50,269	21.01								
P20	18	Kings fort	Department	LT	OH	14										
					UG	874	9,365	0.15	8,851	98	8,949	7	8,957	250	0.68	408
					OH	1,514	9,365	0.75								
					OH	14	9,365	0.00								
AB Sky Line	23	Skyline Garland	Client	LT	UG	64										
					UG	939	9,899	0.18			9,275	4	9,278	500	1.03	620
					OH	1,852	9,899	1.03								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kVA**	**kW**	**KWh / month**
P24	AB Soda varky, 20	Soda varky	Department	LT	OH	43										
					UG	874	50,376	4.40	43,721	5,986	49,707	73	49,780	250	0.99	596
					OH	1,895	50,376	27.24								
P25	21	Sarayu Apartment	Department	LT	OH	44										
					UG	874	33,040	1.89	29,652	2,753	32,405	23	32,555	250	0.81	485
					OH	1,971	33,040	12.19			32,405	127				
G26	24	Kollanur Oriental	Client	LT	UG	81										
					UG	956	6,776	0.09			6,471	1	6,472	200	0.51	305
					OH	2,103	6,776	0.55								
P31	ABI50409, 22	Panmukkumpilly Sastha Temple	Department	LT	OH	34										
					UG	874	37,296	2.41	34,515	2,238	36,753	25	36,789	250	0.85	508
					OH	2,264	37,296	17.84			36,753	10				
AB CTR	19	Cheloor Tudoor Rose	Client	LT	UG	27										
					UG	901	3,542	0.02			3,264	0.3	3,264	160	0.46	278
					OH	1,761	3,542	0.13								
AB Gayathri	26	Gayathri Apartment	Client	LT	UG	27										
					UG	901	4,980	0.04			4,576	1	4,576	250	0.67	404

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kVA**	**kW**	**KWh / month**
					OH	1,835	4,980	0.26								
P36	25	Keeramkulangara	Department	LT	OH	66										
					UG	874	15,963	0.44	15,205	434	15,640	2	15,651	160	0.52	311
					OH	1,895	15,963	2.74			15,640	9				
G27	27	Sreyas Apartment	Client	LT	UG	58										
					UG	932	5,505	0.06			5,101	1	5,101	250	0.67	404
					OH	1,751	5,505	0.30								
RMU31405	29	Forus Apartment	Client	LT	UG	330										
					UG	1,240	3,140	0.02			2,839	0.1	2,839	200	0.50	301
					OH	1,748	3,140	0.10								
	NET SUM							**229.06**		**51,485**		**1,156**				**10,142**

3.5 JUBILEE MISSION COLLEGE FEEDER

Table 48: Loss analysis – JMC

Mapping details					Up to Transformer primary or HT metering			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**
						m	**kWh/ Month**	**kWh/month**
SS		Substation feeder			UG	10		
G17	01, 02 - Jubilee Mission	Jubilee Mission	Client	HT	UG	2811		
					UG	2821	6,76,494	3,416
			NET SUM					**3,416**

3.6 VIVEKODHAYAM FEEDER

Table 49: Loss analysis – Vivekodhayam

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
SS		Substation														
P29	24	Aquatic(Sai)	Department	LT	OH	8										
					UG	81	36,167	0.21	29,102	6,365	35,468	198	35,666	250	0.84	502
					OH	100	36,167	0.74								
LBS	01,02	Aswani Hospital	Client	HT	UG	40										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	KWh/ month
					UG	40	1,05,173	1.76								
					UG	122	1,05,173	2.68								
					OH	92	1,05,173	5.77								
G3	15	SG Complex	Client	HT	UG	18										
					UG	18	5,617	0.001								
					UG	81	5,617	0.01								
					OH	444	5,617	0.08								
G4	3	Govind Appartment	Client	LT	UG	24										
					UG	24	4,301	0.001			3,999	0.35	4,000	200	0.50	302
					UG	81	4,301	0.003								
					OH	446	4,301	0.047								
P6	AB1,P32, P32'29	Swimming Pool TR	Department	LT	OH	49										
					UG	81	55,930	0.500	44,982	10,138	55,121	168	55,289	250	1.07	641
					OH	289	55,930	5.129								
RMU1	28	Silver Roxx	Client	LT	UG	11										
					UG	11	13,047	0.005			12,727	2.43	12,729	200	0.53	318
					UG	167	13,047	0.056								
					OH	339	13,047	0.327								
P33	14	Kalindi	Client	LT	UG	57										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	KWh/ month
					UG	137	8,758	0.021			8,212	2.02	8,214	315	0.91	544
					OH	403	8,758	0.175								
G19	4	Bhima	Client	HT	UG	62										
					UG	386	12,842	0.126								
					OH	339	12,842	0.316								
P35	5	Vanvita	Client	HT	UG	31										
					UG	355	20,798	0.305								
					OH	514	20,798	1.260								
P10	6	Capital Manner	Department	LT	OH	7										
					UG	570	56,588	3.619	46,294	9,396	55,690	251	55,941	250	1.08	647
					OH	601	56,588	10.908								
P37	11	Sree Krishna Appartment	Client	LT	UG	108										
					UG	678	7,524	0.076			7,116	1.72	7,118	250	0.68	406
					OH	878	7,524	0.282								
P15	P38,07	AB-Souparnika, Souparnika	Department	LT	OH	4										
					UG	570	70,851	5.674	57,087	12,247	69,334	685	70,019	315	1.39	832
					OH	720	70,851	20.476								
G12	RMU2, 16	RMU30702, Mukundha Appartment	Client	LT	UG	48										
					UG	831	3,527	0.021			3,249	0.77	3,250	160	0.46	278
					OH	733	3,527	0.052								
P39	8	Satyam	Client	LT	UG	48										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	KWh/ month
					UG	918	7,662	0.107			7,378	0.66	7,379	160	0.47	284
					OH	733	7,662	0.244								
LBS	12	Shivam	Client	LT	UG	39										
					UG	910	4,339	0.034			4,060	0.40	4,060	160	0.46	278
					OH	733	4,339	0.078								
P40	9	Sree Hari	Client	LT	UG	32										
					UG	32	3,310	0.001			3,032	0.22	3,032	160	0.46	277
					UG	783	3,310	0.017								
					OH	845	3,310	0.052								
P20 -1	13	Mannath Lane(NP Tower)	Department	LT	OH	7										
					UG	783	20,598	0.659	18,823	1,331	20,155	9.00	20,164	250	0.72	434
					OH	1,052	20,598	2.528								
P41	10	Ambika Arcades	Client	LT	UG	61										
					UG	844	11,132	0.207			10,717	3.90	10,721	250	0.69	411
					OH	1,088	11,132	0.764								
P27	P45, 23	AB-Music Park, Music Park	Department	LT	OH	7										
					UG	783	53,141	4.387	42,945	9,241	52,186	251	52,438	315	1.17	704
					OH	1,113	53,141	17.814								
G19 -1	25	Anamya Tower	Client	LT	UG	52										
					UG	835	7,662	0.10			7,254	1.91	7,256	250	0.68	406
					OH	1,113	7,662	0.37								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
P27	P28, 26	Post, Karuvan	Department	LT	OH	74										
					UG	783	46,222	3.32	38,165	7,298	45,463	95	45,558	315	1.11	664
					OH	1,180	46,222	14.28								
G28-1	RMU4, 30	RMU30703, Brahmasam Madom	Client	HT	UG	49										
					UG	831	26,803	1.19								
					OH	1,180	26,803	4.80								
P47	22	Capital Heritage	Client	LT	UG	27										
					UG	848	4,726	0.04			4,447	0.30	4,447	160	0.46	279
					OH	1,147	4,726	0.15								
G21	21	Temple Tree	Client	LT	UG	88										
					UG	941	6,177	0.07			5,772	0.20	5,772	250	0.67	405
					OH	1,147	6,177	0.25								
P50	19	Karthiayini	Client	LT	UG	124										
					UG	124	4,601	0.01			4,320	2.12	4,322	160	0.46	279
					UG	853	4,601	0.04								
					OH	1,162	4,601	0.14								
P51	20	Leo Enterprises	Client	HT	UG	50										
					UG	1,104	10,608	0.25								
					OH	1,147	10,608	0.73								
P52	18	Cochin Hall Mark	Client	HT	UG	21										
					UG	1,075	5,709	0.07								
					OH	1,147	5,709	0.21								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	KWh/ month
					ABC	23	5,709	0.00								
G18-1	RMU5, 17	RMU30704, Thiruvambadi Devasm	Client	HT	UG	337										
					UG	1,191	9,070	0.19								
					OH	1,162	9,070	0.54								
RMU5	27	Vrindavan Hotel	Client	HT	UG	51										
					UG	1,241	7,373	0.13								
					OH	1,162	7,373	0.36								
		SUM						**115**		**56,016**		**1,676**				**8,889**

3.7 VELIYANOOR FEEDER

Table 50: Loss analysis – Veliyanoor

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/month	kWh/ month	kVA	kW	KWh/ month
S-S	P1	Post			UG	60										
P2	1	Assay Hall Marking	Department	LT	OH	27										
					UG	60	10,485	0.01	9,885	306	10,191	1.15	10,194	160	0.48	291
					OH	34	10,485	0.02			10,191	2.53				
P1	P3, 21	Airtel Tower	Department	LT	OH	20										
					UG	60	43,943	0.23	40,759	2,601	43,360	33.85	43,394	250	0.92	549
					OH	20	43,943	0.22								
P24	2	Manorama	Client	HT	UG	55										
					UG	115	19,950	0.09								
					OH	41	19,950	0.09								
G14	22	Chicago	Client	LT	UG	128										
					UG	188	20,188	0.15			19,507	5.71	19,513	400	1.13	675
					OH	8	20,188	0.02								
P25	3	C J Tower	Department	LT	OH	24										
					UG	60	21,591	0.06			21,098	49.32	21,154	250	0.73	437
					OH	144	21,591	0.38			21,098	6.68				

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/month	kWh/ month	kVA	kW	KWh/ month
P27	AB Sakthan, 4	Sakthan Market	Department	LT	OH	30										
					UG	396	35,892	1.01	30,567	4,681	35,248	29.83	35,278	315	1.02	614
					OH	264	35,892	1.93								
RMU30206	26	Edu Mart	Client	HT	UG	32										
					UG	32	29,812	0.07								
					UG	401	29,812	0.71								
					OH	264	29,812	1.33								
RMU30202	14	Latin Palli	Department	LT	UG	324										
					UG	735	84,676	10.45	63,317	20,087	83,404	321.18	83,725	250	1.58	951
					OH	234	84,676	9.50								
G20	RMU30203, 24	Vivid Press	Client	LT	UG	219										
					UG	954	5,555	0.06			5,288	0.46	5,289	100	0.44	266
					OH	234	5,555	0.04								
G32	RMU30205, 25	Sakunthala	Client	HT	UG	142										
					UG	1,365	19,812	1.06								
					OH	234	19,812	0.52								
AB OWC	20	OWC Plant	Department	LT	OH	4										
					UG	583	35,735	1.48	30,836	4,050	34,886	168.57	35,236	250	0.83	499

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/month	kWh/ month	kVA	kW	KWh/ month
					OH	305	35,735	2.21			34,886	8.85				
											34,886	172.78				
RMU30208	27	Office of commissioner of Police	Client	HT	UG	466										
					UG	1,103	9,089	0.18								
					OH	301	9,089	0.14								
P6	ABL50204, 05	Ramanchiramadom	Department	LT	OH	241										
					UG	636	50,194	3.18	41,389	8,047	49,436	45.13	49,599	250	0.99	595
					OH	541	50,194	7.73			49,436	118.48				
P8	13	Hari Sree Appartment	Client	LT	OH	3										
					UG	736	1,678	0.00			1,402	0.02	1,402	160	0.46	276
					OH	544	1,678	0.01			1,402	0.04				
G10	ABL50207, 7	Rashtra Deepika	Department	LT	UG	322										
					UG	1,058	42,408	3.78	36,721	5,067	41,788	80.42	41,868	250	0.90	539
					OH	541	42,408	5.52								
RMU30209	16	Rastra Deepika Press	Client	HT	UG	7										
					UG	7	9,866									

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/month	kWh/ month	kVA	kW	KWh/ month
					UG	1,066	9,866	0.21								
					OH	541	9,866	0.30								
AB Joy	8	Joy palace	Client	HT	UG	30										
					UG	30	84,205									
					UG	1,058	84,205	14.89								
					OH	569	84,205	22.87								
P20	9	MRG Flat	Client	LT	OH	12										
					UG	1,058	2,201	0.01			1,799	0.02	1,799	250	0.67	402
					OH	605	2,201	0.02			1,799	0.11				
RMU30 210	23	New Jwala Diamond Jewellery	Client	LT	UG	146										
					UG	1,205	7,203	0.12			6,916	4.64	6,920	160	0.47	283
					OH	666	7,203	0.20								
G13	10	inland	Client	LT	UG	40										
					UG	40	7,189	0.01			6,641	5.35	6,646	315	0.90	543
					UG	1,058	7,189	0.11								
					OH	673	7,189	0.20								
AB PPY	15	P P Yohanan	Client		UG	(Not connected)										
					UG	-	402	0.00				-	-	250	0.67	402
					UG	636	402	0.00				-				
					OH	685	402	0.00								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/month	kWh/ month	kVA	kW	KWh/ month
G6	AB 11	Jwala Diamond	Department	LT	UG	78										
					UG	731	34,305	1.71	27,877	5,841	33,718	44.09	33,813	250	0.82	492
					OH	710	34,305	4.73			33,718	51.02				
AB Malabar	12	Malabar Tower	Client	LT	UG	60										
					UG	60	7,218	0.01			6,811	1.12	6,812	250	0.68	406
					UG	653	7,218	0.07								
					OH	849	7,218	0.25								
AB Em	18, 19	Emerald 1	Client	HT	UG	14										
					UG	667	12,353	0.20								
					OH	876	12,353	0.76								
AB Em	18, 19	Emerald 2	Client	LT	UG	14										
					UG	28	291	0.000005			15	0.000004	15	160	0.46	276
					OH	1,682	291	0.001								
AB Mani	6	Manichitra Arcades	Client	LT	UG	44										
					UG	680	1,879	0.005			1,578	0.23	1,579	200	0.50	300
					OH	704	1,879	0.01								
AB EMK	17	EMKE Silks	Client	HT	UG	80										
					UG	716	96,749	13.30								
					OH	729	96,749	38.68								
		NET SUM						**150.82**		**50,680**		**1,151.59**				**8,797**

3.8 EAST FORT FEEDER

Table 51: Loss analysis – East Fort

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	KWh/ month
SS	2P	Substation feeder			UG	25										
G12	RMU1/ 22	RMU31708, East Avenue	Client	LT	UG	94										
					UG	2,729	4,701	0.12			4,422	1	4,423	160	0.46	279
					OH	74	4,701	0.01								
G13	RMU2/ 15	RMU31709, Navya Bakery	Client	HT	UG	58										
					UG	2,786	5,734	0.18								
					OH	74	5,734	0.01								
ABL51705	10	Sun Tower	Client	LT	UG	28										
					UG	2,663	27,650	4.04			26,714	173	26,887	630	1.27	763
					OH	99	27,650	0.43								
ABL51705	32	E P Jose Commercial	Distribution	LT	OH	13										
					UG	2,635	60,537	19.16	50,239	9,484	59,723	132	59,855	250	1.14	683
					OH	113	60,537	2.34								
P16	27	Selex Mall (KFC)	Client	HT	UG	10										
					UG	10	13,469	0.01								
					UG	2,792	13,469	1.01								
					OH	99										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
	28	Selex Mall (Common)	Client	HT	UG	10										
					UG	10	83,375	0.10								
					UG	2,792	83,375	38.52								
					OH	99	83,375	3.92								
	29	Selex Mall LT Connection	Client	LT	UG	20										
					UG	20	42,658	0.05			41,863	64	41,927	400	1.22	731
					UG	2,792	42,658	28.79								
					OH	99	42,658	0.36								
G11	11	Sindhooram Appartment	Client	LT	UG	137										
					UG	2,772	3,911	0.08			3,633	0.1	3,633	160	0.46	278
					OH	225	3,911	0.02								
P11	1	Thomson Casa	Distribution	LT	UG	13										
					UG	2,649	32,898	5.69	29,613	2,746	32,360	110	32,470	160	0.71	428
					OH	262	32,898	1.61								
P11	P12, 12	Pallikulam	Distribution	LT	OH	141										
					UG	2,635	20,651	2.23	17,880	2,403	20,283	5	20,315	160	0.56	336
					OH	403	20,651	0.97			20,283	12				
P13	P23,33	AB-, Chaldian	Distribution	LT	OH	4										
					UG	2,635	68,497	24.53	53,788	13,590	67,377	307	67,684	315	1.35	813
					OH	483	68,497	12.84								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
P13-1	34	Brothers Lane	Distribution	LT	OH	86										
					UG	2,635	47,959	12.03	37,027	10,304	47,331	50	47,381	250	0.96	578
					OH	565	47,959	7.37								
P14	P14-1, 13	Sakthan Tower	Distribution	LT	OH	190										
					UG	2,635	3,360	0.06	3,051	47	3,098	1	3,099	100	0.43	261
					OH	670	3,360	0.04								
P15	P15-1, 14	Post/Puthenpally	Distribution	LT	OH	134										
					UG	2,635	15,148	1.20	13,771	950	14,721	8	14,729	250	0.70	419
					OH	896	15,148	1.16								
P15-1	RMU7,17	RMU31707,P I Babu	Distribution	LT	UG	24										
					UG	2,660	65,962	22.96	50,623	14,445	65,068	159	65,227	250	1.23	735
					OH	896	65,962	22.09								
P5	AB4/04	ABL51704/Spoon (City Castle)	Distribution	LT	OH	41										
					UG	2,635	85,654	38.36	63,765	20,372	84,138	549	84,687	315	1.61	967
					OH	115	85,654	4.80								
G9	Reliance(HT)	Reliance Super market	Client	HT	UG	10										
					UG	2,645	34,363	6.20								
					OH	115	34,363	0.77								
G9	6,5	Reliance-1(City Palace-1)	Client	LT	UG	100										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
					UG	2,736	8,046	0.35			7,502	1	7,503	315	0.91	543
					OH	115	8,046	0.04								
G9	6,5	Reliance-2(City Palace-2)	Client	LT	UG	100										
					UG	2,736	5,072	0.14			4,531	0.4	4,531	315	0.90	541
					OH	115	5,072	0.02								
P7	P21, 24	AB- Fort Street, Fort Street	Client	LT	OH	19										
					UG	2,635	23,064	2.78			22,475	18	22,494	315	0.95	570
					OH	189	23,064	0.57								
P21	7	Fort City	Distribution	LT	OH	29										
					UG	2,635	6,570	0.23	6,091	198	6,289	0.2	6,289	160	0.47	282
					OH	217	6,570	0.05			6,289					
P17	8	Bharathakshemam	Client	LT	UG	72										
					UG	2,707	3,971	0.08			3,670	0.3	3,670	200	0.50	301
					OH	292	3,971	0.03								
P18	9	Emmatty Tower	Client	LT	UG	26										
					UG	26	14,188	0.01			13,519	2	13,521	400	1.11	667
					UG	2,635	14,188	1.05								
					OH	494	14,188	0.56								
RMU3	16	Candela Appartment	Client	LT	UG	37										
					UG	37	12,418	0.02			11,732	5	11,736	500	1.14	682
					UG	2,635	12,418	0.81								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
					OH	500	12,418	0.44								
P20	25	St-Thomas College	Client	HT	UG	16										
					UG	2,651	6,873	0.25								
					OH	653	6,873	0.17								
AB St-Thomas	26/ABI 51604	Iyyunni	Distribution	LT	OH	28										
					UG	2,635	78,412	32.15	64,437	13,003	77,440	99	77,539	250	1.45	873
					OH	681	78,412	23.71								
P22	2	Seemas	Client	HT	UG	54										
					UG	2,689	19,703	2.07								
					OH	125	19,703	0.27								
P10	23	Kings Way Project	Client	LT	UG	90										
					UG	2,726	6,507	0.23			6,237	1	6,238	100	0.45	269
					OH	141	6,507	0.03								
ABL 51708	3	Honest Bakery	Distribution	LT	OH	20										
					UG	167	29,962	0.30	25,335	4,020	29,354	16	29,370	315	0.99	591
					OH	2,635	29,962	13.40								
ABL 51708	RMU4, 20	RMU31703, Angelic Tower	Client	LT	UG	81										
					UG	2,716	52,176	14.67			51,184	236	51,479	315	1.16	698
					OH	148	52,176	2.28			51,184	59				
G10	RMU5, 19	RMU 31704, Lorde Pally	Client	HT	UG	200										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
					UG	2,835	12,473	0.88								
					OH	148	12,473	0.13								
RMU6	18	East Fort Tower	Client	LT	UG	111										
					UG	2,947	2,879	0.05			2,578	0.10	2,578	200	0.50	301
					OH	148	2,879	0.01								
RMU8	30/31	E Forts Unlimited(HT), E Forts(LT)	Client	HT, LT	UG	73										
					UG	73	26,735	0.21			8,201	2	26,359	200	0.63	375
					UG	2,760	26,735	3.91								
					OH	245	26,735	0.99								
RMU9	21	Rappai & Sons	Client	LT	UG	305										
					UG	2,991	5,730	0.19			5,325	1	5,326	250	0.67	404
					OH	245	5,730	0.05								
		Net Sum						**367**		**91,562**		**2,027**				**14,368**

3.9 KERALAVARMA FEEDER

Table 52: Loss analysis – Keralavarma

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	KWh/ month
	S-S	Substation														
ABL51003	1	Omega	Client	LT	UG	35										
					OH	28	3,471	0.002			3,140	0.48	3,140	200	0.55	331
					UG	2,225	3,471	0.05								
					UG	35	3,471	0.001								
P3-2	2	CIDBI	Client	LT	UG	73										
					OH	32	7,489	0.01			6,825	2.45	6,827	400	1.10	662
					UG	2,246	7,489	0.25								
					UG	73	7,489	0.01								
P3-3	3	Sreesankari	Department	LT	UG	52										
					OH	32	3,828	0.001	3,456	93	3,549	0.12	3,550	160	0.46	278
					UG	2,294	3,828	0.19			3,549	0.61				
					UG	52	3,828	0.002								
P5	RMU,37	Zudio	Client	LT	UG	25										
					OH	161	12,791	0.15			12,200	42.26	12,242	315	0.91	549
					UG	2,086	12,791	0.68								
					UG	25	12,791	0.01								
RMU TM	TM Tower	T M Tower	Client	LT	UG	66										
					OH	161	15,667	0.22			15,352	5.30	15,357	160	0.52	310

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
					UG	2,152	15,667	1.05								
P6	RMU31 003,34	MC TOWER	Client	LT	UG	50										
					OH	204	40,072	1.86			39,272	92.57	39,440	315	1.05	633
					UG	2,136	40,072	6.80			39,272	74.77				
P7-1	4	CA arcade	Client	LT	UG	36										
					OH	311	5,232	0.05			4,952	1.10	4,953	160	0.47	280
					UG	2,086	5,232	0.11								
					UG	36	5,232	0.002								
ABL510 04	25	falkland	Client	LT	UG	61										
					OH	348	11,501	0.26			11,083	5.81	11,089	250	0.69	412
					UG	2,146	11,501	0.56								
RMU31 004	27	chirang Apartment	Client	LT	UG	59										
					OH	370	6,392	0.09			6,058	0.41	6,058	200	0.56	334
					UG	2,145	6,392	0.17								
P10-2	5	Coral Apartment	Client	LT	UG	19										
					OH	484	6,368	0.11			5,825	0.82	5,826	315	0.90	542
					UG	2,123	6,368	0.17								
					UG	19	6,368	0.002								
P10	P11,6	Kerala Varma Bus stop	Department	LT	OH	31										
					OH	501	59,394	3.51	49,450	9,189	58,639	83	58,722	250	1.12	672
					UG	2,086	59,394	41.69								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
RMU31005	31	Palaise Grande App	Client	LT	UG	74										
					OH	719	4,283	0.07			3,878	0.14	3,880	250	0.67	403
					UG	2,101	4,283	0.08			3,878	2.35				
					UG	74	4,283	0.01								
P13	7	Kerala Varma Hostel	Department	LT	OH	132										
					OH	851	77,515	10.15	64,554	11,745	76,299	64.51	76,625	315	1.48	890
					UG	2,086	77,515	71.00			76,299	262				
P16-1	9	Temple Tower	Client	LT	UG	62										
					OH	1,077	3,803	0.09			3,400	0.26	3,400	250	0.67	403
					UG	2,086	3,803	0.06								
					UG	62	3,803	0.003								
P19	10	Mahamaya App	Client	LT	OH	4										
					OH	1,238	1,994	0.03			1,734	0.46	1,735	100	0.43	259
					UG	2,086	1,994	0.02								
ABL57007	11	Sreedurga App	Department	LT	UG	143										
					OH	1,254	2,443	0.01	2,140	43	2,183	0.72	2,183	100	0.43	259
					UG	2,229	2,443	0.08								
P20-1	12	Blue Hills	Client	LT	UG	32										
					OH	1,318	1,813	0.02			1,554	0.06	1,554	100	0.43	259
					UG	2,124	1,813	0.01								
					UG	32	1,813	0.0003								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
7	RMU31 006, 30	Capital Green App	Client	LT	UG	104										
					OH	851	15,055	1.09			14,386	0.93	14,387	400	1.11	668
					UG	2,190	15,055	0.99								
RMU31 007	32	Forus	Client	LT	UG	30										
					OH	851	3,758	0.07			3,480	0.15	3,480	160	0.46	278
					UG	2,250	3,758	0.06								
					UG	30	3,758	0.002								
G23	ABL510 09, 08	Kerala Varma	Client	LT	UG	442										
					OH	851	67,504	21.98			66,429	57.05	66,753	250	1.25	751
					UG	2,528	67,504	22.85			66,429	267				
G31	22	Chungam	Department	LT	UG	804										
					OH	851	44,014	3.27	35,740	7,600	43,340	17.34	43,464	250	0.92	550
					UG	3,332	44,014	36.57			43,340	107				
P21	35	Model Road	Department	LT	OH	286										
					OH	1,137	17,526	0.69	15,335	1,841	17,177	1.09	17,181	100	0.58	345
					UG	3,332	17,526	5.80			17,177	3.58				
G32	21	Central Park	Client	LT	UG	70										
					OH	1,137	11,650	0.87			11,296	9.54	11,306	200	0.57	344
					UG	3,402	11,650	0.92								
P26	13	NP Tower	Department	LT	OH	24										
					OH	770	52,191	4.16	42,933	8,081	51,014	48.06	51,493	315	1.16	698

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/month	kVA	kW	KWh/ month
					UG	2,086	52,191	32.19			51,014	431				
P27-1	15	Capital Symphony	Client	LT	UG	36										
					OH	834	4,443	0.09			4,110	0.82	4,111	200	0.55	332
					UG	2,122	4,443	0.08								
P28	14	Bhadra App	Client	LT	UG	52										
					OH	867	4,109	0.08			3,831	-	3,831	160	0.46	278
					UG	2,086	4,109	0.07								
					UG	52	4,109	0.004								
ABL51015	24	Bindhu Theatre	Department	LT	UG	112										
					OH	687	24,157	0.80	20,528	3,167	23,695	15.55	23,711	250	0.74	446
					UG	2,198	24,157	7.27								
RMU31008	33	Ansari Complex	Client	LT	UG	40										
					OH	687	12,627	0.62			12,209	4.13	12,214	250	0.69	414
					UG	2,248	12,627	0.71								
P29-1	16	Westfort Hospital	Client	HT	UG	33										
					OH	687	48,262	12.09								
					UG	28	48,262	0.43								
					UG	2,318	48,262	14.28								
P30	17	Haya Tower	Client	LT	UG	53										
					OH	760	7,994	0.28			7,330	1.56	7,332	400	1.10	662
					UG	2,338	7,994	0.30								
P32-1	29	Jyothi Tower	Client	LT	UG	36										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
					OH	879	10,676	0.57			10,260	5.10	10,265	250	0.68	410
					UG	2,321	10,676	0.52								
P33	18	Westfort	Department	LT	OH	50										
					OH	914	66,712	8.07	54,032	11,885	65,916	52.66	65,969	250	1.24	743
					UG	2,285	66,712	57.62								
RMU31 009	26	PV Arcade	Client	LT	UG	148										
					OH	977	6,025	0.20			5,689	2.42	5,692	200	0.56	334
					UG	2,448	6,025	0.18								
P34-2	23	TipTop	Client	HT	UG	36										
					OH	985	14,694	1.20								
					UG	2,285	14,694	0.98								
					UG	36	14,694	0.02								
P42	19	Calvary	Department	LT	OH	423										
					OH	1,400	1,07,900	32.34	87,218	19,057	1,06,275	334	1,06,608	250	2.15	1,292
					UG	2,285	1,07,900	150.72								
P38	20	Westfort Tower	Client	LT	UG	28										
					OH	1,064	13,000	1.02			12,446	4.51	12,450	315	0.92	549
					UG	2,285	13,000	0.77								
					UG	28	13,000	0.02								
RMU31 010	28	Chowallur Tower	Client	LT	UG	64										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/ Month**	**kWh/ month**	**kWh/ month**	**kWh/ month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
					OH	1,064	5,361	0.17			4,700	0.20	4,701	400	1.10	661
					UG	2,395	5,361	0.14								
RMU31011	36	Puthenpurakal Tower	Client	LT	UG	72										
					OH	1,064	3,429	0.07			3,151	0.60	3,152	160	0.46	277
					UG	2,403	3,429	0.06								
			NET SUM					**563**		**72,701**		**2,005**				**17,506**

3.10 MISSION QUARTERS FEEDER

Table 53: Loss analysis – Mission Quarters

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh/ month
	SS	Substation			UG											
G6	25	Millenium Kuries	Client	LT	UG	189										
					UG	208	10050	0.04			9,759	1.15	9,760	160	0.48	290
					OH	3	10050	0.00								
RMU2	27	Alice Legacy	Client	LT	UG	60										
					UG	641	8136	0.08			7,472	1.41	7,473	400	1.10	662
					OH	0	8136	0.00								
RMU2	11	Sky Tower	Client	LT	UG	200										
					UG	789	6967	0.08			6,683	0.87	6,684	160	0.47	282
					OH	0	6967	0.00								
AB2	AB3,02(D)	ABI50103, Fathima Nagar, (ABFN)	Department	LT	OH	53										
					UG	913	70589	9.03	57,202	12,296	69498	50.73	69,759	315	1.38	830
					OH	53	70589	1.50			69498	210.74				
AB5	1	Navani Heights(C)	Client	LT	UG	25										
					UG	938	7756	0.11			7,203	9.34	7,212	315	0.91	543
					OH	119	7756	0.04								
AB6	21 (c)	Navani Garden	Client	LT	UG	31										
					UG	31	7659	0.00			7,111	4.67	7,116	315	0.91	543
					UG	913	7659	0.11								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh/ month
					OH	158	7659	0.05								
AB7	RMU4,31	RMU 30104, Jos Alukkas HT 160kVA	Client	HT	UG	39										
					UG	39	12,370	0.004								
					UG	913	12370	0.123								
					OH	29	12370	0.011								
AB8	3	Muttichuokaran (C/D) 250	C/D	LT	OH	70										
					UG	913	38873	2.74	30,977	7,212	38189	4.38	38,356	250	0.86	517
					OH	279	38873	2.39			38189	21.55				
											38189	141.40				
P7	AB9, AB10, 04	ABL50105, AB joy, Kallu Shapp (D) 250	Department	LT	OH	142										
					UG	913	60799	6.70	49,270	10,643	59913	86.18	60,114	250	1.14	685
					OH	350	60799	7.34			59913	60.91				
											59913	53.86				
RMU5	28	RMU30105, Joy Alukkas HT 315kVA	Client	HT	UG	122.11										
					UG	1036	24,345	0.541								
					OH	350	24345	0.523								
G15	RMU7,30	RMU30107,Kalyan Hyper Market (c)	Client	LT	UG	76										
					UG	989	12378	0.30			11,965	0.00	11,965	250	0.69	413
					OH	396	12378	0.34								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh/ month
RMU8	32 (C)	Precious Home 315	Client	LT	UG	412										
					UG	1325	12246	0.39			11,686	12.30	11,698	315	0.91	548
					OH	558	12246	0.47								
AB12	08 (D), P9	Post, Cemetery(D)	Department	LT	OH	66										
					UG	913	37401	2.54	30,052	6,788	36839	52.63	36,892	250	0.85	509
					OH	624	37401	4.94								
AB13	23 (c)	Pleasant hill	Client	LT	UG	43										
					UG	43	4498	0.00			4,216	3.37	4,220	160	0.46	279
					UG	913	4498	0.04								
					OH	1043	4498	0.12								
P14	09,AB14	AB-Microwave, Microwave (D) 150kVA	Department	LT	OH	24										
					UG	913	17986	0.59	16,016	1,607	17623	13.94	17,637	100	0.58	350
					OH	1059	17986	1.94								
AB14	10(c)	BSNL Microwave	Client	HT	OH	40										
					UG	913	37,980	1.162								
					OH	1099	37980	3.993								
AB15	12 (c)	Chemmannam 160	Client	LT	UG	100										
					UG	1013	2327	0.01			2,051	0.10	2,051	160	0.46	277
					OH	1066	2327	0.03								
RMU10	34 (C)	ESAF Jazz Tower	Client	LT	UG	52										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh/ month
					UG	966	15852	0.48			15,536	5.85	15,542	160	0.52	311
					OH	1314	15852	1.87								
P21	14 (D), AB19	AB SIB,SIB (D), 500	Department	LT	OH	4										
					UG	913	71778	9.34	57,389	13,408	70797	185.13	70,982	250	1.33	797
					OH	1378	71778	40.22								
AB19	15 (C)	SIB2 (c) HT Meter	Client	HT	UG	41										
					UG	954	39,661	1.323								
					OH	1378	39661	5.458								
AB Vasan	16 (c)	Vasan Eye Care (HT)	Client	HT	UG	32										
					UG	945	4,036	0.014								
					OH	1476	4036	0.061								
AB Das	17 (c)	Das Continental HT	Client	HT	UG	74										
					UG	987	58,504	2.979								
					OH	1512	58504	13.031								
P32	13(D)	St. Joseph's (D) 315	Department	LT	OH	8.74										
					UG	913	25969	1.22	22,282	3,109	25391	0.00	25,391	315	0.96	578
					OH	1236	25969	4.72			25391	0.00				
P29	20 (c)	Retreat appartment	Client	LT	OH	147										
					UG	913	41238	3.08			40,555	14.81	40,600	315	1.06	638
					OH	1559	41238	15.02			40555	30.38				

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh/ month
G24	22 (c)	Skyline Infinity (Mundupalam)	Client	LT	UG	145										
					UG	1059	11410	0.27			10,737	8.30	10,745	400	1.11	665
					OH	1443	11410	1.06								
RMU9	26 (C)	Asset 400	Client	LT	UG	22.91										
					UG	23	15020	0.02			14,343	8.64	14,351	400	1.11	668
					UG	1012	15020	0.45								
					OH	1455	15020	1.86								
G27	AB23, 07 (D)	ABL 50108, Avenue road 250	Department	LT	UG	309.37										
					UG	1012	29426	1.74	25,004	3,916	28920	38.62	28,959	250	0.78	468
					OH	1455	29426	7.14								
P38	5	Xavy Thekkath 05	Client	LT	OH	55										
					UG	913	5765	0.06			5,497	0.90	5,498	100	0.44	267
					OH	589	5765	0.11								
AB25	RMU6, 29	RMU30106, Aquatic	Client	LT	UG	48										
					UG	961	6833	0.09			6,550	1.28	6,551	160	0.47	282
					OH	739	6833	0.20								
AB26	19(C)	Federal Residency 500	Client	LT	UG	61										
					UG	974	14884	0.43			14,111	89.64	14,201	500	1.14	683
					OH	837	14884	1.05								
P43	06 (D), P43-1	Post , Swimming Pool	Department	LT	OH	187										

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer /AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/ Month	kWh/ month	kWh/ month	kWh/ month	kWh/ month	kVA	kW	KWh/ month
					UG	913	42707	3.31	34,629	7,511	42140	21.32	42,214	200	0.82	493
					OH	805	42707	8.32			42140	52.47				
P50	33 (D), P 50-1	Mulberry Department	Department	LT	OH	93										
					UG	913	24503	1.09	21,224	2,821	24045	8.41	24,074	100	0.72	429
					OH	1183	24503	4.02			24045	20.82				
AB27	18	Mulberry	Client	LT	UG	92										
					UG	92	7931	0.02			7,622	2.44	7,624	200	0.51	306
					UG	913	7931	0.11								
					OH	1236	7931	0.44								
G32	24 (D), P52-1	SN Temple 250	Department	LT	UG	290										
					UG	1203	54943	7.21	44,306	9,836	54141	27.07	54,310	250	1.05	633
					OH	1230	54943	21.04			54141	142.11				
RMU	Skyline Avenue Suites	Skyline Avenue Suites(Tr-1& 2	Client	LT	UG	102										
					UG	1035	1500	0.00			0	0.00	-	630	1.25	750
					OH	1264	1500	0.02					-	630	1.25	750
		NET SUM						**207**		**79,145**		**1388**				**15447**

3.11 PARAVATTANY FEEDER

Table 54: Loss analysis – Paravattany

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/Month	kWh/ month	kWh/month	kWh/month	kWh/month	kVA	kW	KWh/ month
	S-S	Substation														
P1-1	11	Jose pottokoran	Client	LT	UG	38										
					UG	999	7,267	0.10			6,960	2	6,962	200	0.51	305
					OH	34	7,267	0.01								
P1-1	LS	Lifescan	Client	HT	UG	18										
					UG	979	15,714	0.58								
					OH	34	15,714	0.06								
P2	ABn, Fathima	ABL New, Fathima	Distribution	LT	OH	55										
					UG	961	-	-		-	-	-	-	250	0.00	-
					OH	167	-	-			-	-				
P2-1	9	Manjali Enclave	Client	LT	UG	40										
					UG	40	1,949	0.00			1,673	0	1,673	160	0.46	276
					UG	961	1,949	0.01								
					OH	176	1,949	0.00								
P3-1	1	YAS Residency	Client	LT	UG	51										
					UG	1,012	6,905	0.09			6,622	1	6,623	160	0.47	282
					OH	311	6,905	0.08								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/Month	kWh/ month	kWh/month	kWh /month	kWh/month	kVA	kW	KWh/ month
P4-1	12	Cedar Appartment	Client	LT	UG	54										
					UG	1,015	12,335	0.30			11,665	5	11,669	400	1.11	665
					OH	503	12,335	0.42								
					ABC	34	12,335	0.02								
AB3	2	Andrews	Distribution	LT	OH	6										
					UG	961	70,659	9.32	58,995	10,673	69,668	88	69,883	250	1.29	776
					OH	621	70,659	17.21			69,668	127				
P7	10	In Land Appartment	Client	LT	UG	15										
					UG	1,226	4,985	0.06			4,681	2	4,683	200	0.50	302
					OH	757	4,985	0.10								
RMU10	23	CIDBI Appartment	Client	LT	UG	70										
					UG	70	5,352	0.01			4,690	1	4,691	400	1.10	661
					UG	1,380	5,352	0.08								
					OH	757	5,352	0.12								
P8-1	25	Pentark East Park	Client	LT	UG	61										
					UG	61	4,153	0.00			3,851	0	3,851	200	0.50	302
					UG	1,463	4,153	0.05								
					OH	900	4,153	0.09								

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/Month	kWh/ month	kWh/month	kWh /month	kWh/month	kVA	kW	KWh/ month
P10-1	8	Wheels Appartment	Client	LT	UG	27										
					UG	27	2,131	0.00			1,854	0	1,854	160	0.46	276
					UG	961	2,131	0.01								
					OH	1,064	2,131	0.03								
AB3	RMU1, 24	RMU30401, SNA	Client	HT	UG	150										
					UG	1,111	12,523	0.42								
					OH	621	12,523	0.67								
AB4	P5, 3	Post, Unnimossa	Distribution	LT	OH	11										
					UG	1,217	60,353	8.61	49,696	9,846	59,542	104	59,678	250	1.13	675
					OH	632	60,353	12.78			59,542	32				
AB4	RMU2, 14	RMU30402, Sundale Appartment	Client	LT	UG	68										
					UG	1,853	5,364	0.10			5,061	1	5,061	200	0.50	303
					OH	621	5,364	0.10								
RMU2	RMU3, 27	RMU30403, Able Tower	Distribution	LT	UG	158										
					UG	2,011	-	-		-	-	-	-	250	0.00	-
					OH	621	-	-			-	-				
											-	-				

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/Month	kWh/ month	kWh/month	kWh /month	kWh/month	kVA	kW	KWh/ month
P5	16	Homeo	Distribution	LT	OH	163										
					UG	1,217	34,127	2.75	27,785	5,682	33,467	77	33,544	100	0.97	584
					OH	796	34,127	5.14								
AB6	5	Paravattani Park	Distribution	LT	OH	115										
					UG	1,217	1,13,343	30.37	93,546	18,785	1,12,331	-	1,12,331	500	1.69	1,011
					OH	1,116	1,13,343	79.55								
RMU7	15	GEM Hosptial	Client	HT	UG	55										
					UG	1,317	17,486	0.97								
					OH	1,206	17,486	2.53								
P13	6	Paravattani	Distribution	LT	OH	161										
					UG	1,267	1,08,069	28.75	88,050	16,643	1,04,693	242	1,06,793	250	2.13	1,276
					OH	1,599	1,08,069	103.62			1,04,693	297				
											1,04,693	1,561				
P14-1	18	Store	Distribution	LT	UG	110										
					UG	1,377	2,532	0.02	2,210	45	2,255	0	2,256	160	0.46	277
					OH	1,951	2,532	0.07			2,255	0				
											2,255	0				

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	Map no	Pole/transformer/AB	Transformer ownership	Metering point	Cable	Total distance	Energy transmitted	HT OH line loss	Energy transmitted	LT OH line loss	Energy at pole near transformer	LT Cable line loss	Transmission at transformer secondary	Capacity of DT	Transformer loss	Transformer loss
						m	kWh/ Month	kWh/ month	kWh/Month	kWh/ month	kWh/month	kWh /month	kWh/month	kVA	kW	KWh/ month
AB6	17	Double Horse	Distribution	LT	OH	163										
					UG	632	16,088	0.32	13,888	1,774	15,663	6	15,758	100	0.55	330
					OH	1,164	16,088	1.67			15,663	90				
RMU8	26	Asset Precious	Client	LT	UG	43										
					UG	696	9,745	0.13			9,081	1	9,082	400	1.11	663
					OH	1,389	9,745	0.73								
AB7	13	Deepak Tom	Client	HT	UG	166										
					UG	798	11,136	0.24								
					OH	1,576	11,136	1.34								
13	RMU9, 22	RMU30409, Sisters	Client	LT	UG	61										
					UG	859	36,378	2.21			35,695	46	35,877	250	0.83	501
					OH	1,576	36,378	11.57			35,695	136				
AB7	AB8, 7	Kankapadan, ABI-50107	Distribution	LT	OH	80										
					UG	939	56,600	5.84	47,024	8,816	55,840	118	55,958	250	1.07	642
					OH	1,576	56,600	28.02								
G12	AB10, 4	Ottu company	Distribution	LT	UG	24										
					UG	2,007	67,648	17.84	55,218	11,220	66,439	65	66,743	160	1.51	905
					OH	632	67,648	16.05			66,439	239				

Mapping details					Up to Transformer primary or HT metering				From consumer		LT cable - secondary of transformer		Transformer loss			
From Map no	**Map no**	**Pole/transformer/AB**	**Transformer ownership**	**Metering point**	**Cable**	**Total distance**	**Energy transmitted**	**HT OH line loss**	**Energy transmitted**	**LT OH line loss**	**Energy at pole near transformer**	**LT Cable line loss**	**Transmission at transformer secondary**	**Capacity of DT**	**Transformer loss**	**Transformer loss**
						m	**kWh/ Month**	**kWh/ month**	**kWh/Month**	**kWh/ month**	**kWh/month**	**kWh /month**	**kWh/month**	**kVA**	**kW**	**KWh/ month**
G17	RMU2, 19	RMU-30404, Pookuzhypadam	Distribution	LT	UG	144										
					UG	2,200	42,794	7.83	35,235	6,853	42,088	39	42,255	250	0.90	539
					OH	632	42,794	6.42			42,088	128				
RMU3	20	Mystic Rose (Mulberry)	Client	LT	UG	46										
					UG	46	7,794	0.01			7,129	4	7,132	400	1.10	662
					UG	2,719	7,794	0.32								
					OH	632	7,794	0.21								
RMU4	21	Nirmalamatha	Client	HT	UG	139										
					UG	139	543	0.00								
					UG	2,848	543	0.00								
					OH	632	543	0.00								
		NET SUM						406		**90,337**		**3,412**				**12,215**

TECHNICAL LOSSES – SUMMARY

The technical losses comprising all the section above is estimated in feeder wise and given in the following tables.

- **Bini feeder**

Table 55: T & D loss summary – Bini feeder

Particulars	**Units**	**Percentage**
	kWh/annum	**%**
Net energy sales - annual	**56,62,728**	**96.35**
LT Overhead line loss	1,15,302	**1.96**
LT Cable loss	4,823	**0.08**
Transformer Loss	93,585	**1.59**
HT overhead & cable line loss	876	**0.01**
Total loss	2,14,586	**3.65**
Estimated Consumption at feeder level	**58,77,314**	**100**
Registered consumption at feeder level meter	94,99,200	

- **Ramanilayam feeder**

Table 56: T & D loss Summary – Ramanilayam feeder

Particulars	**Units**	**Percentage**
	kWh/annum	**%**
Net energy sales - annual	**62,40,656**	**96.14**
LT Overhead line loss	1,50,290	**2.32**
LT Cable loss	6,274	**0.10**
Transformer Loss	92,551	**1.43**
HT overhead & cable line loss	1,620	**0.02**
Total loss	2,50,735	**3.86**
Estimated Consumption at feeder level	**64,91,391**	**100**
Registered consumption at feeder level meter	39,98,000	

- **Shornur road feeder**

Table 57: T & D loss – Shornur road feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**97,56,504**	**91.57**
LT Overhead line loss	6,55,654	**6.15**
LT Cable loss	25,662	**0.24**
Transformer Loss	2,13,949	**2.01**
HT overhead & cable line loss	2,417	**0.02**
Total loss	8,97,683	**8.43**
Estimated Consumption at feeder level	**1,06,54,187**	**100**
Registered consumption at feeder level meter	1,09,36,000	

- **Chembukavu feeder**

Table 58: T & D loss – Chembukavu feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**79,98,742**	**91.36**
LT Overhead line loss	6,17,826	**7.06**
LT Cable loss	13,873	**0.16**
Transformer Loss	1,21,699	**1.39**
HT overhead & cable line loss	2,749	**0.03**
Total loss	7,56,146	**8.64**
Estimated Consumption at feeder level	**87,54,888**	**100**
Registered consumption at feeder level meter	89,64,000	

- **Jubilee Mission feeder**

Table 59: T & D loss summary – JMC feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**81,17,928**	**99.96**
LT Overhead line loss	-	**0.00**
LT Cable loss	-	**0.00**
Transformer Loss	-	**0.00**
HT overhead & cable line loss	3,416	**0.04**
Total loss	3,416	**0.04**
Estimated Consumption at feeder level	**81,21,344**	**100**
Registered consumption at feeder level meter	81,67,500	

- **Vivekodhayam feeder**

Table 60: T & D loss Summary – Vivekodhayam feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**67,64,088**	**89.42**
LT Overhead line loss	6,72,194	**8.89**
LT Cable loss	20,112	**0.27**
Transformer Loss	1,06,666	**1.41**
HT overhead & cable line loss	1,377	**0.02**
Total loss	8,00,350	**10.58**
Estimated Consumption at feeder level	**75,64,438**	**100**
Registered consumption at feeder level meter	74,22,000	

- **Veleyanoor feeder**

Table 61: T & D loss – Veleyanoor feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**76,10,891**	**91.26**
LT Overhead line loss	6,08,160	**7.29**
LT Cable loss	13,819	**0.17**
Transformer Loss	1,05,561	**1.27**
HT overhead & cable line loss	1,810	**0.02**
Total loss	7,29,349	**8.74**
Estimated Consumption at feeder level	**83,40,240**	**100**
Registered consumption at feeder level meter	89,07,000	

- **East Fort feeder**

Table 62: T & D loss – Eastfort feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**98,80,189**	**88.37**
LT Overhead line loss	10,98,739	**9.83**
LT Cable loss	24,326	**0.22**
Transformer Loss	1,72,418	**1.54**
HT overhead & cable line loss	4,406	**0.04**
Total loss	12,99,889	**11.63**
Estimated Consumption at feeder level	**1,11,80,078**	**100**
Registered consumption at feeder level meter	1,16,02,000	

- **Mission Quaters feeder**

Table 63: T & D loss summary – Mission Quarters feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**89,80,113**	**88.61**
LT Overhead line loss	9,49,737	**9.37**
LT Cable loss	16,653	**0.16**
Transformer Loss	1,85,358	**1.83**
HT overhead & cable line loss	2,486	**0.02**
Total loss	11,54,234	**11.39**
Estimated Consumption at feeder level	**1,01,34,347**	**100**
Registered consumption at feeder level meter	91,51,000	

- **Paravattany feeder**

Table 64: T & D loss Summary – Paravattany feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**75,36,127**	**85.52**
LT Overhead line loss	10,84,041	**12.30**
LT Cable loss	40,941	**0.46**
Transformer Loss	1,46,578	**1.66**
HT overhead & cable line loss	4,871	**0.06**
Total loss	12,76,431	**14.48**
Estimated Consumption at feeder level	**88,12,558**	**100.00**
Registered consumption at feeder level meter	81,23,000	

- **Keralavarma feeder**

Table 65: T & D loss – Keralavarma feeder

Particulars	Units	Percentage
	kWh/annum	%
Net energy sales - annual	**85,55,177**	**88.49**
LT Overhead line loss	8,72,417	**9.02**
LT Cable loss	24,063	**0.25**
Transformer Loss	2,10,073	**2.17**
HT overhead & cable line loss	6,755	**0.07**
Total loss	11,13,308	**11.51**
Estimated Consumption at feeder level	**96,68,485**	**100**
Registered consumption at feeder level meter	91,78,400	

- ***The variation or high mismatch in the actual feeder meter reading and the calculated reading through the loss analysis, is due to the back feeding among the feeders during the power failures or maintenance.***
- *During energy audit period, auditors attempted to verify the error in the meters by analysing the feeder meters at the substation using the power quality analysers and hereby summarised in commercial losses section.*

4. HT/LT RATIO

The total length of the LT line from the transformer to the consumer end at the period of audit is 285.676 km. However, the separation of OH and UG among the LT side is still in the process for the RDSS implementation.

The total 11kV HT line length from the switching station to the DT or HT consumers are 115.13 km. Among this, HT OH line length shares the most with 43.29 km, UG cable with 71.83 km and ABC with 1.85 km

HT/LT ratio is the total distance of HT line to the LT lines in a system. The HT/LT ratio has calculated with respect to the total LT line where;

HT:LT = 1: 2.36, registered during the FY 2022-23, which is higher than the recommended level of 1:1.

5. SUBSIDY COMPUTATION AND ANALYSIS

The DISCOM did not received subsidy from any government or government institutions on any category during the FY 2022-23.

6. TREND ANALYSIS

The historical energy accounts/loss of the TCED DISCOM is tabulated below.

Table 66: Historical energy accounts/loss of the DISCOM

	1. T&D Losses analysis for 2020-21				2. T&D Losses analysis for 2021-22			
Particulars	**Input energy**	**Total Billed energy (MU)**	**Total energy Loss (MU)**	**T&D losses %**	**Input energy**	**Total Billed energy (MU)**	**Total energy Loss (MU)**	**T&D losses %**
	(MU)				(MU)			
DISCOM - TCED	129.33	121.08	8.25	**6.38%**	137.59	129.05	8.54	**6.21**

The graphical representation of the losses for the three years (including audit period FY 2022-23) is given in the figure below.

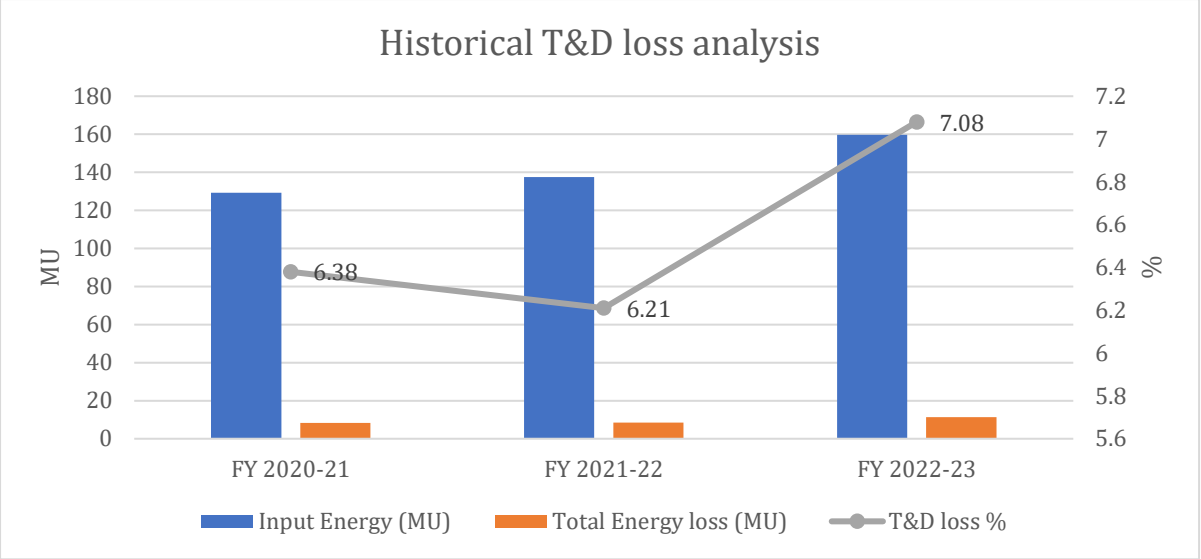

Figure 24: Historical T & D loss with audited data

- The T&D loss % shows an increase from FY 2021-22 to FY 2022-23.
- This is mainly due to the two factors:
    - LT consumer increase: 1.65% increase in LT consumer from FY 2021-22.
    - Solar generation was not considered at the input energy in the FY 2020-21 and FY 2021-22. However, the auditors observed the mismatch in this FY 2022-23 and considered the solar export units as the input energy which resulted in increase in the loss values.

ENERGY AUDIT FINDINGS

1 COMPLIANCE TO BEE REGULATIONS

The compliance status of DISCOM to various provisions of BEE Regulations 2021 is analysed and presented below.

Clause No	Clause Details	Subclause Details	Present Status	Action plan/ comments by DISCOM
3	Intervals of time for conduct of annual energy audit	a. Conducted an annual energy audit for every financial year and submitted the annual energy audit report to the Bureau and respective State Designated Agency and also made available on the website of the electricity distribution company within a period of four months from the expiry of the relevant financial year	a. Annual energy audit for last 3 years being conducted. Report will be submitted to BEE and SDA. Report will also be uploaded onto TCED website.	
4	Intervals of time for conduct of periodic energy accounting	a. All feeder wise, circle wise and division wise periodic energy accounting is conducted by the energy manager of the electricity distribution company for each quarter of the financial year.	a. Periodic energy accounting for Q1 to Q4 of FY 21-22 and FY 22-23 have been prepared by the DC and submitted through mail.	
		b. Submitted the periodic energy accounting report to the Bureau and respective State Designated Agency and also made available on the website of electricity distribution company within forty-five days from the date of the periodic energy accounting.	b. Periodic energy accounting for Q1 to Q4 of FY 21-22 and FY 22-23 have been prepared by the DC and submitted through mail.	

Clause No	Clause Details	Subclause Details	Present Status	Action plan/ comments by DISCOM
		c. Electricity distribution company conducted its first periodic energy accounting, for the last quarter of the financial year immediately preceding the date of such commencement (i.e. 6th October 2021).	c. DC has submitted its first periodic energy accounting for all quarters FY 20-21.	
		d. Electricity distribution company conducted its subsequent periodic energy accounting for each quarter of the financial year for a period of two financial years from the date of such commencement, and submit the periodic energy accounting report within sixty days from the date of periodic energy accounting	d. The DC used to submit the periodic energy auditing reports as per the Energy Audit regulations.	
5	Pre-requisites for annual energy audit and periodic energy accounting	a. Identification and mapping of all of the electrical network assets	a. Mapping of HT line and transformers conducted by the AEA and LT lines are getting mapped by the DISCOM.	The mapping of all the assets such as transformer, pole and consumer meters will be completed by June 2024.
		b. Identification and mapping of high tension and low-tension consumers	b. All the HT consumers have been mapped by AEA and the LT consumers will be mapped by DISCOM	The mapping of LT consumers will be completed by June 2024
		c. Development and implementation of information technology enabled energy	c. DC has LECTOREN software which does only	DC is planning to implement the software as along with

		accounting and audit system, including associated software.	the billing one as per the consumption input.	the RDSS implementation of the smart meter.
Clause No	**Clause Details**	**Subclause Details**	**Present Status**	**Action plan/ comments by DISCOM**
		d. Electricity distribution company ensures the installation of functional meters for all consumers, transformers and feeders. Meter installation is done in a phased manner within a period of three financial years from the date of the commencement of these regulations in accordance with the trajectory set out in the First Schedule	d. All 11kV feeders have been metered. All consumers have been metered under the DISCOM. As of audit period (30th September 2023) out of total 468 distribution transformers, 293 have been metered.	Rest of the DT meters will be completed along with the RDSS scheme June 2024.
		d1. 100% Communicable Feeder Metering integrated with AMI, by 31st December 2022 along with replacement of existing non- communicable feeder meters.	d.1. 100% of the feeders are having DLMS (Device Language Message Specification Communicable Meters).	
		d2. All Distribution Transformers (other than HVDS DT up to 25kVA and other DTs below 25 kVA) shall be metered with communicable meters. Communicable DT Metering for the following areas/ consumers to be completed by December 2023 and in balance areas by December 2025: 100% Communicable Feeder Metering integrated with AMI, by 31st December	d.2. 62.6% of the DTs are provided with communicable meter as on 30th September 2023.	Balance will be completed by the end of financial year 2024-25 as per the RDSS progress report.

		2022 along with replacement of existing non-communicable feeder meters.		
Clause No	**Clause Details**	**Subclause Details**	**Present Status**	**Action plan/ comments by DISCOM**
		d.2.1. All Electricity Divisions of 500 AMRUT cities, with AT&C Losses > 15%	d.2.1. Not Relevant for DC.	
		d.2.2. All Union Territories (for areas with technical difficulty, non-communicable meters may be installed)	d.2.2. Not Relevant for DC	
		d.2.3. All Industrial and Commercial consumers	d.2.3. 100% of the DTR meters is installed in the DISCOM	
		d.2.4. All Government offices at Block level and above	D2.4. DC installed 90% of the government offices at block level with communicable meter.	Plans to do the remaining installations in phased manner
		d.2.5. Other high loss areas i.e. rural areas with losses more than 25% and urban areas with losses more than 15%	d.2.5. The whole DISCOM comes under the Urban area and thus not relevant for DC.	
		d.3. Prepaid Smart Consumer Metering to be completed for all directly connected meters and AMR in case of other meters, by December 2023 in the following areas:		
		d.3.1. All Electricity Divisions of 500 AMRUT cities, with AT&C Losses > 15%;	d.3.1. Not applicable as AT&C loss is less than 15%.	
		d.3.2. All Union Territories (for areas with technical difficulty, prepaid meters to be installed);	d.3.2. Not Relevant for DC.	

<table>
<tr><th>Clause No</th><th>Clause Details</th><th>Subclause Details</th><th>Present Status</th><th>Action plan/ comments by DISCOM</th></tr>
<tr><td></td><td></td><td>d.3.3. All Industrial and Commercial consumers;</td><td>d.3.3. DC has installed 133 communicable metering-AMI for HT consumers and 18155 meters in LT, industrial and commercial.</td><td>Plans to do the work in phased manner along with RDSS by June 2024.</td></tr>
<tr><td></td><td></td><td>d.3.4. All Government offices at Block level and above;</td><td>d.3.4. DC installed 90% of the government offices at block level with communicable meter.</td><td>Plans to do the work in phased manner along with RDSS by June 2024.</td></tr>
<tr><td></td><td></td><td>d.3.5. Other high loss areas i.e. rural areas with losses more than 25% and urban areas with losses more than 15%.</td><td>d.3.5. Not applicable as T&D loss is less than 15%</td><td></td></tr>
<tr><td></td><td></td><td>d4. Consumer Metering: 98% by FY 2022-23 99% by FY 2023-24</td><td>d4. 100% of the consumers are metered.</td><td></td></tr>
<tr><td></td><td></td><td>d.5. Targets for functional meters.
<table><tr><td>Meter</td><td>FY 22-23</td><td>FY 23-24</td><td>FY24-25</td></tr><tr><td>Feeder metering</td><td>98.5%</td><td>99.5%</td><td>99.5%</td></tr><tr><td>DT metering</td><td>90%</td><td>95%</td><td>98%</td></tr></table></td><td>d5. 100% of the feeders are metered. 95% of the DT are metered. 100% of the consumers are metered.</td><td>DT metering will complete by FY 2023-24 along with RDSS scheme.</td></tr>
<tr><td></td><td></td><td>e. e1. All distribution transformers (other than high voltage distribution system up to 25kVA and other distribution system below 25 kVA) is metered with communicable meters.</td><td>e.1. DC yet to start the work</td><td>DT metering will start in phased manner.</td></tr>
<tr><td></td><td></td><td>e.2.And existing non-communicable distribution transformer meters is replaced with communicable meters and integrated with advanced metering infrastructure.</td><td>e.2. Yet to start the work</td><td>DT metering will start in phased manner along with RDSS smart meter installation scheme.</td></tr>
</table>

		e. Electricity distribution company has established an information technology enabled system to create energy accounting reports without any manual interference and such systems may be within a period of three years from the date of the commencement of these regulations in case of urban and priority area consumers; and within five years from the date of the commencement of these regulations in case of rural consumers	f. Yet to start the work	After the implementation of RDSS scheme, the information technology enabled system will be integrated to it.
Clause No	**Clause Details**	**Subclause Details**	**Present Status**	**Action plan/ comments by DISCOM**
		g. Electricity distribution company has a centralized energy accounting and audit cell comprising of— (i) a nodal officer, an energy manager and an information technology manager, having professional experience of not less than five years; and (ii) a financial manager having professional experience of not less than five years	g. DISCOM has energy audit cell. List is mentioned in the audit report. Certified energy auditor is present for the DISCOM.	
6	Reporting requirements for annual energy audit and periodic energy accounting	a. Electricity distribution company has a nodal officer, who is a full-time employee of the electricity distribution company in the rank of the Chief Engineer or above, for the purpose of reporting of the annual energy audit and periodic energy accounting and communicate the same to the Bureau.	a. The DC is complying with this requirement	

Clause No	Clause Details	Subclause Details	Present Status	Action plan/ comments by DISCOM
		b. Electricity distribution company ensures that the energy accounting data is generated from a metering system or till such time the metering system is not in place, by an agreed method of assumption as may be prescribed by the State Commission.	b. DC has already had an agreed system of energy accounting as prescribed by the state commission. Yet to implement the system from metering values.	The completion of the energy accounting data will be generated from the metering system by the FY 2023-24.
		c. Metering of distribution transformers at High Voltage Distribution System up to 25KVA is done on cluster meter installed by the electricity distribution company	c. Not applicable	
		d. The energy accounting and audit system and software is developed to create monthly, quarterly and yearly energy accounting reports.	d. The DC is yet implement the same.	Will be completed along with the implementation of RDSS scheme by June 2024.
		e. Electricity distribution company has provided the details of the information technology system in place as specified in clause (f) of regulation 5 that ensures minimal manual intervention in creating the energy accounting reports and any manual intervention of any nature, in respect of the period specified therein, shall be clearly indicated in the periodic energy accounting report	e. The DC is yet to implement the same	Will be completed along with the implementation of RDSS scheme by June 2024.

2 NOTES OF THE EA/EM ALONG WITH QUERIES AND REPLIES TO DATA GAPS

The following tables shows the query by AEA, the response from EA of DISCOM and Notes by AEA.

Table 67: Queries and replies to data gaps

Sl no	Query by EA	Response by EA of DISCOM	Notes by AEA
1	Why the contract demand not mentioned in the bill?	Can access unlimited demand as per the agreement signed between KSEBL and Thrissur municipality on 1949.	According to that present registered maximum demand is considered for the audit.
2	Expected completion date for LT line mapping and assets?	As per the action plan to RDSS, expected time of completion is June 2024.	AEA started mapping the HT line and transformer and covered 22% of the Total DT, 31% of the total 11 KV feeders & 16.6% of the total consumers
3	When we analysed the loss of 11 feeder, variation observed in the unit sales. Found that very lower than the feeder meter. Any issue in feeder metering?	There is no issue in feeder metering. The difference is due to the back feeding the supply to certain number of consumers in a particular feeder, through interlink poles. For eg: Bini feeder have the option for back feed from Ramanilayam, Vivekodayam and MO road feeders. Back fed unit data not accounted properly in the substation as there is no boundary meter to account the same.	Such that, we have analysed actual loss among the feeder rather than basing on the feeder meter.
4	Why is there observed duplication of solar generation data for both LT and HT?	It was due to the software mistake. TCED will correct the same	Duplication of the solar export data is being corrected and rectified.

Sl no	Query by EA	Response by EA of DISCOM	Notes by AEA
5	There is a mismatch in the transformer consumption data in the feeder-wise that was requested to be corrected last time.ie: Hotel Peninsula (11530) an HT transformer of Shornur road feeder is provided in the Ramanilayam feeder. Why?	TCED will rectify the same and transformer data feeder-wise will be maintained.	Same was observed in the data collection of the FY 2022-23 and requested again to rectify the same.
6	The KSEBL energy meter and the TCED feeder-wise energy meter readings are not matching. An error has been observed. However, when we checked the TOD meter by bypassing the Potential Transformer (PT) and Current Transformer (CT), the values were observed to match. Why?	It is due to the error in CT ratio. Current transformer (CT) is not calibrated for last ten years.	Calibrate the current transformers (CTs) and if required replace it with new one.

CONCLUSION AND ACTION PLANS

1 CRITICAL COMMENTS AND ANALYSIS BY ENERGY AUDITOR

11KV FEEDER METERING AND ENERGY AUDIT

The DISCOM has 100% metering for all the 11 kV feeders and has provided energy input and consumption/ sale data of all the 11 KV feeders (11 kV feeders – 18 nos).

The process of checking the functioning and calibration of the 11 KV feeder meters is an on-going process and can be tested through M/s KSEBL, TMR unit as per CEA regulation.

ANALYSIS ON T&D LOSSES AND AT&C LOSSES

- **% of losses – Aggregate**: - The overall Technical Loss (T&D Loss) is 7.08% and overall AT&C Loss is 9.54% for FY 2022-23. This reflects an overall collection efficiency of 97.36%. The detailed HT, LT and Transformer losses with respect to the input energy is shown in table below.

Table 68: Analysis on T&D losses

Particulars	Units	Values**
Total energy purchased	MU	159.67
Total energy sales	MU	148.36
Quantum of losses at HT level	**MU**	**0.39**
	%	**0.24**
Quantum of LT level losses (LT level and Transformer losses)	**MU**	10.918
	%	**6.84**
Total losses	**MU**	11.31
	%	**7.081**
Collection efficiency	**%**	97.36
AT &C loss	**%**	9.54

Values with full decimal places.

COMPLIANCE TO RENEWABLE PURCHASE OBLIGATIONS

TCED purchasing the 99.34% of the power consumed through KSEBL. As the KSEBL is on the verge of meeting the RPO obligation, the same can consider for the TCED. However, TCED is generating 0.66% of the total consumption through its consumers in net metering tariff by roof top solar method and through its own corporation buildings.

Table 69: Solar generation share

Total Energy Consumption FY 2022-23 (MU)	**159.665**	
Details	**Solar generation**	**Non-solar generation**
Present status - MU	1.06	0
Present status - %	0.66%	0

2 ENERGY CONSERVATION MEASURES

REPLACING HT & LT OVERHEAD LINES WITH UG CABLES

Background

As the location, Thrissur, is known for various festivals yearly, the crowd and the risk possess in the transmission of power through overhead line stays. TCED has initiated to change all the major location, identified disaster prone areas, with UG cables, especially in the HT side. Also, this will reduce the overall loss in the system.

The details of the HT & LT overhead lines in TCED for the audited 4 feeders are summarized in the table given below as sample basis. The distance given below in table are considered for the calculation.

TABLE 70 : OVERHEAD LINES DETAILS

OH Line type	Voltage level	Distance in km	Resistance of the line Ω/km
Racoon	11 kV	8.273	0.3712
Rabbit	415 V	20.97	0.543

Proposal

1. The resistance per line length for UG cables is 0.13 Ω/km for 300 sqmm XLPE which will reduce the power loss through HT overhead line and thereby the net power losses in the system. Estimated reduction in energy loss is 70% from the present losses.
2. The detailed calculation for savings has been done for 4 feeders which is applicable to remaining 12 feeders and financial viability is shown in the table given below.

Calculation

TABLE 71 : ECM 01

Particulars	Units	Equation	Bini	Ramanilayam	Chembukavu	Shornur road
Present HT Line loss	kWh/ annum	A	401	858	2570	1822
Present LT line loss	kWh/ annum	B	61701	75030	524636	631602
Estimated HT line loss after reconductoring with UG	kWh/ annum	C = A x 0.13/0.3712	140	300	900	638
Estimated LT line loss after reconductoring with UG	kWh/ annum	D = B x 0.13/0.543	14747	17932	125388	150953
Annual Savings	**kWh/ annum**	E = C + D	**47215**	**57656**	**400918**	**481833**
HT line Distance to be reconductored with UG	km	F	1.71	1.128	3.317	2.118
LT line Distance to be reconductored with UG	km	G	2.805	3	6.605	8.56
Total distance	km	H = F + G	4.515	4.128	9.922	10.678
Energy charges	Rs/kWh	J	6.5	6.5	6.5	6.5
Reconductoring charges as per TCED estimate	Rs/km	K	6,00,000	6,00,000	6,00,000	6,00,000
Annual Financial savings	Rs/ annum	L = E x J	3,06,898	3,74,761	26,05,970	31,31,917
Investment cost	**Rs**	M = K x H	27,09,000	24,76,800	59,53,200	64,06,800
Net Annual Financial Savings	**Rs**	N = Total of L	64,19,547			
Net Investment	**Rs**	P = Total of M	1,75,45,800			
Simple Pay Back Period	**Months**	Q = P x 12/N	33			

***Resistance of UG cable = 0.13 Ω/km*
Resistance of HT Racoon OH line cable = 0.3712 Ω/km
Resistance of LT Rabbit OH line cable = 0.543 Ω/km

REPLACEMENT OF OLD TRANSFORMER WITH ENERGY EFFICIENT

Background & proposal

The replacement of transformers is proposed in locations where the age of transformer is greater than 30 years. It is proposed to replace the old transformers with new star rated transformer which will significantly reduce transformer losses in distribution.

Some of the transformer identified for the replacement under the RDSS scheme also comes under our 4 feeders for which we were able to analyse the actual loss variation.
The identified transformers for the replacement are given in the table below.

Sl.no	Transformer name	Capacity in (KVA)	Year of Manufacturing	Feeder
1	Varnam	315	1987	Shornur road
2	Trichur/ Malabar Eye Clinic	250	1988	Shornur road

The calculation for the saving through replacement of transformer is given in the table below:

Table 72: ECM 02

Particulars	Units	Equation	Values
Present unit loss in above transformers	kWh/annum	A	14,343
Estimated unit loss in energy efficient transformers - considering the same transmitted power based on FY 2022-23 value	kWh/annum	B	2,292
Difference in unit loss	kWh/annum	C = A-B	12,052
Energy charges	Rs/kWh	D	6.50
Annual financial savings	Rs/annum	E = D x C	78,336
Estimated investment cost for transformer replacement - for 250 kVA transformer	Rs/unit	F	7,00,000
Number of units that need replacement	Nos	G	2
Net investment	Rs	H = F x G	14,00,000
Simple payback period	Months	J = H x 12/E	214
	Years	K = H / E	18

Note: Losses considered for transformer replacement evaluation is mentioned in the table below.

	kVA	*Iron loss*	*Cu loss*
Present transformer	*250*	*670*	*2650*
	315	*900*	*3200*
Energy efficient transformer	*250*	*100*	*670*
	315	*100*	*900*

POWER FACTOR IMPROVEMENT TO NEARY UNITY

Background

1. The average power factor during the measurement period (5-hour logging) at 110kV incomer was 0.97 lagging.
2. However, while measuring the feeder level power parameters during the audit period, at the substation, auditors noticed that the PF was lower in the following feeders.

TABLE 73: PF & REACTIVE POWER OF MAJOR FEEDERS

Sl no	Feeder name	Average PF	Measured KVAR - Avg	Incomer
1	Poonkunnam	0.93 lag	228	66kV
2	Keralavarma	0.94 lag	199	66kV
3	Kottappuram	0.91 lag	247	110kV
4	Aranattukkara	0.97 lag	389	66kV
5	Mission Quarters	0.97 lag	268	110kV
6	Koorkanchery	0.97 lag	261	110kV
7	Paravattani	0.97 lag	310	110kV

3. The average PF during the period from April-2022 to March-2023 at the 110kV as well as 66kV incomer was registered as 0.96 lagging.

Proposal

1. Install LT capacitors of 60kVAr rating at 5 locations, ie; at the secondary side of selected 5 distribution transformers, for the above-mentioned feeders under 66kV incomer.
2. Install LT capacitors of 120kVar rating at 15 locations, ie; at the secondary side of selected 15 distribution transformers, for the above-mentioned feeders under 110kV incomer.
3. Awareness campaign shall be given to major consumers to install capacitors especially for the commercial buildings and apartment flats which will significantly reduce the losses in the respective feeders along with the improvement in PF.
4. KSEBL is entitled to give power factor incentive considering the agreement between the TCED which signed on 1949. However, the incentive was denied and in dispute.

Table 74: ECM 03

66 KV INCOMER						
Month	**Power Factor present**	**Billing Demand**	**Proposed PF**	**Billing Demand after PF improvement**	**Reduction in Billing Demand**	**Reduction in Demand Charges**
		kVA		**kVA**	**kVA**	**Rs**
Apr-22	0.96	10,724	0.99	10,399	325	1,10,492
May-22	0.95	9,943	0.99	9,541	402	1,36,593
Jun-22	0.96	9,615	0.99	9,324	291	1,10,718
Jul-22	0.96	8,501	0.99	8,244	258	97,895
Aug-22	0.96	9,324	0.99	9,042	283	1,07,370
Sep-22	0.96	15,108	0.99	14,650	458	1,73,971
Oct-22	0.96	11,008	0.99	10,674	334	1,26,759
Nov-22	0.96	15,553	0.99	15,081	471	1,79,091
Dec-22	0.96	13,161	0.99	12,762	399	1,51,546
Jan-23	0.97	13,594	0.99	13,319	275	1,04,355
Feb-23	0.97	12,984	0.99	12,722	262	99,677
Mar-23	0.97	16,510	0.99	16,176	334	1,26,743
Annual reduction in demand charges						15,25,209
Annual energy charges (Rs/Annum)						36,93,28,870
Present average annual PF						0.96
Incentives towards improving PF from 0.96 to 0.99 (Rs/Annum)						73,86,577
Present annual penalty paid towards low power factor (Rs/Annum)						Nil
Net annual savings via PF improvement (Rs/Annum)						89,11,787
Estimated investment cost for the improvisation (awareness campaign among major consumers, Installation of 60 kVAr LT capacitors each in 5 locations)						7,50,000
Simple payback period (Months)						1
110 kV incomer						
Month	**Power Factor present**	**Billing Demand**	**Proposed PF**	**Billing Demand after PF improvement**	**Reduction in Billing Demand**	**Reduction in Demand Charges**
		kVA		**kVA**	**kVA**	**Rs**
Apr-22	0.96	26,012	0.99	25,224	788	2,68,002
May-22	0.96	24,216	0.99	23,482	734	2,49,498
Jun-22	0.96	21,510	0.99	20,858	652	2,47,691
Jul-22	0.96	20,590	0.99	19,966	624	2,37,097
Aug-22	0.96	21,608	0.99	20,953	655	2,48,819
Sep-22	0.96	21,430	0.99	20,781	649	2,46,770
Oct-22	0.96	21,140	0.99	20,499	641	2,43,430
Nov-22	0.96	18,300	0.99	17,745	555	2,10,727
Dec-22	0.97	21,160	0.99	20,733	427	1,62,440
Jan-23	0.96	17,700	0.99	17,164	536	2,03,818
Feb-23	0.96	19,220	0.99	18,638	582	2,21,321
Mar-23	0.97	23,480	0.99	23,006	474	1,80,251
Annual reduction in demand charges (Rs/Annum)						27,19,865
Annual energy charges (Rs/Annum)						64,41,92,670
Present average annual PF						0.96
Incentives towards improving PF from 0.96 to 0.99 (Rs/Annum)						1,28,83,853
Present annual penalty paid towards low power factor (Rs/Annum)						Nil
Net annual savings via PF improvement (Rs/Annum)						1,56,03,719
Estimated investment cost for the improvisation (awareness campaign among major consumers, Installation of 120 kVAr LT capacitors each in 15 locations)						30,00,000
Simple Payback period (Months)						2

ANNEXURE: COLLECTED DATA

1. ABOUT THE ACCREDITED ENERGY AUDIT FIRM

Centre for Energy Environment and Productivity (CEEP) is an Empanelled Accredited Energy Auditing Firm (EAEA) recognised by BEE. Consulting and training in the areas of energy audit, ISO 50001, cleaner production and environmental management,

Empanelled Accredited Energy Auditor with Bureau of Energy Efficiency (BEE) which have wide experience in the energy audit sector and have conducted the same in Chemical, Textile, Steel and DISCOM.

NAME AND DETAILS OF ENERGY MANAGER/AEA

M/s TCED, Thrissur District-Kerala -680001 have a BEE Certified Energy Auditor – Mr. Nikhil B (CEA – 24811), whom will be the signatory for all BEE activities.

On behalf of Centre for Energy Environment and Productivity (CEEP), Mr. Ashok K M P (CEA 34760/22) signed the quarterly Energy accounting report for the financial year 2022-23 and will be sign for the upcoming FY 2023-24.

The contact details of Accredited energy auditor and Energy manager from CEEP is given in the table below.

TABLE 75: CONTACT DETAILS OF AEA & CEA

Sr No	Name	Certification	EM/EA/AEA/ Registration No	Phone no	Email
1	Mr. J Nagesh Kumar	• Accredited Energy Auditor	AEA-0133	9444882553, 8668115663	ceepnagesh@gmail.com
2	Mr. Sunil kumar V K	• Sector Expert	EA – 3642	9497752463	vkoilothsunil@gmail.com
3	Mr. Ashok K M P	• Certified Energy Auditor	EA-34760/22	7356111991	ashokkmp@gmail.com
4	Ms. Della David	• Certified Energy Auditor	EA 34867/22	7356111992	delladavid19984@gmail.com

2. CHECKLIST PREPARED BY AUDITING FIRM

1. KSEB bill –FY 2022-23 – April to March
2. Truing up & ARR Document –FY
3. Bill collection data as per the performa for the FY
4. Annual financial statement – P&L – balance sheet
5. Electricity Transmission and consumption data: Both FY (year wise)
    1. Substation meter reading
    2. Feeder meter readings -
    3. HT consumer meter reading - corresponding feeder wise
    4. LT consumer meter reading
    5. Solar export data – unit, location, size of the plant, voltage level, metering type (net or gross), feeder name, consumer no:
6. Transformer details
    1. Incomer transformer data
    2. Feeder wise transformer data (HT and DT separately)
    3. Name plate details of transformers
    4. No load and Copper loss of transformers
7. Energy Meter data
    1. Feeder meter & DT meter – serial no., type of meter
    2. Consumer meter – type & its number
8. HT network diagram (GRID Map)
9. Incomer substation single line diagram
10. Cable details
    1. HT cable – type, location, size, length
    2. LT cable – type, location, size, length
    3. HT & LT overhead line – type
11. Street light – number, location (estimate)
12. Quarterly Performa sheet submitted during the last FY to BEE

3. APPROACH, SCOPE & METHODOLOGY OF ENERGY AUDIT

PERIOD OF AUDIT

The energy audit field study was carried out during the period from 7th Aug 2023 to 9th Sep 2023 for the field study is given in the table below.

Table 76: Activity chart – Energy audit

ACTIVITIES	20th to 30th August 2023	01st Sep to 15th Sep 2023	20th Sep to 10th Oct 2023
• Kick-off meeting with the concerned DISCOM officials • Data collection • site survey plan			
• Site survey • 11kV HT line mapping • DT mapping • Feeder wise measurement at switching station. • Metering deviations of major HT consumers.			
• Verification of T&D Losses, other Calculation • Finalization of form and submission of draft report			

SCOPE OF AUDIT

1. Study and validation of the methodology adopted, data source and its accuracy of the energy audit works carried out for internal as well as external reporting in the following areas.
    a) 11 kV level for study of 11 kV distribution loss in 06 feeders.
        - Losses incurred in individual 11 kV feeders
        - Calculation of technical loss of 11 kV line
    b) Sample LT level study of Distribution transformer and LT distribution loss.
        - Losses incurred in LT line of different 11/0.433 kV distribution transformer in each feeder on 10% sample basis.
        - Calculation of technical loss of LT line with actual LT line data.
        - Selection of the distribution transformer shall be based on the differentiated consumer pattern, length of the distribution lines, old lines etc.
2. Collection and Review of the energy related data of last Financial Year (FY) in the Proforma by visiting the DISCOM physically.

3. Verification of existing pattern of energy distribution across periphery of electricity distribution company
4. Collection and verification of energy flow data of electricity distribution company at all applicable voltage level of distribution network.
5. Collection of data on energy received and distributed by DISCOM and verify the accuracy of data
6. Collection & analysis the data and prepare the same with report;
7. Input energy details:
    a) Collection of input energy from recorded system meter reading
    b) All the inputs points of transmission system
    c) Details provided by transmission unit
    d) System loading and Captures infrastructure details (i.e., no of circle, division, sub-division, feeders, DTs, & Consumers).
8. Parameters for computation of distribution losses:
    a) Details of open access, HT sale, LT sale and transmission losses
    b) Number of consumers category wise in each circle
    c) Consumers connected load category wise in each circle
    d) Details of billed and un-billed energy category wise of each circle
    e) Metered and un-metered details.
    f) Boundary meter details
    g) Energy Cost and Tariff data
    h) Source of energy Supply (e.g., electricity from grid or self-generation), including generation from renewables;
    i) Energy supplied to Open Access Consumers which is directly purchased by Open Access Consumers from any supplier other than electricity distribution company
9. Monitoring and verifications of input energy and consumption pattern at various voltage levels
10. Identify the areas of energy leakage, wastage or inefficient use;
11. Identify high loss-making areas/networks, for initiating target based corrective action;
12. Identify overloaded segments of the network for necessary capacity additions.
13. Computation of agriculture consumption (approved by SERC)
14. Methodology for loss computation various losses.
15. Computation of Average Billing Rate (ABR)
    a) Total revenue billed category wise.
    b) Category wise ABR with tariff subsidy.
    c) Category wise ABR without tariff subsidy.

d) Collection Efficiency (Category wise) and computation of AT&C loss.

16. Observe and compile various Energy Conservation (ENCON) options implemented by the DISCOM and prepared report containing details of expenditure made by DC along with saving and payback period.
17. Recommendations to facilitate energy audit, energy accounting and improve energy efficiency
18. Study the details of loss/gain of DISCOM, analysis of Average Cost of Supply (ACS) and Average Revenue realized (ARR) gap, details of energy charges/Power purchase cost along with the financial analysis.
19. Current System Metering Status at various voltage level of DISCOM
    a) Status of Functional meters for all consumers, transformers and feeders.
    b) Status of default meters (non-functional meters) for all consumers, transformers and feeders
20. Current status of pre-requisites mentioned in regulations.
21. Copies of relevant authentic and certified documents should support the report. Each document should be sealed and signed by DISCOM authorized representative as well as by agency's AEA.
22. Prepare final report of DISCOM as per the scope of work and as per the regulation of Energy Audit, 2021, in a standard format duly indexed, covering profile of the unit and its details of energy related data w.r.t. DISCOMs Sector, analytical & Statistical details and any other relevant information.

METHODOLOGY

In order to meet requirements of the scope of Work, CEEP, adopted the following phase wise approach for completion of the assignment

Phase 1 – Pre-audit phase

a. Kick off meeting with DISCOM officials.

The following were the agenda during the kick off meeting.

- Introduction of the team
- Briefing of energy audit – Schedule of plan & execution
- Discussion about data collection format.
- Discussion on the scope of energy audit

After detailed deliberations following points were discussed.

- TCED will provide the transportation facility for the field measurement.

- TCED will provide a single person of contact for the energy audit assistance who has access to the T Soft (TCED internal software).
- TCED will provide an engineer in the field who has knowledge on the distribution lines

b. Assigning of team members.
c. Collection and Review of the energy related data

Phase 2 – Audit phase

Field survey:

a. The field survey had been conducted for HT lines and transformers of the designated area as representative data for compiling a comprehensive and diligent assessment.
b. A detail route plan of the distribution network had been also ascertained by way of segmenting data through walk down surveys along 11kV incoming feeder and corresponding 11kV feeders were also surveyed.
c. Hourly load analysis was done for all the six feeders and feeder energy meters were calibrated against the power analyzer.
d. HT lines & Transformers are mapped using the Global positioning system (GPS).
e. HT line length and partial LT line length were identified using the GPS.
f. The consumption data, type of cable, transformer details etc were collected from the DISCOM and verified with the field data.
g. Analysis of various types of losses in the system was done. Various losses in the system are as listed below.

Technical Losses:

- HT (11 kV) line losses
- Distribution transformer losses (Iron & Copper losses).
- L.T. Line losses
- HT and LT cable losses

Miscellaneous technical losses

- Losses due to lose jump connections in the line
- Losses due to short circuits & earth faults Losses in service mains of installations.
- Losses incurred in CT'S of energy meters.
- Losses incurred in old static energy meters.

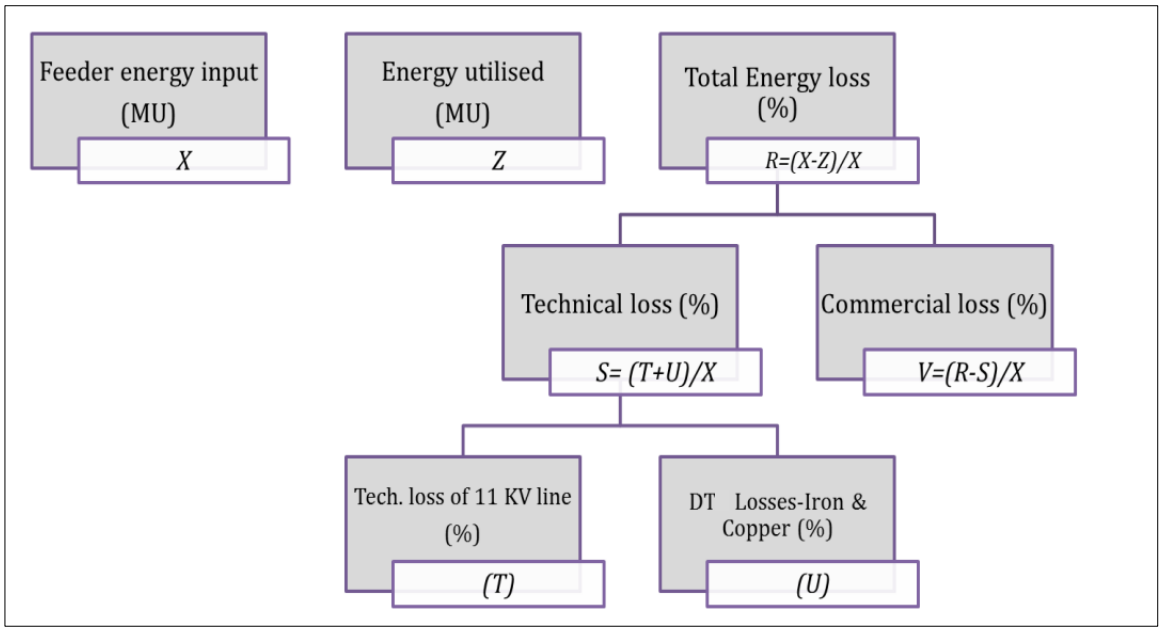

Figure 25: Schematic representation of technical losses

Commercial losses

- Mistakes in the billing.
- Meters not recording (MNR)
- Meters not recording correctly
- Meters bye passed due to defects/ intentionally.
- Meters not read & billed.
- Theft and pilferage.

Phase 3 – Post audit phase

After the identification of various loss reduction initiatives based on the HT & LT distribution detailed analysis was carried out in this phase of the study to prepare a strategy for loss reduction. Under this strategy, detailed steps are defined for loss measurement, energy audit and loss verification as well. A Final Report was prepared after discussion with TCED officials. Submitted the report with complete database and techno economic analysis.

CALCULATIONS INVOLVED IN LOSS ANALYSIS

Technical losses occur in the system due to cables, overhead lines, transformers and other equipment in the substation. The losses in cables and overhead lines depends on the length, type of the cable/overhead line as well as the current passing through it.

The length of the overhead lines could be determined after mapping HT/LT lines and transformers using GPS and the type of overhead line was identified. The type of HT/LT cables, its length, were collected during the field visit. The energy consumption pattern during the previous 12 months for all HT consumers and LT consumers (under each distribution transformer) were analyzed and average monthly energy consumption was noted.

A. LT Losses

For LT side, the average monthly energy consumption is noted (at the transformer secondary side). The **LT overhead line losses** are calculated as per the formula given below

$$LT\ line\ losses\ per\ month\ \left(\frac{kWh}{month}\right) = 3I_L^2 * R_L * d * 24 * 30 \quad \text{..... (1)}$$

Where: I_L = average value of current passing through the LT overhead line (A)

R_L = Resistance/km of the LT overhead line (Ω/km)

d = mean length of the LT overhead line (km)

The value of I_L can be calculated from the total average monthly kWh consumption of all consumers under a single Distribution Transformer as per the following equation

$$I_L = \frac{Total\ Average\ monthly\ kWh\ consumption\ under\ each\ Distribution\ Transformer\ (\frac{kWh}{month})*1000}{\sqrt{3}*400*24*30} \text{.....(2)}$$

Now, Energy transmitted from the pole of the distribution transformer (DT) is given by

$$Energy\ transmitted\ from\ the\ pole\ of\ DT\ \left(\frac{kWh}{month}\right) =$$
$$Total\ energy\ consumption\ under\ each\ DT\ (\frac{kWh}{month}) + LT\ line\ losses\ (\frac{kWh}{month}) \text{.....(3)}$$

LT cable line losses are calculated as follows:

$$LT\ cable\ losses\ per\ month\ \left(\frac{kWh}{month}\right) = \frac{3I_c^2*R_c*d*24*30}{1000} \quad \text{.....(4)}$$

Where: I_c = average value of current passing through the LT cable (A)

R_c = Resistance/km of the LT cable (Ω/km)

d = length of the LT cable (km)

The value of $I_{c\ can}$ be calculated from the total average monthly energy transmitted from the pole of each Distribution Transformer as per the following equation

$$I_c = \frac{Total\ Average\ monthly\ energy\ transmitted\ from\ pole\ of\ each\ Distribution\ Transformer\ (kWh/month)*1000}{\sqrt{3}*400*24*30} \text{.....(5)}$$

Now, the energy at the secondary side of each distribution transformer is given by

$$Energy\ at\ the\ secondary\ side\ of\ each\ DT\ \left(\frac{kWh}{month}\right) = Total\ energy\ transmitted\ from\ pole\ of\ each\ DT\ \left(\frac{kWh}{month}\right) + LT\ cable\ losses\ \left(\frac{kWh}{month}\right) \text{.....(6)}$$

B. Transformer losses

The major losses in a transformer are accounted as Core losses and Copper losses. Core losses are independent of the transformer loading whereas Copper losses depends on the loading factor. The transformer losses are given by the formula as

$$Transformer\ losses\ \left(\frac{kWh}{month}\right) = \frac{(P_{core}+x^2*P_{Cu})*24*30}{1000} \text{.....(7)}$$

Where: P_{core} = Transformer core losses (W)

P_{Cu} = Transformer Copper losses (W)

x, Transformer loading factor = Total average monthly Energy at the transformer secondary (kWh/month)/ (Average monthly Power Factor* Transformer capacity in kVA)

Thus, the total energy transmitted the HT side of each distribution transformer is given by the equation

$$Total\ average\ monthly\ energy\ transmitted\ from\ the\ transformer\ primary\ \left(\frac{kWh}{month}\right) = Average\ monthly\ energy\ transmitted\ from\ the\ transformer\ secondary\ \left(\frac{kWh}{month}\right) + Transformer\ losses\ \left(\frac{kWh}{month}\right) \text{.....(8)}$$

C. HT losses

For HT consumers the average monthly energy at the transformer HT side is available and the HT overhead line loss was calculated as per follows:

$$\text{HT line loss per month}\ \left(\frac{\text{kWh}}{\text{month}}\right) = 3I^2 * R * D * 24 * 30 \text{.....(9)}$$

Where: I = average value of current passing through the overhead line (A)

R = Resistance/km of the HT overhead line (Ω/km)

D = length of the overhead line (km)

The value of average current is found from the average monthly energy consumption recorded at the HT side as $I = \frac{average\ monthly\ kWh\ recorded\ at\ HT\ metering\ side}{24*30*11*\sqrt{3}}$ ……..(10)

For LT consumers under distribution transformer the energy transmitted from the HT side of each distribution transformer is calculated as per equation (9)

$$Total\ \ monthly\ average\ energy\ transmitted\ from\ the\ pole\ at\ switching\ station\ \left(\frac{kWh}{month}\right) =$$
$$Total\ monthly\ average\ energy\ transmitted\ from\ the\ transformer\ primary\ \left(\frac{kWh}{month}\right) +$$
$$Total\ monthly\ average\ HT\ overhead\ line\ losses\ \left(\frac{kWh}{month}\right)\ \text{……..(11)}$$

HT Cable losses is given by equation (12) as follows

$$HT\ cable\ losses\ \left(\frac{kWh}{month}\right) = 3\ I_T^2 * R_{HTcable} * D_c * 24 * 30\ \text{……..(12)}$$

Where: I_T = average current through the HT cable (A)

$R_{HTcable}$ = Resistance/km of HT cable (Ω/km)

D_c = length of HT Cable from incomer to Pole at switching station

The total monthly average energy transmitted from the feeder incomer =

$$The\ total\ monthly\ average\ energy\ transmitted\ from\ the\ feeder\ incomer\ (kWh/month)$$
$$= Total\ monthly\ average\ energy\ transmitted\ from\ the\ pole\ at\ switching\ station$$
$$+ HT\ cable\ losses$$

D. Feeder Meter Calibration

Continuous logging was done at each feeder for a period of 24 hours during a normal working day. The energy transmitted from each feeder was recorded using power analyzer and it is compared against the power analyzer readings. Percentage of error in the feeder side energy meter was found using the formula shown below.

$$\%\ of\ error = \frac{(Feeder\ energy\ meter\ reading - Power\ analyser\ reading\ ) * 100}{Power\ analyser\ reading}$$

LIST OF INSTRUMENTS

The instruments used for the measurements and analysis as a part of electrical distribution audit were as follows:

Table 77: Equipment list

Equipment/software name	**Make**	**Model**	**Purpose**
Portable load manager	Krykard	1. ALM 31 2. ALM 35	Load and distribution loss analysis, Meter deviation
Global positioning system meter	Garmin	Etrex 10	For mapping the HT lines and to have the coordinates of the transformers
Easy GPS software			For mapping the co-ordinates
Google maps			For mapping

4. INFRASTRUCTURE DETAILS

The infrastructure details of the TCED DISCOM are given below as per the Performa filled out and verified by the accredited energy auditor.

Table 78: Infrastructure details

Form-Details of Input Infrastructure					
1	**Parameters**	**Total**	**Covered during in audit**	**Verified by Auditor in Sample Check**	**Remarks (Source of data)**
i	Number of circles	1	1	1	
ii	Number of divisions	1	1	1	
iii	Number of sub-divisions	1	1	1	
iv	Number of feeders	18	18	11	69.11% of the Total feeder
v	Number of DTs	468	468	257	54.91% of the total DT. Transformers of HT consumers not included in the list
vi	Number of consumers	41831	41831	21650	51.75% of the total consumers
2	**Parameters**	**66kV and above**	**33kV**	**11/22kV**	**LT**
a. i.	Number of conventional metered consumers	-	-	-	8130
ii	Number of consumers with 'smart' meters	-	-	-	-
iii	Number of consumers with 'smart prepaid' meters	-	-	-	-
iv	Number of consumers with 'AMR' meters	-	-	-	-
v	Number of consumers with 'non-smart prepaid' meters	-	-	134	33567
vi	Number of unmetered consumers	-	-	-	
vii	**Number of total consumers**	-	-	134	41697
b.i.	Number of conventionally metered Distribution Transformers	-	-	-	293
ii	Number of DTs with communicable meters	-	-	-	-
iii	Number of unmetered DTs	-	-	-	175

iv	**Number of total Transformers**				468
c.i.	Number of metered feeders			-	
ii	Number of feeders with communicable meters			18	
iii	Number of unmetered feeders			-	
iv	**Number of total feeders**			18	
d.	Line length (ct km)		4.2	115.13	285.675
e.	Length of Aerial Bunched Cables			1.85	-
f.	Length of Underground Cables		2.565	71.83	4.525

5. ELECTRICAL DISTRIBUTION SYSTEM

Thrissur is known as the cultural capital of Kerala and it is the administrative capital of Thrissur district. Thrissur is known as the cultural capital of Kerala because of its cultural, spiritual and religious leanings throughout history. It is famous for Thrissur Pooram festival, one of the most colourful and spectacular temple festivals of Kerala from ancient times. Thrissur has been politically, economically and culturally significant to the Indian subcontinent. The city is built around a 65-acre (26 ha) hillock called the Thekkinkadu Maidanam. Thrissur was once the capital of the Kingdom of Cochin and was a point of contact for Arabs, Romans, Portuguese, Dutch and English.

The Thrissur Municipal Corporation manages the distribution of electricity to the residents and Commercial establishments through **Thrissur Corporation Electricity Department.** The distribution network covers about 12.65 Sq. km. Thrissur Corporation Electricity Department (TCED is one of the 10 electricity distribution Licensees in the state of Kerala. The present TCED has 40000 plus consumer strength and the annual energy sale is about 160 MU. TCED has its own 110 kV, 66 kV and 33KV substations with 468 distribution transformers. **Thrissur Corporation is unique in that it is the only local body engaged in the distribution of electricity and aims to become an ideal licensee in India.**

With the support and consent of various govt agencies, TCED has been implementing various programs and projects for efficient use of energy and conservation. TCED has already commissioned 500 kW Solar Power plant, and orientates at more solar plants near future. In addition, TCED will soon be having its own Small Hydel Projects as much as 4 projects are already allotted to TCED by the Kerala Government.

TCED has not availed any funding so far under central support and missed modernisation and strengthening under APDRP, RAPDRP and IPDS.

Presently, as of December 2022, **TCED came under the RDSS and implementing all the required measures as per the Regulations of Energy accounting**. AT& C loss & Revenue gap for TCED is below bench marks but for an area currently handled by TCED this figure is high due to non-segregation of loss data which will be covered in Smart meter program under the RDSS with system metering.

The billing system, ERP covering Material/Procurement, Accounts and HR are missing and more importantly this utility does not have any GIS mapping of consumers and indexing them to Feeder/DTR/Consumer that enable clear energy auditing. This will be covered under IT- enabled system.

As far as KSERC filing is concerned, TCED has equal responsibility as that of other licensees within the state and compliance to variance regulations and statutory filings are mandatory and these reforms now suggested are just for these requirements only and is expected that KSERC will concur for such investment appraisals.

ELECTRICAL NETWORK CONFIGURATION

The Thrissur Corporation Electricity Department (TCED) receives power at two supply voltage:

1. 110 kV – receives at Aswini substation.
2. 66 kV – receives at Aswini Substation

The However, the Thrissur Corporation Electricity Department (TCED) have three substations in the name of its voltage level.

1. 110 kV substation at Aswini.
2. 66 kV substation at Aswini.
3. 33 kV substation at Ikkandawarrior Road.

The supply receives at 110 kV and stepdown to 11 kV feeders using 2 nos of 12.5 MVA transformers installed in the yard. Another 110-kV bus is passed through the 01 no of 16 MVA transformer to stepdown at 33 kV voltage and transmitted to 33 KV substation. In the 33-kV substation 02 nos of 5 MVA transformer will stepdown the supply to 11 kV and supplies to the feeders.

The supply that receives at 66 kV gets stepdown using 2 nos of 10 MVA transformers installed in the yard.

SUBSTATION DETAILS

- ***TRANSFORMER AND FEEDER DETAILS – SUBSTATION***

Transformer details in each substation is given in the table below:

Table 79: Substation transformer details

S/s	TR. No	Capacity of Transformer	Voltage level	Current	Volt impedance	Serial No.	MFD Name	Date of MFD
		MVA	KV	A	%			
66 kV	TR-1	10	66/11	87.5/525	9.57	120285-1	TELK	1988
	TR-2	10	66/11	87.5/525	9.71	120285-2	TELK	1989
	TR-3	10	66/11	87.6/525	9.97	120495	TELK	2005
110 kV	TR-1	12.5	110/11	65.7/657	10.21	120553-1	TELK	2008
	TR-2	12.5	110/11	65.7/657	10.12	120553-2	TELK	2008
	TR-3	16	110/33	84.1/280	10.31	120554	TELK	2008
33 kV	TR-1	5	33/11	87.6/263	7.14	110125-1	TELK	2009
	TR-2	5	33/11	87.6/263	7.01	110125-2	TELK	2009

There are 07nos of 11 kV feeders during the FY 2022-23 period under the 110-kV substation, 07 in 66 kV and 4 in 33 kV substation. The feeders are:

Table 80: Distribution Feeder name

Feeder			
33 kV s/s		110 kV s/s	
1	Paravattani	1	M O Road
2	Koorkanchery	2	Kottappuram
3	Veliyanoor	3	East Fort
4	Mission Quarters	4	Shornur Road
66 kV s/s		5	District Hospital
1	Keralavarma	6	Chembukavu
2	Poonkunnam	7	Vanjikulam
3	Bini		
4	Vivekodayam		
5	Aranattukkara		
6	Jubilee Mission Medical College		
7	Ramanilayam		

- ***DETAILS OF CABLES AND OVERHEAD LINES - SUMMARY***

The details of 11 kV cable used at the substation is given below. The data was taken from the Single line diagram of the substation.

Table 81: Switching Station – 11 kV UG Cable Details

From	To	Cable size	Run	Core	Cable length (m)	R/km (ohm)
110/11 kV TRFR	Substation panel	500 sqmm XLPE	3	3	50	0.081
66/11 kV TRFR	Substation panel	500 sqmm XLPE	3	3	50	0.081
33/11 kV TRFR	Substation panel	300 sqmm XLPE	1	3	50	0.081
Substation panel -110/11 kV	M O Road	300 sqmm XLPE	1	3	30	0.13
	Kottappuram	300 sqmm XLPE	1	3	30	0.13
	Vanjikulam	300 sqmm XLPE	1	3	30	0.13
	Chembukavu	300 sqmm XLPE	1	3	30	0.13
	Shornur Road	300 sqmm XLPE	1	3	30	0.13
	District Hospital	300 sqmm XLPE	1	3	30	0.13
	East Fort	300 sqmm XLPE	1	3	25	0.13
Substation panel -66/11 kV	Poonkunnam	300 sqmm XLPE	1	3	50	0.13
	Keralavarma	300 sqmm XLPE	1	3	50	0.13
	Bini	300 sqmm XLPE	1	3	65	0.13
	Vivekodayam	300 sqmm XLPE	1	3	30	0.13
	Aranattukkara	300 sqmm XLPE	1	3	50	0.13
	Jubilee Mission Medical College	300 sqmm XLPE	1	3	30	0.13
	Ramanilayam	300 sqmm XLPE	1	3	30	0.13
Substation panel -33/11 kV	Paravattani	300 sqmm XLPE	1	3	30	0.13
	Koorkanchery	300 sqmm XLPE	1	3	65	0.13
	Veliyanoor	300 sqmm XLPE	1	3	30	0.13
	Mission Quarters	300 sqmm XLPE	1	3	30	0.13

The details of OH lines used in the TCED distribution system is given in the table below. The HT line length was measured using the GPS mapping and LT line length was taken from the RDSS data.

Table 82: TCED Distribution –line details

Sl. No	Feeder	HT								LT
		OH Line Length	UG Cable length							OH line Length
			95 sq.mm	150 sq.mm	185 sq.mm	240 sq.mm	300 sq.mm	400 sq. mm	ABC - 120 sq mm	
		m	m	m	m	m	m	m	m	m
1	Bini	1838		63	122	354	1258.91		19	1710
2	Chembukavu	3,435		-	170	409	2,281		14	6,730
3	East Fort	2,119		73	47		4,381	56		9,900
4	Koorkenchery	2,782		130	232	266	2,759			NA
5	Ramanilayam	1,811		878	221		680			3,000
6	Veliyanoor	1,493			138	32	3,703			5,580
7	Vivekodhayam	2,120		40	124	86	2,398		20	5,500
8	Shornur Road	2,118		572	301		3,950			8,960
9	District Hospital	2,325		497	67	256	4,637			NA
10	Jubilee Mission						2,821			NA
11	Arnattukkara	4,079				214	5,631		12	NA
12	Kottappuram	2,582		63	455		2,856			NA
13	Vanjikulam	2,173		164	310	185	1,849		1,728	NA
14	Keralavarma	2,918		157	274	123	5,242		28	8,950
15	M O Road	1,736	170	149	480	266	4,959		26	NA
16	Mission Quarters	4,507		135	23	31	4,531	39		10,150
17	Paravattani	3,163		272	111		4,781			10,450
18	Poonkunam	2,095		230	296		3,831			NA
Total		**43295**	**170**	**3423**	**3373**	**2221**	**62548**	**95**	**1846**	**70930**

- ***TRANSFORMER DETAILS – FEEDER WISE***

The details of Transformers in each feeder wise that has been audited under the DISCOM is summarized and listed below in table. **The detailed list is provided in the Annexure.**

Table 83: Feeder wise transformer data - Summary

Sl No	Feeder	No: of Transformer	DTR Meter		No of Consumers		
			Yes	No	LT	HT	Total
1	Ramanilayam	18	10	8	673	9	682
2	Bini	17	11	6	995	12	1007
3	Chembukavu	24	19	5	2495	6	2501
4	Shornur Road	42	27	15	2912	8	2920
5	East Fort	27	16	11	2088	8	2096
6	Koorkenchery	22	15	7	NA**	NA**	NA**
7	Veliyanoor	18	9	9	1933	8	1941
8	Vivekodhayam	21	13	8	1886	9	1895
9	Arnattukkara	31	15	16	NA**	NA**	NA**
10	DH	34	16	18	NA**	NA**	NA**
11	Kottappuram	38	30	8	NA**	NA**	NA**
12	Vanjikulam	22	14	8	NA**	NA**	NA**
13	M O Road	31	12	19	NA**	NA**	NA**
14	Mission Quarters	30	23	7	2258	6	2264
15	Paravattani	24	17	7	3023	5	3028
16	Poonkunam	33	21	12	NA**	NA**	NA**
17	Keralavarma	36	25	11	3312	2	3314
18	Jubilee Mission	Dedicated feeder HT				2	2
Total		**468**	**293**	**175**	**21575**	**75**	**21650**

**NA – Feeder or transformer wise consumer data not available in the DISCOM. DISCOM is building the database along with the RDSS scheme which will be completed by December 2024.

6. POWER PURCHASE DETAILS

POWER ALLOCATION

The State Government of Kerala allocates the energy available from various sources among the state DISCOM's to ensure balanced financial viability and fairly uniform tariff for various categories of consumers in different parts of the state. The allocation is also to ensure payment of power purchase cost including transmission and other related expenses. The point of connection charges shall be paid by DISCOM proportionate to energy allocation of each source. The TCED has only single source of power – KSEBL – which is owned and operated by the Kerala State Government. The power purchase capacity of the TCED as per the Power purchase agreement is 09 MW.

AVERAGE BILLING RATE (ABR):

ABR for a consumer category is determined by dividing total expected revenue from the category by total expected sale to that category. Mathematically, it can be represented as:

$$ABR\ of\ a\ category\ of\ consumer = \frac{Total\ Expected\ revenue\ from\ a\ category}{Total\ Sale\ of\ power\ to\ that\ category}$$

The ABR (Average rate /kWh) of each category as per the audited sheet of TCED is given below. The net average rate/unit is given as **Rs 8.91/kWh**.

Note: There is no tariff subsidy for the DISCOM consumers as per the KSERC regulations

Figure 26: Average billing rate – category wise

Consumer type	Tariff	Number of consumers	Units	Total charges	Average rate per kWh
		Nos	MU	Rs in lakhs	Rs/kWh
Domestic	**LTI**	22,526	40.1	2,440.6	6.09
Industrial	**LTIV-A**	484	3.2	228.1	7.03
Industrial	**LTIV-B**	2	0.0	1.9	7.78
Agricultural	**LTVA**	185	0.1	2.0	3.70
Agricultural	**LTVB**	2	0.001	0.04	3.96
Non-Domestic	**LTVIA**	249	2.2	159.1	7.37
Non-Domestic	**LTVIB**	473	2.6	213.4	8.14
Non-Domestic	**LTVIC**	501	4.7	525.1	11.09
Non-Domestic	**LTVID**	31	0.1	1.8	2.27
Non-Domestic	**LTVIE**	43	0.1	4.4	6.77
Non-Domestic	**LTVIF**	722	5.0	511.9	10.23
Non-Domestic	**LTVIG**	78	1.1	108.5	10.14
Non-Domestic	**LTVIIA**	14,361	42.1	4,507.8	10.70
Non-Domestic	**LTVIIB**	1,656	0.7	50.4	6.98
Non-Domestic	**LTVIIC**	13	0.1	15.4	10.35
Streetlight	**LTVIIIB**	292	1.2	58.1	4.79
Non-Domestic	**LT IX**	76	0.1	15.3	21.74

Consumer type	Tariff	Number of consumers	Units	Total charges	Average rate per kWh
		Nos	MU	Rs in lakhs	Rs/kWh
Non-Domestic	**LTII**	-	0.0	0.1	30.03
Non-Domestic	**LTIII**	1	0.1	11.3	18.29
Non-Domestic	**LTX**	2	0.0	0.6	7.48
Non-Domestic	**HT IA**	5	0.7	56.7	8.42
Non-Domestic	**HT IB**	-	-	-	NA
Non-Domestic	**HT 2A**	8	2.1	155.3	7.54
Non-Domestic	**HT 2B**	31	17.5	1,615.4	9.22
Non-Domestic	**HT 4**	-	-	-	NA
Non-Domestic	**HT 4-A**	53	13.1	1,359.4	10.39
Non-Domestic	**HT 4-B**	36	11.2	1,142.3	10.21
Non-Domestic	**SPS**	1	0.3	35.3	10.96
	Total	**41,831**	**148.36**	**13,220.0**	**8.91**

***Source**: **Truing up and financial year statement 2022-23*

AVERAGE POWER PURCHASE COST PER UNIT

Average per unit cost power purchase for a consumer category is determined by dividing total unit purchase cost from the category by total input purchase in units. Mathematically, it can be represented as:

$$APC\ of\ a\ category\ of\ consumer = \frac{Total\ Purchase\ cost\ from\ a\ category}{Total\ input\ purchase\ units}$$

The net average power purchase cost per unit of the DISCOM is available from the Trueing up document and summarised in the table below.

Table 84: Average purchase cost – DISCOM

FY	Total input energy purchased (MU)**	Total purchase cost (Rs lakhs)	APC (Rs/unit)
2020-21	129.33	8878.80	6.86
2021-22	137.59	9502.00	6.90
2022-23	159.12	11,632.97	7.31

***Total input energy purchased (MU) = Input energy (MU) at the DISCOM from 110 kV, 66kV incomer & solar export energy excluding solar own generation by DISCOM.*

- ***Source**: Audited balance sheet and financial year statement 2022-23*

ACS – ARR GAP ANALYSIS

The Average cost of supply (ACS) and the average revenue realised (ARR) is conducted in the DISCOM during the energy audit and summarized in the below table and chart.

Table 85: ACS- ARR gap

	Input energy (MU)**	**Total expenditure (Rs in lakhs)**	**Total revenue (Rs)**	**ACS (Rs/kWh)**	**ARR (Rs/kWh)**	**ACS - ARR gap (Rs/kWh)**
2020-21	129.33	13615.48	13230.11	10.53	10.23	-0.30
2021-22	137.59	11,702.32	10,913.60	8.51	7.93	-0.57
2022-23	159.12	13,504.75	13,767.08	8.49	8.65	0.16

***Total input energy purchased (MU) = total Input energy (MU) at the DISCOM substation and solar export energy excluding solar own generation by DISCOM.*

- ***Source**: Audited balance sheet and financial year statement 2022-23*

7. SINGLE LINE DIAGRAM

110 KV & 66 KV SUBSTATION

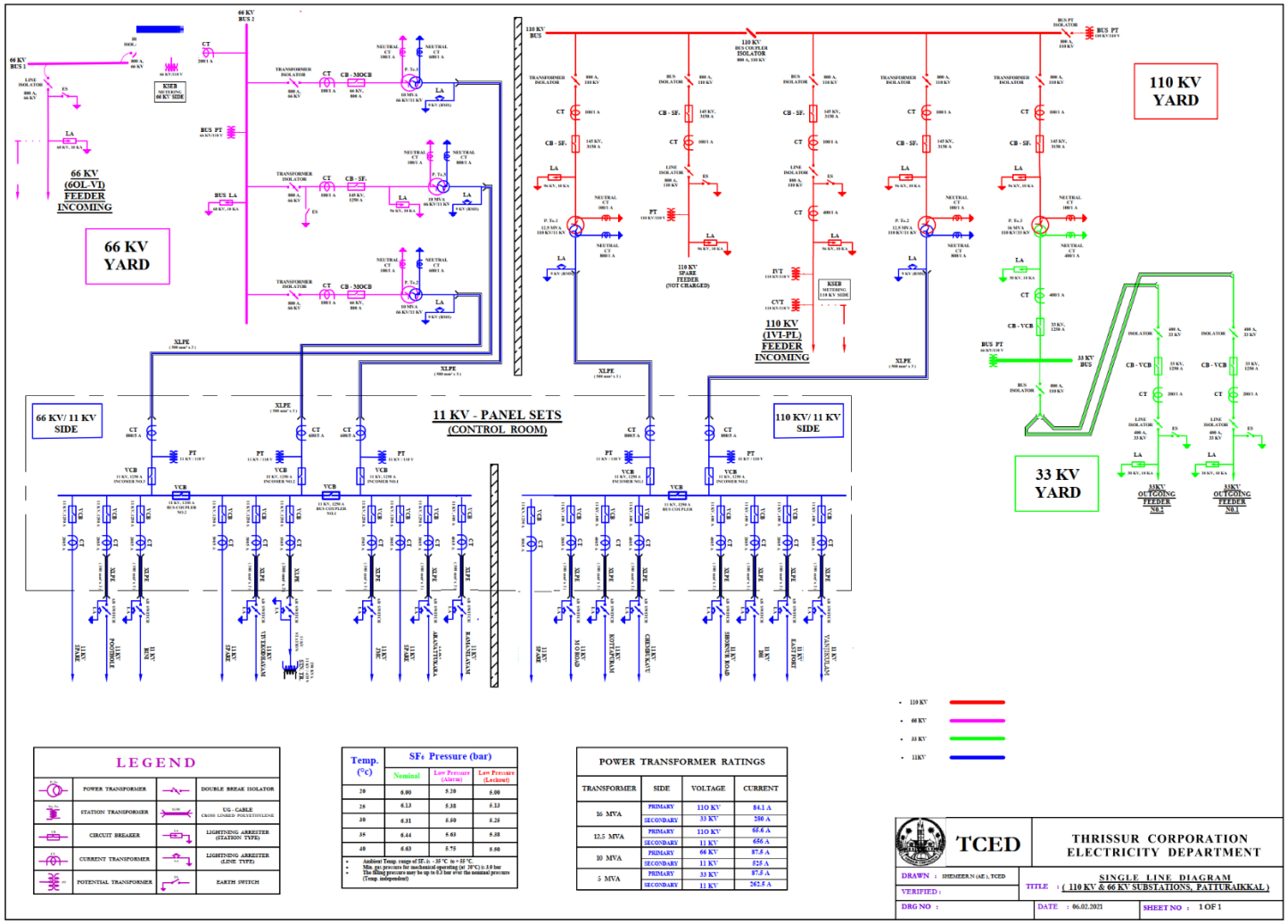

Figure 27: 110 kV & 66 kV substation

33 KV SUBSTATION

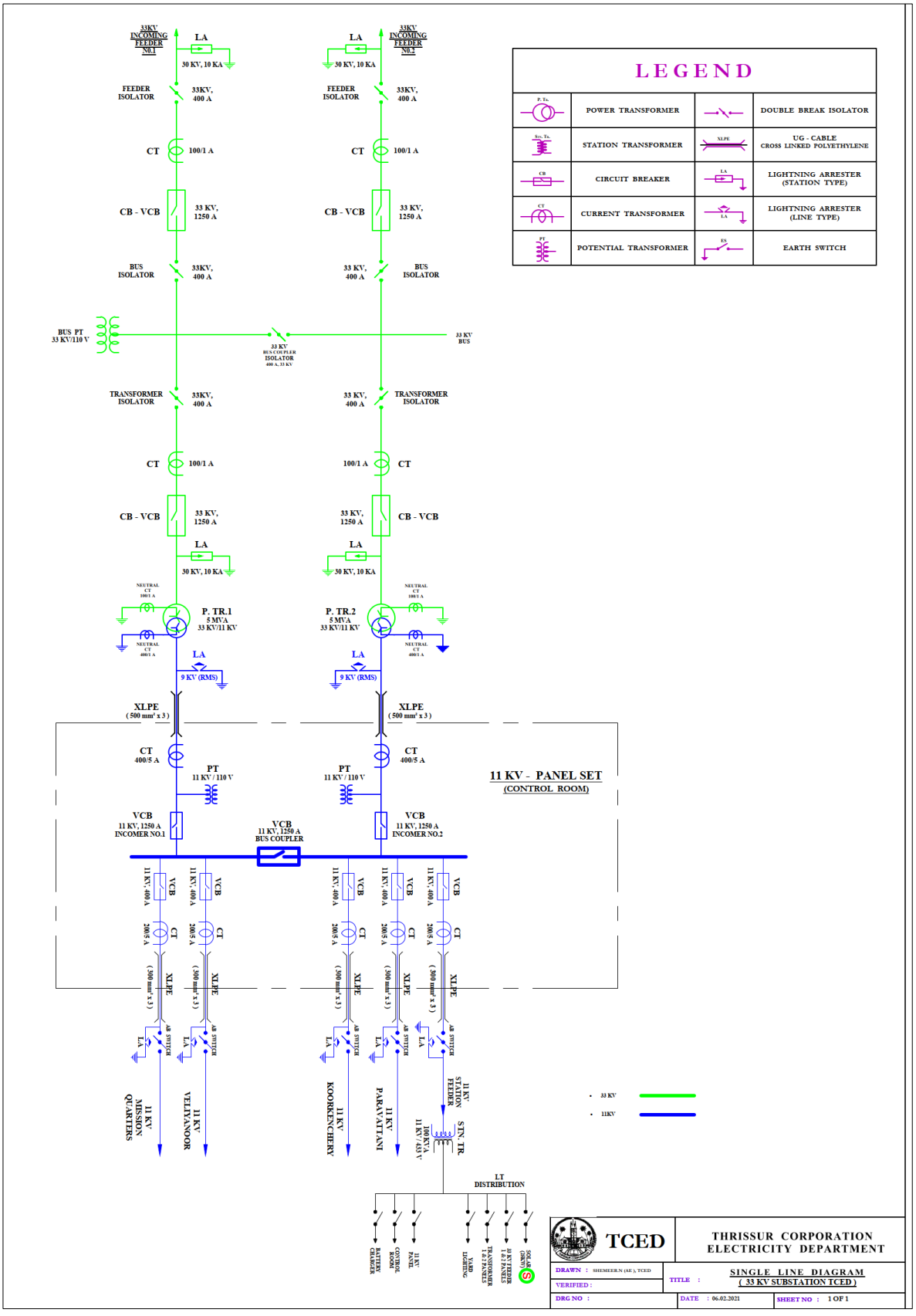

Figure 28: 33 kV substation

8. CATEGORY OF SERVICE DETAILS

DETAILS OF CONSUMERS AND CONSUMPTION

The details of consumers and consumption is given in the table below:

Table 86: Details of consumers and consumption

Summary of Energy						
Period from 1st April 2022 to 31st March 2023						
S. No	**Type of Consumers**	**Category of Consumers (EHT/HT/LT /Others)**	**Voltage Level (In Voltage)**	**No of Consumers**	**Total Consumption (In MU)**	**Remarks (Source of data)**
1	Domestic	LT	0.415	22526	40.10	
2	Commercial	LT	0.415	17876	56.59	
3	IP Sets					
4	Hor. & Nur. & Coffee/Tea & Rubber (Metered)					
5	Hor. & Nur. & Coffee/Tea & Rubber (Flat)					
6	Heating and Motive Power					
7	Water Supply					
8	Public Lighting	LT	0.415	292	1.21	VIII B
9	HT Water Supply					
10	HT Industrial	HT	11	5	0.67	HT IA
11	Industrial (Small)	LT	0.415	486	0.02	LT IV
12	Industrial (Medium)				3.24	
13	HT Commercial	HT	11	90	24.58	HT 4A, 4B, SPS
14	Applicable to Government Hospitals & Hospitals					
15	Lift Irrigation Schemes/Lift Irrigation Societies					
16	HT Res. Apartments Applicable to all areas					
17	Mixed Load - own consumption					
18	Government offices and department	LT	0.415	330	2.31	
19	HT general	HT	11	39	19.59	HT 2A, 2B
20	Agriculture	LT	0.415	187	0.05	LT V
	Total			**41831**	**148.360**	

DIVISION WISE STATUS OF DT LEVEL METERING

The division wise status of DT level metering is given in the table below.

Table 87: Division wise status of DT level metering

a. Division wise status of DT level metering										
Zone name	Circle name	Division name	Feeder name	Total no of DT on feeder	No of unmetered DTs	No of metered DTs			No. of DTs with functional meters	
						AMR metered (communicable)	AMI metered (communicable)	Non-AMR / AMI metered (non-communicable)	Communicating (Total No out of 7 and 8)	Non-communicating (Total No. out of 7,8 and 9)
1	2	3	4	5= (6+7+8+9)	6	7	8	9	10	11
TCED	TCED		Ramanilayam	18	8		10		10	
TCED	TCED		Bini	17	6		11		11	
TCED	TCED		Chembukavu	24	5		19		19	
TCED	TCED		Shornur Road	42	15		27		27	
TCED	TCED		East Fort	27	11		16		16	
TCED	TCED		Koorkenchery	22	7		15		15	
TCED	TCED		Veliyanoor	18	9		9		9	
TCED	TCED		Vivekodhayam	21	8		13		13	
TCED	TCED		Arnattukkara	31	16		15		15	
TCED	TCED		DH	34	18		16		16	
TCED	TCED		Kottappuram	38	8		30		30	
TCED	TCED		Vanjikulam	22	8		14		14	
TCED	TCED		M O Road	31	19		12		12	
TCED	TCED		Mission Quaters	30	7		23		23	
TCED	TCED		Paravattani	24	7		17		17	
TCED	TCED		Poonkunam	33	12		21		21	
TCED	TCED		Keralavarma	36	11		25		25	
TCED	TCED		Jubilee Mission	Dedicated feeder						

DETAILS OF DT WISE LOSSES

The details of DT wise losses as per the Performa is given in the table below.

Table 88: DT wise losses

b. Details of DT-wise losses													
Sub-station ID	**Feeder ID**	**Feeder Name**	**DT Id no**	**DT Capacity (kVA)**	**Predominant consumer type of DT (Domestic/Industrial/ Agriculture /Mixed)**	**Type of metering (Unmetered/AMI /AMR /Other)**	**Status of meter (functional/non-functional)**	**% of data received automatically (if AMI/AMR)**	**No. of connected consumers**	**Input Energy (MU)**	**Billed Energy (MU)**	**Loss of Energy (MU)**	**% Loss**
		1	**2**						**3**	**4**	**5**	**6 = 4-5**	**(7) = [(6)/(4)]*100**
Not available as 100% DT metering not done also the DT measurement not yet commenced													

Note: The DT level input energy is not recorded by the DISCOM that results in non-evaluation of DT level losses.

9. FIELD VERIFICATION DATA

ENERGY & POWER QUALITY ANALYSIS – AT SWITCHING STATION

The objective of this section is to establish how the facility is performing in terms of energy consumption and the quality of power at the switching station.

- **Incomer 110 KV – Measurement Evaluation**

The continuous power measurement of incomer feeder (110 kV) conducted using the Krykard ALM 31 power quality analysers. The incomer side was logged for 5 hours and measured data is summarized in the following table. The measurement-averaging period was 20 seconds. The measurement was done on 7th August 2023.

The summary of measured parameters of the transformer is given in the table below.

Table 89: Incomer Measurement Data

Incomer Name		Incomer 110 kV
Date of measurement		7th August 2023
Basic Parameters		
Parameters	**Units**	**Incomer 110 kV**
Voltage line (kV)	Min	109
	Avg	111
	Max	113
Current (A)	Min	86
	Avg	93
	Max	98
Frequency (Hz)	Min	49.83
	Avg	49.97
	Max	50.08
Energy Parameters		
Parameters	**Units**	**Incomer 110 kV**
Energy consumed (kWh)	Total	83880.5
Energy received (kVAh)	Total	86232.6
Power factor		0.97
Active power (kW)	Min	16570
	Avg	17395
	Max	18116
Apparent power (kVA)	Min	17100
	Avg	17882
	Max	18572
Reactive power (kVAr)	Min	3985
	Avg	4393
	Max	4690
Power quality parameters		
Parameters	**Units**	**Incomer 110 kV**
Voltage imbalance %	Min	0.10
	Avg	0.29

	Max	0.40
Parameters	**Units**	**Incomer 110 kV**
Current imbalance %	Min	0.60
	Avg	1.24
	Max	2.10
THDv %	Min	0.90
	Avg	1.23
	Max	1.60
THDa %	Min	1.60
	Avg	1.92
	Max	2.30

➢ Electrical Parameters – Profile

• Power variations – Incomer

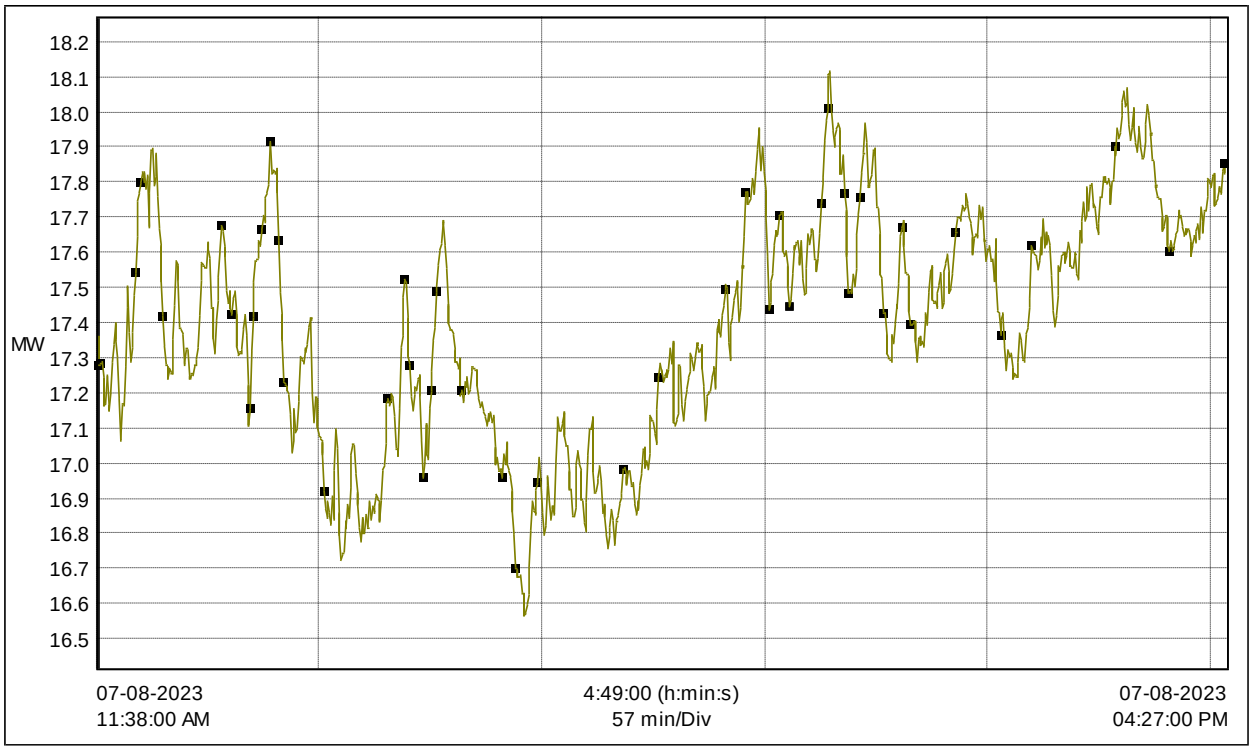

Figure 29: Power variations – continuous logged data

- **Demand variations – incomer**

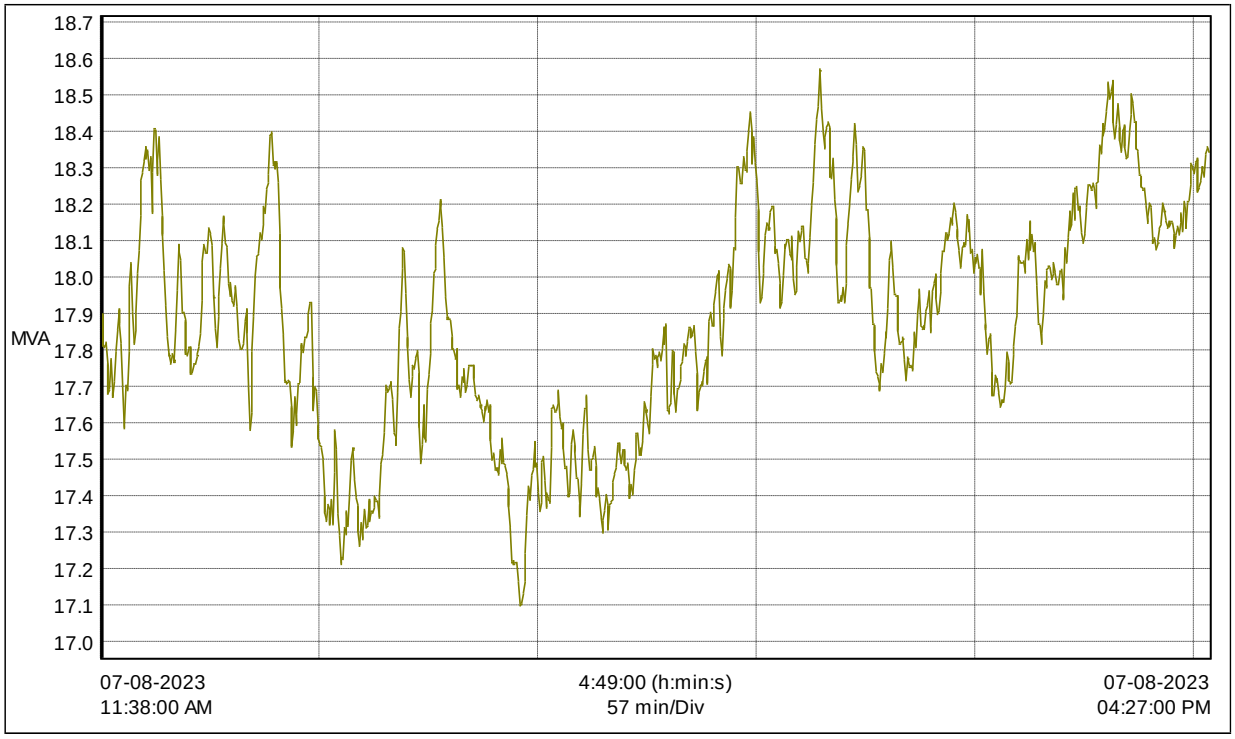

Figure 30: Demand variations – continuous logged data

The maximum demand registered in 02-minute cycle in the continuous logging of 5-hour measurement at 110 kV incomer is 18.57 MVA.

- **Power factor variations - Incomer**

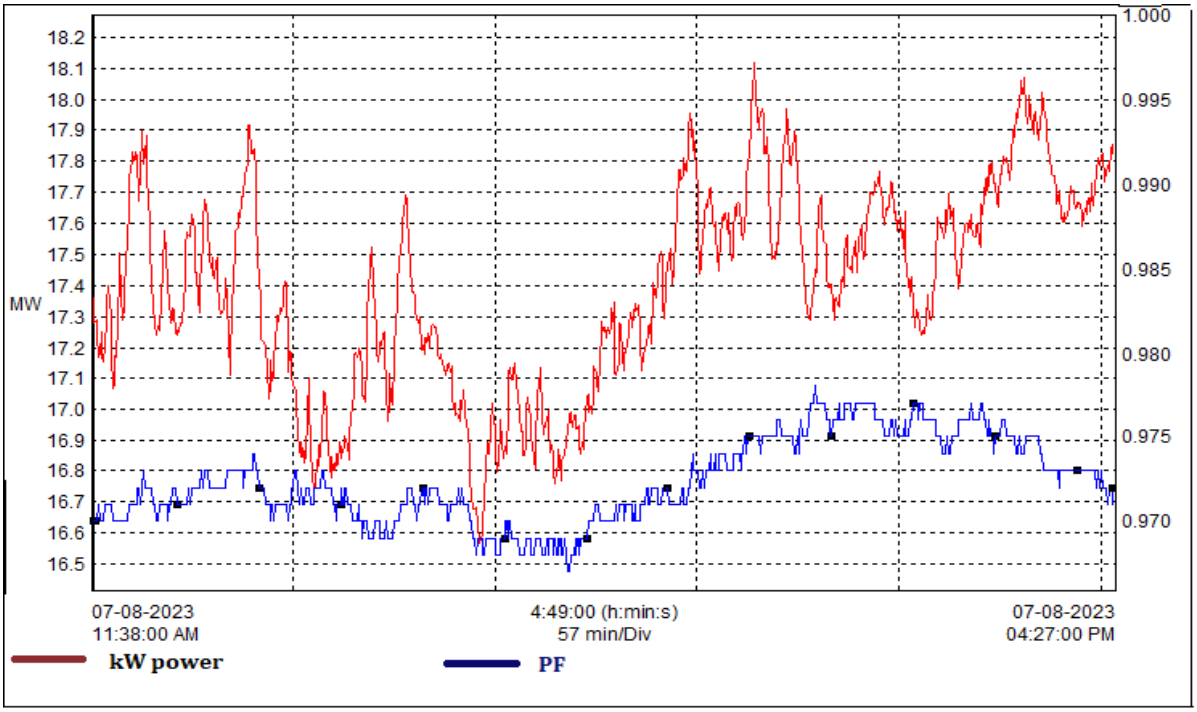

Figure 31: Power factor – variations

- **Power quality**

Harmonics study revolves around the use of non-linear loads that are connected to electric power systems including static power converters, arc discharge devices, saturated magnetic devices and to a lesser degree, rotating machines. Static power converters of electric power are the largest non-linear loads and are used in industry for a variety of purposes such as electro- chemical power supplies, adjustable speed drives, and uninterruptible power supplies.

Classification, effects and standards are given in tables below.

TABLE 90: HARMONICS CLASSIFICATION

	1st order	2nd order	3rd order	3rd order	4th order	5th order	6th order
Frequency Hz	50	100	150	200	250	300	350
Sequence	+	-	0	+	-	0	+

Table 91: CURRENT HARMONICS LIMIT (IEEE 519-2014)

Maximum harmonic current distortion in percent of I_L						
Individual harmonic order (odd harmonics)[a, b]						
I_{SC}/I_L	$3 \le h < 11$	$11 \le h < 17$	$17 \le h < 23$	$23 \le h < 35$	$35 \le h \le 50$	TDD
< 20[c]	4.0	2.0	1.5	0.6	0.3	5.0
$20 < 50$	7.0	3.5	2.5	1.0	0.5	8.0
$50 < 100$	10.0	4.5	4.0	1.5	0.7	12.0
$100 < 1000$	12.0	5.5	5.0	2.0	1.0	15.0
> 1000	15.0	7.0	6.0	2.5	1.4	20.0

[a]Even harmonics are limited to 25% of the odd harmonic limits above.

[b]Current distortions that result in a dc offset, e.g., half-wave converters, are not allowed.

[c]All power generation equipment is limited to these values of current distortion, regardless of actual I_{sc}/I_L.

where

I_{sc} = maximum short-circuit current at PCC

I_L = maximum demand load current (fundamental frequency component) at the PCC under normal load operating conditions

Table 92: VOLTAGE HARMONICS LIMIT (IEEE 519-2014)

Voltage distortion limits		
Bus voltage at PCC	**Individual voltage distortion %**	**Total voltage harmonics distortion %**
V ≤ 01 kV	5.0	8.0
01 kV < V ≤ 69 kV	3.0	5.0
69.001 kV < V ≤ 161 kV	1.5	2.5
161.001 kV and above	1.0	1.5

Thus, harmonic limits at the TCED 110 kV incomer is given in the table below:

Table 93: Standard limits as per the IEEE 519-2014 – at TCED incomer

2. Normal range of Isc/I_L at TCED incomer	-	<20
3. Maximum standard Total demand distortion – current	-	5%
4. Maximum standard Total harmonic distortion – voltage	-	2.5%

Harmonic values at the TCED incomer are given in the table below:

Table 94: Harmonics values – TCED incomer

Particulars	THDv max	THDa max	Remarks
	%	%	
Permissible limit	**2.5**	**5**	
Incomer 110 kV	1.6	2.3	within limits
Incomer 66 kV	NA	NA	Not able to measure

- **Harmonic spectrum**

Voltage harmonic spectrum:

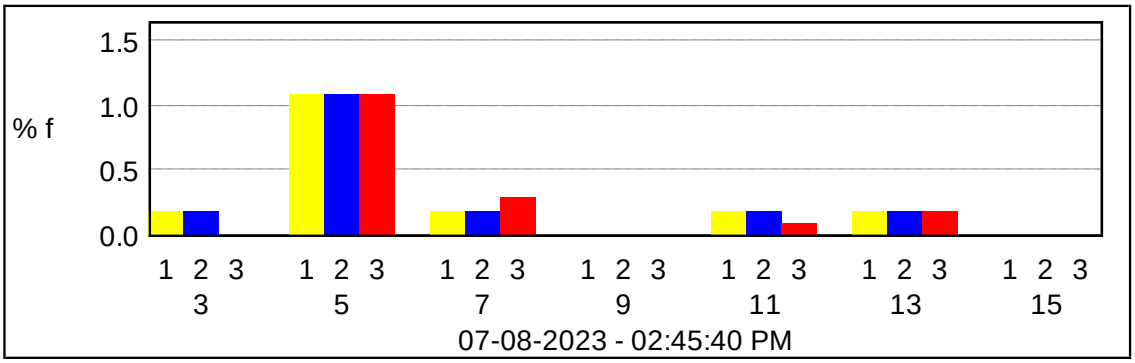

Figure 32: Voltage harmonic spectrum

Current harmonic spectrum:

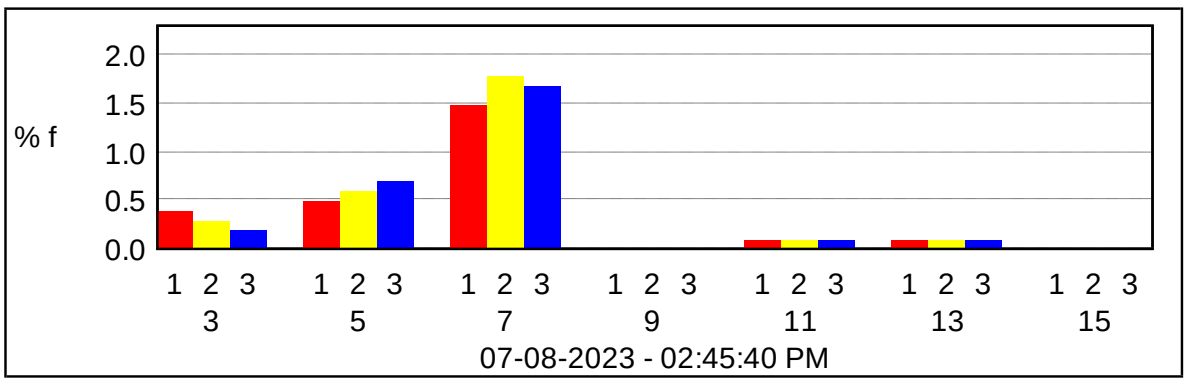

Figure 33: Current harmonic spectrum

OBSERVATIONS AND RECOMMENDATION – ELECTRICAL NETWORK CONFIGURATION

Table 95: Observations & recommendation – electrical network configuration

Observation	Recommendation	Benefit
Incomer measurement evaluation		
• Real time Demand variation shows that the maximum demand registered at normal period (2:45 pm) and it was 18.57 MVA. • The high demand in the normal period is due to the effect of commercial buildings in the DISCOM area, mainly due to the Air conditioning loads in those buildings.	• Nil	• Nil
Energy & power quality analysis		
• The measured per day consumption through the 110-kV s/s approx. is 0.403 MU.	• The current THD values are within the IEEE 519 standard limit (<5%). • The voltage THD values are within the IEEE 519 standard limit (<2.5%)	• Nil

PICTURES

General photos

110 KV substation

110 kV substation

10. LIST OF DOCUMENTS VERIFIED WITH EACH PARAMETER

The following are the documents verified during Annual Energy Audit:

Table 96: List of Documents verified

FY 2022-23 Data Verification		
Sl No	**Name**	**Name Supporting Document**
Input Energy		
1	Input Energy (MU)	Electricity bill of FY April 2022-March 2023 from KSEBL and Consumer bills
Feeder wise Losses		
2	Feederwise Energy Accounting	TCED software
3	No of connection metered (Nos)	TCED software
4	No of connection Unmetered (Nos)	TCED software
5	Connected Load Metered (MW)	TCED software
6	Connected Load Unmetered (MW)	TCED software
7	Input Energy (MU)	KSEB bill and TCED software for solar export data
8	Metered energy (MU)	TCED software
9	Unmetered energy/Assessment Energy (MU)	TCED software
10	T&D Losses (MU)	Manual calculation
11	Collected Amount	TCED billing software
12	AT&C Loss	TCED software
Details of Input Energy Sources		
13	Generation at Transmission Periphery (Details)	KSEB bill and TCED software for solar export data
14	Embedded Generation in DISCOM Area	TCED software - solar export data

11. DETAILED FORMATS TO BE ANNEXED

BALANCE SHEET – FY 2022-23

Table 97: Balance sheet – FY 2022-23

Trichur Corporation Electricity Department			
Balance Sheet as on 31.03.2023			
PARTICULARS	**SCHEDULE NO.**	**As at 31.03.2023**	**As at 31.03.2022**
SOURCES OF FUNDS			
(1) Owner's Funds		**92,85,63,820**	**91,75,55,956**
Capital Account		40,40,60,306	40,40,60,306
Reserves & Surplus		52,45,03,514	51,34,95,650
(2) Consumer Contribution		**7,04,28,933**	**6,90,75,902**
TOTAL		**99,89,92,753**	**98,66,31,858**
APPLICATION OF FUNDS			
(1) Net Fixed Assets		**32,44,83,255**	**33,98,21,293**
(a) Gross Block	1	69,88,80,154	68,87,03,653
(b) Less : Accumulated Depreciation	1	37,43,96,898	34,88,82,360
(c) Net Block	1	32,44,83,255	33,98,21,293
(d) Capital Work in Progress	1		
(2) Current Assets, Loans & Advances		**1,47,13,21,817**	**1,39,52,31,561**
(a) Inventories	2	49,27,558	63,57,814
(b) Sundry Debtors		17,86,93,917	18,92,29,246
Less : Provision for Doubtful Debts		-	-
Net Sundry debtors		17,86,93,917	18,92,29,246
(c) Loans and Advances	3	71,48,35,102	63,76,86,880
(d) Interest Accrued on Investments		3,26,35,738	2,81,66,911
(e) Cash and Bank Balance		54,02,29,503	53,37,90,711
Less : Current Liabilities and Provisions	4	**79,68,12,320**	**74,84,20,995**
Net Current Assets		**67,45,09,498**	**64,68,10,565**
TOTAL		**99,89,92,753**	**98,66,31,858**

Source: *Submitted Truing up FY 2022-23*

PROFIT & LOSS STATEMENT – FY 2022-23

Table 98:Profit & loss statement

Trichur Corporation Electricity Department			
Profit & Loss Account for the year ended 31.03.2023			
PARTICULARS	**SCHEDULE NO.**	**Year Ended 31st March 2023**	**Year Ended 31st March 2022**
INCOME			
Revenue from Sale of Power	5	1,32,37,57,712	1,10,33,50,479
Other Income	6	5,29,50,664	5,70,43,608
TOTAL INCOME		**1,37,67,08,376**	**1,16,03,94,087**
EXPENDITURE			
Purchase of Power - Bulk Supply		1,16,32,96,707	95,11,92,540
Employee Costs	7	10,81,96,019	12,73,18,414
Repairs & Maintenance Expenses	8	79,30,683	74,51,142
Administration and General Expenses	9	3,04,41,726	2,21,20,280
Depreciation	1	2,55,14,541	2,07,38,621
Interest and Finance Charges	10	1,74,21,356	1,68,60,164
Provisions		1,27,50,000	1,07,07,129
TOTAL EXPENDITURE		**1,36,55,51,032**	**1,15,63,88,291**
Net Profit / (Loss) for the period		**1,11,57,344**	**40,05,796**
Balance carried forward to Balance Sheet		**1,11,57,344**	**40,05,796**

***Source**: submitted Truing up FY 2022-23*

ELECTRICITY BILL – KSEBL – 110 KV INCOMER

KERALA STATE ELECTRICITY BOARD LIMITED

Office of the Special Officer(Revenue), Pattom,Thiruvananthapuram

DEMAND NOTICE FOR APRIL 2023

(As per CHAPTER VII OF KERALA ELETRICITY SUPPLY CODE -2014)

Con.	1336680002643	Bill Date	03-Apr-2023	Due Date	10-Apr-2023	Bill.No	11028111058338 Ver : 0		
Tariff	Licensee: ThrissurCorporation			DC Date	25-Apr-2023	CD	57742190	BG	22810284

ASSISTANT SECRETARY, THRISSUR CORPORATION
ELECTRICITY DEPARTMENT, ,
CORPORATION OFFICE,THRISSUR,
THRISSUR,,680002
Mobile no--9446143072
LCN :21/Thr.Corp

SBI Virtual A/c No(IFS Code:SBIN0070493)-null

Consumer GSTIN_ID- 32AAALT1623J1Z7/KSEB (L)GST ID=32AAECK2277NBZ1
TDS u/s 194Q : 67961.63

Arrears as on 28-Feb-2023			
Disputed	0	Undisputed	119125

Contract Demand(kVA)	75% of CD (KVA)	130% of CD (KVA)	Connected Load (KW)
0.0	0.0	0.0	0

Date of Previous Reading	28-Feb-2023	Email: electricitydepartment@yahoo.	
Date of Present Reading	31-Mar-2023	Supply Voltage	110 kV EHT

Average		
MD (kVA)	Consumption (kWh)	PF
19688.90	6846467	0.96

Billing Type	Non-DPS
Section	110 KV Sub Station,Viyyur
Circle	Transmission Circle,

Reading Details of meter X2005320-Working (KVA,KWh,KVAh & KVArh) for 03-2023

1. Energy Consumption(KWh)

Zone	FR	IR	MF	Units
1	13263.60	10734.40	2000.000	5058400
2	4511.50	3639.90	2000.000	1743200
3	5407.30	4266.70	2000.000	2281200
			Total	9082800

3. Energy Consumption(KVArh) Lag and kVARh (Lead)

Zone	FR	IR	MF	Units	FR	IR	Units
1	3774.00	3063.60	2000.000	1420800	5.40	5.40	0
2	1077.30	862.60	2000.000	429400	0.00	0.00	0
3	1363.50	1085.80	2000.000	555400	0.00	0.00	0
			Total kVArh(Lag)	2405600	kVArh(Lead)		0

2. Energy Consumption(KVAh)

Zone	FR	IR	MF	Units
1	13795.50	11167.80	2000.000	5255400
2	4639.50	3741.90	2000.000	1795200
3	5579.00	4404.50	2000.000	2349000
			Total	9399600
Ave.PF=KWh/KVAh		0.97		

4. Demand (KVA)

	Readings	MF	Units
1	11.74	2000.000	23480.0
2	9.83	2000.000	19660.0
3	6.65	2000.000	13300.0

5.Factory Lighting	0.0
6.Colony Lighting	0.0
7.Generator	0

INVOICE

	Unit	Rate	Amount (Rs)
1.Total Demand Charge			
a. Demand Charge	23480.0	380.000	8922400.00
b.	0.0	380.000	0.00
c.	0.0	380.000	0.00
d. Excess Demand Charge	0	190.000	0.00
e.		190.000	0.00
f.		190.000	0.00
Sub Total (a+b+c+d+e+f)			**8922400.00**
2.Total Energy Charges			
a. Energy charges	9082800	6.50000	59038200.00
b.		9.75000	0.00
c.		4.87500	0.00
Sub Total(a+b+c)			**59038200.00**
3.PF Incentive / Disincentive			0.00
Total Energy Charge			**59038200.00**
4.Energy Charges on Lighting load			
a.Factory Lighting	0	0.1	
b.Colony Lighting	0	0.1	0.00
Sub Total(a+b)			
5.Electricity Duty	59038200	0.100	
6.Ele. Surcharge	9082800	0.025	
7.Duty on self generated energy	0	0.012	0.00
8.Penalty for non-segn. of light load			

	Amount
9.Other Charges	
Meter Rent	1000.00
Central GST Amount@9%	90.00
State GST Amount@9%	90.00
Reconnection Fee	0.00
Charges for Belated Payments	33.00
Kerala Flood Cess	0.00
10.Total(add 1 to 9)	**67961813.00**
Plus/Minus (Round off)	0.00
UnDisputed Arr Amount	119125.00
Less 1. Advance / Credit	
2. CD Interest	0.00
3. CD Refund	0.00
Net Payable	**68080938.00**

(Rupees Six Crore Eighty Lakh Eighty Thousand Nine Hundred Thirty Eight Only)

E & O.E

Balance Advance at Credit, if any

As per Regulation 130 of Kerala Electricity Supply Code 2014 any complaint regarding accuracy of a bill shall be first taken up wih the officer designated to issue the bill (Special Officer(Revenue)). Please follow our official Facebook page fb.com/ksebl for information &announcements.(Please see the instructions overleaf)

SPECIAL OFFICER (REVENUE)

Please Detach and enclose with the DD

1336680002643 **11028111058338** **Rs.68080938.00** **April 2023**

ASSISTANT SECRETARY, THRISSUR CORPORATION

DD/Payment Instruction | Name of the | Date D D M M Y Y Y Y | Signature

ELECTRICITY BILL – KSEBL – 66 KV INCOMER

KERALA STATE ELECTRICITY BOARD LIMITED

Office of the Special Officer(Revenue), Pattom,Thiruvananthapuram

DEMAND NOTICE FOR APRIL 2023

(As per CHAPTER VII OF KERALA ELETRICITY SUPPLY CODE -2014)

Con.	1336680002662	Bill Date	**05-Apr-2023**	Due Date	**12-Apr-2023**	Bill.No	11028111061171 Ver : 0		
Tariff	Licensee: ThrissurCorporation			DC Date	**27-Apr-2023**	CD	28515195	BG	24933450

ASSISTANT SECRETARY, THRISSUR CORPORATION
ELECTRICITY DEPARTMENT, CORPORATION OFFICE,
THRISSUR,
THRISSUR,,680001
Mobile no--9446143072

LCN :21/1029

SBI Virtual A/c No(IFS Code:SBIN0070493)-KSEBHT21C1029

Consumer GSTIN_ID- 32AAALT1623J1Z7/KSEB (L)GST ID=32AAECK2277NBZ1
TDS u/s 194Q : 47586.52

Arrears as on 28-Feb-2023			
Disputed	0	Undisputed	79613

Contract Demand(kVA)	75% of CD (KVA)	130% of CD (KVA)	Connected Load (KW)
8000.0	6000.0	10400.0	0

Date of Previous Reading	28-Feb-2023	Email: electricitydepartment@yahoo.	
Date of Present Reading	31-Mar-2023	Supply Voltage	66 kV EHT

Average			Billing Type	Non-DPS
MD (kVA)	Consumption (kWh)	PF	Section	110 KV Sub Station,Viyyur
13801.50	5516067	0.96	Circle	Transmission Circle,

Reading Details of meter KSEB0000021"-Working (KVA,KWh,KVAh & KVArh) for 03-2023

1. Energy Consumption(KWh)

Zone	FR	IR	MF	Units
1	813474.00	795036.00	200.000	3687600
2	266091.00	260286.00	200.000	1161000
3	369772.00	362236.00	200.000	1507200
		Total		6355800

2. Energy Consumption(KVAh)

Zone	FR	IR	MF	Units
1	855859.00	836831.00	200.000	3805600
2	277965.00	272013.00	200.000	1190400
3	392261.00	384499.00	200.000	1552400
		Total		6548400

Ave.PF=KWh/KVAh 0.97

3. Energy Consumption(KVArh) Lag and kVARh (Lead)

Zone	FR	IR	MF	Units	FR	IR	Units
1	264036.	259345.	200.000	938200	200.00	200.00	0
2	79592.0	78280.0	200.000	262400	0.00	0.00	0
3	128471.	126631.	200.000	368000	11.00	11.00	0
			Total kVArh(Lag)	1568600	kVArh(Lead)		0

4. Demand (KVA)

	Readings	MF	Units
1	82.55	200.000	16510.0
2	67.566	200.000	13513.2
3	46.524	200.000	9304.8

5.Factory Lighting	0.0
6.Colony Lighting	0.0
7.Generator	0

INVOICE

	Unit	Rate	Amount (Rs)
1.Total Demand Charge			
a. Demand Charge	16510.0	380.000	6273800.00
b.	0.0	380.000	0.00
c.	0.0	380.000	0.00
d. Excess Demand Charge	0	190.000	0.00
e.		190.000	0.00
f.		190.000	0.00
Sub Total (a+b+c+d+e+f)			**6273800.00**
2.Total Energy Charges			
a. Energy charges	6355800	6.50000	41312700.00
b.		9.75000	0.00
c.		4.87500	0.00
Sub Total(a+b+c)			**41312700.00**
3.PF Incentive / Disincentive			0.00
Total Energy Charge			**41312700.00**
4.Energy Charges on Lighting load			
a.Factory Lighting	0	0.1	
b.Colony Lighting	0	0.1	0.00
Sub Total(a+b)			
5.Electricity Duty	41312700	0.100	
6.Ele. Surcharge	6355800	0.025	
7.Duty on self generated energy	0	0.012	0.00
8.Penalty for non-segn. of light load			

	Amount
9.Other Charges	
Reconnection Fee	0.00
Charges for Belated Payments	18.00
10.Total(add 1 to 9)	**47586518.00**
Plus/Minus (Round off)	0.00
UnDisputed Arr Amount	79613.00
Less 1. Advance / Credit	
2. CD Interest	0.00
3. CD Refund	0.00
Net Payable	**47666131.00**

(Rupees Four Crore Seventy Six Lakh Sixty Six Thousand One Hundred Thirty One Only)

E & O.E

Balance Advance at Credit, if any

As per Regulation 130 of Kerala Electricity Supply Code 2014 any complaint regarding accuracy of a bill shall be first taken up wih the officer designated to issue the bill (Special Officer(Revenue)). Please follow our official Facebook page fb.com/ksebl for information &announcements.(Please see the instructions overleaf)

SPECIAL OFFICER (REVENUE)

Please Detach and enclose with the DD

1336680002662 **11028111061171** **Rs.47666131.00** **April 2023**

ASSISTANT SECRETARY, THRISSUR CORPORATION

DD/Payment Instruction Name of the Date D D M M Y Y Y Y Signature

MONTHLY ENERGY BILL DETAILS – FY 2022-23

Table 99: Energy bill summary – FY 2022-23- 110 kV incomer

CONSUMER	**THRISSUR COPRATION ELECTRICITY DEPARTMENT**					**SUPPLY VOLTAGE**		**110KV/EHT**	**CONSUMER NO:**			**LCN :21/THR.CORP**	
Month	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	**Sum**
kVA Normal	26,012	24,216	21,510	20,590	21,608	21,430	21,140	18,300	21,160	17,700	19,220	23,480	**2,56,366**
kVA Peak	22,710	22,718	19,608	18,737	19,264	19,663	18,520	15,720	20,040	16,800	16,760	19,660	**2,30,200**
kVA Off Peak	15,628	16,142	12,244	11,600	12,468	11,877	10,760	9,220	11,740	10,820	11,840	13,300	**1,47,639**
CONTRACT DEMAND CHARGE	88,44,080	82,33,440	73,65,980	78,24,200	82,11,040	81,43,400	80,33,200	69,54,000	80,40,800	67,26,000	73,03,600	89,22,400	**9,46,02,140**
KWH NORMAL	57,74,600	52,47,000	52,18,200	48,44,000	51,47,000	43,62,800	48,84,600	40,92,000	46,67,400	44,33,600	42,29,600	50,58,400	**5,79,59,200**
KWH PEAK	19,38,800	18,42,000	17,61,000	16,82,000	17,91,000	15,22,800	16,36,400	13,25,800	15,95,000	15,67,200	14,61,000	17,43,200	**1,98,66,200**
KWH OFF-PEAK	23,86,400	21,53,400	19,63,600	18,27,400	19,18,800	17,16,000	18,41,600	15,27,800	18,51,200	18,46,000	18,31,000	22,81,200	**2,31,44,400**
TOTAL KWH	**1,00,99,800**	**92,42,400**	**89,42,800**	**83,53,400**	**88,56,800**	**76,01,600**	**83,62,600**	**69,45,600**	**81,13,600**	**78,46,800**	**75,21,600**	**90,82,800**	**10,09,69,800**
KWH CHARGE	6,11,03,790	5,59,16,520	5,47,21,160	5,42,97,100	5,75,69,200	4,94,10,400	5,43,56,900	4,51,46,400	5,27,38,400	5,10,04,200	4,88,90,400	5,90,38,200	**64,41,92,670**
PF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.97	0.96	0.96	0.97	**12**
PF INCENTIVE/ PENALTY	-	-	-44,577	-2,71,486	-	-	-	-	-	-	-	-	**-3,16,063**
METER RENT	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	**12,000**
CENTRAL GST	90	90	90	90	90	90	90	90	90	90	90	90	**1,080**
STATE GST	90	90	90	90	90	90	90	90	90	90	90	90	**1,080**
OTHERS		1,511	22	68	505	39	75	44	48	47	47	33	**2,439**
GRAND TOTAL	**6,99,49,050**	**6,41,52,651**	**6,20,43,765**	**6,18,51,063**	**6,57,81,925**	**5,75,55,019**	**6,23,91,355**	**5,21,01,624**	**6,07,80,428**	**5,77,31,427**	**5,61,95,227**	**6,79,61,813**	**73,84,95,347**

Table 100: Energy bill summary – FY 2022-23- 66 kV incomer

CONSUMER	**THRISSUR COPRATION ELECTRICITY DEPARTMENT**			**SUPPLY VOLTAGE**			**66KV/EHT**		**CONSUMER NO:**		**LCN :21/1029**		
	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	**Sum**
kVA Normal	10,724	9,716	9,615	8,501	9,324	15,108	11,008	15,553	13,161	13,594	12,984	16,510	**1,45,797**
kVA Peak	8,686	9,943	7,767	7,493	7,608	12,915	9,747	13,118	11,314	10,538	11,472	13,513	**1,24,113**
kVA Off Peak	7,382	7,653	5,855	5,501	5,573	8,470	6,361	8,599	7,548	7,021	7,658	9,305	**86,926**
CONTRACT DEMAND CHARGE	36,46,160	33,80,620	32,34,717	32,30,380	35,43,196	57,41,040	41,83,040	59,10,140	50,01,180	51,65,720	49,33,920	62,73,800	**5,42,43,913**
KWH NORMAL	24,61,800	22,22,400	22,42,200	21,52,400	22,03,600	26,14,000	27,87,800	36,30,000	31,48,200	31,02,800	28,88,400	36,87,600	**3,31,41,200**
KWH PEAK	7,66,400	7,55,400	7,18,000	6,88,800	7,04,400	8,87,400	9,15,800	11,74,800	10,28,000	10,05,400	9,59,800	11,61,000	**1,07,65,200**
KWH OFFPEAK	11,62,400	10,61,800	9,66,600	8,89,200	9,12,800	11,29,600	11,45,200	13,92,200	11,94,200	11,73,800	11,94,200	15,07,200	**1,37,29,200**
TOTAL KWH	**43,90,600**	**40,39,600**	**39,26,800**	**37,30,400**	**38,20,800**	**46,31,000**	**48,48,800**	**61,97,000**	**53,70,400**	**52,82,000**	**50,42,400**	**63,55,800**	**5,76,35,600**
KWH CHARGE	2,65,63,130	2,44,39,580	2,40,15,260	2,42,47,600	2,48,35,200	3,01,01,500	3,15,17,200	4,02,80,500	3,49,07,600	3,43,33,000	3,27,75,600	4,13,12,700	**36,93,28,870**
PF	0.96	0.95	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.97	0.97	0.97	**12**
OTHERS	-	-	-18,642	-1,21,238	-	-	-	-	-	-	-	-	**-1,39,880**
GRAND TOTAL	202	327	13	32	-	19	36	21	23	22	22	18	**735**

MINUTES OF THE MEETING

BEE/DISCOM – 219/23

07.10.2023

21.09.2023 - ാം തീയ്യതി രാവിലെ 11.30 എ.എം. ന് എനർജ്ജി ഓഡിറ്റുമായി ബന്ധപ്പെട്ട് അസിസ്റ്റന്റ് സെക്രട്ടറിയുടെ അദ്ധ്യക്ഷതയിൽ ചേർന്ന യോഗത്തിന്റെ നടപടിക്രമം.

പങ്കെടുത്തവർ

ക്രമ നമ്പർ	പേര്	തസ്തിക
1	കൃഷ്ണകുമാർ. എൻ.കെ.	അസിസ്റ്റന്റ് സെക്രട്ടറി
2	ടി.എസ്. ജോസ്	ഇലക്ട്രിക്കൽ എഞ്ചിനീയർ
3	ജയശ്രീ. വി.എസ്.	സീനിയർ സൂപ്രണ്ട്
4	ബാബുരാജ്. എൻ.	സീനിയർ സൂപ്രണ്ട്
5	റീന. സി.ജെ.	സീനിയർ സൂപ്രണ്ട്
6	ബി. നിഖിൽ	അസിസ്റ്റന്റ് എഞ്ചിനീയർ
7	മനോജ്. എൻ.ജി.	അസിസ്റ്റന്റ് എഞ്ചിനീയർ (I/C)
8	ദീപ. എസ്.	സീനിയർ അസിസ്റ്റന്റ്
9	മായ. എൻ.	സീനിയർ അസിസ്റ്റന്റ്
10	അശോക്. കെ.എം.പി.	CEEP
11	സുനിൽകുമാർ. വി.കെ.	CEEP
12	കീർത്തന. കെ.	CEEP

തീരുമാനം

1. TCED യിലെ 18 എണ്ണം എച്ച്.ടി ഫീഡറുകളിലും രണ്ട് എണ്ണം സ്റ്റേഷൻ ഫീഡറുകളിലുമായി സ്ട്രീറ്റ് ലൈറ്റ് ഉൾപ്പെടെ 41566 ഉപഭോക്താക്കളുടെ വിവരങ്ങൾ നിലവിൽ ലഭ്യമായിട്ടുള്ളതാണ്. ആയത് സോഫ്റ്റ് വെയറിൽ രേഖപ്പെടുത്തുന്നതിനും നിലവിലുള്ള വിവരങ്ങളുമായി ഒത്തു നോക്കുന്നതിനും വിട്ടുപോയ കണക്ഷനുകളുടെ റിപ്പോർട്ട് ഇലക്ട്രിക്കൽ എഞ്ചിനീയർ മുൻപാകെ സമർപ്പിക്കുന്നതിന് സിസ്റ്റം അഡ്മിനിസ്ട്രേറ്ററിനെ ചുമതലപ്പെടുത്തി.
2. Financial statements Energy Audit വിഭാഗത്തിന് നൽകുന്നതിന് അക്കൗണ്ട്സ് സൂപ്രണ്ടിനെ ചുമതലപ്പെടുത്തി.
3. Truing up / ARR വിവരങ്ങൾ എനർജ്ജി ഓഡിറ്റ് വിഭാഗത്തിന് നൽകുന്നതിന് കെ.എസ്.ഇ.ആർ.സി. വിഭാഗം സൂപ്രണ്ടിനെ ചുമതലപ്പെടുത്തി.
4. DTR Meter Record ചെയ്യുന്നതിനും റീഡിങ്ങ് compare ചെയ്യുന്നതിനും ഒരു sample study നടത്തുന്നത് ഉചിതമായിരിക്കുമെന്ന് ഇലക്ട്രിക്കൽ എഞ്ചിനീയർ അഭിപ്രായപ്പെട്ടു.
5. മേൽ വിവരങ്ങൾ ഒക്ടോബർ ആദ്യയാഴ്ച്ചയ്ക്കകം നൽകണമെന്ന് എനർജ്ജി ഓഡിറ്റിൽ അഭിപ്രായപ്പെട്ടു.

യോഗം 12.30 പി.എം. ന് അവസാനിച്ചു.

എൻ.കെ. കൃഷ്ണകുമാർ
അസിസ്റ്റന്റ് സെക്രട്ടറി

SIGNED PERFORMA

➢ General information

General Information				
1	**Name of the DISCOM**	THRISSUR CORPORATION ELECTRICITY DEPARTMENT (TCED)		
2	**i) Year of Establishment**	1937		
	ii) Government/Public/Private	GOVERNMENT		
3	**DISCOM's Contact details & Address**			
i	City/Town/Village	THRISSUR		
ii	District	THRSSUR		
iii	State	KERALA	Pin	680001
iv	Telephone	0487-2422470	Fax	
4	**Registered Office**			
i	Company's Chief Executive Name	N K KRISHNAKUMAR		
ii	Designation	ASSISTANT SECRETARY		
iii	Address	THRISSUR CORPORATION ELECTRICITY DEPARTMENT, MO ROAD		
iv	City/Town/Village	THRISSUR	P.O.	680001
v	District	THRISSUR		
vi	State	KERALA	Pin	680001
vii	Telephone	0487-2422470	Fax	
5	**Nodal Officer Details***			
i	Nodal Officer Name (Designated at DISCOM's)	JOSE TS		
ii	Designation	ELECTRICAL ENGINEER		
iii	Address	TCED, THRISSUR CORPORATION ELECTRICITY DEPARTMENT, MO ROAD		
iv	City/Town/Village	THRISSUR	P.O.	680001
v	District	THRISSUR		
vi	State	KERALA	Pin	680001
vii	Telephone	0487-2423559	Fax	
6	**Energy Manager Details***			
i	Name	B NIKHIL		
ii	Designation	ASSISTANT ENGINEER	Whether EA or EM	EA
iii	EA/EM Registration No.	EA-24811		
iv	Telephone		Fax	
v	Mobile	9037192013	E-mail ID	astced.lsgd@kerala.gov.in
7	**Period of Information**			
	Year of (FY) information including Date and	01-April 2022 TO 31-March-2023		

Assistant Engineer
Electricity Department
Thrissur Corporation

JOSE.T.S
Electrical Engineer
Electricity Department
Thrissur Corporation
Tel:2423559

J Nagesh Kumar
AEA 0133
Date: 04-11-2023

➢ Performance Summary of DISCOM – Form-1

Performance Summary of Electricity Distribution Companies			
1	Period of Information Year of (FY) information including Date and Month (Start & End)	01-April 2022 TO 31-March-2023	
2	**Technical Details**		
(a)	**Energy Input Details**		
(i)	Input Energy Purchase (From Generation Source)	Million kwh	159.665
(ii)	Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	Million kwh	159.665
(iii)	Total Energy billed (is the Net energy billed, adjusted for energy traded))	Million kwh	148.36
(b)	Transmission and Distribution (T&D) loss Details	Million kwh	11.305
		%	7.08
	Collection Efficiency	%	97.36%
(c)	Aggregate Technical & Commercial Loss	%	9.54%

I/We undertake that the information supplied in this Document and Pro-forma is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

Authorised Signatory and Seal

Name of Authorised Signatory

Name of the DISCOM:

Full Address:-

Seal

എൻ. കെ. കൃഷ്ണകുമാർ/ N. K. KRISHNAKUMAR M.A, LL.M.
അസിസ്റ്റന്റ് സെക്രട്ടറി/ASSISTANT SECRETARY
വൈദ്യുതി വിഭാഗം/ELECTRICITY DEPARTMENT
തൃശ്ശൂർ കോർപ്പറേഷൻ/THRISSUR CORPORATION
പെൻ നമ്പർ/Pen No: 743648
ഫോൺ/Phone - 0487 2422470
മൊബൈൽ/Mobile - 8921037758
ഇമെയിൽ/Email : electricitydepartment@yahoo.co.in
പിൻ/PIN : 680 001

Assistant Engineer
Electricity Department,
Thrissur Corporation.

JOSE.T.S
Electrical Engineer
Electricity Department
Thrissur Corporation
Tel:2422339

Signature:-

Name of energy manager: J Nagesh Kumar

Registration Number: AEA 0133

Date: 04-11-2023

➢ Details of Division wise losses

Details of Division Wise Losses (See note below)**

Division Wise Losses

Period From Apr 2022 to Mar 2023

S.No	Name of circle	Circle code	Name of Division	Consumer profile: Consumer category	No of connection metered (Nos)	No of connection Un-metered (Nos)	Total Number of connections (Nos)	% of number of connections	Connected Load metered (MW)	Connected Load Un-metered (MW)	Total Connected Load (MW)	% of connected load	Energy parameters: Input energy (MU)	Billed energy (MU): Metered energy	Billed energy (MU): Unmetered/ assessment energy	Billed energy (MU): Total energy	% of energy consumption	Losses: T&D loss (MU)	Losses: T&D loss (%)	Commercial Parameter: Billed Amount in Rs. Crore	Commercial Parameter: Collected Amount in Rs. Crore	Commercial Parameter: Collection Efficiency	AT & C loss (%)
1	TCED	TCED	TCED	Residential	22526	0	22526	54%	109.85	0	109.850	47.4%	159.665	40.10	0	40.10	27.03%	11.305	7.08%	26.93	26.57	98.66%	
				Agricultural	187	0	187	0.45%	0.438	0	0.438	0.2%		0.0538	0	0.0538	0.04%			0.03	0.02	66.67%	
				Commercial/Industrial-LT	18692	0	18692	45%	78.405	0	78.405	33.9%		62.16	0	62.16	41.90%			69.10	66.25	95.88%	
				Commercial/Industrial-HT	134	0	134	0.32%	42.16	0	42.160	18.2%		44.84	0	44.84	30.22%			46.75	46.75	100.00%	
				Others	292	0	292	1%	0.697	0	0.697	0.3%		1.212	0	1.21	0.82%			0.57	0.00	0.00%	
Sub-total					**41831**	**0**	**41831**	**100%**	**231.55**	**0**	**231.55**	**100%**	**159.665**	**148.360**	**0**	**148.360**	**100%**	**11.305**	**7.08%**	**143.38**	**139.59**	**97.36%**	**9.54%**
2				Residential	0	0	0	0%	0	0	0	0%	0	0	0	0	0%	0	0%	0	0	0.00%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Commercial/Industrial-LT	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Commercial/Industrial-HT	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Others	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
Sub-total					**0**	**0**	**0**	**100%**	**0**	**0**	**0**	**100%**	**0**	**0**	**0**	**0**	**100%**	**0**	**0%**	**0**	**0**	**0.00%**	**100%**
76	Total			Residential	22526	0	22526	53.85%	109.85	0	109.850	47.4%	159.665	40.10	0	40.10	27.03%	11.305	7.08%	26.93	26.57	98.66%	
				Agricultural	187	0	187	0.45%	0.438	0	0.438	0.2%		0.0538	0	0.0538	0.04%			0.03	0.02	66.67%	
				Commercial/Industrial-LT	18692	0	18692	44.68%	78.405	0	78.405	33.9%		62.16	0	62.16	41.90%			69.10	66.25	95.88%	
				Commercial/Industrial-HT	134	0	134	0.32%	42.160	0	42.160	18.2%		44.84	0	44.84	30.22%			46.75	46.75	100.00%	
				Others	292	0	292	0.70%	0.697	0	0.697	0.3%		1.21	0	1.21	0.82%			0.57	0.00	0.00%	
77	At company level				**41831**	**0**	**41831**	**100%**	**231.55**	**0**	**231.55**	**100%**	**159.665**	**148.360**	**0**	**148.360**	**100%**	**11.305**	**7.08%**	**143.38**	**139.59**	**97.36%**	**9.54%**

** Note - It shall be mandatory to record the energy supplied separately for each category of consumers which is being provided a separate rate of subsidy in the tariff, by the state government, so that the subsidy due for the electricity distribution company is quarterly calculated by multiplying the energy supplied to each of such category of consumers by the applicable rate of subsidy notified by the state government.

I/We undertake that the information supplied in this Document and Pro-forma is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

Authorised Signatory and Seal

Name of Authorised Signatory:

Name of the DISCOM:

Full Address:-

Seal

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Electricity Department
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JOSE.T.S
Electrical Engineer
Electricity Department
Thrissur Corporation
Tel:2423559

Signature:-
Name of Energy Manager:
Registration Number:

J Nagesh Kumar
AEA 0133
Date: 04-11-2023

➢ Details of infrastructure

Form-Details of Input Infrastructure					
1	**Parameters**	**Total**	**Covered during in audit**	**Verified by Auditor in Sample Check**	**Remarks (Source of data)**
i	Number of circles	1	1	1	
ii	Number of divisions	1	1	1	
iii	Number of sub-divisions	1	1	1	
iv	Number of feeders	18	18	11	
v	Number of DTs	468	468	257	11 feeders out of 18
vi	Number of consumers	41831	41831	21650	
2	**Parameters**	**66kV and above**	**33kV**	**11/22kV**	**LT**
a. i.	Number of conventional metered consumers	-	-	-	8130
ii	Number of consumers with 'smart' meters	-	-	-	-
iii	Number of consumers with 'smart prepaid' meters	-	-	-	-
iv	Number of consumers with 'AMR' meters	-	-	-	-
v	Number of consumers with 'non-smart prepaid' meters	-	-	134	33567
vi	Number of unmetered consumers	-	-	-	
vii	**Number of total consumers**	-	-	134	41697
b.i.	Number of conventionally metered Distribution Transformers	-	-	-	293
ii	Number of DTs with communicable meters	-	-	-	-
iii	Number of unmetered DTs	-	-	-	175
iv	**Number of total Transformers**				468
c.i.	Number of metered feeders			-	
ii	Number of feeders with communicable meters			18	
iii	Number of unmetered feeders			-	
iv	**Number of total feeders**			18	
d.	Line length (ct km)		4.2	115.13	285.675
e.	Length of Aerial Bunched Cables			1.85	-
f.	Length of Underground Cables		2.565	71.83	4.525
3	**Voltage level**	**Particulars**	**MU**	**Reference**	**Remarks (Source of data)**
i	66kV and above	Long-Term Conventional	158.605	Includes input energy for franchisees	
		Medium Conventional	0		
		Short Term Conventional	0		
		Banking	0		
		Long-Term Renewable energy	0.000		
		Medium and Short-Term RE	0		
		Captive, open access input	0		
		Sale of surplus power	0		
		Quantum of inter-state transmission loss	0		
		Power procured from inter-state sources	158.605		
		Power at state transmission boundary	158.605		
iii		**Input in DISCOM wires network**	158.605		
v	11 kV	Renewable Energy Procurement	0.550	Self generation = solar power plant in own buildings + 11 kV export received	
		Small capacity conventional/ biomass/ hydro plants	0.00		
		Sales Migration Input	0.00		

vi	LT	Renewable Energy Procurement	0.51	Total LT export	
		Sales Migration Input	0		
vii		**Energy Embedded within DISCOM wires network**	1.06		
viii		**Total Energy Available/ Input**	159.665		
4	**Voltage level**	**Energy Sales Particulars**	**MU**	**Reference**	
i	LT Level	DISCOM' consumers	103.52	Include sales to consumers in franchisee areas, unmetered consumers	Total Lt Sales
		Demand from open access, captive	0.00		
		Embedded generation used at LT level	0.000	Demand from embedded generation at LT level	
		Sale at LT level	103.52		
		Quantum of LT level losses	10.92	Included the LT OH line length, LT cable, Switch gear & Commercial losses	Manually calculated using distribution line length and feeder wise consumption
		Energy Input at LT level	114.44		
ii	11 kV Level	DISCOM' consumers	44.84	Include sales to consumers in franchisee areas, unmetered consumers	
		Demand from open access, captive	0.00	Non DISCOM's sales	
		Embedded generation at 11 kV level used	0.0000	Demand from embedded generation at 11kV	
		Sales at 11 kV level	44.84		
		Quantum of Losses at 11 kV	0.39	EHT + HT losses	Manually calculated using distribution line length and feeder wise consumption
		Energy input at 11 kV level	45.23		
		Total Energy Requirement	**159.665**		
		Total Energy Sales	**148.360**		

Energy Accounting Summary

5	DISCOM	Input (in MU)	Sale (in MU)	Loss (in MU)	Loss %
i	LT				
ii	11 Kv	159.665	148.360	11.305	7.08
iii	33 kv				
iv	> 33 kv				
	Loss Estimation for DISCOM				
	T&D loss (MU)	11.305			
	D loss (MU)	11.305			
	T&D loss (%)	7.08			
	D loss (%)	7.08			

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AEA 0133
Date: 04-11-2023

JOSE.T.S
Electrical Engineer
Electricity Department
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- **Form input energy**

Form-Input energy(Details of input energy & Infrastructure)

A. Summary of energy input & Infrastructure

S.No	Parameters	Period From APR 2022 to MAR 2023	Remarks (Source of data)
A.1	Input Energy purchased (MU)	159.665	Electricity bill & solar export
A.2	Transmission loss (%)	0%	
A.3	Transmission loss (MU)	0	
A.4	Energy sold outside the periphery(MU)	0.00	
A.5	Open access sale (MU)	0	
A.6	EHT sale	0	
A.7	Net input energy (received at DISCOM periphery or at distribution point)-(MU)	159.665	Total net input
A.8	Is 100% metering available at 66/33 kV (Select yes or no from list)	Yes	
A.9	Is 100% metering available at 11 kV (Select yes or no from list)	Yes	
A.10	% of metering available at DT	62.6%	293 out of 468 transformers
A.11	% of metering available at consumer end	100%	
A.12	No of feeders at 66kV voltage level	0	
A.13	No of feeders at 33kV voltage level	0	
A.14	No of feeders at 11kV voltage level	18	
A.15	No of LT feeders level	0	Not available
A.16	Line length (ckt. km) at 66kV voltage level	0	
A.17	Line length (ckt. km) at 33kV voltage level	4.2	Measured through HT line mapping
A.18	Line length (ckt. km) at 11kV voltage level	115.13	Measured through HT line mapping
A.19	Line length (km) at LT level	285.675	Measured through LT line mapping
A.20	Length of Aerial Bunched Cables	1.85	Measured through HT line mapping
A.21	Length of Underground Cables	78.92	Site measurement
A.22	HT/LT ratio	1/2.36	

B. Meter reading of input energy at injection points

S.No	Zone	Circle	Voltage Level (kV)	Division (KVA)	Sub-Division (KVA)	Feeder ID	Feeder Name	Feeder Metering Status (Metered/ unmetered/ AMI/AMR)	Status of Meter (Functional/Non-functional)	Metering Date: Date of last actual meter reading/ communication	Feeder Type (Agri/ Industrial/Mixed)	Status of Communication: % data received through automatically/ if feeder AMR	Status of Communication: Number of hours when meter was unable to communicate in period	Status of Communication: Total Number of hours in the period	Period From April 2022 to March 2023: Meter S.No	Period From April 2022 to March 2023: CT/PT ratio	Period From April 2022 to March 2023: Import (MU)	Period From April 2022 to March 2023: Export (MU)	Sales	Remarks (Source of data)
B.1	TCED	TCED	110			21/Thrissur corp	VIPL	Metered	Functioning	01-04-2022	Mixed	0	0	NA	X2005320	200/1	100.97	-		110 kV s/s
B.2	TCED	TCED	66			21/3029	OLVI	Metered	Functioning	01-04-2022	Mixed	0	0	NA	17052040	200/1	57.64	-		66 kV s/s
B.3	TCED	TCED	0.415			Multiple feeder	Multiple feeders	Metered	Functioning	01-04-2022	Mixed	0	0	NA	-	-	0.510			Consumer bills
B.4	TCED	TCED	11			Multiple feeder	Multiple feeders	Metered	Functioning	01-04-2022	Mixed	0	0	NA	-	-	0.550			Consumer bills
B.5																				
B.6																				
B.7																				
B.8																				
B.1001	Total (MU)																159.665	0.00		
B.1002	Net input energy at DISCOM periphery (MU)																	159.665		

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Authorised Signatory and Seal

Name of Authorised Signatory

Name of the DISCOM:

Full Address:

Seal

Signature:

Name of Energy Manager:

Registration Number:

J Nagesh Kumar
AEA 0133
Date: 04-11-2023

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Electricity Department
Thrissur Corporation

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Electrical Engineer
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- **Details of input energy sources**

Details of Input Energy Sources

Period From Apr 2022 to Mar 2023

A. Generation at Transmission Periphery (Details)

S.No.	Name of Generation Station	Generation Capacity (In MW)	Type of Station Generation (Based- Solid (Coal /Lignite)/Liquid/Gas/Renewable (biomass-bagasse)/Others)	Type of Contract (in years/months/days)	Type of Grid (Inter-state/Inter-state)	Point of Connection (POC) Loss MU	Voltage Level (At input)	Remarks (Source of data)
1	NIL							
2								

B. Embedded Generation in DISCOM Area

S.No	Name of Generation Station	Generation Capacity (In MW)	Tytpe of Station (Generation Based-Solid/Liquid/Gas/Renewable/Others)	Type of Contract	Type of Grid	Voltage Level (KV)	Circle Load (MW)	Received at Circle (KV)	Received at Circle (In MU)	Division Level Load (MW)	Received at Division Level (KV)	Received at Division Level (In MU)	Sub-Division Level Load (MW)	Received at Sub-Division Level (KVA)	Received at Sub-Division Level (In MU)	Remarks (Source of data)
1	Own generation	1.16	Renewable	Net metering	Renewable Source	11		11	0.550							Manual measurement - Excel sheet
2	From consumers	2.86	Renewable	Net metering	Renewable Source	0.415		0.415	0.510							Manual measurement - Excel sheet

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➢ Details of consumers and consumption

(Details of Consumers)						
Summary of Energy						
Period From APR 2022 to MAR 2023						
S.No	**Type of Consumers**	**Category of Consumers (EHT/HT/LT/Others)**	**Voltage Level (kV)**	**No of Consumers**	**Total Consumption (In MU)**	**Remarks (Source of data)**
1	Domestic	LT	0.415	22526	40.10	
2	Commercial	LT	0.415	17876	56.59	
3	IP Sets					
4	Hor. & Nur. & Coffee/Tea & Rubber (Metered)					
5	Hor. & Nur. & Coffee/Tea & Rubber (Flat)					
6	Heating and Motive Power					
7	Water Supply					
8	Public Lighting	LT	0.415	292	1.21	VIII B
9	HT Water Supply					
10	HT Industrial	HT	11	5	0.67	HT IA
11	Industrial (Small)	LT	0.415	486	0.02	LT IV
12	Industrial (Medium)				3.24	
13	HT Commercial	HT	11	90	24.58	HT 4A,4B,SPS
14	Applicable to Government Hospitals & Hospitals					
15	Lift Irrigation Schemes/Lift Irrigation Societies					
16	HT Res. Apartments Applicable to all areas					
17	Mixed Load - own consumption					
18	Government offices and department	LT	0.415	330	2.31	
19	HT general	HT	11	39	19.59	HT 2A,2B
20	Agriculture	LT	0.415	187	0.05	LT V
21	Government offices and department					
22	Others-5 (if any , specify in remarks)					
23	Others-5 (if any , specify in remarks)					
24						
25						
			Total	41831	148.360	

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- **Details of Feeder wise losses**

(Details of Feeder-wise losses)

Period From Apr 2022 to Mar 2023

Sl No.	Zone	Received at Circle (In MU)	Received at Division (In MU)	Received at Sub-division (In MU)	Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder (Urban/Mixed/Industrial/Agricultural/Rural)	Type of feeder meter (AMI/AMR/Other)	Received at Feeder (Final in MU)	Feeder Consumption (In MU)	Final Net Export at Feeder Level (In MU)	T&D losses %	AT&C losses %	% Data Received through Automatically (if feeder / MR/AMI)	Remarks
1	TCED						Mission quarters	Urban	Others	10.13	8.98		11.389	17.17	nil	
2	TCED						Veliyanoor	Urban	Others	8.34	7.61		8.745	14.69	nil	
3	TCED						Koorkenchery	Urban	Others	8.44					nil	
4	TCED						Paravattani	Urban	Others	8.81	7.54		14.484	20.06	nil	
5	TCED						Aranattukara	Urban	Others	10.82					nil	
6	TCED						Jubilee medical college	Urban	Others	8.12	8.12		0.042	0.04	nil	
7	TCED						Vivekodayam	Urban	Others	7.56	6.76		10.580	16.41	nil	
8	TCED						Bini	Urban	Others	5.88	5.66		3.651	9.93	nil	
9	TCED						Punkunnam	Urban	Others	7.58					nil	
10	TCED						Keralavarma	Urban	Others	9.67	8.56		11.515	17.28	nil	
11	TCED						Ramanilayam	Urban	Others	6.49	6.24		3.863	10.13	nil	
12	TCED						MO road	Urban	Others	11.38					nil	
13	TCED						Kottappuram	Urban	Others	9.61					nil	
14	TCED						Chembukavu	Urban	Others	8.75	8.00		8.637	14.59	nil	
15	TCED						Shornur road	Urban	Others	10.65	9.76		8.426	14.40	nil	
16	TCED						DH feeder	Urban	Others	9.28					nil	
17	TCED						East fort	Urban	Others	11.18	9.88		11.627	17.39	nil	
18	TCED						Vanchikulam	Urban	Others	4.85						

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➢ Details of Subsidy

Consumer category (Separate for each subsidized consumer category)	Billed energy			Subsidized billed energy			Applicable rate of subsidy as notified by state govt		Subsidy due from state govt			Subsidy actually billed/claimed from state govt (as against col 12)	Subsidy received from state govt (As against col 13)	Balance subsidy yet to be received from state govt
	(in kWh)			(in kWh)			(in Rs/kWh)		(in Rs Cr)			(in Rs Cr)	(in Rs Cr)	(in Rs Cr)
	Metered	Unmetered	Total	Metered (out of col 2)	Unmetered* (out of col 3)	Total	Metered energy**	Unmetered energy	Metered energy	Unmetered energy	Total			
1	2	3	4= 2 + 3	5	6	7 = 5+6	8	9	10 = 5 x 8	11 = 6 x 9	12 = 10 + 11	13	14	15 = 13 + 14
Residential	40098556	0	40098556	0	0	0	0	0	0	0	0	0	0	0
Agricultural	53760	0	53760	0	0	0	0	0	0	0	0	0	0	0
Commercial/Industrial-LT	62156000	0	62156000	0	0	0	0	0	0	0	0	0	0	0
Commercial/Industrial-HT	44840000	0	44840000	0	0	0	0	0	0	0	0	0	0	0
Others + own consumption	1211818	0	1211818	0	0	0	0	0	0	0	0	0	0	0
Total	**148360134**		**148360134**											
*Basis of assessment of energy to be provided in the notes along with relevant Government Orders														
** Provide copy of relevant work orders														
NO SUBSIDY IN TCED														

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➢ Details of DT level losses

a. Division wise status of DT level metering

Zone name	Circle name	Division name	Feeder name	Total no of DT on feeder	No of unmetered DTs	No of metered DTs: AMR metered (communicable)	No of metered DTs: AMI metered (communicable)	No of metered DTs: Non-AMR / AMI metered (non-communicable)	No. of DTs with functional meters: Communicating (Total No out of 7 and 8)	No. of DTs with functional meters: Non-communicating (Total No. out of 7,8 and 9)
1	2	3	4	5=(6+7+8+9)	6	7	8	9	10	11
TCED	TCED		Ramanilayam	18	8		10		10	
TCED	TCED		Bini	17	6		11		11	
TCED	TCED		Chembukavu	24	5		19		19	
TCED	TCED		Shornur Road	42	15		27		27	
TCED	TCED		East Fort	27	11		16		16	
TCED	TCED		Koorkenchery	22	7		15		15	
TCED	TCED		Veliyanoor	18	9		9		9	
TCED	TCED		Vivekodhayam	21	8		13		13	
TCED	TCED		Arnattukkara	31	16		15		15	
TCED	TCED		DH	34	18		16		16	
TCED	TCED		Kottappuram	38	8		30		30	
TCED	TCED		Vanjikulam	22	8		14		14	
TCED	TCED		M O Road	31	19		12		12	
TCED	TCED		Mission Quarters	30	7		23		23	
TCED	TCED		Paravattani	24	7		17		17	
TCED	TCED		Poonkunam	33	12		21		21	
TCED	TCED		Keralavarma	36	11		25		25	
TCED	TCED		Jubilee Mission	Dedicated feeder	Dedicated feeder					

b. Details of DT-wise losses

Sub-station ID	Feeder ID	Feeder Name	DT Id no	DT Capacity (kVA)	Predominant consumer type of DT (Domestic/Industrial/Agriculture/Mixed)	Type of metering (Unmetered/AMI/AMR/Other)	Status of meter (functional/non-functional)	% of data received automatically (if AMI/AMR)	No. of connected consumers	Input Energy (MU)	Billed Energy (MU)	Loss of Energy (MU)	% Loss
		1	2						3	4	5	6 = 4-5	(7)= [(6)/(4)] *100
Not available as 100% DT metering not done also the DT measurement not yet commenced													

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12. ABBREVIATIONS

ABR	:	Average billing rate
ACSR	:	Aluminium core steel reinforced
APFC	:	Automatic Power Factor controller
AVG	:	Average
BD	:	Billing demand
BDV	:	Breakdown voltage
BEE	:	Bureau of energy efficiency
CEA	:	Central electrical authority
CFL	:	Compact fluorescent lamp
CFM	:	Feet cube per minute
CT	:	Current transformer
DB	:	Distribution Board
DC	:	Designated consumer
DT	:	Distribution transformer
EC	:	Energy Conservation
FD	:	Forced draft
HPSV	:	High pressure sodium vapour
HT	:	High Tension
IEC	:	International electro technical commission
IEEE	:	The Institute of electrical and electronics engineers
IS	:	Indian Standard
KG	:	Kilo gram
KSEB	:	Kerala state electricity board
KVA	:	Kilo Volt Ampere
KVAH	:	Kilo volt Ampere Hour
KVAR	:	Kilo volt ampere
KW	:	Kilo Watts
KWH	:	Kilo watt hour
LED	:	Light emitting diode
LT	:	Low tension
MAX	:	Maximum
MH	:	Metal halide
MU	:	Million units
MVA	:	Mega volt ampere
MW	:	Mega watt
NEMA	:	National Electrical Manufacturers Association
ONAN	:	Oil natural air natural
PCC	:	Point of common coupling
PF	:	Power factor
PSI	:	Pound square inch
PT	:	Protentional transformer
R/km	:	Resistance per kilometre
RMD	:	Registered Maximum demand
SDA	:	State designated agency
SEC	:	Specific electricity consumption
SFU	:	Switch Fuse Unit
SLD	:	Single Line Diagram
TDD	:	Total demand distortion
THD	:	Total harmonics distortion
TOD	:	Time of day
TOE	:	Tonne of oil equivalent
TPEA	:	Third party energy auditor
UG	:	Underground
UPS	:	Uninterruptible power supply
VFD	:	Variable frequency drive