ANDHRA UNIVERSITY

VISHAKHAPATNAM

Green Campus Audit Report

2017-18

Date: 22/June/2018

AUDITED BY:

1. Prof. _____ (Prof P. M. Rao)
2. Prof _____ (Prof. Lalitha Bhaskari)
3. Independent Auditor _____

ANDHRA UNIVERSITY ★ WALTAIR ★

1. INTRODUCTION:

The Green campus audit aims to analyse environmental practices within and outside the university campuses, which will have an impact on the eco-friendly atmosphere. Green campus audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of university environment. It was initiated with the motive of inspecting the effort within the institutions whose exercises can cause threat to the health of inhabitants and the environment. Through the Green campusaudit, a direction as how to improve the structure of Green campusand there are include several factors that have determined the growth of carried out the Green campusaudit.

1.1. NEED FOR GREEN CAMPUS AUDITING

Green campus auditing is the process of identifying and determining whether institutions practices are ecofriendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like water become habitual for everyone especially, in common areas. Now, it is necessary to check Whether we are handling resources carefully? Green campus audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green campus audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment. 1.2. GOALS OF GREEN CAMPUS AUDIT University has conducted a Green campus audit with specific goals as: 1. Identification and documentation of Green campuspractices followed by university. 2. Identify strength and weakness in Green campus practices. 3. Analyze and suggest solution for problems identified. 4. Assess facility of different types of waste management. 5. Increase environmental awareness throughout campus 6. Identify and assess environmental risk. 7. Motivates staff for optimized sustainable use of available resources. 8. The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

1.3. OBJECTIVES OF GREEN CAMPUS AUDIT

1. To examine the current practices, which can impact on Green campussuch as of resource utilization, waste management etc.
2. To identify and analyze significant environmental issues.
3. Setup goal, vision, and mission for Green campus practices in campus.
4. Establish and implement Green Campus Management in various departments.
5. Continuous assessment for betterment in performance in Green campus

1.4. BENEFITS OF GREEN CAMPUSAUDIT TO EDUCATIONAL INSTITUTIONS

There are many advantages of Green campusaudit to an Educational Institute:

1. It would help to protect the Green campusin and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. It portrays good image of institution through its clean and green campus. Finally, it will help to build positive impression for through green initiatives the upcoming NAAC visit.

2. OBJECTIVE AND SCOPE

The broad aims/benefits of the eco-auditing system would be:

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the College campus
- Enhancement of College profile
- Developing an environmental ethic and value systems in young people.

3. EXECUTIVE SUMMARY

An environmental audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance. This audit report contains observations and recommendations for improvement of environmental consciousness.

4. DETAILS OF TREES AND PLANTS (FLORA) IN AU CAMPUS

4.1 GREEN BELT AREA & BIO-DIVERSITY

The Green Belt Area is meant for conservation of nature and aesthetic value of the University premises. The Green Area in the campus includes the plants, greenery and sustainability of the campus 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.

4.1.1 OBSERVATIONS

Campus is located in the vicinity of approximately **700** types (species) flora and fauna. Various tree plantation programs are being organized during the month of June and August at college campus and surrounding villages through NSS unit. This program helps in encouraging eco-friendly Green campuswhich provides pure oxygen within the institute and awareness among city people. The plantation program includes various types of indigenous species of ornamental and medicinal. Instead of maintaining biodiversity the similar species planted is observed for example "NEEM". The dominant species in green belt are Neem, Indian Blackberry Tree, Flame Tree, Mango Tree, Jack Fruit Tree and Teak. No. of trees planted in campus Types of trees planted which are Green campusfriendly are enlisted below: Neem, Indian Blackberry Tree, Flame Tree, Mango, Jack Fruit, Teak, Guava, Almond, Cashew, Exotic Flora, Asoka and Spanish Cherry Plant.

4.1.2 RECOMMENDATIONS

The University authority may consider on top priority that total 50% area is to be reserved for plantation.

1. The biodiversity is to be maintained while considering the plantation in future.
2. The selection of trees species to be based on environmental conservation and carbon sequencing value.
3. Artificial nests and water ponds are recommended to attract different birds in their migrating and breeding season.
4. Watering schedule to be planned according to the season.
5. Drip irrigation is strongly recommended to conserve the water.
6. Reuse of the water shall be done instead of use of fresh water for Irringation and watering the plants.

7. Special Tree Plantation shall be celebrated every year on Green campusday and also competitions for bird species identification and knowing the tree values in terms of medicinal and Green campusconservation.

Table 1. Some plant species Andhra University Campus 2017-2018.

S.No	Species Name	Family	Habit	No. of Plants
1	*Abutilon indicum* (L.) Sweet	Malvaceae	Herb	10
2	*Acacia pennata* (L.) Willd.	Fabaceae	Climber	2
3	*Achyranthes aspera* L.	Amaranthaceae	Herb	50
4	*Ageratum conyzoides* L.	Compositae	Herb	35
5	*Aglaia elaeagnoidea* (A. Juss.) Benth.	Meliaceae	Tree	4
6	*Albizia odoratissima* (L.f.) Benth.	Fabaceae	Tree	12
7	*Alternanthera sessilis*(L.) R.Br. ex DC.	Amaranthaceae	Herb	35
8	*Andrographis echioides* (L.) Nees	Acanthaceae	Herb	23
9	*Andrographis ovata (T.Anderson ex Bedd.) Benth. &Hook.f.*	Acanthaceae	Herb	12
10	*Anogeissus latifolia* (DC.) Wallich ex Guill. &Perr.	Combretaceae	Tree	10
11	*Ardisia solanaceaRoxb.*	Primulaceae	Tree	11
12	*Artocarpus heterophyllus* Lam.	Moraceae	Tree	26
13	*Asparagus racemosus* Willd.	Asparagaceae	Climber	30
14	*Baccharoidesanthelmintica* (L.) Moench	Asteraceae	Herb	25
15	*Bauhinia purpurea* Linn.	Fabaceae	Tree	24
16	*Bauhinia semla* Wunderlin	Fabaceae	Tree	3
17	*Bauhinia vahlii* Wight & Arn.	Fabaceae	Climber	21
18	*Biophytumsensitivum*(Linn) DC.	Oxalidaceae	Herb	20
19	*Bischofiajavanica* Blume	Phyllanthaceae	Tree	24
20	*Boehmeria platanifolia* (Franch. & Sav.) C.H.Wright	Urticaceae	Shrub	12
21	*Borreria pusilla* (Wall.) DC	Rubiaceae	Herb	35
22	*Bridelia retusa* (L.) A.Juss.	Phyllanthaceae	Tree	2
23	*Bridelia tomentosa* Blume	Phyllanthaceae	Tree	12
24	*Bryophyllumpinnatum*(Lam.) Oken	Crassulaceae	Shrub	21
25	*Buchananiacochinchinensis* (Lour.) Almeida	Anacardiaceae	Tree	2
26	*Callicarpa tomentosa* (L.) Murr.	Lamiaceae	Tree	12
27	*Caryotaurens* L.	Arecaceae	Tree	25
28	*Casearia elliptica* Willd.	Salicaceae	Shrub	2
29	*Casearia esculenta* Roxb.	Salicaceae	Tree	3
30	*Casearia graveolens* Dalzell	Salicaceae	Tree	12
31	*Casearia tomentosa* Roxb.	Salicaceae	Tree	24
32	*Cassia fistula* L.	Fabaceae	Tree	38
33	*Cassinealbens* (Retz.) Kosterm.	Celastraceae	Tree	21
34	*Cassine glauca (*Rottb.*)* Kuntze	Celastraceae	Tree	12
35	*Catunaregam spinosa* (Thunb.) Tirveng.	Rubiaceae	Tree	2
36	*Celtis philippensis* Blanco	Cannabaceae	Tree	18

S.No	Species Name	Family	Habit	No. of Plants
37	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Asteraceae	Shrub	36
38	*Cipadessabaccifera*(Roth) Miq.	Meliaceae	Shrub	12
39	*Cissampelos pareira* L.	Menispermaceae	Climber	14
40	*Citrus sp.*	Rutaceae	Tree	5
41	*Clausenaheptaphyla*(Roxb.) Wight &Arn.	Rutaceae	Shrub	6
42	*Cleistanthuscollinus* (Roxb.) Benth. ex Hook.f.	Phyllanthaceae	Tree	15
43	*Clerodendruminfortunatum*L.	Lamiaceae	Shrub	20
44	*Colebrookeaoppositifolia*Sm.	Lamiaceae	Shrub	10
45	*Combretum ovalifoliumRoxb.*	Combretaceae	Tree	11
46	*Commelinabenghalensis* L.	Commelinaceae	Herb	35
47	*Cratevaadansonii*DC.	Capparaceae	Tree	20
48	*Curcuma pseudomontana* J.Graham	zingiberacea	Herb	2
49	*Cyathulaprostrata*(L.) Blume	Amaranthaceae	Herb	25
50	*Dalbergia lanceolaria subsp. paniculata* (Roxb.) Thoth.	Fabaceae	Tree	6
51	*Dilleniaindica*L.	Dilleniaceae	Tree	2
52	*Dilleniapentagyna* Roxb.	Dilleniaceae	Tree	2
53	*Dioscoreabulbifera*L.	Dioscoreaceae	Herb	3
54	*Dioscoreahispida*Dennst.	Dioscoreaceae	Herb	15
55	*Dioscoreaoppositifolia* L.	Dioscoreaceae	Herb	16
56	*Dioscorea pentaphylla L.*	Dioscoreaceae	Herb	24
57	*Diospyros chloroxylon*Roxb.	Ebenaceae	Tree	3
58	*Diospyros melanoxylon* Roxb.	Ebenaceae	Tree	4
59	*Diospyros montana* Roxb.	Ebenaceae	Tree	6
60	*Diospyros sylvatica* Roxb.	Ebenaceae	Tree	8
61	*Dyschoristevagans* (Wight) Kuntze	Acanthaceae	Herb	9
62	*Ficus elasticaRoxb.*	Moraceae	Tree	2
63	*Ficus exasperata*Vahl	Moraceae	Tree	19
64	*Ficus tsjakela* Burm.f.	Moraceae	Tree	7
65	*Ficus virens* W. T. Aiton	Moraceae	Tree	5
66	*Gardenia latifolia* Aiton	Rubiaceae	Tree	19
67	*Garuga pinnata* Roxb.	Burseraceae	Tree	2
68	*Glochidiontomentosum*(Dalzell) Trimen	Phyllanthaceae	Tree	6
69	*Glochidion zeylanicum* (Gaertn.) A.Juss.	Phyllanthaceae	Tree	4
70	*Gmelina arborea* Roxb.	Lamiaceae	Tree	4
71	*Gmelina asiatica* L.	Lamiaceae	Shrub	12
72	*Grewia hirsuta* Vahl	Malvaceae	Tree	2
73	*Grewia tiliifoliaVahl*	Malvaceae	Tree	24
74	*Habenaria marginata* Colebr.	Orchidaceae	Herb	25
75	HeyneatrijugaRoxb. ex Sims	Meliaceae	Tree	6
76	*Hiptagebenghalensis* (L.) Kurz	Malpighiaceae	Climber	15
77	*Holoptelea integrifolia* Planch.	Ulmaceae	Tree	2
78	*Homaliumnepalense* Benth.	Salicaceae	Tree	4
79	*Jasminum auriculatum*Vahl	Oleaceae	Climber	12

S.No	Species Name	Family	Habit	No. of Plants
80	*Jatropha curcas*L.	Euphorbiaceae	Shrub	35
81	*Justicia japonica Thunb.*	Acanthacea	Herb	12
82	*Kydiacalycina*Roxb.	Malvaceae	Tree	1
83	*Lagerstroemia parviflora* Roxb.	Lythraceae	Tree	2
84	*Lanneacoromandelica* (Houtt.) Merr.	Anacardiaceae	Tree	12
85	*Lantana camara* L.	Verbenaceae	Shrub	35
86	*Leucaena leucocephala*(Lam.) de Wit	Fabaceae	Tree	12
87	*Leucas martinicensis*(Jacq.) R.Br.	Lamiaceae	Herb	2
88	Litseaglutinosa (Lour.) C.B.Rob.	Lauraceae	Tree	15
89	*Litsealaeta* (Wall. ex Nees) Hook.f.	Lauraceae	Tree	2
90	*Macaranga peltata* (Roxb.*)* Müll.Arg.	Euphorbiaceae	Tree	8
91	*Mallotusphilippensis*(Lam.) Müll.Arg.	Euphorbiaceae	Tree	19
92	*Mangifera indica* L.	Anacardiaceae	Tree	35
93	*Memecylonedule*Roxb.	Melastomataceae	Tree	26
94	*Miliusa tomentosa* (Roxb.) J. Sinclair	Annonaceae	Tree	2
95	*Mimosa pudica L.*	Fabaceae	Herb	50
96	*Murrayapaniculata* (L.) Jack	Rutaceae	Tree	45
97	*Musa acuminata Colla*	Musaceae	Shrub	5
98	*Neolitseafoliosa*(Nees) Gamble	Lauraceae	Tree	6
99	*Nervilia concolor* (Blume) Schltr.	Orchidaceae	Herb	19
100	*Nothopegiaheyneana* (Hook. f.) Gamble	Anacardiaceae	Tree	2
101	*Oplismenuscompositus* (L.) P.Beauv.	Poaceae	Herb	60
102	*Oxalis corniculata* L.	Oxalidaceae	Herb	12
103	*Phaulopsis imbricata* (Forssk.) Sweet	Acanthaceae	Herb	13
104	*Phoenix loureiroi*Kunth	Arecaceae	Shrub	12
105	*Phyllanthus emblica*L.	Phyllanthaceae	Tree	18
106	*Phyllanthus kozhikodianus*Sivar. &Manilal	Phyllanthaceae	Herb	23
107	*Phyllanthus maderaspatensis*L.	Phyllanthacae	Herb	37
108	*Phyllanthus sps*	Phyllanthacae	Herb	12
109	*Piper nigrum* L.	Piperaceae	Herb	2
110	Polyalthiacerasoides (Roxb.) Bedd.	Annonaceae	Tree	50
111	*Pongamia pinnata* (L.) Pierre	Fabaceae	Tree	51
112	*Protium serratum* (Wall. ex Colebr.) Engl.	Burseraceae	Tree	24
113	*Psydraxdicoccos* Gaertn.	Rubiaceae	Tree	12
114	*Pterocarpus marsupium*Roxb.	Fabaceae	Tree	2
115	*Pterospermumxylocarpum*(Gaertn.) Sant. &Wagh	Sterculiaceae	Tree	3
116	*Pueraria tuberosa* (Willd.) DC.	Fabaceae	Climber	5
117	*Randiadumetorum*(Retz.) Poir.	Rubiaceae	Tree	12
118	*Rehmanniaglutinosa*(Gaertn.) DC.	Plantaginaeae	Herb	24
119	*Rotheca serrata* (L.) Steane&Mabb.	Lamiaceae	Tree	42
120	*Rubia cordifolia* L.	Rubiaceae	Herb	24
121	*Ruelliaprostrata* Poir.	Acanthaceae	Herb	18
122	*Rungia repens* (L.) Nees	Acanthaceae	Herb	27
123	*Schleicheraoleosa* (Lour.) Merr.	Sapindaceae	Tree	14

S.No	Species Name	Family	Habit	No. of Plants
124	*Semecarpus anacardium* L.f.	Anacardiaceae	Tree	2
125	*Sida acuta* Burm.f.	Malvaceae	Herb	46
126	*Sida cordata* (Burm.f.) Borss.Waalk.	Malvaceae	Herb	51
127	*Sida cordifolia* L.	Malvaceae	Herb	49
128	*Smilax zeylanica*L.	Smilacaceae	Climber	37
129	*Solanum torvum Sm.*	Solanaceae	Shrub	24
130	*Solanum donianum* Walp.	Solanaceae	Tree	26
131	*Spermacocehispida* L.	Rubiaceae	Herb	24
132	*Spermacocepusilla* Wall.	Rubiaceae	Herb	28
133	*Spermadictyonsuaveolens*Roxb.	Rubiaceae	Shrub	26
134	*Synedrellanodiflora* (L.) Gaertn.	Asteraceae	Herb	24
135	*Syzygiumcumini*(Linn.) Skeels.	Myrtaceae	Tree	26
136	*Syzygiumheyneanum (Duthie) Wall. ex Gamble*	Myrtaceae	Tree	24
137	*Terminalia alata*Heyne ex Roth	Combretaceae	Tree	2
138	*Terminalia arjuna* (Roxb. ex DC.) Wight &Arn.	Combretaceae	Tree	3
139	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Tree	4
140	*Terminalia chebula* Retz.	Combretaceae	Tree	6
141	*Terminalia tomentosa* Wight &Arn.	Combretaceae	Tree	1
142	*TriumfettapentandraA.Rich.*	Malvaceae	Herb	38
143	*Urena lobata* L.	Malvaceae	Herb	26
144	*Vernonia cinerea* (L.) Less.	Asteraceae	Herb	56
145	*Wendlandiagamblei*Cowan	Rubiaceae	Tree	15
146	*Wrightia arborea* (Dennst.) Mabb.	Apocynaceae	Tree	2
147	*Xantolis tomentosa* (Roxb.) Raf.	Sapotaceae	Tree	5
148	*Ximenia americana* L.	Olacaceae	Tree	6
149	*Xyliaxylocarpa* (Roxb.)Taub.	Fabaceae	Tree	10
150	Ziziphus jujuba Mill.	Rhamnaceae	Tree	12
151	*Ziziphus oenoplia*(L.) Mill.	Rhamnaceae	Climber	15
152	*Ziziphus rugosa* Lam.	Rhamnaceae	Climber	18
			Total	**2557**

4.2 DETAILS OF FAUNA

Fauna is all of the animal life present in a particular region or time. The corresponding term for plants is flora, and for fungi, it is funga. Flora, fauna, funga and other forms of life are collectively referred to as biota. Zoologists and paleontologists use fauna to refer to a typical collection of animals found in a specific time or place, e.g. the "Sonoran Desert fauna" or the "Burgess Shale fauna". Paleontologists sometimes refer to a sequence of faunal stages, which is a series of rocks all containing similar fossils. The study of animals of a particular region is called faunistics.

Press Information Bureau
Government of India
Ministry of Environment, Forest and Climate Change
India submits Sixth National Report to the Convention of Biological Diversity (CBD)

29 DEC 2018 5:40PM by PIB Delhi

India today submitted its Sixth National Report (NR6) to the Convention on Biological Diversity (CBD). The report was submitted online to the CBD Secretariat by the Union Environment Minister, Dr. HarshVardhan, during the inaugural session of the 13th National Meeting of the State Biodiversity Boards (SBBs) organized by the National Biodiversity Authority (NBA) in the Ministry of Environment, Forest and Climate Change (MoEFCC), New Delhi. The Minister also released the document 'Progress on India's National Biodiversity Targets: A Preview' on the occasion.

Speaking at the inaugural session Dr. Harsh Vardhan, said that India is among the f**irst five countries in the world, the first in Asia and the first among the biodiversityrich megadiverse countries to have submitted NR6 to the CBD Secretariat**. "While globally, biodiversity is facing increasing pressure on account of habitat fragmentation and destruction, invasive alien species, pollution, climate change and oversuse of resources, India is one of the few countries where forest cover is on the rise, with its forests teeming with wildlife. I am also happy to note that India is ***on track t***o achieve the biodiversity targets at the national level and is also contributing significantly towards achievement of the global biodiversity targets", said the minister.

Submission of national reports is a mandatory obligation on Parties to international treaties, including CBD. As a responsible nation, India has never reneged on its international commitments and has earlier submitted on time five National Reports to the CBD. Parties are required to submit their NR6 by 31 December 2018.

The NR6 provides an update of progress in achievement of 12 National Biodiversity Targets (NBT) developed under the Convention process in line with the 20 global Aichi biodiversity targets. Briefly, the Report highlights that while India has exceeded/overachieved two NBTs, it is on track to achieve eight NBTs and in respect of the remaining two NBTs also, India is striving to meet the targets by the stipulated time of 2020.

With well over 20 percent of its total geographical area under biodiversity conservation, India has exceeded the terrestrial component of 17 percent of Aichi target 11, and 20 percent of corresponding NBT relating to areas under biodiversity management. Similarly, India has also made noteworthy achievement towards NBT relating to access and benefit sharing (ABS) by operationalising the Nagoya Protocol on ABS. Having published the first internationally recognized certificate of compliance (IRCC) under the Protocol in 2015, India has since published nearly 75% of the IRCCs published so far on ABS Clearing House. Thus, in respect of these two NBTs (6 and 9), the progress made by India has exceeded the targets.

India has done well on raising awareness about biodiversity, which is an important thrust area in several programmes of the Government. As a megadiverse country harbouring nearly 7-8% of globally recorded species while supporting 18% of the global human population on a mere 2.4% of the world's land area, India's quest for inclusive economic development while maintaining integrity of its natural capital is being pursued through various programmes and strategies. Measures have been adopted for sustainable management of agriculture, fisheries and forests, with a view to provide food and nutritional security to all without destroying the natural resource base while ensuring intergenerational environmental equity. Programmes are in place to maintain genetic diversity of cultivated plants, farms livestock and their wild relatives, towards minimising genetic erosion and safeguarding their genetic diversity. Mechanisms and enabling environment are being created for recognising and protecting the vast heritage of coded and oral traditional knowledge relating to biodiversity for larger human welfare while safeguarding the interests and rights of the local communities as creators and holders of this knowledge.

India has been investing a huge amount on biodiversity directly or indirectly through several development schemes of the Central and State Governments, to the tune of Rs 70,000 crores per annum as against the

estimated annual requirement of nearly Rs 1,09,000 crores. India has nearly two third of the population of wild tigers in the world. The population of lion has risen from 177 in 1968 to over 520 in 2015, and elephants from 12,000 in 1970s to 30,000 in 2015. One-horned Indian Rhino which was on the brink of extinction during the early 20th century, now number 2400. Further, while globally over 0.3 % of total recorded species are critically endangered, in India only 0.08% of the species recorded are in this category. India is committed to protecting its rich heritage of biodiversity which are so vital to our economic and social development.

Details of Phylum in the World & in India

Taxonomic group	World species	Indian species	% in India
PROTISTA			
Protozoa	31250	2577	8.24
Total (Protista)	**31250**	**2577**	**8.24**
ANIMALIA			
Mesozoa	71	10	14.08
Porifera	4562	486	10.65
Cnidaria	9916	842	8.49
Ctenophora	100	12	12
Platyhelminthes	17500	1622	9.27
Nemertinea	600		
Rotifera	2500	330	13.2
Gastrotricha	3000	100	3.33
Kinorhyncha	100	10	10
Nematoda	30000	2850	9.5
Nematomorpha	250		
Acanthocephala	800	229	28.62
Sipuncula	145	35	24.14
Mollusca	66535	5070	7.62
Echiura	127	43	33.86
Annelida	12700	840	6.61
Onychophora	100	1	1
Arthropoda	987949	68389	6.9
Crustacea	35534	2934	8.26
Insecta	853000	53400	6.83
Arachnida	73440		7.9
Pycnogonida	600		2.67
Pauropoda	360		
Chilopoda	3000	100	3.33
Diplopoda	7500	162	2.16
Symphyla	120	4	3.33
Xiphosura	4	2	50
Phoronida	11	3	27.27
Bryozoa (Ectoprocta)	4000	200	5
Endoprocta	60	10	16.66
Brachiopoda	300	3	1
Pogonophora	80		

Praipulida	8		
Pentastomida	70		
Chaetognatha	111	30	27.02
Tardigrada	514	30	5.83
Echinodermata	6223	765	12.29
Hemichordata	120	12	10
Chordata	48451	4952	10.22
Protochordata (Cephalochordata+Urochordata)	2106	119	5.65
Pisces	21723	2546	11.72
Amphibia	7533	350	4.63
Reptilia	5817	456	7.84
Aves	9026	1232	13.66
Mammalia	4629	390	8.42
Total (Animalia)	**1196903**	**868741**	**7.25**
Grand total (Protosticta+Animalia)	**1228153**	**871318**	**7.09**

Faunal diversity of Andhra University Campus 2017-2018

S.No	Scientific name	Common name	Family	Phylum
1	*Pheretima posthuma*	Earthworm	Megascolecidae	Annelida
2	*Hirudo medicinalis*	Leeches	Glossiphoniidae	Annelida
3	*Papilio gigon*	Butterfly	Papilionidae	Arthropoda
4	*Junonia lemonias*	Lemon pansy	Nymphalidae	Arthropoda
5	*Micronia aculeata*	Moths	Uraniidae	Arthropoda
6	*Diplacodes trivialis*	Dragon flies	Libellulidae	Arthropoda
7	*Calopteryx splendens*	Damselflies	Calopterygidae	Arthropoda
8	*Calliphora vomitoria*	Houseflies	Calliphoridae	Arthropoda
9	*Bactrocera cucurbitae*	Fruit fly	Tephritidae	Arthropoda
10	*Argiope anasuja*	Spider	Araneidae	Arthropoda
11	*Holocnemus pluchei*	Spider	Araneidae	Arthropoda
12	*Polyspilota aeruginosa*	Grasshopper	Mantidae	Arthropoda
13	*Solenopsis*	Red ant fire ant	Formicidae	Arthropoda
14	*Apis indica*	Honeybee	Apidae	Arthropoda
15	*Ho1ento1a tamulus*	Scorpion	Scorpionidae	Arthropoda
16	*Helixpomatia molluscus*	Snails	Gastropoda	Mollusca
17	*Calotes versicolor*	Garden lizard	Agamidae	Reptelia

Faunal diversity of Andhra University Campus 2017-2018

18	*Chamaeleo calyptratus*	Chameleon	Chamaeleonidae	Reptelia
19	*Ptyas mucosa*	Rat snake	Colubridae	Reptelia
20	*Naja naja*	Cobra	Elapidae	Reptelia
21	*Lissemys punctata*	Tortoise	Trionychidae	Reptelia
22	*Varanus varius*	Monitor lizard	Varanidae	Reptelia
23	*Ardea alba modesta*	Crane	Ardeidae	Aves
24	*Ardeola grayii*	Indian crane	Ardeidae	Aves
25	*Psi1acula krameri*	Parrot	Psittaculidae	Aves
26	*Halcyon smyrnensis*	Kingfisher	Alcedinidae	Aves
27	*Passer domesticus*	Sparrows	Passeridae	Aves
28	*Columba livia domestica*	Pigeons/Doves	Columbidae	Aves
29	*Corvus splendens*	Crow	Corvidae	Aves
30	*Acridotheres tristis*	Indian myna	Sturnidae	Aves
31	*Clanga hastata*	Eagle	Accipitridae	Aves
32	*Buteo jamaicensis*	Hawk	Accipitridae	Aves
33	*Ra1us norvegicus*	Rat	Muridae	Mammal
34	*Funambulus palmarum*	Squirrel	Sciuridae	Mammal

Types of Phylum in Andhra University in 2018

Sr. No.	Phylum	Total of 2018
1	Annelida	2
2	Arthropoda	13
3	Aves	10
4	Mammal	2
5	Mollusca	1
6	Reptelia	6
	Total	**34**

5 Water Report of Andhra University

Andhra University is reducing water usage and benefits through its water efficiency measures. To that end, it is hoped that the results of the study would benefit the policy and planning authorities in Andhra University in optimizing the existing water resources for campus development.

The Critical factors in green design, construction, and product selection, according to McGraw-Hill Construction's latest Smart Market Report, are water efficiency and onservation over the next five years. According to reports released, of the all other aspects of green building, water efficiency is rapidly becoming a higher priority over energy efficiency and waste [Water's Role in Green Building, 2009]. According to the United Nations Environmental Program, on the ongoing basis buildings are responsible for 30-40 % of energy use and 15-20 % of water use worldwide [Sumateja Reddy.V, 2016& Levine, A.D., and T. Asano, 2004], a resource that becomes scarcer each year.

Per capita water availability as per the National Commission of Integrated Water Resources Development (NCIWRD) projection, the urban water demand in 2025 and 2050 has been assessed at 200 and 220 lpcd [GRIHA manual, 2017]. The requirement of a total daily supply of about 8 gallons per person for a day is essential for good health and cleanliness, according to the World Health Organization (WHO) [UNESCO 2003 & Bahar Zoghi Moghadam, 2009]. Water efficiency strategies in green building practices are becoming paramount to new and existing construction efforts.

5.1 The Energy, Water and Global Warming Connection

The collection, distribution, and treatment of drinking water and wastewater citywide consume tremendous amounts of energy and release carbon dioxide (Co). The energy-water connection is particularly strong in the driest regions 2 where significant amounts of energy are used to import water. Solutions exist to cut both water and energy use. Nationwide, about 4% [Water facts, 2009] of power generation is used for water supply and treatment, reducing water consumption saves energy because less water needs to be treated and pumped to end users.

The University is spread in a sprawling lush green campus of 423.15 acres dotted with 121 buildings of Academic, Administrative and support services with a plinth area of about 20 lakhs sq. ft., and 324 staff quarters. Approximately strength of student and staff is 50,000.

Water usage can be defined as water used for all activities which are carried out on campus from different water sources. This includes usage in all residential halls, academic buildings, on-campus, and on-grounds. Wastewater is referred to as the water which is transported off the campus. The wastewater includes sewerage; residence water used in cooking, showering, clothes washing as well as wastewater from chemical and biological laboratories which ultimately go down in the sink or drainage system.

5.2 Water Quality

Primary Water Quality Criteria for Bathing Waters, in a water body or its part, water is subjected to several types of uses. Depending on the types of uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various types of uses there is one use that demands highest level of water quality or purity and that is termed as "Designated Best Use" in that stretch of water body. Based on this, water quality requirements have been specified for different uses in terms of primary water quality criteria. The primary water quality criteria for bathing water are specified along with the rationale in table 1. PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER (Water used for organized outdoor bathing) CRITERIA

1. Fecal Coliform MPN/100 ml: 2. Fecal Streptococci MPN/100 ml:
2. pH
3. Dissolved Oxygen:
4. Biochemical Oxygen

The desirable and permissible limits are suggested to allow for fluctuation in environmental conditions such as seasonal change, changes in flow conditions etc. The range provides protection to the skin and delicate organs like eyes, nose, ears etc. which are directly exposed during outdoor bathing. The minimum dissolved oxygen concentration of 5 mg/1 ensures reasonable freedom from oxygen consuming organic pollution immediately upstream which is necessary for preventing production of anaerobic gases (obnoxious gases) from sediment. The Biochemical Oxygen Demand of 3 mg/1 or less of the water ensures reasonable freedom from oxygen demanding pollutants and prevent production of obnoxious gases.

5.3 Drinking Water Quality

The ground water of Indore contains Designated Best Use Water Quality Criteria Designated-Best-Use Class of water Criteria Drinking Water Source without conventional treatment but after disinfection

- Total Coli Forms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20C 2mg/l or less Outdoor bathing (Organized)
- Total Coli Forms Organism MPN/100ml shall be 500 or less pH between 6.5 and 8.5 Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20C 3mg/l or less Drinking water source after conventional treatment and disinfection
- Total Coli Forms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20C 3mg/l or less Propagation of Wild life and Fisheries
- pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less Irrigation, Industrial Cooling, Controlled Waste disposal
- pH between 6.0 to 8.5 Electrical Conductivity at 25C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l.
-

5.4 Electrical Conductivity:

The lowest value of E.C (µS/cmat 250C) was recorded at Gudem village as 110. Higher values of E.C more than 3,000 recorded as 3,263 at Addaroad village, 3,202 at Pudimadaka village, and 3,150at Revupolavaram village. The EC increases from north to south i.e. towards Coast. Higher values of E care recorded at Addaroad, Pudimadaka, and Revupolavaram.

The lowest value of chloride recorded as 7 mg/l at Kottur and higher value was recorded at Pudimadaka village as 674 mg/l. The concentrations of Nitrates in the district range from a minimum of 0.4 mg/l at Lotugadda village, to maximum value of 249 mg/l at Pudimadaka. Fluoride in the area ranges from 0.04 to 1.6mg/l, by and largethearea is free from fluoridehazards. The lowest value of 0.04 mg/lisre corded at Gudem village and maximum value of1.6mg/lre corded at Narsipatnam.

5.5 GROUND WATER RELATED ISSUES AND PROBLEMS

Overall, there is no significant change in water levels in the district. However, at few places decline in water table exists, which suggests that suitable preventive steps to be taken. However, the magnitude of the decline is less. Water logging does not exist in University campus area.

Ground water pollution is not significant in the non-industrial area of the district. However, localized Nitrate pollution in the district is due to excess use of fertilizers, urban sewerage disposal and improper drainage system. Though district has a coastline of 132 km, no significant sea water intrusion/ ingress is reported. Heavy metal pollution of ground water exists in the Mindi-Chukkavanipalem industrial area due to the industrial effluents. In old city area of Visakhapatnam i.e. Kotaveedhi, Gnanapuram etc. ground water is already contaminated due to the marshy nature. In such areas well should be limited to shallow zones only.

Mass awareness programmes may be conducted to aware the people to adopt for construction of roof top water harvesting in a large scale so that rainwater can be harvested, and it will increase ground water resource. In Visakhapatnam Urbanarea it is evident from the investigations carried out by various agencies and scientific scholars the groundwater has also polluted within the vicinity of industries due to industrial effluents released without proper treatment. It is also reported the polluted ground water affecting adversely the human health of the people who are living in the industrial areas. So, it is recommended industry wise systematic micro level ground water quality studies may be taken up immediately and remedial measures may be taken up by the Government organizations and also the agencies involved in water related issues. Strict measures should be implemented to ensure the industrial effluents are properly treated before discharging into canals/surface drainage.

Total hardness includes both temporary and permanent hardness caused by the calcium and magnesium, based on which water is categorized as soft or hard and very hard. Several epidemiological investigations have demonstrated the relation between risk for cardiovascular disease, growth retardation, reproductive failure, and other health problems and hardness of drinking water or its content of magnesium and calcium. A good percentage of people who consumes hard water, which is considered to be a significant etiological factor around the globe causing many diseases such as cardiovascular problems, diabetes, reproductive failure, neural diseases, and renal dysfunction and so on.

Table 1 Concentrations of dissolved calcium and magnesium in soft and hard water.

Dissolved calcium and magnesium		
Water	**Milligrams per liter (mg/l)**	**Grains per US gallon (gpg)**
Soft	0-60	0-3.5
Moderate	61-120	3.5-7.0
Hard	121-180	7.0-10.5
Very hard	>180	>10.5
1 ppm=0.058 grains/US gallon		

5.5.1 pH value:

A pH of 7 is considered neutral. That “seven” number is considered neutral or balanced between acidic and alkaline. If water is below 7 on the pH scale, it's "acidic." If it's higher than 7, it's "alkaline." EPA guidelines state that the pH of tap water should be between 6.5 and 8.5.

Acidic water with a pH of less than 6.5 is more likely to be contaminated with pollutants, making it unsafe to drink. It can also corrode (dissolve) metal pipes.
Many municipal water suppliers voluntarily test the pH of their water to monitor for pollutants, which may be indicated by a changing pH. When pollutants are present, water companies treat their water to make it safe to drink again.

5.5.2 Alkaline water

Alkaline water has become a popular drinking water choice over the past few years. Some people say that drinking slightly alkaline water — with a pH between 8 and 9 — can improve your health. They say it may make you age more slowly, maintain a healthy pH in your body, and block chronic disease.

5.5.3 Electrical Conductivity of Water

Pure water is not a good conductor of electricity. Ordinary distilled water in equilibrium with carbon dioxide of the air has a conductivity of about 10 x 10-6 W-1*m-1 (20 dS/m). Because the electrical current is transported by the ions in solution, the conductivity increases as the concentration of ions increases.
Electrical conductivity (EC) is a measurement of water's ability to conduct electricity. EC is related to water temperature and the total concentration, mobility, valence and relative concentration of ions. Higher EC means more electrolytes in the water.
The reason that the conductivity of water is important is because it can tell you how much dissolved substances, chemicals, and minerals are present in the water. Higher amounts of these impurities will lead to a higher conductivity.

Types of water	Conductivity Value
Pure distilled and Deionized water	0.05 µS/cm
Seawater	50 mS/cm
Drinking water	200 to 800 µS/cm.
Rain or Snow water	2 to 100 µS/cm

Water Consumption in Andhra University, Visakhapatnam, Andhra Pradesh

WATER CONSUMPTION				
Sr. No.	**PUMP LOCATION**	**PUMPING HOURS (IN HOURS)**	**PUMPING CAPACITY IN HP**	**OVERHEAD TANK CAPACITY**
1	Main Pump House(Near A.U. Health Centre)	10 Hours	35 HP	350 KL
2	Victory Tank (Near C.A.O. Office)	7 Hours	15 HP	60 KL
3	Library Pump House	8 Hours	35 HP	200 KL
4	Seasand Pump House	5 Hours	15HP	30 KL
5	Pithapuram Pump Hosue	5 Hours	15HP	25 KL

6	Bhagiradha Pump House	4 Hours	15HP	40KL
7	Ladies Hostel (Maharanipeta)	6 Hours	30 hp	100 KL
8	Main Pump House (Near Gandhi Bhavan)	10 Hours	15 HP	140 KL
9	4,5, Pump House (Ladies Hostel Backside)	10 Hours	15 HP	160 KL
10	Near Mechanical Engineering Pump House	4 Hours	15 HP	150 kl
11	Vidya Hostel Pump shed	6 Hours	7.5 HP	100 KL

5.6 Rain Water Harvesting Andhra University Campus, Visakhapatnam

The Andhra University is one of the oldest premier educational institutions in the country, constituted in the year 1926 by the Madras Act of 1926. The 93-year-old institution works with the vision of creating new frontiers of knowledge in quest for development of a humane and just society. The University has more than 66 academic departments and centres as part of the constituent colleges: Arts, Commerce & Management, Law, Science & Technology and Engineering & Pharmacy. Institute of Yoga & Consciousness, a world class yoga village, caters to the emotional and physical health of the citizens of Visakhapatnam. The University promotes Fine Arts and Performing Arts through the Department of Fine Arts, Music, Dance and Theatre. Center of Environment, Sustainable Development and climate Change is the recent addition to extend the academic and extensive services to the government and society. The University is spread in a sprawling campus of 422 acres dotted with 170 buildings of academic, administrative and support services and 258 staff quarters with a roof top area of about 20 lakhs sq.ft.

More than 7000 students and 600 staff with their family members are residing in the campus. The area comprises of North and South campuses of the Andhra University which is surrounded by several residential colonies viz., Pithapuram Colony, Naukanagar, Chinna Waltair, HPCL Colony, Panduranga Puram, Siripuram, BalajiNagar, Resuvanipalem and Maddilapalem with a population of approximately 3,00,000. The layout of the Andhra University is depicted in the Figure 1. The Google Earth image of the Andhra University campus is shown in Figure. Total number of rain water harvesting pits is 16 in north campus.

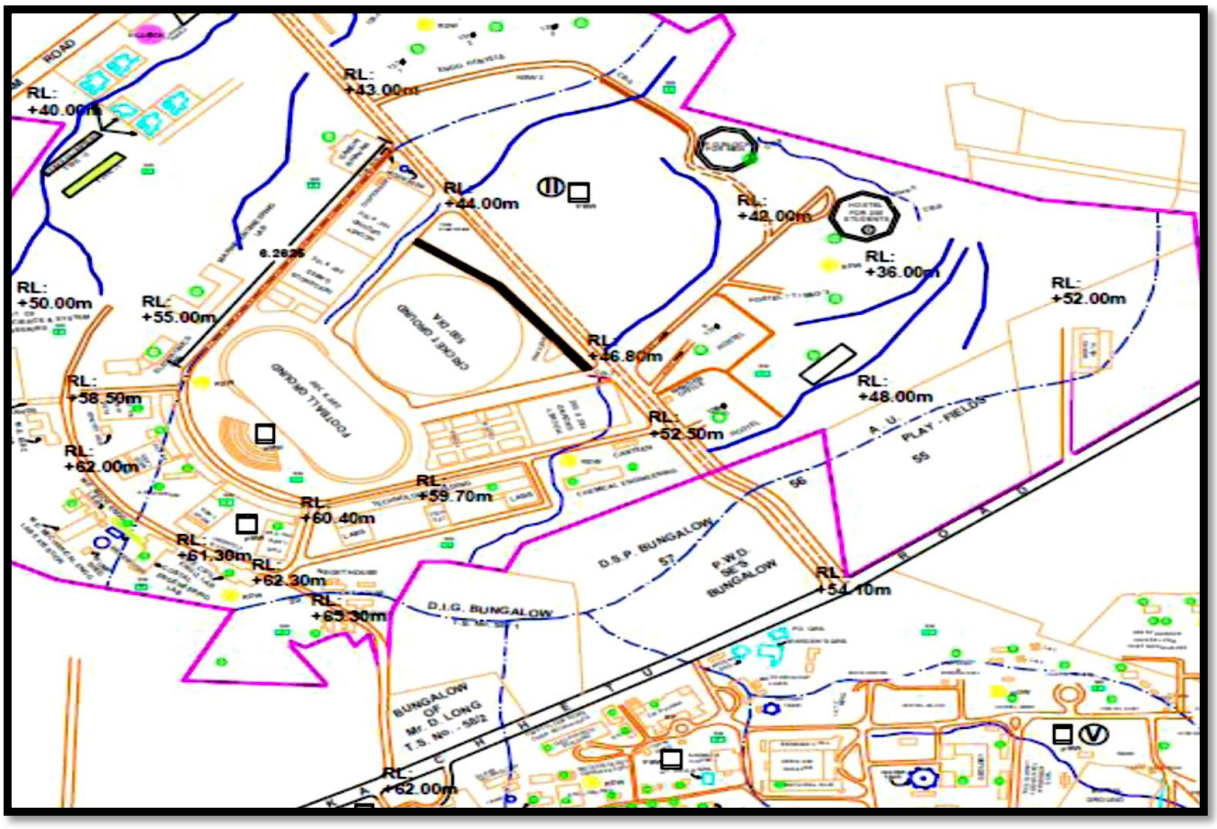

Figure 1: Andhra University Campus Layout along with the adjoining areas.

Figure 2: Google Image of the Andhra University Campus

5.6.1 THE ANDHRA UNIVERSITY: RAIN WATER HARVESTING

The campus is located in an upland area on the east coast and the ground levels vary from + 72.00 m to +10.00 m making it a sloppy terrain. The contour differences are about 30 m in the northern portion and 50m in the southern portion of the campus. The contour map is presented in the Figure 3. The entire university area is covered with red loamy, laterite and sandy soils

with high porosity and infiltration capacity. Red soils are formed from the parent khondalite rock whereas the sandy soils are confined to sea coast. Uneven land topography with gullied nature is observed. The hilly terrain contains a thin veneer of hydrophilic soils which supports luxuriant forest vegetation. The hilly terrain contains a thin layer of hydrophilic soils supporting forest vegetation. Table 1 shows the results of the geophysical studies conducted at different locations in the university campus. The details of the geological strata of the Andhra University area along with its immediate neighbourhood are shown pictorially in Figure 4 and Figure 5. The ground water pathways are shown in Figure 6. The micro watersheds in the university campus are shown in Figure 7.

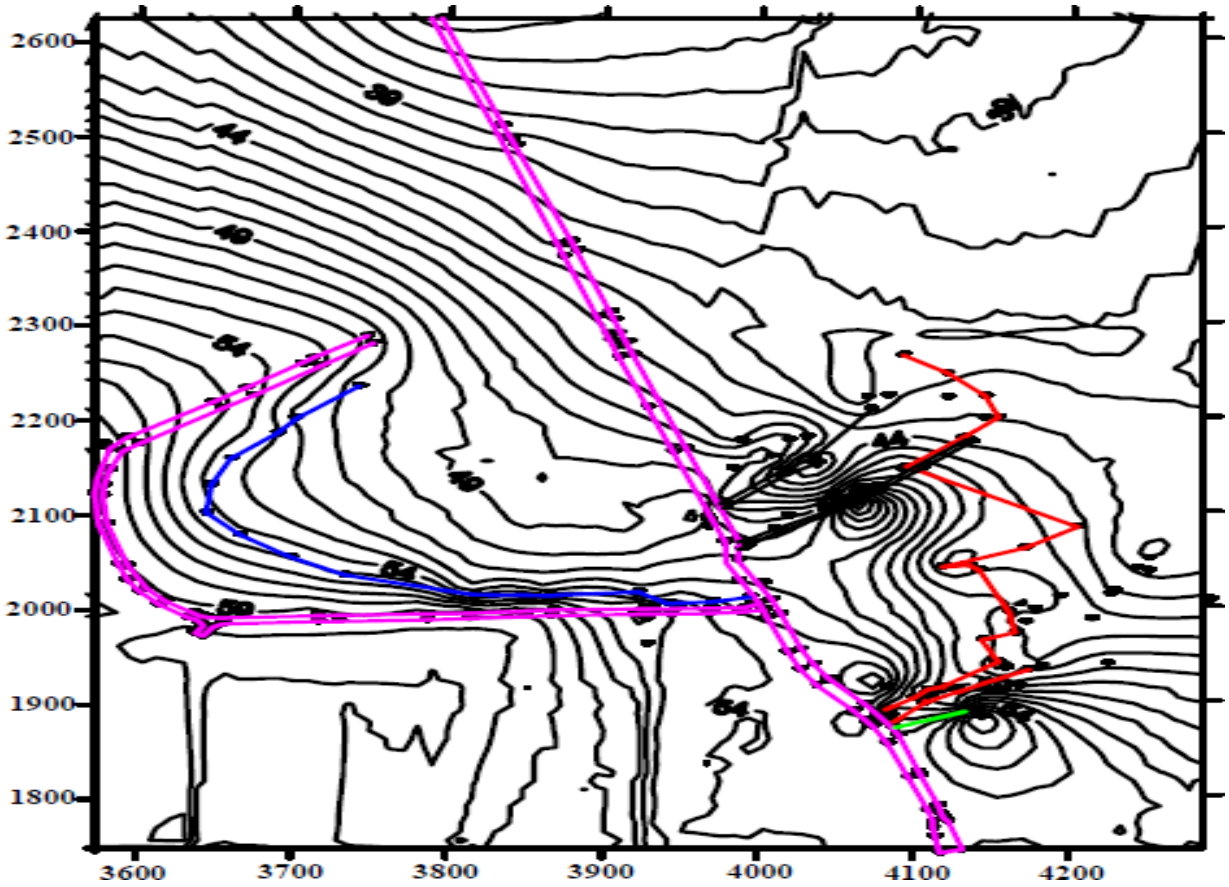

Figure 3: The Contour Map of Andhra University, Visakhapatnam.

The campus receives a total rainfall of 1121.60 mm per year on an average. The rainfall is distributed over 118 rainy days with maximum amount of rainfall occurring during months July to October every year. Owing to the varied topographical features most of the rainfall goes without tapped and utilized properly. On the other hand, to support the needs of nearly 9000 students, faculty and supporting staff residing in the campus and for other activities the university requires approximately 20 lakh litres of water per day. The groundwater sources of the university at present are able to supply only 7 to 9 lakh litres per day, the remaining amount of water being supplied by the municipal corporation at a specified rate. The university is

located on a dome like geological terrain surrounded by number of residential colonies on all sides; the effective recharging of rainwater in the campus may enrich the groundwater table in the surrounding colonies benefiting two to three lakhs of people residing there. Therefore, keeping in view of the above cited figures, there is a necessity to adopt and implement suitable rainwater harvesting systems through systematic study to tap the groundwater recharge potential at the campus. Hence, the Andhra University implemented the 'Catch the Rain' program through an effective RWH system in its campus.

The RWH systems in place in the Andhra University campus are i) Construction of suitable rainwater harvesting structures of different types like recharge wells, pits, check dams etc. throughout the campus; ii) Providing monitoring wells in the area of influence to study the water level fluctuations at regular intervals of time; and iii) dissemination of the knowledge gained through the RWH project and creating awareness in the society for proper management of groundwater resources.

Table 1: Results of Geophysical Studies Conducted at Different Places in Andhra University Campus.

Depth (ft)	Type of Soil/Rock				
	NCC Camp Office	**CSE Department**	**Samatha Hostel**	**Dispensary, AU South Campus**	**Assembly Hall**
0-10	Gravel	Gravel	Gravel	Gravel	Gravel
10-20	Gravel	Gravel	Gravel	Gravel	Gravel
20-30	Weathered Charnockite	Gravel	Gravel	Gravel	Weathered Liptinite
30-40	Weathered Charnockite	Loamy RedSoil	Gravel	Highly Weathered Liptinite	Weathered Liptinite
40-50	Weathered Charnockite	Loamy RedSoil	Red Loamy	Highly Weathered Liptinite	Weathered Liptinite
50-60	Weathered Charnockite	Highly Weathered Khondalite	Red Loamy	Weathered Liptinite	Weathered Liptinite
60-70	Fractured Charnockite	Highly Weathered Khondalite	Red Loamy	Weathered Liptinite	Fractured Liptinite
70-80	Fractured Charnockite	Highly Weathered Khondalite	Red Loamy	Weathered Liptinite	Fractured Liptinite
80-90	Fractured Charnockite	Highly Weathered Khondalite	Highly Weathered Khondalite	Fractured Liptinite	Fractured Liptinite
90-100	Fractured Charnockite	Weathered Khondalite	Highly Weathered Khondalite	Fractured Liptinite	Fractured Liptinite

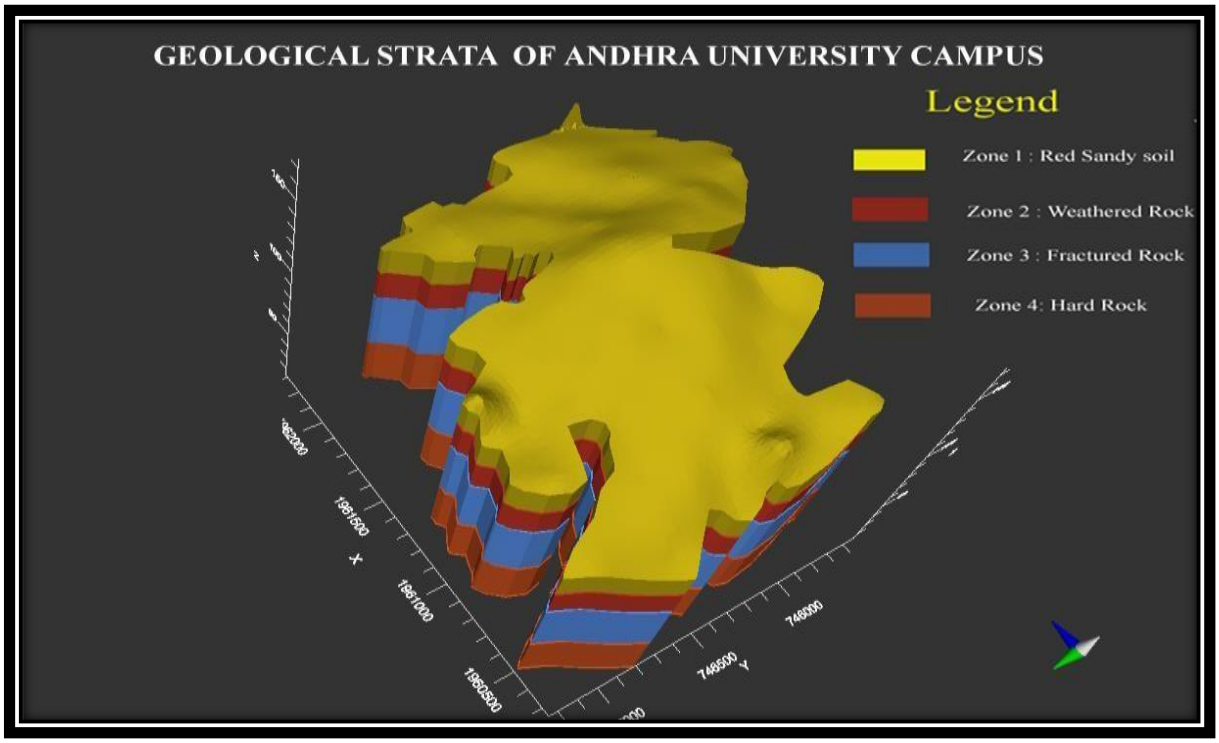

Figure 4: Geological Strata of Andhra University Campus

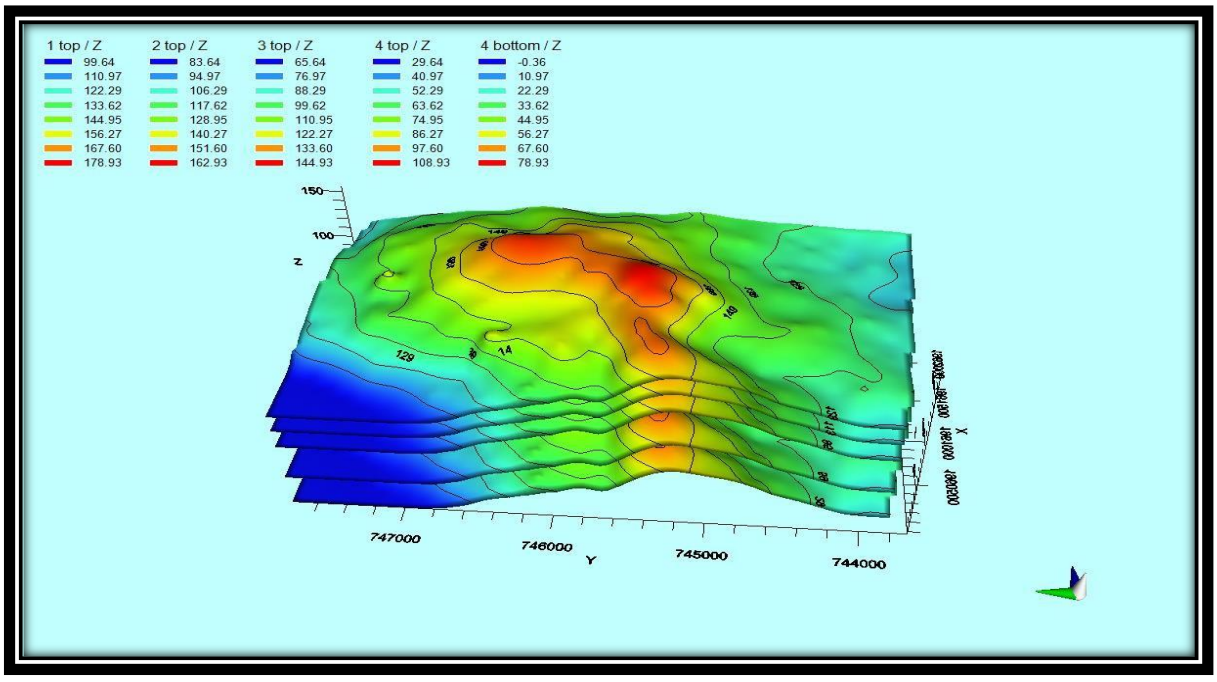

Figure 5: Geological Strata of the Andhra University along with its Neighbourhood

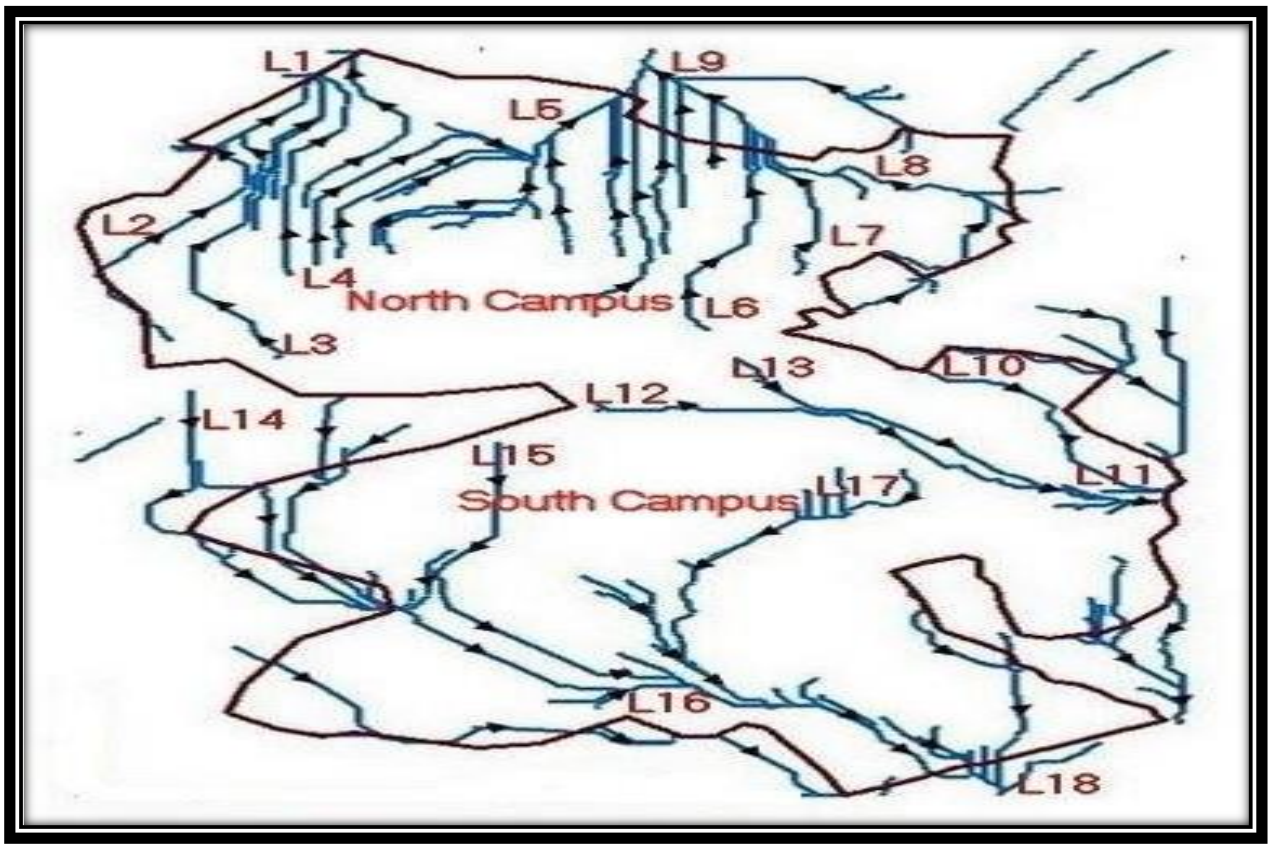

Figure 6: Groundwater Flow Pathways in the Andhra University, Visakhapatnam

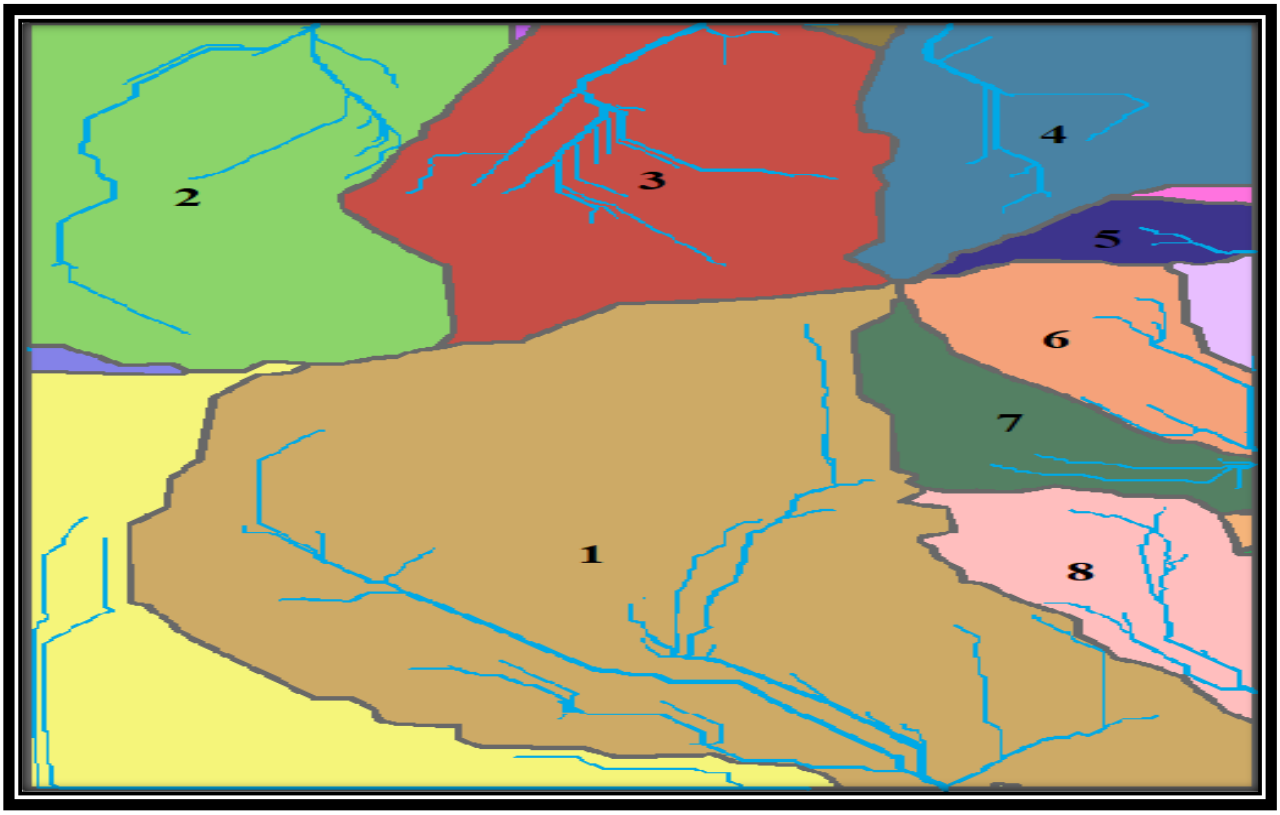

Figure 7: Delineation of Micro Watersheds in the University Campus

The major buildings in each of the watershed of the Andhra University campus are identified for placing the RWH systems. The topographical characteristics of the micro-watersheds are shown in Table 3. The details of identified major buildings in each of the watersheds are given in Table 4. The order of the channels or water courses or streams passing through the campus are presented in Table 5.

Table 3: Topographic Characteristics of the Micro-Watersheds

Micro watershed	*Area(km^2)*	*Minimum elevation (m MSL)*	*Maximumelevation (m MSL)*
MW1	0.781	8	75
MW2	0.306	38	75
MW3	0.282	38	75
MW4	0.182	38	60
MW5	0.005	45	60
MW6	0.089	30	60
MW7	0.031	30	60
MW8	0.100	8	45

Table 4: Major buildings/areas in Micro-watershed of the Andhra University, Visakhapatnam

Water shedNo.	**Buildings / Areas covered**	**Watershed No.**	**Buildings / Areas covered**
1	Central administrative office	2	Maddilapalem Gate
	Avula Sambasiva Rao women'shostel		N.C.C. Building
	South Campus Post office		N.C.C. Opposite ground
	Commerce and Managementdepartment		Y.V.S. Murthy auditorium
	Sir CR Reddy convocation hall		Marine Department
	Nagarjuna hostel		ECE Department
	Officer's colony		CSE Department
	HPCL waltair park		CSE new class rooms
	Resident quarters		EEE Department
	A.U. Yoga village		Engineering Exams cell
	Department of Marine LivingResources		Mechanical Department
	A.U. High school		Civil Department
3	P.G. Girls hostel	4	A.U Samatha hostel
	A.U. Engineering boys hostel		A.U International studenthostel
	A.U. Engineering girls hostel		A.U Mamatha law hostel
	A.U. Engineering college ground		
5	Vidya Research Scholars hostel	6	Siddardha hostel
			Sathavahana hostel
			Sri Krishna Devarayahostel
			AU Health centre
7	G.M.C. Balayogi Researchscholars hostels	8	A.U. Platinum Jubilee GuestHouse
	A.U. South Campus Ground		School of Distance Education
	Dept. of Physical Sciences		APCET Office
	Dept. of fine arts		AU International StudentHostel (South Campus)
	T.L.N. Sabha Hall		
	Dept. of Physical education		

Table 5: Stream Order and Number of Streams in the Study Area in each of the Watersheds

Water Shed No.	1 Order streams	2 Order streams	3 Order stream	4 Order streams	Total Streams
1	32	6	2	1	41
2	11	2	1	0	14
3	15	5	1	1	22
4	8	2	1	0	11
5	2	1	0	0	3
6	6	2	0	0	8
7	4	1	0	0	5
8	6	2	1	0	9
Total	84	21	6	2	113

Energy Consumption Details

Electrical Consumption Service No. 048 (South), 265 (North) & 601 (SDE)

2018

		048 (South)			265 (NORTH)			601 (SDE)			TOTAL		
S.NO.	MONTHS	NO. OF UNITS in KVAH CONSUMED	NO. OF UNITS in kWh CONSUMED	AMOUNT PAID	NO. OF UNITS in KVAH CONSUMED	NO. OF UNITS in kWh CONSUMED	AMOUNT PAID	NO. OF UNITS in KVAH CONSUMED	NO. OF UNITS in kWh CONSUMED	AMOUNT PAID	NO. OF TOTAL UNITS KVAH CONSUMED	NO. OF TOTAL UNITS kWh CONSUMED	TOTAL AMOUNT PAID
1	JAN	2,98,884	2,39,107	27,83,339	1,75,950	1,40,760	16,95,130	29,698	23,758	3,31,676	5,04,532	4,03,626	48,10,145
2	FEB	2,44,663	1,95,730	23,54,150	1,27,320	1,01,856	13,10,642	23,752	19,002	2,84,475	3,95,735	3,16,588	39,49,267
3	MAR	2,88,701	2,30,961	27,02,956	1,87,598	1,50,078	17,86,312	27,100	21,680	3,11,131	5,03,399	4,02,719	48,00,399
4	APRIL	3,61,788	2,89,430	33,44,225	2,47,658	1,98,126	23,02,148	40,234	32,187	4,14,383	6,49,680	5,19,744	60,60,756
5	MAY	3,68,208	2,94,566	34,10,648	2,35,410	1,88,328	22,18,675	40,368	32,294	3,65,105	6,43,986	5,15,189	59,94,428
6	JUNE	2,85,792	2,28,634	26,68,214	1,32,728	1,06,182	13,46,532	41,779	33,423	4,25,590	4,60,299	3,68,239	44,40,336
7	JULY	2,77,554	2,22,043	26,03,791	1,22,588	98,070	12,66,788	75,132	60,106	6,88,246	4,75,274	3,80,219	45,58,825
8	AUG	3,72,996	2,98,397	34,87,217	2,09,078	1,67,262	20,16,596	37,094	29,675	3,88,946	6,19,168	4,95,334	58,92,759
9	SEP	3,42,024	2,73,619	31,72,563	2,28,525	1,82,820	21,52,234	40,458	32,366	4,15,611	6,11,007	4,88,806	57,40,408
10	OCT	3,22,848	2,58,278	30,09,946	2,22,443	1,77,954	21,33,274	38,006	30,405	3,96,064	5,83,297	4,66,638	55,39,284
11	NOV	3,21,414	2,57,131	30,30,839	2,06,265	1,65,012	19,75,627	40,432	32,346	4,15,941	5,68,111	4,54,489	54,22,407
12	DEC	3,18,162	2,54,530	29,81,041	2,13,279	1,70,623	19,87,316	28,662	22,930	3,22,899	5,60,103	4,48,082	52,91,256
TOTAL		**38,03,034**	30,42,427	**3,55,48,929**	**23,08,842**	**18,47,074**	**2,21,91,274**	**4,62,715**	**3,70,172**	**47,60,067**	**65,74,591**	**52,59,673**	**6,25,00,270**
AN AVEREAGE		**3,16,920**	**2,53,536**	**29,62,410**	**1,92,404**	**1,53,923**	**18,49,273**	**38,560**	**30,848**	**3,96,672**	**5,47,883**	**4,38,306**	**52,08,356**