

A
Environment (Green) Audit Report
(Pre Level Audit)

of



"Arunodaya Dnyan Prasarak Mandal"
Women's College of Arts, Commerce
and Home Science, Jalgaon

For the year

2018-19

Submitted by

External Audit Team

K. C. E. S's Moolji Jaitha College
Jalgaon

Index

Sr. No.	Contents	Page Nos.
1	Certificate	03
2	Introduction	04
3	About the Institution	04
4	About the College	05
5	Audit Team	05
6	Executive Summary	06
7	Statement of Assurance	06
8	Steps in Audit	06
9	Methodology and Instruments used for the Audit	07
10	Summary of Findings	07
11	Audit Framework and Detailed Findings	07
12	Recommendations	13
13	Declaration	14

CERTIFICATE

Environmental (Green) Audit

This is to certify that **A.D.P.M'S Women's College of Arts, Commerce and Home Science, Jalgaon (Maharashtra)** has satisfactorily conducted the Environmental (Green) Audit (**Pre Level**) in accordance with the required norms for the academic year 2018-19.

The audit shall assist them to develop measures to save the environment and its individual units.

Prof. K. P. Pawar

Assistant Professor
(Dept. of Environmental Sciences)

KCES's Moolji Jaitha College, Jalgaon

Email: kiranpawar933@gmail.com

Mobile: (+91) 9860678762

Phone: 0257-2237363 Ext. 228 (EVS Dept.)

Introduction

The current environmental audit (Pre Level) represents the first stage in our efforts to build environmental sustainability on the campus. The audit was conducted by a team of faculty lead by Prof. K. P. Pawar (Assistant Professor, Department of Environmental Sciences, KCES's Moolji Jaitha College, Jalgaon) with assistance from Mr. B. R. Joshi (Head, Department, B.Voc., KCES's Moolji Jaitha College, Jalgaon). We have conducted this audit for the college to create awareness among not only students but also staff and stakeholders about avoiding engagement in non-eco-friendly activities. We desire to make these activities as a regular part of functioning.

The overall goals of this audit were:

- To introduce students to real concern of environment and its sustainability using the college campus as a study site.
- To analyse the pattern and extent of resources used on the campus.
- To make the college a more environmentally sustainable.
- To bring out a status report on environmental compliance.

About the Institution

Under the able leadership of veteran Gandhian Hon'ble Shri. Balasaheb Madhukarrao Chaudhari, people from higher education, social work and other walks of life came forward to establish "Arunodaya Dnyan Prasarak Mandal" in the year 1987. Shri. Balasaheb Chaudhari who was managing bodies of several educational institutions, had a first-hand experience. He realised that 'East Khandesh', our region needs an educational institution with a difference in a sense. There was an urgent need to open the doors of higher education for WOMEN, especially those who are under-privileged for various reasons – early marriage, widowhood, deserted women etc. To serve this class, the institution introduced the college in 1989 which is affiliated to the SNDT Women's University, Mumbai.

About the College

Since its inception the college has been imparting higher education to the girls from socio-economical backward class students so as to bring them in the mainstream of the society. Basically, the students hail from the surrounding villages and on the outskirts of the city. The college initially introduced Arts and Commerce faculty and gradually started Home Science faculty as the need of the hour.

In the year 1992, the college received 100 percent grants from the State Government. By the efforts of the institution, the State Government allotted one acre centrally located land to the institution in 1993. The beautiful campus comprises of a three storied building, well equipped Indoor Sports Hall for Badminton and a playground. The college got 2 (f) recognition in 1994. The University granted permanent affiliation to the college in 1998. Consequently, the college started with only 80 enrolments in 1989, specialization in two subjects. i.e. Marathi and Hindi, seven teaching and two non-teaching staff members. The college now has enrolment of 294 students, six subject specialization in Arts faculty and 16 teaching and 8 non-teaching staff.

The college underwent NAAC Accreditation process twice and maintained the 'B' Grade. Presently we are appearing for the 3rd Cycle with the strong hope to improve our grade.

Audit Team

1. Internal Audit Team

Sr. No.	Name of Auditors	Designation
1	Dr. Somnath Lokare	Chairman
2	Dr. Prakash Kamble	Member
3	Dr. Vinay Patil	Member
4	Mr. Rajesh Kharde	Member

2. External Audit (Expert) Team

Sr. No.	Name of Auditors	Designation
1	Prof. Kiran P. Pawar	Assistant Professor, Dept. of Environment Science, KCES's Moolji Jaitha College, Jalgaon
2	Prof. B. R. Joshi	Head, Department of B. Voc., KCES's Moolji Jaitha College, Jalgaon

Executive Summary

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development.

The college is intensely concerned and totally believes that there is an urgent need to address these basic problems and reverse the trends. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards.

The College Campus Area Development Committee serves as an “Internal Audit Team” to perform various activities in the field of Green Campus. College is adopting zero waste discharge facility to manage the solid, liquid and e-waste.

- **Liquid waste management:** The College has designed the outflow of the liquid waste in such a way as to prevent contamination in the campus. A properly constructed leakage proof sewer system is used for drainage.
- **Green Practices:** Colleges willingly accepted the green practices and strictly follow them. The college conducts campaign for students and faculty to understand the importance of environmental protection and be mindful about saving energy. The authority frequently appeals to the students and faculty to maintain the tradition of no vehicle day in a week. Tree plantation drive are regularly been carried out in the college premises and also nearby areas.

Statement of Assurance

The audit has been conducted in accordance with the standard procedures for the professional practice of internal auditing.

Steps of Audit

In order to meet its objectives, this audit combined physical inspection with review of relevant documentation and interactions with departmental staff members and students.

- **Review of the Documentation:** For the purpose of this audit Green audit frame work was reviewed.
- **Physical Inspection:** The audit team has conducted physical observation in the college campus to inspect the green practices.

Methodology and Instruments used for the Audit

Sr. No.	Parameter	Instrument Used
1	Ambient and Workplace Air Quality Monitoring and Assessment	High Volume Sampler (Envirotech APM 460 BL Respirable Dust Sampler-RDS)
2	Noise Quality Monitoring	Sound Level Meter (Lutron SL-4010) and Environmental Noise Pollution Monitor Meter (RT-5510)
3	Illumination Level Monitoring	Digital Lux Meter (TES-1332A).

Summary of Findings

The main finding of the audit shows that, all the departments, staff and students are aware about the need for environment protection at a general level. It was also observed that a number of best practices such as maintaining the collection of waste separately, introduce rain water harvesting to new building structures, implementing plastic free campus etc. are followed in the college premises.

Audit Framework and Detailed Findings

The following audit framework is used for conducting Green Audit in 2018-19. The frame work also lists the finding and also observations for every criterion.

Criteria- 1 (A): Waste Generation and Management

Objective: Maximize the waste recycle and minimize the quantity of non-recycled refuse.

Activity: Segregation of waste

Audit Observation: Waste Material is segregated as per category like Paper, Cardboard, Scrap Wood, Scrap Metal, Plastic scrap, glass etc. Each waste is disposed as per the environmental guideline.

Type of waste	Audit Observation
Paper Waste	<ul style="list-style-type: none"> One side rough paper is used for the printing of Notices, Time Tables etc. Email and Mobile media communication is used for minimize use of paper.
Plastic waste	<ul style="list-style-type: none"> Plastic bottles, caps and other waste material are stored separately at departmental level and sell as a scrap material

Criteria- 1 (B): Waste Generation and Management

Objective: Collection of waste.

Activity: Students as well as faculties of different departments are concerned about waste collection. They do not throw the waste paper in the premises of college campus.

Audit Observation: Proper dustbins are provided within college campus. Also some dustbins are provided to departments for collection of solid waste. The stored waste is sent for Vermi-composting.

Criteria- 1 (C): Waste Generation and Management

Objective: Plastic free Campus.

Activity: Motivate students about harm of plastic carry bags and items to convince them for no use of plastic in college premises.

Audit Observation: The activity called as “No Use of Plastic” is conducted for awareness among staff and students.

Criteria- 2 (A): Water Quality Assessment

Objective: To Provide Safe Drinking water.

Activity: Drinking Water Quality Assessment by APHA-1998 Method.

Location Code	Source
DW-1	RO Water Sample
DW-2	Water Cooler Sample

➤ **Analytical Results of Water Quality Assessment**

Sr. No.	Parameters	Units	DW-1	DW-2	BIS Limits	Remark
1	Colour	----	Clear	Clear	----	According to present observation ,all values of physical, chemical and biological parameters were found within the prescribed
2	Odour	----	Non-objectionable			
3	Taste	----	Agreeable			
4	Turbidity	NTU	0.4	0.7	5	
5	pH		6.85	6.67	6.5 to 8.5	
6	Electrical Conductivity	ds/m	3.8	3.33	-----	
7	Total Acidity	mg/l	0.9	14	120	
8	Total Alkalinity	mg/l	0.8	1.4	200	
9	Total Hardness (as CaCO ₃)	mg/l	13	26	300	
10	Calcium Hardness	mg/l	06	16	200	

11	Magnesium Hardness	mg/l	07	10	100	limit of BIS.
12	Ca ²⁺	mg/l	8.7	40.5	75	
13	Mg ²⁺	mg/l	5.4	9.1	50	
14	Total Dissolved Solids	mg/l	2.9	20.7	500	
15	Total Suspended solids	mg/l	0.9	10.3	NS	

(*NS – No Standard)

Criteria- 3 (A): Energy Consumption (Electrical Energy)

Objective: To save the electrical energy.

Activity: Conservation of Electrical Energy at Departmental Level

Audit Observation:

- All Departments having panel boards MCB switch to control the electrical supply within the department. The responsibility is given to non-teaching staff to “Switch-off” this switch without any ignorance to avoid the wastage of electrical energy.
- Sign boards like “Switch off the fans / light when not in use” are displayed in the departments.
- The water pumps are regularly maintained for minimum consumption of electricity.



Criteria- 3 (B): Energy Consumption (Electrical Energy)

Objective: To save the electrical energy.

Activity: Installation of “Solar Plate” at Main Building.

Audit Observation: Solar Plates are installed in the main building to save the electrical energy using natural resource.

Criteria- 3 (C): Energy Consumption (Electrical Energy)

Objective: To determine Illumination (Light Intensity).

Activity: To measure the light intensity in college campus by Lux Meter.

Audit Observation: As the college promotes to different educational activities like PPT presentations, Interactive teaching-learning with ICT tools, adequate lighting must be provided. Insufficient light may create eye problems, visual fatigue while the more concentration causes

glare or reflection into the staffs, student's eyes. To measure the present status of light intensity, Illumination is measured in units of LUX (Lumens per square meter) by Illumination Digital Lux Meter (TES-1332A). The obtained Results compared with standard guidelines. The illumination levels at all locations were found good according to standards.

Sr. No.	Locations	Illumination (Day Time) Lux	
		Without Light	With Light
1	Principal's Cabin	81.7	109.2
2	Management Room	81.9	102.8
3	Administrative Office	98.2	120.3
4	Library (Reading Room)	78.8	127.9
5	Staff Room	81.7	133.7
6	Vice - Principal's Cabin	88.3	122.6
7	Bachpan School Principal's Cabin	74.5	107.5
8	Conference Hall	77.1	120.4
9	Basement Class Room	85.3	111.4
10	Class Room No. 2	81.3	101.2

Illumination Level at various parts of College



Class Room with provision of Natural Light to save the electricity

Criteria- 4: Energy Consumption (Transportation)

Objective: To save the fuel energy.

Activity: Motivate students and faculties to reduce the use of vehicles in college campus.

Audit Observation: College actively organizes “No Vehicle Day” programme in college premises on second Saturday of each month.

Criteria- 5: Monitoring and Assessment of Noise

Objective: To measure the ambient as well as workplace noise within the college campus.

Activity: To measure the Noise Quality by Noise Level Meter.

Audit Observation:

Noise has been recognized as ambient air pollutant. Standards in this regards are laid down under Environment (protection) rules, 1986.

Sr. No.	Category of Zone	Permissible Limits dB (A) Leq	
		Day Time	Night Time
1	Industrial Zone	75	70
2	Commercial Zone	65	55
3	Residential Zone	55	45
4	Silence Zone	50	40

Permissible Limit of Noise in Silence Zones

- The permissible limits are count as per the zones. The noise monitoring generally carried out at day time and at night time.
- The day timing is considered as morning 06:00 am to night 10:00 pm and the night timing is considered as night 10:00 pm to morning 06:00 am.
- As per the observations recorded the day time and night time standards are used for the comparisons.
- Zone assortment may be carried out by Municipal Authority of that particular locations or city.
- Hospitals, **Educational Institutes**, Governmental offices, Session courts and Police Stations include in “Silent Zone”. The college abides by the norms laid down for silent zones.
- So “Silent Zones” standards (Day Time only) used for the comparisons.

Sr. No.	Locations	Noise Level in dB (A)		MPCB Limits
		Day Time	Night Time	Silent Zone
1	Main Gate	69.2	NA	Day Time 50 dB Night Time 40dB
2	Centre Point of Ground	57.8	NA	
3	Principal's Cabin	39.8	NA	
4	Management Room	37.4	NA	
5	Administrative Office	44.7	NA	
6	Library (Reading Room)	41.3	NA	
7	Staff Room	39.2	NA	
8	Vice - Principal's Cabin	38.7	NA	
9	Bachpan School Principal's Cabin	48.2	NA	
10	Conference Hall	45.7	NA	

Observation of Noise Level Monitoring (A)

Except Main gate and centre point of ground all other observations are within the prescribed limits of Environment (protection) rules, 1986. Due to nearby traffic areas the noise level is high at Main gate and centre point of ground.

Criteria- 6: Air quality Monitoring

Objective: To measure the Ambient Air Quality.

Activity: To measure the Ambient Air Quality by RDS Sampler

Audit Observation:

Location wise Google Earth Image of the A.D.P.M'S Women's College of Arts, Commerce and Home Science, Jalgaon

Location Code	Locations	Parameters		
		SO _x	NO _x	SPM
L-1	Main Gate (Entrance)	26.74	68.21	222.4
L-2	Right End of the College Campus	27.60	66.32	195.3
L-3	Back Side of the College Campus	28.10	63.47	188.2
L-4	Left End of the College Campus	24.33	61.23	178.7
NAAQS Limits		80	80	200

Status of Ambient Air Quality within the premises of College

The concentration of NO_x and SO_x (Oxides of Sulphur and Oxides of Nitrogen) at different locations were within permissible limits given by NAAQS. The concentration of suspended

particulate matter was higher at L-1 (Main Gate) was higher because of there is presence of main road here and number of vehicles continuously passed through this road. Soil particles are easily mixed in lower atmosphere due to movements of vehicles. Watering is best solution for minimizing the SPM in this area.

Criteria- 7: Green Campus

Objective: To increase the Green Cover within the college campus.

Activity: Plantation.

Audit Observation: Plants such as an Aloe-vera, Neem, Tulsi are planted to increase the oxygen content in the air. Tree plantation drive are regularly carried out in the college premises and also nearby areas.

Recommendations

Following the audit, several recommendations are made to the college authority by external audit team.

- **Solid waste management:** Vermi-composting/Bio-composting structure should be installed in the campus for bio degradable waste such as leaves of trees, green garbage etc.
- **Water Conservation:** The runoff of rain water from the terrace of the buildings should be saving by constructing Rain water harvesting structure in the college campus. This runoff eventually facilitates groundwater recharge.
- **Energy Consumption (Electrical Energy):** Use LED lights in laboratories, seminar hall instead of regular tube light to conserve the electricity.
- **Increase the Green Cover:** To avoid the dust pollution in college campus, Plantation activity should adopted at corner adages of college compound. It restrict the duct pollution.

Declaration

I agree with all the recommendations and observations mentioned in this Pre Level audit report.

Place: Jalgaon

Date: 16 July 2018

(Original signed with college seal by,)

**Dr. Jayashri M. Nemade
(Principal)**