



**KARMAVEER SHANTARAMBAPU KONDAJI WAVARE,
ARTS, SCIENCE AND COMMERCE COLLEGE
CIDCO, Nashik-08, M.S.**

**GREEN AUDIT REPORT
2018-19**





Executive Summary

Rapid industrialization and urbanization has created several environmental issues which may lead to ecological crisis. Keeping this in mind it becomes essential to adopt sustainable methods in our day to day activities. KSKW Arts, Science and Commerce College, Cidco Nasik believes in the same and is striving to address issues related to environmental problems.

The purpose of the green audit is to see that the practices followed in the campus comply with the green policy adopted by the institution. The methodology includes preparation and filling up questionnaire, physical inspection of the campus, observation and review of the documentation, data analysis, measurements and recommendations. It works on several facets like Water conservation, Tree plantation, and Waste management, use of Alternative energy source etc .The objective of the audit is to evaluate as to which degree the departments comply with the same.



About the College

MVP Samajs, KSKW Arts, Science and Commerce College, CIDCO, Nashik (Maharashtra) is committed to provide higher educational opportunities to socially under-privileged and financially weaker sections of the society..

The College offers 22 UG and 09 PG courses affiliated to the Savitribai Phule Pune University, Pune. For the effective implementation of the curricula, a meticulous action plan is developed and deployed. Teaching plans are prepared and followed according to the time table. For the better teaching practices, teachers participate in workshops on Curriculum Restructuring, Training Programmes and Special Guidance on ICT based Teaching Technology. Eminent scholars are invited to enlighten the faculty as well as students. Career Oriented/ Placement Activity is conducted to orient students towards employment market. The College has established MOU's, Linkages and Collaborations with Industries, Research Bodies and other Universities for good academic prospectus. A good number of faculty members are working on Editorial Boards of various International Journals. Experienced faculty members participate in the procedure of curriculum design & development. Some faculty members are elected /nominated on BOS and other committees of S P Pune University, Pune.



VISION

To Empower Students with Innovative Life Skills and Social Values for Global Competency.

MISSION

Upholding the motto of MVP Samaj, '*Bahujan Hitaya, Bahujan Sukhaya*', i.e. welfare and happiness of the masses, the College is committed to provide higher educational opportunities to the socially under-privileged and financially weak sections of the society and create dignity of labour and importance of self-reliance.

OBJECTIVES OF THE STUDY

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

- To introduce and make students aware of real concerns of environment and its sustainability.



- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections require high cost.
- To bring out a status report on environmental compliance

Methodology

The methodology includes tools such as questionnaire, physical inspection, observation and review of documentation, interviewing key person's .The study covered the following areas

- Water management
- Waste management
- Green area management



Observations and Recommendations

Water Use

This indicator addresses water supply, water consumption, Appliances and fixtures .A water audit is an onsite survey and assessment to determine the water use and hence improving the efficiency of its use.

Observations

The college receives 15,000 L/day of Water from Nashik Muncipal Corporation. Which is used for laboratories, laboratories, gardening and drinking purpose. College has well maintained RO plant (250L/h) for drinking purpose. During the survey, no loss of water is observed, neither by leakage, nor by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 15,000L/day, which include 9000L/day for domestic purposes, 2,000 L/day for gardening and 4,000 L/day for different laboratories. The RO water used for drinking purpose analyzed as per IS 10500:2012 drinking water specification and observed to be potable.



College has also installed a rain water harvesting unit for reuse of rain water. Drip irrigation system is used for gardening purpose to save water.

About 4.5 m³ of domestic and 1.5 m³ of Laboratory waste water is generated per day. The waste water generated from Laboratory is stored and treated before disposal. Whereas domestic waste water is treated in septic tank and soak pit

Drinking water analysis report

Sr. No.	Parameter	Result	Acceptable Limit as per IS 10500: 2012
<i>Organoleptic & Physical Parameters</i>			
1.	Colour	1	<i>Max. 5</i>
2.	Odour	Agreeable	<i>Agreeable</i>
3.	pH Value	7.06	<i>6.5 to 8.5</i>
4.	Turbidity	0.3	<i>Max. 1</i>
5.	Total Dissolved Solids	51	<i>Max. 500</i>
6.	Calcium (as Ca)	1.5	<i>Max. 75</i>
7.	Chloride (as Cl)	6.5	<i>Max. 250</i>
8.	Fluoride (as F)	0.56	<i>Max. 1</i>
9.	Iron (as Fe)	BDL(DL:0.06)	<i>Max. 0.3</i>
10.	Magnesium (as Mg)	0.96	<i>Max. 30</i>
11.	Nitrate (as NO ₃)	2.6	<i>Max. 45</i>
12.	Sulphate (as SO ₄)	5.3	<i>Max. 200</i>
13.	Total Alkalinity (as CaCO ₃)	21	<i>Max. 200</i>
14.	Total Hardness (as CaCO ₃)	8	<i>Max. 200</i>
<i>Bacteriological Analysis</i>			
15.	<i>E.coli</i>	Absent	-
16.	Total Coli forms	Absent	-

RO PLANT



Recommendations

Dependency on Municipal Corporation should be reduced especially for toilets and gardening. Water supply from rainwater harvesting should be increased.

Waste Generation and treatment

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable waste, glass, dust etc. and also recycling. Furthermore, solid waste often includes wasted material resources that could otherwise be channelled into better service through recycling, repair and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The



survey focused on volume, type and current practice of solid waste management.

Observations

The total solid waste collected in the campus is 25 kg/day. Waste generated from canteen and tree droppings is a major solid waste in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Non Bio-degradable waste. Segregation of chemical waste generated in laboratories is also practiced.

Single sided used papers are reused for writing and printing in all departments. Important and confidential reports/ papers are sent for recycling to authorised recycler M/s. Sainath Raddi Depot after completion of their preservation period. Complying with government rules plastic has been banned. Metal waste and wooden waste is stored and given to authorized scrap agents for further processing. Glass bottles generated in laboratories are reused. The food waste from canteen and tree droppings is sent to vermi-compost.



Recommendations



E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury and Polychlorinated biphenyls (PCBs) that can damage human health and the environment

Observations

E-waste generated in the campus is very negligible. The college has total of 128 Computers & laptops and 35 printers, 03 Xerox machine & 08 Scanner in working condition. The cartridges of printers are refilled and



reused. Administration conducts the awareness programmes regarding E-waste Management with the help of various departments. The E- waste and defective item from computer laboratory is being stored properly. The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

Electronic waste material such as Computer, Computer Peripherals, Printer, Scanner etc. are handed over to the following organization/department, where they are reused / recycled safely.

1. MVP Samajs, Engineering college, Gangapur Road, Nashik
2. MVP Samajs, ITI Institute, Gangapur Road, Nashik
3. Dept. of Physics & Electronics

KSKW Arts, Science & Commerce College, CIDCO, Nashik Conducts
“Computer Hardware Course” for science students





Recommendations

As far as possible electronics instruments from reputed companies should be purchased which have a better life span.

Land Use and Green area

This includes the available area under construction and open space available for plantation to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

Observations

College Map

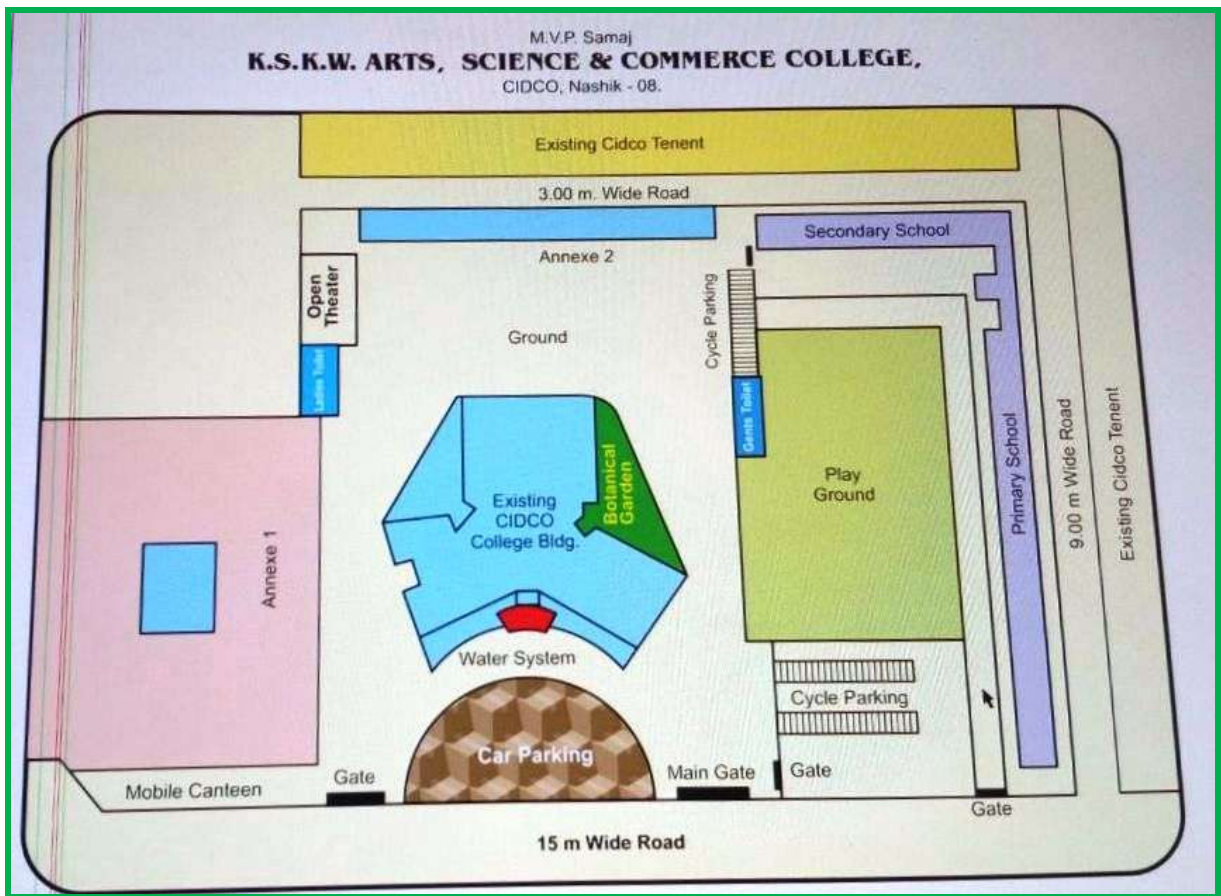




Chart showing Available area and area under construction.

Facility	Rooms	Carpet Area	Facility	Rooms	Carpet Area
Large Class Rooms	16	1096.22 sq.mtr	Botanical Garden	01	595.24 sq.mtr
Small Class Rooms	11	520.78 sq.mtr	Vermin Culture Unit	01	9 x 15=135 sq.ft.
Departmental Class Rooms	12	183.55 sq.mtr	Virtual Classroom	01	21x19 =399 sq.ft.
UG Laboratories	09	672.84 sq.mtr	English language Lab	01	26.4x14.5 =382.80 sq.ft.
PG Laboratories (Chemistry)	01	31x41 =1271 sq.ft.	Psychology Lab	01	20x14 =280 sq.ft.
PG Lab. (Physics Dark Room)	01	15.3 x 12.5 = 191.25 sq.ft.	YCMOU Centre	01	18x11 =198 sq.ft.
Computer Lab	01	25x25 =625sq.ft	NAAC Room	01	14x10 =140 sq.ft.
Library	01	45x29=1305 sq.ft.	Exam Room	01	Strong Room - 12x20 = 240 sq.ft. Exam Section – 12x20=240 sq.ft.
Administrative Block	01	103.42 sq.mtr	Staff Room (New Building)	02	25x21 =525 sq.ft.(New) 29x20=580 sq.ft.(Old)
Seminar Hall	01	318.47 sq.mtr	Staff & Guest Parking	01	1285 Sq. mtr.
Reading Rooms	03	1696.65 sq.ft.	Open Stage	01	47 x 19=893 sq.ft.
Utilities	08	11.25 sq.mtr	Store Room	02	13x18 =476 sq.ft.
Network Resource Centre	01	12.5x7.5=93.75 sq.ft.	IT Lab	01	21x22.8=478.80 sq.ft.
Day Care Centre	01	21x19 =399 sq.mtr	Open Space		1516Sq. mtr.



Campus & Built up Area

Location *	Urban
Campus area in sq. mts.	Total Area 3.6 acres
Built up area in sq. mts.	27625 sq.foot

The college attempts to maintain eco-friendly atmosphere on the campus; the number and variety of plant species helps to maintain eco-friendly ambience. Further, to create eco-friendly awareness among the students college arranges special programmes through which the students get clear idea and importance of trees in life. There are several perennial plant species in the campus. College has undertaken various activities like plantation and beautification of campus through various drives.

List of Plants

Sr.No.	Name of Plant	Habit	Family
1	<i>Terminalia chebula</i>	Tree	Combretaceae
2	<i>Terminalia belerica</i>	Tree	Combretaceae
3	<i>Madhuca longifolia</i>	Tree	Sapotaceae
4	<i>Catharanthus roseuss</i>	Herb	Apocynaeae
5	<i>Putranjiva roxburghii</i>	Tree	Putranjivaceae



Sr.No.	Name of Plant	Habit	Family
6	<i>Bauhinia variegata</i>	Tree	Fabaceae
7	<i>Centella asiatica</i>	Herb	Apiaceae
8	<i>Cissus quadrangularis</i>	Climber	Vitaceae
9	<i>Trachyspermum ammi</i>	Herb	Apiaceae
10	<i>Piper longum</i>	Climber	Piperaceae
11	<i>Hibiscus sabdarifa</i>	Herb	Malvaceae
12	<i>Adhatoda vasica</i>	Shrub	Acanthaceae
13	<i>Cestrum nocturnum</i>	Climber	Solanaceae
14	<i>Bryophyllum pinnatum</i>	Herb	Crassuliaceae
15	<i>Kalanchoe sp.</i>	Herb	Crassulaceae
16	<i>Aloe vera</i>	Herb	Liliaceae
17	<i>Curcuma longa</i>	Herb	Zingiberaceae
18	<i>Asparagus racemosus</i>	Climber	Asparagaceae
19	<i>Phyllanthus emblica</i>	Tree	Phyllanthaceae
20	<i>Punica granatum</i>	Shrub	Lythraceae
21	<i>Cymbopogon citratus</i>	Herb	Poaceae
22	<i>Cyperus papyrus</i>	Herb	Cyperaceae
23	<i>Alstonia scholaris</i>	Tree	Apocynaceae
24	<i>Carica papaya</i>	Herb	Caricaceae
25	<i>Stevia rebaudiana</i>	Herb	Asteraceae
26	<i>Ocimum sanctum</i>	Herb	Lamiaceae
27	<i>Chlorophytum comosum</i>	Herb	Liliaceae
28	<i>Acacia auriculiformis</i>	Tree	Mimosaceae
29	<i>Annona reticulata</i>	Shrub	Annonaceae
30	<i>Bauhinia Purpurea</i>	Tree	Caesalpiniceae
31	<i>Caesalpinia Pulcherrima</i>	Shrub	Caesalpiniceae
32	<i>Callistemon Lanceolatus</i>	Shrub	Mimosaceae
33	<i>Anthocephalus Cadamba</i>	Tree	Rubiaceae



Sr.No.	Name of Plant	Habit	Family
34	<i>Cassia fistula</i>	Tree	Caesalpiniceae
35	<i>Melia azedaracha</i>	Tree	Meliaceae
36	<i>Millingtonia hortensis</i>	Tree	Bignoniaceae
37	<i>Polialthia longifolia</i>	Tree	Annonaceae
38	<i>Pongamia Pinnata</i>	Tree	Papilionaceae
39	<i>Samania Saman</i>	Tree	Mimosaceae
40	<i>Parkia biglandulosa</i>	Tree	Mimosaceae
41	<i>Casuarina equisetifolia</i>	Tree	Casurinaceae
42	<i>Dalbergia Sisso</i>	Tree	Papilionaceae
43	<i>Delonix regia</i>	Tree	Caesalpiniceae
44	<i>Grevillea robusta</i>	Tree	Proteaceae
45	<i>Jacaranda mimosaefolia</i>	Tree	Bignoniaceae
46	<i>Mangifera indica</i>	Tree	Anacardiaceae
47	<i>Hamelia Patens</i>	Shrub	Rubiaceae
48	<i>Bougainvillea spectabilis</i>	Climber	Nyctaginaceae
49	<i>Araucaria columnaris</i>	Tree	Aurocariaceae
50	<i>Roystonegia regia</i>	Tree	Arecaceae
51	<i>Syzygium cumini</i>	Tree	Myrtaceae
52	<i>Tecoma stans</i>	Shrub	Bignoniaeaceae





Recommendation

The College has ample green area and has utilized the available space generously in this regards, the college can have understanding with Local bodies to contribute in greening the spaces available with the local bodies.



Environmental Monitoring

Environmental Awareness Course (EVS): This is compulsory course introduced by Savitribai Phule Pune University, Pune for second year students for all faculties. Under this course students learn to be environmental friendly.

They are made aware of

- 1) Renewable and Non-renewable energy sources
- 2) Energy conservation.
- 3) E-waste management.

Air Monitoring

Air quality in the academic institute is very important for health of the students, faculty and staff of the institute. The air pollution sources in the college campus are wind, pollen grains, natural dust, vehicular emissions, and laboratory fumes etc. All the pollutants were measured by the CPCB installed continuous air monitoring station. The air pollutants monitored on regular basis are Sulphur dioxide (SO₂), Oxides of Nitrogen as NO₂, Suspended Particulate Matter (SPM) and Repairable Suspended Particulate Matter (RSPM) etc.



Monitoring for

- 1) Temperature
- 2) Humidity
- 3) Pressure
- 4) Rainfall

Air Monitoring Report (Near Main Gate)

Meteorological Data / Environmental Conditions			
Average Wind Velocity 0.98 km/h	Prominent Wind Direction		Relative Humidity (Max./Min.): 83/23 %
	W-E		
Parameter	Result	NAAQS #2009	Unit
Sulphur Dioxide (SO ₂)	5.75	80	µg/m ³
Nitrogen Dioxide (NO ₂)	6.40	80	µg/m ³
Particulate Matter (size less than 10 µm) or PM ₁₀	172	100	µg/m ³
Particulate Matter (size less than 2.5µm) or PM _{2.5}	36	60	µg/m ³
Ozone (O ₃)	BDL(DL:19.6)	180	µg/m ³
Lead (Pb)	BDL(DL:0.02)	1	µg/m ³
Carbon Monoxide (CO)	0.66	4	mg/m ³
Ammonia (NH ₃)	BDL(DL:4)	400	µg/m ³



Noise Environment

The noise level measurements were carried out using Noise level meter. The noise level survey was carried out at seven locations, at outside as well inside the study area. The Noise levels monitored in the college campus as well as in side the classroom and found the noise level within the permissible limit.

Sr.No	Location	Minimum Reading In dB	Maximum Reading In dB	Limits
1.	Near Main Gate	57.5	64.4	75
2.	Near Back Gate	50.2	54.4	75
3.	Inside Class room	51.9	56.9	75
4.	Outside Classroom	51.4	56.8	75
5.	Inside Library	52.0	56.5	75
6.	Inside Chemistry lab	53.2	56.9	75
7.	Inside Physics lab	50.0	56.6	75

Recommendation

A stand of Tall trees should be planted near the front wall so as to reduce noise and air pollution from the road side.



Conclusions

There is significant environmental awareness amongst the faculty and students and initiatives taken by them are substantial. The installation of solar panels, paperless work system, composting, besides environmental awareness course initiated by the administration shows how the campus is going to be a



Green Campus. Few recommendations are added to curb the menace of waste management using eco-friendly and scientific techniques.

As part of green audit of campus, we carried out the environmental monitoring of campus where includes Illumination, Noise level, Ventilation and Indoor, Air quality of the class room. It was observed that Illumination and Ventilation is adequate considering natural light and air velocity present. Noise level in the campus is well within the limit.

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