ENVIRONMENT AUDIT – 2020

NAIPUNNYA BUSINESS SCHOOL

PONGAM, THRISSUR
KERALA

EXECUTED BY

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PREFACE

Every institution should be imparting knowledge about the campus environment and its surroundings through activities that follows the principles of sustainability and waste management. Hence an evaluation is needed to understand where it stands in the path to be an environment friendly, and in talent nurturing educational institution.

This Environment Audit was done with the aim to assess mainly on waste management of the campus. The college vision is "To become a centre par excellence of learning, where the best in humans is unveiled, based on human values, focused on life enhancement and constructive in adapting to the needs of the world". The mission of college is "to mould individuals into successful and vibrant professionals facilitating comprehensive and rounded formation, to function as effective and empathetic human beings, grounded with courage of conviction, personal integrity, professional ingenuity and social commitment "and it was we observed by us from the students' participation during the environmental audit.

This report is compiled by the BEE certified energy auditor along with the project engineers who are experienced in the field of energy, environment and management. The student volunteers made a mammoth contribution with data collection and in preparing an initial skeleton for the report.

ACKNOWLEDGEMENTS

We express our sincere gratitude to the Naipunnya Business School (NBS), Pongam, Thrissur for giving us an opportunity to carry out the project of Environment Audit. We are extremely thankful to all the staffs for their support to carry out the studies and for input data, and measurements related to the project of Environment audit. Special thanks to Prf. (Dr) Jacob P M - Director of NBS who is helping lot for completion of this audit

Also congratulating our Environment audit team members for successfully completing the assignment in time and making their best efforts to add value.

ENVIRONMENT AUDIT TEAM

1. **Mr. Santhosh A**
   Registered Energy Auditor of Bureau of Energy Efficiency (BEE – Govt. of India)
   Accredited Energy Auditor No – EA 7597

2. **Mr. Jaideep P P,** Project Engineer - ME, Energy Engineering.

Yours faithfully

Managing Director
Athul Energy Consultants Pvt Ltd

ENVIRONMENT AUDIT SUMMARY

- College segregated the waste from college, canteen, and hostels and treated in a scientific manner.
- Separate storage provisions are done for metal and plastics in college.
- Biodegradable wastes are treated in a biogas plant installed behind the canteen.
- Non-biodegradable wastes are incinerated which installed near the playground.
- Vermi compost plant is working well in the campus.
- E- Wastes are collected and given to an authorized agent and college is signed an MOU with Northamps ENV solutions, Ernakulam (MOU copy given in the Annexure).

Suggestions for improvement

- Internal inspection team to be formed which comprises of staff and students for internal auditing of the waste management in the campus
- Introduce 'refuse plastic' concept in college inventories. This will increase the awareness among students and staffs and will seep into their behaviour.
- Display the weight of segregated wastes that collected from the canteen, hostels and college in prominent locations which will be an eyeopener for all and it will help in reduce the waste generation.
- Monthly Records should be kept for segregated wastes which will give the administration to pinpoint the source and can take necessary steps to reduce it.

GENERAL DETAILS

The general details of the NBS are given below in table.

Sl. No:	Particulars	Details
1	Name of the College	Naipunnya Business School (NBS)
2	Address	Pongam, Koratti
		Thrissur - 68
3	Contact Person	IQAC Coordinator, Prof. Dr. Jacob P. M. Director, NBS
4	Contact Phone numbers & Fax	0480 273 0340, 9605078601
		0480-27335
5	E-mail ID	mail@mbanimit.ac.in, info@nbs.ac.in
6	Type of Building	Educational Institution
7	Annual Working Days	210
8	No: of Shifts	Day Shift (One) (9AM -4PM)
9	No: of students enrolled	87
10	Total campus area	2.5 Acre
11	Total Built Up area	5857 m^2

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TABLE 2: GENERAL DETAILS

ABOUT NBS

NAIPUNNYA is set in a serene nature of 2.5 acres of landscaped gardens and aesthetically built buildings. The design is elevated by simplicity and full of flora and fauna. NBS is at Pongam and Nearby to National High way 544 and just 10 Kms away from CIAL airport

Naipunnya Business School, (NBS) Pongam, Koratty is a management institute, run by the Archdiocese of Ernakulam- Angamaly. NBS was launched in the year 2012, with a vision to create professionals, suitable for the industry. An offshoot of Naipunnya Group of Educational Institutions, NBS imparts premium professional education at an affordable cost. The institute provides an environment that is conducive to meet the needs of each student. NBS fosters in developing self-confidence and a positive self-image for Business Graduates. The Patron of the "Naipunnya Business School" is His Beatitude Cardinal Mar George Alencherry. The Co-Patrons is Archbishop Mar Antony Kariyil. The Executive Director is Rev. Fr. Dr.Paulachan K. J. and the coordinator of NBS is Rev. Fr. Varghese Assin. NBS is affiliated to the University of Calicut and recognized by AICTE. Naipunnya Business School (NBS), an offshoot of Naipunnya Institute of Management and Information Technology (NIMIT) was set up in 2012 for creating Business professionals who meet the standards of the present industry and culture.

- Transform students into business leaders.
- Committed Holistic development of students
- Immersive & Experiential Learning Process.
- Regular winners in National Business Plan & Management fests
- Student-centred Teaching
- Global Exposure Program (GEP)
- Eco-friendly green campus.

The MBA programme at NBS aims at holistic development of every student, which enables to explore the realms of professional life. The MBA programme at NBS is approved by ALL India Council for Technical Education (AICTE) and is affiliated to the University of Calicut.

Vision

To be a global academy, one of the world's leading institutes that moulds students for management practices, striving continuously for excellence in education and service to the society.

Mission

Our mission is to equip students with management skills so that they may function efficiently and effectively in the modern world. We strive to produce leaders who have an awareness and involvement in wider societal concerns, such as the protection of the environment, conservation of

energy and concern for social justice. At NBS, students will Experience the joy of learning, Explore new horizons and Excel in all fields.

Core VALUES

The mission of Naipunnya Business School is to educate students to become business leaders who make a difference in the world. For achieving this mission it requires an environment of trust and mutual respect, free expression and a commitment to truth, excellence, and lifelong learning. All our students, faculty, staff, and alumni are trained to accept these principles when they join NBS. This also enables them to foster values useful for the business and community. We practice these values in our daily interactions so that students are able to:

- Respect for the rights, differences, and have a cultural immersion the larger community
- Practice honesty, transparency in all their dealings with members of the community
- To be a person who is prepared to change behaviour, accept norms and be part of the community
- NBS strives to be a living model of these values. To this end, NBS community members have a personal responsibility to integrate these values into every aspect of their experience here. Through our personal commitment to these values, NBS will be able to change the economic and social for the good of all.

ABOUT ENVIRONMENT AUDIT

The ICC defines Environmental Auditing as: **"A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects."**

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Environmental conditions may be monitored from angles that are relevant to Indian requirements, without stress on legal issues or compliance. This innovative scheme is user friendly and totally voluntary. The environmental awareness helps the institution to set environmental examples for the community and to educate young learners.

Here we can mainly divided this report waste management initiatives and installations of systems such as bio gas plant, vermicompost, incinerator and collection and segregation of waste in the campus etc and students initiates in waste management as a social cause.

Figure 1: NBS CAMPUS

WASTE MANAGEMENT

Waste is generally termed as 'a resource at the wrong place'. The college authorities are aware of the possible methods and have installed waste management measures like biogas systems. The waste clearance measures associated with different types of wastes are briefly given below. In this college normally three types of wastes are generated and we can divide the same as,

1. Bio degradable
2. Non bio degradable and
3. E-waste

1. BIODEGRADABLE WASTES

Biodegradable waste includes any organic matter in waste which can be broken down into carbon dioxide, water, methane or simple organic molecules by micro-organisms and other living things by composting, aerobic digestion, anaerobic digestion or similar processes also includes some inorganic materials which can be decomposed by bacteria. These materials are non-toxic to the environment and mainly include the natural substances like Plants and animals waste, even the dead plants and animals, fruits, paper, vegetables, etc. get convert into the simpler units, which further get into the soil and are used as manures, biogas, fertilizers, compost, etc.

The biodegradable wastes are mainly from the college canteen and pushed it to the Biogas plant. The bio-slurry is used as manure to the plantation.

I. BIO GAS PLANT

Figure 2: Bio gas plant

Biogas is the mixture of gases produced by the breakdown of organic matter in the absence of oxygen (anaerobically), primarily consisting of methane and carbon dioxide. Biogas is a renewable energy source Biogas is produced by anaerobic digestion with methanogen or anaerobic organisms, which digest material inside a closed system, or fermentation of biodegradable materials. This closed system is called an anaerobic digester, bio digester or a bioreactor.

Biogas is a renewable, as well as a clean, source of energy. Gas generated through bio digestion is non-polluting; it actually reduces greenhouse emissions. No combustion takes place in the process, meaning there is zero emission of greenhouse gasses to the atmosphere; therefore, using gas from waste as a form of energy is actually a great way to combat global warming. Another biogas advantage is that, unlike other types of renewable energies, the process is natural, not requiring energy for the generation process. In addition, the raw materials used in the production of biogas are renewable.

Bio gas plant reduces soil and water pollution. Consequently, yet another advantage of biogas is that biogas generation may improve water quality. Moreover, anaerobic digestion deactivates pathogens and parasites; thus, it's also quite effective in reducing the incidence of waterborne diseases.

Bio gas generation produces organic fertiliser. The by-product of the biogas generation process is enriched organic (digest ate), which is a perfect supplement to, or substitute for, chemical fertilizers. The fertilizer discharge from the digester can accelerate plant growth and resilience to diseases, whereas commercial fertilizers contain chemicals that have toxic effects and can cause food poisoning, among other things.

The biogas plant converts food wastes into methane gas and usable bio fertilizers which will used for plants. The methane gas from the biogas plant is used in the canteen for cooking purpose and for heating drinking water hot water. Approximately 100 kg of LPG /month is saved by using biogas plant. The bio maneuver from the biogas plant is used for gardening, agriculture and for trees. This bio waste is also act as best bio insecticide and thus the college avoided the usage environmentally toxic precipices for environment. Here college is using fixed dome permanent structure biogas plant of size 4 M^3 for treating bio waste. The slurry coming from the plant is collected in drums and reused after diluting with water for agriculture and for gardens. The methane gas is used in the canteen for hot water generation which is used for drinking and tea making.

II. VERMI-COMPOST

Figure 3: Vermi - Compost

It is the product of the decomposition process using various species of worms, usually red wigglers, white worms, and other earthworms, to create a mixture of decomposing vegetable or food waste, bedding materials, and vermicast. Vermicomposting contains water-soluble nutrients and is an excellent, nutrient-rich organic fertilizer and soil conditioner.[3] It is used in farming and small scale sustainable, organic farming.

The major source of raw material for vermi-compost is the leaves in the college campus and also the wastes generated which are not fed into biogas such as Chicken bones etc. The vermi-compost plants installed near to the scrap yard in the college campus

Benefits of Vermi-compost

a. For Soil

- Improves soil aeration
- Enriches soil with micro-organisms (adding enzymes such as phosphatase and cellulose)
- Microbial activity in worm castings is 10 to 20 times higher than in the soil and organic matter that the worm ingests
- Attracts deep-burrowing earthworms already present in the soil
- Improves water holding capacity

b. For Plant growth

- Enhances germination, plant growth, and crop yield.
- Improves root growth, Enriches soil with micro-organisms, adding plant hormones such as auxins and gibberellic acid.

c. For Economic

- Bio wastes conversion reduces waste dumping in landfills.
- Elimination of bio wastes from the waste stream reduces contamination of other recyclables collected in a single bin (a common problem in communities practicing is single-stream recycling)
- Creates low-skill jobs at local level.
- Low capital investment and relatively simple technologies make vermicomposting practical for less-developed agricultural regions.

d. For Environmental

- Helps to close the "metabolic gap" through recycling waste on-site.
- Large systems often use temperature control and mechanized harvesting, however other equipment is relatively simple and does not wear out quickly
- Production reduces greenhouse gas emissions such as methane and nitric oxide (produced in landfills or incinerators when not composted).

III. WASTE GENERATED FROM PETS

The wastes generated from Pets (Different varieties of birds, dogs, rabbit etc) are collected separately and used as base manure after mixing with vermi compost as bio fertilizer for plants in the college. The pet cages are located near to the ground, chapel, behind administrative building, near to incinerator and on the way to paly ground.

IV. WASTE GENERATED FROM FISHPOND AND OTHER AQUARIUM IN THE COLLEGE

The water in the fish pond always in rich with ammonia. Frequently, this water is pumped to garden and fresh water is fill into the pond. Other wastes like those from the toilets are disposed through septic tank at locations situated away from water sources.

2. NON-BIODEGRADABLE WASTE

Materials that remain for a long time in the environment, without getting decompose by any natural agents, also causing harm to the environment are called non-biodegradable substances. These materials are metals, plastics, bottles, glass, poly bags, chemicals, batteries, etc. But as these are readily available, convenient to use, and are of low cost, the non-biodegradable substances are more often used. But instead of returning to the environment, they become solid waste which cannot be broken down and become hazardous to the health and the environment. Hence are regarded as toxic, pollution causing and are not considered as eco-friendly.

Many measures are taken these days, concerning the use of non-biodegradable materials. The **three 'R'** concept which says **Reduce-Recycle -Reuse** is in trend, which explains the use of the non-biodegradable materials. As we already discuss that these substances do not decompose, or dissolve

easily so can be recycled and reuse. And one can help in reducing this waste by instead of throwing the plastics and poly bags in the garbage; it can be put in the recycling bags to use again.

Non-recyclable wastes are collected and burned once in a month using incinerator places inside the campus itself. The recyclable wastes are sorted out into categories and supplied it to the collecting units.

I. INCINERATOR

Figure 4: Incinerator

The objective of waste incineration, in common with most waste treatments, is to treat waste to reduce its volume and hazard, whilst capturing (and thus concentrating) or destroying potentially harmful substances. Incineration processes can also provide a means to enable recovery of the energy, mineral and/or chemical content from waste. Basically, waste incineration is the oxidation of the combustible materials contained in the waste. Waste is generally a highly heterogeneous material, consisting essentially of organic substances, minerals, metals and water. During incineration, flue-gases are created that will contain most of the available fuel energy as heat. The organic substances in the waste will burn when they have reached the necessary ignition temperature and come into contact with oxygen. The actual combustion process takes place in the gas phase in fractions of seconds and simultaneously releases energy. Where the calorific value of the waste and oxygen supply is enough, this can lead to a thermal chain reaction and self-supporting combustion, i.e. there is no need for the addition of other fuels.

The incinerator is used for incinerating non-biodegradable waste such as paper, plastic, sanitary napkins etc. The ash generated are as for manoeuvre after mixing with cow dung for plants. The ash generated from plastic will be treated separately.

The ash generated from canteen were wood is used as a fuel is used as manoeuvre for plants. The college campus promoting biodegradable packaging and reducing the consumption of plastic to a large extent.

3. ELECTRONIC WASTE

Electronic waste or e-waste describes discarded electrical or electronic devices. E-waste or electronic waste is created when an electronic product is discarded after the end of its useful life. The rapid expansion of technology and the consumption driven society results in the creation of a very large amount of e-waste in every minute. Used electronics which are destined for refurbishment, reuse, resale, salvage recycling through material recovery, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environment pollution. Certain components of some electronic products contain materials that render them hazardous, depending on their condition and density.

College signed an agreement with **Northamps** for collecting for processing E-waste generated from College. The party is approved agency of Kerala state **Suchithwa Mission** for collecting E waste. The MOU copy is attached in the Annexure.

FACILITIES PROVIDED BY COLLEGE FOR WASTE MANAGEMENT COLLECTION

- Toilets in every floor of all buildings separately for girls, boys and staff.
- There is separate toilet facility for department heads, staff rooms, administrative department and common facility.
- Certain toilets are facilitated for disable friendly with suitable hand rails and support mechanisms.
- Bins are provided in various areas of Campus for segregated collection of bio degradable (food,) and non-bio degradable wastes (Plastic, bottles)
- Every day cleaning and sanitisation is done at each and every toilet by cleaning personnel which used to check by housekeeping supervisor.
- Separate team is maintained by college for maintain the clean campus, removal of wastes from pets, collection wastes from bins, which is supervised by maintenance supervisor.

Figure 5: Waste bins

Figure 6: Plastic collection

STUDENT ACTIVITIES FOR ENVIRONMENTAL CONSERVATION

LED Bulb Manufacturing

To inculcate the importance of energy and environment conservation activity NBS initiated to teach students for LED bulb assembling Resource person is Mr. Sreekumar from energy management cell

9.10 ENERGY CONSERVATION AND L E D BULB MAKING

This programme gives a new knowledge to us. Why because, this programme help us to learn the making of L E D bulbs. A class was conducted on the topic how we can save energy by Mr.Sreekumar who is working in energy management cell. By the help of Mr.sreekumar,we all have learned to make a LED bulbs with a limited period.

PHISIS-Swatch Bharath Abyan

First year NBS students conducted a series of events on the occasion of Gandhi Jayanthi day October 2 as Phisis as Swachh Bharat and Unnat Bharath Abhyan . The main focus of this events are Protecting environment from hazardous plastic and to promote environment friendly products which can be replaced for plastics. The event is conducted as 3 phases. In phase 1 students conducted flash mob, street drama, Fun Quiz, Awareness campaign, product promotion such as use paper straw, sugar cane bowl, seed pen etc. As a phase 2 and 3 students are divided into 6 groups and collected the plastic from households from Vellapara and created a plastic free environment

Figure 7: Student activities

CONCLUSION

Environment audit is the best way to analyse and solving the critical issues of waste management. Environment audit can add value to management approach being taken by college for identifying, collecting, segregating and processing of waste generated in the college campus. By analysing the waste generation in each segment such as biodegradable, non-degradable, R waste etc. gave an indication of waste generation and thus put control for the same to reduce the environmental impacts in due course.

The findings in the report shows that college perform fairly well in waste management issues and taken considerable efforts in a responsible manner. During audit and the conversations with the college team, we observed that NBS done various approaches in the past few years to performing well to sustainable environment. Even though there is space for further improvement that mentioned in the executive summary, the college is a good example for the minimisation of environment issues in the existing conditions.

ANNEXURE

- **BEE Accredited energy auditor certificate**

ENERGY IS LIFE
BEE
CONSERVE IT

BUREAU OF ENERGY EFFICIENCY

Examination Registration No.: EA- 7597

Accreditation Registration No.: AEA-0275

Certificate of Accreditation

This is to certify that Mr./Ms. Santhosh. A having its trade/registered office at Kerala has been given accreditation as accredited energy auditor. The certificate shall be effective from 2nd day of November, 2017

The certificate is subject to the provisions of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

This certificate shall be valid until it is cancelled under regulation 9 of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

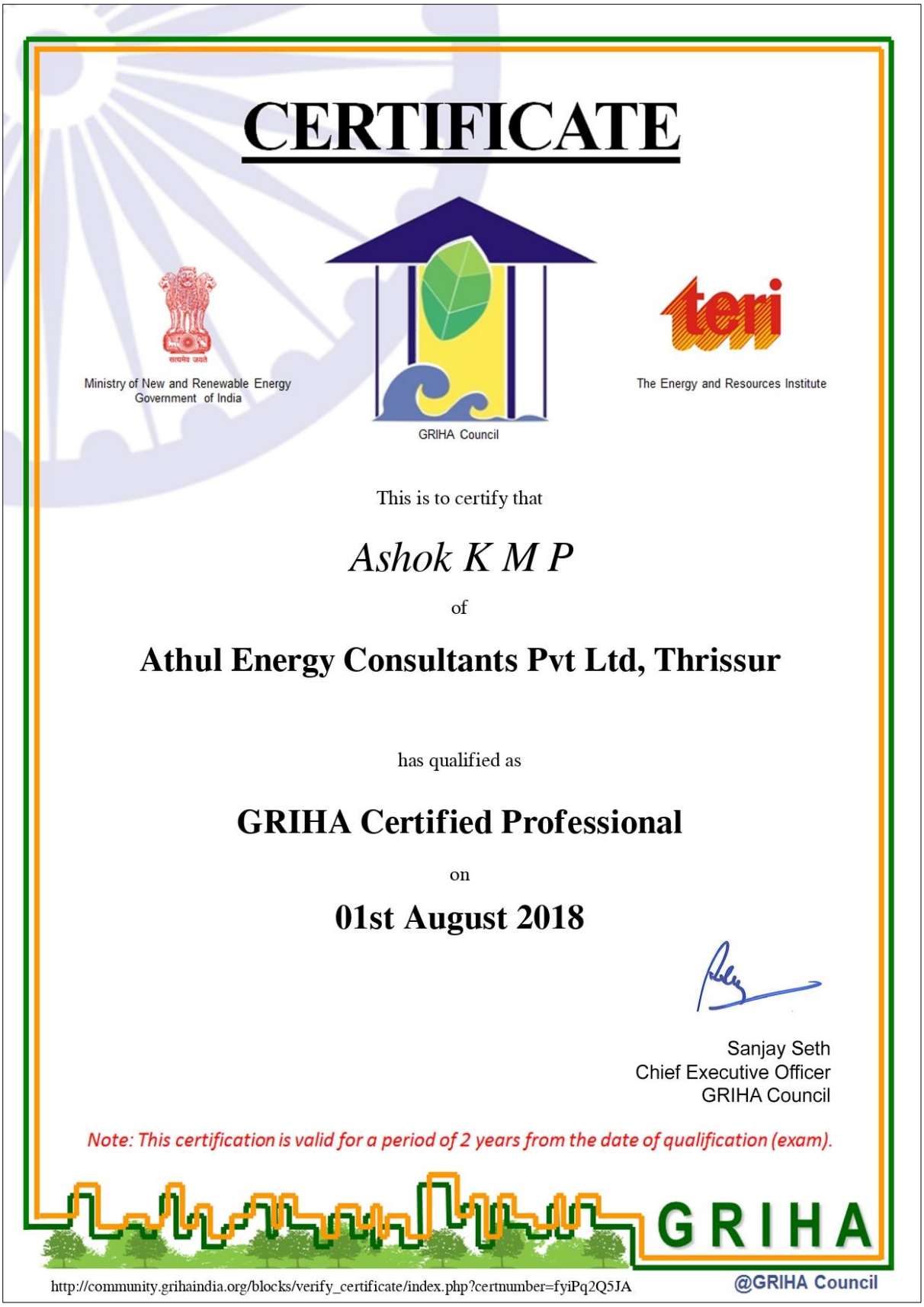
On cancellation, the certificate of accreditation shall be surrendered to the Bureau within fifteen days from the date of receipt of order of cancellation.

Your name has been entered at AEA No. 0275 in the register of list of accredited energy auditors. Your name shall be liable to be struck out on the grounds specified in regulation 8 of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

Given under the seal of the Bureau of Energy Efficiency, Ministry of Power, this 12th day of February, 2018

Secretary,
Bureau of Energy Efficiency
New Delhi

- **GRIHA Certified Professional**



CERTIFICATE

Ministry of New and Renewable Energy
Government of India

GRIHA Council

The Energy and Resources Institute

This is to certify that

Ashok K M P

of

Athul Energy Consultants Pvt Ltd, Thrissur

has qualified as

GRIHA Certified Professional

on

01st August 2018

Sanjay Seth
Chief Executive Officer
GRIHA Council

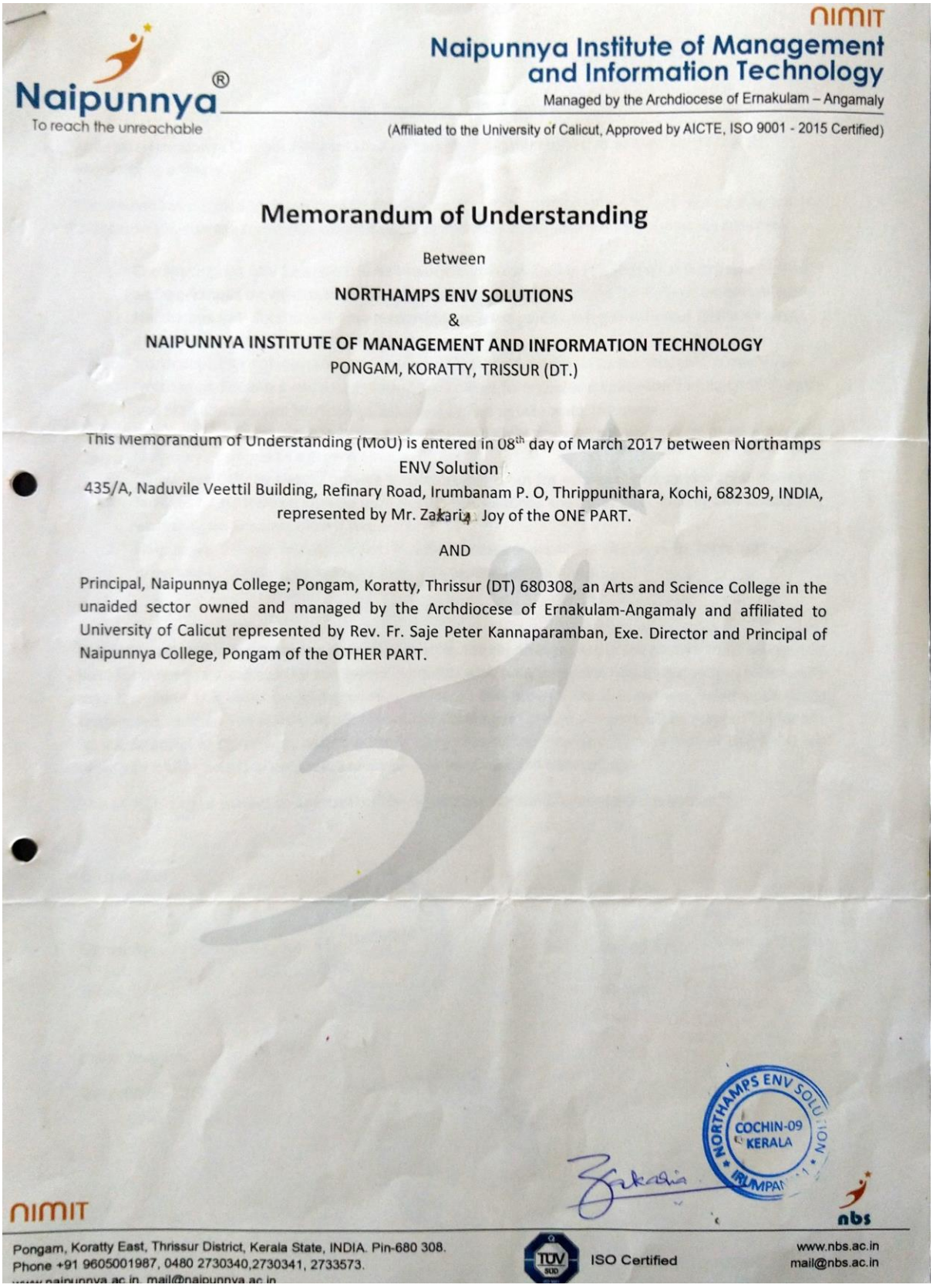
Note: This certification is valid for a period of 2 years from the date of qualification (exam).

GRIHA

http://community.grihaindia.org/blocks/verify_certificate/index.php?certnumber=fyiPq2Q5JA

@GRIHA Council

- **MOU between Northamps ENV Solutions and NIMIT**



Naipunnya®
To reach the unreachable

NIMIT
Naipunnya Institute of Management and Information Technology
Managed by the Archdiocese of Ernakulam – Angamaly
(Affiliated to the University of Calicut, Approved by AICTE, ISO 9001 - 2015 Certified)

Memorandum of Understanding

Between

NORTHAMPS ENV SOLUTIONS

&

NAIPUNNYA INSTITUTE OF MANAGEMENT AND INFORMATION TECHNOLOGY

PONGAM, KORATTY, TRISSUR (DT.)

This Memorandum of Understanding (MoU) is entered in 08th day of March 2017 between Northamps ENV Solution
435/A, Naduvile Veettil Building, Refinary Road, Irumbanam P. O, Thrippunithara, Kochi, 682309, INDIA, represented by Mr. Zakaria Joy of the ONE PART.

AND

Principal, Naipunnya College; Pongam, Koratty, Thrissur (DT) 680308, an Arts and Science College in the unaided sector owned and managed by the Archdiocese of Ernakulam-Angamaly and affiliated to University of Calicut represented by Rev. Fr. Saje Peter Kannaparamban, Exe. Director and Principal of Naipunnya College, Pongam of the OTHER PART.

NORTHAMPS ENV SOLUTION COCHIN-09 KERALA IRUMPA

NIMIT nbs

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