

# ENVIRONMENT AUDIT REPORT

FOR THE YEAR 2022-23



**LAXMI VENKATESH DESAI COLLEGE**

**RAICHUR**

Principal Lead Auditor:

Mallikarjun A Kambalyal.

Regd India: CEA, EA-3485, ISO 50001, 14001 Lead Auditor.

Germany Energieberater: Anbieter-Nr 1041388

Mauritius : REA-57

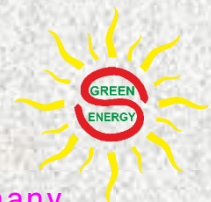
Audited by:

**SUNBSHUBH TECHNOVATIONS PVT LTD.,**

120-2, LGF, 'A' wing, IT Park,

Hubli – 580029. Karnataka. India.

Germany off: Neuer Weg 166, 47803 Krefeld, Dusseldorf. Germany



## SUNSHUBH TECHNOVATIONS PVT LTD

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Germany off: NeuerWeg 166, 47803 Krefeld, Dusseldorf.

<b>WATER</b>	<b>ENERGY</b>	<b>POLLUTION</b>	<b>ORGANIC</b>	
Harvesting	Efficiency	Minimize	Farming	
Conservation	Conservation	Eliminate	Worm compost	
Management	Generation	Manage	Benefits	
Regd. Certified Energy Auditors. GOI (EA 3485), Germany: Anbieter-Nr 1041388				

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CIN : U74999KA2020PTC136321, PAN:ABECS0250Q, TAN:BLR577362F GST No: 29ABECS0250Q1ZX

### ENVIRONMENT AUDIT COMPLETION CERTIFICATE

I, Mallikarjun A Kambalyal, endorse and confirm that the ENVIRONMENT Audit has been carried out on 15th June 2023 under the instructions of Dr. Venkatesh B Devaru, Principal LVD College, Raichur.

This report is generated based on the site visits and evidence collected from the site and this completion certificate is issued in compliance with Criteria 7.1.6.

All attempts have been made to evaluate the scope for development and inculcate green practices in the campus and extended throughout the campus. The focus is also laid to make positive impact on the society for a better living.

This report is tabled in two parts. The first forms the core discussions which are subject specific under the statutory requirements of the NAAC accreditation norms. The second section is general in nature.

Any modifications, changes, omissions after the site visit shall be exclusive.

Authorised Auditor.



Mallikarjun A. Kambalyal B.E (E&C)

Certified Energy Auditors EA-3485.

ISO 50001:2011 & ISO14001:2015 Lead Auditor.

Date: 19<sup>th</sup> June 2023

*Credentials attached 7.1.6*



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ENVIRONMENT AUDIT REPORT 2022-23

## EXECUTIVE SUMMARY

Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category 7
1	Rainwater Management	No serious water problem seen but anticipated.	Need quality water for social existence.	Structured approach to retain the rainwater within the campus.	Yes, Capital intensive	Improved quality of water and high yield. Calls for reduced pumping hours and eliminate or reduce need for water	7.1.4
2	Surface water	Runoff to drain	Wastage of precious pure water	Divert to specified point near to borewell.	Minimal		
3	Water management	Flooding bottle watering			Nil, use of used water bottles	Minimized water use, manpower and spillage.	
4	Solid Waste Management	Spillage of waste	Dirty used packages in and around the college	Awareness to place the waste in right place.	Already in place, however , needs to be refined.	Reduced cleaning hours and good hygienic conditions.	7.1.3



Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category 7
5	Personal Health	Used Sanitary pads dispensing unit is not in place.	Open area disposal	Incinerator to be placed at convenient point and proper training is given to the students to make use of it.	Nil	Clean and safe health.	7.1.3
6	Used Battery disposal	Environmental hazard.		Regenerative approach.			7.1.3
7	Work culture	Paperless office, as discussed in detail.					
8	Natural Lighting	Un cleaned windows and ventilators, forced switching on of tube lights	High energy bills	Clean the windowpanes and allow maximum natural light penetration.	Nil, part of routine, In house manpower.	Substantial cost of energy bills on lighting.	7.1.2 7.1.6
9	Natural Ventilation	Permanently closed ventilators.	Creation of hot air pockets below the ceiling.	Open the Ventilators for easy exit of hot/warm air from the rooms.	Nil, In house manpower.	Eliminates use of Electrical Fans and Substantial cost of energy bills	7.1.2 7.1.6
* For details, please follow the discussions in the report.							

## ACKNOWLEDGEMENT

SUNSHUBH TECHNOVATIONS PVT LTD is pleased to express its sincere gratitude to the management of TARANATH SHIKSHANA SAMSTHE, LAXMI VENKATESH DESAI COLLEGE, RAICHUR for entrusting Sunshubh Technovations Pvt Ltd with the assignment on Green Earth practices based on Educate, Practice, Advocate & Manage the resources in their educational organization.

We acknowledge the assignment with order reference number Green Audit 2022-23. We also wish to thank Dr Venkatesh B Devaru Principal, Taranath Shikshana Samsthe, Laxmi Venkatesh Desai College, Raichur, and Dr Jayateertha N S IQAC Coordinator and Smt Roopa Kulakarni Criteria VII, who have been constantly following with the Carbon Handprint initiatives and developments in the college. It was on their instance that we got to evaluate the initiatives undertaken. The officials and the maintenance staff for the help rendered during the energy flow study.

We would fail if we neglect to appreciate the sincere efforts put in by the Faculty Members lead by

- Dr Jayateertha N S, IQAC Coordinator
- Ms. Swathi Dixit, Criteria I
- Dr. Chakradhar, Criteria II
- Dr Manjunath, Criteria III
- Dr. Padma, Criteria IV
- Sri Hussainappa, Criteria V
- Sri Hanumanth Nayak, Criteria VI
- Ms. Roopa Kulakarni, Criteria VII

And the Students who against all odds have kept the college premises clean to the possible limits.

Without the crucial and significant support from the fellow teaching team the potential energy saving options and carbon footprint reduction would not be a reality.

With the motivational support of the management, ground realistic support from teaching team and sincere efforts of the students in incorporating the change (habits) and instructions, the college could effectively declare the reduction in Carbon footprint and optimize the waste reductions.

## ENVIRONMENT AUDIT COMPLETION CERTIFICATE

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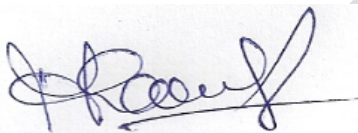
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Mallikarjun A. Kambalyal B.E (E&C)

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ISO 50001:2011 & ISO14001:2015 Lead Auditor.

Date: 19<sup>th</sup> June 2023

*Credentials attached 7.1.6*







## BUREAU OF ENERGY EFFICIENCY



Examination Registration No. : **EA-3485** Serial Number **2838**

Certificate Registration No. : **2838**

### Certificate For Certified Energy Manager

This is to certify that Mr./Mrs./Ms. **Mallikarjun A Kambalyal** Son/Daughter of Mr./Mrs. **Andanappa V Kambalyal** who has passed the National Examination for certification of energy manager held in the month of **April 2006** is qualified as certified energy manager subject to the provisions of Bureau of Energy Efficiency (Certification Procedures for Energy Managers) Regulations, 2010.

This certificate shall be valid for five years with effect from the date of award of this certificate and shall be renewable subject to attending the prescribed refresher training course once in every five years.

His /Her name has been entered in the Register of certified energy manager at Serial Number **2838** being maintained by the Bureau of Energy Efficiency under the aforesaid regulations.

Mr./Mrs./Ms. **Mallikarjun A Kambalyal** is deemed to have qualified for appointment or designation as energy manager under clause (1) of Section 14 of the Energy Conservation Act, 2001 (Act No.52 of 2001).

Given under the seal of the Bureau of Energy Efficiency, this **7<sup>th</sup>** day of **February, 2013**

Secretary  
Bureau of Energy Efficiency  
New Delhi

Dates of attending the refresher course	Secretary's Signature	Dates of attending the refresher course	Secretary's Signature
<b>28.01.2020</b>			

Bureau of energy Efficiency Regd No: EA3485

## *Certificate of Successful Completion*

The Intertek logo consists of the word "Intertek" in a white, sans-serif font, centered within a dark blue rounded rectangular background.

*This is to Certify that*

***MALLIKARJUN A KAMBALYAL***

*has successfully completed the*

***Intertek***

***CQI & IRCA Certified ISO 14001:2015  
Auditor Conversion Training Course***

*The Course includes the assessment and evaluation of Environmental Management Systems to conform to the requirements of ISO 14001:2015 and ISO 19011:2011*

*This course is certified by the Chartered Quality Institute (CQI) and the International Register of Certificated Auditors (IRCA)  
– IRCA REFERENCE 18093 –*

*The course meets the training requirements for individuals seeking certification under the IRCA Auditor Certification Schemes*



*Authorising Signature: Vystra Stasunova*

*Course Dates: 14<sup>th</sup> – 16<sup>th</sup> July 2017*

*Certificate Number: 47730*

*Membership Application To Be Made Within 3 Years From Last Day of Course*

121807

**ISO Certified Lead Auditor. Certificate No: 47730**

**bsi.**

## BSI Training Academy

This is to certify that

**Mallikarjun A. Kambalyal**

has attended and passed

**Energy Management Systems (ENMS) Auditor/Lead Auditor Training Course  
(ISO 50001:2011)**



Premanand Ramakrishnan, Director of Training

Date: 14/04/2016 - 18/04/2016  
Certificate Number: ENR-00253448

This certificate is valid for 3 years from the date above for the purpose of registering as an auditor with IRCA.



Course number A17583 certified by IRCA

The British Standards Institution is incorporated by Royal Charter  
BSI India, The Mitra Corporate Suites (A-2), Plot 1 & 2, Jawahar Nager, Mehra Road, New Delhi 110085, India Tel: +91 11 2862 9000



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ISO Certified Lead Auditor. Certificate No: ENR-00253448

## OBJECTIVE OF ENVIRONMENT AUDIT

The main objective of the environment audit of educational institutions is to set an informative work schedule wherein, the impact assessment of all the activities carried out in day today activities are highlighted and PROs and Cons are discussed off the class room session.

Self-contribution to the society's well-being is what is intended to be discussed.

Judicious use of resources, minimal waste generation and segregation of waste at source are key aspects of the Environment Audit. In doing so the contribution of Green envelope in the campus helping maintain lower temperature and retain good amount of rainwater is another key factor.

The discussions in the report have been focussed to educate the inmates of the campus so as to get maximum contribution from each and every beneficiary be it an employee or the student or even their parents.



## CARBON FOOTPRINT AUDIT OBJECTIVES

*Know Why? Where? What? When? How? about this Audit and the objectives.*

Carbon Footprint Audit was initiated in the beginning of 1970's, with the motive of inspecting the work executed within an organization, whose exercises could cause risk to the health of inhabitants and the environment. It exposes the genuineness of the proclamation made by the organisation with the concern on health issues. As a consequence of their operations with respect to environmental pollution, it is the duty of the organisation to carry out the Carbon Footprint audit of the ongoing processes for various reasons, such as

- To make sure whether one is performing in accordance with the relevant rules and regulations,
- To improve the procedures and aptness of material in use,
- To analyse the potential duties and to determine a way which can lower the cost and to the revenue outflow.

Through Carbon Footprint Audit one gets adoration as to how to improve the condition of the environment. There are various factors that were forced upon and determine the growth of/or conduct of Carbon Footprint audit. Incidents like, decades old Bhopal gas tragedy, that has left its residual effect which still haunts us; Our buildings catching fire due to various reasons; Industries blowing off taking valuable human lives etc.; People going sick, feeling tired, after long hours of operations in the organization; Increased demand of generators due to inconsistent power supply, which has resulted or lead into recent floods and droughts; are some of the situations to ponder about?

To address various issues in context with human health, ENVIRONMENT audit is assigned to "Criteria 7" of NAAC (National assessment and accreditation council) accreditation. NAAC is a self-governing organization in India that declares the institutions as Grade "A", Grade "A+", or Grade "A++"..., according to the scores assigned at the time of accreditation.

The other intention of organising Carbon Footprint audit is to update the environment conditions in and around the institutions i.e., within the

compound and outside the compound. It is carried out with the aid of performing certain tasks like waste management, energy consumed, diesel burnt it performing the objective of the organization. Lastly to self-assess the net carbon footprint of the conduct of process in the organization.

The goals of Carbon Footprint audit

- The purpose of carrying out Carbon Footprint audit is securing the environment and cut down the threat posed to human health.
- To Make sure that rules and regulations are complied with.
- To avoid the environmental interruptions that are more difficult to handle and their corrections call for high cost.
- To suggest the best protocol for adding to sustainable development.
- To execute the process of the organisations utilising minimum natural resources and efficient use of those resources contributing to minimum waste generation.

How is the Carbon Footprint audit conducted?

- Pre-audit
- Planning
- selecting the team of auditors both internal and external
- schedule the audit facility
- acquire the background information
- visit areas under audit

**On site conditions:**

- Understand the scope of audit
- Analyse the strengths and weaknesses of the internal controls
- Conduct audit with end user comfort focused and making it easy to perform.
- Collect necessary evidence so that the stakeholders stand to understand how and where they are going wrong in the process of their conduct.
- Post audit draw the report based on the data collected.



- On confirmation of the preliminary report, draw a final report of the observations and inference with accuracy more near to implementable way.
- Discuss various remedial measures for alternatives if required.
- Prepare an action plan to overcome the shortcomings with continual observation on the action plan initiated.

### STEPS UNDER CARBON FOOTPRINT AUDIT

**Energy audit:** It deals with use of energy in carrying out the task. In the Audit process conservation prevails over efficiency. Conservation awareness and implementation plays a significant role. Awareness in conservation brings in Efficiency by itself. Hence, energy audit will always consider not to use the energy if necessary. At best it can be used judiciously. The final objective is to assess the extent of impact on the environment either Direct or Indirect. One such key tool is CARBON FOOTPRINT.

Carbon Footprint also considers various other components as discussed below.

**Water audit:** Water is one of the cheapest commodities next to the Air we breathe. Although we Indians, use less water in comparison to western countries. However, the extent of pollutants that we leave behind has polluted all the resources including the deep well.

Rainwater harvesting is one of the best techniques that can be adopted by harvesting the rainwater and using it at the time of scarcity. the audit team to observe and investigate the relevant methods that can be adopted and implemented and draw the balance of use of water.

**Waste management audit:** The point of generation of waste, the type of waste generated, i.e., hazardous, recyclable and organically compostable wastes and segregating method at the point of generation for easy and best way to handle the same. Evaluating such methods to minimise the use of resources in the process of their management.

**Environmental quality audit:** It analyses air quality, noise level and the programs undertaken by the institution for plantation creating awareness of

trees around us and how nature provides us with remedial measures within its framework.

**Health audit:** In the process of use of resources and conduct of the activities, they can develop impact on human health, that might be off minutely harmful, cause permanent disorder or may even cause death. Occupational health hazards are discussed in detail and the stakeholders are informed of the same and required necessary remedial measures indicated.

**Renewable energy:** To make in organisation net zero net zero carbon emission use of renewable resources including energy such as solar wind biogas geothermal energies are put into ooh utilisation.

**Carbon handprint:** The net impact All the above components of Carbon Footprint Audits are to make an organisation contribute zero emissions which are called by bhair use of water generation of waste use of energy e environmental damage health damage and finally to explore if the campus or direction can go in in contributing to third-party emissions minimising

**Benefits of Carbon Footprint audit:** To draw home the benefits, the system has been separated out into various audits as listed above. In doing so, and if audit findings are effectively implemented there are many advantages that can be practiced in the process

- Recognise the cost saving methods through waste minimising and managing technologies.
- Point out the prevailing and forth coming complications.
- Authenticate conformity with the legal requirements.
- Empower the organisation to frame a better environmental performance.
- Portray a good image of the institution which helps build better relationships with the group's organisations, stakeholders in and around its operations
- Enhance the alertness for environmental guidelines duties and conduct of preparedness for any eventualities due to environmental disasters.

## DAY'S CARBON HANDPRINT PLEDGE

*(indicative templet for display at all prominent areas, classrooms, waiting rooms, canteen, library, relaxing areas in the campus.)*

We, The Principal, staff and students, adopt responsible practices in our daily activities with due regard to the environment. We set and continually review objectives and targets for achieving our goal to protect our entire college premises from all pollutions primarily.

We seek to compile with safety and environmental regulations to implement inhouse standards to improve our environmental performance.

We commit ourselves to the safe operation of all our working habits, be it in classrooms, library, canteen, on road, off road, in-campus out-campus as well as at our place of stay.

We adhere to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycle, with special emphasize to minimising emissions of greenhouse gases, ozone depleting substance and particle matter. we endure to minimise environmental loads and adopt environmentally friendly technologies when ordering and purchasing necessary products and resources.

We endure to attend educational programs and promulgate our close friends and colleagues to follow suite. We endure to ensure that we recognize the essence of this ENVIRONMENT policy by actively and aggressively conducting workshops and training to all in environmental concepts.

We make wide ranging social contribution to close association with the students, teaching staff, administrative staff, housekeeping staff by disclosing environmental information and supporting environmental consumption.

Principal

## DAY's CARBON HANDPRINT PLEDGE (proposed)

*(indicative templet for display at all prominent areas, classrooms, waiting rooms, canteen, library, relaxing areas in the campus.)*

We, The Principal, staff and students, adopt responsible practices in our day's energy use with due regard to the environment. We pledge to avoid using electrical power where not needed. We also pledge to use judiciously the electrical power by using Energy efficient products.

We shall practice to switch off all appliances when not in use.

### PURPOSE:

To realistically and comprehensively reduce energy consumption, assure acceptable indoor air quality, and improve energy efficiency on campus through methods that are consistent with a safe, secure, and inviting campus community. As outlined in this policy, energy conservation will be accomplished by developing a proactive and progressive approach to providing energy efficient, responsible, and cost-effective operations on campus. This policy will be reviewed and updated periodically as public awareness, management techniques, and technologies change.

APPLIES TO: Faculty, staff, students, and visitors.

CAMPUS: Taranath Shikshana Samsthe, Laxmi Venkatesh Desai College, Raichur

## ABOUT THE COLLEGE

LAXMI VENKATESH DESAI COLLEGE, RAICHUR KARNATAKA is located in a small town educating the rural children of nearby villages.

The college has Arts Commerce and Science stream.

The upkeep of the campus speaks for their concern to the environment. With few corrective measures the college can consider to move towards being CARBON NEUTRAL.

## VISION STATEMENT OF THE INSTITUTE

### **Core Values of the Institution**

<http://www.grgayapcci.org/index.php>

### **Vision**

Our vision, drawing inspiration from the philosophy of our founder Pandit Taranath is to transform the College into a truly great educational institution that can play a pivotal role in effecting changes in tune with the fast-changing educational scenario. Our vision is to transform ourselves into a truly great educational institution, that can play a pivotal role in effecting changes in tune with fast changing scenario.

### **Mission**

Our mission is to ensure and enhance the quality of education in this educationally backward area that even rivals the educational standards in other parts. To empower the rural men and women to contribute in the nation building process.

### **Objectives**

The five core human values are:

- (1) Right conduct,
- (2) Peace,
- (3) Truth,
- (4) Love, and
- (5) Nonviolence.

1. Values related to RIGHT CONDUCT are:

(a) SELF-HELP SKILLS: Care of possessions, diet, hygiene, modesty, posture, self-reliance, and tidy appearance.

(b) SOCIAL SKILLS: Good behavior, good manners, good relationships, helpfulness, No wastage, and good environment, and

(c) ETHICAL SKILLS: Code of conduct, courage, dependability, duty, efficiency,

(d) A Textbook on Professional Ethics and Human Values ingenuity, initiative, perseverance, punctuality, resourcefulness, respect for all, and responsibility

2. Values related to PEACE are: Attention, calmness, concentration, contentment, dignity, discipline, equality, equanimity, faithfulness, focus, gratitude, happiness, harmony, humility, inner silence, optimism, patience, reflection, satisfaction, self-acceptance, self-confidence, self-control, self-discipline, self-esteem, self-respect, sense control, tolerance, and understanding

3. Values related to TRUTH are: Accuracy, curiosity, discernment, fairness, fearlessness, honesty, integrity (unity of thought, word, and deed), intuition, justice, optimism, purity, quest for knowledge, reason, self-analysis, sincerity, sprit of enquiry, synthesis, trust, truthfulness, and determination.

4. Values related to LOVE are: Acceptance, affection, care, compassion, consideration, dedication, devotion, empathy, forbearance, forgiveness, friendship, generosity, gentleness, humanness, interdependence, kindness, patience, patriotism, reverence, sacrifice, selflessness, service, sharing, sympathy, thoughtfulness, tolerance and trust



5. Values related to NON-VIOLENCE are: (a) PSYCHOLOGICAL: Benevolence, compassion, concern for others, consideration, forbearance, forgiveness, manners, happiness, loyalty, morality, and universal love (b) SOCIAL: Appreciation of other cultures and religions, brotherhood, care of environment, citizenship, equality, harmlessness, national awareness, perseverance, respect for property, and social justice.

#### AIMS AND OBJECTIVES

- To impart quality education to young men and women from the Rural and Socio economically marginalized sections of the society.
- To provide education to develop an analytical mind with a compassionate heart and right conscience.
- To contribute towards a society of equality, fraternity and liberty.
- We encourage our students to excel in all their activities.
- We emphasis on all-round and integral development of the student.
- We inculcate in our students, rational mind, secular sprit and strong social values with a commitment to cultural and human values.

#### **Affiliation**

Affiliated to Affiliated to Gulbarga University, Kalaburagi & Raichur University,

## ABOUT ENVIRONMENT AUDIT:

LAXMI VENKATESH DESAI COLLEGE, RAICHUR KARNATAKA has asked SUNSHUBH TECHNOVATIONS PVT LTD, Hubli, to conduct the ENVIRONMENT Audit for their Institution.

In this context, the management of the Institute represented by Prof S B Jadhav, Principal, entrusted us the task of conducting the feasibility study to reduce energy consumption and adopt green habits.

SUNSHUBH TECHNOVATIONS PVT LTD, Hubli, represented by Mr. Mallikarjun A Kambalyal made a detailed study and readings of various appliances were taken and carried out the ENVIRONMENT audit along with the safety parameters.

We hope the points presented will be self-explanatory, if there is need for any clarification, we are open for discussions.

### LIMITATIONS:

Our recommendations are in the interest of conservation of Electrical Energy and Green Culture i.e., the reduction in CARBON FOOTPRINT. The compliance to the recommendations will be subjected to meeting the safety and Environmental rules and guidelines.

### ONGOING STATUS:

It's an optimistic & highly dedicated team effort lead by the Principal & the senior staff who have dedicated all their wits & free time to initiate Green Carpet the entire college premises. It is also a fact that there do exist, few short comings which however is unintentional & on being trained & educated the campus should look for continued minimized waste generation. With all due appreciation to the management, staff involved & cooperation by the students, we have made few suggestions which on implementation, will reduce, demand for water & electrical power. It will also reduce the existing level of pollution to bear minimum.

There is high potential among the students to be educated and spread the knowledge of going ZERO waste generation in their respective colonies and society they dwell in, contributing positively to the cause of

**NO WASTE – NO POLLUTION – NO HEALTH HAZARD.**

## AUTHENTICATION & DATE OF ENVIRONMENT AUDIT:

This ENVIRONMENT Audit has been carried out 15<sup>th</sup> June 2023 under the instructions of Dr Venkatesh B Devaru Principal and Dr Jayateertha N S IQAC Coordinator.

We are not in a position to compute the carbon footprint at this point of time. however, a beginning is made in drawing the objective of Carbon Footprint.

**we will discuss the Carbon Footprint in the follow up compliance report.**

Wishing the team, a great success, we deeply express our gratitude and heartfelt "THANKYOU" for allowing us to assess the energy flow scenario there by the GREEN STATUS.

Mallikarjun A. Kambalyal. B.E.(E&C).

Certified Energy Auditors (EA-3485)

SUNSHUBH TECHNOVATIONS PVT LTD.

## DISCUSSIONS ON EXECUTIVE SUMMARY:

### ENVIRONMENT AUDIT.



Aerial View of the College Campus

## DISCUSSIONS ON EXECUTIVE SUMMARY:

The campus is spread over scenic, elevated terrain. The Rocky structure makes things great for beatification with local flora and fauna. The campus has good opportunity to nurture the knowledge among the students from Biology, Physics and Geology.

We have discussed one such opportunity for the students and team of faculty from Physics department.

**Primary Considerations:** Conservation practices that can be brought about in the campus contributing to use of natural resources.

Water is the primary source of energy and motivation factor for all good things that can happen in the world.

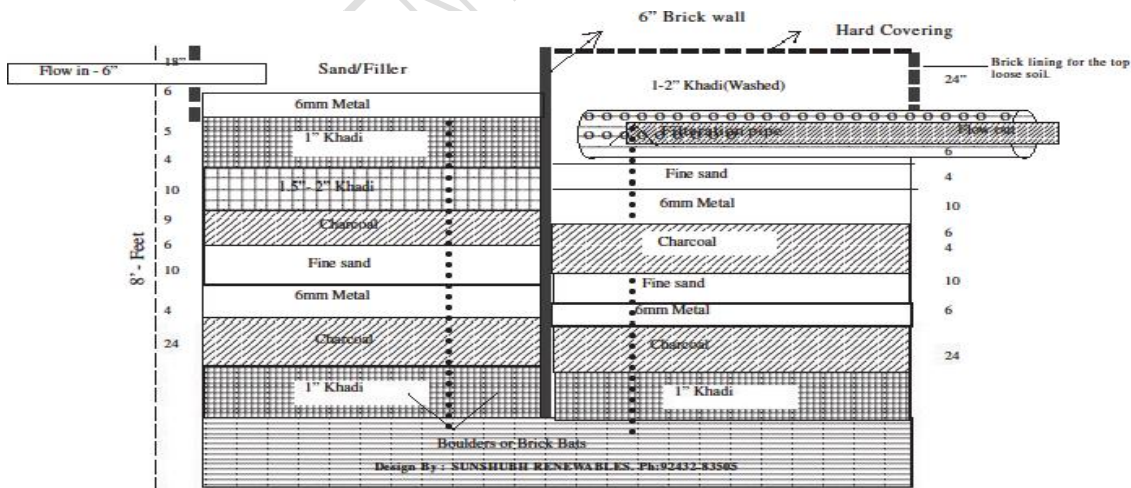
The gradient indicates that the complete campus rainwater can be pooled at a Point near the gotanical gargen and the same can be put to use at a later days.

RAIN WATERMANAGEMENT

Category 7.1.4



From the gradient discussed above, the profile varies from 442 Metres (1450 ft) to 435 Metres (1427 ft). For cost effective rainwater management, it is advised to divert the surface rainwater to the area marked #437 Metres and 435 Metres as the surface slopes on both the sides.



Not to scale.

Layout structure for 8' depth, hard strata.

Borewell point that is located in front of the college may be directly

The



connected to the Borewell through the filter provided the terrace is locked and has restricted entry.

If not, the above filtration system should be adopted before linking to the borewell.

## GARDEN

The college has creatively used the centre space for gardening. The rainwater is used to recharge the subsoil, the perennial plants will thrive with green cover. The terrace water in the campus, partially flows and is collected in a tank. There is a need for planned exit points & The awareness on the why's, Do's and Don'ts in rainwater should be displayed for the knowledge of the students and visitors.





## SURFACE WATER

The water that hits the open area may be channelized to the lowest point (marked above). The specified exit points be provided & make way for the water to flow over to low-lying areas.

The fact that Water & Tar (Bitumen) do not go hand in gloves, the road should be made in such a way that the rainwater does not over stay. The road should be such that the water flows off across the road and at no stage the water should be allowed to flow along the road. Although the roads are laid, in future, It is advised to consider the use of perforated pavers as shown in the subsequent discussions. The runoff water can prove to be very resourceful if harvested judiciously.

### Category 7.1.4



### CONCRETE PAVERS:

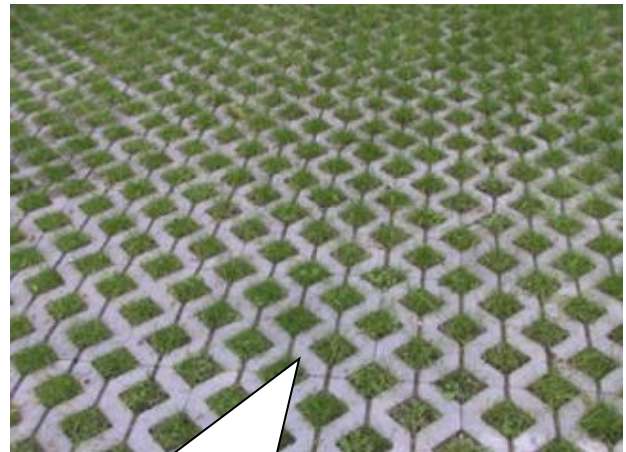
It is observed that the part of the open area in the college has been left open. The Rain water will runoff into adjoining areas. Hence, acting against the interest of water conservation measures & depriving the perennial plants around it from natural watering system.

It would be appreciated if the perforated pavers are used in lieu of the present system. This will help in increasing the greenery in addition to managing the Rainwater & preventing possible flooding.

### SOLUTION:

Guide the terrace Rainwater to flow through the pipe. This helps to avoid dampening the walls and prevent defacing the inside part.

It also prevents down flow of rainwater at random.



Perforated pavers, increase water percolation, prevent flooding and gives decorated flooring too.

## WATER MANAGEMENT:

Watering the plants in excess or not watering them hampers the healthy growth, it also results into wastage of water & increase manpower.

## SOLUTION:

Water management is advised as shown in the illustration here, using the waste plastic pet bottles. This will help in surface evaporation loss. For larger plants it is advised to incorporate mulching & using organic waste & cover with newspaper/wastepaper. The significance of newspaper to cover the mulched area draws the attention of the students & the visitors. Thus, creating a platform for education & knowledge sharing.

## Category 7.1.4



## SOLID WASTE MANAGEMENT

### Category 7.1.3

It is highly appreciated & worth noticing the level of awareness of spillage. It was noticed that the college management is focusing to maintain cleanliness & spitting Gutka is banned. To keep the good going, it is important that we facilitate the provision for waste disposal. Hence, it is advised to place waste segregation bins. There is an urgent need for placing waste bins at regular distances. Ideally for every room there should be two bins placed in front of the class room .

One in Yellow/Red and the other in Green in colour.

It is necessary to educate the inmates to use to place degradable waste like food, paper and other vegetable waste in GREEN coloured bin. The plastic and other metal waste, should be placed in red/yellow coloured bin.

This method imparts the sense of segregating waste at source and makes the task of handling waste simple.

It also makes room for revenue generation as the plastic and metal waste can be sold at a later date.

SOLUTION:



Illustrative Corrective measures

#### Plastic Bins



#### Metal Bins





A very innovative concept of waste collection system has been introduced by the college nearby @ Ilkal. A little change can be followed i.e., colour the baskets and display its objective.

The green is to be used for organic waste and paper.

The yellow for Plastic and Metal waste.

The red should be used for chemical, hygienic waste like medicinal packings, pads etc.,

Ease of approach should make the clean & green practices self-sustainable.

By incorporating the segregation of the solid waste at the point of its source will make the task of handling it at the Vermicomposting pit easy and time saving.

### **ORGANIC WASTE MANAGEMENT**

The organic waste management system should be built and information on the benefits should be prominently displayed.

It would be highly appreciated if it is on one side and in front of the college. The information displayed would educate the pupil of other institutes as well.

### Local Biodegradable Bins.



Mulching with Solid waste.

Use of Paper and waste management. The college need to work out a policy for paperless communication and record maintenance. The college within its purview can consider going paperless. To draw home the possibilities, We are presenting a technical article in reference to various areas it is made possible.

The copy can be downloaded using the link <https://www.ijeat.org/wp-content/uploads/papers/v8i4/D6268048419.pdf>

### HEALTH HAZARD

The Institution has installed sanitary pad dispenser. It is a good initiative.

It is also seen that the lady's room and the girl's room have been provided with the Sanitary Pad incinerator. However, the unit is not in operation. Hence, pads are not being fed to the incinerator or they are either left unattended or are disposed in open area, this causes unhealthy living conditions and at times an embarrassment too.

Hence it is necessary that the issue is addressed with top priority.

Proper usage training is necessary for the inmates of the Hostel and to all the girls.





## DISPOSAL OF USED BATTERIES

### BATTERY MANAGEMENT:



### Battery Management.

The batteries disposal is an environment threat. The lead which is a major component has serious adverse effects. The acidic fumes damage the electronic components and when disposed to environment through uncertified local ragpickers either as scrap or buyback option, The institute stands to be morally responsible to such environmental pollution.

Hence the disposal of the batteries should be prolonged. This is possible by putting into use the Battery regenerative system

However, much before the regeneration It is good practice to make room for cross ventilation for the batteries to be placed in cool place.

The benefits include –

In normal operating mode, the batteries are known to last for 5 to 6 years.

With good working practice, they would last for almost three times the life.

Prolonged life of the Batteries.

Avoids acid fumes accumulation on the Batteries.

Increased life of all electronic gadgets around the Battery bank.

Delayed discarding of the Batteries avoids environment pollution and Revenue outflow for the organisation.

WE suggest to regenerate the batteries once every 3 years, so that the sulphur lining is minimized. If the regeneration is executed once every three years, we can regain the working performance to 95 to 98% of its original status.

However, this needs to be backed up with necessary periodical check with the density of the battery solution.

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## BATTERY PLACEMENT:

In compliance with

The batteries breath acid fumes. It is good practice to make room for cross ventilation for the batteries to be placed in cool place.

The benefits include –

Prolonged life of the Batteries.

Avoids acid fumes accumulation on the Batteries.

Increased life of all electronic gadgets around the Battery bank.

Delayed discarding of the Batteries avoids environment pollution and Revenue outflow for the organisation.

**SOLUTION:** The placement of batteries needs to be at the place very close to cross ventilation, if possible, in open but shaded place. The following clippings are explained.



Fuel Management & Safety. **Category 7.1.1, 7.1.2, 7.1.3 and 7.1.5**

The Laboratory team need to make sure that only the approved vendor supplies the rubber pipes. The non-standard blue pipes are known to cause gas leakage and eventual fire at critical places.

Placement of cylinder inside the laboratory is to be avoided. The placement of cylinders and use of nonstandard pipes as seen here should be moved out.







Placement of bulk chemical storage bottles.

Category 7.1.1, 7.1.2, 7.1.3 and 7.1.5



In the interest of preventing any unwanted chemical leak, it is safe to place the bottles away from easy reach. If necessary, always place a safety barricade at all such selves.

Medicinal garden Information centre.



The Plantations inside the campus need to be upkept and each plant should be labelled and the benefits from each of these plants should be displayed in simple language so that the general public get to know the benefits.




The vermicompost facility area should be increased and all the solid waste should be sent for composting.



## FACTORS CONSIDERED.

It is vital factor to consider the limitations beyond human control. However, our work culture, should be oriented towards the better and safe dwelling. Considering the present health hazards, Not forgetting the ongoing COVID, the quality of air and after effects of the pollution caused by our activities need to be addressed and all the young generations should be educated to contribute towards positive impact. Geographical layout plays an important role when deciding on our energy use. The conditions prevailing has been listed below (Courtesy:

Sindagi, City	
	
Sindagi; Location in Karnataka, India	
<b>Coordinates: 16.92°N 76.234°E</b>	
Country	India
State	Karnataka
Region	Bayalu Seeme
District	Bijapur District
Elevation	500 m (1,600 ft)
Population (2011)	40,000
Languages	
• Official language	Kannada
Time zone	UTC+5:30 (IST)
PIN	586128
Vehicle registration	KA:28
Website	www.karnataka.gov.in www.sindagitown.mrc.gov.in

<https://en.wikipedia.org/wiki/Sindagi>).



Sindagi is a City and Taluk in Vijayapura district in the Indian state of Karnataka, about 60 km to the east of Bijapur.

### **Geography**

Sindagi is located at 16.92°N 76.23°E. It has an average elevation of 500 metres (1640 feet). Sindagi is 60 km/37.28 miles away from the main district city of Bijapur, and 545 km/338.95 miles from the state capital, Bangalore. The nearest major railway station to Sindagi is at Indi (50 km), and the nearest airport is at Kalaburagi (96 km). Sindagi is a lesser Rainy Area and Most of the Area is Dry land. And Sindagi has a Good Planned City in Vijayapura District . Sindagi is Having Good Transportation System With National Highway 50.

### **Demographics**

As of 2011 India census, Sindagi had a population of 53,213. Males constitute 51% of the population and females 49%. Sindagi has a middle range literacy rate of 61%. Male literacy is 69%, and female literacy is 55%. 16% of the population is under 6 years. Sindagi City is the best commercial taluk In Vijayapura District and one of the taluks eligible of being a new district also.

### **Sindagi Religion Data 2011**

The population of Sindagi town was 37,226, as per the 2011 census by government of India. Hindus constitute 69.26% of the population, while Muslims closely follow with 30.12%.

**Bijapur**, officially known as **Vijayapura**, is the district headquarters of Bijapur District of Karnataka state of India. It is also the headquarters for Bijapur Taluka. Bijapur city is well known for its historical monuments of architectural importance built during the rule of the Adil Shahi dynasty. It is also well known for the sports by the popular Karnataka premier league team as Bijapur Bulls. Bijapur is located 530 km (330 mi) northwest of the State Capital Bangalore and about 550 km (340 mi) from Mumbai and 384 km (239 mi) west of the city of Hyderabad.

The city was established in the 10th-11th centuries by the Kalyani Chalukyas and was known as Vijayapura (City of victory). The city was passed to Yadavas after Chalukya's demise. In 1347, the area was conquered by the Bahmani Sultanate. After the split of the Bahmani Sultanate, the Bijapur Sultanate ruled from the city. Relics of the Sultanates' rule can be found in the city, including the Bijapur Fort, Bara Kaman, Jama Masjid, and Gol Gumbaz.

Vijayapura, one of the popular heritage cities located in the Karnataka state of India is also one of the top ten populated cities in Karnataka. The Bijapur city has been declared as one of the corporations in the state of Karnataka last year. Bijapur urban population as per 2011 census is 326,000, perhaps the 9th biggest city in Karnataka. Bijapur Mahanagara Palike (BMP) is the newest Municipal Corporation formed under the KMC act along with Shimoga and Tumkur Municipal Corporations. Administratively, Vijayapura district comes under Belgaum division along with Bagalkote, Belgaum, Dharwad, Gadag, Haveri and Uttara Kannada (Karwar) districts.

Geographically, the district lies in the tract of the Deccan Plateaus. The lands of the district can be broadly divided into three zones: the northern belt consisting of the northern parts of Bijapur Taluks of Indi and Sindagi; the central belt consisting of Bijapur city; the southern belt consisting of the rich alluvial plains of the Krishna Rivers parted from the central belt by a stretch of barren Trap. The northern belt is a succession of low rolling uplands without much vegetation, gently rounded and falling into intermediate narrow valleys. The upland soil being shallow, the villagers are generally confined to the banks of the streams and are far away from one another. The Don River Valley has plains and consists of rich tracks of deep black soils stretching from west to east in the central part of the district. Across the Krishna River is a rich plain crossed from west to east by two lines of sandstone hills. Further south towards Badami and southwest to east by two lines of sandstone hills. Further south towards Badami and southwest of Hunagund, the hills increase the number and the black soil gives way to the red

There are 34 rain gauge stations in Bijapur District. The average annual rainfall for the district is 553 mm with 37.2 rainy days. The monsoon generally breaks in the district during June and lasts till October. The highest mean monthly rainfall is 149 mm in the month of September and lowest is 3 mm in February. The annual rainfall variation in the district is marginal from place to place.

The soils of Bijapur District can be categorized as a low to moderately yielding area (1000 to 8000 L/h) 72.2% of district falling in this category. From considerable part of the district (9%) poor yielding (less than 1000 L/h sources) or non-feasible areas have been reported. The talukas having largest poor yielding area, are Muddebihal (19%) followed by Indi (15%), Bijapur and Sindagi (13% each), Basavan Bagewadi (4%). Low yielding areas (1000 to 4000 L/h source) in the district constitute about 40% of the district, with the largest being Basavan Bagewadi (54%) and smallest in Indi taluka Moderate yields (4000 to 8000 L/h source) are reported from 36% of the district, highest being in Bijapur with 70% of the area, and lowest being in Sindagi with 19% of the taluka. High yielding areas (more than 8000 L/h sources) over 15% of the district. The smallest area under this category is in Sindagi Taluka (2% each) and largest is in Muddebihal (29% each) where very lengthy contact zones occur between traps and other formations

On the basis of projections from this information, the main parameters affecting water quality in Bijapur can be expected to be brackishness (salinity) and hardness (PH). Salinity affects the district in high to low groundwater problem areas and occurs in areas all along the major and minor river courses and stream courses.

### Climate and temperature

Bijapur has a semi-arid climate. It is located at **16.83°N 75.7°E**. It has an average elevation of 606 metres (1988 ft).

The climate of Bijapur district is generally dry and healthy. In summer, especially in April and May it is too hot; at that time the temperature lays between 40-degree Celsius to 42-degree Celsius. In winter season, from

November to January the temperature is between 15-degree Celsius to 20-degree Celsius. Usually the district has dry weather, so the humidity varies from 10% to 30%.

hideClimate data for Bijapur (1981–2010, extremes 1901–2012)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	39.4 (102.9)	41.1 (106.0)	41.9 (107.4)	43.3 (109.9)	44.9 (112.8)	43.0 (109.4)	36.9 (98.4)	36.5 (97.7)	37.4 (99.3)	37.3 (99.1)	35.0 (95.0)	34.6 (94.3)	44.9 (112.8)
Average high °C (°F)	30.8 (87.4)	33.9 (93.0)	36.9 (98.4)	39.0 (102.2)	39.1 (102.4)	33.6 (92.5)	30.9 (87.6)	30.5 (86.9)	31.4 (88.5)	31.6 (88.9)	30.5 (86.9)	29.7 (85.5)	33.1 (91.6)
Average low °C (°F)	16.5 (61.7)	18.3 (64.9)	21.9 (71.4)	24.1 (75.4)	24.0 (75.2)	22.7 (72.9)	22.0 (71.6)	21.7 (71.1)	21.6 (70.9)	21.0 (69.8)	18.5 (65.3)	15.7 (60.3)	20.7 (69.3)
Record low °C (°F)	7.0 (44.6)	8.9 (48.0)	11.2 (52.2)	15.8 (60.4)	17.8 (64.0)	17.2 (63.0)	16.1 (61.0)	16.7 (62.1)	16.1 (61.0)	12.2 (54.0)	5.6 (42.1)	6.0 (42.8)	5.6 (42.1)
Average rainfall mm (inches)	4.0 (0.16)	0.6 (0.02)	5.7 (0.22)	20.6 (0.81)	39.8 (1.57)	108.0 (4.25)	66.9 (2.63)	92.3 (3.63)	156.9 (6.18)	119.7 (4.71)	25.0 (0.98)	7.7 (0.30)	647.1 (25.48)
Average rainy days	0.2	0.1	0.8	1.4	3.3	5.8	5.5	5.6	8.3	5.7	2.0	0.4	39.1
Average relative humidity (%) (at 17:30 IST)	38	31	28	30	34	56	65	65	62	54	49	43	47

Source: [India Meteorological Department](#)<sup>[8]</sup>

## Rainfall

The district has 34 rain gauge stations. The average annual rainfall for the whole district is 552.8 mm, with 37.2 rainy days. The monsoon generally reaches the district by June and lasts till October. Though the total rainfall is not high, the district benefits both from the south-west and the north-east monsoons. The annual rainfall varies from place to place within the district.

## Soil

The district has two types of soil. First one is, "deep black soil" (or yeari bhoomi), which is good for the crops like jawar, wheat, pulses, sunflower, etc. The major portion of the district consists of this kind of soil which has a great moisture-holding capacity. Second one is "red soil" (or masari /maddi bhoomi), which is generally poor, good for irrigation and horticulture.

## Rivers

Krishna river, which is the most important river of the district. It flows about 125 miles in the district. A dam is built across the river at Almatti, Bhima river flows in northern part of district for about 20 miles. It overflows in the

rainy season and spreads over a wider area, which is thereby rendered extremely fertile land. In central part of district Doni river flows.

## Economy

Farming and agriculture related business is the main occupation for many people in the district. Of the total geographical area of 10,530 square kilometres, 7,760 square kilometres is available for cultivation which is 74% of the total area, while areas under forest account for only 0.19% of the total area. Only 17.3% of the net cultivable area is irrigated and the balance 82.7% of the area has to depend on the monsoon.

The major oilseed crops are sunflower, groundnut and safflower. Horticulture crops like grapes, pomegranate, ber, guava sapota, lime are also grown. A recent trend shows that there is a low shift towards fruit crops like Pomegranate and grapes of the total area of 8,610 square kilometres. Covered during 2002-03 cereals occupy about 55.2% by oilseeds 24.5% pulse 15.6% and other commercial crops like [cotton](#) and [sugarcane](#) about 4.8%. There is a slight shift towards commercial crops like cotton and sugarcane over last 2 years. The land holding pattern in the district indicates that small and marginal farmers account for 4% of total land holdings and 0.6% of the total land, semi-medium for 27.5% with 10.1% of total land while 68% of the holdings are above 20,000 m<sup>2</sup>, accounting for 89.3% of land. Many small-scale industries are working in the district however no large-scale industry can be found in the district.

Classification of Labour Force	No. of Workers
Cultivators or Farmers	2,21,060
Agricultural Laborers (Non-Land Owners)	2,87,778
Artisans	17,776
Home based / Cottage Industries	18,232
Services and Other sectors	1,95,573

**EXHIBIT GREEN HABITS:**

The college administration, should engage its resources in exhibiting Green Habits as discussed.

## ACTION PLAN SUMMARY:

Earmark the action plan.

Prioritize the initiatives and execute.

Observe the benefits and shortcomings.

Workout further improvement by involving the staff and students.

## MODE OF ACTION:

The process of ENVIRONMENT AUDIT & ENERGY CONSERVATION should be carried out in three steps.

Good housekeeping practices using available manpower.

Minor alterations using in house work culture with minimum investments on accessories as discussed.

Capital investments, which may be required for installation of new methodologies may be taken up on phased manner.

We will be happy to assist you for any further advice/consultancy if required either on Rainwater management or on any of the measures discussed in the report.

We hope the measures are implemented in good spirit and to human convenience and comfort.

For SUNSHUBH RENEWABLES & RESEARCH CENTRE

Mallikarjun A. Kambalyal. B.E. (E&C)

Certified Energy Auditors EA-3485