

GREEN AUDIT REPORT

of

**Malad Kandivli Education Society's,
Nagindas Khandwala College of Commerce, Arts & Management
Studies and Shantiben Khandwala College of Science,**
Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai 400 064



Year: 2022-23

Prepared by

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ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-20105 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/NKC/22-23/02

Date: 18/7/2023

This is to certify that we have conducted Green Audit at Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantiben Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai 400 064 in the year: 2022-23.

The College has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Lighting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Installation of Roof Top Solar PV Plant of Capacity 1 kWp
- Segregation of Waste at source
- Bio Tumbler Unit for conversion of Organic Waste
- Installation of Effluent Treatment Plant for treatment of Waste Water
- Implementation of Rain Water Management Project
- Good Internal Road
- Tree Plantation in the Campus
- Provision of Ramp, Wheel Chair and Lift for Divyangajan
- Creation of Awareness on Water Conservation by Display of Posters

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

For Engress Services,



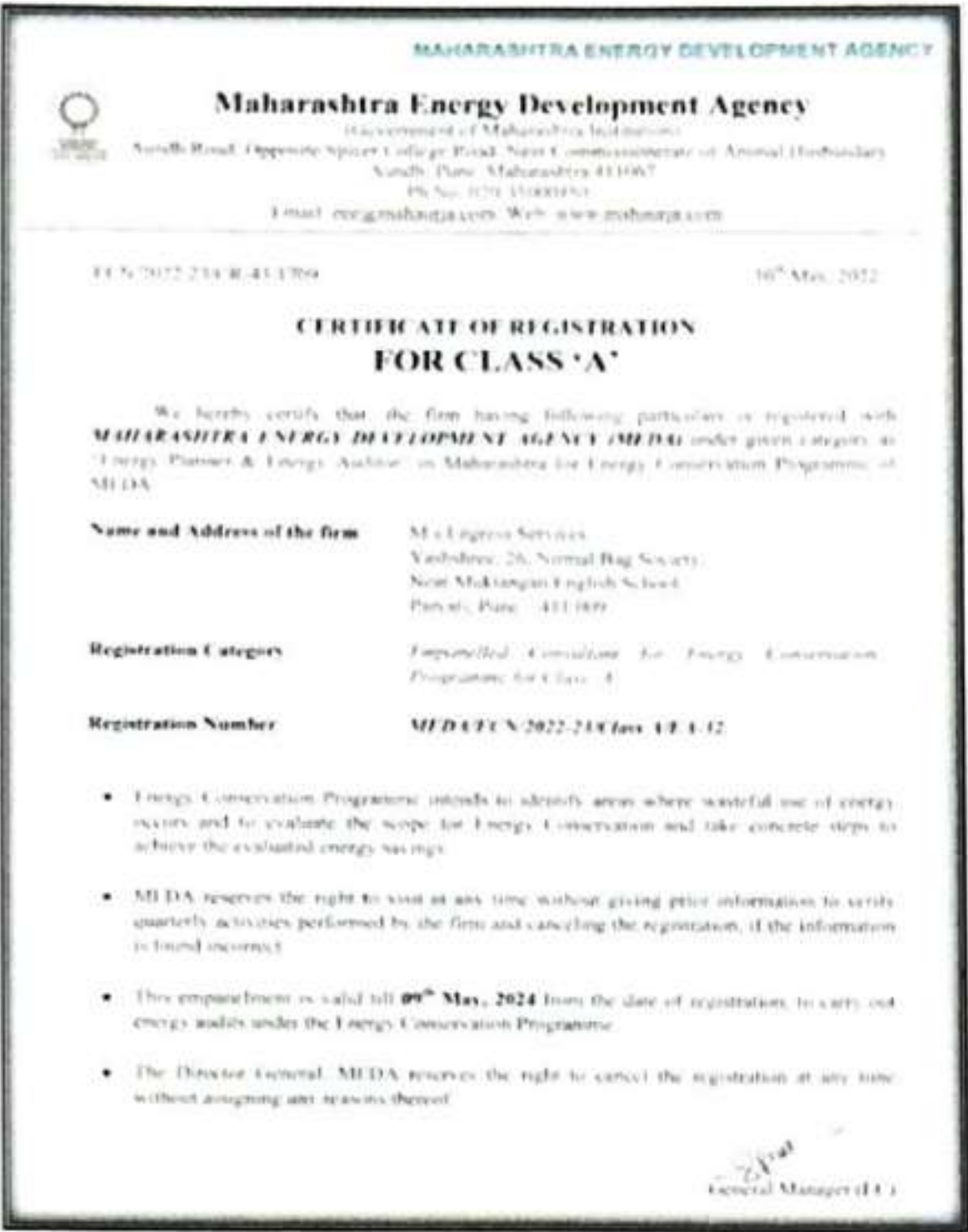
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B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



REGISTRATION CERTIFICATES



MEDA Registration Certificate



ASSOCHAM GEM CP Certificate



ISO: 9001-2015 Certificate



ISO: 14001-2015 Certificate



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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantiben Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai for awarding us the assignment of Green Audit of their campus for the Year: 22-23.

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



EXECUTIVE SUMMARY

1. Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantiben Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai, consumes Energy in the form of Electrical Energy; used for equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	474316	kWh
2	Annual CO ₂ Emissions	426.88	MT

3. Usage of Renewable Energy & CO₂ Emission Reduction:

- Energy generated by 1 kWp Solar PV Plant in 2022-23 is 1200 kWh
- Reduction in CO₂ Emissions due to Solar PV Plant in 2022-23 is 1.08 MT

4. Waste Management Practices:

No	Head	Initiative
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installation of Bio Tumbler Unit
3	Waste Water	Installation of Effluent Treatment Plant
4	E Waste	Provision of Dedicated E Waste Collection Bin

5. Rain Water Management:

The College has installed the Rain water Management Project. The Rain Water falling on the terrace is stored in an underground Storage Tank and further used for domestic purpose.

6. Green & Sustainable Practices:

- Good internal road
- Internal tree plantation
- Provision of Ramp for Divyangajan
- Creation of Awareness on Water Conservation by Display of Posters

7. Assumptions:

1. Electrical Energy Consumption computed on the basis of Capacity Utilization Factor
2. 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere
3. Solar Energy Generated by Solar PV Plant: 4 kWh/kWh/Day
4. Annual Solar Energy Generation Days: 300 Nos

8. References:

- For CO₂ Emissions: www.tatapower.com
- Roof Top Solar PV Energy Generation: www.solarrooftop.gov.in

ABBREVIATIONS

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

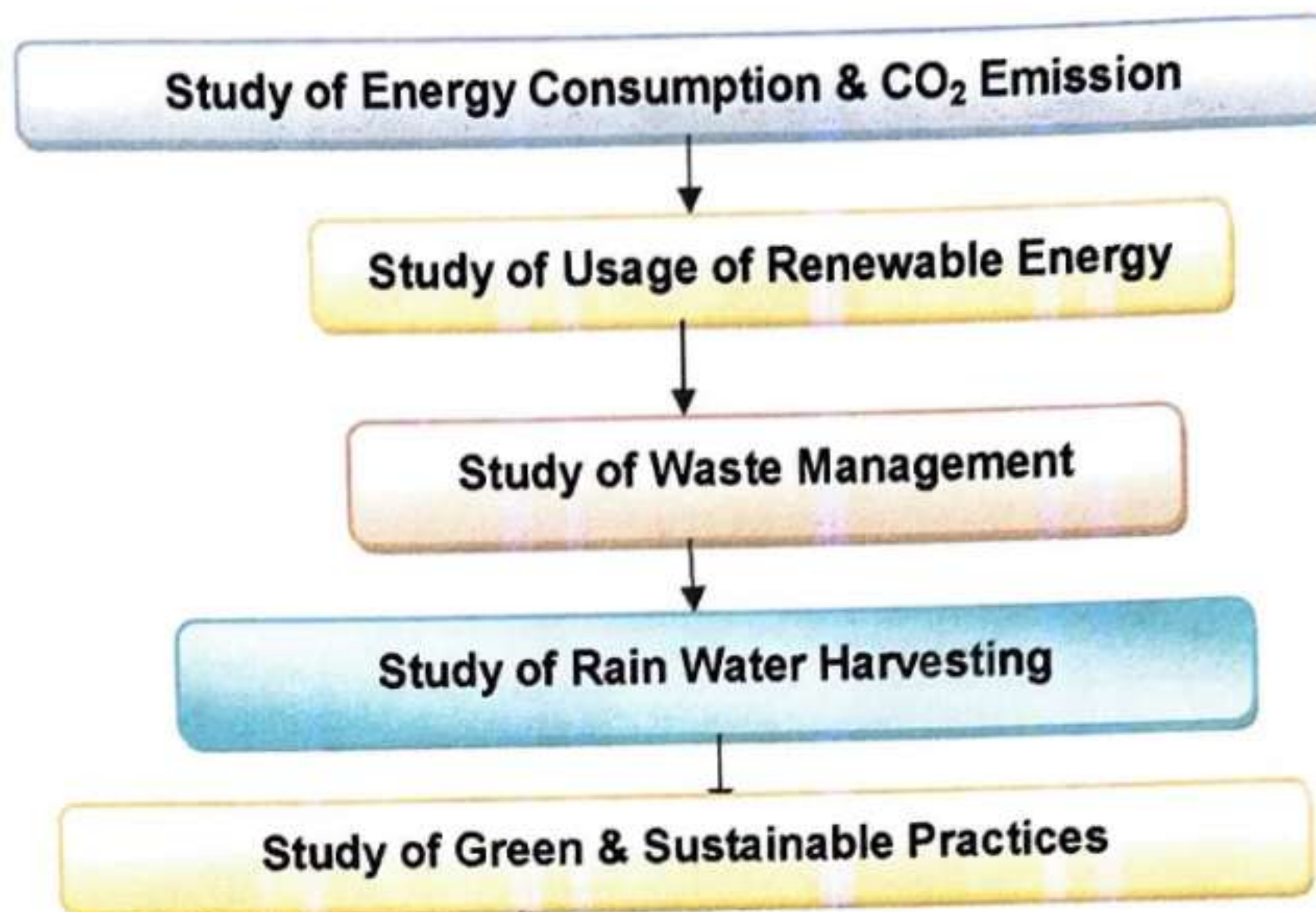


CHAPTER-I INTRODUCTION

1.1 Introduction:

A Green Audit is conducted at Malad Kandivli Education Society's Nagindas Khandwala College, Malad (W), Mumbai.

1.2 Audit Procedural Steps:



1.3 Google Earth Image:



College
Campus

CHAPTER-II
STUDY OF ENERGY CONSUMPTION & CO₂ EMISSION

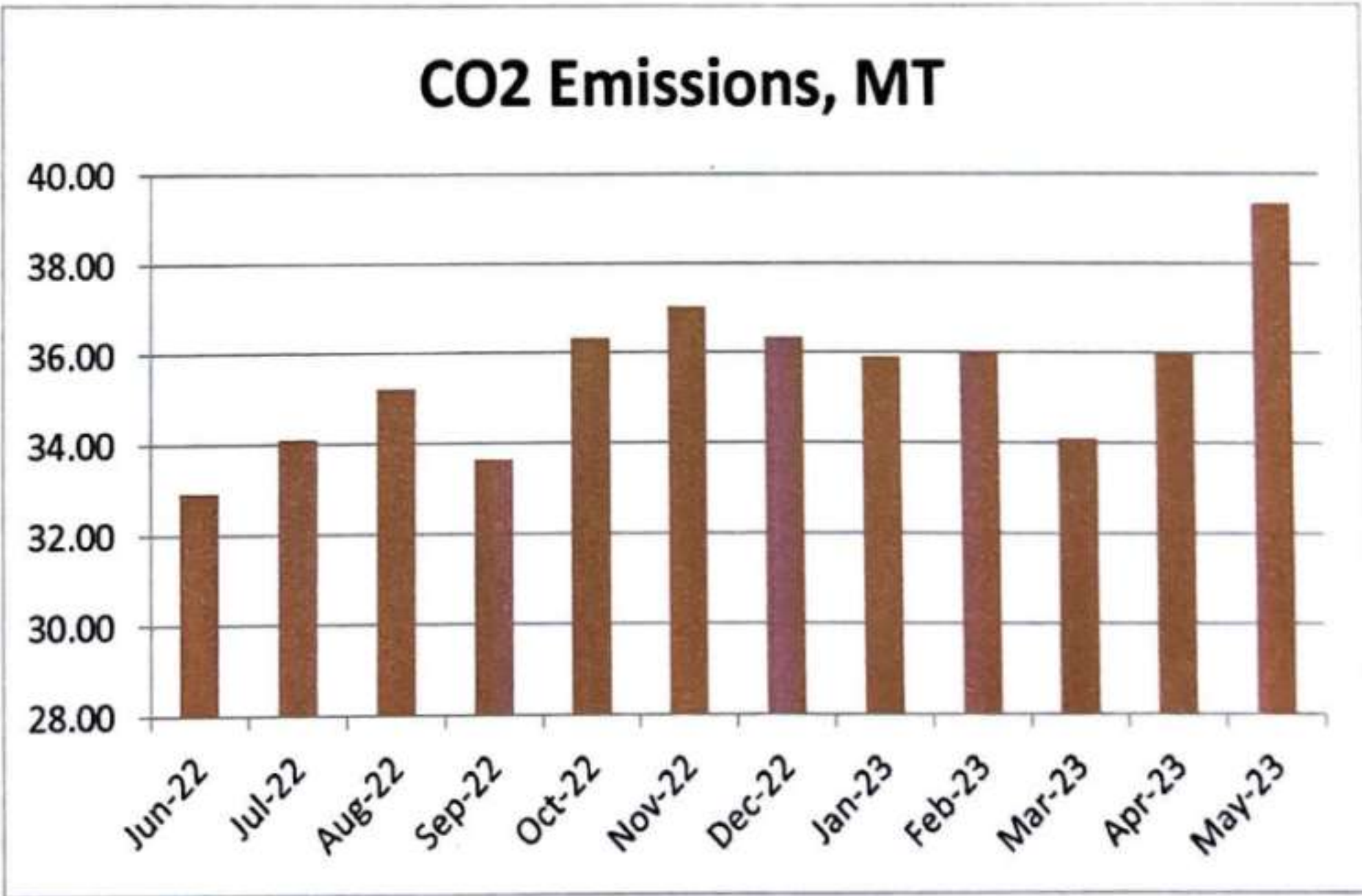
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

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

Table No 1: Month wise Energy Consumption & CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Jun-22	36569	32.91
2	Jul-22	37896	34.11
3	Aug-22	39127	35.21
4	Sep-22	37369	33.63
5	Oct-22	40369	36.33
6	Nov-22	41127	37.01
7	Dec-22	40378	36.34
8	Jan-23	39896	35.91
9	Feb-23	40015	36.01
10	Mar-23	37895	34.11
11	Apr-23	39978	35.98
12	May-23	43697	39.33
13	Total	474316	426.88
14	Maximum	43697	39.33
15	Minimum	36569	32.91
16	Average	39526.33	35.57

Chart No 1: To study the variation of Month CO₂ Emissions, MT:



CHAPTER-III
STUDY OF USAGE OF RENEWABLE ENERGY

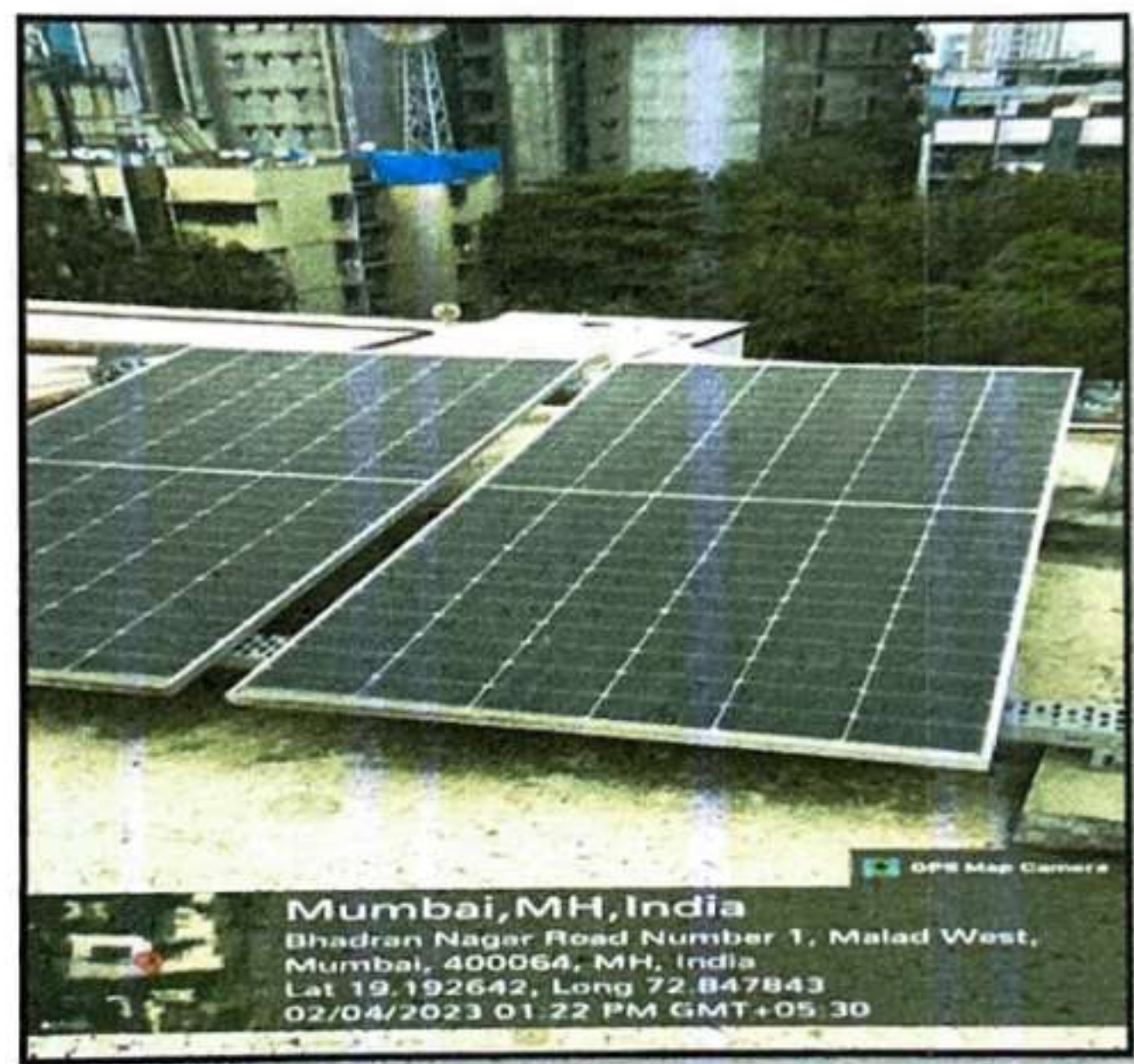
The College has installed Roof top Solar PV Plant of Capacity 1 kWp.

Now we compute the Energy generated by the Solar PV Plant and Reduction in CO₂ Emissions.

Table No 2: Computation of CO₂ Emission Reduction:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	1	kWp
2	Energy Generated in per kWp	4	kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 2022-23	1200	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO ₂ Saved by Solar PV Plant =(4)*(5) /1000	1.08	MT of CO ₂

Photograph of Roof Top Solar PV Plant:

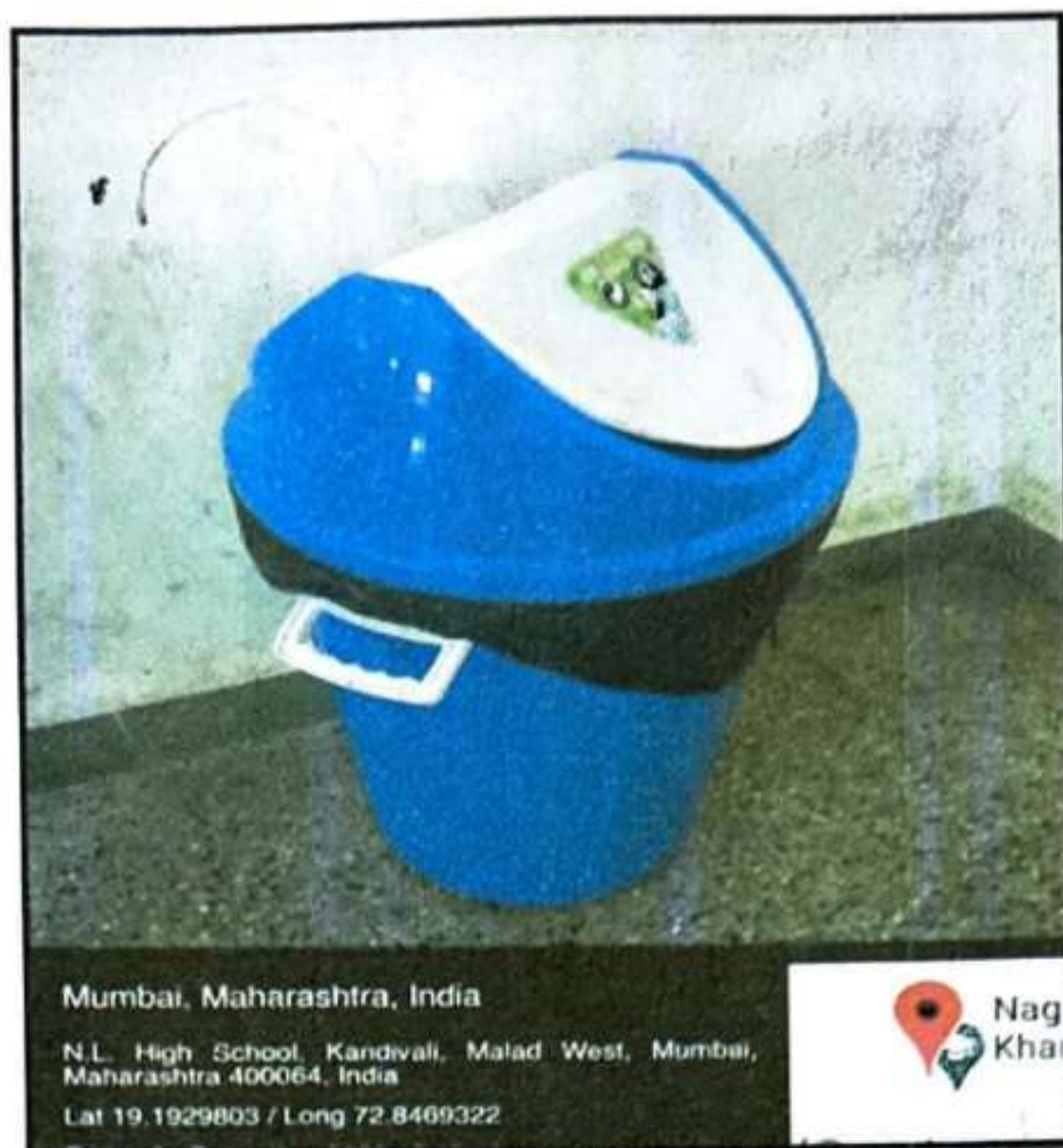


CHAPTER-IV STUDY OF WASTE MANAGEMENT

4.1 Segregation of Waste at Source:

The Waste is segregated at source by providing Waste collection bins at important locations.

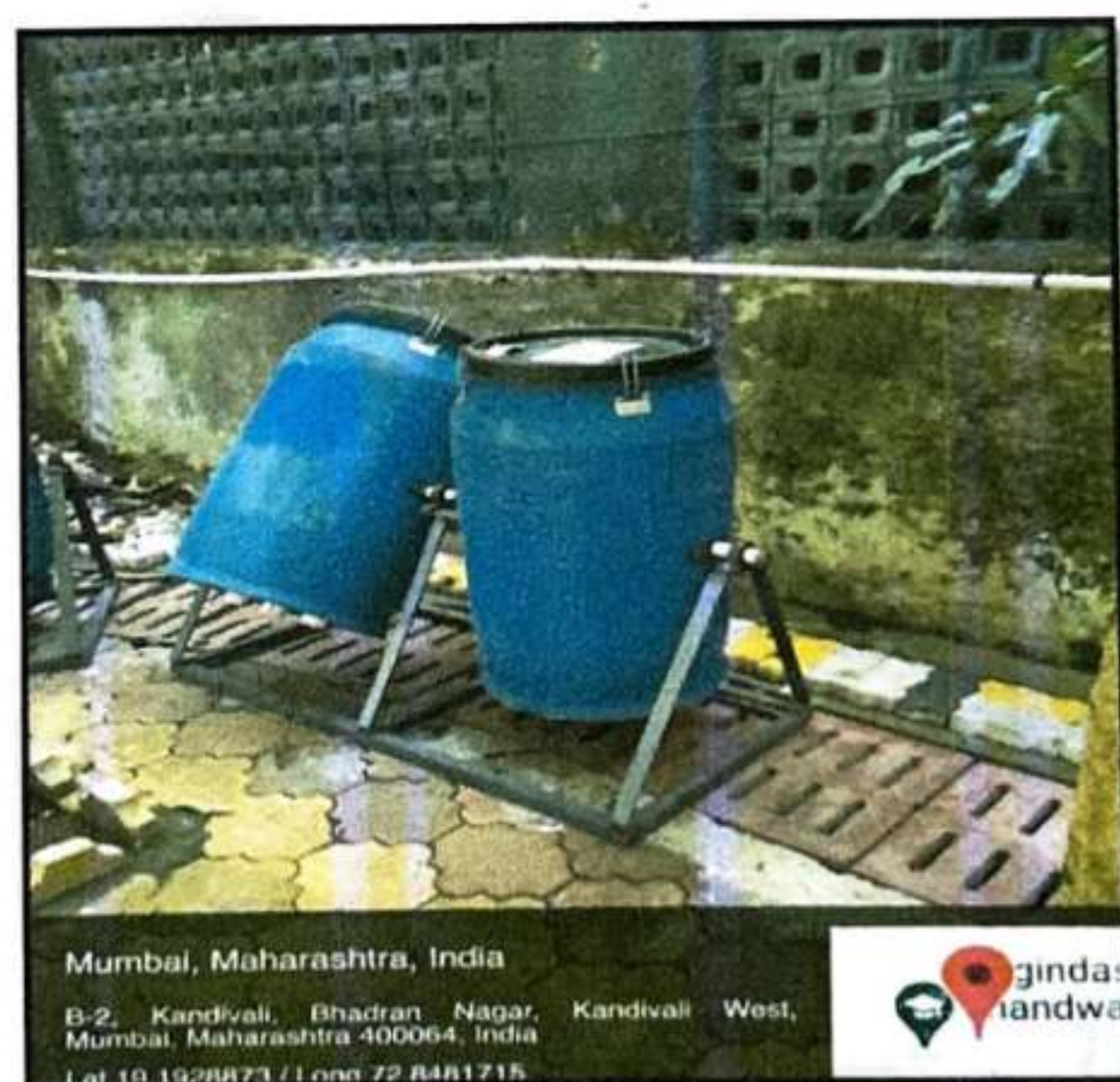
Photograph of Separate Waste Collection Bin:



4.2 Organic Waste Management:

The College has Bio Tumbler Units or conversion of Organic Waste, into Bio Compost.

Photograph of Bio Tumbler Unit:



4.3 Waste Water Management:

It is recommended to dispose of the E Waste through Authorized Agency.

Photograph of Effluent Treatment Plant:



4.4 E Waste Management:

The College has a dedicated E Waste Collection Bin, to collect the E Waste, for further disposal through Authorized Agency.

Photograph of E Waste Collection Bin:

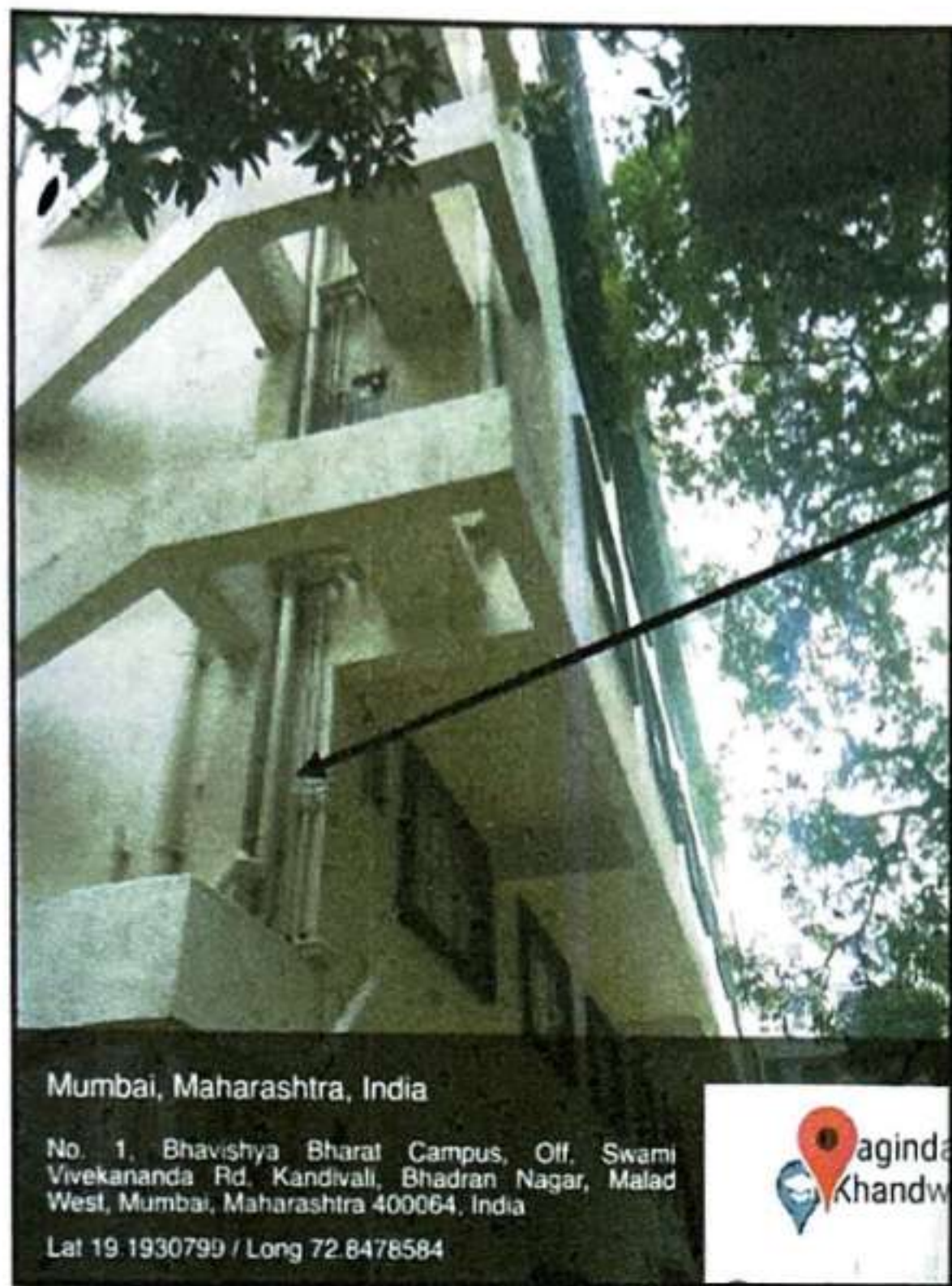


CHAPTER-V

STUDY OF RAIN WATER MANAGEMENT

The College has installed the Rain water Management Project. The Rain Water falling on the terrace is stored in an underground Storage Tank and further used for domestic purpose.

Photograph of Rain Water Collecting Pipe:



Rain Water
Collecting Pipe

Mumbai, Maharashtra, India

No. 1, Bhavishya Bharat Campus, Off. Swami
Vivekananda Rd. Kandivali, Bhadran Nagar, Malad
West, Mumbai, Maharashtra 400064, India

Lat 19.1930799 / Long 72.8478584



CHAPTER-VI

STUDY OF GREEN & SUSTAINABLE PRACTICES

6.1 Pedestrian Friendly Road:

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

Photograph of Road within campus:



6.2 Internal Tree Plantation:

The College has well maintained Tree Plantation.

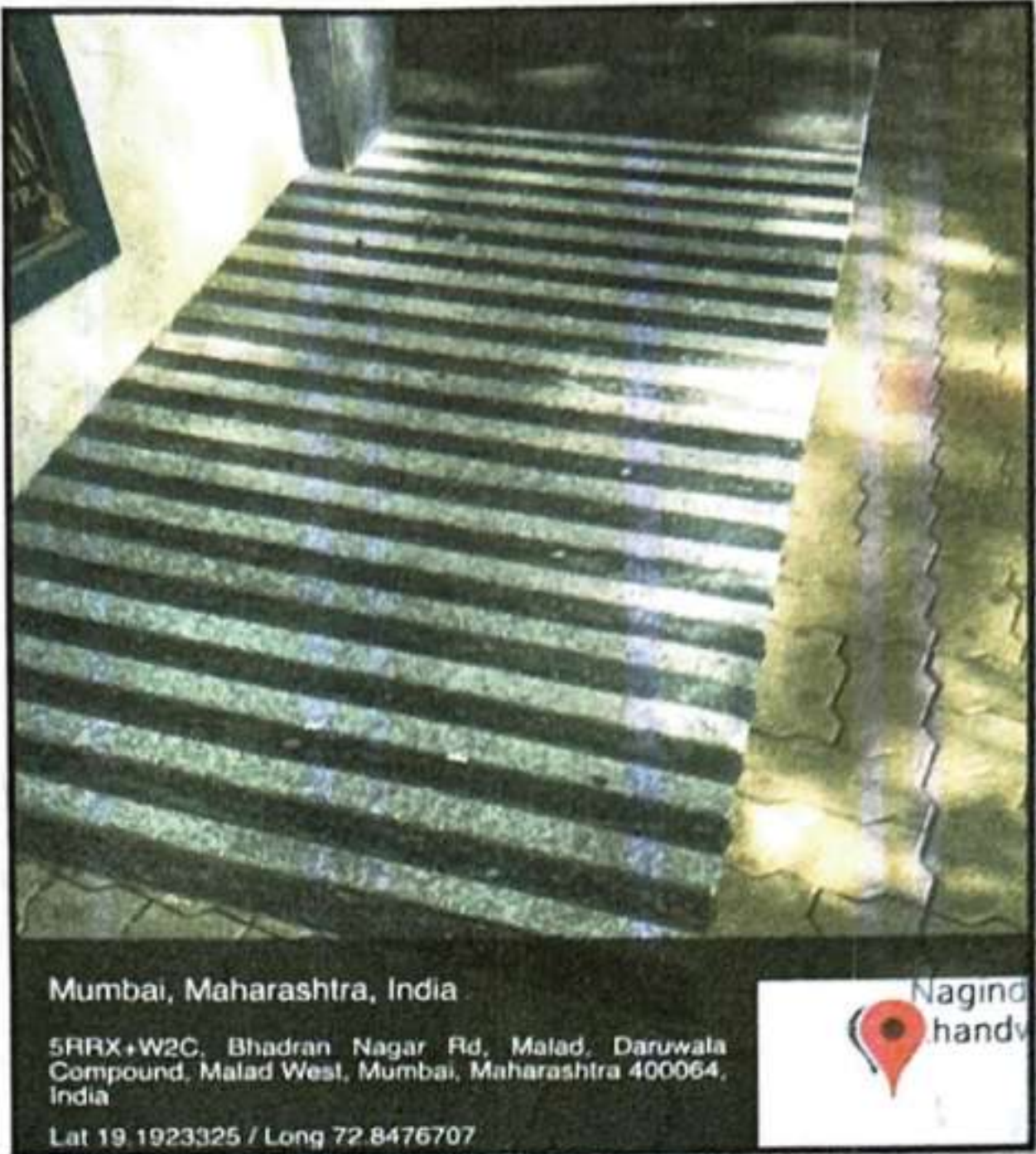
Photograph of Tree Plantation:



6.3 Provision of Ramp and Wheel Chair for Divyangajan:

The College has made provision of Ramp, Wheel Chair and Lifts for easy movement of Divyangajan in the Campus.

Photograph of Ramp:



6.4 Creation of Awareness on Water Conservation by Display of Posters:

The College has displayed posters on importance of Water Conservation.

Photograph of Poster on Water Conservation:

