

ENERGY AUDIT REPORT

of

Pragnya Education Trust's,

PRAGNYA COLLEGE OF MANAGEMENT & COMPUTER STUDIES,

S. No. 26/1/1, Handewadi Chowk, Hadapsar, Pune 412 308

Year: 2017-18

Prepared by:

Enrich Consultants

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: enrichcons@gmail.com



MAHARASHTRA ENERGY DEVELOPMENT AGENCY



Maharashtra Energy Development Agency

(A Government of Maharashtra undertaking)

2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006

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Email: econ@mahaurja.com, Web: www.mahaurja.com

ECN/2017-18/CR-01/5726

30th November 2017

**CERTIFICATE OF REGISTRATION
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor in Maharashtra under Save Energy Programme of MEDA.

Name and Address of the firm : Enrich Consultants
Yashashree, Plot No. 26, Nirmal Baug
Society, Parvati, Pune - 411009.

Registration Category : Empanelled Consultant for Save Energy Programme.

Registration Number : **MEDA/ECN/CR-01/2017-18/EA-37**

- The Save Energy Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid upto **3 year** from the date of registration, to carry out energy audits under the Save Energy Programme of MEDA.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

(Smita Kudarikar)
Manager (EC)



Enrich Consultants

Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: enrichcons@gmail.com

Ref: ES/PETPCOMCS/17-18/01

Date: 12/6/2018

CERTIFICATE

This is to certify that we have conducted Energy Audit at Pragnya Education Trust's Pragnya College of Management & Computer Studies, S. No. 26/1/1, Handewadi Chowk, Hadapsar, Pune 412 308 in the Year 2017-18.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor
EA-8192



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ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management Pragnya Education Trust's Pragnya College of Management & Computer Studies, S. No. 26/1/1, Handewadi Chowk, Hadapsar, Pune 412 308, for awarding us the assignment of Energy Audit of their Handewadi Campus for the Year: 17-18.

We are thankful to all the Staff members for helping us during the field study.



EXECUTIVE SUMMARY

1. Pragnya Education Trust's Pragnya College of Management & Computer Studies, S. No. 26/1/1, Handewadi Chowk, Hadapsar, Pune 412 308 consumes Energy in the form of Electrical Energy; used for various Electrical Equipment, office & other facilities.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	2492	1.99
2	Maximum	792	0.63
3	Minimum	100	0.08
4	Average	207.67	0.17

3. Energy Conservation projects installed:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

4. Usage of Alternate Energy:

- The College has yet to install Roof Top Solar PV Plant.
- As on today, the % of Usage of Alternate Energy to Total Energy Demand is Nil

5. Usage of LED Lighting:

- The Total Lighting Load of the College is **2.62 kW**.
- The Total LED Lighting Load of the College is **1.02 kW**.
- The percentage of LED Lighting to Total Lighting Load is **39 %**.

6. Assumption:

1. **1 kWh** of Electrical Energy releases **0.8 Kg** of CO₂ into atmosphere

ABBREVIATIONS

LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Limited
BEE	:	Bureau of Energy Efficiency
FTL	:	Fluorescent Tube Light
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
CO ₂	:	Carbon Di Oxide
MT	:	Metric Ton



CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To Study the present CO₂ emissions
4. To study usage of Alternate Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of Institution	Pragnya Education Trust's Pragnya College of Management & Computer Studies
2	Address	S. No. 26/1/1, Handewadi Chowk, Hadapsar, Pune 412 308
3	Affiliation	Savitribai Phule Pune University

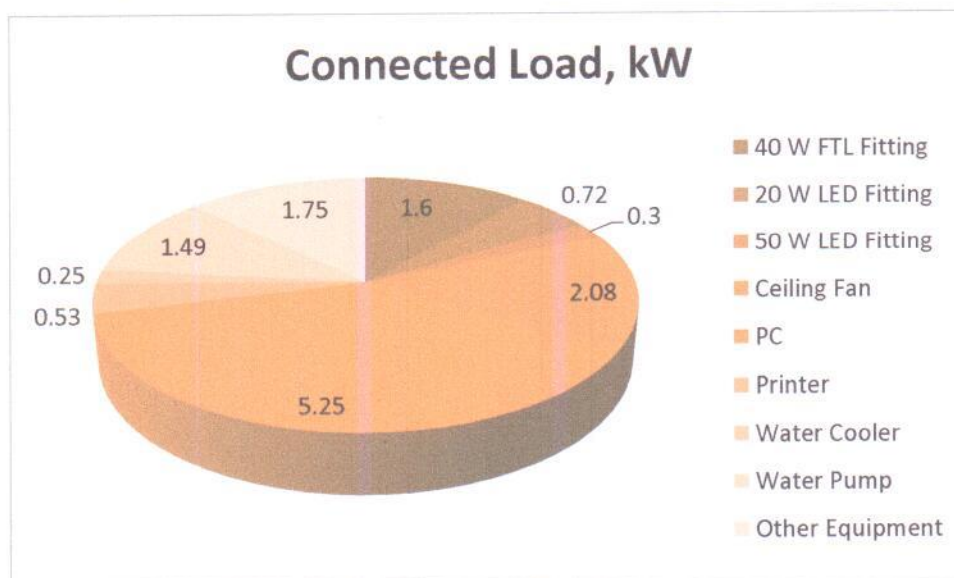
CHAPTER-II STUDY OF CONNECTED LOAD

The major contributors to the connected load of the College are as under.

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	40 W FTL Fitting	40	40	1.6
2	20 W LED Fitting	36	20	0.72
3	50 W LED Fitting	6	50	0.3
4	Ceiling Fan	32	65	2.08
5	PC	35	150	5.25
6	Printer	3	175	0.53
7	Water Cooler	1	250	0.25
8	Water Pump	1	1492	1.49
9	Other Equipment	10	175	1.75
10	Total			14

Chart No 1: Study of Connected Load:



CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy Consumption.

Table No 3: Electrical Energy Consumption Analysis- 2017-18:

No	Month	Energy Consumed, kWh
1	Apr-17	792
2	May-17	173
3	Jun-17	144
4	Jul-17	137
5	Aug-17	140
6	Sep-17	174
7	Oct-17	153
8	Nov-17	100
9	Dec-17	176
10	Jan-18	276
11	Feb-18	115
12	Mar-18	112
13	Total	2492
14	Maximum	792
15	Minimum	100
16	Average	207.67

Chart No 2: Variation in Monthly Energy Consumption:

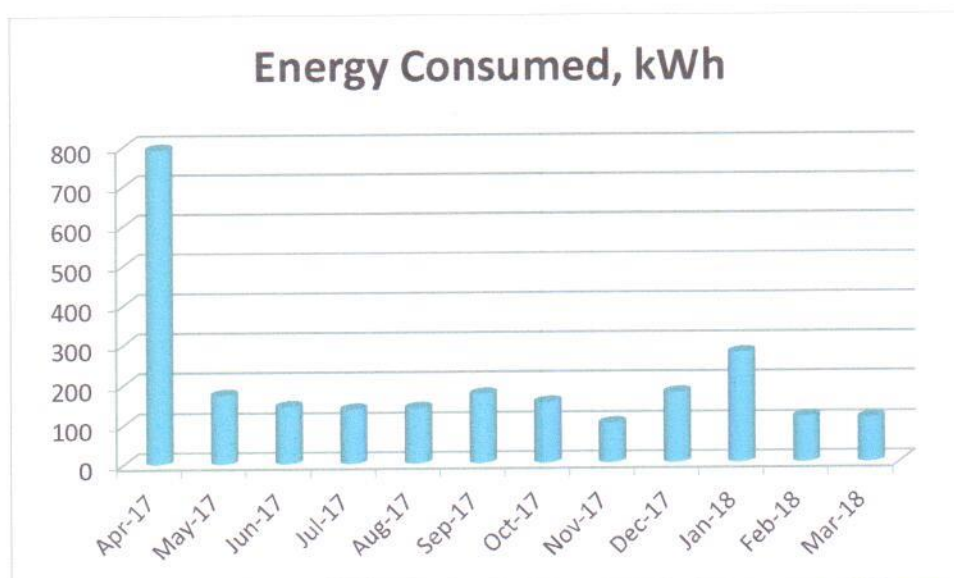


Table No 4: Variation in Important Parameters:

No	Parameter/ Variation	Energy Consumed, kWh
1	Total	2492
2	Maximum	792
3	Minimum	100
4	Average	207.67



CHAPTER-IV CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by taking into account the usage of the Electrical Energy.

Basis for computation of CO₂ Emissions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 5: Month wise CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-17	792	0.63
2	May-17	173	0.14
3	Jun-17	144	0.12
4	Jul-17	137	0.11
5	Aug-17	140	0.11
6	Sep-17	174	0.14
7	Oct-17	153	0.12
8	Nov-17	100	0.08
9	Dec-17	176	0.14
10	Jan-18	276	0.22
11	Feb-18	115	0.09
12	Mar-18	112	0.09
13	Total	2492	1.99
14	Maximum	792	0.63
15	Minimum	100	0.08
16	Average	207.67	0.17

Chart No 3: Month wise CO₂ Emissions:

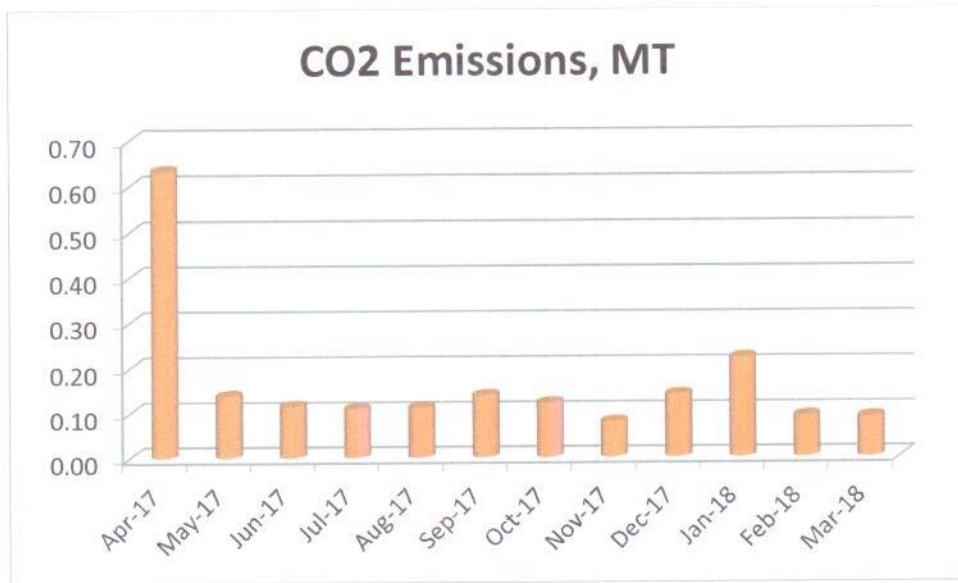


Table No 6: Important Parameters:

No	Parameter/ Variation	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	2492	1.99
2	Maximum	792	0.63
3	Minimum	100	0.08
4	Average	207.67	0.17

CHAPTER-V

STUDY OF USAGE OF ALTERNATE ENERGY

The College has yet to install Roof Top Solar PV Plant.

As on today, the % of Usage of Alternate Energy to Total Energy Demand is Nil



CHAPTER VI STUDY OF USAGE OF LED LIGHTING

In this chapter, we compute the percentage of usage of LED Lighting to Annual Lighting power requirement.

Table No 7: Percentage of Usage of LED Lighting to Annual Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W LED Fittings	40	Nos
2	Load of 40 W LED Fitting	40	W/unit
3	Total Load of 40 W LED Fittings	1.6	kW
4	No of 20 W LED Fittings	36	Nos
5	Load of 20 W LED Fitting	20	W/unit
6	Total Load of 20 W LED Fittings	0.72	kW
7	No of 50 W LED Fittings	6	Nos
8	Load of 50 W LED Fitting	50	W/unit
9	Total Load of 50 W LED Fittings	0.3	kW
10	Total LED Lighting Load= 6+9	1.02	kW
11	Total Lighting Load=3+6+9	2.62	kW
12	% of LEDs to Total Lighting Load= $10 \times 100 / 11$	39	%

GREEN AUDIT REPORT

of

Pragnya Education Trust's,

PRAGNYA COLLEGE OF MANAGEMENT & COMPUTER STUDIES,

S. No. 26/1/1, Handewadi Chowk, Hadapsar, Pune 412 308

Year: 2017-18

Prepared by

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Tel: 09890444795 Email: enrichcons@gmail.com

Ref: EC/ PETPCOMCS /17-18/02

Date: 12/6/2018

CERTIFICATE

This is to certify that we have conducted Green Audit at Pragnya Education Trust's Pragnya College of Management & Computer Studies, S. No. 26/1/1, Handewadi Chowk, Hadapsar, Pune 412 308 in the Year 2017-18.

The College has adopted following Green practices:

- Maximum Usage of Day Lighting
- Usage of Energy Efficient LED Fittings
- Segregation of Waste at source
- Tree Plantation in the campus
- Good internal roads in the campus

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor, EA-8192



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No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	2492	1.99
2	Maximum	792	0.63
3	Minimum	100	0.08
4	Average	207.67	0.17

3. Waste Management:

Segregation of Waste at Source:

The Dry and Wet waste is segregated at the source and is handed over to Authorized Agency for further action.

4. Rain Water Management:

The College has yet to implement the Rain Water Harvesting Project.

5. Green Practices:

- Good internal road for easy movement of commuters
- Internal tree plantation in the campus

6. Assumption:

1. 1 kWh of Electrical Energy releases 0.8 Kg of CO₂ into atmosphere

ABBREVIATIONS

LED : Light Emitting Diode
kWh : kilo-Watt Hour
MT : Metric Ton
CO₂ : Carbon Di Oxide



CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study present Energy Consumption
2. To compute CO₂ emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To Study Green & Sustainable Initiatives

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	Pragnya Education Trust's Pragnya College of Management & Computer Studies
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CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 2: Electrical Energy Consumption Analysis- 2017-18:

No	Month	Energy Consumed, kWh
1	Apr-17	792
2	May-17	173
3	Jun-17	144
4	Jul-17	137
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10	Jan-18	276
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12	Mar-18	112
13	Total	2492
14	Maximum	792
15	Minimum	100
16	Average	207.67

Chart No 1: To study the variation of Monthly Energy Consumption, kWh:

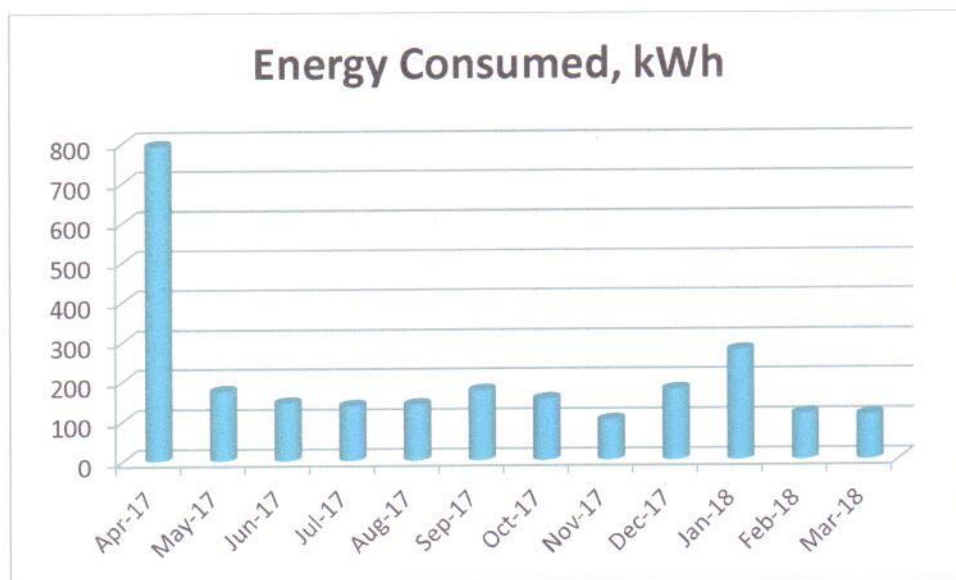


Table No 3: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	2492
2	Maximum	792
3	Minimum	100
4	Average	207.67



CHAPTER III CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions:

- 1 kWh of Electrical Energy releases 0.8 Kg of CO₂ into atmosphere.

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-17	792	0.63
2	May-17	173	0.14
3	Jun-17	144	0.12
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12	Mar-18	112	0.09
13	Total	2492	1.99
14	Maximum	792	0.63
15	Minimum	100	0.08
16	Average	207.67	0.17

Chart No 2: Representation of Month wise CO₂ Emissions:

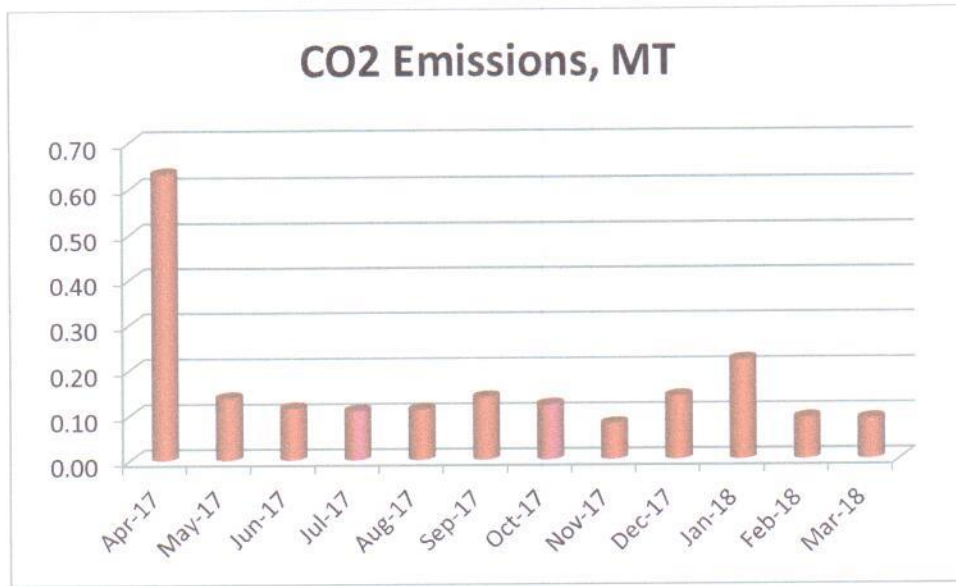


Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO ₂ Emissions, MT
1	Total	2492	1.99
2	Maximum	792	0.63
3	Minimum	100	0.08
4	Average	207.67	0.17

CHAPTER IV

STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof Top Solar PV Plant.

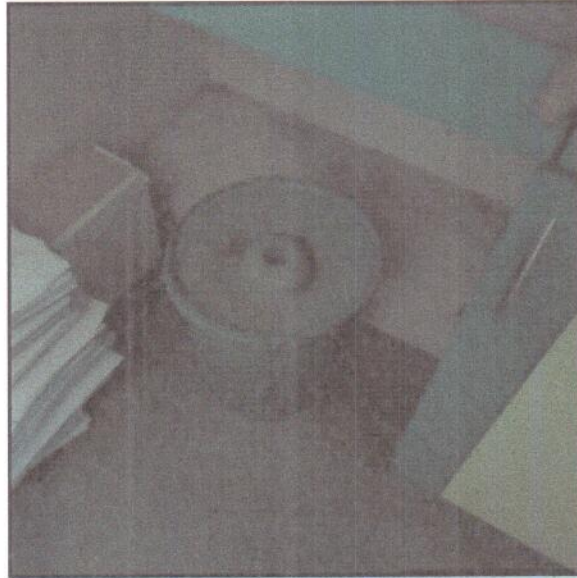


CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The Waste is segregated at source and is handed over to Agency for further action.

Photograph of Waste Collection Bin:



CHAPTER VI

STUDY OF RAIN WATER MANAGEMENT

The College has yet to implement the Rain Water Management Project.



CHAPTER VII

STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Road:

The College has well maintained internal road to facilitate the easy movement of the students within the campus.

Photograph of Internal Road inside the College Campus:



7.2 Internal Tree Plantation:

The College has well maintained Tree Plantation in the campus.

Photograph of Tree Plantation Campus:

