



Registered Energy Auditor : EA-13
MEDA, GOVT. OF MAHARASHTRA

Certificate of Completion

This certificate is awarded to

**SONOPANT DANDEKAR SHIKSHAN MANDALI
SONOPANT DANDEKAR ARTS COLLEGE
V. S. APTE COMMERCE COLLEGE
M. H. MEHTA SCIENCE COLLEGE**

for completing **ENVIRONMENT AUDIT** successfully
as on October 2020

ASHUTOSH THAKUR
MANAGING DIRECTOR
SAUR ENGINEERS & CONSULTANTS PVT. LTD.
ENERGY AUDIT DIVISION



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**Detailed Report
Environment Audit**

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**Project Beneficiary
2020-2021**

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**Sonopant Dandekar Shikshan Mandli
(SDSM)**

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SDSM
Tal. Palghar, Dist. Palghar,
Pin 401404.

=====
Consultants & Auditor

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SAUR
Engineers & Consultants Pvt. Ltd.
EA-13

=====
D-8, Plot No. 108, Akshay, Rsc-16,
Gorai-1, Borivali (west), Mumbai-400092
MAHARASHTRA
+919867499812/+919168402909



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Acknowledgement

Environment Audit is executed successfully for beneficiary details mentioned below under guidance of Registered Environmental Audit Company M/s. Saur Engineers & Consultants Pvt. Ltd. having registered office at D8, Plot No. 108, Akshay Society, Gorai-1, Borivali west, Mumbai 400091 contact id: saurengineers@gmail.com.

Our sincere thanks to Site In charge, all staff of SDSM present at site, for excellent co-ordination during field measurements and providing accurate data required the said work and preparation of Test report.

Name of Beneficiary: Sonopant Dandekar Shikshan Mandli

Registration Number: NA

Address: Tal. Palghar, Dist. Palghar 401404

Contact Person: Mr. Mahesh Deshmukh

Contact Number: 02525252163

Date of Audit: 24/12/2020



Sign & Seal

Saur Engineers & Consultants Pvt. Ltd. Plot No. 108, D-8, Gorai-1, Borivali (W), Mumbai - 400 091.

ENERGY AUDITOR "CLASS-A" No. EA-28
SAUR ENGINEERS & CONSULTANTS PVT. LTD.
Plot No. 108, D-8, Gorai-1, Borivali (W),
Mumbai - 400 091.

I understood the facts, suggestions and details mentioned in this Environmental audit report. Saur Engineers & Consultants Pvt. Ltd. explained us this report to our satisfaction. It is our responsibility to implement them all. I do not hold responsible Saur Engineers & Consultants Pvt. Ltd. for any incomplete execution and its consequences.

Sign & Seal

SDSM



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Environmental Audit Report Sonopant Dandekar Shikshan Mandli (SDSM-Palghar)

1. Introduction

Environmental Audit is a process of systematic identification, quantification, recording, reporting and analysis of impact on components of environmental diversity properties of institute. It aims to analyse within and surrounding the place concerned, which will see interrelation with eco-friendly atmosphere. Environmental audit is a valuable means for an Institution related to educational area to determine how and where they are impacting on natural resources or diversity of nature. Environmental audit report includes assessment of premises which refers to impact on environment with carbon emission, wastages in terms of initiatives, implementation, best practices, working environment, capacity utilization based on all above parameters observed during Environmental audit along with conditions and benchmarks as Wastage types, recycling, Greenery, effect of impact, Carbon footprints as well as biodiversity conditions. Understanding these conditions the institution can make plans for day to day working, future expansions as well as an environment-friendly view of life while making changes and planning for savings.

It can create health consciousness, environmental awareness, practice green values and ethics. It provides better understanding of impact on surrounding conditions to staff and students. If self-enquiry is natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the institution evaluates its own contributions towards a sustainable future. As the pollution and CO₂ is becoming an increasingly important issue for the nation, the role of higher education institute is more vital and prevalent in relation with the issue.

The rapid urbanization and economic development at local, regional and global level has led to several greenery and ecological crisis. On this background it becomes essential to adopt the system of Green Campus for the institution which leads for sustainable development and at the same time persisting the quality of the same while travelling on the growth path. The National Assessment & Accreditation Council, New Delhi (NAAC) has made it mandatory to all Higher educational institutions should submit a Environmental audit Report. Moreover, it is social responsibility of a Higher educational institution to ensure that they contribute towards the saving of environment and reduce level of quantity for impact on natural resources available.



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2. Objective

In recent times, the Environmental audit of an institution has becoming the paramount important for self-assessment of the Institution which reflects in the role of the institution in mitigation to current problem of reducing greenery and natural resources depletion. The institution has been putting efforts to keep clean and green atmosphere since its inception. Therefore the purpose of present Environmental audit is to identification, quantification, recording, reporting and analysis of components of surrounding environmental properties of institute framework as a part of global environment sustainability in compliance with the applicable regulations, policies and standards.

The main objectives to carrying out the Environmental audit are:-

- To have overview of premises
- To record and document Wastage type and management
- To record and document Recycling Procedures
- To record and document Greenery availability
- To record and document Impact on environment
- To record and document Carbon footprints

3. Methodology

The purpose of Environmental audit of Anna Bhau Sathe Bhavan is to ensure that the practices followed in the campus are in accordance with the Green Policy of the Country. The methodology includes : collection of data, physical inspection of the campus, calculations and review of the documentation and data analysis.

4. About the Building

The SDSM was founded in the Memory of Hon. Sonopant Dandekar, the scholar of higher degree, philosophe, strong protagonist of Varkari Sampradaya, the Great narrator of The “Dnyaneshwari”. The SDSM founded in the year 1968 and is started arts and commerce colleges in 1970. In the year 1984 the science college was started. The college premises is about 10 hectare. It consists of five buildings with fully equipped offices, Libraries, seminar hall, Laboratories, Gymnasium, Yoga center, running track and cricket ground along with adequate toilet blocks. About 3000 students avail facilities of the institute with help of 250 Teaching and Non Teaching staff.



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5. Environmental audit Statement:-

The building is adopting the “Environment Friendly” system for greenery conservation and sustainability. There are main three pillars i.e. zero wastage, maximum recycling and 100% inmates demonstrating environmental literacy. The goal is to maintain good environment, reduce energy and water wastage, while creating an atmosphere where inmates can learn, study and live healthy.

6. Overview

SL No	Head	Details
1	Name of Applicant Institution	SDSM
3	Address	Tal. Dist. Palghar 401404
4	Contact Number	NA
5	Registration Certificate Number	NA
6	Sector Type	Educational Institute
7	Senior Management Contact	Asst. Prof. Mahesh Deshmukh
8	Contact Number	7972547497
9	Status of Institution (Pvt./Public)	Private
10	Company Turnover (Rs. In Lakhs)	750
11	Number of Employees	235
12	Approximate Floor Area (ft ²)	75000
13	Year of Establishment	1970
14	Plot Area (ft ²)	800000
15	Constructed Area (ft ²)	75000
16	Greenery Area (ft ²)	700000
17	Roof Area (ft ²)	24000
18	No of Buildings	5
19	Building Type	RCC Construction
20	Age of Building	30years
21	Leakages/Cracks on wall/roof	Minor wall leakages in rooms
22	No. of workers (Footfall)	250
23	No. of Customers (Footfall)	3000-4000
24	Day Vs Night activity in %	100% Day
25	Shifts per day	1
26	Hours per shift	12
27	DG Set installed	Yes
28	Inverter Installed	Yes
29	Renewable Energy System installed	No
30	(Solar/Wind/Biomass/Biofuel/Etc.)	No

7. Location:-

SL No	Head	Details	Remark
1	Name of Institute	SDSM	
2	Category	Educational Institute	
3	Address	Tal. Palghar, Dist. Palghar 401404	
4	State	Maharashtra	
5	Nearest Railway Station	Palghar	Western Railway
			Central Railway
6	Nearest Bus Station	Palghar MSRTC Depot	Interstate/Intrastate
		Palghar	Local
			Local
7	Nearest Airport	CSIA, Mumbai	
8	Longitude	19.42	
9	Latitude	72.45	

Arial View of Premises:





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8. Wastage Types and Management

1. Do the premises generate wastage?

Yes

2. What type of wastage and quantity is generated? What are actions taken on it?

SL No	Wastage Type	Quantity	Action
1	Biomass	5-8Kg per day (as observed)	Put near tree roots
		1000Kg approx. once by grass cutting	Taken away by contractor
2	Paper	150-200Kg approx. per year	Cleaned by housekeeping and sent to municipal wastage
3	Water	400-500Ltrs approx. per year due to leakage	Not considered
4	E-Waste	Un-quantified	Cleaned by housekeeping and sent to municipal wastage
5	Bio-Hazardous	NIL	NIL
6	Fuel	Electricity Wastage by running fans and lights for uncounted time after room cleaning	NIL
7	Production	NIL	NIL
8	Process	Occasional electricity wastage by room user/s accidently keeping equipments switched On while leaving the room.	NIL
9	Food	Occasionally wastage in very low quantity	Cleaned by housekeeping and sent to municipal wastage
10	Man-Hours	NIL	NIL

Suggestions

1. Install a vermin-compost plant for Biomass and food wastage (point no.1 and 9).
2. Install a Bin in reception area to collect paper wastage (point no.2).
3. Fix all taps, replace old pipelines, use Teflon tapes on ties, and use sealants for joints to avoid leakage (point no.3).
4. Install a Bin in reception area to collect E- wastage like damaged or dead luminaries, mobiles, computer or spare-parts, Etc. hand over it to proper scrap vendor once bin is full (point no.4).
5. Update SOP of cleaning with statement "Switch OFF Fans after 5 Minutes once room is cleaned". (point no.6)
6. Fix a Notice on Back-side of Exit Door of Room-"SWITCH OFF all electrical equipments and Taps". (point no.8 and 6)



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9. Recycling Procedures

1. Does Premises users aware about Recycle or Re-use of resources used?
NO
2. Does institute run wastage and recycling awareness campaign for users?
NO
3. Does institute have SOP for wastage and recycling procedures?
NO
4. Does Premises Recycle or Re-use resources used?
NO

Suggestions:

1. In present scenario observed there is no any recycling procedure is thought, documented or observed in premises.
2. Recycling of one side used papers to be observed.
3. Prepare and observed a Generalized SOP having attributes specialize on each type of wastage and it's re-usage and/or recycling.



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10. Conservation:

1. Any Energy conservation method applied?
Yes Partially LED lights installation has been carried out.
2. Any SOP on operation and maintenance is defined?
NO
3. Any Energy conservation devices installed?
NO
4. Any alternative Energy source is installed?
NO
5. Does the SWITCH OFF Drills conducted regularly?
NO
6. Are electronic and smart devices run on power saving mode? (computers,Etc)
NO
7. Does electronic & other equipment run standby mode? How many hours?
YES 2-3 hours in Computer lab
8. Does institute perform Water quality monitoring?
NO
9. Have you installed rain water harvesting system?
NO
10. Any SOP on operation and maintenance of plumbing system is defined?
NO
11. Any SOP on Water utilization is defined?
NO
12. Does institute record water usage?
NO
13. Are rooms well ventilated?
NO
14. Does institute perform Air quality monitoring?
NO



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15. Any vehicles used? Type of Fuel? Quantity of fuel consumed?

NO

Suggestions:

- 1. Generate awareness among user about environment conservation.**
- 2. Prepare and observe SOPs for the same.**
- 3. Put "SWITCH OFF" boards on back side of Doors.**
- 4. Use energy efficient Lighting.**
- 5. Use Energy efficient fans.**
- 6. Keep AC temperature to 26⁰ C.**
- 7. Clean Luminaries, Fans, ACs regularly to increase efficiency.**
- 8. Prepare and observe SOPs for maintenance of equipments.**
- 9. Avoid Draft printing, use email/Whatsapp maximum.**



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11. Greening

1. Is there any Garden in premises?
Yes
2. Are there any trees on border of premises?
Yes sizable gardening is available
3. Is there any available place for Greening?
Yes. On border, quadrangular places available within building.
4. What type of Plantation suitable for institute?
Ashoka, Ficus Religeosa, Boganvella, Alovera, Tulsi, Camphor and many others suitable as per geographical regime.
5. Does the institute have horticulture department/Experts?
NO
6. Are there any horticulture /Garden related expert staff in premises?
YES
7. Any Tree plantation drive run by institute inside or outside campus?
YES
8. Number of Trees Planted last year?
50
9. What is Survival rate?
60%
10. Any Plant distribution program for students/Users of Institute?
NIL
11. Any Plant ownership/Maintenance program observed by institute?
NO
12. Is there any SOP for Greenery Maintenance?
NO



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Suggestions:

1. Prepare and observed a Generalized SOP for greenery management.
2. Plant small vegetation like aloe Vera, Tulsi, Etc in quadrangular places available within building.
3. Plant trees in Gaps available within the trees on plot boundary.
4. Plan and install Green walls on Entry and outside of reception area.
5. Plant Terrace garden on roof with small plants.
6. Hire or engage a gardener for the premises.
7. Start a planting drive with students outside campus.
8. Gift small plants or seeds/seed-balls to students leaving or going to native place and encourage them to plant at their own premises.

12. Environment Impact on Natural resources

Table-1: Overall

Environmental Impact Analysis Report		
Annual Consumption	20000	KWh
Annual Green- Impact		
Coal Burned	12423.6	Kg
Diesel Burned	6584.1	Ltr
Natural Gas Burned	251209	Cub Ft
Trees Cut	622.2	Nos
Water Consumed	44815.4	Ltr
Life Time Environmental- Impact		
Coal Burned	714399.5	Kg
Diesel Burned	119895.9	Ltr
Natural Gas Burned	4574516.4	Cub Ft
Trees Cut	11330.5	Nos
Water Consumed	816088.4	Ltr

Table-2: Per Square-foot

Environmental Impact Analysis Report		
Annual Consumption	20000	KWh
Annual Green- Impact		
Coal Burned	1.23	Kg
Diesel Burned	0.65	Ltr
Natural Gas Burned	24.79	Cub Ft
Trees Cut	0.06	Nos
Water Consumed	4.42	Ltr
Life Time Green- Impact		
Coal Burned	70.50	Kg
Diesel Burned	11.83	Ltr
Natural Gas Burned	451.40	Cub Ft
Trees Cut	1.12	Nos
Water Consumed	80.53	Ltr

Table-3: Per Person

Environmental Impact Analysis Report		
Annual Consumption	20000	KWh
Annual Green- Impact		
Coal Burned	86.28	Kg
Diesel Burned	45.72	Ltr
Natural Gas Burned	1744.51	Cub Ft
Trees Cut	4.32	Nos
Water Consumed	311.22	Ltr
Life Time Green- Impact		
Coal Burned	4961.11	Kg
Diesel Burned	832.61	Ltr
Natural Gas Burned	31767.48	Cub Ft
Trees Cut	78.68	Nos
Water Consumed	5667.28	Ltr

Life Impact is calculated considering 20 years running with same consumption conditions. Square foot area is area of constructions and person is population.

13. Carbon Footprints

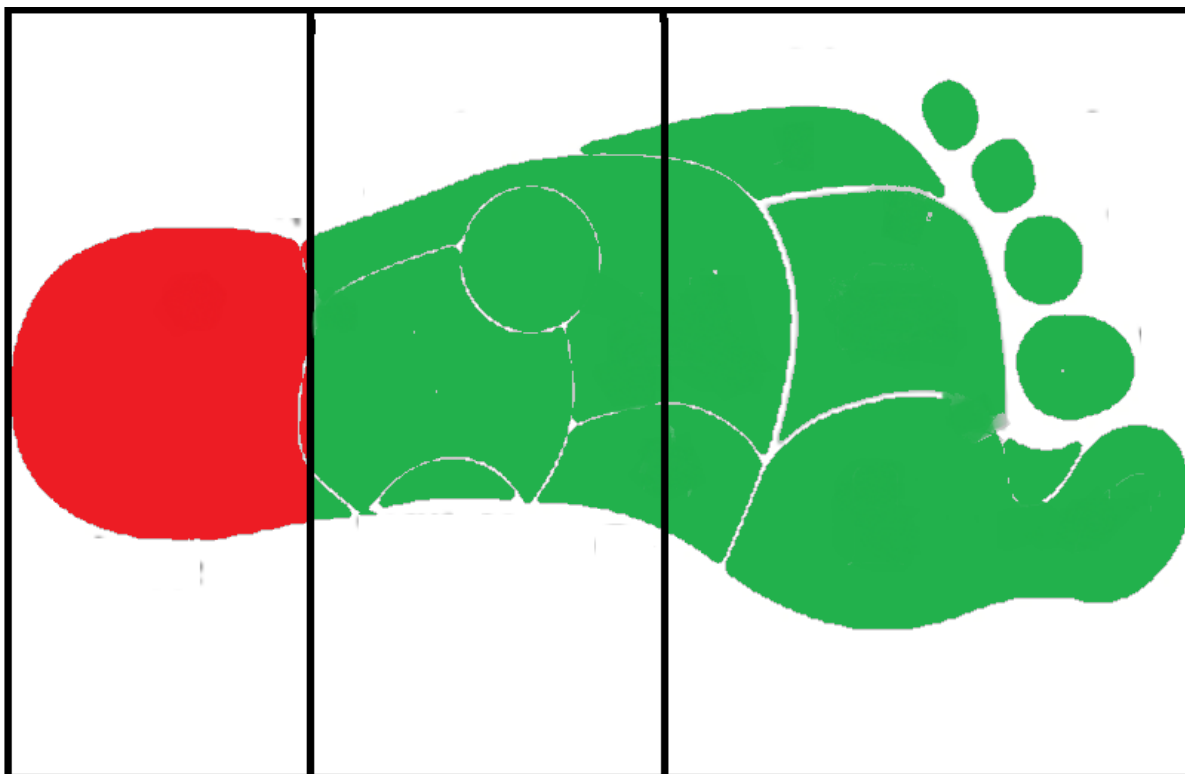
Head	General	Per Square Foot	Per Person
Per Year (Kg.)	13668	1.35	94.92
Lifetime (20Years) (kg.)	248863	24.56	1728.22

Ranges:

Best: (Below 1800/Per Person per year)

Average: (Below 3000 and Above 1800/Per Person per year)

Bad: (Above 3000/Per Person per year)



Carbon Footprint found best category.



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14. BEST Practices Observed:

SL No	Head	Practice
1	Wastage Management	Biomass Used for natural composting at tree routes.
2	Recycling	NIL
	Conservation	1. 50Kwp Solar GCRT system to save 80% Consumption 2. Use of Energy efficient lights 750 Nos 3. Use of Energy efficient fans 400 Nos
3	Greening	NIL
4	Natural Resource Impact	NIL
5	Carbon Footprint	Good consumption matrix

All suggestions given above under every head are need to be implemented and SOPs to be generated.

Disclaimer

The report is generated from data, information, answer to asked questions, standards and procedures defined by different and concerned authorities time to time, available site condition, weather condition, operational and availability conditions provided by beneficiary on the day of survey. If any changes on above said measures on any other parameters affecting these measures may lead to change, alter, in-corrections even falsifying calculations, results, recommendations and suggestions. The values, figures, amounts mentioned are indicative to the site situation and condition; it may not reflect each and every aspect of it. The report is generated restricted to given scope and available conditions and measures.

Conclusion

We hereby conclude report for "Environment Audit" of the Work done under scope of WORK ORDER given by your office vide above Reference number; for work: "Energy Audit of Sonopant Dandekar College Buildings, SDSM, Tal. Palghar, Dist. palghar, 401404". Please study it thoroughly and implement recommendations and suggestions at earliest.