Environmental Management System

ISO 14001:2015 Certification

List of Annexure Documents

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University under section 3 of UGC Act 1956)

www.srmist.edu.in

Kattankulathur, Chengalpattu District – 603 203

Tamil Nadu, India.

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Abbreviations

AC	Air Conditioner
AC	Alternate Current
ACP	Automatic Control Panel
AICTE	All India Council for Technical Education
AVR	Automatic Voltage Regulators
Ca	Calcium
CFT	Cross Functional Team
CO	Carbon monoxide
CO_2	Carbon dioxide
CPCB	Central Pollution Control Board
CT	Current Transformer
DC	Direct Current
DCA	Directorate of Campus Administration
E&T	Engineering and Technology
EB	Electricity Board
EMS	Environmental Management System
ETP	Effluent Treatment Plant
GHG	Green House Gas
GW	Groundwater
HC	Hydrocarbon
HT	High Tension
IHM	Institute of Hotel Management
ARD	Automatic Rescue Device
ISO	International Organisation of Standardization
LMO	Liquid Medical Oxygen
LPG	Liquefied Petroleum Gas
LT	Low Tension
MBBR	Moving Bed Biofilm Reactor
MEP	Mechanical Electrical and Plumbing
Mg	Magnesium
MHS	Medical and Health Sciences
MiN	Minor Nonconformity

NC	Nonconformity
NCC	National Cadet Corps
NCR	Nonconformity Report
NGT	National Green Tribunal
NH 45	National Highway - 45
NO_X	Nitrogen Oxides
NRV	Non Return Valve
NSS	National Service Scheme
O_2	Oxygen
OCP(A)	Operational Control Procedure – Abnormal Conditions
OCP(E)	Operational Control Procedure – Emergency Conditions
PCB	Printed Circuit Board
PM	Particulate Matter
PPE	Personal Protective Equipment
PSA	Pressure Swing Adsorption
PT	Potential Transformer
RO	Reverse Osmosis
SOP	Standard Operating Procedure
SO_X	Sulphur Oxides
SPCB	State Pollution Control Board
STP	Sewage Treatment Plant
TNPCB	Tamil Nadu Pollution Control Board
UF	Ultrafiltration
UGC	University Grants Commission
VCB	Vacuum Circuit Breaker
VFD	Variable Frequency Drive
YRC	Youth Red Cross
TV	Television
AD(CL)	Associate Director (Campus Life)
DEOT	Disaster Emergency Operation Team

Annexure 1 - External and Internal Issues

Table A1.1: External issues

External Issue	Information required
Political	Democratic political style. Substantial interference of politics in business development
Economic	Needed resources (gas, fuel, water, electricity, food, and infrastructure) are accessible at reasonable cost
Financial	Access to external financing is rather difficult. Potential research projects receive fund support from Government research bodies.
Competition	Highly competitive market with several reputed institutions.
Supply chain management	Sufficient suppliers for all major raw materials and services see available. The availability eco-friendly certified suppliers are limited.
Market and public demand	The market and public demand is high for certain undergraduate programs and low for few undergraduate programs due to the business opportunities and other aspects.
Social	Access to educated workforce is available and the organization creates significant job opportunities at all levels. There is no gender discrimination.
Cultural	More than 60% of the organization population is away from Tamil Nadu and certain population are from other countries as well. Students from all the religious background exist in the campus. Due to this, minor cultural variations exist among the population. The organization conducts numerous events and programmes on regular basis to reduce the cultural gaps.
Technological	Up to date technology is available but at affordable cost.
Legislative	The organization adopts to the changes brought in by the regulatory bodies such as AICTE, UGC, and comply with state legislations.
Ecological environment	The entrance of main campus nearby the NH45 and Potheri railway station experiences considerable noises from the transportation activities. The expansion of the NH45 interrupts the regular traffic movements. Unforeseen natural/artificial disasters such as flooding, storms, fire accidents etc., has minor impacts on the organization.

Table A1.2: Internal issues

Internal Issue	Information required
Organizational governance and structure	SRM Institute of Science and Technology (Kattankulathur campus) has its organizational governance and structure to plan, implement, control, and improve the various processes performed in the organization.
Policies and strategies	The organisation has various polices for hostel, examination, library, admission, code of conduct, internal complaints committee, research, leave, disciplinary actions, grievance and redressal. The Strategic plan to realize the vision and mission embarks on academic excellence, research excellence, capacity building – faculty and students, global visibility and collaboration, innovation, incubation and entrepreneurship, sustainability and development
Capacity and capability of organization	Infrastructure facilities availability is adequate. Sufficient resources are provided to provide the basic amenities for all the concerned authorities. In few places requirements of skilled workforces is in demand.
Organizational style and culture	Democratic organisational style is adopted. The management allows the employees to participate in the organization decision making process and encourages to consider the employees feedback. Academy Culture is maintained. The management encourages employees to improve their professional competence.
Existing contractual relations of organization	The contractual relationships are maintained as per the compliance obligations of the contracts act through contracts or agreement.

Version control

Effective Date (from)	Description	Version
22.11.2022	External and Internal Issues	01
03.03.2023	External and Internal Issues – Presented as separate annexure document	02

Annexure 2 - EMS Roles and Responsibilities

Responsible person and role – Top management

Dr. T. R. Paarivendhar – Founder Chancellor
Dr. Ravi Pachamoothoo – Pro Chancellor (Administration)
Dr. P. Sathyanarayanan – Pro Chancellor (Academics)
Prof. C. Muthamizhchelvan – Vice Chancellor
Prof. S. Ponnusamy – Registrar
Mr. R. Arunachalam – Estate Officer

Scope

Campus life

Responsibilities

- Demonstrate leadership and commitment with respect to the environmental management system (EMS).
- Establish, implement, monitor, and improve the EMS.
- Allocate the essential resources and support required for the EMS.
- Provide the necessary competence for the people involved in the EMS.
- Assign the roles and responsibilities for the essential personnel required for the EMS.
- Conduct management review and direct the departments to implement the improvement actions for the nonconformities.
- Set the strategic and tactical objectives and key actions for the EMS.
- Communicate the effectiveness of EMS to the internal and external stakeholders.

Responsible person and role

Dr.V.Thirumurugan – EMS Coordinator

Scope

Campus life

Responsibilities

- Communicate the performance of EMS to the internal and external stakeholders.
- Periodically review the status of EMS and suggest recommendations.
- Ensure the EMS receives the appropriate support from the top management.
- Identify, assess, schedule, and provide the necessary support and ensure the completion of all EMS-related tasks.
- Prepare the overall budget for the EMS and submit it to the top management.
- Ensure all the tasks relating to the EMS are identified and completed in a timely manner.
- Verify, approve, and recommend the resources required for the EMS.
- Update the top management about the progress of EMS.
- Oversee the internal and external audits.

Responsible person and role

Dr. S. Gopinath – Management representative (ISO 14001:2015)

Scope

Campus life

Responsibilities

- Establish the framework for the EMS, prepare and maintain the EMS manual.
- Conduct aspect impact study and risk assessment to find the significant impacts.
- Establish the emergency response procedure for all the emergency conditions as per the EMS scope.
- Communicate the performance of EMS as per the standards to the EMS Coordinator
- Conduct regular progress review meeting with the operational heads and CFT members to monitor and measure the performance of EMS as per the established objectives.
- Prepare the EMS performance report.
- Conduct awareness program among the stakeholders about the EMS.
- Organise and conduct internal/external audits, management reviews and submit the reports to the EMS Coordinator.
- Report the risks and opportunities to the EMS Coordinator at regular intervals.
- Retain the essential documented information and records.
- Interact and organise the activities with the certifying body related to the certification process.
- Maintain the ISO 14001:2015 certification status.

Responsible person and role

Dr. A. Bhargavi Haripriya – Assistant Management representative (ISO 14001:2015)

Scope

Campus life

Responsibilities

- Maintain the documented information about the standard operating procedure, operational control procedure and emergency preparedness plan.
- Attend the management review meeting, audit meeting and circulate its minutes.
- Oversee and verify the correctness of EMS manual and audit report.
- Aware and have access to all the essential information about the EMS.
- Update the risk and opportunities register.
- Update the environmental impact assessment register.
- Discuss with the EMS cross functional teams and obtain the necessary records.
- Ensure the availability of important EMS related documents in the institute website for the stakeholders.
- Track the performance of EMS towards the attainment of objectives.

- Provide relevant recommendations for the cross functional team in case of any deviation in their performance towards EMS.

Responsible Person and role – Internal Auditor

1. Dr. S. Balaji
2. Mr. S. Sundar
3. Ms. Lakshmi Prabha. P
4. Dr. A Bhargavi Haripriya
5. Dr. K. Subha Sharmini
6. Dr. R. Senthil Kumar
7. Dr. K. S. Anandh
8. Dr.C.Sudha
9. Dr. S. Gopinath
10. Dr. Periyar Selvam. S
11. Dr. K. Anbalagan
12. Dr. M. Magesh Kumar
13. Dr. Arunachalam N
14. Dr. R. Thamizhamuthu
15. Dr. Yaseen Masvood
16. Dr. R. Sridharan
17. Dr. K. Karthikeyan
18. Dr. Manonmoney J

Scope

Campus life

Responsibilities – Internal auditor

- Conduct the internal audits with integrity, fair presentation, and due professional care.
- Maintain confidentiality about the EMS information.
- Perform audit impartially with the objectivity of the audit conclusions.
- Ensure the evidence for the existence for the nonconformities.
- Identify the root cause of the nonconformities.
- Considers the risk and opportunities-based approach while auditing.
- Aware of the up-to-date compliance obligations of the activities and services.
- Report the lead internal auditor with the nonconformities report.

Responsibilities – Lead internal auditor

- Organise the internal audit.
- Conduct an opening meeting.
- Collect and verify the information.
- Conduct a closing meeting.
- Compile the auditor's note and communicate to the management representative.

Responsible person and role

Dr. D. Antony Ashok Kumar – Director - IHM

Scope

Food production and management in the mess and canteens

Responsibilities

- Determine and obtain of budget for the various work related to the EMS scope
- Establish and implement the operational planning process.

- Plan and assign the works to the appropriate personnel for the various works related to the scope.
- Allocate resources - manpower, machineries, and materials for the various works related to the scope.
- Perform all the works as per compliance obligations.
- Set the operational objectives, key actions, and implement the actions to attain the intended objectives.
- Monitor and control of the work progress by conducting regular meetings.
- Approve and recommend the requirements to the top management.
- Maintains the operational control procedure/standard operating procedure for the activities/process associated with the EMS scope.
- Control the operational process and communicate the progress to the management representative.
- Establish, implement, and maintain the process(s) needed to manage the identified potential emergency situations.
- Conduct general and emergency awareness program among the CFT members
- Maintain documented information and retain records.
- Direct appropriate actions to rectify the cause of nonconformities and prevent its reoccurrences.
- Regularly monitor the status of corrective actions for the identified nonconformities in the progress review meeting.

Responsible person and role

Dr. N.Kamaraj – Director - Projects and Development

Scope

Legal compliance obligations

Responsibilities

- Obtain and maintain essential compliance obligations from the state pollution control board
- Retaining documented information

Responsible person and role

Dr.V.Thirumurugan – Associate Director (Campus Life)

Scope

a. Engineering & Technology: water treatment, high tension electricity supply, gensets, solar panels, fire safety, rainwater harvesting, storm water drainage, parking facilities, maintenance and service activities.
b. Integrated solid waste management
c. Waste water treatment: sewage treatment plants, effluent treatment plants and water treatment units
d. Food courts (contractors)

e. Bio-diversity activities

Responsibilities

- Determine and obtain of budget for the various work related to the EMS scope.
- Establish and implement the operational planning process.
- Plan and assign the works to the appropriate personnel for the various works related to the scope.
- Allocate resources - manpower, machineries, and materials for the various works related to the scope.
- Perform all the works as per compliance obligations.
- Set the operational objectives, key actions, and implement the actions to attain the intended objectives.
- Monitor and control of the work progress by conducting regular meetings.
- Approve and recommend the requirements to the top management.
- Maintains the operational control procedure/standard operating procedure for the activities/process associated with the EMS scope.
- Control the operational process and communicate the progress to the management representative.
- Establish, implement, and maintain the process(s) needed to manage the identified potential emergency situations.
- Conduct general and emergency awareness program among the CFT members.
- Maintain documented information and retain records.
- Direct appropriate actions to rectify the cause of nonconformities and prevent its reoccurrences.
- Regularly monitor the status of corrective actions for the identified nonconformities in the progress review meeting.
- Dispose the hazardous waste as per the Hazardous and Other Waste Management Rules, 2016.

Responsible person and role

Mr.Dharmendranath - Associate director - (Campus life and maintenance) - Medical and Health Sciences

Scope

a. Medical campus: water treatment, high tension electricity supply, gensets, solar panels, fire safety, rainwater harvesting, storm water drainage, maintenance and service activities.
b. Waste management: Biomedical waste
c. Waste water treatment: Effluent treatment unit(s)

Responsibilities

- Determine and obtain of budget for the various work related to the EMS scope.
- Establish and implement the operational planning process.

- Plan and assign the works to the appropriate personnel for the various works related to the scope.
- Allocate resources - manpower, machineries, and materials for the various works related to the scope.
- Perform all the works as per compliance obligations.
- Set the operational objectives, key actions, and implement the actions to attain the intended objectives.
- Monitor and control of the work progress by conducting regular meetings.
- Approve and recommend the requirements to the top management.
- Maintains the operational control procedure/standard operating procedure for the activities/process associated with the EMS scope.
- Control the operational process and communicate the progress to the management representative.
- Establish, implement, and maintain the process(s) needed to manage the identified potential emergency situations.
- Conduct general and emergency awareness program among the CFT members.
- Maintain documented information and retain records.
- Direct appropriate actions to rectify the cause of nonconformities and prevent its reoccurrences.
- Regularly monitor the status of corrective actions for the identified nonconformities in the progress review meeting.
- Dispose the hazardous waste as per the Hazardous and Other Waste Management Rules, 2016.

Responsible person and role

Dr.Jawahar Philimis– Assistant Director (Hostels)

Scope

a. Hostel buildings: high tension electricity supply, gensets, water heaters, water treatment units, fire safety, rain water harvesting, storm water drainage, maintenance and service activities.

b. Bio gas and steam production bio gas plants, and solar steam boilers.

Responsibilities

- Determine and obtain of budget for the various work related to the EMS scope.
- Establish and implement the operational planning process.
- Plan and assign the works to the appropriate personnel for the various works related to the scope.
- Allocate resources - manpower, machineries, and materials for the various works related to the scope.
- Perform all the works as per compliance obligations.

- Set the operational objectives, key actions, and implement the actions to attain the intended objectives.
- Monitor and control of the work progress by conducting regular meetings.
- Approve and recommend the requirements to the top management.
- Maintains the operational control procedure/standard operating procedure for the activities/process associated with the EMS scope.
- Control the operational process and communicate the progress to the management representative.
- Establish, implement, and maintain the process(s) needed to manage the identified potential emergency situations.
- Conduct general and emergency awareness program among the CFT members.
- Maintain documented information and retain records.
- Direct appropriate actions to rectify the cause of nonconformities and prevent its reoccurrences.
- Regularly monitor the status of corrective actions for the identified nonconformities in the progress review meeting.
- Dispose the hazardous waste as per the Hazardous and Other Waste Management Rules, 2016.

Responsible person and role

Mr. Muthamizhchelvan – Manager (Horticulture)

Scope

Horticulture activities in the campus life

Responsibilities

- Management and maintenance of the horticulture activities in the campus.
- Set the operational objectives.

Responsible person and role

Mr. M. Anand – General Manager – Transportation

Scope

Transportation services and its related activities

Responsibilities

- Determine and obtain of budget for the various work related to the EMS scope.
- Establish and implement the operational planning process.
- Plan and assign the works to the appropriate personnel for the various works related to the scope.
- Allocate resources - manpower, machineries, and materials for the various works related to the scope.
- Perform all the works as per compliance obligations.

- Set the operational objectives, key actions, and implement the actions to attain the intended objectives.
- Monitor and control of the work progress by conducting regular meetings.
- Approve and recommend the requirements to the top management.
- Maintains the operational control procedure/standard operating procedure for the activities/process associated with the EMS scope.
- Control the operational process and communicate the progress to the management representative.
- Establish, implement, and maintain the process(s) needed to manage the identified potential emergency situations.
- Conduct general and emergency awareness program among the CFT members
- Maintain documented information and retain records.
- Direct appropriate actions to rectify the cause of nonconformities and prevent its reoccurrences.
- Regularly monitor the status of corrective actions for the identified nonconformities in the progress review meeting.
- Dispose the hazardous waste as per the Hazardous and Other Waste Management Rules, 2016.

Responsible person and role

Mr. Aravindha Kumar – Purchase Officer Register Office

Scope

E&T: Purchase of computers

Responsibilities

- Maintain the agreement with authorized e-waste disposal vendor by CPCB
- Maintain the record of e-waste generated
- Maintain the manifest, annual return, and other documents in relevant forms as mentioned in e-waste management rules, 2016.

Responsible person and role

Mr. Ramesh – Purchase Manager – Construction

Scope

Purchase of materials related to the maintenance of academic buildings and hostels in the main campus, annexure campus, and medical campus

Responsibilities

- Compiling the approved budget of every department.
- Producing the resources as per the procurement policy.
- Identify requirements for suppliers and criteria for procurement.
- Storage and distribution of the resources.

- Maintain of the documented information.

Responsible Persons and role

Ms. A.Blessy - Assistant Maintenance Engineer (EMS)

Ms. D.Poorani Shri - Assistant Maintenance Engineer (EMS)

Mr. S.Mohanakrishna - Assistant Maintenance Engineer (EMS)

Scope

Campus Life

Responsibilities

- Prepare and maintain the EMS manual and discuss with Management Representative
- Conduct aspect impact study and risk assessment to find the significant impacts and updating impact assessment register.
- Communicate the performance of EMS as per the standards to Management Representative.
- Prepare the EMS performance report.
- Report the risks and opportunities to the Management Representative at regular intervals about the EMS facilities and update the risk and opportunities register
- Retain the essential documented information and records.
- Maintain the documented information about the standard operating procedure, operational control procedure and emergency preparedness plan.
- Attend the management review meeting, and circulate its minutes.
- Discuss with the EMS cross functional teams and obtain the necessary records.
- Track the performance of EMS towards the attainment of objectives.
- Provide relevant recommendations for the cross functional team in case of any deviation in their performance towards EMS.

Role

All the Deans, Directors of the schools and Heads' of the Department

Scope

Respective schools and departments

Responsibilities

- Assure the resources (electricity, water, consumables, stationaries and others) are utilized optimally.
- Maintain the information about stationaries and consumables inventory.
- Maintain the record of equipment/machineries services.
- Maintain the information about waste generation based on the available resources and newly purchased resources.

Responsible person and role

All the stakeholders - Students, research scholars, faculties, staffs, contractors, visitors and others

Scope

Campus life

Responsibilities

- Conform to environmental management system requirements.
- Avoid using plastics in the campus.
- Segregate and dispose the waste in the respective waste collection bins in the primary collections.

Report needs or issues if any related to the EMS.

Version control

Effective Date (from)	Description	Version
22.11.2022	Roles and responsibilities	01
03.03.2023	Roles and responsibilities – Presented as separate annexure document; Added the roles of assistant management representative and waste management team; Updated the responsibilities of top management and management representative	02
22.04.2024	Added the roles of assistant maintenance engineer – EMS and their responsibilities	03

Annexure 3 - Life Cycle Perspective

Table A3.1: Life cycle perspective of the activity/product/services

Activity/Product/ Services	Life cycle perspective
Utilization of High Tension Electricity Supply from Electricity Board	*Acquisition of raw materials*: Purchase of materials from certified vendors *Design*: In accordance and compliance with the standard and guidelines from CPCB & SPCB requirements *Transportation*: Through armoured power cables *Use*: Operation of electrical and electronic products *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Operation of Gensets	*Acquisition of raw materials*: Purchase of materials from certified vendors *Design*: In accordance and compliance with the standard and guidelines from CPCB & SPCB requirements *Transportation*: Through armoured power cables *Use*: Operation of electrical and electronic products *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Generation of Electricity through Solar	*Acquisition of raw materials*: Purchase of materials from certified vendors *Design*: In accordance and compliance with the standard and guidelines from CPCB & SPCB requirements *Production*: Electricity *Transportation*: Through armoured power cables *Use*: Operation of electrical and electronic products *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Regulation of indoor temperature using Air conditioner (Centralized Unit)	*Acquisition of raw materials*: Purchase of materials from certified vendors *Production*: Cool air *Transportation*: Through ductworks *Use*: Regulation of indoor temperature *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill

Activity/Product/ Services	Life cycle perspective
Regulation of indoor temperature using Air conditioner (Individual Unit)	*Acquisition of raw materials*: Purchase of materials from certified vendors *Production*: Cool air *Use*: Regulation of indoor temperature *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Operation of Lift	*Acquisition of raw materials*: Purchase of materials from certified vendors *Use*: Facilitation of vertical transport *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Groundwater Extraction	*Acquisition of raw materials*: Purchase of materials from certified vendors (motors, pumps) *Use*: Water supply (Domestic and drinking purpose) *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of components to certified and minimise the landfill
Water Treatment - RO	*Acquisition of raw materials*: Purchase of materials from certified vendors *Design*: Accordance with the standard requirements ISO16240:2015 and IS10500:2012 *Production*: Treated and rejected water *Use*: Drinking purpose, Reject water – Plate washing, Flushing *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of components to certified and minimise the landfill
Softener Plant	*Acquisition of raw materials*: Purchase of materials from certified vendors *Production*: Ions free water *Use*: Prevention from scaling effects *End of life treatment* Determination of obsolete components *Final disposal*: Disposal of the components and effluent sludge to certified vendor and minimise the landfill

Activity/Product/ Services	Life cycle perspective
Wastewater Treatment - STP	*Acquisition of raw materials*: Purchase of materials from certified vendors *Design*: In accordance with the standard requirements NGT(PB) O.A. 1069-2019 *Production*: Treated waste water *Use*: Gardening and irrigation activities, Bus Service station *End of life treatment*: Determination of obsolete components and sludge *Final disposal*: Disposal of components to certifies vendors, minimise the landfill and disposing the sludge safely
Wastewater Treatment - ETP	*Acquisition of raw materials*: Purchase of materials from certified vendors *Production*: Treated effluent waste water *Use*: reduce the usage of fresh water *End of life treatment* Determination of obsolete components and effluent sludge *Final disposal*: Disposal of the components and effluent sludge to certified vendor and minimise the landfill
Rain Water Harvesting	*Design*: Optimum design as per the building terrace dimension *Use*: Increase in ground water Quality and Quantity *End of life treatment*: Determination of service life *Final disposal*: Disposal to landfill/recreational purpose
Storm Water Drainage	*Design*: Optimum design to capture the storm water *Use:* Decrease in soil erosion and Prevention from floods *End of life treatment*: Demolition and reconstruction *Final disposal*: Disposal of components to certified vendor and minimise the landfill
Solar Steam (Cooking) Plant	*Acquisition of raw materials*: Purchase of materials from certified vendors *Production*: Steam for cooking *Use*: Decrease in consumption of LPG *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill

Activity/Product/ Services	Life cycle perspective
Oxygen (INOX, PSA and ACP) Plant	*Acquisition of raw materials*: Purchase of materials from certified vendors *Production*: Oxygen gas *Use*: Oxygen supply *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Solid Waste Management	*Acquisition of raw materials*: Purchase of materials for the activities related solid waste management from certified vendors *Use*: To maintain clean surroundings in the campus *End of life treatment*: Determination of recyclable material *Final disposal*: Disposal to recyclers and minimise the landfill
Hazardous & Other Wastes Management	*Acquisition of raw materials*: Purchase of primary and secondary collection and storage barrels from certified vendors *Use*: To dispose the hazardous waste as per the compliance requirements of SCPB and CPCB *End of life treatment*: Determination of used oils and chemicals *Final disposal*: Disposal to TNPCB authorized hazardous waste management recyclers
Biomedical Waste Management	*Acquisition of raw materials*: Purchase of primary and secondary collection and storage bins from certified vendors *Use*: To dispose the biomedical waste as per the compliance requirements of SCPB and CPCB *End of life treatment*: Determination of tissues and organs *Final disposal*: Disposal to TNPCB authorized biomedical waste vendor
Food Production in the Mess and Canteens	*Acquisition of raw materials*: Purchase of materials, machineries and cooking utilities for the activities cooking from certified vendors *Production*: Food as per the compliance of Food Safety and Standards (Organic Foods) Regulations, 2017 *End of life treatment* (machineries and cooking utilities): Determination of scrap materials and food waste from mess *Final disposal*: Used for the Biogas plants and minimise the landfill

Activity/Product/ Services	Life cycle perspective
Food Production in Food Courts	*Acquisition of raw materials*: Purchase of materials, machineries and cooking utilities for the activities cooking from certified vendors *Production*: Food as per the compliance of Food Safety and Standards (Organic Foods) Regulations, 2017 *End of life treatment* (machineries and cooking utilities): Determination of scrap materials and food waste from food courts *Final disposal*: Used for the Biogas plants and minimise the landfill
Horticulture Activity	*Acquisition of raw materials*: Purchase of materials from certified vendors *End of life treatment*: Determination of broken branches and dry leaves *Final disposal*: Shredded and reused in the compost process
Firefighting System	*Acquisition of raw materials*: Purchase of materials from certified vendors *Use*: To put off the fire *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Operation of Transportation Services	*Acquisition of raw materials*: Purchase of materials from certified vendors *Use*: Fleet operations *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Housekeeping Activities	*Acquisition of raw materials*: Purchase of materials from certified vendors *Use*: Clean (campus) environment *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill
Civil Maintenance Activities and MEP Services	*Acquisition of raw materials*: Purchase of materials from certified vendors *Use*: Civil works and MEP services *End of life treatment*: Determination of obsolete components *Final disposal*: Disposal of the components to certified vendor and minimise the landfill

Activity/Product/ Services	Life cycle perspective
Academic, administrative, research, hostel, quarters, and maintenance services	*Acquisition of raw materials*: Purchase of machineries, electronic products, consumables and stationaries from certified vendors *Use:* Utilization of the materials for functioning of academic, administrative, and maintenance services *End of life treatment*: Determination of scrap materials *Final disposal*: Disposal to scrap vendor and minimise the landfill
Procurement	*Acquisition of raw materials*: Purchase of materials from certified vendors *End of life treatment*: Determination of scrap materials *Final disposal*: Disposal to scrap vendor and minimise the landfill

Version control

Effective Date (from)	Description	Version
22.11.2022	Life cycle perspective	01
03.03.2023	Life cycle perspective – Presented as separate annexure document.	02
22.04.2024	Life cycle perspective – added new activities and revised	03

Annexure 4 - Needs and Expectations of Interested Parties

The needs and expectations of interested parties were determined based on the environmental aspect of the activities/processes, compliance obligations. The needs and expectations were assessed by the operational heads to determine the areas of concern of the interested parties and the expectations, which have scope to fulfil the EMS requirements.

Table A4.1: Needs and Expectations of the Interested Parties

S.No	Activity/Product/Services	Needs and Expectations of the Interested Parties
1	**Utilization of High Tension Electricity Supply from Electricity Board**	• Single control point for switching of complete electricity in classrooms • Need to conserve electricity by monitoring systems by new technologies coming into existence • Replace Old Electric Motors with Modern – Savings Cover Cost in Weeks. Solar panels for only the lights/fans etc. • In classrooms with one switch multiple fans and lights are working so that is also wastage of electricity • Additional Power socket in every classes for laptop charging • To be reduced. Load on a/c to be reduced making the buildings less dependent on ac taking advantage of air circulation possible in high rise buildings. • Automatic switching on/off for fans & lights whenever the room is unoccupied. • Energy management would be better if proper labelling of switches for individual item (fan, light, door, AC, etc.). • Currently, it is difficult to find which switch corresponds to which item. • There's a need to improve the sealing's to minimize the loss of energy. • Distribution of AC to the classrooms could be improved. • different units meters can be fixed to monitor the usage • Electricity consumption may be regulated. School wise / building wise monitoring mechanism may be implemented.

S.No	Activity/Product/Services	Needs and Expectations of the Interested Parties
		• We need sensor lights everywhere in main campus in order to save energy. • Motion sensor lights in the laboratories and offices will be more efficient. • Natural Lighting -- utilized in all buildings. • There are no regulators for fans. So, even during a cold weather the fans run in a high speed." • AC was surplus during winter but not enough during summer especially classrooms are very hot in tech park without AC, students also suffer a lot that time • Monthly consumption can be displayed. • Instead of giving remote control fan to all, motion sensing fan and light can be implemented to save energy. • More Renewable Energy generation may be planned, how much energy we used for our usage/ research / any activities. • The only thing it is should not waste energy, Study on Carbon footprint is needed. • Need automated lights inside classroom as we need not touch the cables and switches itself off when no one is in • Switching on and off of electricity in classes could be automated according to the class hours. • For the past few days, the power supply and off is erratic - that needs to be addressed
2	**Operation of Gensets**	• Air quality monitoring system to be installed at prime locations • Frequent Inspection of Gensets Noise
3	**Generation of Electricity through Solar**	• Solar power panels can be installed. The electrical energy can be saved by installing solar powered bulbs in the street. • Solar energy utility should be improved to reduce the electricity

S.No	Activity/Product/Services	Needs and Expectations of the Interested Parties
		• Alternate Energy (solar energy) not fully utilized throughout the campus. Biomass may be used for generation of caloricity. • Solar powered panels can be installed for additional power backup
4	**Water Treatment - RO**	• Improve maintenance • Drinking water treatment and facilities should definitely be taken immediate action and must be improved because of poor level of management of those facilities. • Need cleaning of coolers at least once a week • A transparent process of how the water is being treated and distributed has to be conveyed periodical cleaning is needed • Maintenance of RO is good, water leakage should be attended in emergency manner • Scheduled cleaning of RO water dispensers is required
5	**Wastewater Treatment - STP**	• Sewage treatment plants are old, pumps are old, making sounds many times disturbing the occupants around, and their size/capacity seems to be not matching the requirement/input flow at many sites in the campus. Waste water/any water staying open places, drainage canal blockages to be avoided. If required new drainage paths/garden usage to be created for such water outlets of STP for example. Kindly check this. Need to preserve more water by reusing and recycling for plantation and washroom purposes.Sometimes passing through the clock tower to the Hospital lane, the smell is coming it can be reduced. • Three STP plants and 3 Ultrafiltration systems are in place for Sewage treatment. The final residues can be treated properly for manure

S.No	Activity/Product/Services	Needs and Expectations of the Interested Parties
		• Drainages to be maintained regularly, and constructions, floors, sidewalks etc. throughout campus to be modified to avoid rain water/water stay.
6	**Operation of Transportation Services**	• College can start using alternate fuel-based buses. There can provisions for cycles to be rented inside the campus. • A pedestrian subway/overhead bridge can be provided near the railway station. MTC can be asked to start services to the campus directly. • Cycling was initiated but unfortunately now it is not working. • The shuttle buses must be operated with the entry doors closed. In the peak hours the buses are operated with doors open and many students / parents are in the footboard which is risky. • Need Bicycles. • We can go for battery/electric operated buses/vans. • All shuttle buses should be electric. VIPs/Administrators can travel inside the campus on electric buggies or any other electric cars instead of using petrol and diesel cars. • Create few cycle points in the campus. People can take a cycle from one point and leave it in another point. User can be charged nominally or made free. • Good parking points for cycles and these points can be closer to the building that two-wheeler or cars so that people will prefer to use cycle. • More of battery-operated vehicles for doctors from main road to the medical college. • encourage the use of electric vehicles in our campus if we have electric plug points everywhere especially in the parking lots (electricity produced by solar panels) and can ultimately reduce the

S.No	Activity/Product/Services	Needs and Expectations of the Interested Parties
		environmental pollution to some extent from our side. Electric vehicles like bikes and buses can be used in our campus. • We can use electric buses for shuttle services. more battery-operated cars, battery cycles can be encouraged. Shuttle buses can be allowed only for needy (patients, elder, ladies etc.) • Solar powered cars can be used for shuttling. • The shuttle service is very helpful but electric buses can be used in the future with charging facilities as the vehicles only go around the campus and not outside. It will save a lot of fuel and also does not pollute the air. • Shuttle service is good at the time of morning 7 to 9 and Eve 3.30 to 5. But in between time, pupil have to wait too much time for shuttle service. • Provide good Bus facilities to the students, maintenance is needed for the buses • Spillage of oil - External lead auditor - ISO 14001:2015 certification – 05.05.2022 • Lack of firefighting facilities and assembly points - External lead auditor - ISO 14001:2015 certification – 05.05.2022 • Emission free vehicles may be thought of operation within the campus. • The numerous automobiles that are transported throughout the campus are a contributing factor to pollution. • By limiting the number of automobiles and bikes that can park on campus, dust particles from vehicle movement can be decreased.

S.No	Activity/Product/Services	Needs and Expectations of the Interested Parties
		• To prevent air and noise pollution, specified locations must be equipped with air quality monitors and noise measurement devices.
7	**Housekeeping, Civil Maintenance Activities and MEP Services**	• The maintenance of toilets and flushing system is very poor. For example, the toilet in hi-tech first floor. There we can find flaws in installation of urinals. The water will flash out when the tap is turned. This can be seen even in the wash basins. No proper taps are installed. (Simply put, no design thinking is there. We need to train our staffs in design thinking. I would say design thinking in service, in this case.). There's no upgradation of toilets. There should be both raised (western) and floor (traditional or Indian) style toilets. Automatic flushing system are advised. • For paper and plastic waste collection and disposal needs to systemized. • The school of bioengineering does not have a separate trash bin for biodegradable waste. All food items and plastic waste are disposed together. • Moreover, the classes are not sweeped properly and I have recognised articles of waste from months ago in the classroom. Given that the students throw trash in their places and not the bin, I believe it has to be improved from both ends. • Avoid working carpentry and repairing works during the college hours. • In general water facility in washroom is not at all clean and hygienic.
8	**Bio Medical Waste**	• Bio waste management awareness need to improve

S.No	Activity/Product/Services	Needs and Expectations of the Interested Parties
9	**Bio Methanation Unit**	• Action can be initiated to reduce food wastage in canteens and hostels • Kitchen waste can be converted to Bio-Gas to make SRM GREENER and Eco-friendlier. • Food waste management is very poor particularly in canteen area, Steps must be taken to keep all the place clean
10	**Horticulture Activity**	• Expand more tree or green for college areas • More Indian origin tree saplings has to be planted. • All the campus should be more of trees like in the main campus.

Version control

Effective Date (from)	Description	Version
22.04.2024	Needs and expectation of interested parties – presents as separate annexure	01

Annexure 5 - Risk Identification

The risk and opportunities were determined based on the environmental aspect of the activities/processes, compliance obligations, and other requirements. The inputs considered for the determination of risk and opportunities are the needs and expectations of the interested parties, internal and external issues, and the context of organization. The needs and expectations were assessed by the operational heads to determine the areas of concern of the interested parties and the expectations, which have scope to fulfil the EMS requirements were included in the risk identification process. Based on the impact of every environmental aspect, positive (opportunities) and negative (risks) were determined considering normal, abnormal, and emergency conditions.

According to Clause 6.1.1 of IS/ISO 14004:2016, the organization can "integrate the determination of risks and opportunities that need to be addressed into its determination of significant environmental aspects, and apply a similar approach to the other sources of risks and opportunities."

Table A5.1: Risk Identification

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**Utilization of High Tension Electricity Supply from Electricity Board**	Generation of LT Electricity	Normal	Generation of used oil from transformer	Risk
2			Normal	Generation of obsolete silica gel	Risk
3			Normal	Generation of used cables	Risk
4			Normal	Generation of obsolete coils	Risk
5			Normal	Generation of obsolete components	Risk
6		Fluctuations in voltage (High and Low Voltage)	Abnormal	Failure of electrical products	Risk
7		Failure of HT fuse	Abnormal	Knock out of power supply	Risk
8		Failure of phase	Abnormal	Unbalanced load leading to equipment failure	Risk
9		Failure of lightning arrester	Abnormal	Failure of electrical products	Risk
10		Failure of surge arrester	Abnormal	Failure of electrical products	Risk
11		Failure of relay and breaker	Abnormal	Knock out of power supply for the specific wing where the relay has failed	Risk
12		Spillage of oil	Abnormal	Slippery conditions leading to fire accidents	Risk
13		Failure of PT/CT	Abnormal	Power failure	Risk
14		Failure of Jaw contact	Abnormal	Power failure	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
15		Moisture ingress in VCB	Abnormal	Power failure	Risk
16		Failure of HT insulation	Abnormal	Power failure	Risk
17		Failure of Transformer	Abnormal	Power outage	Risk
18.a		Occurrence of Floods	Emergency	Stagnation of water	Risk
18.b			Emergency	Intercepted power supply	Risk
18.c			Emergency	Repair of transformer components	Risk
19		Damage of Underground cables	Emergency	Intercepted Power supply	Risk
20.a		Occurrence of Cyclonic Conditions	Emergency	Fall of trees on the overhead lines	Risk
20.b			Emergency	Intercepted power supply	Risk
1	**Operation of Gensets**	Production of LT Electricity through Gensets	Normal	Generation of used oils	Risk
2			Normal	GHG emissions due to burning of fuels	Risk
3			Normal	SOx, NOx, PM, HC, CO emissions due to burning of fuels	Risk
4			Normal	Depletion of non-renewable resources	Risk
5			Normal	Generation of obsolete valves and pumps	Risk
6			Normal	Generation of obsolete batteries	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
7			Normal	Generation of noise and Obsolete components	Risk
8			Normal	Generation of obsolete filters	Risk
9			Normal	Reduction in noise pollution due to built up of acoustic chambers	Opportunity
10			Normal	Safe emission height of air pollutants due to built up of stack arrangements	Opportunity
11.a		Spillage of diesel	Abnormal	Slippery conditions leading to accidents	Risk
11.b			Abnormal	Excessive depletion of non-renewable resources	Risk
11.c			Abnormal	Possible fire accidents	Risk
12.a		Leakage of Radiator coolant	Abnormal	Overheated engine	Risk
12.b			Abnormal	Interruptions in the output power	Risk
12.c			Abnormal	Possible explosions	Risk
13.a		Overloading operation of gensets	Abnormal	Power failure	Risk
13.b			Abnormal	Tripping	Risk
14.a		Failure of AVR	Abnormal	Sudden power outage	Risk
14.b			Abnormal	Damage to connected electrical equipment (Flickering)	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
15		Failure of Self-starter motor	Abnormal	Gensets breakdown	Risk
16		Damage of Fan belt	Abnormal	Power failure	Risk
17		Failure of Battery	Emergency	Breakdown of gensets	Risk
18		Occurrence of Fire Accidents	Emergency	Loss of resources and life	Risk
1	**Generation of Electricity through Solar**	Production of Electricity through Solar	Normal	Alternative for non-renewable resources as no CO_2 emission is involved	Opportunity
2			Normal	Generation of PV waste that has heavy metals like Cu and Pb	Risk
3			Normal	Generation of used electric cables	Risk
4			Normal	Generation of obsolete inverters	Risk
5			Normal	Generation of obsolete components	Risk
6		Failure of Inverter	Abnormal	No power production	Risk
7		Failure of Connecter	Abnormal	No panel productivity	Risk
8		Failure of DC Fuse	Abnormal	Interrupted power generation	Risk
9.a		Failure of Surge arrester	Abnormal	Equipment failure	Risk
9.b			Abnormal	Interrupted power generation	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
10		Damage of solar panel	Abnormal	Reduced efficiency of solar panels (No power delivery) leading to production losses	Risk
11.a		Occurrence of natural calamities	Emergency	Solar equipment damage	Risk
11.b			Emergency	Intercepted power generation	Risk
1	**Regulation of Indoor Temperature using Air Conditioner (Centralized Unit)**	Circulation of cool air inside the buildings using Chiller plants	Normal	Depletion of non-renewable resources	Risk
2			Normal	Water leakage	Risk
3			Normal	Generation of wastewater	Risk
4			Normal	Generation of noise	Risk
5			Normal	Generation of obsolete motors and pumps	Risk
6			Normal	Generation of obsolete blowers and fans	Risk
7			Normal	Generation of used oils	Risk
8			Normal	Generation of used electric cables	Risk
9			Normal	Generation of obsolete filters, valves and condenser coils	Risk
10			Normal	Generation of obsolete PVC fills	Risk
11		Leakage of refrigerants	Abnormal	Greenhouse gas emission	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
12		Tripping due to high pressure	Abnormal	No cooling production	Risk
13		Tripping due to increase in oil temperature	Abnormal	Chiller shut down	Risk
14.a		Imbalance in Water flow	Abnormal	Low pressure leads to ice formation and tripping	Risk
14.b			Abnormal	Hammering	Risk
14.c			Abnormal	Expected temperature is not achieved if there is more water	Risk
15		Failure of Motor/pumps	Abnormal	Chiller shut down (No delivery)	Risk
16.a		Puncture of Chilled water line	Abnormal	Water leakage	Risk
16.b			Abnormal	Chiller shutdown	Risk
17.a		Failure of NRV	Abnormal	Back pressure issue	Risk
17.b			Abnormal	Unwanted water circulation	Risk
18		Failure of VFD	Abnormal	Chiller shutdown	Risk
19		Puncture of condenser copper tube	Emergency	Chiller shutdown (15- 20 days)	Risk
20		Failure of Compressor	Emergency	Chiller shutdown	Risk
21		Failure of Phase	Emergency	Chiller shutdown	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
22		Failure of Fuse	Emergency	Possible electrical fire	Risk
23		Opening of pressure relief valve	Emergency	Chiller shut down	Risk
1	**Regulation of Indoor Temperature using Air Conditioner (Individual Unit)**	Circulation of cool air inside the buildings using split AC	Normal	Depletion of non-renewable resources	Risk
2			Normal	Greenhouse gas emission	Risk
3			Normal	Generation of used electric cables	Risk
4			Normal	Generation of obsolete filters, valves and condenser coils	Risk
5			Normal	Generation of obsolete motors	Risk
6		Failure of motor	Abnormal	Split AC shutdown	Risk
7		Leakage of refrigerants	Abnormal	Greenhouse gas emission	Risk
8		Damage caused by rodents	Abnormal	Split AC shutdown	Risk
9		Damage of fan/blower	Abnormal	Hinders the cooling process	Risk
10		Failure of Board	Abnormal	System Shutdown	Risk
11.a		Damage of Valve	Abnormal	Unable to control refrigerant flow	Risk
11.b			Abnormal	Refrigerant leakage	Risk
12		Malfunctioning of PCB	Abnormal	Split AC shutdown	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
13		Failure of Capacitor	Abnormal	Split AC shutdown	Risk
14		Failure of Compressor	Emergency	Hinders the cooling process	Risk
1	**Operation of Lift**	Facilitation of vertical transport	Normal	Depletion of non-renewable resources	Risk
2			Normal	Generation of obsolete motors	Risk
3			Normal	Generation of used Oils	Risk
4			Normal	Generation of used electric cables	Risk
5			Normal	Generation of obsolete components	Risk
6			Normal	Generation of metal scraps	Risk
7			Normal	Generation of obsolete batteries	Risk
8		Overloading of people	Abnormal	Halt of vertical transport	Risk
9.a		Failure of Sensor	Abnormal	Lift stuck up/OFF	Risk
9.b		Oil spillage	Abnormal	Slippery conditions leading to fall accidents	Risk
10		Failure of Relay	Abnormal	Lift Shutdown	Risk
11		Malfunctioning of ARD	Emergency	Passengers stuck up in lift during power failure	Risk
12		Failure of door rope	Emergency	Lift Shutdown	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
13		Switching of floor level	Emergency	Disruption in the vertical transport	Risk
1	**Groundwater Extraction**	Consumption of Water	Normal	Depletion of renewable resource due to water consumption	Risk
2			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
3			Normal	Generation of Obsolete Components such as Pipes, Plumbing fixtures, pumps and Motors.	Risk
4			Normal	Generation of Noise due to the operation of Pumps and Motors.	Risk
5		Over-exploitation of groundwater	Abnormal	Declination in Groundwater Level	Risk
6		Unavailability of Groundwater	Emergency	Excessive increase in water demand	Risk
1	**Water Treatment - RO**	Production of Treated Water	Normal	Generation of Reject water	Risk
2			Normal	Depletion of renewable resource (water)	Risk
3			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
4			Normal	Generation of noise due to operation in pumps and motors	Risk
5			Normal	Generation of obsolete components such as Pipes, Plumbing Fixtures, Storage tanks, Dual media, Flow indicators, Pressure gauges, Various pumps, Motors and Micron filter	Risk
6			Normal	Spillage of Antiscalant	Risk
7		Fluctuation in Voltage	Abnormal	No Production of treated water due to Panel damage	Risk
8		Scaling in Raw Water Pipeline	Abnormal	Inflow of the RO Unit will be decreased	Risk
9		Failure in Pumps	Abnormal	RO Unit Shutdown	Risk
10		Failure in flow indicators & pressure gauge	Abnormal	Imbalance water flow in RO Unit	Risk
11		Cut-off of Membrane O-Ring	Abnormal	1.Increase in generation of Reject Water 2.The Taste of water will be reduced	Risk
12		Damage in Fibre Reinforced Plastic(FRP) Vessel	Abnormal	1.RO Unit will Stop its Function 2.Wastage of water	Risk
13		Failure in High Pressure Pump	Abnormal	RO Unit Shutdown	Risk
14		Excessive shortage in power supply	Emergency	RO Unit Shutdown	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**Softener Plant**	Production of Soft Water	Normal	Reduction in concentration of Ca & Mg ions	Opportunity
2			Normal	Prevention of scaling effects in pipelines	Opportunity
3			Normal	Depletion of renewable resource (water)	Risk
4			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
5			Normal	Generation of noise due to operation in pumps and motors	Risk
6			Normal	Generation of obsolete components such as Pipes, Plumbing Fixtures, Storage tanks, Dual media, Flow indicators, Pressure gauges, Pumps, Motors, Various tanks, and Valves	Risk
7			Normal	Spillage of Resin beads, Brine solution and Salt	Risk
8		Failure in Pumps	Abnormal	Plant Shutdown - No Water Delivery	Risk
9		Failure in Shaft	Abnormal	Delivery of Water will be Stopped	Risk
10		Failure in Valves	Abnormal	Water Supply will be affected	Risk
11		Failure in Agitator	Abnormal	Time Consumption for Salt mixing	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
12		Damage in Resin Beads	Abnormal	Increase the Hardness of Water	Risk
13		Failure in Regeneration Tank	Abnormal	Output Water will not be delivered and it affect the Backwashing	Risk
14		Failure in Dual Media	Abnormal	Decrease in Water Quality due to improper filtration	Risk
15		Excessive shortage in power supply	Abnormal	Softener Unit Shutdown	Risk
1	**Wastewater Treatment - STP**	Production of Treated Waste Water	Normal	Generation of Sludge	Risk
2			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
3			Normal	Generation of Noise due to the operation of Pumps and motors.	Risk
4			Normal	Generation of Obsolete components such as Pipes and plumbing fixtures, flow meters, chemical stored tanks, pumps and motors, Membranes	Risk
5			Normal	Spillage of MBBR	Risk
6			Normal	Generation of Wastes such as Solid, Plastic waste	Risk
7		Blockage in Diffuser	Abnormal	Obstruction of air flow may lead to blower damage and odour generation	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
8		Failure of Pulley	Abnormal	1.Generation of noise 2.Overheating of Belt may lead to Belt cut off	Risk
9		Outburst in Pipes	Abnormal	Spillage of Wastewater	Risk
10		Damage in Bearing	Abnormal	1.Generation of noise 2.Wear and tear of bearing housing	Risk
11		Choking in Filter	Abnormal	1.Improper air flow 2.Settlement of dust	Risk
12		Corrosion in Pipes	Abnormal	Formation of holes may lead to spillage	Risk
13		Blockage in Blower	Abnormal	Absence of air flow	Risk
14		Leakage in Valves	Abnormal	1.Air leakage in aeration tank 2.Leakage of Wastewater in storage tank	Risk
15		Leakage of Oil in Pumps	Abnormal	Spillage of oil	Risk
16		Failure in Pumps	Abnormal	Plant Shutdown	Risk
17		Cut Off of Belt	Abnormal	Operation of Treating will stop due to overheat in clarifier and decanter	Risk
18		Failure in Bush	Abnormal	Wear and Tear may lead to pulley damage	Risk
19		Damage in Centre Shaft Pipe	Abnormal	Obstruction in operation of pump	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
20		Damage in Impeller	Abnormal	Obstruction in water movement	Risk
21		Choking in Dual Media	Abnormal	Increase in water inlet pressure may lead to pump damage	Risk
22		Breakage in Rotameter	Abnormal	Not able to" read " the flow rate	Risk
23		Excessive Wastewater Inflow	Abnormal	Spillage of Wastewater	Risk
24		Choking in Membrane(UF)	Abnormal	1.Increase in the inlet pressure may lead to outburst and leakage 2.Reduction in flow rate	Risk
25		Failure in Pneumatic Wall	Abnormal	Plant Shutdown	Risk
27		Decanter Sensor Break	Abnormal	No display of speed variations may lead to stop the decanter	Risk
28		Failure in Decanter Indicator Failure	Abnormal		Risk
29		Failure in Decanter Dosing Pump	Abnormal	Obstruction in polymer insertion may lead to stop the sludge thickening	Risk
30		Failure in Decanter Panel Board	Abnormal	obstruction in power supply may lead to plant shutdown	Risk
31		Failure in Decanter VFD Drive	Abnormal	1.Decrease in motor speed and no input signal may lead to decanter shutdown 2.Unregulate the motor speed regulations	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
32		Death of Bacteria	Abnormal	1.Generation of odour 2.Decrease in wastewater quality parameters	Risk
33		Occurrence of Natural Calamity	Emergency	Plant Shutdown	Risk
1	**Wastewater Treatment - ETP**	Production of Treated Effluent Water	Normal	Generation of Effluent Sludge	Risk
2			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
3			Normal	Generation of Noise due to the operation of Pumps and motors.	Risk
4			Normal	Generation of Obsolete components such as Pipes and plumbing fixtures, flow meters, chemical stored tanks, pumps and motors	Risk
5			Normal	Spillage of chemical while filling dosing pump	Risk
6		Failure in Dosing Pump	Abnormal	Generation of Odour due to decrease in Water Quality (Pale colour Formation)	Risk
7		Cut-off of Hose	Abnormal	No Dosing of Chemical due to air lock	Risk
8		Cut-off of Belt in Agitator	Abnormal	No Mixing of chemicals	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
9		High Voltage Supply	Abnormal	Plant Shutdown	Risk
10		Failure in Pumps	Abnormal	Plant Shutdown	Risk
11		Failure in Bush	Abnormal	1.Occurrence of Leak 2.Reduction in rate of effluent inflow	Risk
12		Failure in Agitator	Abnormal	Improper mixing of Chemical & Water	Risk
13		Excessive flow of Effluent Inflow	Abnormal	Decrease in Effluent Plant Treatment Capacity	Risk
14		Occurrence of Natural Calamity	Emergency	Plant Shutdown - No Treatment of Effluent Water	Risk
1	**Rainwater Harvesting**	Conservation of Rainwater	Normal	Increase the Quality and Quantity of Groundwater	Opportunity
2			Normal	Generation of Obsolete Components such as Pipes and Plumbing fixtures.	Risk
3		Blockage of Rainwater Collection Pipe	Abnormal	Wastage of Rainwater	Risk
4		Obstruction in Pits	Emergency	Decrease in Infiltration Rate and Percolation of water	Risk
1	**Storm Water Drainage**	Flow of Water in Drains	Normal	Prevention of Soil Erosion and Flood	Opportunity
2			Normal	Safe Discharge of Rainwater	Opportunity

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
3		Stagnation of water	Abnormal	Fall Accidents due to Wet Surface	Risk
4		Blockage of Drainage	Abnormal	Overflow of water	Risk
5		Excessive Rainfall	Emergency	Occurrence of Flash Flood	Risk
1	**Solar Steam (Cooking) Plant**	Production of Steam for Cooking	Normal	Utilisation of Solar Energy	Opportunity
2			Normal	Depletion of renewable resource due to water consumption	Risk
3			Normal	Generation of Obsolete Components such as Solar dish, Tracking Motor, Boiler, Pipes and receivers	Risk
4			Normal	Deposition of Dust in Solar dishes	Risk
5			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
6		Outburst in Pipeline	Abnormal	Leakage of Steam	Risk
7		Defocus of heat on Electrical wire	Abnormal	Electrical Failure	Risk
8		Damage in Solar dish due to Wind Conditions	Abnormal	Loss in Steam Production	Risk
9		Excessive Solar Heat	Abnormal	Release of Excess Steam Produced	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
10		Malfunction of Tracking Motor	Abnormal	Loss in Heat Gain	Risk
11		Leakage of Wet Steam From Boiler	Abnormal	Loss in Steam	Risk
12		Occurrence of Natural Calamity like Storm, Cyclone	Emergency	Plant Shutdown	Risk
1	**Oxygen - INOX Plant**	Production of O_2 Gas	Normal	Generation of O_2 gas from LMO	Opportunity
2			Normal	Generation of Obsolete Gauges and Telemetric components	Risk
3			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
4			Normal	Depletion of renewable resource due to water consumption	Risk
5		Increase in the Pressure of LMO > 13 bar	Abnormal	Discharge of LMO from tank	Risk
6		Decrease in the Pressure of LMO < 7 bar	Abnormal	Discharge of LMO from tank	Risk
7		Puncture in Gas Pipeline	Abnormal	Leakage of Gas	Risk
8		Flange Loosening	Emergency	Heavy Discharge of LMO	Risk
9		Occurrence of Fire Accident	Emergency	Occurrence of Explosion	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**O_2 Automatic Control Panel - ACP**	Production of O_2 Gas and its supply	Normal	Generation and Supply of O_2 from Oxygen and Nitrogen Cylinders	Opportunity
2			Normal	Generation of used cylinders	Risk
3			Normal	Leakage of O_2	Risk
4			Normal	Generation of Obsolete Components such as Control panel, Regulators, Gauges, Solenoid coil and Valves	Risk
5			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
6		Non Return Valve (NRV) Leakage	Abnormal	Leakage of O_2	Risk
7		Falling of Cylinder	Abnormal	Explosion due to Gas Leakage	Risk
8		Failure of EB Supply	Emergency	Shortage of O_2 Supply	Risk
1	**O_2 Pressure Swing Adsorption - PSA**	Production of O_2 Gas	Normal	Generation of O_2 gas from Air	Opportunity
2			Normal	Generation of Obsolete Components such as Control Panel, Fine Filter, Carbon Filter, Moisturizer Filter, Oil filter, Solenoid Coil, Air Dryer, Valves and Gauges, Regulators	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
3			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
4			Normal	Spillage of Chemicals due to Zeolite and Activated alumina usage	Risk
5			Normal	Generation of Used Oil due to Synthetic oil usage	Risk
6			Normal	Generation of Noise due to operation of Compressor	Risk
7		Breakage of Gasket	Abnormal	Leakage of Air	Risk
8		Breakage of Valves	Abnormal	Leakage of Air	Risk
9		Malfunction in Air Dryer	Abnormal	Reduction in Air Purity Level	Risk
10		Failure in Compressor	Abnormal	Plant Shutdown	Risk
11		Spillage of Oil	Abnormal	Floor become Wet and Slippery	Risk
12		Air Pressure Variation	Abnormal	Reduction in Air Purity Level	Risk
13		Blockage of Solenoid Coil	Emergency	Absence of O_2 Supply	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**Solid Waste Management**	Recoverable Degradable waste Inert waste	Normal	Promotion of circular economy.	Opportunity
2			Normal	Prevention of Air and Water borne diseases	Opportunity
3			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
4			Normal	Depletion of renewable resources (diesel) for transportations	Risk
5			Normal	Obsolete machineries components	Risk
6		Generation of Leachate and odour	Abnormal	Creates a Bad odour and the cause Air and waterborne diseases	Risk
7		Spillage of Wastes while collecting	Abnormal	Bike Accidents may occur by skid	Risk
8		Mix up of Biomedical waste	Abnormal	May cause contamination and pollute the soil	Risk
9		Mix up of Carcass waste	Abnormal	Bad odour and prey for birds	Risk
10		Non availability of collection trucks	Abnormal	Stocking of wastes and it cause bad odour	Risk
11		Occurrence of Fire Accidents	Emergency	Pollution to the environment, loss of stocks fire, Fire Injuries	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**Hazardous Waste Management**	Hazardous waste management	Normal	Reduction of the harmful chemicals and pollutants that enters to the soil, water.	Opportunity
2			Normal	Generation of used barrels and glassware	Risk
3			Normal	Emissions of greenhouse gases	Risk
4		Spillage of oils while storing	Abnormal	Slippery condition may lead to accidents by fall	Risk
5		Leakage in the storage container	Abnormal	Results in surface water pollution	Risk
6		Manual handling of oils	Abnormal	Human Injuries	Risk
7		Occurrence of Fire Accident	Emergency	Occurrence of Explosion	Risk
1	**E-Waste Management**	Generation of E-waste	Normal	Generation of obsolete electronic equipment and lab instruments	Risk
2			Normal	Depletion of non-renewable resource	Risk
3		Fall accidents during storage and transport	Abnormal	Minor Injury	Risk
4		Occurrence of fire accidents in the storage room	Emergency	Production of polycyclic aromatic hydrocarbons and dioxins.	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**Horticulture Activity**	Development of Green Belt	Normal	Generation of soil pollution	Risk
2			Normal	Carbon dioxide emission due to consumption of electricity	Risk
3			Normal	Generation of Noise due to the operation of lawn movers and motors.	Risk
4			Normal	Generation of Obsolete components such as pipes, valves, drip irrigation setups. etc.	Risk
5			Normal	An Eco-friendly environment lifestyle to the students.	Opportunity
6		Damage to the plants	Abnormal	Generation of Odour due to decrease in Water Quality	Risk
7		Components Malfunctions	Abnormal	Lack of water flow or unpruned of plants	Risk
8		Lopping injuries	Abnormal	Minor Injury	Risk
9		Over stagnant of water	Abnormal	Loss of Percolation	Risk
10		Failure of Pumps	Abnormal	Lack of water to plants	Risk
11		Occurrence of Natural Calamity	Emergency	Fall of trees and branches	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**Horticulture Waste Management**	Organic composting production	Normal	Generation of Odour	Risk
2			Normal	Generation of Mosquitos	Risk
3			Normal	Generation of Leachate	Risk
4		Loss of worms while composting	Abnormal	Increase in Composting time.	Risk
5		Excessive waste generation	Abnormal	Lack of area for the composting	Risk
6		Occurrence of Fire Accidents	Emergency	Occurrence of Explosion	Risk
1	**Food Production**	Production of Food	Normal	Ozone layer depletion (Refrigerants)	Risk
2			Normal	Obsolete machineries components and utensils	Risk
3			Normal	Generation of waste water	Risk
4			Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
5			Normal	Generation of noise due to operation in grinder and peeler.	Risk
6			Normal	Spillage of oils and raw materials while cooking	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
8		Voltage fluctuation	Abnormal	Fire injuries and no operation of components	Risk
9		Apron Fire	Abnormal	Fire injuries	Risk
10		Falling of Cylinder	Abnormal	Injuries to human	Risk
11		Spillage of food during manual transportation	Abnormal	Slippery condition may lead to accidents and food loss	Risk
12		Spillage of oil	Abnormal	Fall Accidents	Risk
13		Shredding accidents	Abnormal	Injuries to human	Risk
14		Failure of cold storage	Abnormal	Rotten of fresh vegetables and dairy products	Risk
15.a		Flooding due to rain	Emergency	water logging in Kitchen area	Risk
15.b		Occurrence of Fire Accident	Emergency	Fire injuries to human and loss of components	Risk
1	**Bio Methanation Unit**	Production of Biogas	Normal	Generation of biogas from food and vegetable waste.	Opportunity
2			Normal	Generation of Obsolete Components such as Control Panel, Geyser, Storage tank, Valves and Hydrolysers, Regulators.	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
3			Normal	Depletion of non-renewable resource and CO2 emission due to consumption of electricity.	Risk
4			Normal	Generation of odour.	Risk
5			Normal	Generation of sludge.	Risk
6		Rat bite in Twin balloon storage	Abnormal	Leakage of Methane gas	Risk
7		Leakage in hydrolysis tank	Abnormal	Leakage of slurry	Risk
8		Spillage of food waste	Abnormal	Generation of odour and slippery in the floor	Risk
9		Leakage in methane valve	Abnormal	Loss of methane gas and Greenhouse gas emission	Risk
10		Malfunction of Geyser	Abnormal	Loss in production of methane gas	Risk
11		Occurrence of Fire Accident	Emergency	Occurrence of Explosion	Risk
1	**Firefighting System**	Executing the firefighting operations	Normal	GHG emissions due to burning of fuels (diesel)	Risk
2			Normal	SOx, NOx, PM, HC, CO emissions due to burning of fuels (diesel)	Risk
3			Normal	Generation of used oils	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
4			Normal	Generation of hazardous waste due to the operation of fire extinguishers	Risk
5		Spillage of grease	Abnormal	Slippery conditions leading to fall accidents	Risk
6		Obstruction in exit ways	Abnormal	Fall accidents	Risk
7		Blockage in water mains	Emergency	Intercepted water flow causing hindrance to the operation	Risk
8		Malfunctioning of fire alarms	Emergency	Unable to hear the warning alarm	Risk
1	**Operation of Transportation Services**	Facilitation of fleet service	Normal	GHG emissions due to burning of fuels (diesel)	Risk
2			Normal	SOx, NOx, PM, HC, CO emissions due to burning of fuels (diesel)	Risk
3			Normal	Depletion of non-renewable resources	Risk
4			Normal	No GHG emissions due to battery operated vehicles	Opportunity
5			Normal	No release of air pollutants due to battery operated vehicles	Opportunity
6			Normal	Generation of obsolete batteries and other obsolete components	Risk
7		Maintenance of vehicle	Normal	Improved mileage and passenger safety	Opportunity

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
8			Normal	Generation of used paint containers and other accessories	Risk
9			Normal	Generation of obsolete tyres due to wear and tear	Risk
10			Normal	Generation of effluent due to water wash	Risk
11			Normal	Improved indoor air quality due to water wash	Opportunity
12			Normal	Inhalation of volatile organic compounds and aerosols due to painting and stickering works	Risk
13			Normal	Generation of used engine oils	Risk
14			Normal	Generation of electrical and solid waste	Risk
15		Fall accidents during wheel maintenance	Abnormal	Minor injury	Risk
16		Spillage of oils	Abnormal	Slippery conditions leading to accidents	Risk
17			Abnormal	Depletion of non-renewable resources	Risk
18		Leakage of refrigerants	Abnormal	Emission of greenhouse gases	Risk
19		Breakdown of vehicles	Abnormal	Delay in reaching the destination	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
20		Occurrence of minor road accidents	Abnormal	Injuries to people	Risk
21		Occurrence of minor road accidents	Abnormal	Delay in reaching the destination	Risk
22		Occurrence of fire accidents	Emergency	Minor/major injuries and damage to the property	Risk
23		Occurrence of major road accidents	Emergency	Loss of life and property	Risk
1	**Housekeeping Activities**	Performing Cleanliness and Sanitation works	Normal	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	Risk
2			Normal	Depletion of renewable resource due to water consumption	Risk
3			Normal	Generation of Obsolete Components such as vacuum machine, shampoo washing machine, carpet cleaning machine, floor cleaning machine, smart tools, PPE and other accessories	Risk
4			Normal	Generation of Noise due to the operation of vacuum machine and shampoo washing machine	Risk
5			Normal	Wet Flooring	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
6		Spillage of Detergents and Shampoo	Abnormal	Slippery Condition may lead to fall accidents	Risk
7		Electrical Hazards	Abnormal	Major injuries due to electric shock and etc.	Risk
8		Fall of dust on eyes	Abnormal	Eye irritation	Risk
9		Improper Operation Protocols of machines	Abnormal	1.Major injuries due to reverse operation 2.Damage in machines	Risk
10		Fire Accidents	Emergency	Loss of life and properties	Risk
1	**Civil Maintenance Activities**	Consumption of Building Materials	Normal	Depletion of Resources	Risk
2		Utilisation of Equipment	Normal	Generation of Noise and Obsolete Components	Risk
3		Provision of Carpentry	Normal	Generation of Noise and Wood waste	Risk
4		Provision of Partition Facilities	Normal	Generation of Aluminium Waste	Risk
5		Provision of Fall Ceiling	Normal	Generation of Waste False Ceiling Boards	Risk
6		Provision of Painting	Normal	Generation of Paint Containers	Risk
7		Spillage of Paint	Abnormal	Slippery floor condition	Risk
8		Fall of Objects	Abnormal	Minor Injuries	Risk

S.No	Activity/Product/Services	Aspect	Condition	Impact	Category
1	**MEP Services**	Consumption of Mechanical and Plumbing Components	Normal	Generation of Obsolete Components	Risk
2		Repair and Provision of Plumbing Facilities	Normal	Generation of Damaged Pipes and Depletion of Resources	Risk
3		Leakage of Water	Abnormal	Depletion of Renewable Resource	Risk
4		Overflow of Storage Tanks	Abnormal	Depletion of Renewable Resource	Risk
5		Spillage of Water	Abnormal	Fall Accidents due to Wet Surface	Risk
6		Bursting of Pipelines	Emergency	Excessive Depletion of Renewable Resource	Risk
1	**Stores**	Storage of materials	Normal	Provision of ambient temperature (proper storage of materials)	Risk
2				Generation of packaging waste	Risk
4		Storage of oil	Abnormal	Spillage of oils	Risk
5		Storage of chemicals	Abnormal	Spillage of chemicals	Risk
6		Occurrence of Fire Accidents	Emergency	Generation of emissions and Loss of resources	Risk

Version control

Effective Date (from)	Description	Version
22.11.2022	Risk identification	01
03.03.2023	Risk identification – Presented as separate annexure document.	02
22.04.2024	Risk identification – Updated and **Newly added aspects as follows** 1. Softener plant 2.Oxygen INOX plant 3.Oxygen automatic control panel 4.Oxygen pressure swing adsorption 5.Horticulture waste management 6.Operation of lift 7.Food Production 8.Bio methanation unit	03

Annexure 6 - Environmental Impact Assessment

Environmental impact assessment was performed based on the severity and likelihood of the environmental impacts. The Probability of Occurrence (PoC) and severity of negative and positive impacts were categorised five-point attributes as presented in table A6.1 and A6.2 respectively. The significance score of every environmental impact was determined using the empirical equation 1 and its correspondence in table A6.3. An environmental impact was considered as significant when its overall significance score was more than or equal to 15, or an environmental impact was complained about by the interested parties, or an environmental impact comes under mandatory compliance obligations or the value of severity is > 3 or any combination of these.

Table A6.1: Probability of Occurrence

Rating for PoC	Probability of Occurrence (PoC)
1	More than six months
2	Once in a month to six months
3	Once in a week to month
4	Once in a day to week
5	Multiple times a day or continuous

Figure A6.1 presents the significance matrix to evaluate the impacts. The significant environmental aspects shall be communicated among the various levels and functions of the organization as appropriate.

Table A6.2: Attributes of negative and positive environmental impact

Rating for Severity	Impact limits (physical)	Severity of Noise	Severity of Air pollution	Severity of Water pollution	Severity of Resource Depletion	Severity of other impacts
						Land Contamination/release of toxins/gases
1	Within work station	< 40 dB	AQI ranging from 0 - 50	Within permissible limits, no risks	Easily available renewable resources (e.g., Wind, Sun)	Impact on work environment/people/property/soil/flora/fauna due to release of non-toxic that affects within the department/ non-hazardous/ non-inflammable substance
2	Within department	40 - 74 dB	AQI ranging from 51 - 100	Within acceptable limits, no risks	Scarcely available renewable resources (e.g., Water)	Impact on work environment/people/property/soil/flora/fauna due to release of non-toxic that affects overall premises/ non-inflammable substance
3	Within work building	75 - 89 dB	AQI ranging from 101 - 200	Slightly greater than acceptable limits, limited risks	Easily available/ non-renewable resource/ recyclable (e.g., plastic)	Impact on work environment/people/property/soil/flora/fauna due to release of toxic that affects within the department/hazardous/ inflammable substance but controlled
4	Within campus premises	90 - 104 dB	AQI ranging from 201 - 300	Greater than acceptable limits, pose risks to health and environment	Hazardous material/ chemical/ non-recyclable (e.g., used oils, used chemicals)	Impact on work environment/people/property/soil/flora/fauna due to release of toxic that affects overall premises/hazardous/ inflammable substance
5	Outside campus premises	> 104 dB	AQI > 300	Very poor water quality with odour, pose serious risks to health and environment	Scarcely available non-renewable resources (e.g., Petroleum, LPG)	Impact on Globe due to controlled release of toxic/hazardous/ flammable substances into atmosphere

Severity	Probability of Occurrence				
	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Fig A6.1: Significance matrix

Qualitative assessment

Significance score = severity x probability of occurrence **equation 1**

Table A6.3: Level of significance

Significance score	Nature of Impact
<=8	Low
9 to 14	Medium
>= 15	High

Aspect Impact – Electricity from Transformer

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Utilization of High Tension Electricity Supply from Electricity Board**	Generation of LT Electricity	Normal	EMS-SOP-HT-V-02	Generation of used oil from transformer	2	4	8	Yes	High
2					Generation of obsolete silica gel	1	4	4	Yes	High
3					Generation of used cables	3	3	9	Yes	High
4					Generation of obsolete coils	2	4	8	Yes	High
5					Generation of obsolete components	1	2	2	No	Low
6		Fluctuations in voltage (High and Low Voltage)	Abnormal	EMS-OCP(A)-HT-V-02	Failure of electrical products	2	4	8	No	High
7		Failure of HT fuse	Abnormal	EMS-OCP(A)-HT-V-02	Knock out of power supply	1	4	4	No	High
8		Failure of phase	Abnormal	EMS-OCP(A)-HT-V-02	Unbalanced load leading to equipment failure	2	4	8	No	High
9		Failure of lightning arrester	Abnormal	EMS-OCP(A)-HT-V-02	Failure of electrical products	1	3	3	No	Low
10		Failure of surge arrester	Abnormal	EMS-OCP(A)-HT-V-02	Failure of electrical products	1	3	3	No	Low

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
11		Failure of relay and breaker	Abnormal	EMS-OCP(A)-HT-V-02	Knock out of power supply in relay failed area	2	3	6	No	Low
12		Spillage of oil	Abnormal	EMS-OCP(A)-HT-V-02	Slippery conditions leading to fire accidents	1	3	3	Yes	High
13		Failure of PT/CT	Abnormal	EMS-OCP(A)-HT-V-02	Power failure	1	4	4	No	High
14		Failure of Jaw contact	Abnormal	EMS-OCP(A)-HT-V-02	Power failure	1	4	4	No	High
15		Moisture ingress in VCB	Abnormal	EMS-OCP(A)-HT-V-02	Power failure	1	4	4	No	High
16		Failure of HT insulation	Abnormal	EMS-OCP(A)-HT-V-02	Power failure	1	4	4	No	High
17		Failure of Transformer	Abnormal	EMS-OCP(A)-HT-V-02	Power outage	1	4	4	No	High
18.a		Occurrence of Natural calamities (Floods, cyclones, etc.)	Emergency	EMS-OCP(E)-HT-V-01	Stagnation of water	1	4	4	No	High
18.b			Emergency	EMS-OCP(E)-HT-V-01	Intercepted power supply	1	5	5	No	High

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
18.c			Emergency	EMS-OCP(E)-HT-V-01	Failure of transformer components	1	2	2	No	High
18.d			Emergency	EMS-OCP(E)-HT-V-01	Fall of trees on the overhead lines	1	4	4	No	High
19		Damage of Underground cables	Emergency	EMS-OCP(E)-HT-V-01	Intercepted Power supply	1	3	3	No	High

Aspect Impact – Electricity from Gensets

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Operation of Gensets**	Production of LT Electricity through Gensets	Normal	EMS-SOP-DG-V-02	Generation of used oils	3	4	12	Yes	High
2					GHG emissions due to burning of fuels	5	5	25	Yes	High
3					SOx, NOx, PM, HC, CO emissions due to burning of fuels	4	5	20	Yes	High
4					Depletion of non-renewable resources	4	5	20	No	High
5					Generation of obsolete valves and pumps	1	4	4	Yes	High
6					Generation of obsolete batteries	1	3	4	Yes	High
7					Generation of noise and Obsolete components	4	3	12	Yes	High
8					Generation of obsolete filters	1	1	1	Yes	High
9					Reduction in noise pollution due to build-up of acoustic chambers	4	1	4	Yes	High

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
10					Safe emission height of air pollutants due to build-up of stack arrangements	4	4	16	Yes	High
11.a		Spillage of diesel	Abnormal	EMS-OCP(A)-DG-V-02	Slippery conditions leading to accidents	2	1	2	Yes	High
11.b			Abnormal	EMS-OCP(A)-DG-V-02	Excessive depletion of non-renewable resources	1	5	5	Yes	High
11.c			Abnormal	EMS-OCP(A)-DG-V-02	Possible fire accidents	1	5	5	Yes	High
12.a		Leakage of Radiator coolant	Abnormal	EMS-OCP(A)-DG-V-02	Overheated engine	1	1	1	No	Low
12.b			Abnormal	EMS-OCP(A)-DG-V-02	Interruptions in the output power	1	3	3	No	Low
12.c			Abnormal	EMS-OCP(A)-DG-V-02	Possible explosions	1	5	5	No	High
13.a		Overloading operation of gensets	Abnormal	EMS-OCP(A)-DG-V-02	Power failure	1	4	4	No	High
13.b			Abnormal	EMS-OCP(A)-DG-V-02	Tripping	3	4	12	No	High
14.a		Failure of AVR	Abnormal	EMS-OCP(A)-DG-V-02	Sudden power outage	2	2	4	No	Low

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
14.b			Abnormal	EMS-OCP(A)-DG-V-02	Damage to connected electrical equipment (Flickering)	2	1	2	Yes	High
15		Failure of Self-starter motor	Abnormal	EMS-OCP(A)-DG-V-02	Gensets breakdown	1	4	4	No	High
16		Damage of Fan belt	Abnormal	EMS-OCP(A)-DG-V-02	Power failure	2	4	4	No	High
17		Failure of Battery	Emergency	EMS-OCP(E)-DG-V-01	Breakdown of gensets	1	4	4	No	High
18		Occurrence of Fire Accidents	Emergency	EMS-OCP(E)-DG-V-01	Loss of resources and life	1	5	5	No	High

Aspect Impact – Electricity from Solar

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Generation of Electricity through Solar**	Production of Electricity through Solar	Normal	EMS-SOP-PV-V-01	Alternative for non-renewable resources as no CO_2 emission is involved	5	4	20	Yes	High
2					Generation of PV waste that has heavy metals like Cu and Pb	1	4	4	Yes	High
3					Generation of used electric cables	1	2	2	Yes	High
4					Generation of obsolete inverters	1	1	1	Yes	High
5					Generation of obsolete components	1	2	2	No	Low
6		Failure of Inverter	Abnormal	EMS-OCP(A)-PV-V-01	No power production	1	3	3	No	Low
7		Failure of Connecter	Abnormal	EMS-OCP(A)-PV-V-01	No panel productivity	1	2	2	No	Low
8		Failure of DC Fuse	Abnormal	EMS-OCP(A)-PV-V-01	Interrupted power generation	1	3	3	No	Low
9.a		Failure of Surge arrester	Abnormal	EMS-OCP(A)-PV-V-01	Equipment failure	1	2	2	Yes	High
9.b			Abnormal	EMS-OCP(A)-PV-V-01	Interrupted power generation	1	3	3	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
10		Damage of solar panel	Abnormal	EMS-OCP(A)-PV-V-01	Reduced efficiency of solar panels (No power delivery) leading to production losses	1	3	3	No	Low
11.a		Occurrence of natural calamities	Emergency	EMS-OCP(E)-PV-V-01	Solar equipment damage	1	3	3	No	High
11.b			Emergency	EMS-OCP(E)-PV-V-01	Intercepted power generation	1	2	2	No	High

Aspect Impact – Air Conditioner (Centralized Unit)

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Regulation of Indoor Temperature using Air Conditioner (Centralized Unit)**	Circulation of cool air inside the buildings using Chiller plants	Normal	EMS-SOP-CP-V-02	Depletion of non-renewable resources due to the consumption of electricity	3	3	9	No	Medium
2					Water leakage	3	3	9	No	Medium
3					Generation of wastewater	2	3	6	No	Low
4					Generation of noise	5	1	5	No	Low
5					Generation of used oils	1	4	4	Yes	High
6					Generation of used electric cables	1	3	3	Yes	High
7					Generation of obsolete components	1	4	4	Yes	High
8					Generation of obsolete PVC fills	2	3	6	Yes	High
9		Leakage of refrigerant	Abnormal	EMS-OCP(A)-CP-V-02	Greenhouse gas emission	1	5	5	Yes	High
10		Tripping due to high pressure	Abnormal	EMS-OCP(A)-CP-V-02	No cooling production	1	4	4	No	High

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
11		Tripping due to increase in oil temperature	Abnormal	EMS-OCP(A)-CP-V-02	Chiller shut down	1	4	4	No	High
12.a		Imbalance in Water flow	Abnormal	EMS-OCP(A)-CP-V-02	Low pressure leads to ice formation and tripping	2	1	2	No	Low
12.b			Abnormal	EMS-OCP(A)-CP-V-02	Hammering	2	1	2	No	Low
12.c			Abnormal	EMS-OCP(A)-CP-V-02	Expected temperature is not achieved if there is more water	1	1	1	No	Low
13		Failure of Motor/pump	Abnormal	EMS-OCP(A)-CP-V-02	Chiller shut down (No delivery)	1	3	3	No	Low
14.a		Puncture of Chilled water line	Abnormal	EMS-OCP(A)-CP-V-02	Water leakage	2	1	2	No	Low
14.b			Abnormal	EMS-OCP(A)-CP-V-02	Chiller shutdown	2	3	6	No	Low
15.a		Failure of NRV	Abnormal	EMS-OCP(A)-CP-V-02	Back pressure issue	1	1	1	No	Low
15.b			Abnormal	EMS-OCP(A)-CP-V-02	Unwanted water circulation	1	1	1	No	Low
16		Failure of VFD	Abnormal	EMS-OCP(A)-CP-V-02	Chiller shutdown	1	3	3	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
17		Puncture of condenser copper tube	Emergency	EMS-OCP(E)-CP-V-01	Chiller shutdown (15- 20 days)	1	3	3	No	High
18		Failure of Compressor	Emergency	EMS-OCP(E)-CP-V-01	Chiller shutdown	1	3	3	No	High
19		Failure of Phase	Emergency	EMS-OCP(E)-CP-V-01	Chiller shutdown	1	3	3	No	High
20		Failure of Fuse	Emergency	EMS-OCP(E)-CP-V-01	Possible electrical fire	1	4	4	No	High
21		Opening of pressure relief valve	Emergency	EMS-OCP(E)-CP-V-01	Chiller shut down	1	4	4	No	High

Aspect Impact – Air Conditioner (Individual Unit)

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Regulation of Indoor Temperature using Air Conditioner (Individual Unit)**	Circulation of cool air inside the buildings using split AC	Normal	EMS-SOP-IAC-V-01	Depletion of non-renewable resources due to the consumption of electricity	3	3	9	No	Medium
2					Greenhouse gas emission	4	5	20	Yes	High
3					Generation of used electric cables	1	1	1	Yes	High
4					Generation of obsolete filters, valves and condenser coils, motors	1	1	1	Yes	High
5		Failure of motor	Abnormal	EMS-OCP(A)-IAC-V-01	Split AC shutdown	1	1	1	No	Low
6		Leakage of refrigerant	Abnormal	EMS-OCP(A)-IAC-V-01	Greenhouse gas emission	1	5	5	Yes	High
7		Damage caused by rodents	Abnormal	EMS-OCP(A)-IAC-V-01	Split AC shutdown	3	1	3	No	Low
8		Damage of fan/blower	Abnormal	EMS-OCP(A)-IAC-V-01	Hinders the cooling process	1	1	1	No	Low
9		Failure of Board	Abnormal	EMS-OCP(A)-IAC-V-01	System Shutdown	1	1	1	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
10.a		Damage of Valve	Abnormal	EMS-OCP(A)-IAC-V-01	Unable to control refrigerant flow	1	1	1	No	Low
10.b			Abnormal	EMS-OCP(A)-IAC-V-01	Refrigerant leakage	1	5	5	Yes	High
11		Malfunctioning of PCB	Abnormal	EMS-OCP(A)-IAC-V-01	Split AC shutdown	1	3	3	Yes	High
12		Failure of Capacitor	Abnormal	EMS-OCP(A)-IAC-V-01	Split AC shutdown	1	3	3	Yes	High
13		Failure of Compressor	Emergency	EMS-OCP(E)-IAC-V-01	Hinders the cooling process	1	3	3	Yes	High

Aspect Impact – Operation of Lift

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Operation of Lift**	Facilitation of vertical transport	Normal	EMS-SOP-LI-V-02	Depletion of non-renewable resources due to the consumption of electricity	5	3	15	No	High
2			Normal		Generation of used Oils	1	4	4	Yes	High
3			Normal		Generation of used electric cables, batteries	1	4	4	Yes	High
4			Normal		Generation of obsolete components and metal scraps	1	3	3	No	Low
5		Overloading of people	Abnormal	EMS-OCP(A)-LI-V-02	Halt of vertical transport	5	1	5	No	Low
6		Failure of Sensor	Abnormal	EMS-OCP(A)-LI-V-02	Lift stuck up/OFF	2	3	6	No	Low
7		Oil spillage	Abnormal	EMS-OCP(A)-LI-V-02	Slippery conditions leading to fall accidents	1	3	3	No	Low
8		Failure of Relay	Abnormal	EMS-OCP(A)-LI-V-02	Lift Shutdown	1	3	3	No	Low
9		Malfunctioning of ARD	Emergency	EMS-OCP(E)-LI-V-01	Passengers stuck up in lift during power failure	1	3	3	No	High
10		Failure of door rope	Emergency	EMS-OCP(E)-LI-V-01	Lift Shutdown	1	4	4	No	High

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
11		Switching of floor level	Emergency	EMS-OCP(E)-LI-V-01	Disruption in the vertical transport	1	3	3	No	High

Aspect Impact – Groundwater Extraction

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Groundwater Extraction**	Consumption of Water	Normal	EMS-SOP-GWE-V-01	Depletion of renewable resource (water)	5	2	10	No	Medium
2					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
3					Generation of Obsolete Components such as Pipes, Plumbing fixtures, pumps and Motors.	1	4	4	Yes	High
4					Generation of Noise due to the operation of Pumps and Motors.	5	1	5	No	Low
5		Over-exploitation of groundwater	Abnormal	EMS-OCP(A)-GWE-V-01	Declination in Groundwater Level	2	4	8	No	High
6		Unavailability of Groundwater	Emergency	EMS-OCP(E)-GWE-V-01	Excessive increase in water demand	1	5	5	No	High

Aspect Impact – Water Treatment -RO

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Water Treatment - RO**	Production of Treated Water	Normal	EMS-SOP-RO-V-02	Generation of Reject water	5	1	5	No	Low
2					Depletion of renewable resource (water)	5	2	10	No	Medium
3					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
4					Generation of noise due to operation in pumps and motors	5	2	10	No	Medium
5					Generation of obsolete components such as Pipes, Plumbing Fixtures, Storage tanks, Dual media, Flow indicators, Pressure gauges, Various pumps, Motors and Micron filter	1	4	4	Yes	High
6					Spillage of Antiscalant	3	1	3	No	Low
7		Fluctuation in Voltage	Abnormal	EMS-OCP(A)-RO-V-02	No Production of treated water due to Panel damage	1	1	1	No	Low
8		Scaling in Raw Water Pipeline	Abnormal	EMS-OCP(A)-RO-V-02	Inflow of the RO Unit will be decreased	2	1	2	No	Low
9		Failure in Pumps	Abnormal	EMS-OCP(A)-RO-V-02	RO Unit Shutdown	1	4	4	No	High

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
10		Failure in flow indicators & pressure gauge	Abnormal	EMS-OCP(A)-RO-V-02	Imbalance water flow in RO Unit	1	1	1	No	Low
11		Cut-off of Membrane O-Ring	Abnormal	EMS-OCP(A)-RO-V-02	1.Increase in generation of Reject Water 2.The Taste of water will be reduced	2	4	8	Yes	High
12		Damage in Fibre Reinforced Plastic(FRP) Vessel	Abnormal	EMS-OCP(A)-RO-V-02	1.RO Unit will Stop its Function 2.Wastage of water	1	4	4	No	High
13		Failure in High Pressure Pump	Abnormal	EMS-OCP(A)-RO-V-02	RO Unit Shutdown	1	4	4	No	High
14		Excessive shortage in power supply	Emergency	EMS-OCP(E)-RO-V-01	RO Unit Shutdown	1	4	4	No	High

Aspect Impact – Softener Plant

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Softener Plant**	Production of Soft Water	Normal		Reduction in concentration of Ca & Mg ions	4	3	12	No	Medium
2					Prevention of scaling effects in pipelines	4	4	16	No	High
3					Depletion of renewable resource (water)	3	2	6	No	Low
4					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
5					Generation of noise due to operation in pumps and motors	4	1	4	No	Low
6					Generation of obsolete components such as Pipes, Plumbing Fixtures, Storage tanks, Dual media, Flow indicators, Pressure gauges, Pumps, Motors, Various tanks, and Valves	1	4	4	Yes	High
7					Spillage of Resin beads, Brine solution and Salt	1	1	1	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
8		Failure in Pumps	Abnormal	EMS-OCP(A)-SP-V-01	Plant Shutdown - No Water Delivery	1	4	4	No	High
9		Failure in Shaft	Abnormal	EMS-OCP(A)-SP-V-01	Delivery of Water will be Stopped	1	2	2	No	Low
10		Failure in Valves	Abnormal	EMS-OCP(A)-SP-V-01	Water Supply will be affected	1	2	3	No	Low
11		Failure in Agitator	Abnormal	EMS-OCP(A)-SP-V-01	Time Consumption for Salt mixing	1	1	1	No	Low
12		Damage in Resin Beads	Abnormal	EMS-OCP(A)-SP-V-01	Increase the Hardness of Water	1	1	1	No	Low
13		Failure in Regeneration Tank	Abnormal	EMS-OCP(A)-SP-V-01	Output Water will not be delivered and it affect the Backwashing	1	1	1	No	Low
14		Failure in Dual Media	Abnormal	EMS-OCP(A)-SP-V-01	Decrease in Water Quality due to improper filtration	1	2	2	Yes	High
15		Excessive shortage in power supply	Emergency	EMS-OCP(E)-SP-V-01	Softener Unit Shutdown	1	4	4	No	High

Aspect Impact – Wastewater Treatment - STP

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Waste Water Treatment - STP**	Production of Treated Waste Water	Normal	`EMS-SOP-STP-V-02	Generation of Sludge	4	2	8	No	Low
2					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
3					Generation of Noise due to the operation of Pumps and motors.	5	1	5	No	Low
4					Generation of Obsolete components such as flow meters, chemical stored tanks, pumps and motors, Membranes	1	3	3	Yes	High
5					Spillage of MBBR	3	1	3	No	Low
6					Utilization of treated water for various purposes	5	1	5	Yes	High
7					Generation of Wastes such as Solid, Plastic waste	1	3	3	Yes	High
8		Blockage in Diffuser	Abnormal	EMS-OCP(A)-STP-V-02	Obstruction of air flow may lead to blower damage and odour generation	1	1	1	No	Low

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
9		Failure of Pulley	Abnormal	EMS-OCP(A)-STP-V-02	1.Generation of noise 2.Overheating of Belt may lead to Belt cut off	2	2	4	No	Low
10		Outburst in Pipes	Abnormal	EMS-OCP(A)-STP-V-02	Spillage of Wastewater	1	1	1	No	Low
11		Damage in Bearing	Abnormal	EMS-OCP(A)-STP-V-02	1.Generation of noise 2.Wear and tear of bearing housing	2	1	2	No	Low
12		Choking in Filter	Abnormal	EMS-OCP(A)-STP-V-02	1.Improper air flow 2.Settlement of dust	2	2	4	No	Low
13		Corrosion in Pipes	Abnormal	EMS-OCP(A)-STP-V-02	Formation of holes may lead to spillage	1	1	1	No	Low
14		Blockage in Blower	Abnormal	EMS-OCP(A)-STP-V-02	Absence of air flow	2	2	4	No	Low
15		Leakage in Valves	Abnormal	EMS-OCP(A)-STP-V-02	1. Air leakage in aeration tank 2.Leakage of Wastewater in storage tank	3	2	6	No	Low
16		Leakage of Oil in Pumps	Abnormal	EMS-OCP(A)-STP-V-02	Spillage of oil	1	4	4	No	High
17		Failure in Pumps	Abnormal	EMS-OCP(A)-STP-V-02	Plant Shutdown	1	4	4	No	High

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
18		Cut Off of Belt	Abnormal	EMS-OCP(A)-STP-V-02	Operation of Treating will stop due to overheat in clarifier and decanter	2	4	8	No	High
19		Failure in Bush	Abnormal	EMS-OCP(A)-STP-V-02	Wear and Tear may lead to pulley damage	1	1	1	No	Low
20		Damage in Centre Shaft Pipe	Abnormal	EMS-OCP(A)-STP-V-02	Obstruction in operation of pump	1	1	1	No	Low
21		Damage in Impeller	Abnormal	EMS-OCP(A)-STP-V-02	Obstruction in water movement	1	1	1	No	Low
22		Choking in Dual Media	Abnormal	EMS-OCP(A)-STP-V-02	Increase in water inlet pressure may lead to pump damage	1	2	2	No	Low
23		Breakage in Rotameter	Abnormal	EMS-OCP(A)-STP-V-02	Not able to" read " the flow rate	1	1	1	No	Low
24		Excessive Wastewater Inflow	Abnormal	EMS-OCP(A)-STP-V-02	Spillage of Wastewater	1	3	3	No	Low
25		Choking in Membrane (UF)	Abnormal	EMS-OCP(A)-STP-V-02	1.Increase in the inlet pressure may lead to outburst and leakage 2.Reduction in flow rate	1	3	3	No	Low
26		Failure in Pneumatic Wall	Abnormal	EMS-OCP(A)-STP-V-02	Plant Shutdown	1	4	4	No	High

S. No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
27		Decanter Sensor Break	Abnormal	EMS-OCP(A)-STP-V-02	Decanter shutdown	1	2	2	No	Low
28		Failure in Decanter Indicator Failure	Abnormal	EMS-OCP(A)-STP-V-02	No display of speed variations may lead to stop the decanter	1	2	2	No	Low
29		Failure in decanter dosing pump	Abnormal	EMS-OCP(A)-STP-V-02	Obstruction in polymer insertion may lead to stop the sludge thickening	1	1	1	No	Low
30		Failure in decanter Panel Board	Abnormal	EMS-OCP(A)-STP-V-02	obstruction in power supply may lead to plant shutdown	2	4	8	No	High
31		Failure in decanter VFD Drive	Abnormal	EMS-OCP(A)-STP-V-02	1.Decrease in motor speed and no input signal may lead to decanter shutdown 2.Unregulate the motor speed regulations	1	2	2	No	Low
32		Death of Bacteria	Abnormal	EMS-OCP(A)-STP-V-02	1.Generation of odour 2.Decrease in wastewater quality parameters	1	4	4	Yes	High
33		Occurrence of Natural Calamity	Emergency	EMS-OCP(E)-STP-V-01	Plant Shutdown	1	5	5	No	High

Aspect Impact – Wastewater Treatment - ETP

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Wastewater Treatment - ETP**	Production of Treated Effluent Water	Normal	EMS-SOP-ETP-V-02	Generation of Effluent Sludge	4	4	16	Yes	High
2					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
3					Generation of Noise due to the operation of Pumps and motors.	4	1	4	No	Low
4					Generation of Obsolete components such as Pipes and plumbing fixtures, flow meters, chemical stored tanks, pumps and motors	1	4	4	Yes	High
5					Spillage of chemical while filling up of dosing pump	1	2	2	No	Low
6		Failure in Dosing Pump	Abnormal	EMS-OCP(A)-ETP-V-02	Generation of Odour due to decrease in Water Quality (Pale colour Formation)	1	1	1	Yes	High
7		Cut-off of Hose	Abnormal	EMS-OCP(A)-ETP-V-02	No Dosing of Chemical due to air lock	1	1	1	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
8		Cut-off of Belt in Agitator	Abnormal	EMS-OCP(A)-ETP-V-02	No Mixing of chemicals	1	1	1	No	Low
9		High Voltage Supply	Abnormal	EMS-OCP(A)-ETP-V-02	Plant Shutdown	1	3	3	No	Low
10		Failure in Pumps	Abnormal	EMS-OCP(A)-ETP-V-02	Plant Shutdown	1	3	3	No	Low
11		Failure in Bush	Abnormal	EMS-OCP(A)-ETP-V-02	1. Occurrence of Leak 2.Reduction in rate of effluent inflow	1	2	2	No	Low
12		Failure in Agitator	Abnormal	EMS-OCP(A)-ETP-V-02	Improper mixing of Chemical & Water	1	1	1	No	Low
13		Excessive flow of Effluent Inflow	Abnormal	EMS-OCP(A)-ETP-V-02	Decrease in Effluent Plant Treatment Capacity	1	2	2	No	Low
14		Occurrence of Natural Calamity	Emergency	EMS-OCP(E)-ETP-V-01	Plant Shutdown - No Treatment of Effluent Water	1	4	4	No	Low

Aspect Impact – Rainwater Harvesting Facility

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Rainwater Harvesting**	Conservation of Rainwater	Normal	EMS-SOP-RWH-V-01	Increase the Quality and Quantity of Groundwater	2	4	8	No	High
2					Generation of Obsolete Components such as Pipes and Plumbing fixtures.	1	3	3	Yes	High
3		Blockage of Rainwater Collection Pipe	Abnormal	No Control	Wastage of Rainwater	1	4	4	No	High
4		Obstruction in Pits	Emergency	No Control	Decrease in Infiltration Rate and Percolation of water	2	4	8	No	High

Aspect Impact – Storm Water Drainage

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Storm Water Drainage**	Flow of Water in Drains	Normal	EMS-SOP-SWD-V-01	Prevention of Soil Erosion and Flood	1	4	4	No	High
2					Safe Discharge of Rainwater	1	5	5	No	High
3		Stagnation of water	Abnormal	No Control	Fall Accidents due to Wet Surface	1	3	3	No	Low
4		Blockage of Drainage	Abnormal	No Control	Overflow of water	1	4	4	No	High
5		Excessive Rainfall	Emergency	No Control	Occurrence of Flash Flood	1	5	5	No	High

Aspect Impact – Solar Steam (Cooking) Plant

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Solar Steam (Cooking) Plant**	Production of Steam for Cooking	Normal	EMS-SOP-SSP-V-01	Utilization of Solar energy	5	4	20	No	High
2					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
3					Depletion of renewable resource due to water consumption	3	2	6	No	Low
4					Generation of Obsolete Components such as Solar dish, Tracking Motor, Boiler, Pipes and receivers	1	3	3	Yes	High
5					Deposition of Dust in Solar dishes	3	2	6	No	Low
6		Outburst in Pipeline	Abnormal	EMS-OCP(A)-SSP-V-01	Leakage of Steam	1	2	2	No	Low
7		Defocus of heat on Electrical wire	Abnormal	EMS-OCP(A)-SSP-V-01	Electrical Failure	1	2	2	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
8		Damage in Solar dish due to Wind Conditions	Abnormal	EMS-OCP(A)-SSP-V-01	Loss in Steam Production	3	3	9	No	Medium
9		Excessive Solar Heat	Abnormal	EMS-OCP(A)-SSP-V-01	Release of Excess Steam Produced	1	2	2	No	Low
10		Malfunction of Tracking Motor	Abnormal	EMS-OCP(A)-SSP-V-01	Loss in Heat Gain	1	1	1	No	Low
11		Leakage of Wet Steam From Boiler	Abnormal	EMS-OCP(A)-SSP-V-01	Loss in Steam	1	4	4	No	High
12		Occurrence of Natural Calamity like Storm, Cyclone	Emergency	EMS-OCP(E)-SSP-V-01	Plant Shutdown	1	4	4	No	High

Aspect Impact – Oxygen INOX Plant

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Oxygen - INOX Plant**	Production of O_2 Gas	Normal	EMS-SOP-INOX-V-01	Generation of O_2 gas from LMO	4	1	4	No	Low
2					Generation of Obsolete Gauges and Telemetric components	1	2	2	Yes	High
3					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
4					Depletion of renewable resource due to water consumption	4	2	8	No	Low
5		Increase in the Pressure of LMO > 13 bar	Abnormal	EMS-OCP(A)-INOX-V-O1	Discharge of LMO from tank	1	2	2	No	Low
6		Decrease in the Pressure of LMO < 7 bar	Abnormal	EMS-OCP(A)-INOX-V-O1	Discharge of LMO from tank	1	2	2	No	Low
7		Puncture in Gas Pipeline	Abnormal	EMS-OCP(A)-INOX-V-O1	Leakage of Gas	1	3	3	No	Low
8		Flange Loosening	Emergency	EMS-OCP(E)-INOX-V-O1	Heavy Discharge of LMO	1	3	3	No	Low
9		Occurrence of Fire Accident	Emergency	EMS-OCP(E)-INOX-V-01	Occurrence of Explosion	1	5	5	No	High

Aspect Impact – Oxygen Pressure swing Adsorption

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**O_2 Pressure Swing Adsorption - PSA**	Production of O_2 Gas	Normal	EMS-SOP-O2PSA-V-01	Generation of O_2 gas from Air	4	1	4	No	Low
2					Generation of Obsolete Components such as Control Panel ,Fine Filter, Carbon Filter, Moisturizer Filter, Oil filter, Solenoid Coil, Air Dryer, Valves and Gauges, Regulators	1	2	2	Yes	High
3					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
4					Spillage of Chemicals due to Zeolite and Activated alumina usage	2	1	2	No	Low
5					Generation of Used Oil due to Synthetic oil usage	1	4	4	Yes	High
6					Generation of Noise due to operation of Compressor	4	2	8	No	Low
7		Breakage of Gasket	Abnormal	EMS-OCP(A)-O2PSA-V-01	Leakage of Air	1	1	1	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
8		Breakage of Valves	Abnormal	EMS-OCP(A)-O2PSA-V-01	Leakage of Air	1	1	1	No	Low
9		Malfunction in Air Dryer	Abnormal	EMS-OCP(A)-O2PSA-V-01	Reduction in Air Purity Level	1	2	2	No	Low
10		Failure in Compressor	Abnormal	EMS-OCP(A)-O2PSA-V-01	Plant Shutdown	1	4	4	No	High
11		Spillage of Oil	Abnormal	EMS-OCP(A)-O2PSA-V-01	Floor become Wet and Slippery	1	4	4	Yes	High
12		Air Pressure Variation	Abnormal	EMS-OCP(A)-O2PSA-V-01	Reduction in Air Purity Level	2	1	2	No	Low
13		Blockage of Solenoid Coil	Emergency	EMS-OCP(E)-O2PSA-V-01	Absence of O_2 Supply	1	4	4	No	High

Aspect Impact – Oxygen Automatic Control Panel

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**O_2 Automatic Control Panel - ACP**	Production of O_2 Gas and its supply	Normal	EMS-SOP-O2ACP-V-01	Generation and Supply of O_2 from Oxygen and Nitrogen Cylinders	4	3	12	No	Medium
2					Generation of used cylinders	3	3	9	Yes	High
3					Leakage of O_2	1	1	1	No	Low
4					Generation of Obsolete Components such as Control panel, Regulators, Gauges, Solenoid coil and Valves	1	2	2	Yes	High
5					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
6		Non Return Valve (NRV) Leakage	Abnormal	EMS-OCP(A)-O2ACP-V-01	Leakage of O_2	1	1	1	No	Low
7		Falling of Cylinder	Abnormal	EMS-OCP(A)-O2ACP-V-01	Explosion due to Gas Leakage	2	2	4	No	Low
8		Failure of EB Supply	Emergency	EMS-OCP(E)-O2ACP-V-01	Shortage of O_2 Supply	1	4	4	No	High

Aspect Impact – Solid Waste Management

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Solid Waste Management**	Recoverable Degradable waste Inert waste	Normal	EMS-SOP-SWM-V-01	Promotion of circular economy.	3	1	3	No	Low
2					Prevention of Air and Water borne diseases	5	1	5	No	Low
3					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
4					Depletion of renewable resources (diesel) for transportations	5	5	25	No	High
5					Obsolete machineries components	1	3	3	Yes	High
6		Generation of Leachate and odour	Abnormal	EMS-OCP(A)-SWM-V-01	Creates a Bad odour and the cause Air and waterborne diseases	2	2	4	No	Low
7		Spillage of Wastes while collecting	Abnormal	EMS-OCP(A)-SWM-V-01	Bike Accidents may occur by skid	1	4	4	No	High
8		Mix up of Biomedical waste	Abnormal	EMS-OCP(A)-SWM-V-01	May cause contamination and pollute the soil	1	3	3	Yes	High
9		Mix up of Carcass waste	Abnormal	EMS-OCP(A)-SWM-V-01	Bad odour and prey for birds	1	1	1	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
10		Non availability of collection trucks	Abnormal	EMS-OCP(A)-SWM-V-01	Stocking of wastes and it cause bad odour	1	2	2	Yes	High
11		Occurrence of Fire Accidents	Emergency	EMS-OCP(E)-SWM-V-01	Pollution to the environment, loss of stocks fire, Fire Injuries	1	4	4	No	High

Aspect Impact – Hazardous Waste Management

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Hazardous Waste Management**	Hazardous waste management	Normal	EMS-SOP-HWM-V-01	Reduction of the harmful chemicals and pollutants that enters to the soil, water.	5	4	20	No	High
2					Generation of used barrels and glassware's	1	3	3	No	Low
3					Emissions of greenhouse gases	1	5	5	Yes	High
4		Spillage of oils while storing	Abnormal	EMS-OCP(A)-HWM-V-01	Slippery condition may lead to accidents by fall	1	1	1	No	Low
5		Leakage in the storage container	Abnormal	EMS-OCP(A)-HWM-V-01	Results in surface water pollution	1	4	4	No	High
6		Manual handling of oils	Abnormal	EMS-OCP(A)-HWM-V-01	Human Injuries	1	2	2	No	Low
7		Occurrence of Fire Accident	Emergency	EMS-OCP(E)-HWM-V-01	Occurrence of Explosion	1	5	5	No	High

Aspect Impact – E -Waste Management

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**E-Waste Management**	Generation of E-waste	Normal	EMS-SOP-EWM-V-01	Generation of obsolete electronic equipment's and lab instruments	2	4	8	Yes	High
2					Depletion of non-renewable resource	3	3	9	No	Medium
3		Fall accidents during storage and transport	Abnormal	EMS-OCP(A)-EWM-V-01	Minor Injury	1	1	1	No	Low
4		Occurrence of fire accidents in the storage room	Emergency	EMS-OCP(E)-EWM-V-01	Production of polycyclic aromatic hydrocarbons and dioxins.	1	5	5	No	High

Aspect Impact – Horticulture Activity

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Horticulture Activity**	Development of Green Belt	Normal	EMS-SOP-HA-V-01	Generation of soil pollution	2	4	8	Yes	Low
2					Carbon dioxide emission due to consumption of electricity	3	3	9	Yes	Medium
3					Generation of Noise due to the operation of lawn movers and motors.	3	1	3	Yes	Low
4					Generation of Obsolete components such as pipes, valves, drip irrigation setups. etc.	1	4	4	No	Low
5					An Eco-friendly environment lifestyle to the students.	5	4	20	No	High
6		Damage to the plants	Abnormal	EMS-OCP(A)-HA-V-01	Generation of Odour due to decrease in Water Quality	2	4	8	Yes	Low
7		Components Malfunctions	Abnormal	EMS-OCP(A)-HA-V-01	Lack of water flow or unpruned of plants	1	4	4	No	Low
8		Lopping injuries	Abnormal	EMS-OCP(A)-HA-V-01	Minor Injury	2	1	2	Yes	Low
9		Over stagnant of water	Abnormal	EMS-OCP(A)-HA-V-01	Loss of Percolation	2	4	8	Yes	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
10		Failure of Pumps	Abnormal	EMS-OCP(A)-HA-V-01	Lack of water to plants	1	1	1	Yes	Low
11		Occurrence of Natural Calamity	Emergency	EMS-OCP(E)-HA-V-01	Fall of trees and branches	1	5	5	Yes	Low

Aspect Impact – Horticulture Waste Management

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Horticulture Waste Management**	Organic composting production	Normal	EMS-SOP-HW-V-01	Generation of Odour	5	1	5	No	Low
2					Generation of Mosquitos	4	4	16	No	High
3					Generation of Leachate	2	2	4	No	Low
4		Loss of worms while composting	Abnormal	EMS-OCP(A)-HW-V-01	Increase in Composting time.	2	2	4	No	Low
5		Excessive waste generation	Abnormal	EMS-OCP(A)-HW-V-01	Lack of area for the composting	1	4	4	No	High
6		Occurrence of Fire Accidents	Emergency	EMS-OCP(E)-HW-V-01	Occurrence of Explosion	1	5	5	Yes	High

Aspect Impact – Food Production

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Food Production**	Production of Food	Normal	EMS-SOP-FP-V-01	Ozone layer depletion (Refrigerants)	4	1	4	No	Low
2					Obsolete machineries components and utensils	1	1	1	No	Low
3					Generation of waste water	5	2	10	No	Medium
4					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
5					Generation of noise due to operation in grinder and peeler.	4	1	4	No	Low
6					Spillage of oils and raw materials while cooking	3	1	3	Yes	High
8		Voltage fluctuation	Abnormal	EMS-OCP(A)-FP-V-01	Fire injuries and no operation of components	1	2	2	No	Low
9		Apron Fire	Abnormal	EMS-OCP(A)-FP-V-01	Fire injuries	1	1	1	No	Low
10		Falling of Cylinder	Abnormal	EMS-OCP(A)-FP-V-01	Injuries to human	3	1	3	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
11		Spillage of food during manual transportation	Abnormal	EMS-OCP(A)-FP-V-01	Slippery condition may lead to accidents and food loss	5	2	10	No	Medium
12		Spillage of oil	Abnormal	EMS-OCP(A)-FP-V-01	Fall Accidents	2	1	2	No	Low
13		Shredding accidents	Abnormal	EMS-OCP(A)-FP-V-01	Injuries to human	1	1	1	No	Low
14		Failure of cold storage	Abnormal	EMS-OCP(A)-FP-V-01	Rotten of fresh vegetables and dairy products	2	3	6	No	Low
15		Flooding due to rain	Emergency	EMS-OCP(E)-FP-V-01	Water logging in Kitchen area	1	5	5	No	High
16		Occurrence of Fire Accident	Emergency	EMS-OCP(E)-FP-V-01	Fire injuries to human and loss of components	1	5	5	No	High

Aspect Impact – Bio Methanation Unit

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Bio Methanation Unit**	Production of Biogas	Normal	EMS-SOP-BG-V-01	Generation of biogas from food and vegetable waste.	5	1	5	No	Low
2					Generation of Obsolete Components such as Control Panel, Geyser, Storage tank, Valves and Hydrolysers, Regulators.	1	2	2	Yes	High
3					Depletion of non-renewable resource and CO_2 emission due to consumption of electricity.	3	3	9	No	Medium
4					Generation of odour.	5	1	5	No	Low
5					Generation of sludge.	1	1	1	Yes	High
6		Rat bite in Twin balloon storage	Abnormal	EMS-OCP(A)-BG-V-01	Leakage of Methane gas	1	1	1	No	Low
7		Leakage in hydrolysis tank	Abnormal	EMS-OCP(A)-BG-V-01	Leakage of slurry	1	2	2	No	Low
8		Spillage of food waste	Abnormal	EMS-OCP(A)-BG-V-01	Generation of odour and slippery in the floor	4	2	8	No	Low
9		Leakage in methane valve	Abnormal	EMS-OCP(A)-BG-V-01	Loss of methane gas and Greenhouse gas emission	1	4	4	No	High

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
10		Malfunction of Geyser	Abnormal	EMS-OCP(A)-BG-V-01	Loss in production of methane gas	2	1	2	No	Low
11		Occurrence of Fire Accident	Emergency	EMS-OCP(E)-BG-V-01	Occurrence of Explosion	1	5	5	No	High

Aspect Impact – Firefighting System

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Firefighting System**	Executing the firefighting operations	Normal	EMS-SOP-FS-V-01	GHG emissions due to burning of fuels (diesel)	4	4	16	Yes	High
2					SOx, NOx, PM, HC, CO emissions due to burning of fuels (diesel)	4	4	16	Yes	High
3					Generation of used oils	2	4	8	Yes	High
4					Generation of hazardous waste due to the operation of fire extinguishers	1	4	4	Yes	High
5		Spillage of grease	Abnormal	EMS-OCP(A)-FS-V-01	Slippery conditions leading to fall accidents	1	1	1	No	Low
6		Obstruction in exit ways	Abnormal	EMS-OCP(A)-FS-V-01	Fall accidents	1	4	4	No	High
7		Blockage in water mains	Emergency	EMS-OCP(E)-FS-V-01	Intercepted water flow causing hindrance to the operation	1	5	5	No	High
8		Malfunctioning of fire alarms	Emergency	EMS-OCP(E)-FS-V-01	Unable to hear the warning alarm	1	4	4	No	High

Aspect Impact – Transportation Facility

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Operation of Transportation Services**	Facilitation of fleet service	Normal	EMS-SOP-TS-V-02	GHG emissions due to burning of fuels (diesel)	4	4	16	Yes	High
2					SOx, NOx, PM, HC, CO emissions due to burning of fuels (diesel)	4	4	16	Yes	High
3					Depletion of non-renewable resources	4	5	20	No	High
4					No GHG emissions due to battery operated vehicles	5	5	5	No	High
5					No release of air pollutants due to battery operated vehicles	5	5	5	No	High
6					Generation of obsolete batteries and other obsolete components	1	2	2	No	Low
7		Maintenance of vehicle	Normal		Improved mileage and passenger safety	5	1	5	No	Low
8					Generation of used paint containers and other accessories	1	1	1	No	Low
9					Generation of obsolete tyres due to wear and tear	1	4	4	Yes	High
10					Generation of effluent due to water wash	4	4	16	Yes	High

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
11			Normal	EMS-SOP-TS-V-02	Improved indoor air quality due to water wash	4	1	4	No	Low
12					Inhalation of volatile organic compounds and aerosols due to painting and stickering works	1	2	2	No	Low
13					Generation of used engine oils	2	4	8	Yes	High
14					Generation of electrical and solid waste	2	1	2	Yes	High
15		Fall accidents during wheel maintenance	Abnormal	EMS-OCP(A)-TS-V-02	Minor injury	1	1	1	No	Low
16		Spillage of oils	Abnormal	EMS-OCP(A)-TS-V-02	Slippery conditions leading to accidents	1	1	1	No	Low
17			Abnormal	EMS-OCP(A)-TS-V-02	Depletion of non-renewable resources	1	4	4	No	High
18		Leakage of refrigerants	Abnormal	EMS-OCP(A)-TS-V-02	Emission of greenhouse gases	1	5	5	Yes	High
19		Breakdown of vehicles	Abnormal	EMS-OCP(A)-TS-V-02	Delay in reaching the destination	2	4	8	No	High
20		Occurrence of minor road accidents	Abnormal	EMS-OCP(A)-TS-V-02	Injuries to people	1	5	5	No	High

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
21		Occurrence of minor road accidents	Abnormal	EMS-OCP(A)-TS-V-02	Delay in reaching the destination	2	4	8	No	High
22		Occurrence of fire accidents	Emergency	EMS-OCP(E)-TS-V-01	Minor/major injuries and damage to the property	1	5	5	No	High
23		Occurrence of major road accidents	Emergency	EMS-OCP(E)-TS-V-01	Loss of life and property	1	5	5	No	High

Aspect Impact – Housekeeping Facility

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Housekeeping Activities**	Performing Cleanliness and Sanitation works	Normal	EMS-SOP-HK-V-01	Depletion of non-renewable resource and CO_2 emission due to consumption of electricity	3	3	9	No	Medium
2					Depletion of renewable resource due to water consumption	5	2	10	No	Low
3					Generation of Obsolete Components such as vacuum machine, shampoo washing machine, carpet cleaning machine, floor cleaning machine, smart tools, PPE and other accessories	1	4	4	Yes	High
4					Generation of Noise due to the operation of vacuum machine and shampoo washing machine	4	1	4	No	Low
5					Wet Flooring	5	1	5	No	Low
6		Spillage of Detergents and Shampoo	Abnormal	EMS-OCP(A)-HK-V-01	Slippery Condition may lead to fall accidents	2	1	2	No	Low

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
7		Electrical Hazards	Abnormal	EMS-OCP(A)-HK-V-01	Major injuries due to electric shock and etc.	1	1	1	No	Low
8		Fall of dust on eyes	Abnormal	EMS-OCP(A)-HK-V-01	Eye irritation	3	1	3	No	Low
9		Improper Operation Protocols of machines	Abnormal	EMS-OCP(A)-HK-V-01	1.Major injuries due to reverse operation 2.Damage in machines	1	1	1	No	Low
10		Fire Accidents	Emergency	EMS-OCP(E)-HK-V-01	Loss of life and properties	1	5	5	No	High

Aspect Impact – Civil Maintenance Activities

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Civil Maintenance Activities**	Consumption of Building Material	Normal	EMS-SOP-CMA-V-02	Depletion of Resources	3	4	12	No	High
2		Utilisation of Equipment			Generation of Noise and Obsolete Components	2	4	8	No	High
3		Provision of Carpentry			Generation of Noise and Wood waste	2	4	8	No	High
4		Provision of Partition Facilities			Generation of Aluminium Waste	2	3	6	Yes	High
5		Provision of Fall Ceiling			Generation of Waste Fall Ceiling Boards	2	1	2	No	Low
6		Provision of Painting			Generation of Paint Containers	1	4	4	Yes	High
7		Spillage of Paint	Abnormal	EMS-OCP(A)-CMA-V-01	Slippery Floor Condition	1	1	1	No	Low
8		Fall of Objects	Abnormal	EMS-OCP(A)-CMA-V-01	Minor Injuries	1	1	1	No	Low

Aspect Impact – MEP Services

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**MEP Services**	Consumption of Mechanical and Plumbing Components	Normal	EMS-SOP-MEP-V-02	Generation of Obsolete Components	2	4	8	Yes	High
2		Repair and Provision of Plumbing Facilities			Generation of Damaged Pipes and Depletion of Resources	2	3	6	No	Low
3		Leakage of Water	Abnormal	EMS-OCP(A)-MEP-V-01	Depletion of Renewable Resource	2	2	4	No	Low
4		Overflow of Storage Tanks	Abnormal	EMS-OCP(A)-CMA-V-01	Depletion of Renewable Resource	2	2	4	No	Low
5		Spillage of Water	Abnormal	EMS-OCP(A)-CMA-V-01	Fall Accidents due to Wet Surface	2	2	4	No	Low
6		Outburst of pipes	Emergency	EMS-OCP(E)-MEP-V-01	Excessive Depletion of Renewable Resource	1	2	2	No	High

Aspect Impact – Stores

S.No	Activity/ Product/ Services	Aspect	Condition	Controls	Impact	Probability of Occurrence	Severity	Significance Score	Compliance	Nature of impact
1	**Stores**	Storage of materials	Normal	EMS-SOP-Stores-V-01	Provision of ambient temperature (proper storage of materials)	5	1	4	No	Low
2					Generation of packaging waste	5	4	20	No	High
4		Storage of oil	Abnormal	EMS-OCP(A)-Stores-V-01	Spillage of oils	1	1	1	Yes	Low
5		Storage of chemicals	Abnormal	EMS-OCP(A)-Stores-V-01	Spillage of chemicals	1	2	2	Yes	Low
6		Occurrence of Fire Accidents	Emergency	EMS-OCP(E)-Stores-V-01	Generation of emissions and Loss of resources	1	5	5	Yes	High

Version control

Effective Date (from)	Description	Version
22.11.2022	Environmental impact assessment	01
03.03.2023	Environmental impact assessment – Presented as separate annexure document.	02
27.04.2023	The environmental aspects are presented as isolated sections for better understanding; All the aspects were revised with the consideration of its inputs, process, and waste generated. **Newly added aspects are as follows** 1.Solar steam plants 2.Civil maintenance 3.Electrical maintenance 4.Mechanical and plumbing maintenance 5.e-waste management 6.Firefighting system 7.Air conditioners 8.Housekeeping	03
22.04.2024	Environmental impact assessment – Updated and **Newly added aspects are as follows** 1.Softener plant 2.Oxygen INOX plant 3.Oxygen automatic control panel 4.Oxygen pressure swing adsorption 5.Horticulture waste management 6.Operation of lift 7.Food Production 8.Bio methanation unit	04

Annexure 7 – Compliance Obligations Register

S.No	Name of the compliance	Date	Scope
1	The Air (Prevention and Control of Pollution) Act, 1981	22.11.2022	Prevent and control the harmful effects of air pollution in India.
	Latest Amendment / Updates:		
	The Air (Prevention and Control of Pollution) Act 1981, amended 1987	28.04.2023	Inclusion of noise pollution and other provisions to empower citizens to actively participate in environmental protection efforts
2	National Ambient Air Quality Standards (NAAQ Monitoring programme – 1984)	22.11.2022	National Ambient Air Quality Standards (NAAQS) are standards for air quality that are set by the Central Pollution Control Board (CPCB) that are applicable all over the country.
	Latest Amendment / Updates:		
	CPCB notified the revised National Ambient Air Quality Standards in 2009. (18th Nov 2009)	28.04.2023	Inclusion of new parameters, uniform standards for residential and industrial areas and other revisions to public health
3	The Environment (Protection) Act, 1986	22.11.2022	Presents the actions to be followed to protectand improve the environment and prevent hazards for the human being and other livingspecies.
	Latest Amendment / Updates:		
	The Environment (Protection) Act, 1986, amended 1991	16.04.2024	Inclusion of noise pollution, emphasizing pollution prevention, citizen participation, and regulatory enforcement
4	The Environment (Protection) Rules, 1986	22.11.2022	Describes the rules to be followed to implement the processes as mentioned in theenvironmental protection act.
	Latest Amendment / Updates:		
	Environment (Protection) second Amendment Rules, 2002	28.04.2023	States the noise limit for generator sets run with diesel
	Environment (Protection) Third Amendment Rules 2002	16.04.2024	States the emission standards for diesel engines (engine: rating more than 0.8 Mw (80.0 kw)

S.No	Name of the compliance	Date	Scope
	Environment (Protection) Amendment Rules, 2003	16.04.2024	States the emission limits for new diesel engines up to 800 kW for gensets applications
	Environment (Protection) second Amendment Rules, 2004	16.04/2024	Presents the clarification of languages and date substitutions and emission limits omission
	Environment (Protection) Amendment Rules, 2006	16.04.2024	Presents the clarification of languages and date substitutions
	Environment (Protection) Amendment Rules, 2007	16.04.2024	Exemption from provisions for DG sets purchased by the Ministry of Defence, Government of India
	Environment (Protection) Eighth Amendment Rules, 2008	16.04.2024	Presents the clarification of languages and transportation of DG sets above 250 kVA
	Environment (Protection) (Second Amendment) Rules, 2013	16.04.2024	Standards for Generator sets on Petrol and Kerosene
	Environment (Protection) (Third Amendment) Rules, 2013	16.04.2024	States the emission limits for new diesel engine up to 800 kW for generator set (Gensets) application
	Environment (Protection) (Third Amendment) Rules, 2014	16.04.2024	Presents the clarification of languages and date substitutions
	Environment (Protection) (Fifth Amendment) Rules, 2014	16.04.2024	Presents the clarification of languages and date substitutions
	Environment (Protection) Amendment Rules, 2015	16.04.2024	Exemption from the Emission Norms for twenty Diesel Gensets of 113.2 kW to be procured by Bharat Electronics Limited for 3D Tactical Control Radar for Indian Army
	Environment (Protection) (Second Amendment) Rules, 2015	16.04.2024	Presents the clarification of languages and date substitutions
	Environment (Protection) Third Amendment Rules, 2016	16.04.2024	Gensets run on dedicated Natural Gas (NG) or Liquid Petroleum Gas (LPG)
	Environment (Protection) Third Amendment Rules, 2022	16.04.2024	Emission limits for new engines used for Gensets applications up to 800 kW Gross Mechanical Power
5	Petroleum Act, 1934	16.04.2024	An Act to consolidate and amend the law relating to the import, transport, storage, production, refining and blending of petroleum.

S.No	Name of the compliance	Date	Scope
	Latest Amendment /Updates:		No further amendment
6	Petroleum Rules, 2002	22.11.2022	Presents the rules to store, handle, transport, and use petroleum products across the country
	Latest Amendment /Updates:		
	Petroleum (Amendment) Rules, 2018	16.04.2024	Presents the clarification of languages, storage tank construction materials, and regulations about certificate of safety
	Petroleum (Amendment) Rules, 2019	16.04.2024	Presents the clarification of languages, refuelling and unloading conditions
	Petroleum (Amendment) Rules, 2024	16.04.2024	Presents the clarification of languages, restriction on import and transport of ISO tank containers, importation by air and respective forms
7	The Electricity Act, 2003	22.11.2022	Enacted to transform the power sector in India.The act covers major issues involving generation, distribution, transmission and trading in power.
	Latest Amendment /Updates:		
	Electricity (Amendment) Act, 2003.	16.04.2024	Introduced market-oriented reforms, facilitated open access to transmission and distribution networks and established regulatory bodies
	Electricity (Amendment) Act, 2007.	16.04.2024	Strengthened regulatory mechanisms and governance in the power sector
	The Electricity (Amendment) Bill, 2022	16.04.2024	Address issues related to restructuring the distribution business and rationalizing tariffs
8	The Electricity Rules, 2005	16.04.2024	Rules related to the operation and management of electricity distribution, generation, and transmission in India
	Latest Amendment /Updates:		
	Electricity (Third Amendment) Rules, 2023	16.04.2024	Aims to enhance regulations related to electricity supply, distribution, and consumer rights

S.No	Name of the compliance	Date	Scope
	Electricity (Second Amendment) Rules, 2024	16.04.2024	Updates on the wheeling charges
9	The Electricity (Rights of Consumers) Rules, 2020	16.04.2024	Rules and regulations regarding the supply of electricity, consumer services, metering, billing, and grievance redressal mechanisms.
	Latest Amendment /Updates:		
	The Electricity (Rights of Consumers) Amendment Rules, 2021	16.04.2024	Aspects related to metering arrangements, distribution license obligations and compensation mechanisms
	The Electricity (Rights of Consumers) Amendment Rules, 2022	16.04.2024	Aspects to empower consumers, ensure reliable electricity supply, and foster an investment-friendly environment in the power sector
	The Electricity (Rights of Consumers) Amendment Rules, 2023	16.04.2024	Encourages renewable energy generation by prosumers and provisions related to new connections, billing and complaints.
10	Ozone Depleting Substances (Regulations and Control) Rules, 2000	22.11.2022	Describes the process to avoid using ozone depleting substances and norms to be followed while dealing the ozone depleting substances.
	Latest Amendment /Updates:		
	Ozone Depleting Substances (Regulation and Control) Amendment Rules, 2014	28.04.2023	Provide guidelines for the production, consumption, and handling of ODS, ensuring compliance with international agreements such as the Montreal Protocol.
11	Gas cylinder rules, 1981	16.04.2024	Regulate, import, filling, possession of manufactured cylinders, valves, safety fittings used for cylinders containing compressed gases
	Latest Amendment /Updates:		No further amendment
12	Gas cylinder rules, 2004	16.04.2024	Rules on ensuring the safe use and management of gas cylinders, as it provides detailed guidelines and definitions pertinent to the industry
	Latest Amendment /Updates:		No further amendment

S.No	Name of the compliance	Date	Scope
13	Gas cylinder rules, 2016	22.11.2022	Presents the rules to store, handle, transport,and use gas cylinders across the country.
	Latest Amendment /Updates:		
	Gas Cylinders Amendment Rules 2018	16.04.2024	Presents the clarification of languages
	Gas Cylinders (Second Amendment) Rules, 2018	16.04.2024	Provisions on storage of LPG, Certificates and documents required
	Gas Cylinders (Amendment) Rules, 2022	16.04.2024	Provisions related to permanent and tamper proof marking in cylinders and containers
14	The Motor Vehicles Act, 1988.	22.11.2022	The act to consolidate and amend the law relating to motor vehicles. It regulates almostall aspects of road transport vehicles.
	Latest Amendment /Updates:		
	The Motor Vehicles (Amendment Act), 2019	28.04.2023	Provisions for vehicle alterations, procedures for registration, licensing and the establishment of a National Register for Driving Licenses and Motor Vehicles.
	Motor Vehicles (Fifth Amendment) Act, 2022	16.04.2024	Omission of No-fault liability, Introduction of new chapter XI, Enhanced compensation, Golden Hour Scheme
15	Central Motor Vehicles Rules, 1989	16.04.2024	Comprehensive regulations on vehicle registration, record-keeping, and the display of registration marks in India.
	Latest Amendment /Updates:		
	Central Motor Vehicles (Fifth Amendment) Rules, 2022	16.04.2024	New Provisions for Insurance, Enhanced compensation, expedited claims processes
16	The Tamil Nadu Motor Vehicles Rules, 1989	16.04.2024	Comprehensive guide for the governance of motor vehicle operations within Tamil Nadu
	Latest Amendment /Updates:		No further amendment

S.No	Name of the compliance	Date	Scope
17	Tamil Nadu Combined Development and Building Rules, 2019	16.04.2024	Rules and regulations on planning, layout, land use and relevant requirements
	Latest Amendment /Updates:		
	Amendments to the Tamil Nadu combined development and building rules, 2019 (Released - 2020)	16.04.2024	Legislative authority, adjustments to road width requirements, building height restrictions, and the introduction of new rules for high-rise buildings, roles and responsibilities of professionals
18	Tamil Nadu Fire and Rescue Service Act 1985	16.04.2024	Establishment and maintenance of a Fire Service in the State of Tamil Nadu
	Latest Amendment /Updates:		No further amendment
19	Noise Pollution (Regulation and Control) Rules, 2000	22.11.2022	Propagates the ambient noise levels in public places from various sources.
	Latest Amendment /Updates:		
	Noise pollution (regulation & control) (amendment) rules, 2010	28.04.2023	Inclusion of Firecrackers and Sound-Producing Instruments and provisions on Horns, Construction Equipment, and Firecrackers
	Noise pollution (regulation & control) (amendment) rules, 2006	16.04.2024	Specifies the responsibilities of the authority in managing noise pollution
	Noise pollution (regulation & control) (amendment) rules, 2002	16.04.2024	The amendment aimed to enhance noise regulation and control measures, particularly concerning loudspeaker usage
	Noise pollution (regulation & control) (amendment) rules, 2000	16.04.2024	Provisions on measuring and monitoring noise levels, define acceptable noise limits for various zones and times, and establish mechanisms for enforcing and implementing noise control measures

S.No	Name of the compliance	Date	Scope
20	National Building Code, 2016 (Volume 1 and 2) – Available in digital version	22.11.2022	Presents a set of minimum provisions designed to protect the safety of the public with regard to structural sufficiency, fire hazards and health aspects of buildings; so long as these basic requirements are met, the choice of materials and methods of design and construction are left to the ingenuity of the building professionals.
	Latest Amendment /Updates:		No further amendment
21	The Tamil Nadu Groundwater (Development and Management) Act, 2003	22.11.2022	An Act to protect groundwater resources to provide safeguards against hazards of it's over exploitation and to ensure its planned development and proper management in the State of Tamil Nadu and for matters connected therewith or incidental thereto.
	Latest Amendments/ Updates:		No further amendment
22	The Chennai Metropolitan Area Groundwater (Regulation) Act,1987	16.04.2024	An Act to regulate and control the extraction, use or transport of ground water and to conserve groundwater in certain areas in the State of Tamil Nadu.
	Latest Amendments/ Updates:		No further amendment
23	The Chennai Metropolitan Area Groundwater (Regulation) Rules,1988	16.04.2024	Implementation of rainwater harvesting measures.
	Latest Amendments/ Updates:		No further amendment
24	The Water (Prevention and Control of Pollution) Act ,1974	22.11.2022	Comprehensive legislation that regulates agencies responsible for checking on water pollution and the ambit of pollution controlboards both at the centre and states.
	Latest Amendments/ Updates:		
	The Water (Prevention and Control of Pollution) Act ,1988	16.04.2024	This plays a vital role in safeguarding our water resources and ensuring a healthier environment for all.

S.No	Name of the compliance	Date	Scope
	The Water (Prevention and Control of Pollution) Amendment Act, 2024	16.04.2024	This presents update on discharge of polluting matter, consent exemptions for establishing industries, penalty for other offence and etc.,
25	The Water (Prevention and Control of Pollution) Rules,1975	16.04.2024	Presents the powers, duties, salaries and allowance of the board officers.
	Latest Amendments/ Updates:		
	The Water (Prevention and Control of Pollution) Amendment Rules, 2011	16.04.2024	Presents the powers, duties, salaries and allowance of the board officers.
26	The Water (Prevention and Control of Pollution) Cess Act,1977	28.04.2023	An Act to provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards
	Latest Amendments/ Updates:		
	The Water (Prevention and Control of Pollution) Cess Act, 2003	16.04.2024	It addresses issues related to water pollution control and the imposition of cess (tax) on industries that consume water or generate sewage or trade effluents
27	The Water (Prevention and Control of Pollution) Cess Rules, 1978	16.04.2024	Presents the details about affixing meters
	Latest Amendments/ Updates:		
	The Water (Prevention and Control of Pollution) Cess Amendment Rules, 1992	16.04.2024	These amendments aimed to enhance the effectiveness of water pollution control measures and streamline the assessment and collection of the pollution cess.
28	The Tamil Nadu Water (Prevention and Control of Pollution) Rules,1983	16.04.2024	Quality Testing for STP & ETP water
	Latest Amendments/ Updates:		No further amendment
29	The Boilers Act, 1923	22.11.2022	Consolidate and amend the law relating to steam-boilers

S.No	Name of the compliance	Date	Scope
	Latest Amendments/ Updates:		
	The Indian Boilers (amendment) Act,2007	28.04.2023	Introduced significant improvements to enhance safety norms and keep pace with technological developments in the fabrication, testing, inspection, and operation of boilers.
30	Boilers Operation Rules, 2021	28.04.2023	Describes the boiler operation rules for the consumers, examiners, examination, and certification.
	Latest Amendments/ Updates:		No further amendment
31	Construction and demolition waste management rules, 2016	22.11.2022	Presents the rules for every waste resulting from construction, re-modelling, repair and demolition of any civil structure of individualor organization or authority who generates construction and demolition waste such as building materials, debris, and rubble.
	Latest Amendments/ Updates:		No further amendment
32	The Environment (Protection) Rules, 1986	22.11.2022	Describes the rules to be followed to implement the processes as mentioned in theenvironmental protection act.
	Latest Amendments/ Updates:		
	Environment-Protection-115-Amendment-Rules-2021	28.04.2023	These amendments aim to enhance water quality and ensure safe water purification practices.
33	Solid Waste Management Rules, 2016	22.11.2022	Presents the rules to segregate, store, treat, anddispose the solid waste for wealthy recovery ofreusable and recyclable resources.
	Latest Amendment / Updates:		No further amendment
34	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	22.11.2022	Presents the process of identifying the hazardous waste and rules for their safe disposal methods.

S.No	Name of the compliance	Date	Scope
	Latest Amendment / Updates:		
	Hazardous and Other Wastes (Management and Transboundary Movement) Second Amendment Rules, 2023	16.4.2024	This amendment briefs about Extended producer responsibility of the used oil and the setup for the storage of used oil.
35	Plastic Waste (Management and Handling) Rules, 2016 and Plastic waste management (Amendment rules 2022)	22.11.2022	Mentions the rules and regulations related tothe use of plastics and how to manage plasticwaste.
	Latest Amendment / Updates:		
	Plastic Waste Management (Amendment) Rules,2022	28.4.2023	This Amendment briefs about the Extended Producer Responsibility for plastic packaging.
36	Food Safety and Standards Act, 2006	22.11.2022	Consolidate the laws relating to food and to establish the Food Safety and Standards Authority of India for laying down science- based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and for matters connectedtherewith or incidental thereto.
	Latest Amendment / Updates:		
	Amendment 82: 21st February 2023	28.4.2023	Made amendments to the Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011 thereby amending the standards inter alia for milk, oils, desiccated coconut, wheat flour or resultant wheat flour, millets, mithun (bos frontalis).
37	Food Safety and Standards Rules, 2011	22.11.2022	Presents the rules related to the food safety and production, distribution, labelling and safe disposal of food waste across the country.

S.No	Name of the compliance	Date	Scope
	Latest Amendment / Updates:		No further amendment
38	The e-waste (Management) Rules, 2022	28.4.2023	Presents the rules related to the segregation, storage, and safe disposal of electronic wasteacross the country.
	Latest Amendment / Updates:		No further amendment
39	Bio-Medical Waste (Management and Handling) Rules, 2016	22.11.2022	Presents the rules related to the segregation,treatment, storage, and safe disposal of bio-medical waste across the country.
	Latest Amendment / Updates:		
	Bio-Medical Waste Management (Second Amendment) Rules, 2019.	28.4.2023	For removal of doubts, it is hereby clarified that the expression “Chlorinated plastic bags” shall not include urine bags, effluent bags, abdominal bags and chest drainage bags.
40	Battery Waste Management Rules, 2022	28.4.2023	Presents the rules related to the utilization andsafe disposal of batteries waste across the country.
	Latest Amendment / Updates:		No further amendment
	Notifications / Guidelines:		
41	TNPCB - Circular Memo No. TNPCB/T6/STP/05656/201 (Dated- 02.02.2022)	16.04.2024	Implementation of OCEMS for continuous monitoring.
42	Standards for Discharge of Trade Effluent (TNPCB B.P. Ms. No. 30 Dated: 21.02.1984)	16.04.2024	Presents the standards for quality parameters
43	Standards for Sewage Treatment Plants (STPs) (Source: NGT (PB) Order dated 30.04.2019 in O.A. No. 1069/2018)	16.04.2024	Presents the standards for quality parameters
44	Ministry of Housing and Urban Affairs (Drinking Water Quality Monitoring and Surveillance - chapter 8)	16.04.2024	Frequency of groundwater testing

S.No	Name of the compliance	Date	Scope
45	Notification No. TNPCB/Labs/DD(L)/02151/2019	22.11.2022	Retrofitting of emission control devices/equipment in DG sets with capacity of 125 KVA and above
46	Ministry of Jalsakthi (Department of Water Resources, River Development and Ganga Rejuvenation) –CGWA Consolidated guidelines to regulate and control groundwater extraction in India, notification 2020 and amended in 2023	16.04.2024	Presents the guidelines for groundwater extraction
47	Guidelines for in-use Generator sets (Noise and emission) - The National Green Tribunal (Effective from 15.1.2008 for 1000kW)	22.11.2022	Mentions the noise and emission level to be maintained for in-use generator sets across the country.
	Latest Amendment /Updates:		
	Revised from 3.11.2022 for 800KWs	28.04.2023	Specifications on installation, useful life and maintenance of gensets
48	DO. No. F. 0l-04/2023(QIP) Sustainable Development Goals (UGC)	16.04.2024	Net Zero Carbon - Higher Education Institutions

Identification of compliance obligations

Step 1	Step 2	Step 3	Step 4
Recognize the legal and other requirements that are related to environmental aspects of the organization.	Identify the compliance requirements from the sources of nodal government bodies, such as CPCB, TNPCB, MoEF&CC, Ministry of power, PESO, Ministry of Road Transport and Highways, Ministry of Commerce and Industry, TN Gazette notifications and others.	Asses the compliance requirements and shortlist the relevant legal and other requirements	Determine how the legal and other requirements apply to the environmental aspects of organization. Periodically (once in six months) recognize the updates of the legal requirements in the forms of notifications, amendments, new rules related to the identified compliance obligations.

Evaluation of compliance obligations

Step 1	Step 2	Step 3	Step 4
Compile the compliance obligations of the environmental aspects of the organization	Asses the implementation of the compliance obligations.	Ensure the sufficient evidences are maintained for the compliance obligations.	Record and report the results of the evaluation, including compliance and/or non-compliance with all legal and other requirements. Periodically review the evaluation of compliance obligations.

Version control

Effective Date (from)	Description	Version
22.11.2022	Compliance register	01
03.03.2023	Compliance register – Presented as separate annexure document; Added The Environment (Protection) Act, 1986, The Tamil Nadu Groundwater (Development and Management) Act, 2003, Ozone depleting substances rules 2000.	02
05.04.2023	Added The Boilers Act, 1923; Boilers operation rules, 2021; Added the relevant legal requirements and other binding obligations for the environmental aspects; Added the process of compliance evaluation with legal and other requirements for the environmental aspects; Upgraded E-Waste management rules from 2016 to 2022; Removed procurement manual as it is not directly related to any of the environmental aspects.	03
28.04.2023	The amendments for the identified compliance requirements were studied and included the relevant updates.	04
22.04.2024	Additional legal requirements that are relevant to the organization's context were added and latest amendments/notifications were updated for all the relevant legal requirements	05

Annexure 8 - Proactive Risk and Opportunity Form

Reference Number	YYYY/MON/SC/XXX	**Date**	dd/mm/yyyy
Details of Proactive Risk and Opportunity			
Situation *(Encircle the Choice)*	Unsafe Condition / Unsafe Practice / Environmental Observation		
Environmental Impact *(Encircle the Choice)*	Adverse / Positive		
Scope *(Encircle the Choice)*	DCA region / Hostel region / Medical region / Others		
Where *(location)*			
When *(time)*	00:00:00 am/pm		
Description of the Situation			
Registered by *(name)*			
Designation			
Department			
Organization			
Mobile Number			
e-mail			

Signature EMS Coordinator

Version control

Effective Date (from)	Description	Version
22.11.2022	Proactive risk and opportunity form	01
03.03.2023	Proactive risk and opportunity form – Presented as separate annexure document	02
22.04.2024	Proactive risk and opportunity form - E&T region renamed as DCA region and the form was revised	03

Note: This page is not required to be printed/copied while submitting the proactive risk and opportunity form

Annexure 9 - Emergency Preparedness and Response Plan

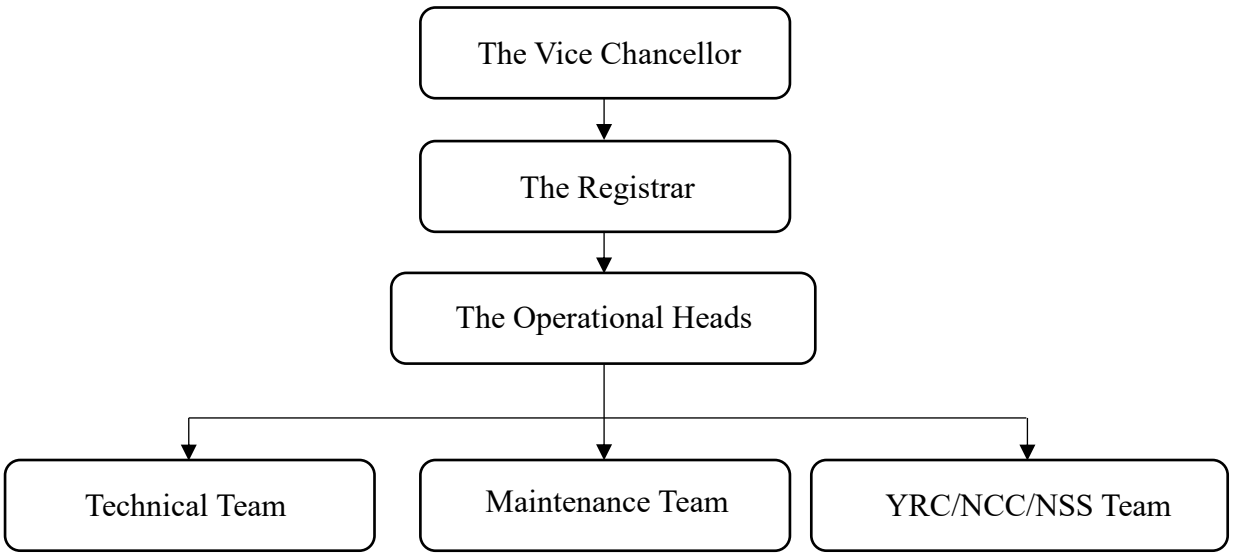
1. Title	Emergency preparedness plan for “fire”

2. Purpose	To establish the procedure for the response of the Fire Safety team(s), SRM IST for Fire Hazard. The SOP prescribes guidance and assigns responsibility for adopting various executive actions to ensure prompt response during Fire Hazard.

3. Scope	All elements of the operation while performing any operations inside the premises of SRM IST. This SOP is a guideline and shall be subject to review periodically once in a year with competent authority.

4. Responsibility	***Directors/Heads of DEO Team:*** It shall be the responsibility of all the Directors/Heads of DEOT at SRM IST who are involved in the fire hazard response to ensure that all aspects of this SOP are adhered to. ***Responders:*** It shall be the responsibility of all the responders to know, understand and follow the directions of the SOP in the letter and spirit.

5. Decision of deployment**



**Further team can be segregated with respect to the decision of respective heads.

6. Introduction

Fire is a process of rapid oxidation at elevated temperature accompanied by the evolution of heated gases products of combustion and the emission of visible and invisible radiation Fire is a chemical reaction that requires three elements to be present for the reaction to take place and continue. The three elements are:

- Heat or an ignition source
- Fuel
- Oxygen

These three elements typically are referred to as the “fire triangle.” Fire is the result of the reaction between the fuel and oxygen in the air. Heat, fuel and oxygen must combine in a precise way for a fire to start and continue to burn. If one element of the fire triangle is not present or removed, fire will not start or, if already burning, will extinguish.

6.1 The Classes of Fire

Class A Fire

Fires involving solid combustible materials or organic nature such as wood, paper, rubber, plastics, etc. where the cooling effect of water is essential for extinction of fires

Class B Fires

Fires involving flammable liquids or liquefiable solids or the like where a blanketing effect is essential

Class C Fires

Fires involving flammable gases under pressure including liquefied gases, where it is necessary to inert gas, powder or vaporizing liquid for extinguishment

Class D Fires

Fires involving combustible metals, such as magnesium, aluminium, zinc, sodium, potassium, etc, when the burring metals are reactive to water and water containing agents and in certain cases carbon dioxide, halogenated hydrocarbons and ordinary dry powders. These fires require special media and techniques to extinguish.

Class F

Fires involving vegetable or animal cooking oils or fats; common in commercial cooking operations using deep fat fryers

6.2. Fire Extinguishers

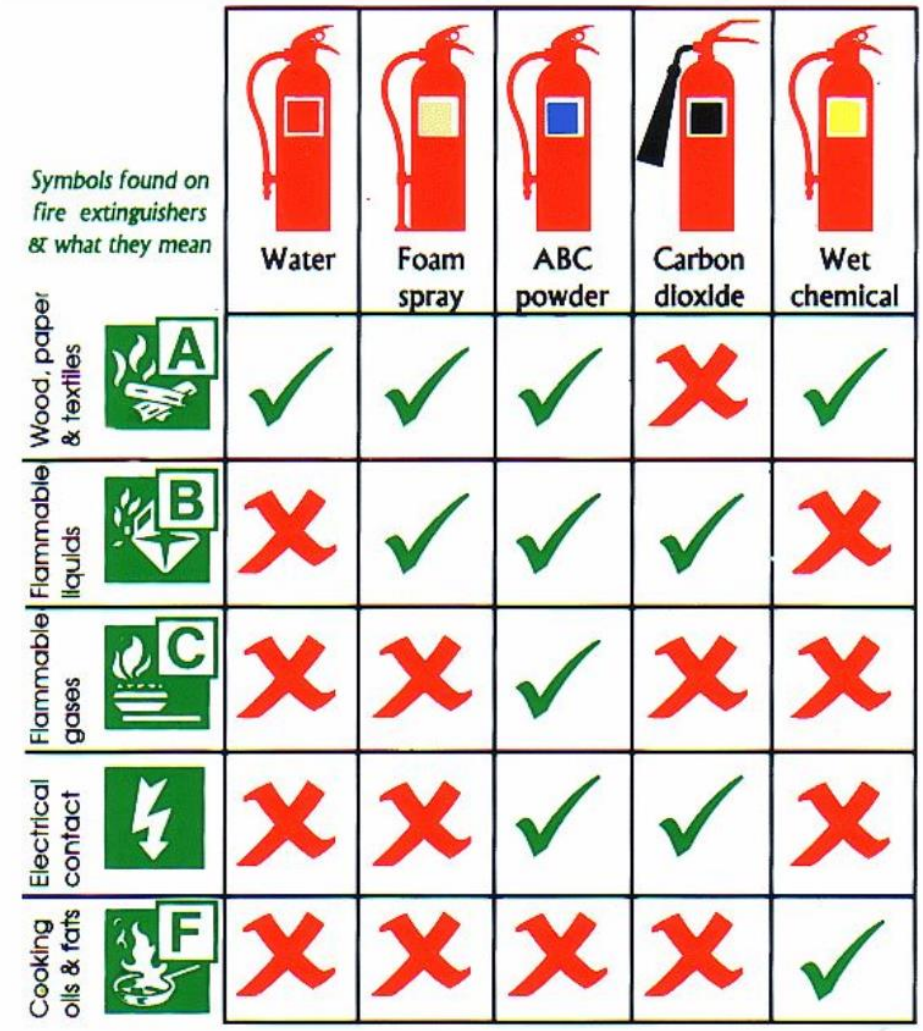


Figure 1: Categories of fire extinguishers Source: NFPA

To operate a fire extinguisher, remember the word **PASS**:

- **P**ull the pin. Hold the extinguisher with the nozzle pointing away from you, and release the locking mechanism.
- **A**im low. Point the extinguisher at the base of the fire.
- **S**queeze the lever slowly and evenly.
- **S**weep the nozzle from side-to-side.

7. Hazardous Area Classification

CLASSIFICATION	DIVISION	LOCATIONS
Class I locations are those in which flammable gases or vapours are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures	Division - 1	Locations in which ignitable concentrations of flammable gases or vapours can exist under normal operating conditions; ignitable concentrations of such gases or vapours may exist frequently because of repair or maintenance operations or because of leakage; break-down or faulty operation of equipment or processes might release ignitable concentrations of flammable gases or vapours, and might also cause simultaneous failure of electric equipment in such a way as to directly cause the electrical equipment to become a source of ignition.
	Division - 2	Locations in which volatile flammable liquids or flammable gases are handled, processed, or used, but in which the liquids, vapours, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in case of abnormal operation of equipment; or ignitable concentrations of gases or vapours are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operation of the ventilating equipment; ignitable concentrations of gases or vapours might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.
Class II locations are those that are hazardous because of the presence of combustible dust.	Division - 1	Locations in which combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures; where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitable mixtures to be produced, and might also provide a source of ignition through simultaneous failure of electric equipment, operation of protection devices, or from other causes; combustible dusts of an

CLASSIFICATION	DIVISION	LOCATIONS
		electrically conductive nature may be present in hazardous quantities.
	Division - 2	Locations where combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitable mixtures and dust accumulations are not normally insufficient to interfere with the normal operation of electric equipment or other apparatus, but combustible dust may be in suspension in the air as a result of infrequent malfunctioning of handling or processing equipment and combustible dust accumulations on, in, or in the vicinity of the electrical equipment may be sufficient to interfere with the safe dissipation of heat from electrical equipment or may be ignitable by abnormal operation of failure of electrical equipment.
Class III locations are those that are hazardous because of the presence of easily ignitable fibres or flying's, but in which such fibres or flying's are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures.	Division - 1	Location in which easily ignitable fibres or materials producing combustible flying's are handled, manufactured, or used.
	Division - 2	Location in which easily ignitable fibres are stored or handled other than in the process of manufacture.

8. General SOP for FIRE Hazard

The management of Fire-Risk deals with three aspects:

1. Fire Prevention: It is the adoption of safe practices initially at the design stage and subsequently in the day to day operation to prevent break out of fires.
2. Fire Protection: It involves different facilities which shall help in immediate handling of fire effectively.
3. Firefighting: It is the physical phenomenon of handling the fire with the use of fire protection equipment, facilities as well as with the help of firefighting personnel who have been specifically trained for this job.

All these three distinct aspects are very closely related to each other but are completely separate in their individual scope with a philosophy that all fires can be prevented.

- AD(CL) shall adopt a Preventive approach to Fire Safety (i.e. Control on ignition source, Safe handling of fuel source)
- Facilities shall be designed and constructed in accordance with applicable laws, codes, and regulations in force in that jurisdiction. In the absence of local regulations / laws, facilities shall be designed with technically sound practices.
- Sites / Facilities should be managed in a way that fires are prevented, injuries and business losses are avoided, property is protected, and trust is fostered in the communities in which the AD (CL) operates
- Facilities should be managed, operated, and maintained in such way that the fire safety features are not compromised
- Fires are to be controlled in the initial stage itself and not allowed to spread
- Fire equipment is to be used for intended purpose only
- Emergency Plans shall be put in place.
- As part of the due diligence review, the Safety Head shall assess the level of fire protection / prevention in use or being planned in case emergency

Fire Risk Assessment:

The Safety Team Head should perform a risk assessment and fire load calculation. The following key elements shall be considered:

- Risk of fire occurring to the particular facility / site
- Assessment of fire load to the particular facility/site
- Provision of means of escape
- Fire Compartmentation (Passive measures) etc.
- Fire Detection (Active measures)
- Firefighting & Emergency handling arrangements
- Emergency procedures

In the case of a new facility being constructed it shall be ensured that fire prevention / protection systems are installed. These systems are to be designed and constructed in

accordance with applicable laws, codes regulations and they shall be authenticated by a fire expert or a third party fire engineer.

For occupied buildings located in the vicinity of a high hazard facility, a separate risk assessment shall be carried out to assess the risk due to the external threat of fire / explosion.

Hazard studies on 'high hazard facilities' (e.g. Process Hazard Reviews etc.) shall consider the potential scenarios associated with a fire.

Where there is no reasonable alternative to hot working methods, a hot work permit system shall be utilized to ensure that appropriate control measures are put in place.

Fire Risk Assessment should be done by including neighboring areas as well. i.e. asses the possibility of fire spreading from the neighboring areas to the companies specific site / facility / business unit.

9. Fire Detection & Alarm Systems

Fire detection and alarm systems shall be installed in every class rooms / office / laboratory/ facility.

The following types of detection systems are available and should be chosen based on their suitability for use at locations where they are required:

VESDA (Very Early Smoke Detection Apparatus) systems

Fire Alarm and Detection System

With Various type of fire alarm detectors like as Heat Detector, Smoke detector, Heat & Smoke Combined detector, Flame detector, Beam Detector, Normal Manual call points (MCP), intrinsically safe Manual call point, Hooter, Beacon light etc

Gas Detection System

With Various types of detectors like as Ammonia detector, Chlorine detector, Bromine detector, Hydrogen detector, Carbon monoxide detector, H_2S detector, Beacon light etc.

The detection system to be used is to be selected as per the following criteria:

Type of Occupancy

- Nature of Fire and Emergency Hazard
- Quantum of Hazard
- Selection of appropriate detector device considering the hazard
- Physical and environment condition

Fire Protection / Control Systems:

The following two types of fire protection systems are to be used:

Passive restraints / protection: Passive fire protection systems should be installed to contain fires or reduce the speed at which they may spread, through:

- Compartmentalization
- Segregation
- Separating distances
- Use of Fire resistance wall, Floors & doors etc.
- Dykes for storage tank
- Fire resistant/retardant coatings/ paints / Cables

Active restraints / protection: This requirement is a risk based decision, and suggests the provision for suitable and sufficient firefighting/escape equipment and devices will be determined by the fire risk assessment.

A combination of the following types of protection systems shall be considered

Portable type system

Portable Fire protection systems, which are used at the incipient stage of fire for immediate control, need to be installed. Some examples are:

- Fire extinguishers (Based on extinguishing media: DCP, Co2, Water, Foam)
- Sand buckets
- Fixed / Semi fixed type system
- Fixed / Semi fixed fire protection systems needs to be installed. Some Examples are:
- Fire Hydrant system
- Fire Alarm & Detection system

- Sprinkler system
- Gas flooding system
- Medium velocity & High velocity water spray system
- Mobile type system
- Mobile Fire Protection systems (Fire Vehicles) need to be provided / mobilized as appropriate. Some examples are:
- Fire Tenders – With various type of firefighting media like as Water, Foam, Dry Chemical powder, Carbon dioxide.
- Rescue Van – With Various type of Rescue equipment Like as TRIPOD, lifting Pads.
- TOOL, Hydraulic RAM, Descended/De-rope device, Rescue rope, Rescue stretcher, Emergency light mast etc.
- HAZMAT (hazardous material) Response Unit – With Various types of equipment like as hazardous chemical spill control kit, Leak arrest Kit, decontamination unit, various suits etc.

Inspection and Maintenance:

- To ensure integrity and reliability of the fire protection systems, they should be checked, inspected, maintained, and tested periodically. The inspection and maintenance shall:
- Ensure that the systems are available for intended protection all the time and are in a working condition at all times
- Ensure that the systems perform as per specifications
- Safe systems of work shall be established and implemented for entry into gas and water flood protected areas to ensure that the extinguishing media is not discharged whilst the area is occupied.
- Applicable technical codes and standards are to be referred for inspection and maintenance of fire detection/ protection systems.
- Periodically check the fire extinguisher for the expiry date

Emergency Preparedness:

- An emergency preparedness plan shall be put in place to address emergencies on account of fires. This emergency plan shall ensure that there is no harm to life, environment or property.

- Each Team Head shall have Fire Emergency plans based on their requirements. Roles and responsibilities are to be defined in the plan. The plan should also be communicated to all personnel who may be affected by the emergency.
- Auxiliary support squad shall be identified for responding to emergencies & assisting the fire fighters. Their names shall be displayed in operation/fire control rooms.
- Each site / premises shall include in their emergency plan, risks on account of potential fires and the appropriate measures for:
- Raising the alarm, which shall be distinct from all other alarms in
- Evacuation of personnel to an area of safe assembly point and accounting for their attendance.
- Quick reporting the fire to 'on site' or 'off site' emergency services,
- Containment of the fire until arrival of the emergency services, and
- Periodic testing to demonstrate adequacy of the plan / resources to manage the foreseeable scenarios.
- Regular\ mock drills should be conducted as per standard/procedure.

RECORDS

- Record of inspection/test of fire equipment/system (Retention -Three years)
- Record of mock drills (Retention - Three Years)

TRAINING & COMMUNICATION:

- Training shall be conducted to ensure appropriate response in times of an emergency. The training should be conducted, in the following categories:
- Awareness Training: To be conducted for all employees, teaching and non- teaching staffs and construction/maintenance workers. It should cover basics of fire, emergency preparedness, emergency response and general do's and don'ts
- Specific fire Training- This training and competency testing is to be conducted for individuals on specific topics such as how to handle fire extinguishers, emergency management plans etc. Those who are trained in this usually become fire marshals/fire guards (or equivalent)
- Training and competency testing for Fireman-To be conducted for the dedicated fire response team as per the standard/procedure

- Auxiliary Support Squad shall be trained to ensure their capability to respond to emergencies.

VERIFICATION

- Audits shall be carried out to ensure identification of areas of strengths and weakness of the fire safety management systems. These audits should be undertaken to meet the following objective:
- To ensure that fire detection/protection and firefighting systems are in place
- To ensure that proper inspection and maintenance schedules are followed
- To ensure that adequate training has been imparted
- To ensure that proper emergency procedures are in place

8. SRM Disaster Emergency Operation Team Contact Details

S.No	Name	Phone Number	Mail id
1	The Vice Chancellor	9940036001 9940036004	vc@srmist.edu.in
2	The Registrar	9940036008 9940636069	registrar@srmist.edu.in
3	Associate Director (CL)	9940036026	assocdirector.cl@srmist.edu.in
4	Maintenance Team Head	9940036029 9940036027	me.civil@srmist.edu.in me.electrical@srmist.edu.in
5	Health team	9791138447	sridhars4@srmist.edu.in
6	NCC/NSS/YRC Volunteers Head	9791197807 9884937734	nsscell@srmist.edu.in
7	Security Control Officer	7358098801	dharmalp@srmist.edu.in

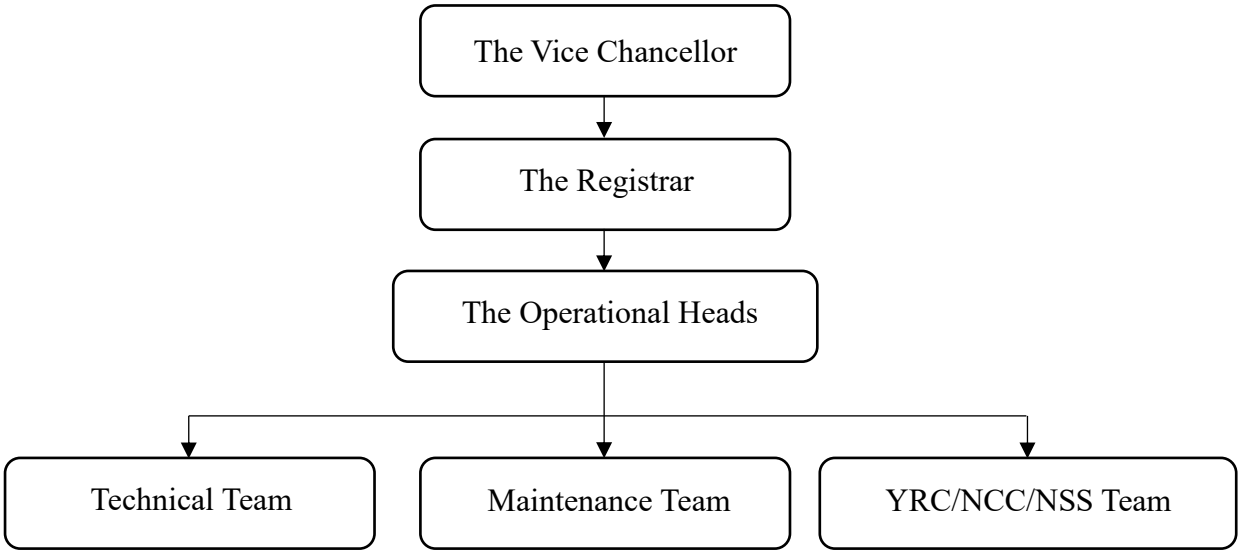
1. Title	Emergency preparedness plan for “flood”

2. Purpose	To establish the procedure for the response of the DEO team(s), SRM IST for floods. The SOP prescribes guidance and assigns responsibility for adopting various executive actions to ensure prompt response during disasters

3. Scope	All elements of the operation while performing flood disaster response operations. This SOP is a guideline and shall be subject to review periodically once in a year with competent authority.

4. Responsibility	***Directors/Heads of DEO Team:*** It shall be the responsibility of all the Directors/Heads of DEOT at SRM IST who are involved in the flood disaster response to ensure that all aspects of this SOP are adhered to. ***Responders:*** It shall be the responsibility of all the responders to know, understand and follow the directions of the SOP in the letter and spirit.

5. Decision of deployment**



**Further team can be segregated with respect to the decision of respective heads.

6. Categorization of alerts

Specific hazards have different categories of alerts as indicated below. For the purpose of dissemination of alerts, a uniform system has been devised by categorizing each type of alert in stages

Green- No Action needed;

Yellow- Watch and stay updated;

Orange- Be prepared;

Red- Take action

Fig 1. Campus Layout

7. General SOP for Flood Hazard

Team	Description
Maintenance Team	Setting up of DEOT with Ham Radio or other relevant technology
	Issue directions to repair/restore/maintain roads, drains, trees (prune), etc.
	Prepare Campus Disaster Management Plan
	Define triggers for issuing of alerts and warnings – rainfall / special event, etc.
	Update data on flooding spots
	Conduct coordination meetings with academic departments, local police stations, fire stations etc.
	Undertake Capacity Building measures for staff & personnel

Team	Description
	Conduct Mock Drills
	Maintain stock of potable water, food packets, insecticide, etc. during rainy season
	De- silting of storm water drains, culverts and canals periodically.
	Redesign existing storm water and drainage systems in flood prone areas for adequate flow of volume of drainage.
	Cleaning of sumps and manholes for clog free flow of waste water.
	Setting up of flood level markers within the city.
	Identify buildings in the low lying areas and develop strategy for strengthening / retrofitting so as to minimize damage.
	Undertake prevention/protection/structural rehabilitation/retrofitting measures of lifeline buildings
	Identify sensitive locations around high risk power installations.
	Periodical checking, testing, maintenance of all equipment and Instruments.
	Provision for separate lines/ sources of power for critical substations
	Raise level of transformers and substations above flood level
	Training of staff about handling the flood situation
Technical Team	Prepare Campus Disaster Management Plan and DM action plan for all emergencies
	Demarcate River catchments / flood plains/ Low lying areas/flood pathways and prepare Base flood hazard map
	Map location of man-holes, storm water drains, other critical features
	Undertake Needs Assessment & capacity building measures for Flood mitigation
	Integrate department specific plans and DM concerns into:
	Campus drainage plan, Master Plan, Land use Plan, Building Bye-laws
	Submit integrated department specific plans to DEOT
Health Team	Prepare an Emergency Health crisis management plan for prevention of epidemic.
	Identify a private area for pregnant women and lactating mothers
	Adequate Plan to treat the special community like physically challenged/Geriatric/Infants etc.
	Maintain emergency stock of medicine/equipment/blood.
	Maintain in good working condition, adequate no of Ambulances, mobile dispensaries, Hearse vans for movement of corpses.
	Prepare a directory of Health officers/professionals and medical facilities.

Team	Description
	Undertake vaccination and disinfection drives
	Develop skills and provide training to field staff/medical practitioners

8. SRM Disaster Emergency Operation Team Contact Details

S.No	Name	Phone Number	Mail id
1	The Vice Chancellor	9940036001 9940036004	vc@srmist.edu.in
2	The Registrar	9940036008 9940636069	registrar@srmist.edu.in
3	Associate Director (CL)	9940036026	assocdirector.cl@srmist.edu.in
4	Maintenance Team Head	9940036029 9940036027	me.civil@srmist.edu.in me.electrical@srmist.edu.in
5	Health team	9791138447	sridhars4@srmist.edu.in
6	NCC/NSS/YRC Volunteers Head	9791197807 9884937734	nsscell@srmist.edu.in
7	Security Control Officer	7358098801	dharmalp@srmist.edu.in

1. Title	Emergency preparedness plan for “oil spillage”

2. Purpose	To ensure that incidents occurring within the University that have a potential risk of pollution to the environment are dealt with in a safe manner to ensure minimal environmental impact.

3. Scope	Covers all the areas in which oil is used for different activities

4. Responsibility	Assistant Maintenance Engineer – Electricals Store in-charges

5. Definitions

- ‘Oil’ including petrol, diesel, central heating oil, lubricating oil, mineral oil, vegetable and plant oil, heavy oil i.e. bitumen, solvents i.e. paraffin, waste oil
- Spills from ‘fly tipped’ waste
- Firewater pollution entering the drainage system (water used to fight fires can contain dangerous substances)
- Drainage system failure
- Chemical incidents are managed through specific department procedures

6. Procedure

6.1 Discovering a spill

- Take measures to protect life, including your own. If possible, remove injured persons from danger and if you have first aid skills then render them if safe to do so.
- Take all reasonable measures to prevent access to the area. For any significant* spill, inform Security and request assistance. Security will inform Safety and Health Services if the spill is on the roadway or walkway or presents a significant risk to health and safety. Security will alert the fire brigade of any significant spill involving petrol.
- If safe to do so, try to control the spill to prevent escape to the drainage system by any practical means i.e. by using a spill kit. Do not attempt to deal with the spill without appropriate safety glasses and gloves at a minimum for Oil/Diesel. Stop the flow of oil if possible, any pumps should be stopped and switched off. Where a spillage occurs during a pipeline receipt, pumping should be stopped immediately

- If possible, isolate the area - cordon off the contaminated area, keep people at least 5 metres from the spill
- Do not leave the spill site - someone should be present continuously until the oil is cleaned up and the danger removed.

6.2 Major Spill

- Place the chemical spill signboard next to the spill.
- Wear appropriate personal protective equipment (PPE) - Gloves, mask, eye goggles) to cleanup spill.
- Pick up any broken glass with forceps. Do not use your hands.
- Sprinkle absorbent material over the spill, making sure not to spread liquid. Acid and base spill should be neutralized prior to clearing it up.
- Collect the entire spill with water pusher and dust pan.
- Dispose of all contaminated material in Red color cover. Label the cover with the name of the Hazardous material, name of the department and send to biomedical waste area.

6.3 Minor spill

- Place the chemical spill sign board next to the spill. Minor chemical spill can be cleaned up with the available departmental spill kit by housekeeping staff.
- Wear appropriate personnel protective equipment (glove, mask, eye goggle) to clean up the spill.
- Sprinkle absorbent material (chemisorbs) over the spill making sure not to spread liquid, Acid and base Spill should be neutralized prior to clearing it up.
- Dispose of all spill contaminated material in zip lock cover. Label the bag with the name of the Hazardous material, and name of the department and sent to biomedical waste area.
- Clean the area as per the cleaning procedure.

6.4 Reporting a spill

- Contained Spill – where a small spill (less than 5 litres or less than 1 metre in diameter) has been contained and successfully cleaned up please contact Security to report the spill and summarise action taken. Security will not assist with clean-up unless necessary but will log this spill as an incident. Please ensure once you have cleaned the spill you book a collection for the contaminated spill kit order a replacement from Sustainability.

- Significant and large spill– where a significant (Greater than 5 litres or greater than 1 meter in diameter) or a large (Greater than 25 litres) spill occurs contact Security immediately stating the exact location of the spill, substance spilt (if known), approximate quantity spilled and if the substance has entered the drainage system. Security will follow a procedure for notifying relevant departments.

6.5 Containing a spill – Step 1

- Immediate steps using the correct PPE should be taken to control the flow of the liquid being spilled.
- Assess the situation and contain the spillage with minibooms and other absorbents. Concentrate on containing the spill by preventing the liquid from entering the drains.
- At the same time as the leak is being controlled, contain the spilled material in as small an area as possible using absorbent minibooms to create a ‘dam’ around the spill.
- Do everything possible to keep it from spreading or getting worse.
- Once the spill has been contained, pads (or pillows for larger spills where available) may be placed on the spill area to absorb the spill to relieve the burden on the minibooms

6.6 Cleaning a spill - Step 2

- If you haven’t already done so, place absorbent pads on the spill area to soak up the spill.
- Replace saturated pads as necessary until all the spill has been soaked up.
- For larger spills, cushions where available, should be used instead of pads.
- Do not hose down the area and allow any fluid to enter drainage systems.

6.7 Waste disposal – Step 3

- All used spill kit and PPE should be disposed of in the polybags provided in the spill kit. All used spill kit material is classified as hazardous waste and must be disposed of under The Hazardous and Other Waste Management Rules 2016.
- The bag should be closed using a cable tie (provided in the kit) and taken to a secure area, which should ideally be bunded until disposal arrangements have been made by Sustainability.

7. Equipment

7.1 Spill kits

- Each Site Spill Kit contains, as a minimum.
- Absorbent Pads - Used to soak up spills after they have been contained
- Absorbent Minibooms - Used to contain a spill by creating a ‘dam’ around it
- Disposal bags and ties - for the disposal of used spill kit
- Personal Protective Equipment

8. SRM Disaster Emergency Operation Team Contact Details

S.No	Name	Phone Number	Mail id
1	The Vice Chancellor	9940036001 9940036004	vc@srmist.edu.in
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6	NCC/NSS/YRC Volunteers Head	9791197807 9884937734	nsscell@srmist.edu.in
7	Security Control Officer	7358098801	dharmalp@srmist.edu.in

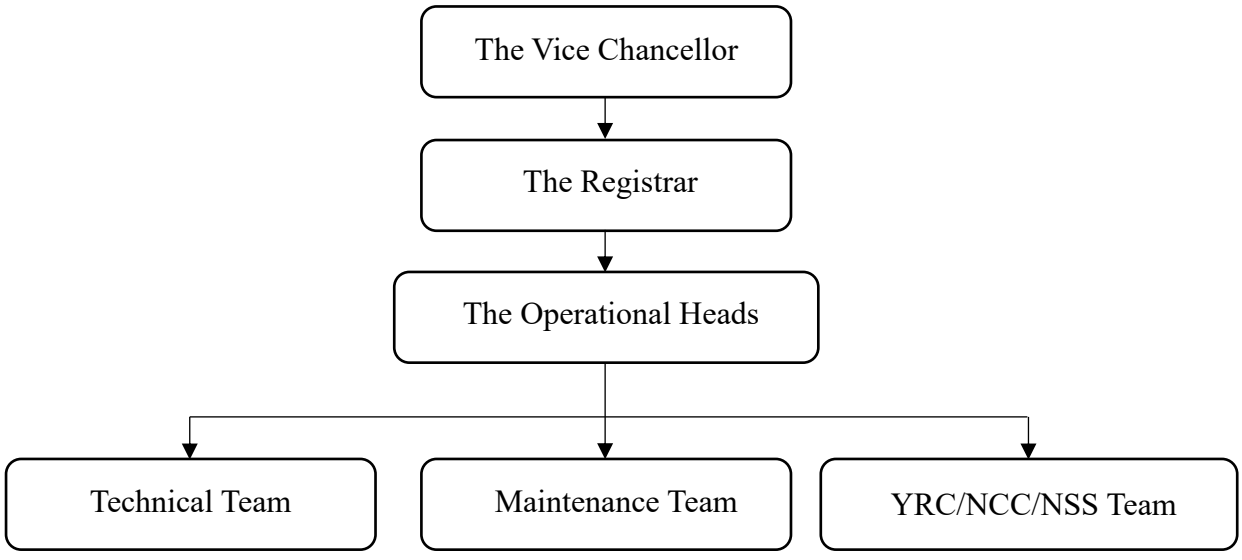
1. Title	Emergency preparedness plan for “earthquake”

2. Purpose	To establish the procedure for earthquake. The SOP prescribes guidance and assigns responsibility for adopting various executive actions to ensure prompt response during disasters

3. Scope	All elements of the operation while performing flood disaster response operations. This SOP is a guideline and shall be subject to review periodically once in a year with competent authority.

4. Responsibility	***Directors/Heads of DEO Team:*** It shall be the responsibility of all the Directors/Heads of DEOT at SRM IST who are involved in the fire hazard response to ensure that all aspects of this SOP are adhered to. ***Responders:*** It shall be the responsibility of all the responders to know, understand and follow the directions of the SOP in the letter and spirit.

5. Decision of deployment**



**Further team can be segregated with respect to the decision of respective heads.

6. Earthquake

An earthquake is a phenomenon that occurs without warning and involves violent shaking of the ground and everything over it. It results from the release of accumulated stress of the moving lithospheric or crustal plates. The earth's crust is divided into seven major plates, that are about 50 miles thick, which move slowly and continuously over the earth's interior and several minor plates. Earthquakes are tectonic in origin; that is the moving plates are responsible for the occurrence of violent shakes. The occurrence of an earthquake in a populated area may cause numerous casualties and injuries as well as extensive damage to property.

6.1 What to Do During an Earthquake

Stay as safe as possible during an earthquake. Be aware that some earthquakes are actually foreshocks and a larger earthquake might occur. Minimize your movements to a few steps that reach a nearby safe place and stay indoors until the shaking has stopped and you are sure exiting is safe.

6.1.1 If indoors

- DROP to the ground; take COVER by getting under a sturdy table or other piece of furniture; and HOLD ON until the shaking stops. If there is no a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.
- Protect yourself by staying under the lintel of an inner door, in the corner of a room, under a table or even under a bed.
- Stay away from glass, windows, outside doors and walls, and anything that could fall, (such as lighting fixtures or furniture).
- Stay in bed if you are there when the earthquake strikes. Hold on and protect your head with a pillow, unless you are under a heavy light fixture that could fall. In that case, move to the nearest safe place.
- Use a doorway for shelter only if it is in close proximity to you and if you know it is a strongly supported, load bearing doorway.
- Stay inside until the shaking stops and it is safe to go outside. Research has shown that most injuries occur when people inside buildings attempt to move to a different location inside the building or try to leave.

- Be aware that the electricity may go out or the sprinkler systems or fire alarms may turn on.

6.1.2 If outdoors

- Do not move from where you are. However, move away from buildings, trees, streetlights, and utility wires.
- If you are in open space, stay there until the shaking stops. The greatest danger exists directly outside buildings; at exits; and alongside exterior walls. Most earthquake-related casualties result from collapsing walls, flying glass, and falling objects.

6.1.3 If in a moving vehicle

- Stop as quickly as safety permits and stay in the vehicle. Avoid stopping near or under buildings, trees, overpasses, and utility wires.
- Proceed cautiously once the earthquake has stopped. Avoid roads, bridges, or ramps that might have been damaged by the earthquake.

6.1.4 If trapped under debris

- Do not light a match.
- Do not move about or kick up dust.
- Cover your mouth with a handkerchief or clothing.
- Tap on a pipe or wall so rescuers can locate you. Use a whistle if one is available. Shout only as a last resort. Shouting can cause you to inhale dangerous amounts of dust

6.2 What to Do After an Earthquake

- Keep calm, switch on the radio/TV and obey any instructions you hear on it.
- Be prepared to expect aftershocks.
- Turn off the water, gas and electricity.
- Do not smoke and do not light matches or use a cigarette lighter. Do not turn on switches. There may be gas leaks or short-circuits. Use a torch.
- If there is a fire, try to put it out. If you cannot, call the fire brigade.
- If people are seriously injured, do not move them unless they are in danger.
- Immediately clean up any inflammable products that may have spilled (alcohol, paint, etc.).
- If you know that people have been buried, tell the rescue teams. Do not rush and do not worsen the situation of injured persons or your own situation.

- Avoid places where there are loose electric wires and do not touch any metal object in contact with them.
- Do not drink water from open containers without having examined it and filtered it through a sieve, a filter or an ordinary clean cloth.
- If your home is badly damaged, you will have to leave it. Collect water containers, food, and ordinary and special medicines (for persons with heart complaints, diabetes, etc.)
- Do not re-enter badly damaged buildings and do not go near damaged structures.

6.3 Disaster Emergency Kit Ready

- Battery operated torch with extra batteries
- Battery operated radio
- First aid kit and manual
- Emergency food (dry items) and water (packed and sealed)
- Candles and matches in a waterproof container
- Knife,
- Essential medicines
- Cash and credit cards
- Thick ropes and cords
- Sturdy shoes

Fig 2. Campus Layout

7. SRM Disaster Emergency Operation Team Contact Details

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7	Security Control Officer	7358098801	dharmalp@srmist.edu.in

Source	National Disaster Management Authority, Government of India

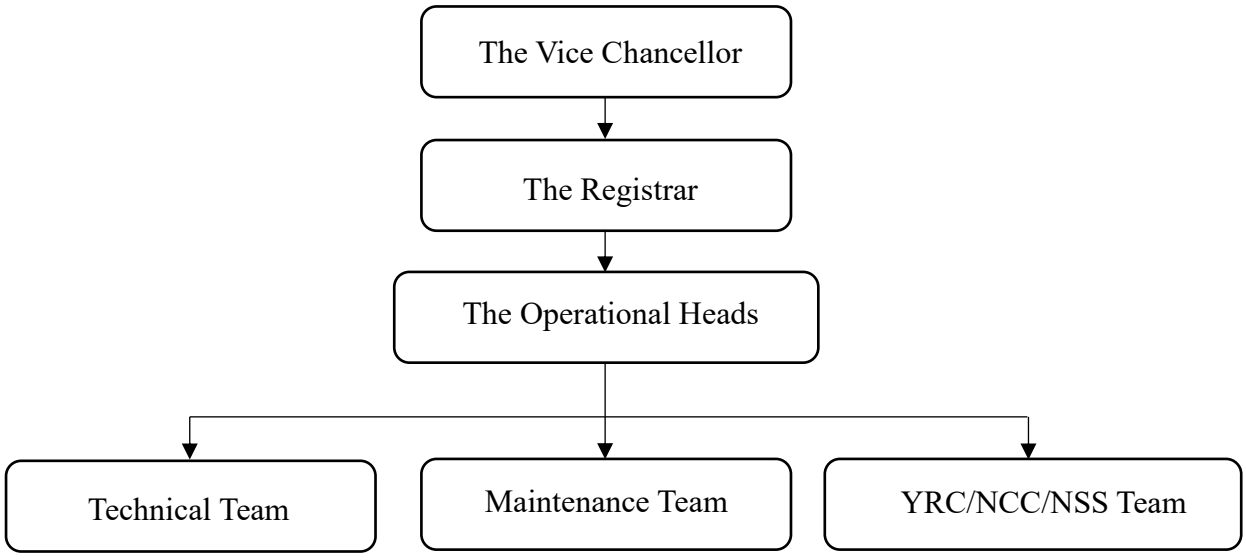
1. Title	Emergency preparedness plan for “cyclone”

2. Purpose	To establish the procedure for cyclone. The SOP prescribes guidance and assigns responsibility for adopting various executive actions to ensure prompt response during disasters

3. Scope	All elements of the operation while performing flood disaster response operations. This SOP is a guideline and shall be subject to review periodically once in a year with competent authority.

4. Responsibility	***Directors/Heads of DEO Team:*** It shall be the responsibility of all the Directors/Heads of DEOT at SRM IST who are involved in the fire hazard response to ensure that all aspects of this SOP are adhered to. ***Responders:*** It shall be the responsibility of all the responders to know, understand and follow the directions of the SOP in the letter and spirit.

5. Decision of deployment**



**Further team can be segregated with respect to the decision of respective heads.

6. Cyclones

Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. Cyclones are usually accompanied by violent storms and bad weather. The air circulates inward in an anticlockwise direction in the Northern hemisphere and clockwise in the Southern hemisphere. Cyclones are classified as: (i) extra tropical cyclones (also called temperate cyclones) and (ii) tropical cyclones.

6.1 Before the cyclone season

- Check the buildings; secure loose tiles and carry out repairs of doors and windows
- Remove dead branches or dying trees close to the house; anchor removable objects such as lumber piles, loose tin sheets, loose bricks, garbage cans, sign-boards etc. which can fly in strong winds
- Keep some wooden boards ready so that glass windows can be boarded if needed
- Keep a hurricane lantern filled with kerosene, battery operated torches and enough dry cells
- Demolish condemned buildings
- Keep some extra batteries for transistors
- Keep some dry non-perishable food always ready for use in emergency

6.2 When the cyclone starts

- Listen to the radio (All India Radio stations give weather warnings).
- Keep monitoring the warnings. This will help you prepare for a cyclone emergency.
- Pass the information to others.
- Ignore rumours and do not spread them; this will help to avoid panic situations.
- Believe in the official information
- When a cyclone alert is on for your area continue normal working but stay alert to the radio warnings.
- Stay alert for the next 24 hours as a cyclone alert means that the danger is within 24 hours

6.3 When your area is under cyclone warning area

- Leave early before your way to high ground or shelter gets flooded
- Do not delay and run the risk of being marooned
- If your building is securely built on high ground take shelter in the safe part of the building. However, if asked to evacuate do not hesitate to leave the place.

- Board up glass windows or put storm shutters in place.
- Provide strong suitable support for outside doors.
- If you do not have wooden boards handy, paste paper strips on glasses to prevent splinters. However, this may not avoid breaking windows.
- Get extra food, which can be eaten without cooking. Store extra drinking water in suitably covered vessels.
- If you have to evacuate the flats move your valuable articles to upper floors to minimize damage.
- Ensure that your hurricane lantern, torches or other emergency lights are in working condition and keep them handy.
- Small and loose things, which can fly in strong winds, should be stored safely in a room.
- Be sure that a window and door can be opened only on the side opposite to the one facing the wind.
- Switch off the electrical mains in your house.
- Remain calm.

6.4 During a cyclone

DO NOT venture out even when the winds appear to calm down. The 'eye' of the cyclone might be passing. Winds might intensify and gush again and cause damage. Be safe inside till it is officially announced that the cyclone has passed.

6.5 When evacuation is instructed

- Pack essentials for yourself and your family to last a few days. These should include medicines, special food for babies and children or elders.
- Head for the proper shelter or evacuation points indicated for your area.
- Do not worry about your property
- At the shelter follow instructions of the person in charge.
- Remain in the shelter until you are informed to leave

6.6 Post-cyclone measures

- You should remain in the shelter until informed that you can return to your flats.
- You must get inoculated against diseases immediately.
- Strictly avoid any loose and dangling wires from lamp posts.

- If you have to drive, do drive carefully.
- Clear debris from your premises immediately.
- Report the correct losses to appropriate authorities

Fig 3. Campus Layout

7. SRM Disaster Emergency Operation Team Contact Details

S.No	Name	Phone Number	Mail id
1	The Vice Chancellor	9940036001 9940036004	vc@srmist.edu.in
2	The Registrar	9940036008 9940636069	registrar@srmist.edu.in
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4	Maintenance Team Head	9940036029 9940036027	me.civil@srmist.edu.in me.electrical@srmist.edu.in
5	Health team	9791138447	sridhars4@srmist.edu.in
6	NCC/NSS/YRC Volunteers Head	9791197807 9884937734	nsscell@srmist.edu.in
7	Security Control Officer	7358098801	dharmalp@srmist.edu.in

Source	National Disaster Management Authority, Government of India

Version control

Effective Date (from)	Description	Version
03.03.2023	Emergency preparedness and response plan	01
22.04.2024	Earthquake and Cyclone – newly added in emergency preparedness and response plan	02

Prepared by	Verified by	Approved by
Ms.D.Poorani Shri	Dr.S.Gopinath	Dr.V.Thirumurugan
AME-EMS	Assistant Professor	Associate Director – Campus Life

Annexure 10 - Audit Evidence / Process Notes (ISO 14001:2015)

Standard: ISO 14001:2015	**Site:**	**Audited person:**
Process / Area:	**Date:** DD/MM/YYY	**Auditor:**
Process Input: (Quality / insp. plans, Env. Aspects, Hazards, emergency plans, applicable legal req., Life cycle stages,etc.)	**Process Output:** (Quality records, reports, Operation controls, implementation of life cycle stages, M & M records etc.)	
Process evidence/ Documentation / Records / Tools / Notes: (You may use next page as additional pages for notes)		**Evaluation**[1]
KPIs / Objectives / Efficiency indicators	**Risks and opportunities**	**Resources (Material / Personnel)**

[1] **Note: Please use separate process audit notes for each process however you can use multiple sheets for single** process. **Evaluation**: 1 = Conformance; 2 = Minor Non-conformance; 3 = Major Non-Conformance; n.a.: Not Applicable; "evaluation with clause" numbers in case of Minor /Major NC

Additional Notes / objective evidence: (e. g. department / Name of audited persons / inspected documents /audit observations)	**Evaluation**[2]

[2] **Note: Please use separate process audit notes for each process however you can use multiple sheets for single** process. **Evaluation**: 1 = Conformance; 2 = Minor Non-Conformance; 3 = Major Non-Conformance
n.a.: Not Applicable; "evaluation with clause" numbers in case of Minor /Major NCs

Annexure 11 - Nonconformity Report (NCR)

No: Office use	Date: DD/MM/YYYY	Site: DCA / E&T Hostels / MHS

Standard: ISO 14001:2015	Clause number:	Type (MiN or NC):

Audit Results (filled out by Auditor)

Finding:	
Evidence:	

Action: (filled out by Auditee)

Correction: (immediate)				
	When?	DD/MM/YYYY	Who?	

Root Cause: (Why did the nonconformity occur)	

Corrective Action: (action to avoid repetition of root cause)				
	When?	DD/MM/YYYY	Who?	

Auditor's decision of correction and corrective action: (filled out by auditor)						
Correction:	Date:	DD/MM/YYYY	Effective (E) / Accepted (A)		Evidence of implementation:	
Corrective:	Date:	DD/MM/YYYY	Effective (E) / Accepted (A)		Evidence of implementation:	

MiN – Minor Non-Conformity; **NC** – Non Conformity

Version control

Effective Date (from)	Description	Version
22.11.2022	Nonconformity report (NCR)	01
03.03.2023	Nonconformity report (NCR)– Presented as separate annexure document	02
22.08.2023	Audit results and corrective actions were presented as single annexure.	03

Note: This page is not required to be printed/copied while submitting the NCR

Annexure 12 - Environmental Process Map

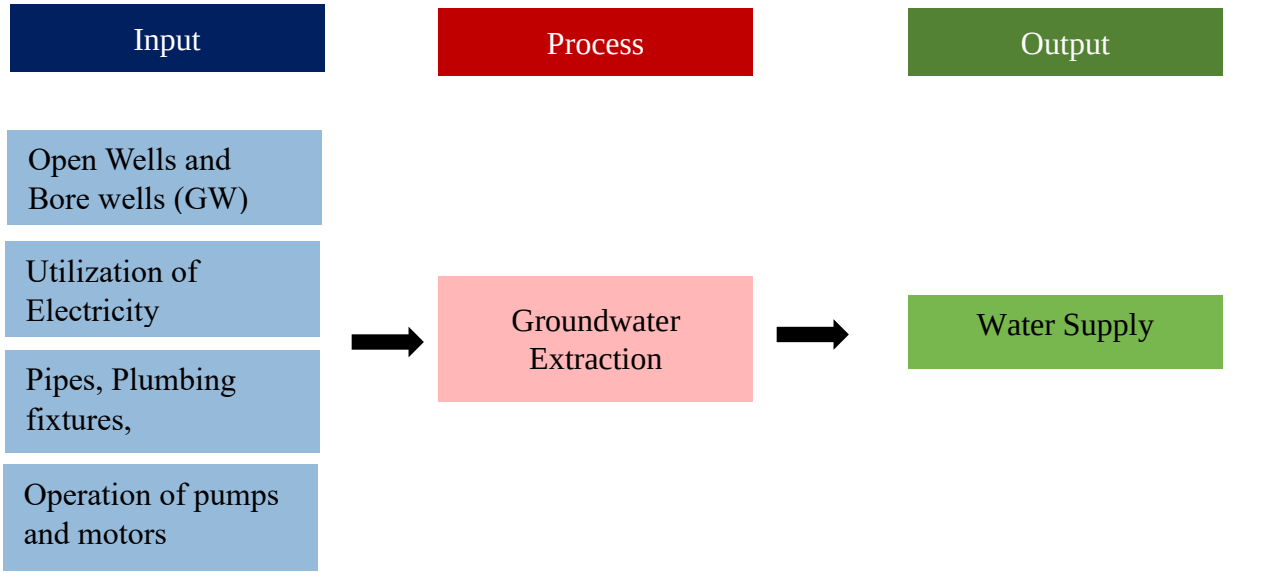

Fig 1. Groundwater extraction

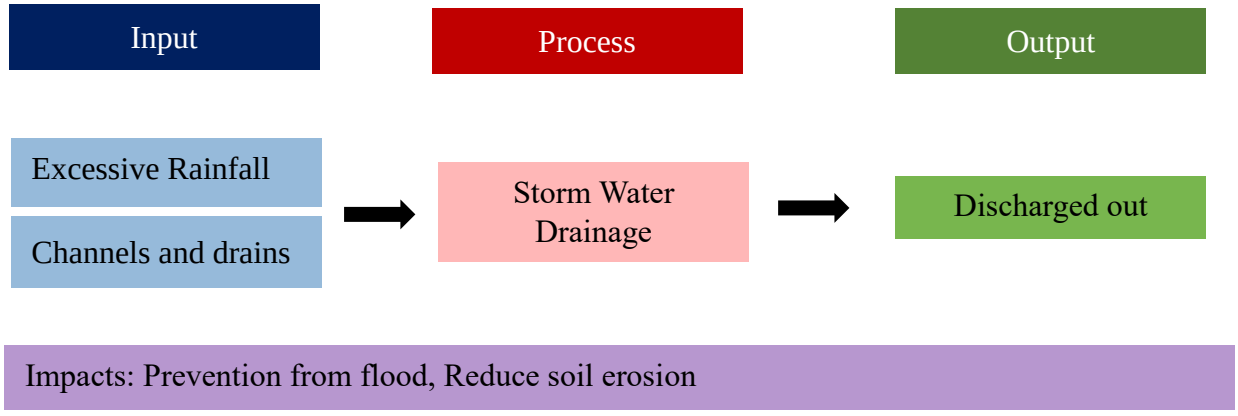

Fig 2. Storm water drainage

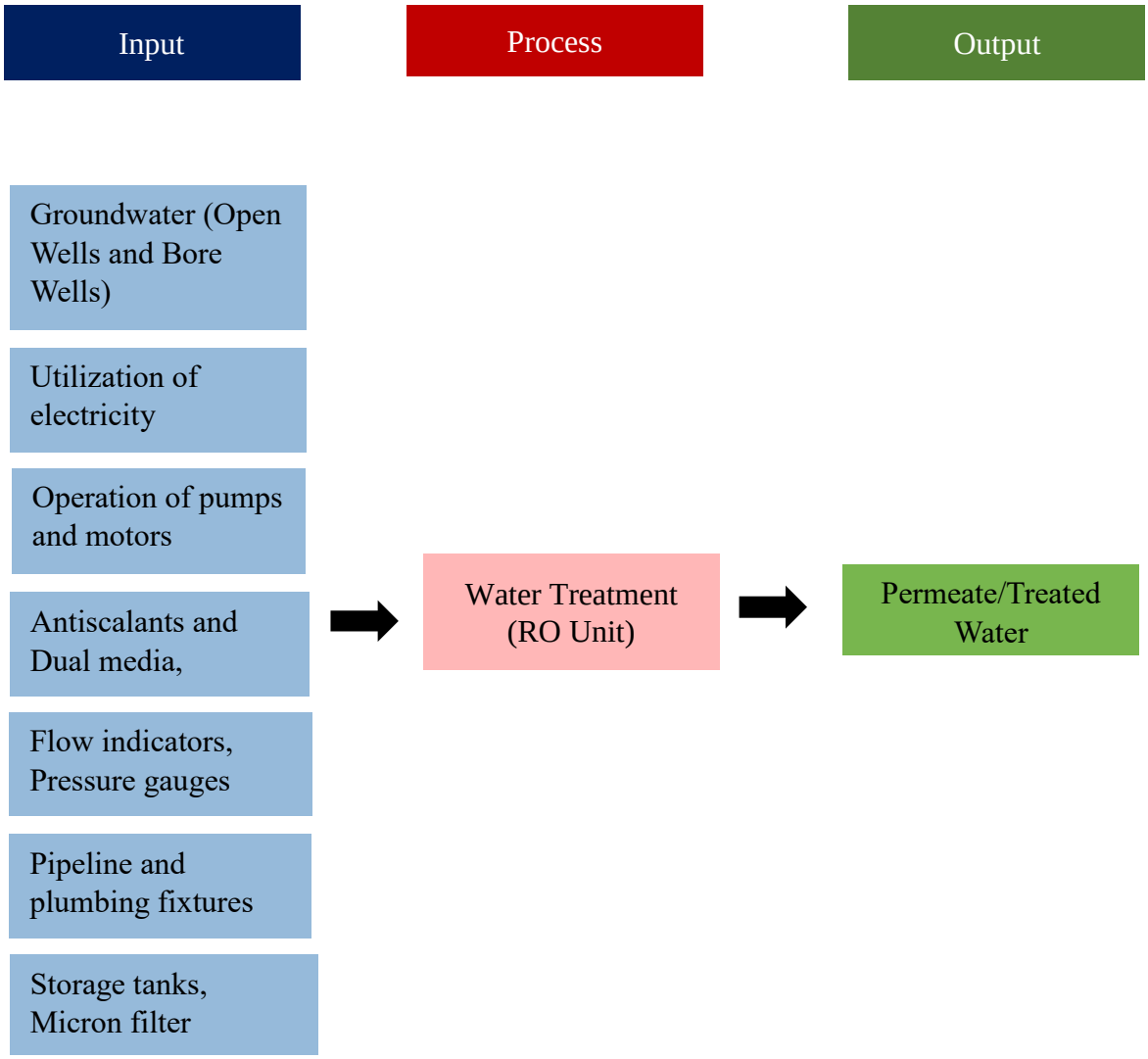

Fig 3. Reverse osmosis unit

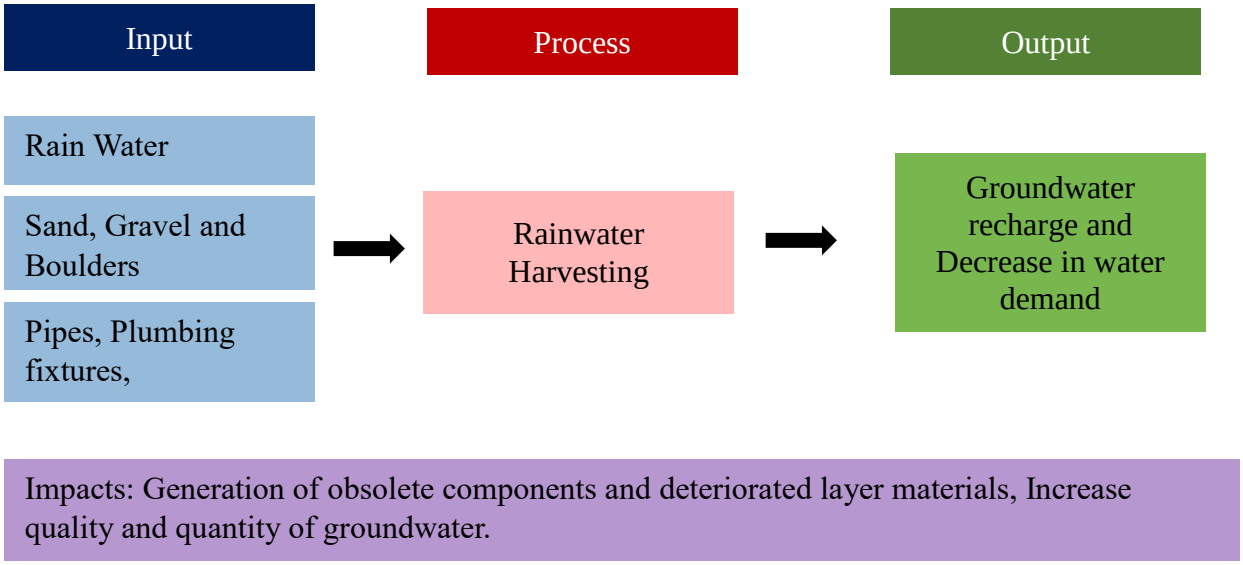

Fig 4. Rainwater harvesting

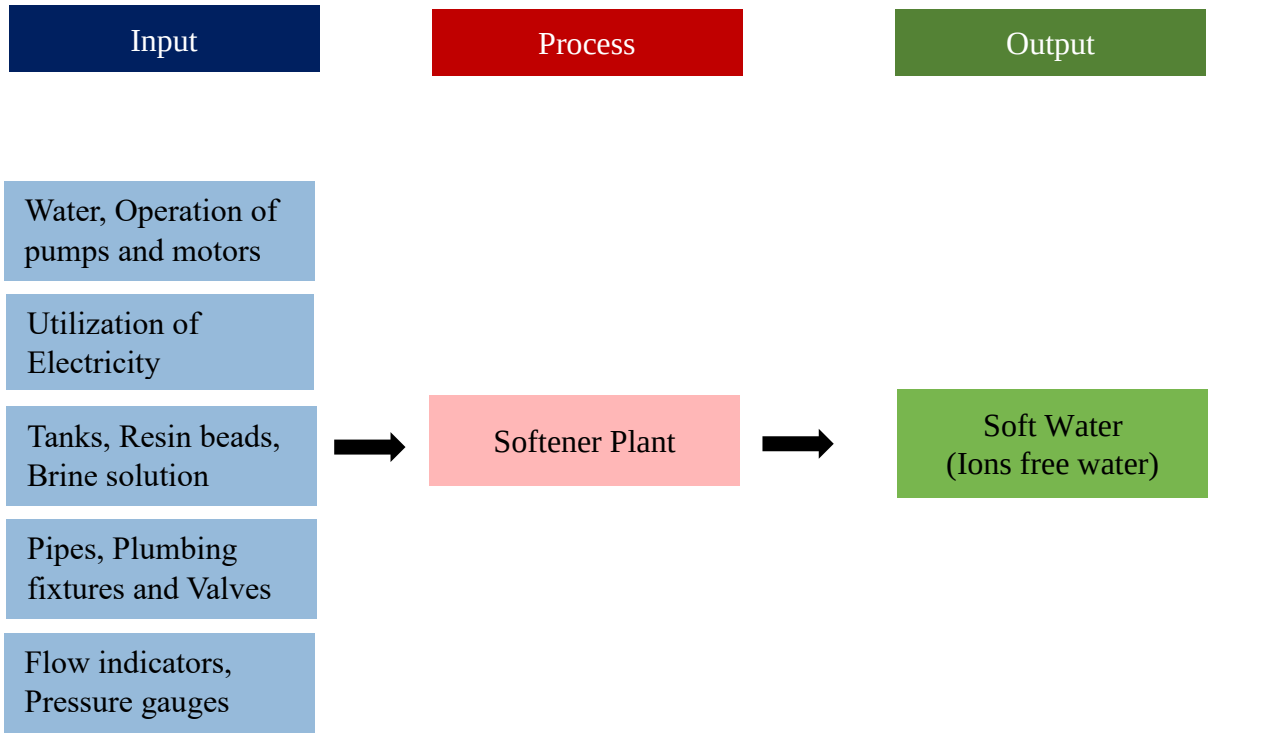

Fig 5. Softener plant

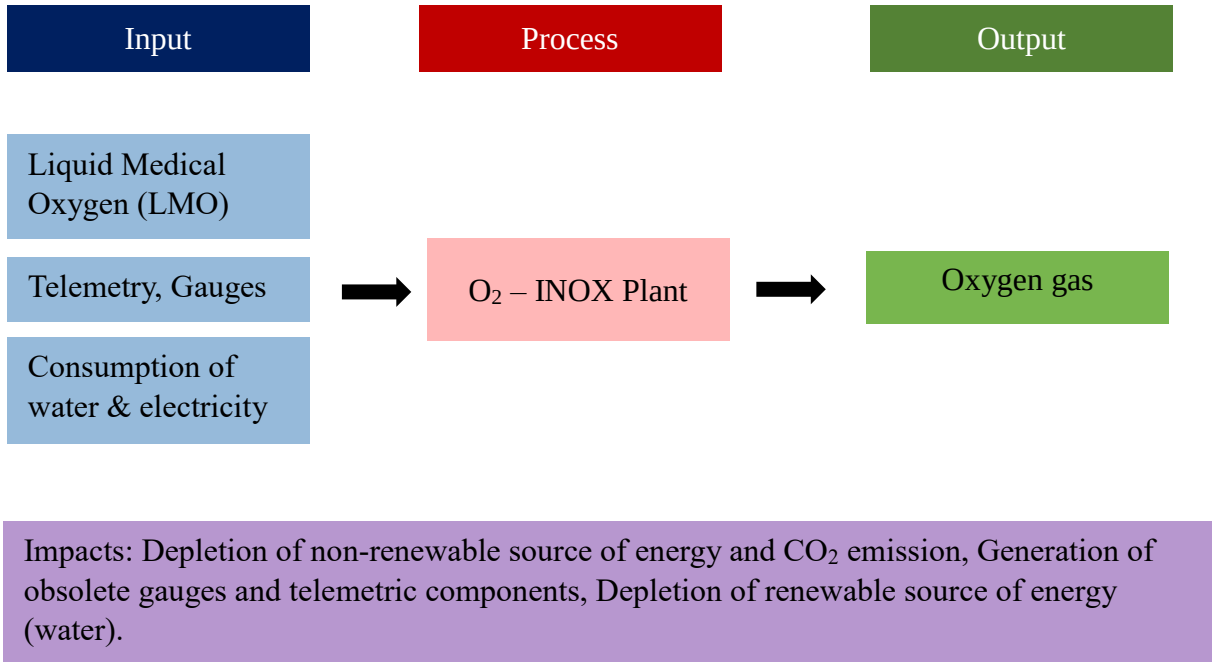

Fig 6. O_2 - INOX Plant

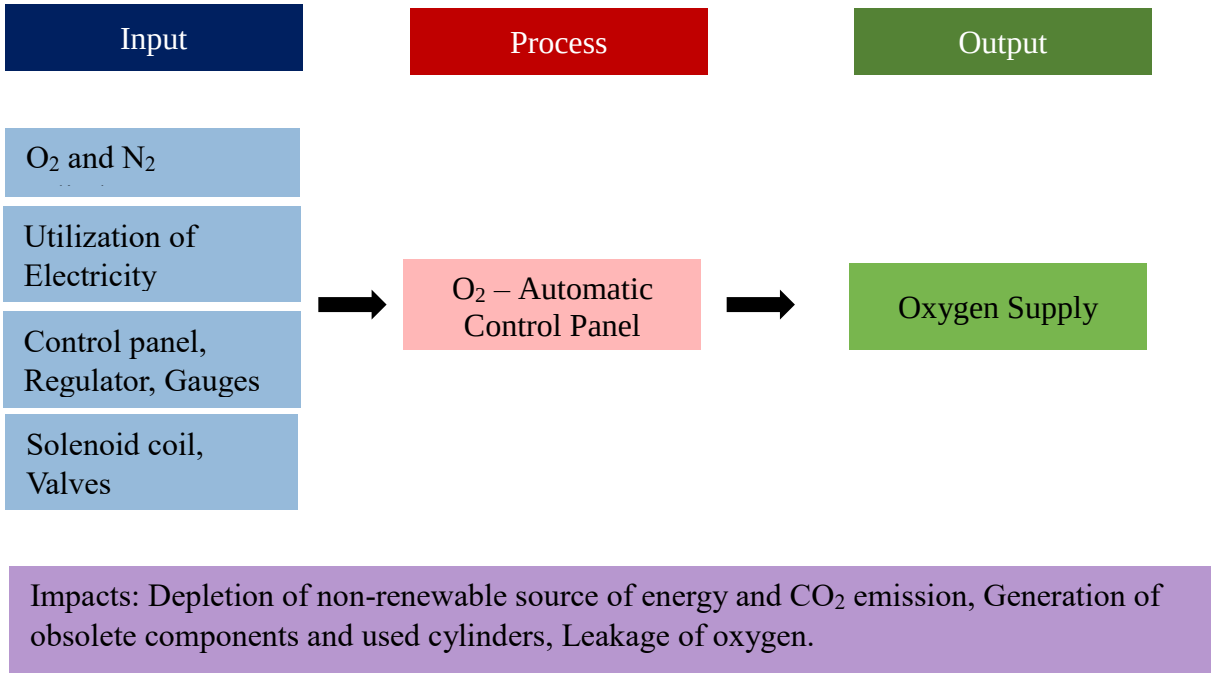

Fig 7. O_2 - automatic control panel

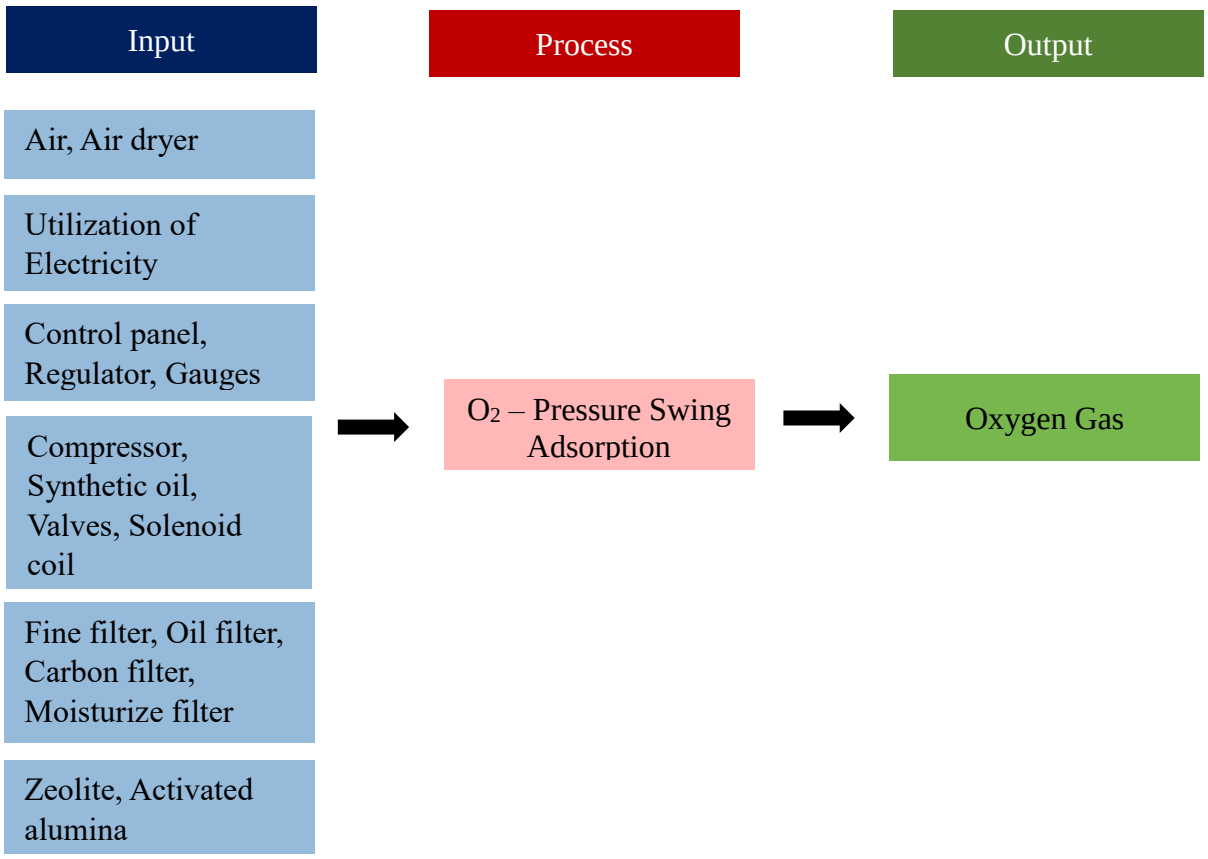

Fig 8. O_2 - pressure swing adsorption

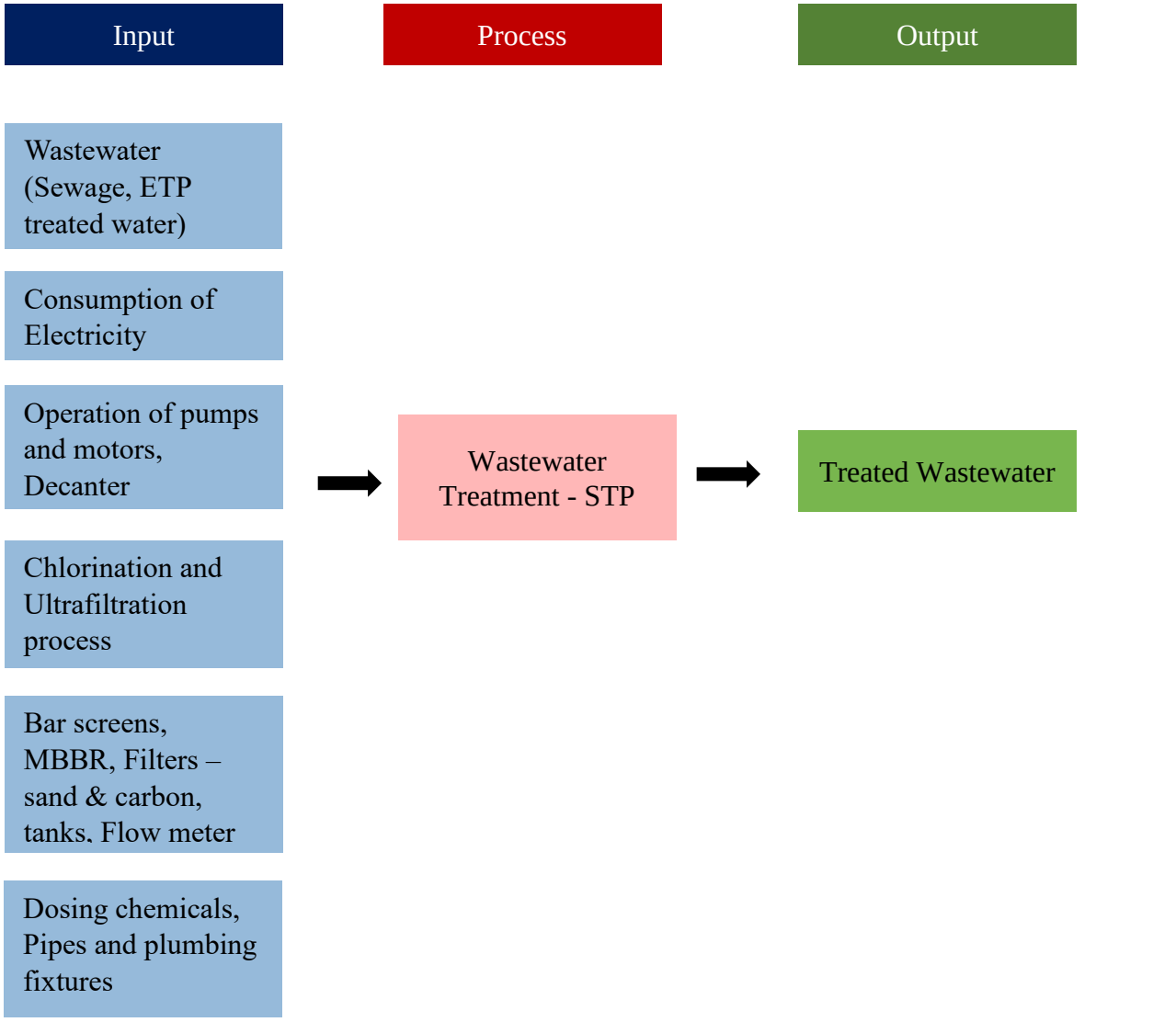

Fig 9. Sewage treatment plant (STP)

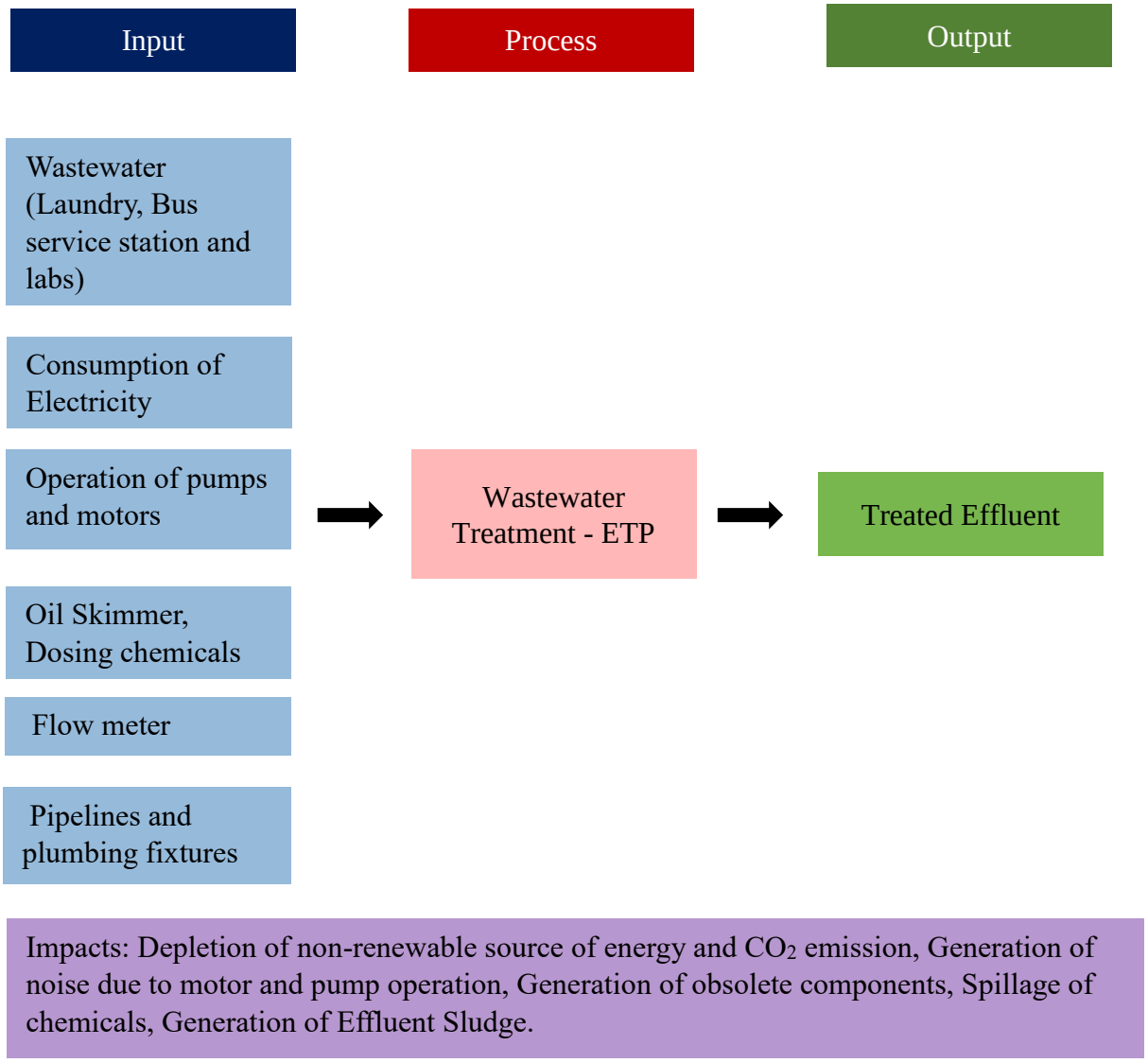

Fig 10. Effluent treatment plant (ETP)

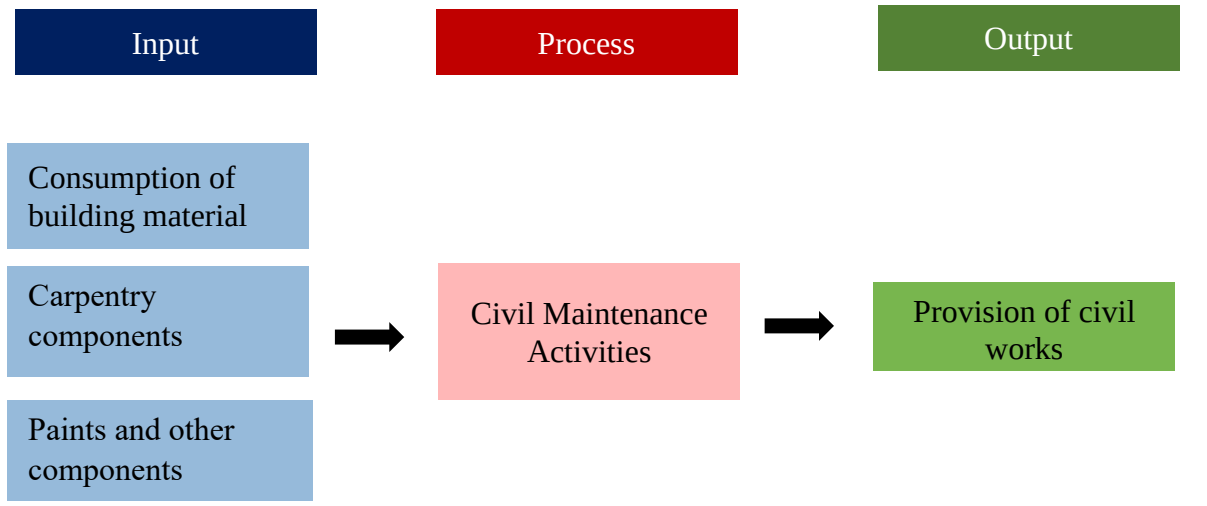

Fig 11. Civil maintenance activities

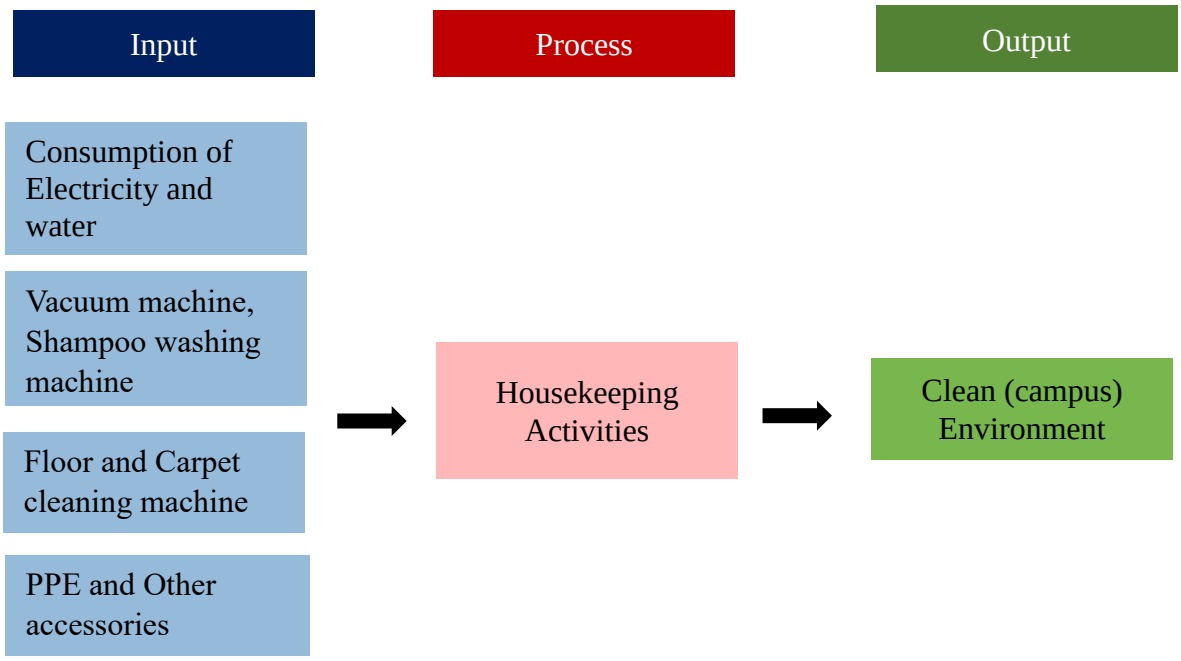

Fig 12. Housekeeping activities

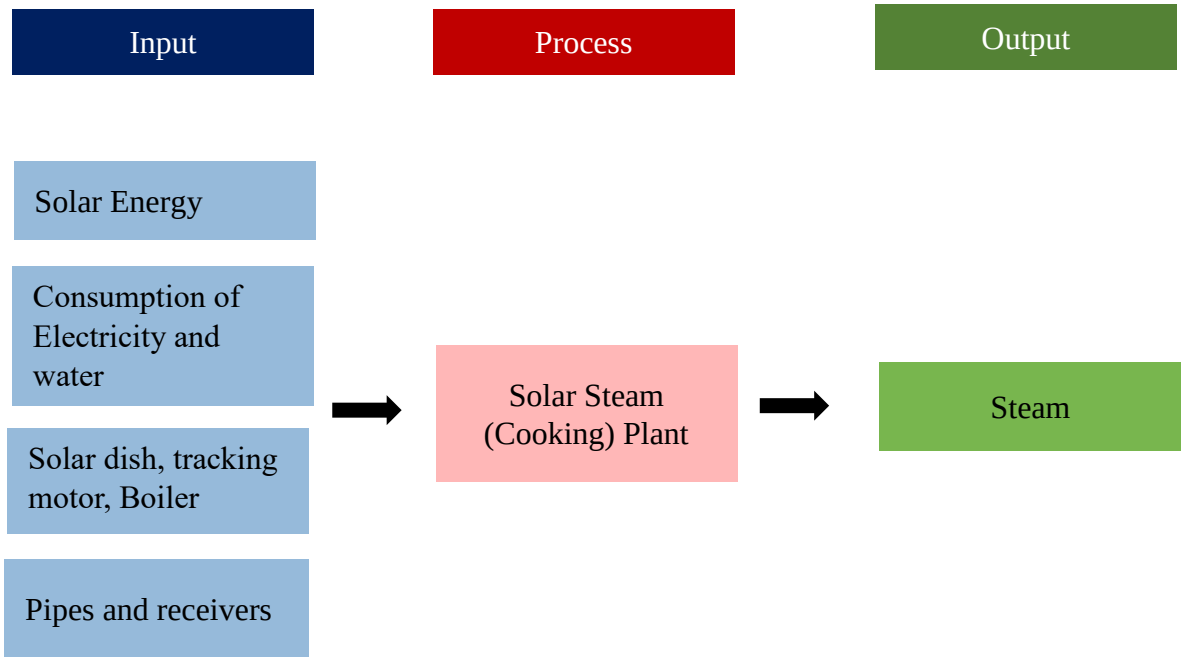

Fig 13. Solar steam plant

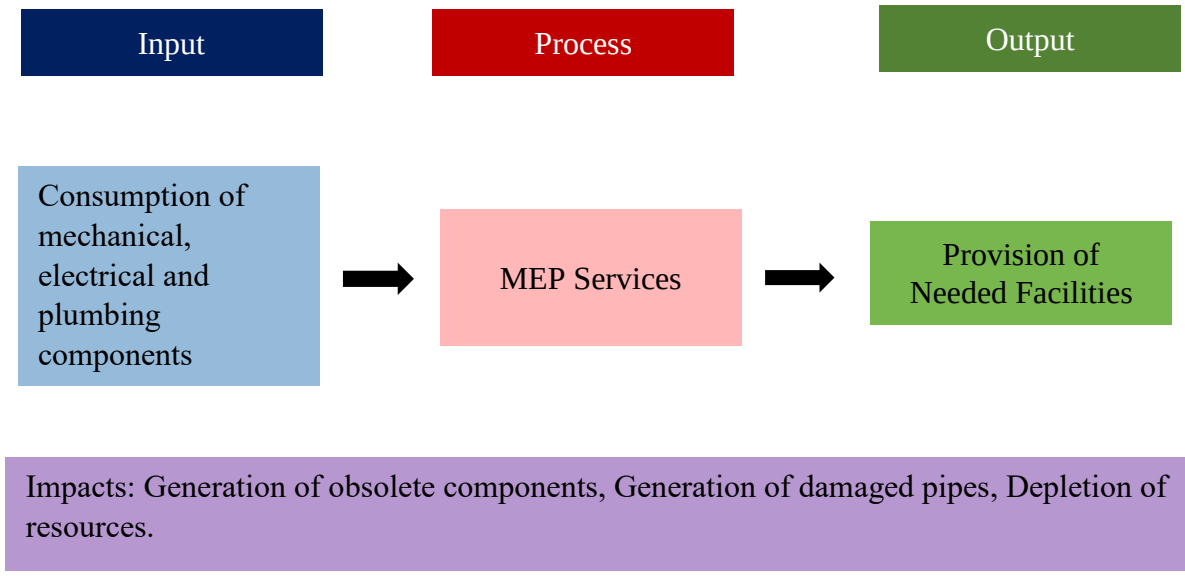

Fig 14. Mechanical electrical and plumbing services

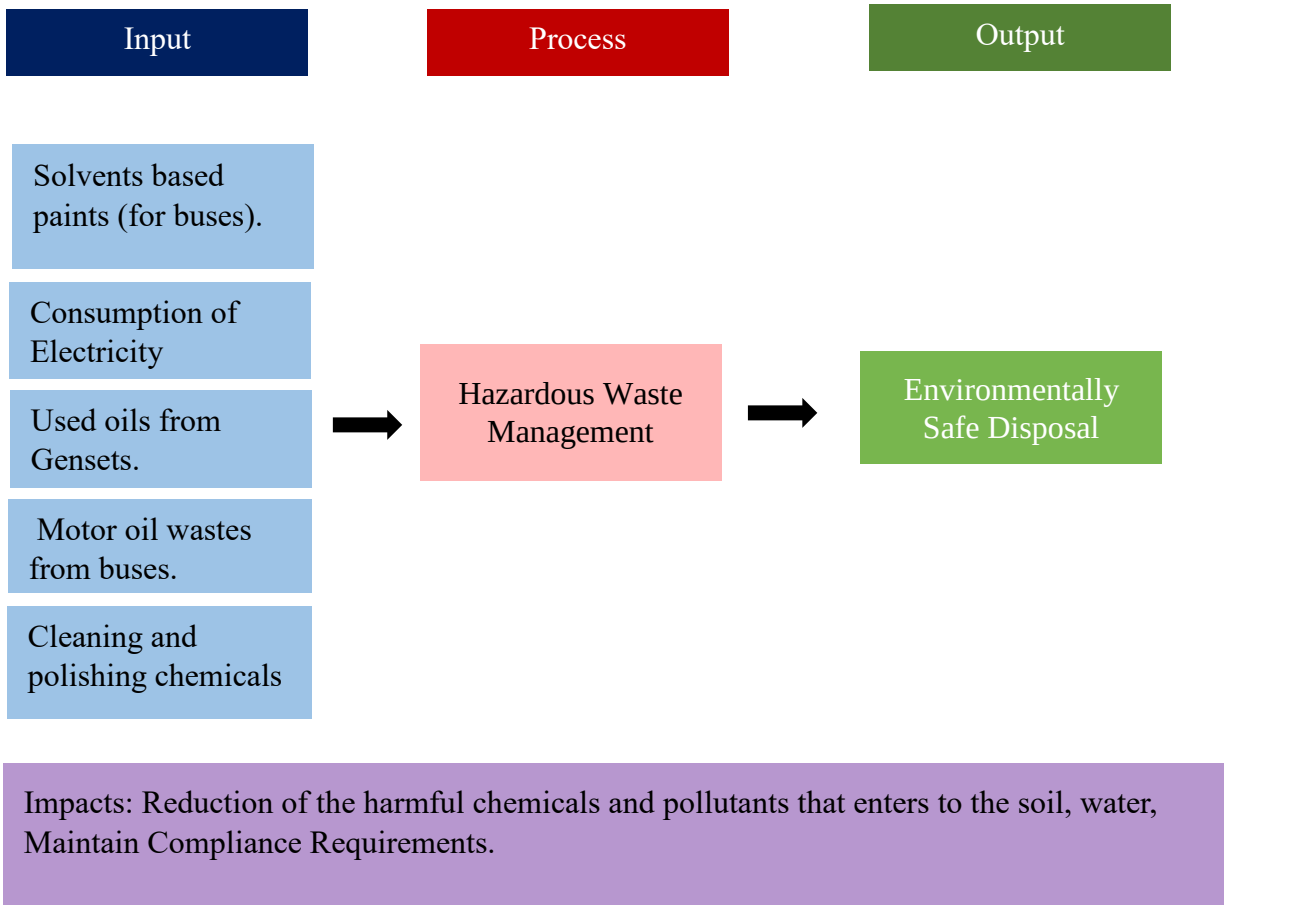

Fig 15. Hazardous waste management

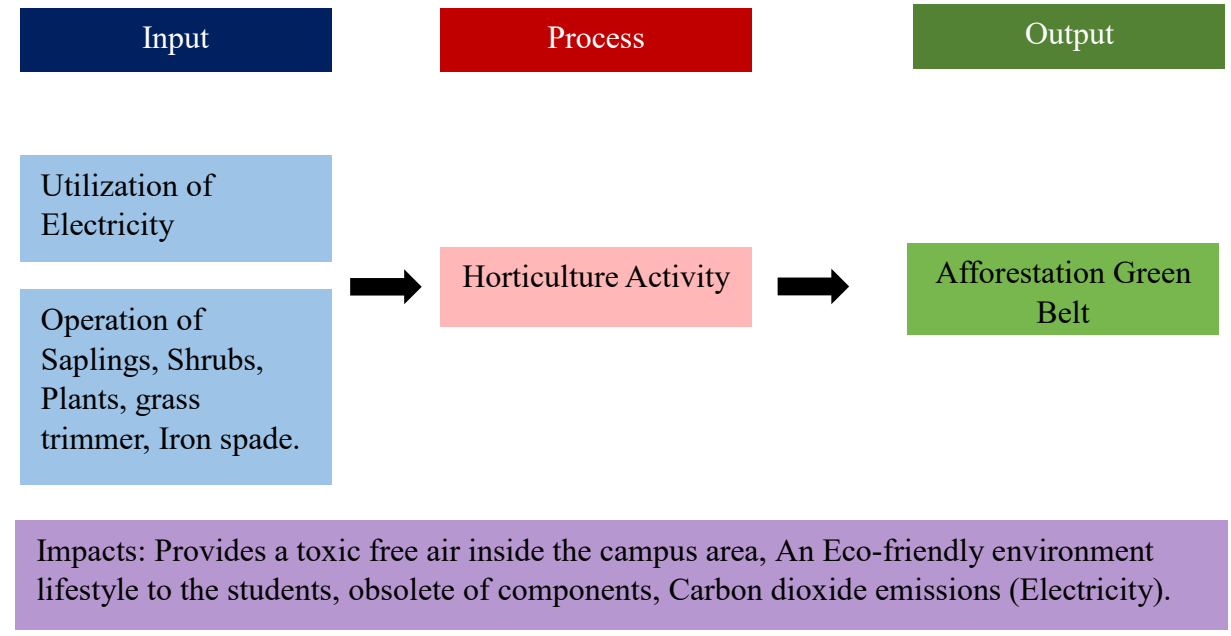

Fig 16. Horticulture activity

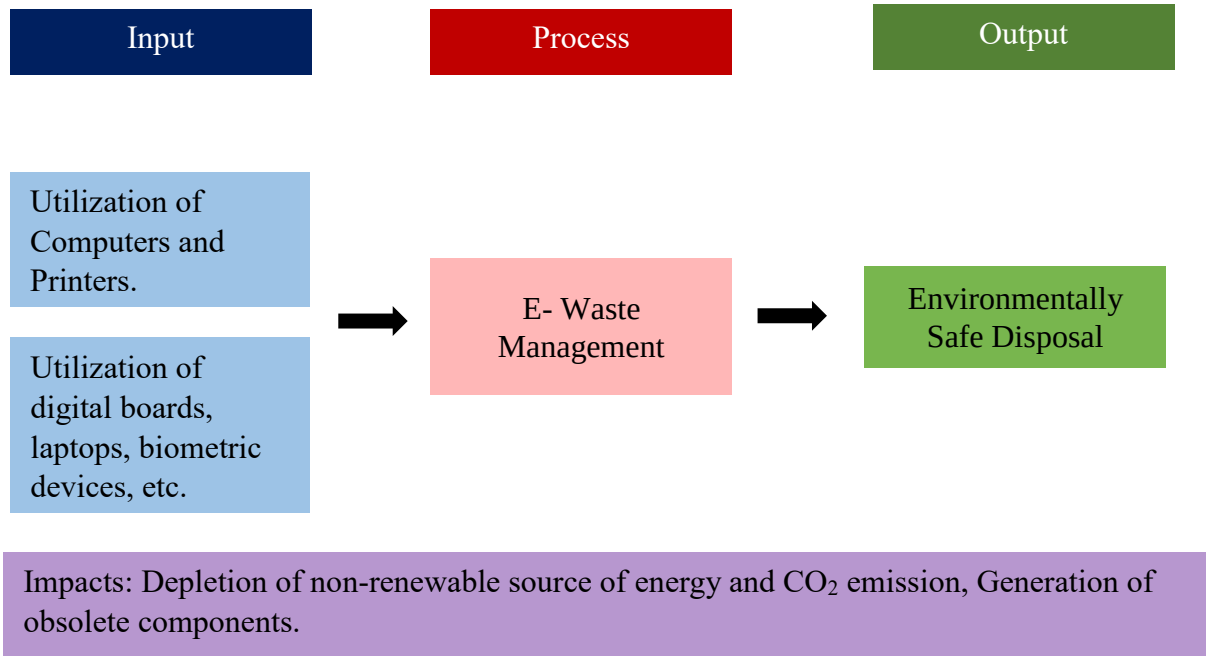

Fig 17. E - waste management

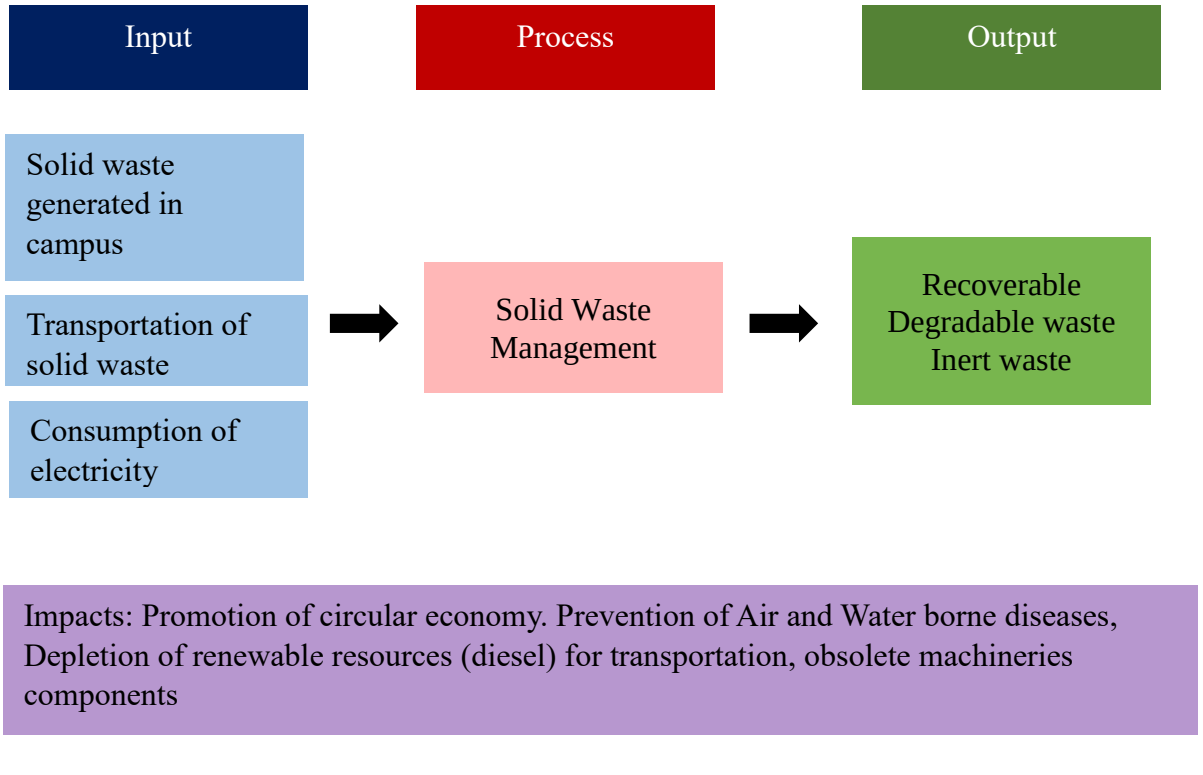

Fig 18. Solid waste management

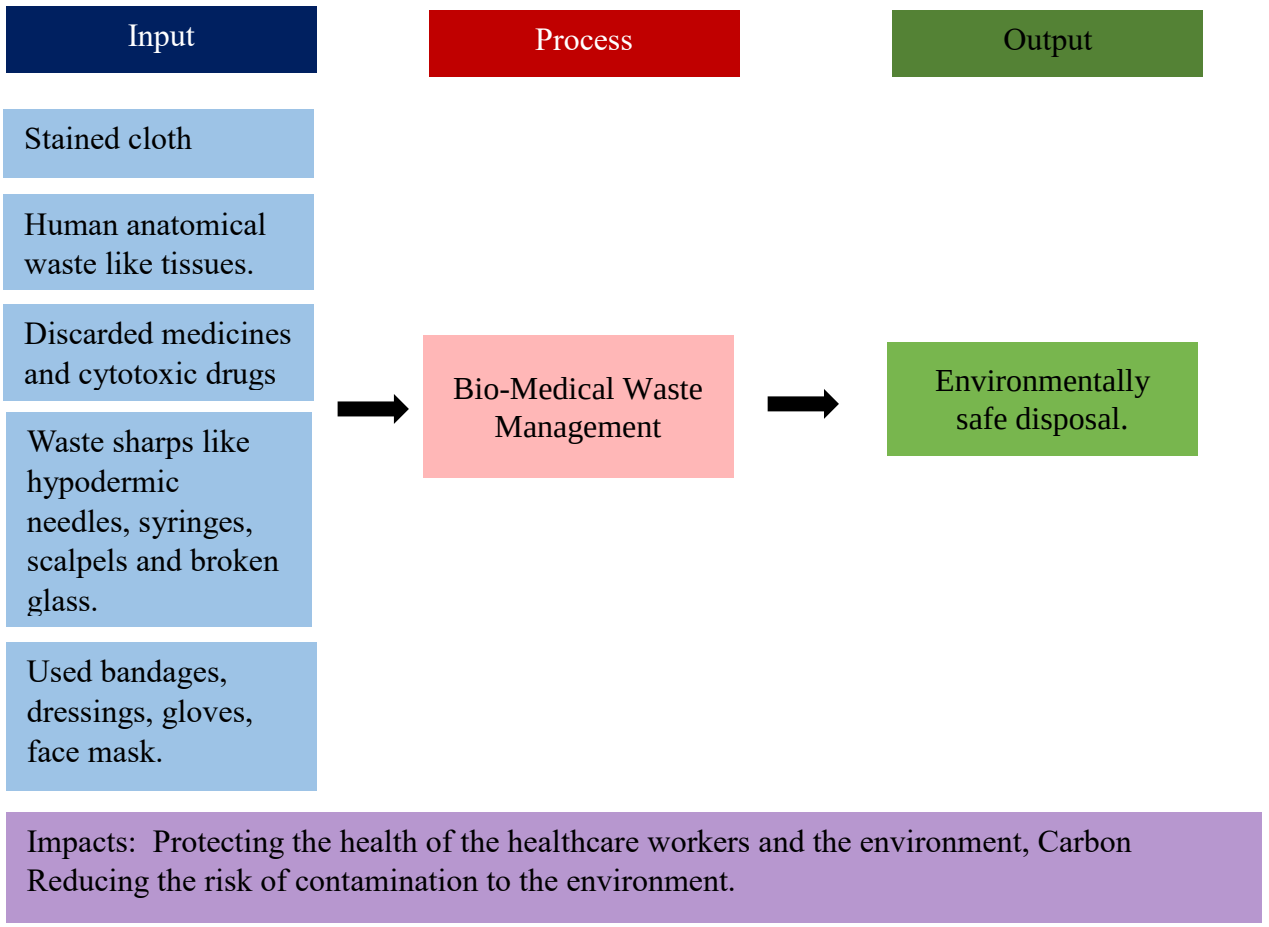

Fig 19. Bio-medical waste management

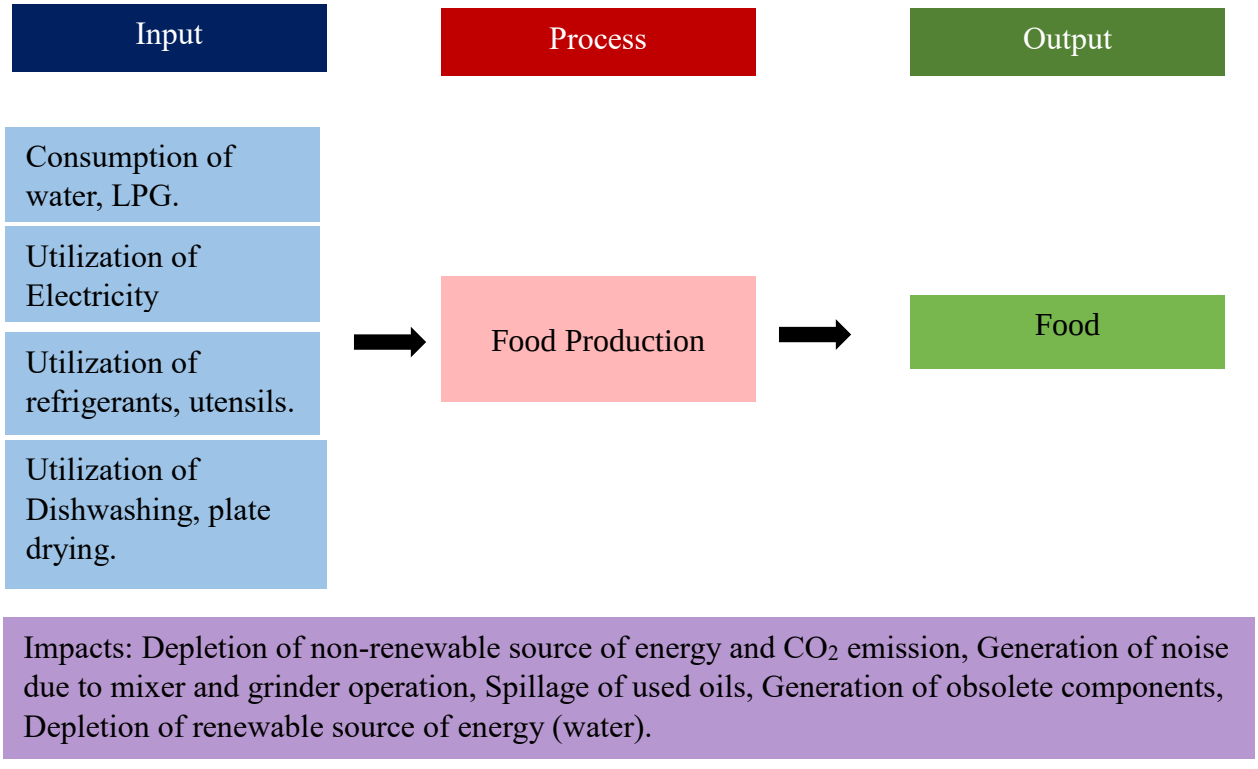

Fig 20. Operation of food production

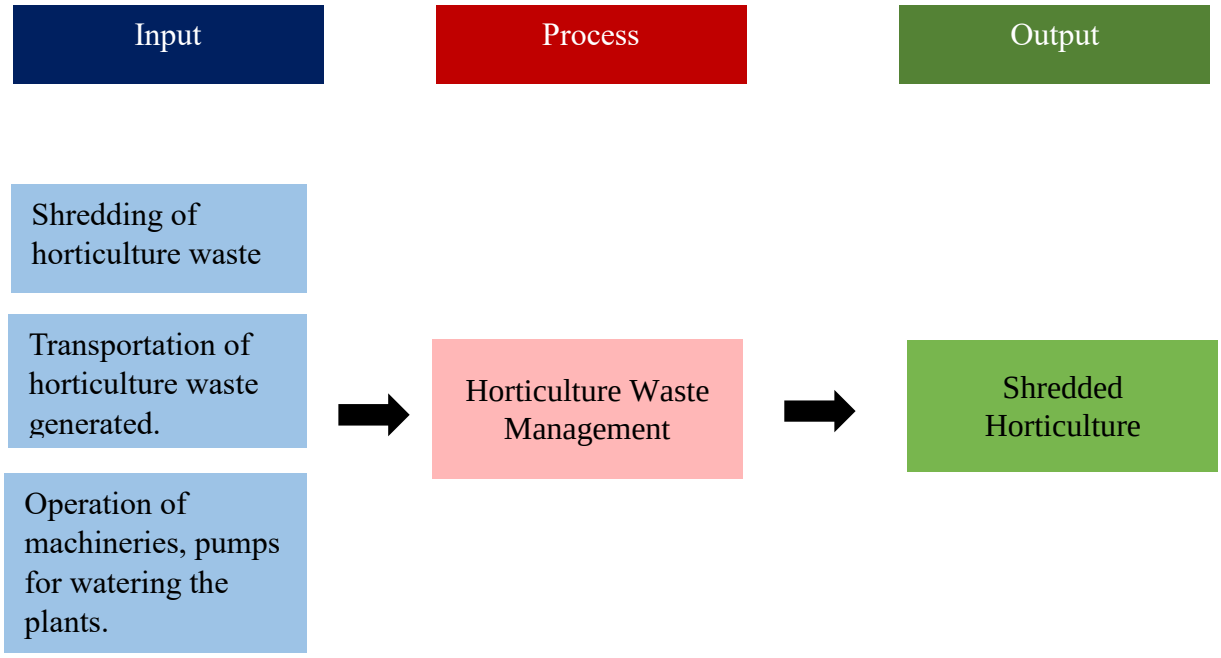

Fig 21. Horticulture waste management

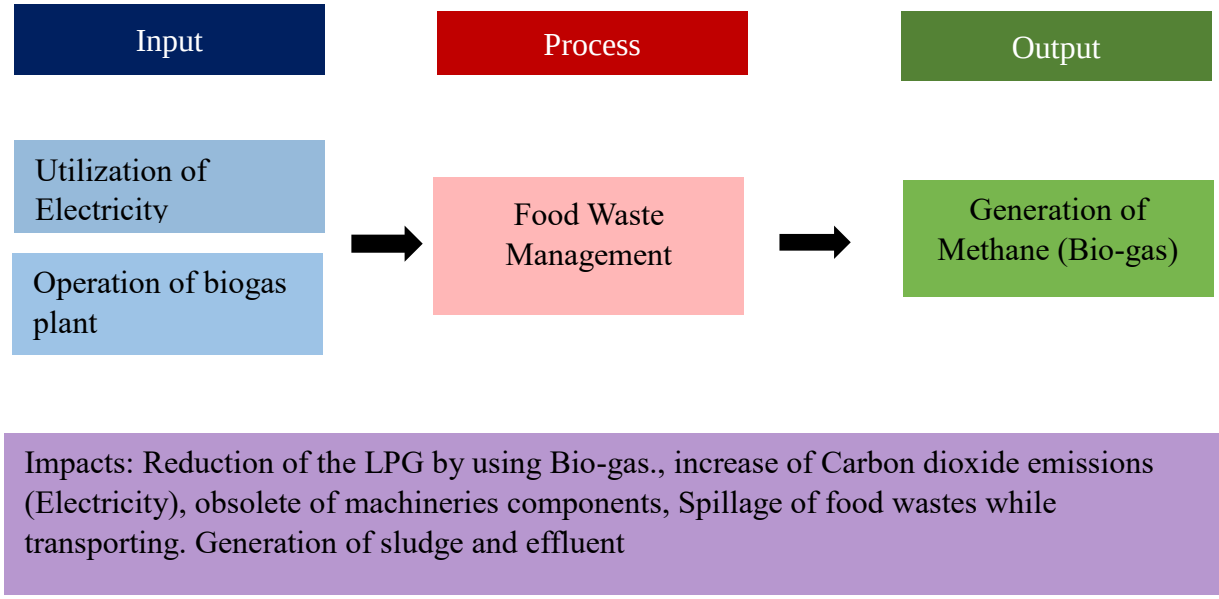

Fig 22. Food waste management

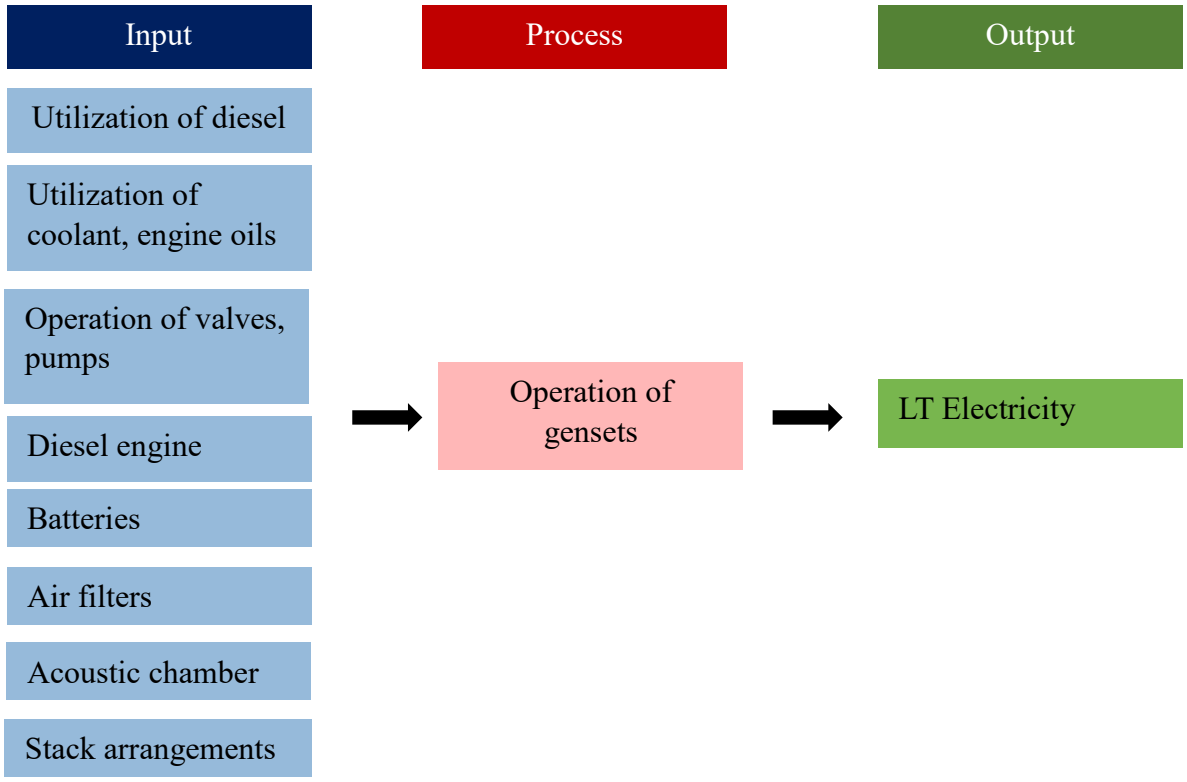

Fig 23. Operation of gensets

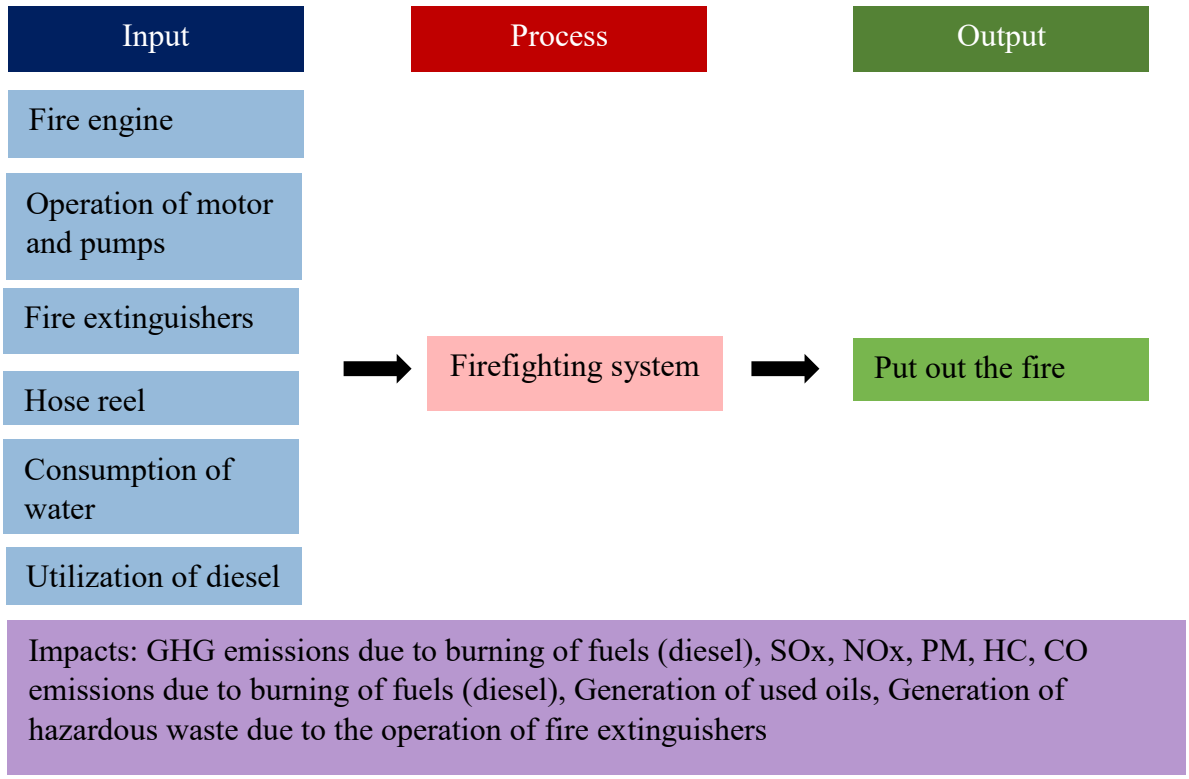

Fig 24. Firefighting system

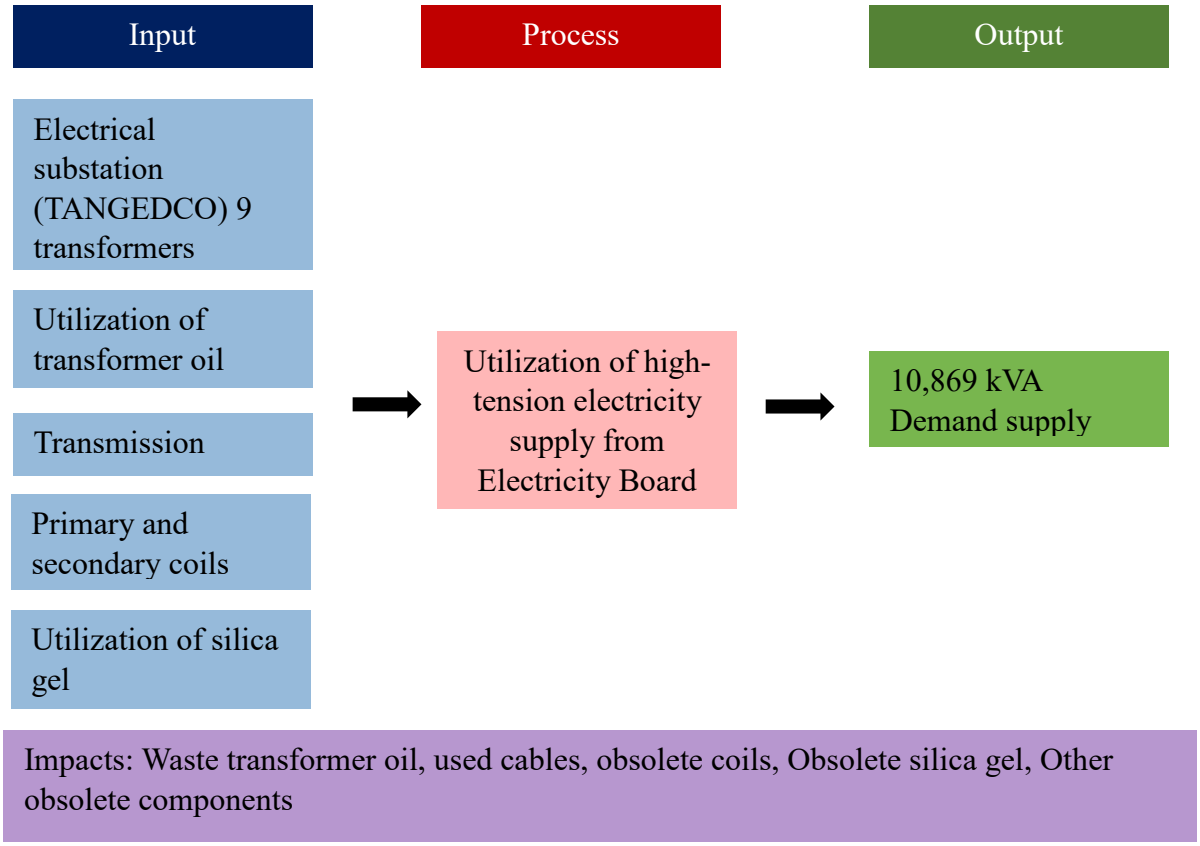

Fig 25. Utilization HT electricity supply from EB

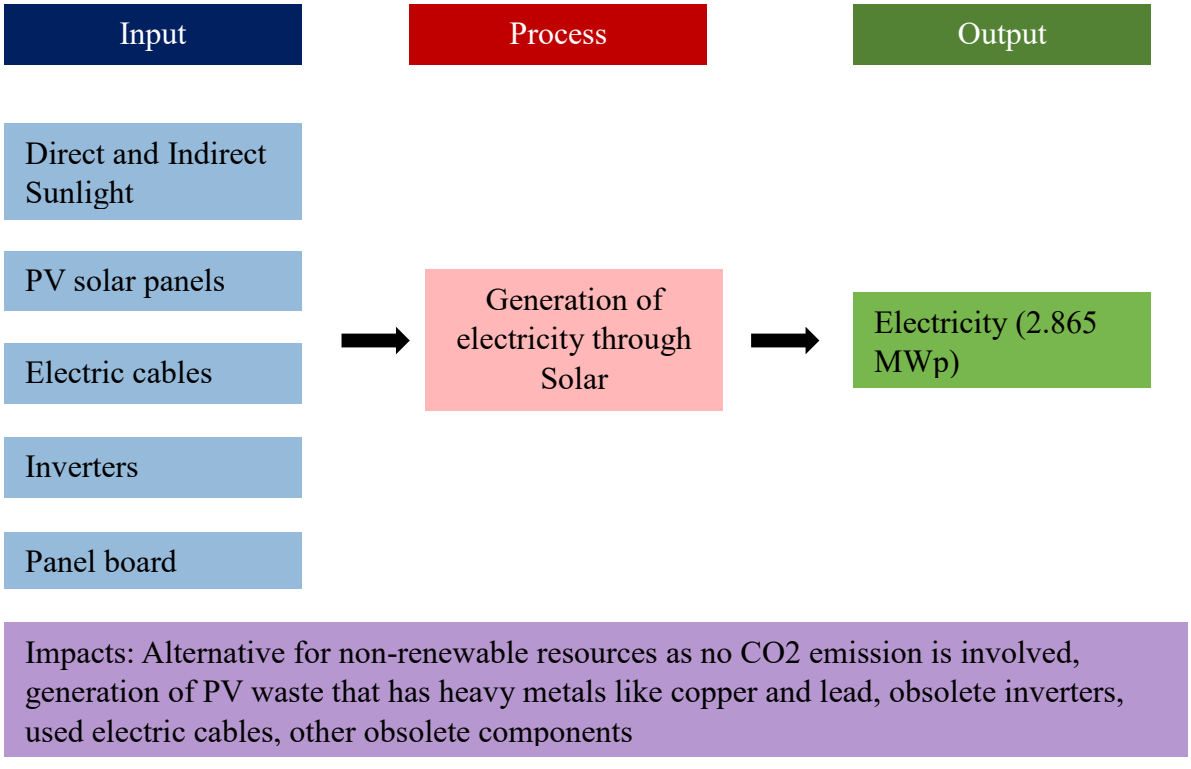

Fig 26. Generation of electricity through Solar

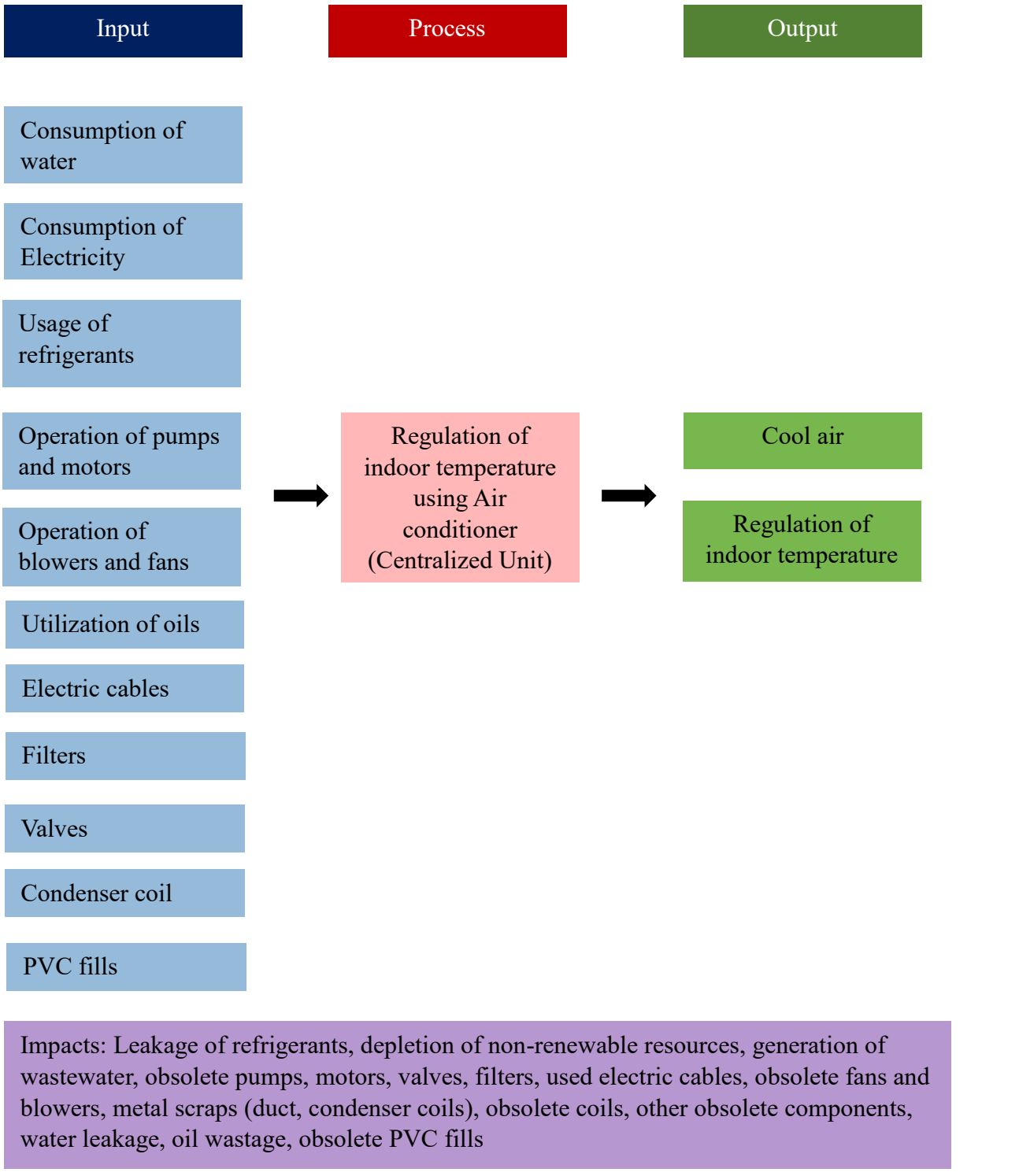

Fig 27. Operation of chiller plants

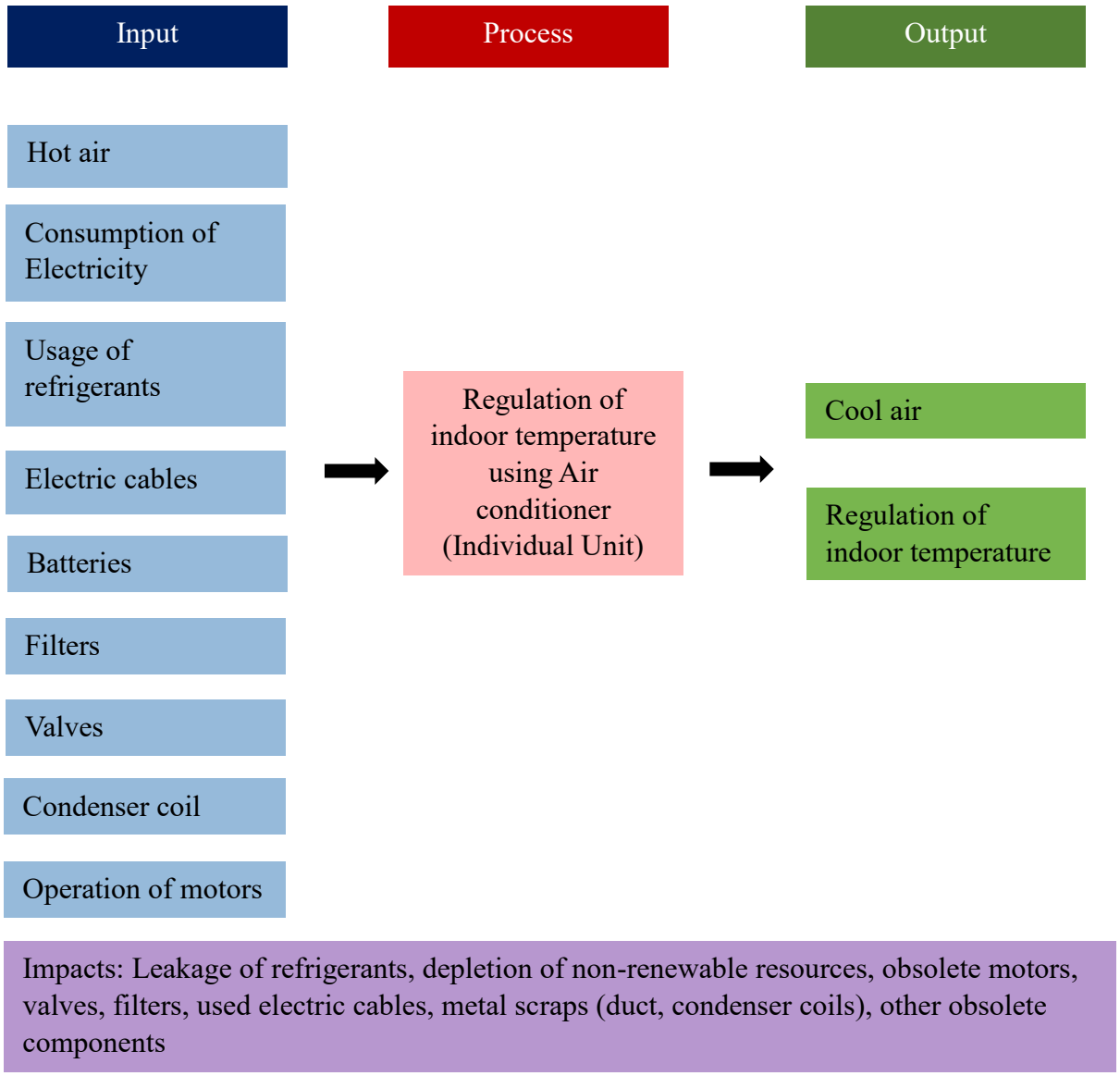

Fig 28. Operation of unit Air Conditioner

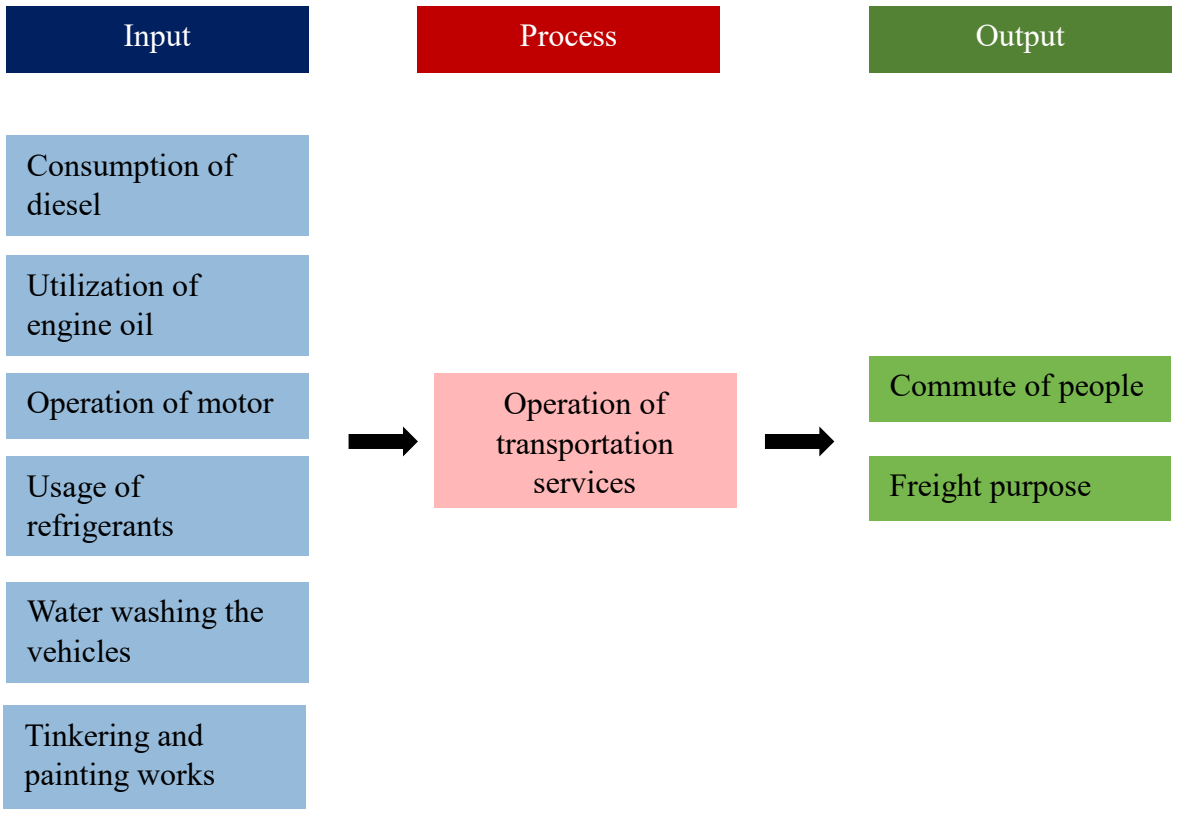

Fig 29. Operation of transportation services

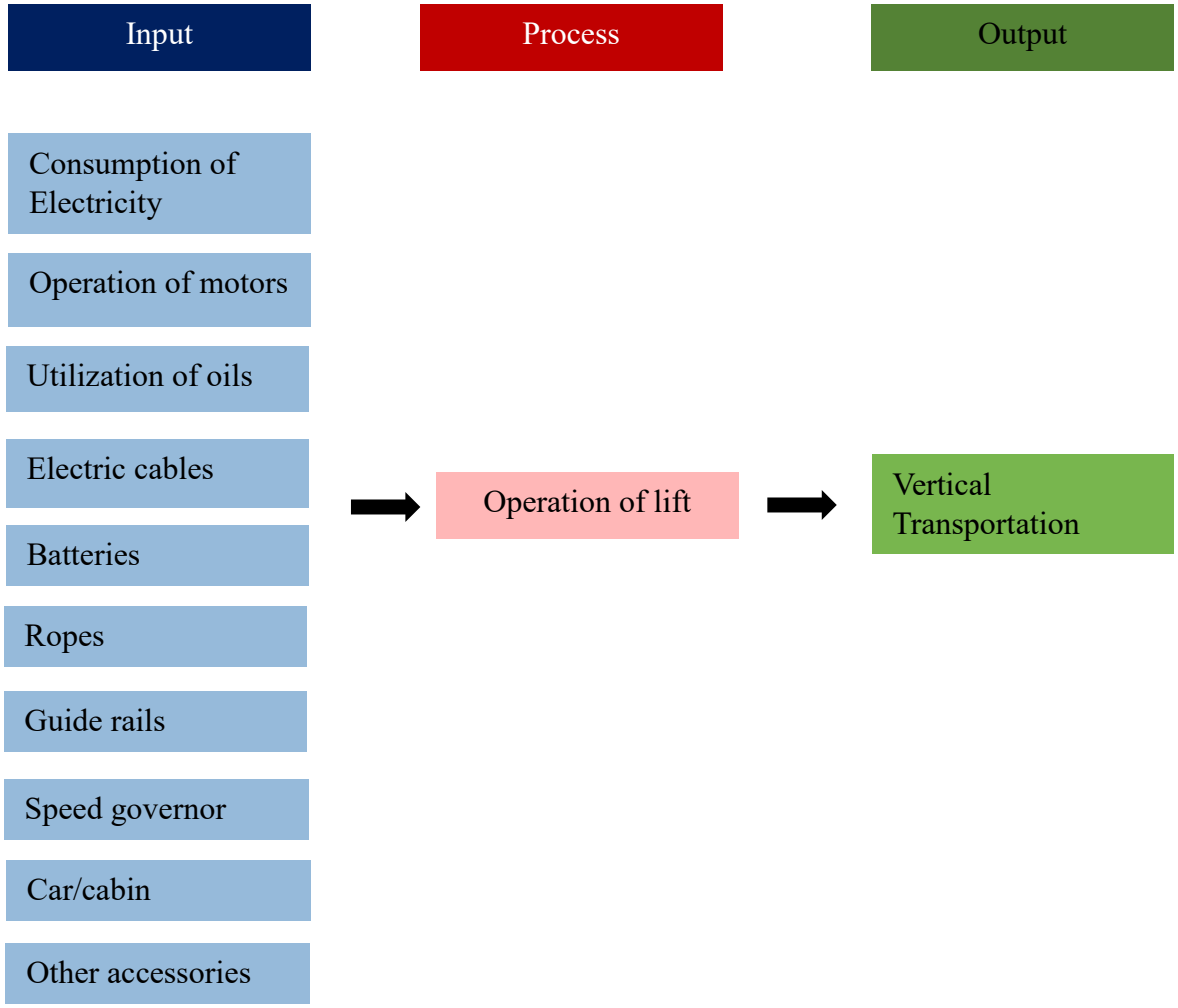

Fig 30. Operation of lift