

UNIMAS CAMPUS- WIDE WASTE MANAGEMENT HANDBOOK

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1. INTRODUCTION

Universiti Malaysia Sarawak (UNIMAS) recognizes the critical importance of implementing a holistic and sustainable waste management system across its entire campus. As a research university committed to environmental stewardship, this Waste Management Handbook outlines comprehensive guidelines and procedures to manage all categories of waste generated within the university. It aligns with national environmental regulations and supports UNIMAS' ambition to achieve a Low Carbon Campus by 2030.

Objectives

- Ensure compliance with environmental laws and best practices.
- Promote waste minimization, recycling, and circular economy.
- Institutionalize SOPs for all types of waste.
- Raise awareness and encourage community participation.
- Align waste management practices with UNIMAS Sustainability Framework, ESG Policy, Environmental Policy, and ULCC Roadmap.

2. CORE PRINCIPLES OF WASTE MANAGEMENT

While waste management processes may differ across types of waste, several core principles guide our overall waste management approach. These core principles, adapted from the EU Waste Directive, allow us to keep pace with up-and-coming waste management and valorisation technologies, while ensuring that our commitment to reducing our environmental footprint is met.

- Principle 1: Waste is managed without endangering human health. Risks of exposure to hazardous substances and disease should be negligible throughout the waste management process.
- Principle 2: Waste is managed without risk to water, air, soil, plants or animals. The quality of air, water and soil, in addition to the wellbeing of other organisms, should be preserved throughout the waste management process.
- Principle 3: Waste is managed without causing noise or odour pollution. The emission of unpleasant noise and smells should be minimised throughout the waste management process.
- Principle 4: Waste is managed without adversely affecting the natural beauty of our surroundings. The aesthetic value of our natural environment should be preserved as much as possible throughout the waste management process.

3. WASTE HIERARCHY

The waste hierarchy is depicted as an inverted pyramid with five layers, with each layer decreasing in size in order of its preference. Each layer of the waste hierarchy represents a waste management method: prevention, reuse, recycling, recovery, and disposal.

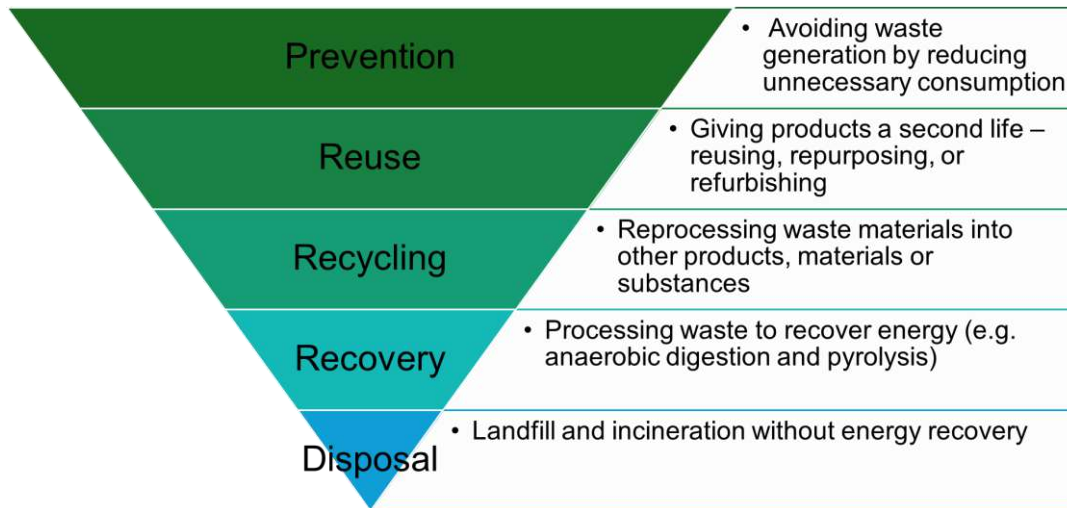


Figure 1: The waste hierarchy, consisting of prevention, reuse, recycling, recovery and disposal

It is a tool that helps indicate an order of preference for action to reduce and manage waste. UNIMAS uses it to tackle the problem of waste before the point of waste generation (prevention) and to utilise waste as a potential resource (reuse, recycling, and recovery) before disposal. By following this order of preference, UNIMAS seeks to decrease the volume of waste being landfilled and to contribute to the circular economy.

4. THREE GENERAL STEPS TOWARDS HOLISTIC WASTE MANAGEMENT

Regardless of waste type, there are three general steps towards holistic waste management. While the specifics may vary, all waste management protocols in UNIMAS follow these three general steps.

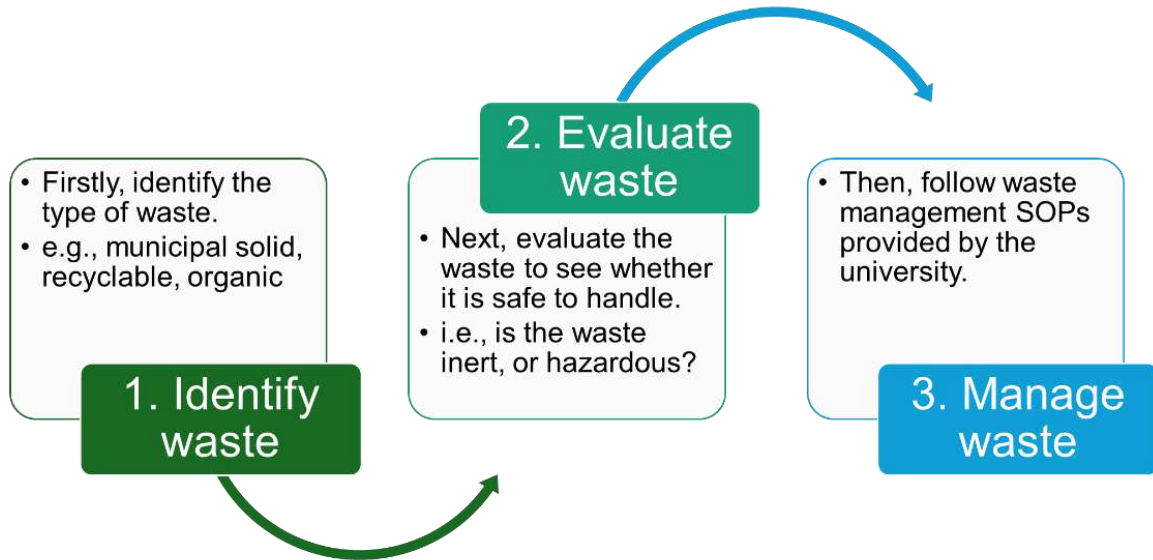


Figure 2: UNIMAS' three general steps towards proper waste management.

5. CATEGORIES OF WASTE IN UNIMAS

This section outlines the main types of waste generated within UNIMAS campus premises. Each category requires specific handling procedures, from segregation at source to disposal or valorisation. Proper classification is essential for compliance with environmental regulations, ensuring health and safety, and enabling effective resource recovery. These categories encompass daily operational waste, research and laboratory by-products, and waste resulting from university development activities.

Waste Type	Description	Common Sources
General Waste	Non-hazardous residual waste	Offices, lecture halls, dormitories
Recyclable Waste	Paper, plastics, metal, glass	Admin blocks, residential colleges
Compostable Waste	Biodegradable food and landscape waste	Cafeterias, canteens, landscape units
Electronic Waste	Discarded electronic devices	Offices, IT labs, maintenance stores
Used cooking oil		
Construction Waste	Debris from renovation and development works	Construction sites, facility upgrades
Clinical Waste		
Scheduled Waste	Hazardous laboratory and clinical waste	Labs, clinics, research centres

6. GOVERNANCE & RESPONSIBILITIES

The waste management structure at UNIMAS is governed by a coordinated hierarchy designed to ensure institutional oversight, operational effectiveness, and stakeholder engagement. At the top of the structure is the Advisory Panel led by TNC HEPA, which plays a strategic role in guiding institutional alignment, policy endorsement, and ESG integration.

The UNIMAS Facilities (Pembangunan) Head holds executive responsibility for ensuring that all physical and operational infrastructures needed for effective waste management are in place. This role ensures that sufficient resources, staffing, and logistics are available to support campus-wide implementation.

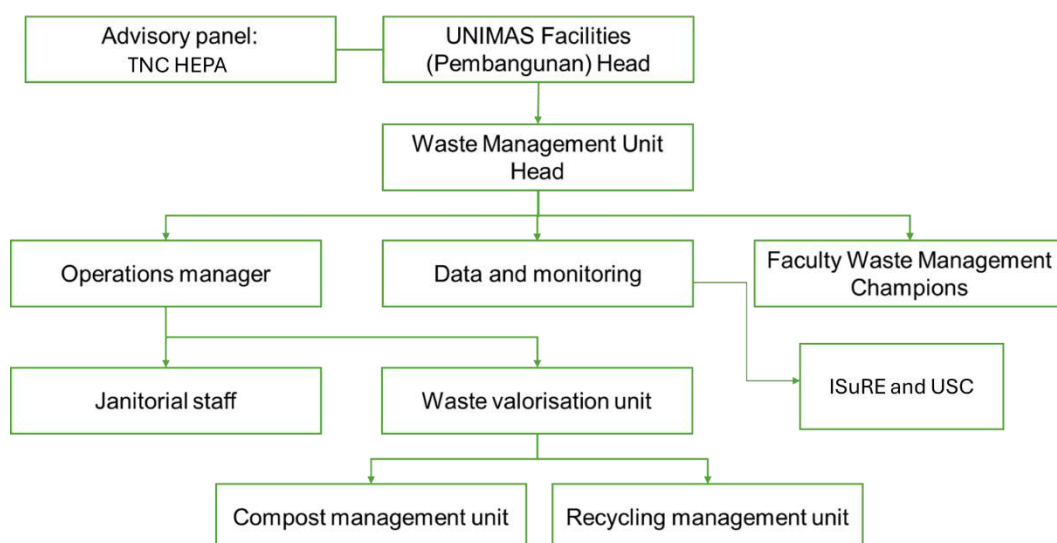
The Waste Management Unit Head reports directly to the Facilities Head and serves as the primary coordinator and implementer. This individual leads the overall waste operations, SOP enforcement, and performance monitoring. The unit is supported by three key branches:

- The Operations Manager, who supervises janitorial staff and field execution.
- The Data and Monitoring Team, responsible for tracking waste performance, producing reports, and maintaining compliance documentation.
- The Faculty Waste Management Champions, appointed by each faculty to coordinate faculty-level waste programs and liaise with the Waste Unit.

The Waste Valorisation Unit is tasked with exploring circular economy initiatives and resource recovery solutions, supported by the Compost Management Unit and Recycling Management Unit, which focus specifically on compostable waste composting and materials recovery, respectively.

Additionally, Institute of Sustainable and Renewable Energy (ISuRE) and the University Sustainability Cluster (USC) serve as research, training, and policy input bodies. These units provide technical support, conduct audits, and facilitate innovation across the system.

Each unit and role within this structure is clearly defined to enhance coordination and accountability. The entire system is reviewed through periodic audits, and continuous improvement is driven by monthly internal reporting and quarterly strategic reviews chaired by the Advisory Panel.



Person in Charge	Role	Job Scope
Advisory panel	Strategic Oversight & Institutional Alignment	<ul style="list-style-type: none"> • Provide high-level advisory on sustainability strategies and institutional policies. • Ensure waste management practices align with university-wide ESG and ULCC goals. • Endorse major initiatives, budget allocations, and inter-departmental collaborations.
UNIMAS Facilities Head	Executive Oversight	<ul style="list-style-type: none"> • Oversee the overall implementation and integration of the waste management system. • Ensure infrastructure, logistics, and staffing support for campus-wide operations. • Approve strategic plans, annual workplans, and audit recommendations.
Waste Management Unit Head	Operational Lead & Coordination	<ul style="list-style-type: none"> • Lead the waste management team and coordinate with faculties, vendors, and external agencies. • Develop and update SOPs, emergency plans, and waste KPIs. • Report monthly to UNIMAS Facilities Head and TNC HEPA on performance and challenges. • Chair internal Waste Management Task Force meetings.
Operations Manager	Field Operations & Logistics	<ul style="list-style-type: none"> • Manage daily waste collection, bin maintenance, and janitorial schedules. • Monitor contractor and janitorial staff performance. • Ensure compliance to safety, hygiene, and environmental SOPs at ground level. • Coordinate urgent response for overflows or complaints.
Data and Monitoring	Analytics, Compliance & Reporting	<ul style="list-style-type: none"> • Track and analyze data on waste types, volumes, and performance per zone/faculty.

	(handled by ISuRE and USC)	<ul style="list-style-type: none"> • Maintain records for ESG, ULCC, and regulatory reporting. • Generate dashboards and monthly progress reports. • Support audits and vendor assessments.
Faculty Waste Management Champions	Faculty-Level Coordination	<ul style="list-style-type: none"> • Implement faculty-specific Waste Management Plans (WMP). • Serve as focal point for training, data reporting, and SOP compliance. • Organize awareness campaigns, audits, and improvement actions within their faculty. • Submit quarterly reports to the Waste Management Unit Head.
Janitorial staff	On-Ground Waste Handling	<ul style="list-style-type: none"> • Execute daily waste collection and transportation to interim storage. • Conduct basic sorting if needed; report any missegregation or contamination. • Maintain bin cleanliness, replace liners, and assist during campus events.
Waste valorisation unit	Circular Economy & Innovation	<ul style="list-style-type: none"> • Identify and implement waste-to-resource initiatives (e.g., biocompost, upcycling). • Support pilot projects with student groups or faculties. • Work with vendors and researchers to test new recycling/composting technologies. • Maintain collaboration with the Compost and Recycling Management Units.
Compost management unit	Compostable Waste Treatment	<ul style="list-style-type: none"> • Operate and maintain on-campus composting systems (aerated bins, tumblers, etc.). • Ensure proper processing of food and landscape waste. • Track compost quality and output volume. • Liaise with café operators, landscape teams, and student projects.

<p>Recycling management unit</p>	<p>Recyclables Coordination & Vendor Interface</p>	<ul style="list-style-type: none"> • Manage recyclable waste logistics (plastic, paper, aluminium, glass). • Maintain records of vendor pick-ups and revenue generation. • Ensure bin labelling consistency and contamination reduction. • Facilitate recycling campaigns with student and faculty groups.
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7. WASTE MANAGEMENT PROCESS FLOW

7.1 General Campus Waste Flow

The general waste management process at UNIMAS follows a comprehensive sequence beginning with waste generation, proceeding through segregation, internal handling, temporary storage, and ending with final treatment or disposal. Waste generation occurs throughout all campus operations including academic activities, administration, residential life, research, facility maintenance, and food services. The responsibility for minimizing waste begins with the individual, who must ensure proper separation at the source.

Waste is divided into three clearly defined categories, each represented by standardized color-coded bins placed strategically across campus. These bins are prominently labeled in English and include illustrated guides for easy understanding. Once segregated, cleaning staff or assigned personnel collect the waste according to a structured schedule: daily for general, compostable waste and recyclables and monthly for e-waste, scheduled or textile waste and used oil.

Collected waste is transported using designated trolleys and vehicles to specific temporary storage points in Zone 1, 2 and 3. These storage facilities vary by waste type: for example, hazardous and e-waste are stored in secure, ventilated rooms with controlled access and equipped with spill kits and logbooks. Recyclables and general waste are placed in consolidated bins prior to vendor pick-up.

Figure 3 shows the management overview of all waste streams within UNIMAS

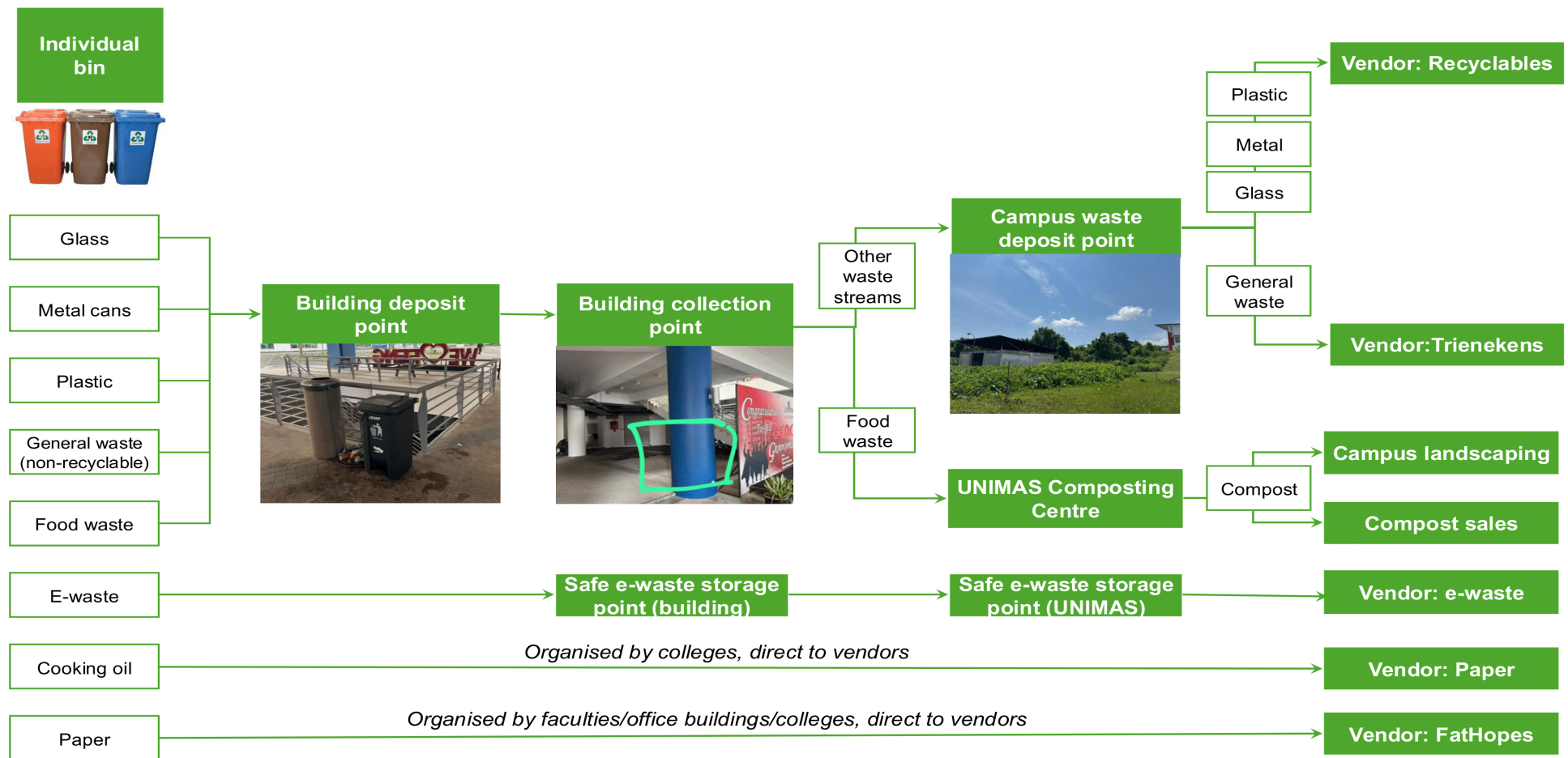


Figure 3 Management overview of all waste streams within UNIMAS

Final processing depends on waste classification. General waste is sent to MPKS’s landfill. Recyclables are weighed and sold to licensed vendors, and income is tracked through sustainability reports. Compostable waste, primarily food and landscape waste, is delivered to the on-campus composting facility managed by the Development Unit. Scheduled waste follows strict Department of Environment (DOE) regulations using Jadwal 2, 5, and 7 documentation and is removed by certified contractors.

This multi-tiered waste flow system ensures accountability, regulatory compliance, and operational efficiency, contributing to the university’s sustainability objectives and low carbon campus targets.

Figure 4 shows the standard campus waste flow.



Figure 4 Standard campus waste flow

7.2 Green Event-Based Waste Management

The green event-based waste management system applies to all types of events conducted on campus, including convocations, carnivals, academic workshops, student activities, and exhibitions. The process is designed to ensure waste minimization and proper segregation throughout the entire event lifecycle. (Refer to Appendix F)

Pre-Event	During Event	Post-Event
Waste Management Checklist filled by organizers	Volunteers monitor waste stations	Waste weighed by category
Allocation of volunteers and bin types based on estimated attendance	On-site announcements made to direct proper disposal	Compostables delivered to compost site
Signage prepared for waste streams	Overflow prevention monitored hourly	Report submitted within 3 working days to CoSHE

7.3 Faculty Waste Management

Waste from faculty includes general office waste, recyclables, used papers, lab residues, and expired chemicals.

- Each faculty must appoint a Faculty Waste Coordinator.
- Develop Faculty Waste Management Plan (WMP) based on handbook template.
- Maintain a waste inventory log, supported with photos and data.

- Coordinate with JPPHB for pickups and schedule vendor visits.
- Submit quarterly reports and improvement suggestions.

7.4 Café Waste Management

Focuses on management of food scraps, beverage containers, packaging, and kitchen cleaning residues.

- Cafés must segregate food waste in green bins and label all bins appropriately.
- All food handlers undergo basic composting briefing.
- No oil, bones, or inorganic materials in green bins.
- Compost bins monitored for odour, moisture, and leachate.
- Bin cleaning logs maintained by café staff.

7.5 Residential College Waste Management

Residential waste includes domestic, hygiene-related waste, food scraps, recyclable beverage containers, and textiles.

- Each college must have a waste corner per block, with 3-bin system minimum.
- Monthly awareness bulletin prepared by student committee.
- Participation in university-wide competition: “Sustainable College Champion.”
- Fellows verify waste collection quality and report irregularities.

8. STANDARD OPERATING PROCEDURES (SOPs)

These standard operating procedures (SOPs) contain instructions on how to manage three types of waste commonly found in UNIMAS: general solid waste, recyclable waste, and organic waste. They outline the specific handling, segregation and disposal methods for each waste type to ensure compliance with UNIMAS and local waste management policies. It also assigns responsibilities to relevant staff. Three different colour bins are shown below for recyclables, blue waste bin (paper), brown waste bin (glass and aluminium can) and orange waste bin (plastic).



8.1 General Waste SOP

Definitions

General waste are items that are not recyclable and not hazardous. They are safe to handle by the general public and do not cause immediate harm to the environment.

Examples include:

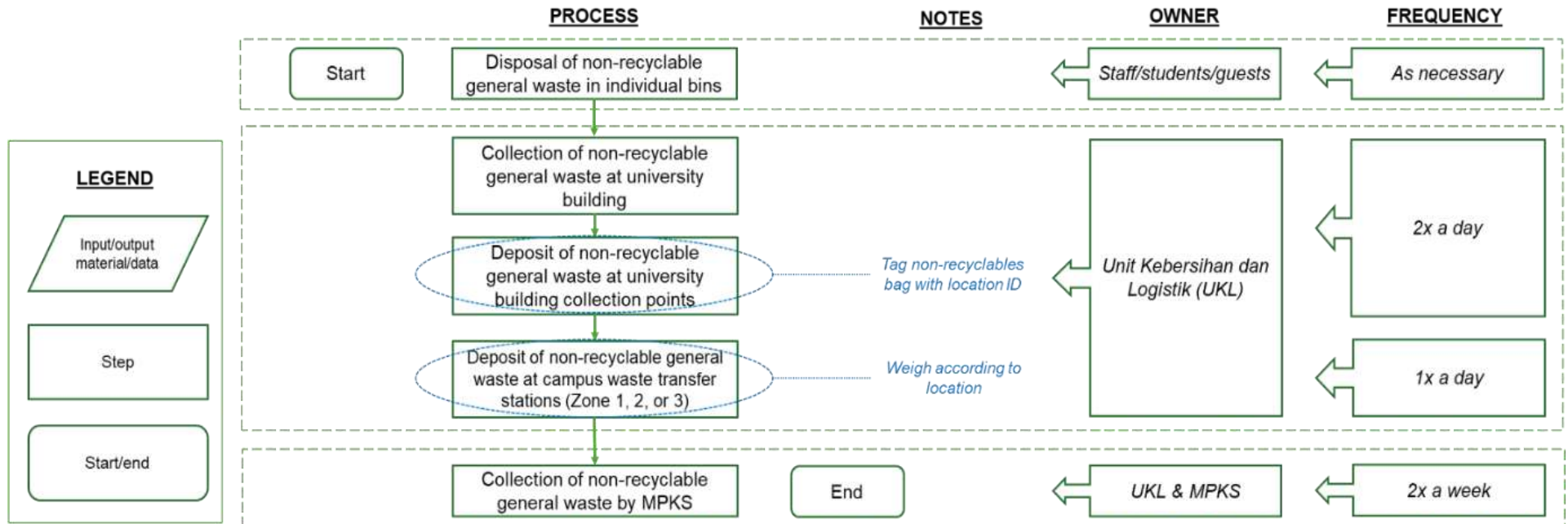
- Used tissue paper and napkins
- Broken glass or ceramics
- Non-recyclable plastics (e.g., plastic bags, bubble wrap)
- Dirty recyclable materials (e.g., soiled paper, greasy cardboard)
- Food packaging materials (e.g., plastic wrappers)
- Dust and swept-up debris

Safety and hygiene considerations

- ✓ Wash hands thoroughly with soap after handling or disposing of waste.
- ✓ Avoid overfilling bins to prevent spillage and pest attraction.

8.1.2 Procedure

Non-recyclable general waste



8.2 Recyclable Waste SOP

8.2.1 Definitions

Recyclable waste are items that can be made of plastic, metal, paper or glass. After use, these items are still clean (or can be cleaned) and easily sorted into their respective categories.

Examples include:

- Plastic bottles and containers
- Glass bottles and jars
- Clean paper and cardboard (printed paper, newspapers, magazines, books, cardboard packaging)

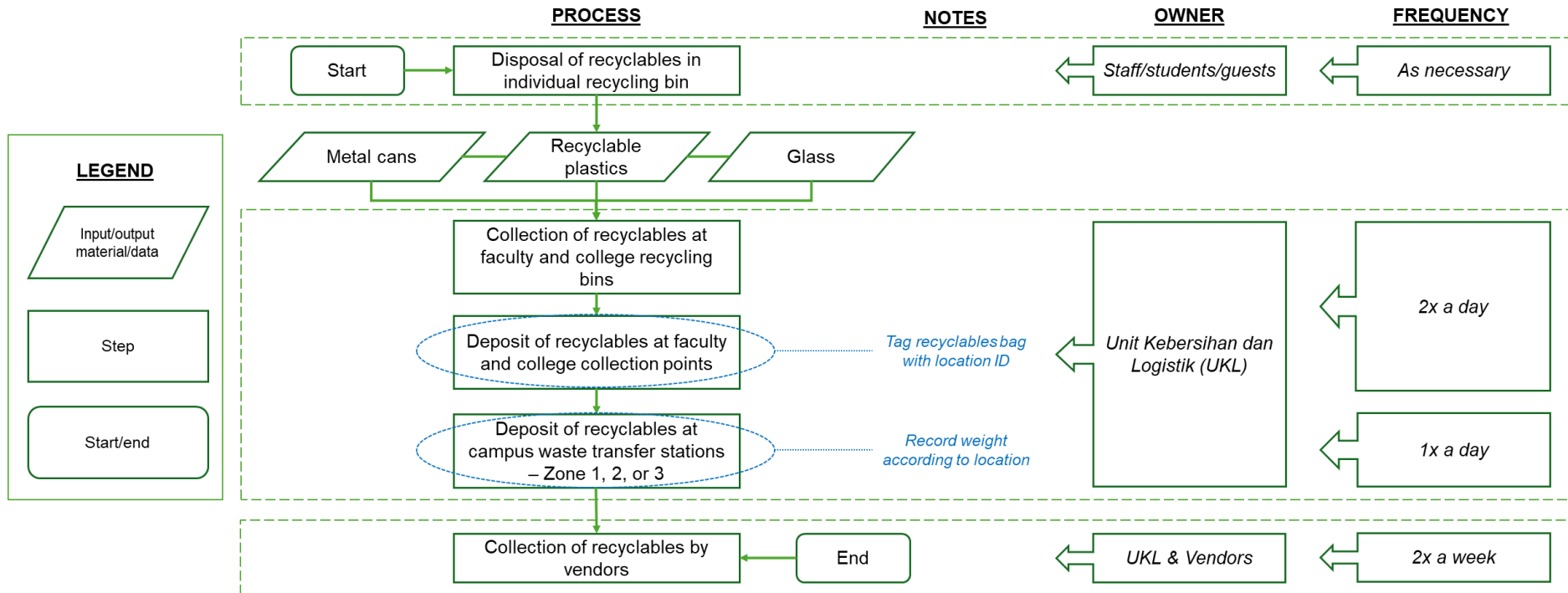


8.2.2 Safety and hygiene considerations

- ✓ Wash hands thoroughly with soap after handling or disposing of waste.
- ✓ Avoid overfilling bins to prevent spillage and pest attraction.
- ✓ Ensure that glass bottles and jars are not broken to avoid injuries on sharp glass pieces.

8.2.3 Procedure

Recyclables



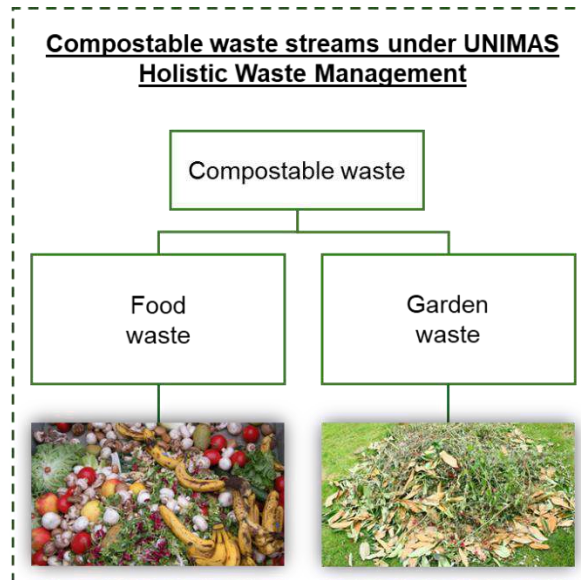
8.3 Compostable Waste SOP

8.3.1 Definition

Compostable waste is organic waste, which include materials such as garden waste, plant-based leftovers, and agricultural waste. These types of organic waste can break down into carbon dioxide, water, and organic matter in the composting environment.

Examples include:

- Food scraps: Vegetable peels, fruit cores, coffee grounds, eggshells
- Garden waste: Leaves, twigs

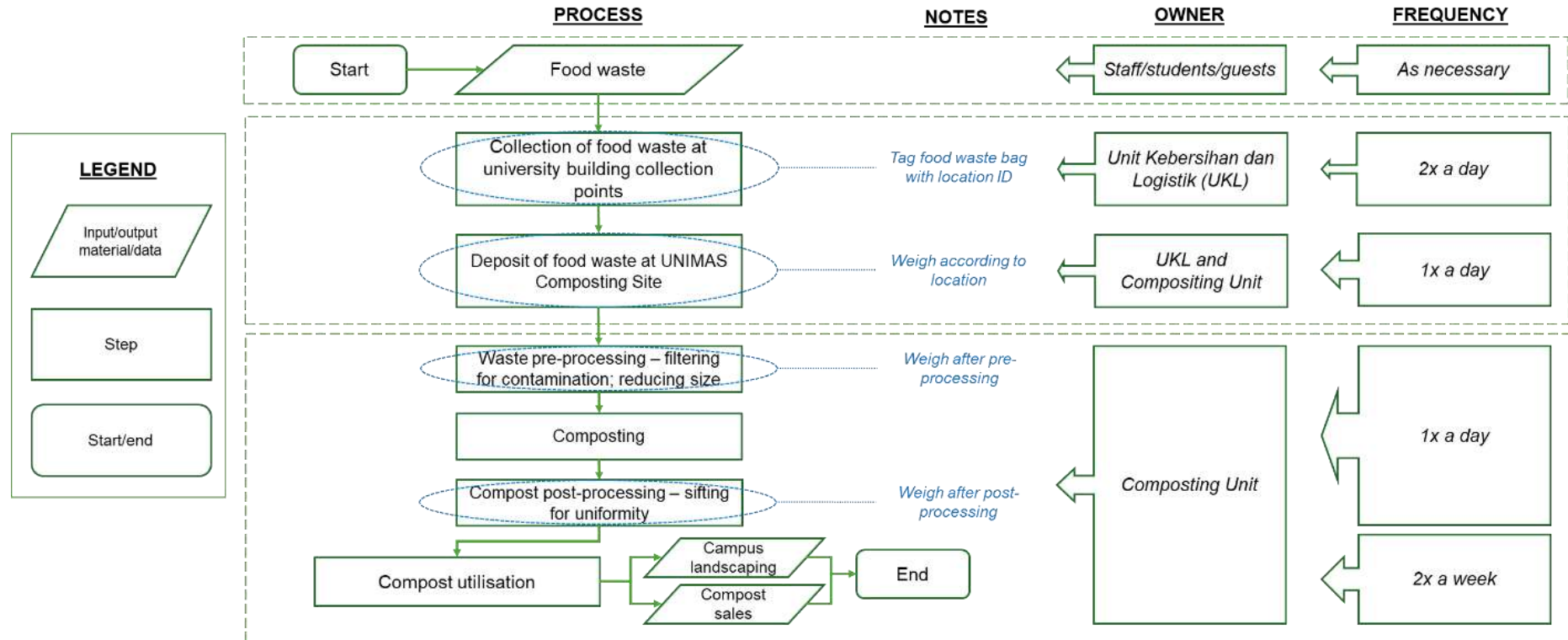


8.3.2 Safety and hygiene considerations

- ✓ Wash hands thoroughly with soap after handling or disposing of waste.
- ✓ Avoid overfilling bins to prevent spillage and pest attraction

8.3.3 Procedure

Composting process



8.4 E-Waste SOP

8.4.1 Definition

E-waste refers to any electrical or electronic equipment that have been discarded with no intention of re-use. Almost any discarded item with circuitry or a power supply can be considered e-waste.

Broadly speaking, there are six categories of discarded electrical and electronic equipment under e-waste. The six categories are:

- Temperature exchange equipment: refrigerators, freezers, air conditioners, heat pumps.
- Screens and monitors: televisions, monitors, laptops, notebooks, and tablets.
- Lighting: Fluorescent lamps, high intensity discharge lamps, and LED lamps.
- Large equipment: washing machines, electric stoves, large printing machines, copying equipment, and photovoltaic panels.
- Small equipment: Vacuum cleaners, microwaves, ventilation equipment, toasters, electric kettles, electric shavers, scales, calculators, radio sets, video cameras, electrical and electronic toys, small electrical and electronic tools, small medical devices, small monitoring and control instruments.
- Small IT and telecommunication equipment: Mobile phones, Global Positioning Systems (GPS), pocket calculators, routers, personal computers, printers, telephones.

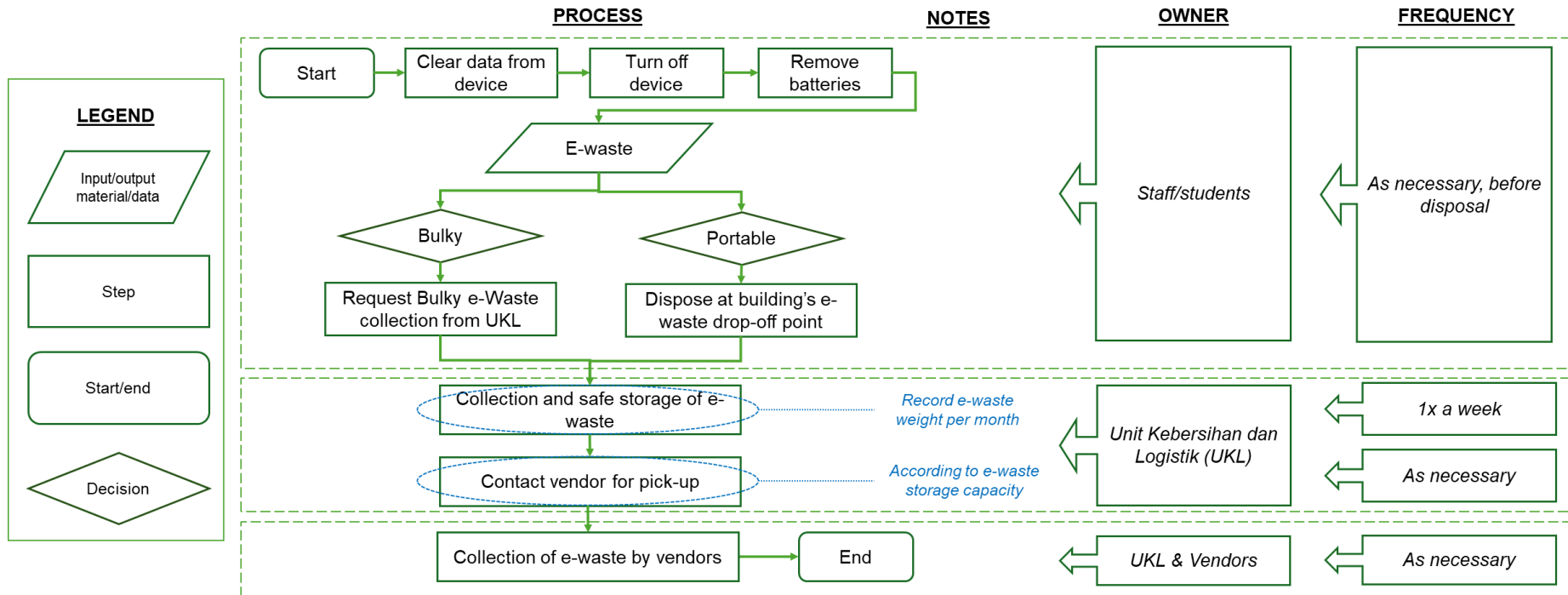
For UNIMAS waste management, different procedures apply for bulky and portable equipment. Portable equipment is any equipment that can fit within the dimensions of the provided e-waste collection bins, while bulky equipment exceeds these dimensions. **To dispose of bulky e-waste, a request for bulky e-waste collection must be put forward to UKL.**

8.4.2 Safety and Hygiene Considerations

- ✓ Wear gloves and safety glasses when handling bulky e-waste
- ✓ Do not drop, crush, or dismantle e-waste
- ✓ Avoid contact with exposed wires, frayed electrical cords, or burnt components
- ✓ Be aware of leaking or damaged batteries. Any leaks should be treated as a hazardous spill and must be cleaned up as such.

8.4.3 Procedure

E-waste



8.5 Used Cooking Oil SOP

8.5.1 Definition

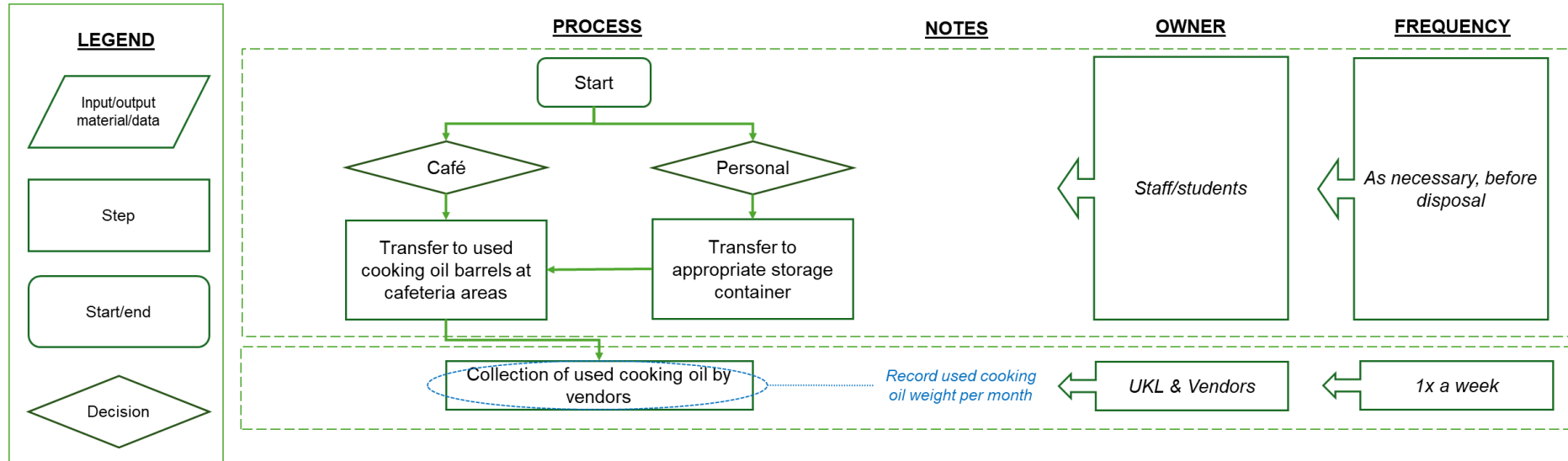
Used cooking oils are oils that have been used for cooking or frying food and can come from restaurants or homes. Used cooking oils can be refined into biofuels or as raw material for bio-based plastics.

8.5.2 Safety and Hygiene Considerations

- ✓ Do not contaminate oil with water or food waste. Strain oil before storage to remove food particles.
- ✓ Allow oil to cool before transferring oil into storage containers.
- ✓ Use containers with secure, tight-fitting lids to prevent contamination. Storage containers must be kept upright.
- ✓ Label all containers clearly.
- ✓ Use funnels when transferring oil into larger used cooking oil storage barrels.
- ✓ Do not store used cooking oil near drains, heat sources, or combustible materials.

8.5.3 Procedure

Used cooking oil



8.6 Construction Waste SOP

Definition

Construction waste includes generated from campus infrastructure development and renovation activities.

Example included:

- debris,
- rubble,
- broken tiles,
- wood,
- metal scraps,
- insulation materials, and
- packaging waste

Safety and Hygiene Considerations

Construction waste often contains sharp, bulky, or dusty components. Contractors must follow the university's Environmentally Friendly Construction Guidelines. Proper PPE must be worn and debris should be stored in designated containment areas.

Procedure

Contractors must submit a Construction Waste Management Plan to JPPHB prior to project commencement. On-site waste must be segregated into categories: inert waste (e.g., concrete), recyclable (e.g., steel), and hazardous (e.g., asbestos). Waste must be stored in marked skips and removed weekly. Reports including waste volume and disposal method must be submitted bi-weekly. Reusable items such as bricks or wood panels may be directed to UNIMAS' Waste Valorisation Unit for upcycling or student projects.

8.7 Clinical Waste SOP

Definition

Clinical waste refers to waste generated from healthcare or research-related clinical activities, including sharps, infectious waste, anatomical waste, and laboratory residues.

Safety and Hygiene Considerations

This waste is highly hazardous and requires stringent protocols. Sharps must be disposed of in puncture-resistant containers. Clinical staff must be trained on biosafety, and vaccinations (e.g., Hepatitis B) must be up to date.

Procedure

Each clinical area must maintain yellow-coded clinical bins with biohazard labels. Sharps bins must never be overfilled. Waste is collected twice weekly by a certified contractor using DOE-compliant containers and vehicles. All clinical waste must be recorded in a logbook and signed off by the Facility Waste Coordinator. Storage rooms must have restricted access, air ventilation, and temperature control.

8.8 Scheduled Waste SOP

Definition

Scheduled waste is classified under Malaysia's Environmental Quality (Scheduled Wastes) Regulations 2005 and includes toxic, flammable, corrosive, or reactive substances such as chemical reagents, solvents, expired lab supplies, and contaminated PPE.

Safety and Hygiene Considerations

Scheduled waste must never be disposed of in regular bins. All waste must be clearly labelled with the appropriate Schedule Code (e.g., SW322 for waste containing heavy metals) and handled with PPE. Emergency response kits must be accessible.

Procedure

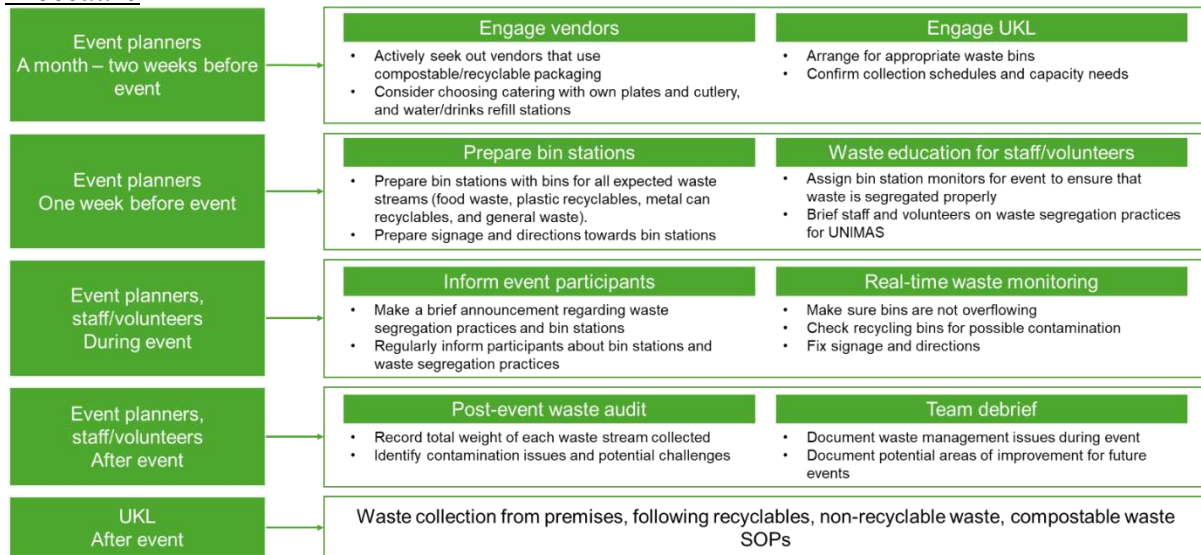
Each laboratory or research centre must maintain a scheduled waste inventory using DOE's Jadual 7. Waste must be stored in chemical-resistant drums placed on spill pallets in secured storage areas. Monthly pickups are arranged with licensed DOE contractors using Jadual 2 and Jadual 5 documentation. Waste manifests must be filed for 3 years and submitted during audits. ISuRE will perform quarterly inspections to ensure compliance.

8.9 UNIMAS Green Event Waste Management SOP

Introduction

The largest waste streams in most university events will be waste streams associated with food consumption, such as food and plastic waste. Additionally, university events may be open to members of the public who may not be familiar with waste segregation practices in UNIMAS. Hence, UNIMAS event waste management will focus on segregating focus waste streams (i.e., plastics, metal cans, and food waste) and clearly signposting waste segregation practices for event participants.

Procedure



9. INFRASTRUCTURE & FACILITIES

UNIMAS has invested in developing dedicated infrastructure to support a robust campus-wide waste management system. These include three main waste management zones, multiple interim storage depots, categorized bin stations, composting units, and specialized waste processing facilities.

Each of the three waste management zones (Zone 1: Academic, Zone 2: Research & Administration, Zone 3: Residential & Community) houses centralized waste depots equipped with proper signage, shade roofing, CCTV surveillance, fire safety equipment, and access control

Compost facilities are located at the edge of Zone 1 and managed through aerated bins and mechanical composters, which process up to 500 kg of food and landscape waste weekly. Recyclable waste is stored in metal cages prior to pick-up. Scheduled and clinical waste storage rooms are built with spill containment flooring and climate-controlled ventilation.

Bin stations are standardized with a 3-bin or 4-bin colour system: Black (General Waste), Green (Compostables), Blue (Recyclables), and Red (Hazardous/Clinical). These stations are located within 100 meters of all high-traffic areas, including faculties, dormitories, and cafeterias.

To support future growth, UNIMAS plans to upgrade the compost system to an IoT-based monitoring unit and expand its Material Recovery Facility (MRF) to handle paper shredding, plastic baling, and e-waste dismantling. Solar-powered bins with weight sensors are currently being piloted near the Faculty of Engineering.

10. AWARENESS & CAPACITY BUILDING

UNIMAS recognises that behavioural change and stakeholder engagement are essential for successful waste management. Awareness campaigns and capacity-building activities are designed to ensure that every member of the campus community—from students to staff to vendors—is well-informed and motivated to participate in sustainable waste practices.

Annual waste awareness campaigns, such as “Trash to Treasure Week” and “Green Cafeteria Month,” are organised in collaboration with student groups, residential colleges, and faculty champions. These campaigns include exhibitions, upcycling competitions, composting demos, recycling drives, and zero-waste challenges.

Capacity-building programmes are conducted regularly by ISuRE and USC, covering topics such as scheduled waste handling, composting techniques, and audit readiness. Cafeteria operators and cleaners undergo mandatory onboarding training on waste segregation and hygiene SOPs. Laboratory staff and researchers receive scheduled waste and e-waste briefings at the start of each semester.

All new students and staff are required to attend a sustainability induction module during orientation, which includes a session on waste protocols, bin systems, and digital reporting tools. Specialised training modules are available online via the UNIMAS e-Learning platform and updated annually.

10.1 UNIMAS Student Sustainability Champions

In the pursuit of sustainability excellence, UNIMAS will appoint, train, and recognise UNIMAS Student Sustainability Champions (USSC). USSC are members of the student body who are committed to promoting sustainability within the campus. They represent the student body in matters of campus sustainability and organise student-led sustainability events and initiatives. USSC are catalysts for change, increasing student awareness, engagement, and ownership of campus sustainability.

In the context of UNIMAS waste management, USSC are responsible for ensuring students are actively participating in waste reduction initiatives such as recycling, UNIMAS Circular Lab, and Green Event Waste Management Plan. They also help disseminate relevant information regarding waste management amongst the student body and are able to relay feedback and suggestions from the student body to persons in charge of campus sustainability initiatives.

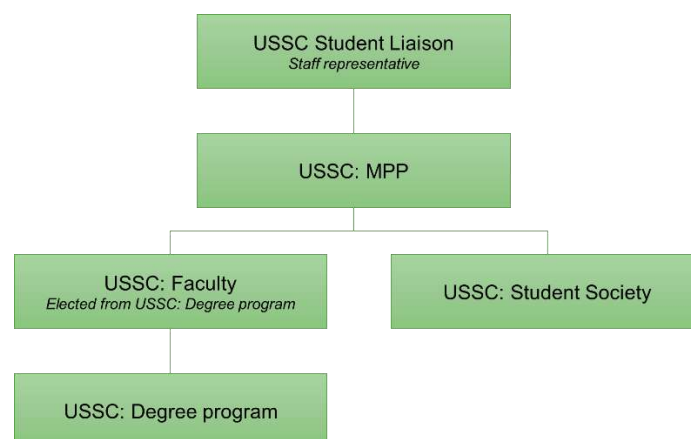


FIGURE 3: USSC ORGANISATIONAL STRUCTURE

USSC are appointed in every degree program, student-led society, and the UNIMAS Student Representative Council (MPP).

USSC operate across three aspects of university sustainability: environmental awareness, student engagement and ownership, and green events. The details of their roles across each aspect are listed below.

10.1.1 Environmental awareness

- Help onboard new students regarding campus sustainability practices using materials provided by the university
- Lead by example in adopting sustainable practices and encouraging peers to follow suit
- Lead awareness campaigns and educational initiatives within their student group
- Stay up to date with university sustainability initiatives and disseminate information regarding such initiatives to their student group

10.1.2 Student engagement and ownership

- Recruit and maintain other students to join sustainability efforts
- Create opportunities for other students to take ownership of sustainability projects and initiatives within and across student groups
- Gather student feedback and represent student voices in university sustainability planning

10.1.3 Green events

- Promote, implement, and oversee the Green Event Waste Management SOP in student-led events.
- Monitor and evaluate the environmental impact of student-led events

11. MONITORING, EVALUATION & REPORTING

Effective monitoring and evaluation are central to ensuring that the UNIMAS waste management system remains accountable, transparent, and results-driven. The Waste Management Unit, with technical assistance from ISuRE and the University Sustainability Cluster (USC), is tasked with continuously tracking waste generation, segregation efficiency, diversion rates, and compliance to standard operating procedures.

Monitoring is conducted through a combination of monthly data submissions from faculties and service vendors, random spot checks, and IoT-based bin weight sensors being piloted at key locations. Each category of waste is monitored for volume, frequency of collection, and destination (e.g., landfill, composting site, recycling vendor, DOE facility). Visual inspections and contamination audits are conducted quarterly, particularly at waste corners and compost bins.

Evaluation is structured around key performance indicators (KPIs) such as waste diversion rate (% diverted from landfill), segregation compliance (% bins correctly used), and resource recovery value (RM from recyclables). Results are compared against baseline targets set annually and incorporated into the university's ESG and ULCC reporting cycles.

A quarterly Waste Performance Report is prepared and presented to the Advisory Panel chaired by TNC HEPA. These reports highlight performance trends, gaps, corrective actions, and innovations. Annual reports will be submitted to the Jawatankuasa Pemandu Alam Sekitar UNIMAS and will feed into external sustainability disclosures and audit readiness.

11.1 WASTE AUDIT

11.1.1 Waste audit procedure

A waste audit should be conducted regularly to investigate trends. Waste from each location should be tagged with an identifier denoting type of location

- Academic building (e.g., faculties, research centres)
- Administrative building (e.g., offices)
- Event hall (e.g., DeTAR)
- Common areas (e.g., library, cafeteria, sports hall)
- Others

11.1.2 Waste audit template

1. Frequency: Filled in at last point of collection (before vendor and MPKS collection).

Location	Material category	Waste generated (kg)	Waste generated (%)
Academic buildings			
Administrative buildings			
Event hall			
Common areas			
Others			

2. Frequency: Filled in during detailed waste audit.

Location	Material category	Material sub-category	Weight (kg)		Total waste generated		Waste diverted from landfill	Waste to landfill
			Landfill stream	Recycling stream	(kg)	(%)	(%)	(%)
	Plastic	PET (Type 1)						
		HDPE (Type 2)						
		PVC (Type 3)						
		LDPE (Type 4)						
		PP (Type 5)						
		PS (Polystyrene) (Type 6)						
		Other plastics						
	Metal	Aluminium cans						
		Bimetal cans						
	Glass	Glass bottles						
	Paper	Newsprint						
		Mixed paper						
		Cardboard						
	Green waste	n/a						
	Food waste	Processed food waste (i.e. cooked)						
		Raw food waste (e.g. vegetable peels, uneaten raw fruits and vegetables)						
Tetra Pak	n/a							

12. EMERGENCY RESPONSE TO CHEMICAL SPILLS

12.1 Chemical spills

12.1.1 Definition

A chemical spill refers to any accidental release or discharge of hazardous chemicals in laboratory, storage, or work areas that poses potential risks to personnel, environment, or property. Chemical spills are classified based on volume, toxicity, and immediate threat level.

Chemical spills are broadly categorized into:

- Minor spills: Small volume (<1L liquid or <1kg solid), manageable risk, no immediate health threat to personnel
- Major spills: Large volume (≥ 5 L liquid or ≥ 5 kg solid), respiratory hazard, unknown chemicals, fire/explosion risk, or any spill requiring professional hazmat response

For laboratory waste management, different procedures apply for minor and major spills. Minor spills can be handled by trained laboratory personnel using appropriate safety equipment and procedures, while major spills require immediate evacuation and professional emergency response. **To respond to major chemical spills, emergency services must be contacted immediately and the area evacuated.**

12.1.2. Safety and Hygiene Considerations

- Wear chemical splash goggles, chemical-resistant gloves, apron or suit, and boots when handling any chemical spill
- **Do not attempt cleanup if uncertain about safety or chemical identity**
- Avoid inhaling vapours, touching spilled material with unprotected skin, or creating sparks near flammable chemicals
- Be aware of unknown chemical mixtures or reactive materials. Any spill involving unknown chemicals should be treated as a major spill and must be handled by emergency responders

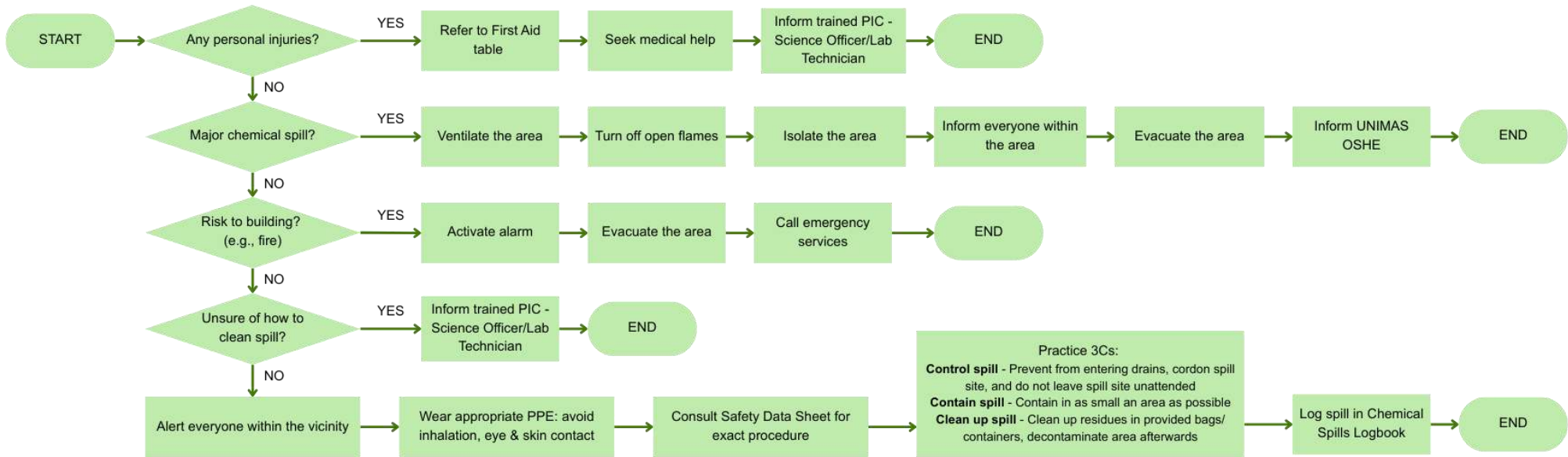
12.1.3 Contents of Chemical Spill Kit

These items are REQUIRED in each spill kit. Each spill kit must undergo regular checks to ensure that missing, used, expired items are replaced. This chemical spill kit must be placed in areas where chemical spills are expected, i.e.,

- Personal protective equipment (goggles, gloves, apron, boots)
- Absorbent materials (pads, booms, pillows)
- Neutralizing agents (acid and base neutralizers)
- Solvent solidifier/vapor suppressant
- Plastic scoop and scraper
- Waste disposal bags and labels
- pH test strips and warning signs

12.1.3 Procedure

Remember: SAFETY FIRST - CLEANUP SECOND



12.1.4 First Aid Table

The table below lists the first aid actions that must be taken according to the types of exposure.

Type of exposure	First aid action
Skin contact	Remove contaminated clothing, flush with water for 15+ minutes, seek medical attention.
Eye contact	Flush eyes with water for 15 minutes (up to 60 minutes for corrosives), seek medical attention.
Inhalation	Move to fresh air, apply CPR if breathing stopped, seek immediate medical aid.
Ingestion	Rinse mouth with water, DO NOT induce vomiting, seek immediate medical attention.

12.1.5 Training and Reporting

- All personnel must complete chemical safety training and spill response training
- All spills must be reported to supervisor and safety office
- Documentation must include: chemical identity, quantity, location, cause, injuries, and cleanup actions taken

13. INNOVATION & RESEARCH LINKAGES

As a comprehensive university, UNIMAS embeds innovation into its waste management ecosystem. Through partnerships with faculties, student innovation clusters, and external collaborators, the university seeks to turn waste challenges into opportunities for knowledge creation, commercialization, and circular economy development.

The Waste Valorisation Unit facilitates cross-faculty projects such as the development of bioplastics from cafeteria waste, 3D printing filament from e-waste plastics, and vermicomposting using landscape trimmings. Capstone and final-year projects on smart bins, AI-based waste classification, and circular design are encouraged under the Green Innovation Track coordinated by ISuRE.

External research collaborations with institutions like Universiti Teknologi Malaysia (UTM), Kyoto University, and local authorities like MBKS are also underway to test advanced sorting technologies and pilot decentralised treatment units. Joint publications and conferences, such as the International Conference on Low Carbon Asia (ICLCA), serve as platforms to disseminate results.

To foster innovation, UNIMAS has also allocated seed grants and lab access for waste-themed startups and social enterprises through its Innovation & Commercialisation Centre (INNOCeNT). Outputs from these research efforts are integrated into campus operations and scaled through student-led initiatives or vendor partnerships.

14. WAY FORWARD & CONTINUOUS IMPROVEMENT

Looking ahead, UNIMAS is committed to strengthening its waste management system through continuous improvement, digitalisation, stakeholder empowerment, and integration into broader sustainability agendas.

The immediate priorities include expanding smart bin installations with sensor-based monitoring, automating waste tracking dashboards, and digitising SOP compliance via QR-code based checklists. Additionally, the university aims to enhance composting capacity by scaling up mechanical composters and introducing anaerobic digestion for food waste.

UNIMAS will strengthen enforcement through performance-based vendor contracts and faculty-level scorecards. A “Green Office Certification” programme will be launched to incentivise units that demonstrate excellence in waste reduction, recycling rates, and innovation.

Further integration with teaching and learning will be pursued through Living Lab models, where the campus becomes a real-world testbed for environmental solutions. Sustainability indicators from the waste system will also be included in student KPIs for active citizenship.

In alignment with the UNIMAS Low Carbon Campus Roadmap (ULCC 2030), the university will explore zero waste-to-landfill targets by 2035 and collaborate with state authorities on circular economy pilot zones in Kota Samarahan. Through institutional commitment, data-driven systems, and community participation, UNIMAS aims to position itself as a national model for sustainable campus waste management.

Appendices

A: List of Authorized Vendors

Recycling Services in Samarahan and Kuching: Collection Options for UNIMAS

No.	Recycling Centre	Address	Contact Number	Fees status	Collection Fees	Availability to collect at UNIMAS
1.	Golden Jumbo Recycle Sdn Bhd (Main Factory) (They collect metal, copper, and paper, but they don't take glass bottles or plastic bottles.)	Lot 1238, Block 8, Muara Tebas, Jalan Bako Demak Laut, Indah 5, Sejingkat, 93050 Kuching, Sarawak	082-496 858 +60 16-622 7801		Transportation fees are not included and will vary depending on the weight of the waste.	Yes
2.	Tzu Chi Stutong Baru Recycling Center	Lor 18, Kampung Stutong Baru, 93350 Kuching, Sarawak	082-344 706 016-8864706 (Tzu Chi)		(free)	Yes
3.	Atas Sepakat Recycle Center	No. 20, Lot 1299, Section 66, Jalan Perbadanan, Pending Industrial Estate, 93450 Kuching, Sarawak	082-337 023 017-553 1181 (Madam Lau)		(free) (pay us for the waste)	Yes
4.	Bako Kaya (food waste)	Lot 1316, Jalan Datuk Bandar Mustapha & Batu 4 1/2, Richmond Hill, 93350 Kuching, Sarawak	016-898 4444		Will be charge depends on the waste (trasportation fees)	
5.	Triple-C Recycle Sdn Bhd	S/L 6, Lot 1625, Jalan Kuap & Batu 10, Light Industrial Park, 93250 Kuching, Sarawak	082-617 179		(self-drop)	No
6.	Preserve Green Recycle (cutter boxes, buku-buku, papers) (papers, cuttons)	Lot 4560, Block 225, 4 1/2 Miles, Jalan Datuk Stephen Yong, KNLD, 93250 Kuching, Sarawak	016-886 3159		They pay us for the waste based on weight, and transportation is free.	Yes

7.	Kpm Recycle Sdn. Bhd.	Lot 942, Pl 11, Demak Laut Industrial Park, Sejingkat, 93050 Kuching, Sarawak	019-819 9818		No	No
8.	Dinkargo Recycle Sdn Bhd (Sejingkat)	Lot 1243, Block 8, Jln Demak Indah, Demak Laut Industrial Park, 93050 Kuching, Sarawak	082-435 257 016 – 889 8257 – Mister Lau			Yes
9.	Chakkarah Metal resources Sdn Bhd (only taking paper and can)	432, Block, 225, 4 1, Jalan Penrissen, 93250 Kuching, Sarawak	016-332 5143		(self-drop)	No
10.	GOLDEN JUMBO RESOURCES SDN BHD	1078, Jalan Pending, Tanah Putih, 93450 Kuching, Sarawak	082-751 870		(Number not active)	No
11.	Shasta Recycles Industrial Sdn. Bhd. (Only tin and paper)	Jalan Setia Raja, Muara Tabuan Light Industrial Park, 93450 Kuching, Sarawak	082-502 201		If we have at least 1 ton of items, they will provide free transportation.	Depends on the Item
12.	Green Earth Metal Industrial Sdn Bhd (food waste)	Lot 2501, Block 226, 5th Mile, Jln Kong Ping, 93350 Kuching, Sarawak	012-808 7179		Transportation fees depend on the item weight; if the quantity is large, there is no fee, but if it's small, a charge will apply.	Yes
13.	BORNEO RECYCLE	Lot 954 Block 5 Sentah Segu Land District 16th Mile, Jalan Kuching - Serian, Road, 94200 Kuching, Sarawak	016-867 6999		Decline call	No
14.	Michael's Recycling Centre	99, Jalan Ketek, 6th Mile, 93250 Kuching, Sarawak	012-856 3373			No
15.	ZeeMetal Recycle Center	100, Jalan Ketek, 6th Mile, 93250 Kuching, Sarawak	011-2505 2808		Voice mail pop up x2	No
16.	Dinkargo Recycle Sdn. Bhd. (no food waste) paper can,	Lot 915 4, Jalan Kuching - Serian, 14th miles, Sungai Entingan, 93250 Kuching, Sarawak	016-889 7257 (Sir Amin)		Based on the item	Yes

	plastic, botol plastic like shampoo, PET(mineral bottle				fee rate depends on the weight of the waste. If a lot of waste pickup, the fees will be low and vice versa Depends on the items itself	
17.	Dinkargo (can all)	Lot 357, Jalan Kampung Stapok - Segedup, &, Jalan Batu Kawa, 93250 Kuching, Sarawak	082-683 531		By trip, depends with the item (016-8895357) - Tracy	Yes.
18.	Tincargo Recycle Company Sdn Bhd	LOT 2517 BLOCK 8, Jalan Kim Chu Shin, JALAN MATANG - BATU KAWA, 93050 Kuching, Sarawak	010-799 1713		Cannot confirm the fee cause depends on the items.	Yes
19.	ZHA Environmental Sdn. Bhd. (Tayar only)	Lot 6558, Block 8, Jalan Alam Indah, Off Jalan Batu Kawa-Matang, Matang Land District, Kuching, 93050, Sarawak, 93050 Kuching	082-287 599			
20.	RBK Metal Recycle Sdn. Bhd.	SP152, Lot 510, Batu 6 1/2, Jalan Penrissen, 93250, Kuching, Sarawak	016-242 4435		(Depends with the items) (cannot confirm yet)	
21.	Mega waste management sdn bhd (depends on what types of food waste)	Q502-2, Batu kawa, 93250 Kuching, Sarawak	019-818 3279		Normally 1 tong roller bin 15 kaki Panjang, 7 kaki width, 4 kaki tinggi - RM200	Yes
22.	S.M.I Hardware Company	S.M.I Hardware Company, 93250 Kuching, Sarawak	012-518 9060		Number not active	
23.	GC RECYCLE SDN.BHD	S/L 5) No. 34, Survey Lot 4691 Block 5 Matang Land District Workshop/Office Taman Pelangi Matang Batu 5 1, 2, Q309, Petra Jaya, 93050 Kuching, Sarawak	012-204 5776		(self-drop)	No

24.	Sijui Industrial & Trading Co.	1435, Jalan Perbadanan, Pending Industrial Estate, 93450 Kuching, Sarawak	082-335 239		Number not active	
25.	The Recycling Company Ltd	Sublot 15, Jalan Batu Kitang, Yan Kwan Industrial Estate, 93250 Kuching, Sarawak	016-894 1522		Depends on the item	Yes
26.	Green Earth Metal Industrial Sdn Bhd	Lot 2501, Block 226, 5th Mile, Jln Kong Ping, 93350 Kuching, Sarawak	012-808 7179		Number not active	
27.	Recycling centre (besi buruk) Bau (paper, kotak, besi, no food waste)	No 476 jalan bau Tanjung durian, bau, 94000 Kuching, Sarawak	016-333 4726		Depends on the item -if less waste the transportation will be charge, if lot of waste, there will no charge on transportation	Yes
28.	ADI STEEL SDN BHD (no food waste)	L745, JALAN BAKO, DEMAK LAUT INDUSTRIAL PARK,93050, KUCHING, SARAWAK, Kuching, 93050 Kuching, Sarawak	082-434 211 016 – 910 73003 - Lin		Nya bagi quotation, barang termasuk ngan transportation fee	Yes
29.	Hom Kim Waste Management	Jalan Kuap, Kang Cheng Light Industrial Estate, 93250 Siburan, Sarawak	082-626 290		Decline call	

Have Fee
Pending Status
No Fee
No Respond/Decline call

B: Waste Category Codes (DOE Schedule)

Refer to https://www.doe.gov.my/wp-content/uploads/2021/08/Environmental_Quality_Scheduled_Wastes_Regulations_2005_-_P.U.A_294-2005.pdf

C: SOP Templates (Jadual 2, 5, 7)

Refer to https://www.doe.gov.my/wp-content/uploads/2021/08/Environmental_Quality_Scheduled_Wastes_Regulations_2005_-_P.U.A_294-2005.pdf

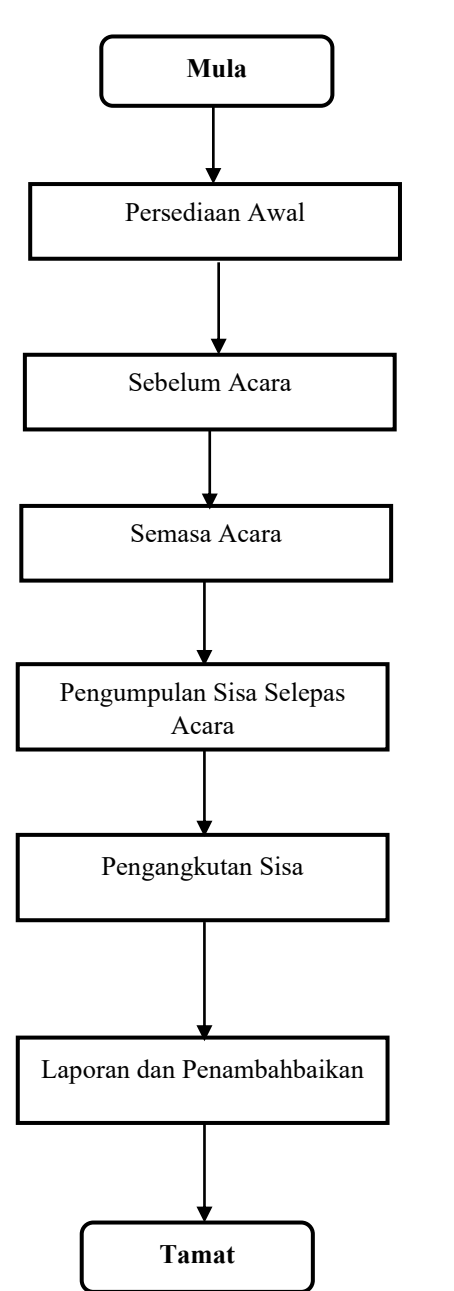
D: Campus Waste Map

Senarai Lokasi dan Jumlah Penempatan Tong Sampah Kitar Semula

Bil	Lokasi	Jumlah (Set)
1	Pusat Islam Tun Abang Salahuddin (PITAS)	1
2	Fakulti Sains dan Teknologi Sumber	2
3	Fakulti Kejuruteraan	2
4	Fakulti Sains Komputer dan Teknologi Maklumat	2
5	Bangunan CUBE	1
6	Pejabat pembangunan	1
7	Detar Putra	1
8	Bangunan HEP	1
9	Bangunan CAUH	1
10	PeTARY	1
11	TAHODC	1
12	Kafe Lake View dan Panggung Gemilang	1
13	Fakulti Pendidikan, Bahasa dan Komunikasi	2
14	Fakulti Seni Gunaan dan Kreatif	2
15	Fakulti sains Kognitif dan Pembangunan Manusia	2
16	<i>Centre for Teaching Facilities 1 (CTF1)</i>	1
17	<i>Centre for Teaching Facilities 2 (CTF2)</i>	1
18	<i>Centre for Teaching Facilities 3 & 4 (CTF 3&4)</i>	1
19	Fakulti Sains Sosial dan Kemanusiaan	2
20	Fakulti Ekonomi dan Perniagaan	2
21	Fakulti Perubatan dan Sains Kesihatan	2
22	UNIMAS City Campus	1
23	Stadium UNIMAS	1
24	ARENA Tun Tuanku Haji Bujang	1
25	Fakulti Alam Bina	2
26	Pusat Penyelidikan Tumbuhan, FSTS	1
27	Pejabat Bahagian Keselamatan	1
28	Pejabat Pentadbiran Pra-U	1
29	Bangunan KAPU	1
30	Pejabat Pengangkutan	1
31	Pejabat Unit Kebersihan dan Logistik / Unit Landskap	1
32	Medan Selera Keranji	1
33	Kolej Allamanda	1
34	Kolej Sakura	1
35	Kolej Bunga Raya	2
36	Kolej Cempaka	2
37	Kolej TAZ	1
38	Kolej Seroja	1
39	Kolej Kenanga	1
40	Kolej Rafflesia	1
41	Kolej Kasturi	1
Jumlah Keseluruhan		53 Set

E: Full Waste Flowcharts (Green Event, Faculty, Café, College)

Carta Alir Mengenai Mengenai Pengurusan Sisa di Kampus (Acara)

Tanggungjawab	Proses Kerja	Keterangan
Pegawai Pengurusan Acara ¹	 <pre> graph TD Mula([Mula]) --> P1[Persediaan Awal] P1 --> P2[Sebelum Acara] P2 --> P3[Semasa Acara] P3 --> P4[Pengumpulan Sisa Selepas Acara] P4 --> P5[Pengangkutan Sisa] P5 --> P6[Laporan dan Penambahbaikan] P6 --> Tamat([Tamat]) </pre>	<ul style="list-style-type: none"> • Menubuhkan pasukan pengasingan dan pengurusan sisa • Menyediakan tong sampah berlabel untuk sisa organik, plastik, kertas, dan lain-lain. • Menyediakan papan tanda dan poster untuk pengasingan sisa. • Mengisi borang <i>waste checklist</i> yang disediakan <p>Nota 1: Papan tanda dan poster hendaklah diletakkan di lokasi strategik untuk memudahkan peserta membuang sampah dengan betul.</p>
Pegawai Pengurusan Acara ¹	Sebelum Acara	<ul style="list-style-type: none"> • Melakukan taklimat ringkas kepada semua peserta mengenai pentingnya pengurusan sisa. • Memastikan semua tong sampah berada di lokasi yang sesuai.
Pasukan pengasingan dan pengurusan sisa ²	Semasa Acara	<ul style="list-style-type: none"> • Memantau pembuangan sampah oleh peserta untuk memastikan pengasingan sisa yang betul. <p>Nota 2: Sukarelawan membantu memberi arahan kepada peserta jika perlu.</p>
Pegawai Pengurusan Acara ¹	Pengumpulan Sisa Selepas Acara	<ul style="list-style-type: none"> • Mengumpul sisa dari setiap tong sampah. • Mengasingkan sisa mengikut kategori (sisa organik, sisa kertas, sisa plastic, sisa tin dan sisa makanan).
Pegawai Pengurusan Acara ¹	Pengangkutan Sisa	<ul style="list-style-type: none"> • Mengangkut sisa kitar semula ke pusat kitar semula. • Mengangkut sisa organik ke tapak kompos. <p>Nota 3: Sisa yang tidak boleh dikitar semula hendaklah dibuang di tempat pelupusan yang sah.</p>
Pegawai Pengurusan Acara ¹	Laporan dan Penambahbaikan	<ul style="list-style-type: none"> • Menyediakan laporan sisa selepas acara. • Menganalisis jumlah sisa yang dihasilkan dan peratusan yang dikitar semula. <p>Nota 4: Menggunakan laporan untuk penambahbaikan di acara seterusnya.</p>
	Tamat	

¹ Wakil daripada ahli jawatankuasa acara

² Pasukan pengasingan dan pengurusan sisa yang dilantik

³ Pengawai dari pihak ISuRE

Carta Alir Mengenai Mengenai Pengurusan Sisa di Kampus (Fakulti)

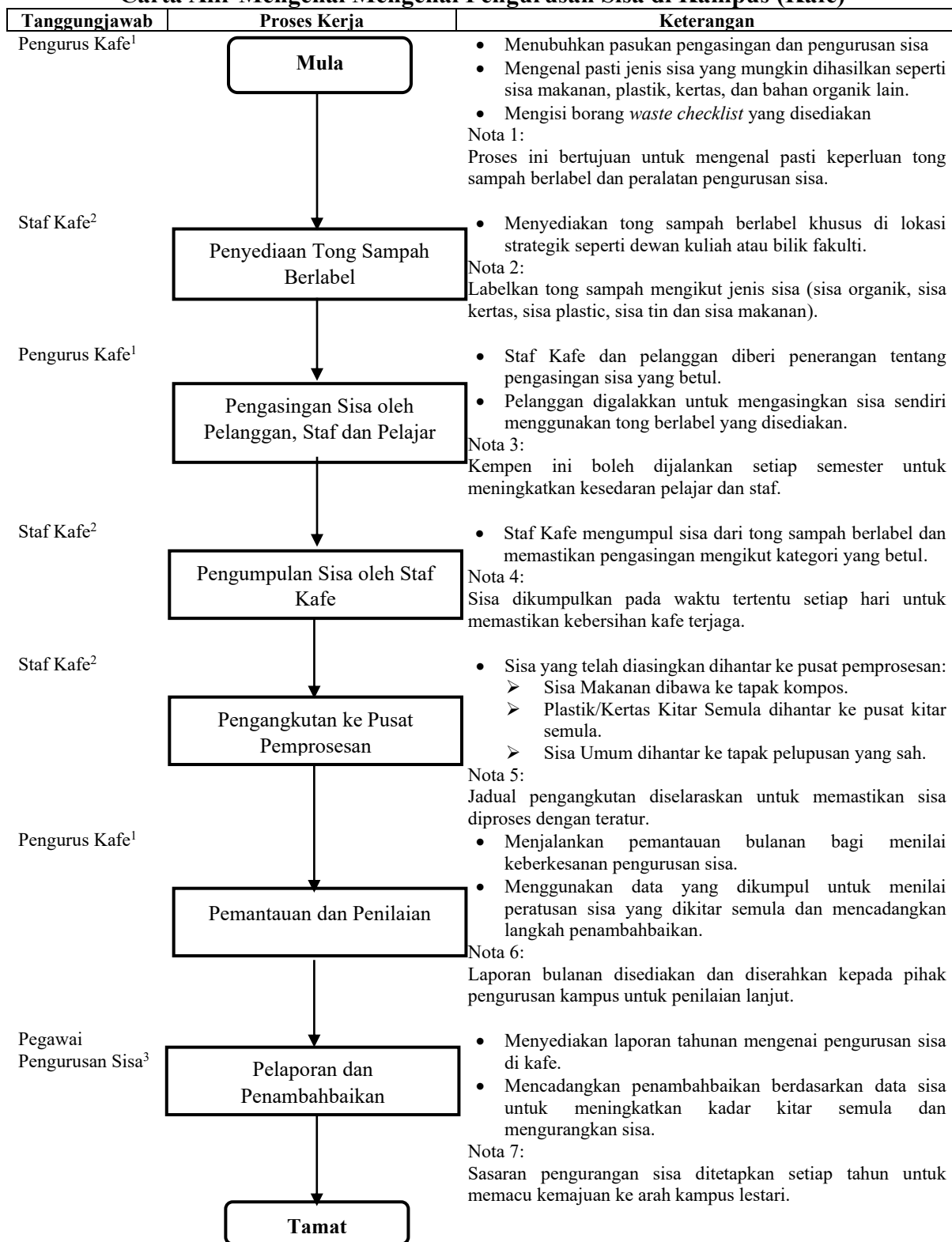
Tanggungjawab	Proses Kerja	Keterangan
Pegawai Fakulti ¹	<div style="border: 1px solid black; border-radius: 10px; padding: 5px; width: fit-content; margin: 0 auto;">Mula</div>	<ul style="list-style-type: none"> Menubuhkan pasukan pengasingan dan pengurusan sisa Mengenal pasti jenis sisa yang mungkin dihasilkan (kertas, plastik, sisa makanan, dll). Mengisi borang <i>waste checklist</i> yang disediakan <p>Nota 1: Pegawai mesti memastikan perancangan sisa ini sejajar dengan polisi kampus.</p>
Pegawai Kebersihan ²	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Penyediaan Tong Sampah Berlabel</div>	<ul style="list-style-type: none"> Menyediakan tong sampah berlabel khusus di lokasi strategik seperti dewan kuliah atau bilik fakulti. <p>Nota 2: Labelkan tong sampah mengikut jenis sisa (sisa organik, sisa kertas, sisa plastic, sisa tin dan sisa makanan).</p>
Pegawai Fakulti ¹ atau Pegawai Pengurusan Sisa ³	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Kempen Kesedaran</div>	<ul style="list-style-type: none"> Menjalankan kempen kesedaran tentang pengurusan sisa dengan memberikan taklimat dan memasang papan tanda. <p>Nota 3: Kempen ini boleh dijalankan setiap semester untuk meningkatkan kesedaran pelajar dan staf.</p>
Pegawai Kebersihan ²	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Pengumpulan Sisa</div>	<ul style="list-style-type: none"> Mengumpul sisa daripada tong berlabel dan memastikan sisa diasingkan mengikut kategori. <p>Nota 4: Pastikan semua sisa yang dikumpul sesuai dengan label yang disediakan.</p>
Pegawai Kebersihan ²	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Pengangkutan ke Pusat Pemprosesan</div>	<ul style="list-style-type: none"> Sisa dikategorikan dan dihantar ke pusat pemprosesan: <ul style="list-style-type: none"> ➤ Sisa Kitar Semula dibawa ke pusat kitar semula. ➤ Sisa Organik dibawa ke tapak kompos untuk digunakan sebagai baja. ➤ Sisa Umum dibuang secara sah di tapak pelupusan yang ditetapkan. <p>Nota 5: Pengangkutan dijadualkan pada masa yang tetap untuk memastikan pengumpulan berjalan lancar.</p>
Pegawai Fakulti ¹	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Pemantauan dan Penilaian</div>	<ul style="list-style-type: none"> Membuat pemantauan berkala bagi menilai keberkesanan proses pengurusan sisa.. <p>Nota 6: Laporan pemantauan dibentangkan setiap bulan kepada pihak pengurusan fakulti.</p>
Pegawai Pengurusan Sisa ³	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Pelaporan dan Penambahbaikan</div>	<ul style="list-style-type: none"> Menyediakan laporan bulanan dan tahunan mengenai jumlah sisa yang dihasilkan dan kadar kitar semula. Mencadangkan penambahbaikan dalam sistem pengurusan sisa. <p>Nota 7: Sasaran pengurangan sisa ditetapkan setiap tahun untuk memacu kemajuan ke arah kampus lestari.</p>
	<div style="border: 1px solid black; border-radius: 10px; padding: 5px; width: fit-content; margin: 0 auto;">Tamat</div>	

¹ Wakil daripada pihak Fakulti (TD HEPA)

² Pasukan pengasingan dan pengurusan sisa yang dilantik

³ Pegawai dari pihak ISuRE

Carta Alir Mengenai Mengenai Pengurusan Sisa di Kampus (Kafe)

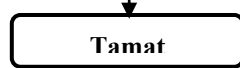
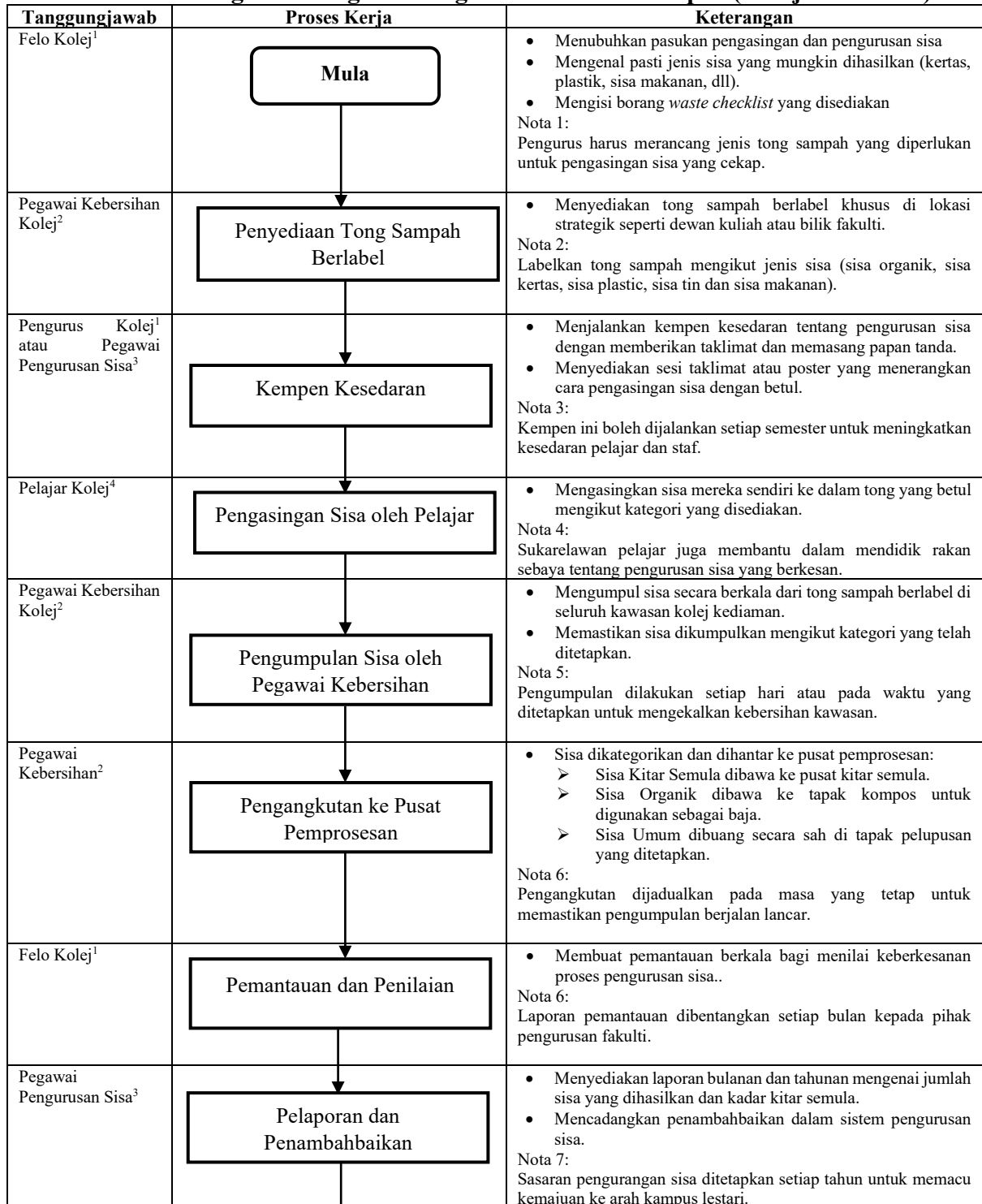


¹ Pengurus Kafe masing masing

² Pasukan pengasingan dan pengurusan sisa yang dilantik

³ Pegawai dari pihak ISuRE

Carta Alir Mengenai Mengenai Pengurusan Sisa di Kampus (Kolej Kediaman)



¹ Felo Kolej

² Pasukan pengasingan dan pengurusan sisa yang dilantik

³ Pegawai dari pihak ISuRE

⁴ Pelajar Kolej

F: Waste Checklist Template

Waste Management Checklist for Green Event - Participants

Pre-Event Preparation

- Familiarize yourself with the event's waste management guidelines.
- Locate designated waste bins (paper, plastics, aluminum and food waste) on the event check point.
- Bring a reusable water bottle to minimize waste.
- Avoid bringing items with excessive or non-recyclable packaging.
- Bring your own recycle tote bag to minimize plastics usage.

Waste Disposal During the Event

- Use the appropriate bins for different waste types (recyclables, compostables, landfill).
- Ask volunteers or staff for assistance if unsure where to dispose of certain items.
- Crush recyclables (e.g., plastic bottles) to reduce bin space usage if possible.
- Avoid littering; keep waste with you if bins are not immediately available.

Sustainable Practices

- Reduce waste by opting for reusable items, such as bags, containers, and utensils.
- Encourage others to follow waste management guidelines during the event.
- Participate in any sustainability activities or waste reduction initiatives offered.

Post-Event Actions

- Ensure any personal waste is properly disposed of or taken with you if bins are full.
- Reflect on your waste generation and consider sustainable practices for future events.
- Share feedback with event organizers on waste management for improvement.

Waste Management Checklist for Green Event - Vendors

- Waste Segregation: Ensure separate bins for recyclable, non-recyclable, and hazardous waste.
- Bin Placement: Place waste bins at key locations around the event venue, ensuring accessibility.
- Labeling: Clearly label bins with appropriate waste categories.
- Staff Training: Train staff on waste segregation and management procedures.
- Monitoring: Assign personnel to monitor and manage waste disposal throughout the event.
- Vendor Packaging: Encourage vendors to use sustainable and minimal packaging.
- Food Waste: Implement a strategy to minimize food waste (e.g., donation, composting).
- Waste Collection Timing: Coordinate regular collection of waste during and after the event.
- Hazardous Waste: Identify and properly handle any hazardous waste (e.g., batteries, chemicals).
- Post-Event Cleanup: Plan for thorough post-event waste collection and site cleanup.
- Recycling Partners: Coordinate with local recycling services to manage recyclable materials.
- Reporting: Track and report waste management performance post-event.
- Communication: Inform attendees and vendors of waste disposal and recycling guidelines.
- Waste Reduction: Encourage vendors to reduce unnecessary waste generation (e.g., using reusable items).
- Emergency Plan: Develop a waste spill or emergency response plan.

Vendor Checklist for Volunteers

Pre-Event Preparations

- Coordinate with event organizers for waste management locations and access points.
- Set up labeled waste bins for segregation (e.g., recyclables, compostables, landfill).
- Arrange adequate staff for waste collection, sorting, and monitoring during the event.
- Ensure all bins are clearly labeled with visible signage.
- Prepare educational materials or signage about proper waste disposal for event attendees.
- Confirm transportation logistics for collected waste to recycling or disposal facilities.

Waste Collection and Segregation

- Monitor waste bins regularly to prevent overflow.
- Collect waste from bins systematically based on the schedule agreed upon with organizers
- Separate waste into categories: recyclables, compostables, and landfill as collected.
- Educate event attendees on proper waste segregation if required.
- Store waste securely in designated areas until post-event transportation.

Event-Day Management

- Assign team members to monitor waste disposal behaviors of event attendees.
- Replace or empty full bins and transport waste to designated sorting area.
- Report any issues or overflow immediately to the event management team.
- Ensure backup bins are available in case of increased waste generation.
- Communicate updates or needs to event organizers as necessary.

Post-Event Clean-Up and Disposal

- Conduct a final round of waste collection, including litter pick-up in the event area.
- Sort and segregate any mixed waste for proper recycling and disposal.
- Ensure proper transport of recyclables, compostables, and landfill waste to facilities.
- Review waste quantities and report data (if required) for waste management metrics.
- Clean and return any equipment or materials provided by the recycling waste center.

Green Event Waste Management Checklist Form

Event Details:

Event Date: _____

Event Location: _____

Event Organizer: _____

1. Pre-Event Planning

Waste audit conducted?

Yes

No

If Yes, estimated waste (types/quantities):

Waste recycle bins provided?

Yes

No

If Yes, the number of bins with labels (food waste, plastic, paper) in one location :

Recycling/Disposal services arranged?

Yes

No

Service provider: _____

Waste management plan created?

Yes

No

Responsible person/team: _____

Eco-friendly materials selected?

Yes

No

List materials used (e.g., biodegradable dining ware):

Waste reduction strategies in place?

Yes

No

Strategies listed: _____

2. Waste Collection Stations

Waste bin locations identified?

Yes

No

Locations (list key areas):

Waste bins labeled and color-coded?

Yes

No

Bin types (check all that apply):

Recyclables (Paper and Plastic)

Compostable (Food Waste and Biodegradable Items)

Non-Recyclable Waste

Bins easily accessible to attendees?

Yes

No

3. On-the-Day Waste Management

Waste management volunteers assigned?

Yes

No

Staff/Volunteer names: _____

Waste disposal instructions communicated to attendees?

Yes

No

Communication for waste management method (check all that apply):

Announcements (physical, e-mail, Facebook post)

Signage

Banners

Other (specify): _____

Are bins being regularly monitored and replaced when full?

Yes

No

Person responsible for bin monitoring: _____

Backup waste storage available?

Yes

No

If Yes, specify location and type of storage: _____

Food waste being monitored?

Yes

No

4. Post-Event Waste Handling

Waste sorted and segregated properly?

Yes

No

If Yes, confirm types (check all that apply):

Recyclables

Compostables

General Waste

Waste transported to proper facilities?

Yes

No

Service provider for transport: _____

Venue cleaned post-event?

Yes

No

Person responsible for venue cleaning: _____

5. Reporting and Review

Waste management success evaluated?

Yes

No

Comparison (actual vs. estimated waste): _____

Feedback provided to stakeholders?

Yes

No

List key feedback points:

Lessons learned for future improvement?

Yes

No

Details:

6. Additional Sustainability Measures

Reusables promoted (e.g., water bottles, utensils)?

Yes

No

Details: _____

Event going paperless (e.g., digital, QR codes)?

Yes

No

Eco-friendly gifts provided?

Yes

No

If Yes, specify: _____

Form Completed By:

Name: _____

Date: _____

Circular Campus Green Event Waste Segregation Volunteerism

Waste segregation is the separation of waste into categories like organic, plastic, paper, etc., at the source. It ensures proper disposal and supports resource recovery, reducing landfill use and carbon emissions. On a circular campus, segregation enables materials to be reused or repurposed, supporting low-carbon, zero-waste goals through efficient resource cycles.

Total Waste Segregated (kg) and Waste Disposal/Processing Method

Please tick (/) the box for the waste disposal/processing method according to the waste type, whether it is recycled, incinerated, landfilled, or categorized as others.

Location:		Waste Disposal/Processing Method				
Waste Category	Waste Mass (kg)	Estimated Waste Carbon Emission (Kg CO₂e)	Recycled	Landfilled	Incinerated	Others
General waste						
Compostable (i.e., Food Waste)						
Plastic						
Paper						
Aluminium Can						
Glass						
Total						

Formula

Waste Category	Formula
Organic ¹	Mass (kg) x 1.74636 (CO ₂ e)
Plastic ²	Mass (kg) x 0.034 (CO ₂ e)
Paper ²	Mass (kg) x 0.58 (CO ₂ e)
Aluminum Can ³	Mass (kg) x 1.851 (CO ₂ e)

References

1 https://www.ipcc.ch/site/assets/uploads/2018/03/5_Waste-1.pdf

2 <https://www.cidb.gov.my/eng/mycrest/>

3 <https://www.climatiq.io/data/emission-factor/a8e2a63c-0631-41f0-ba20-49f7d344aa2f>

Day 1

TYPE	FOOD WASTE	CAN	PLASTIC	PAPER	NON-RECYCLING WASTE (Marker, Batteries, ect)
TIME	WEIGHT (KG)				
10 AM					
12PM					
2PM					
4PM					

PICTURES:

BEFORE	AFTER

Note: Please take a picture of each type of waste before and after the process of segregation, the waste pickup from the collection point, and the recycle bins with different plastic colors, etc.



UNIMAS CAMPUS-WIDE WASTE MANAGEMENT HANDBOOK

Waste management guidelines and Standard Operating Procedures (SOP)

2025

UNIMAS LOW CARBON CAMPUS ROADMAP 2030

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Data collection, initial reporting

Nurul Afiqah Khairunnisa Azman
Data collection, initial reporting

Waste Management Guidelines

Universiti Malaysia Sarawak (UNIMAS) is a vibrant and impactful campus community, with a vision to become a leading global university for a sustainable future. While our many achievements in education, research, and community service prove our dedication to this vision, we have ambitious plans to cement our place as a beacon of academic excellence in the region.

These plans mean that our university will be a hub of activity. We understand that these activities will require us to consume resources such as raw materials, water, and energy, and will inevitably result in waste. However, as stewards of Sarawak's natural environment, we are committed to reducing our environmental footprint by implementing effective waste management processes. We recognise our responsibility to do so in a manner that prioritises waste reduction and contributes back to a circular economy.

Thus, these guidelines are written with this commitment and responsibility in mind and are directly aligned with existing sustainability and environmental management frameworks in UNIMAS (Box 1).

Box 1. Existing sustainability and environmental frameworks in UNIMAS



**40% of waste
minimization from 2022**

Core Principles of Waste Management

While waste management processes may differ across types of waste, several core principles guide our overall waste management approach. These core principles allow us to keep pace with up-and-coming waste management and valorisation technologies, while ensuring that our commitment to reducing our environmental footprint is met.

Principle 1

Waste is managed without endangering human health.

Risks of exposure to hazardous substances and disease should be negligible throughout the waste management process.

Principle 2

Waste is managed without risk to water, air, soil, plants or animals.

The quality of air, water and soil, in addition to the wellbeing of other organisms, should be preserved throughout the waste management process.

Principle 3

Waste is managed without causing noise or odour pollution.

The emission of unpleasant noise and smells should be minimised throughout the waste management process.

Principle 4

Waste is managed without adversely affecting the natural beauty of our surroundings.

The aesthetic value of our natural environment should be preserved as much as possible throughout the waste management process.

The Waste Hierarchy



The waste hierarchy is depicted as an inverted pyramid with five layers, with each layer decreasing in size in order of its preference. Each layer of the waste hierarchy represents a waste management method: prevention, reuse, recycling, recovery, and disposal.

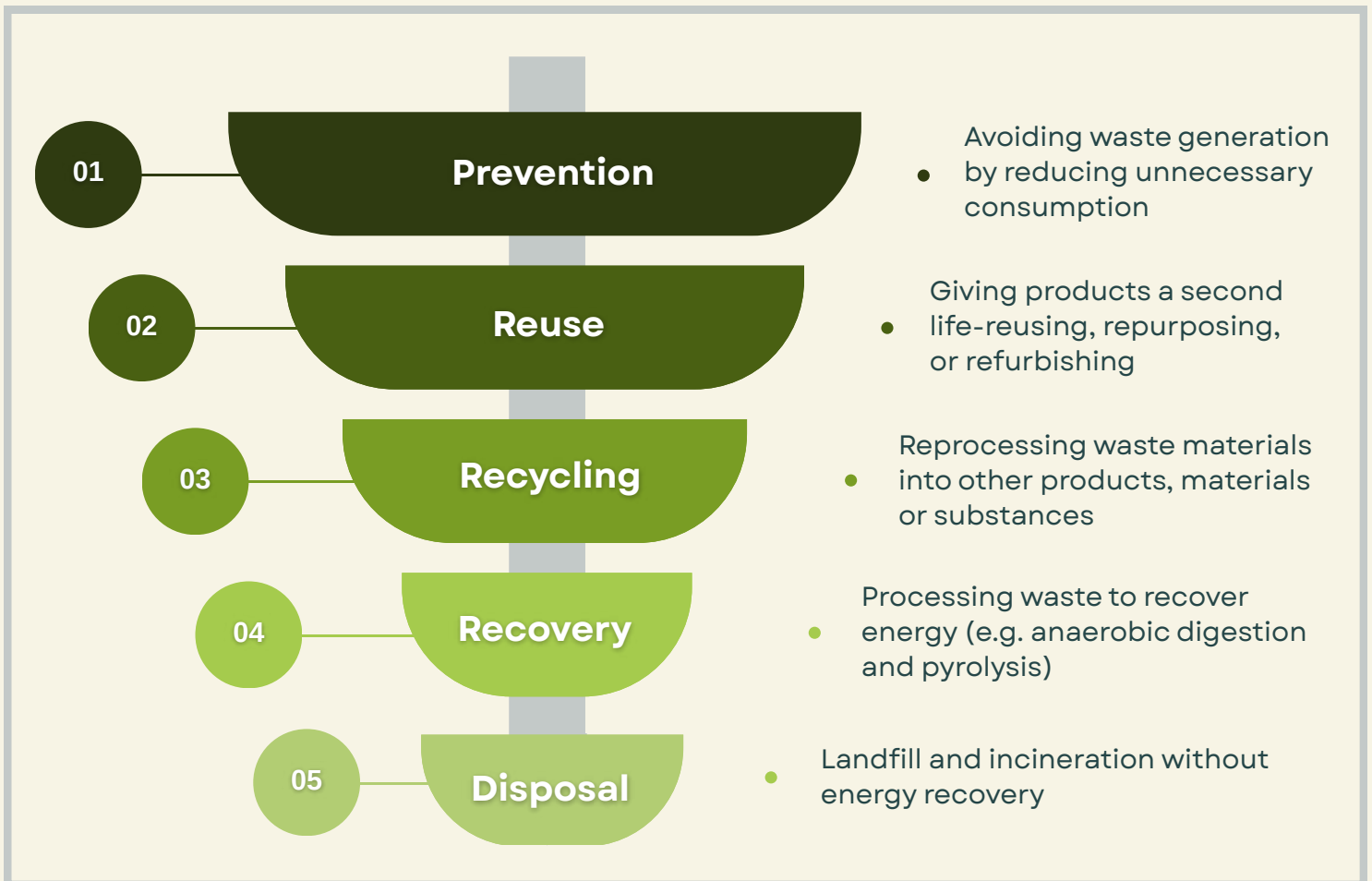


Figure 1: The waste hierarchy, consisting of prevention, reuse, recycling, recovery and disposal

It is a tool that helps indicate an order of preference for action to reduce and manage waste. UNIMAS uses it to tackle the problem of waste before the point of waste generation (prevention) and to utilise waste as a potential resource (reuse, recycling, and recovery) before disposal. By following this order of preference, UNIMAS seeks to decrease the volume of waste being landfilled and to contribute to the circular economy.

Three General Steps Towards Proper Waste Management

Regardless of waste type, there are three general steps towards proper waste management. While the specifics may vary, all waste management protocols in UNIMAS follow these three general steps.

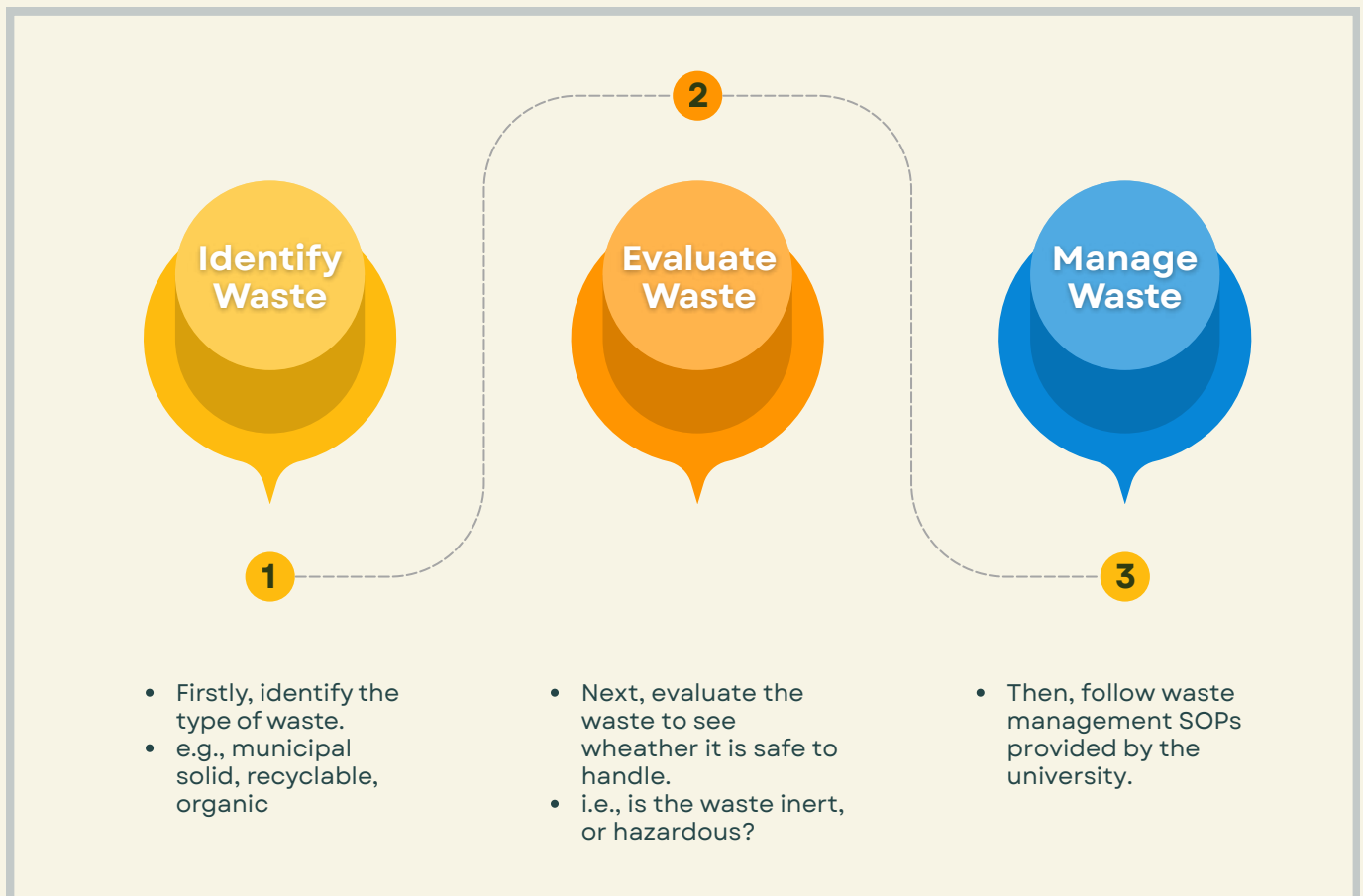
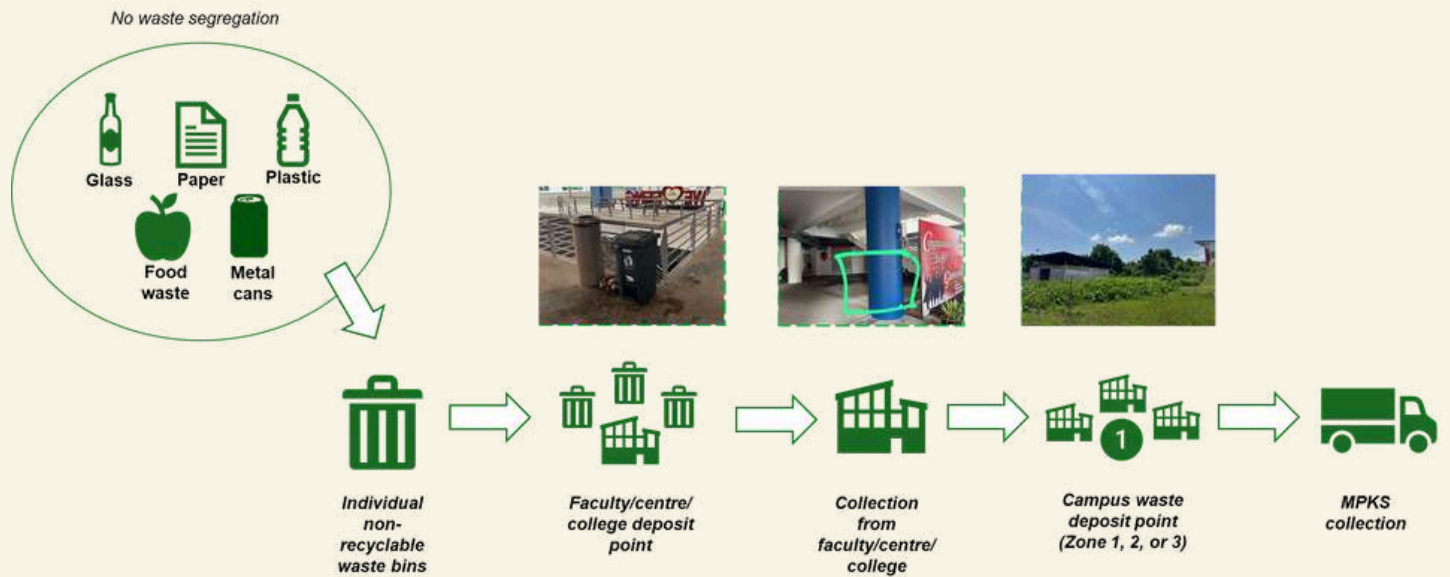
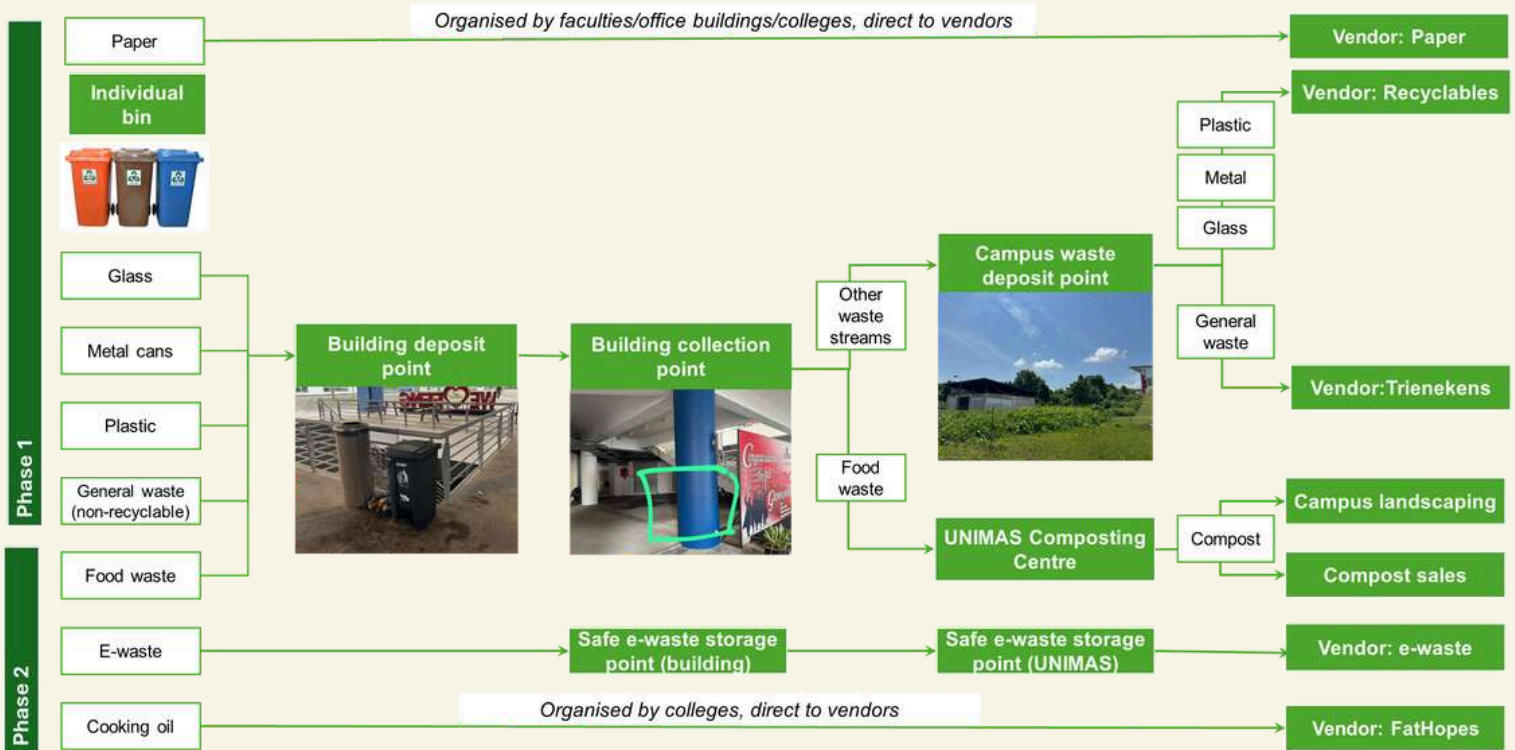


Figure 2: UNIMAS' three general steps towards proper waste management.

Current Waste Management Flow at UNIMAS



Proposed Comprehensive Waste Management Flow at UNIMAS



Proposed UNIMAS Holistic Waste Management



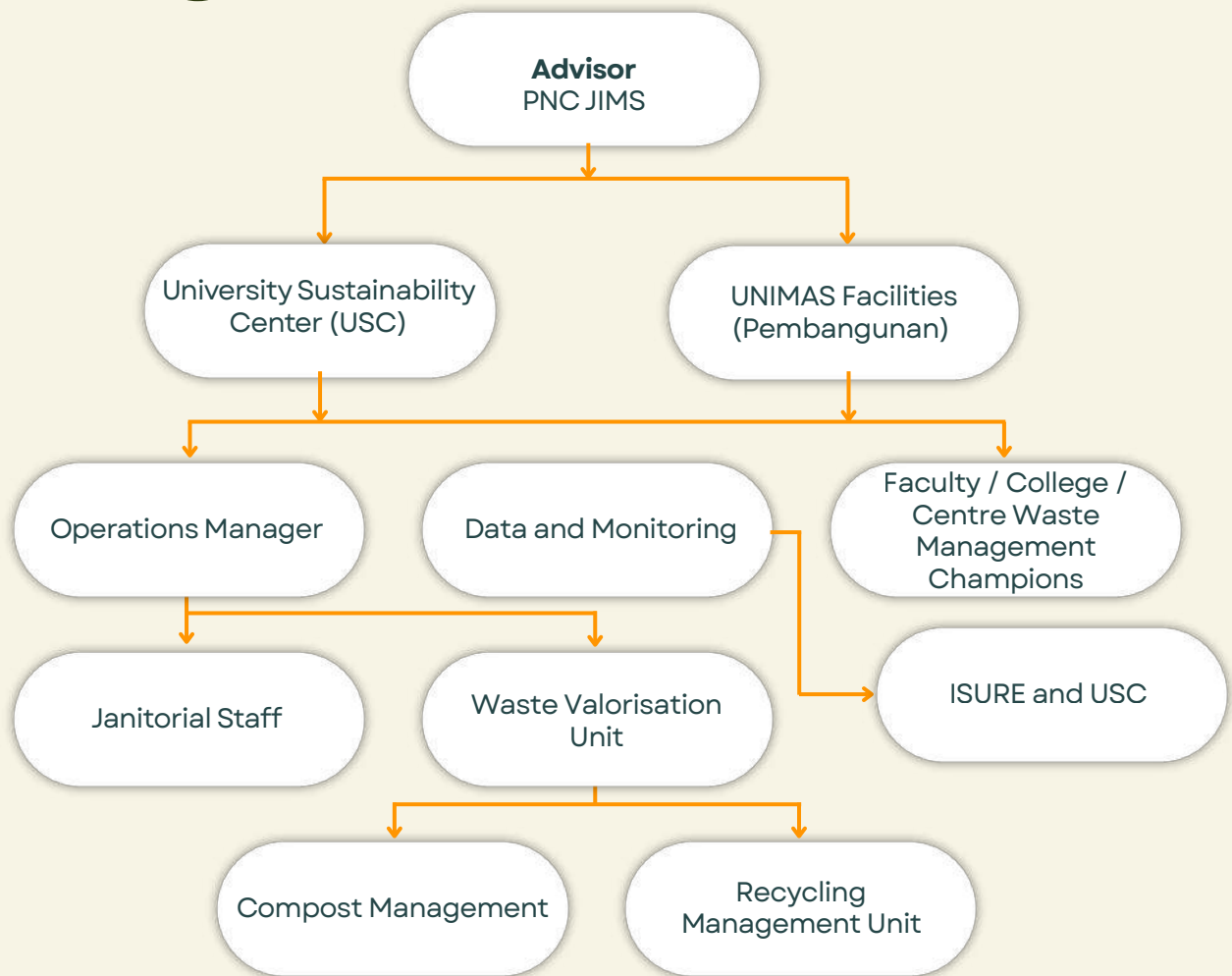
Total Recycle Bin Purchased = 159 bins (53 sets)

No	Location	Total (Set)
1	Fakulti Sains dan Teknologi Sumber	2
2	Fakulti Kejuruteraan	2
3	Fakulti Sains Komputer dan Teknologi Maklumat	2
4	Fakulti Pendidikan, Bahasa dan Komunikasi	2
5	Fakulti Seni Gunaan dan Kreatif	2
6	Fakulti sains Kognitif dan Pembangunan Manusia	2
7	Fakulti Sains Sosial dan Kemanusiaan	2
8	Fakulti Ekonomi dan Perniagaan	2
9	Fakulti Perubatan dan Sains Kesihatan	2
10	Fakulti Alam Bina	2
11	Pejabat pembangunan	1
12	Pejabat Bahagian Keselamatan	1
13	Pejabat Pentadbiran Pra-U	1
14	Pejabat Pengangkutan	1
15	Pejabat Unit Kebersihan dan Logistik / Unit Landskap	1
16	Pusat Islam Tun Abang Salahuddin (PITAS)	1
17	TAHODC	1
18	PeTARY	1
19	Centre for Teaching Facilities 1 (CTF1)	1
20	Centre for Teaching Facilities 2 (CTF2)	1
21	Centre for Teaching Facilities 3 & 4 (CTF 3&4)	1
22	Pusat Penyelidikan Tumbuhan, FSTS	1

Total Recycle Bin Purchased = 159 bins (53 sets)

No	Location	Total (Set)
23	Detar Putra	1
24	Bangunan CUBE	1
25	Bangunan HEP	1
26	Bangunan CAUH	1
27	Bangunan KAPU	1
28	ARENA Tun Tuanku Haji Bujang	1
29	Stadium UNIMAS	1
30	Kolej Allamanda	1
31	Kolej Sakura	1
32	Kolej Bunga Raya	2
33	Kolej Cempaka	2
34	Kolej TAZ	1
35	Kolej Seroja	1
36	Kolej Kenanga	1
37	Kolej Rafflesia	1
38	Kolej Kasturi	1
39	Kafe Lake View dan Panggung Gemilang	1
40	Medan Selera Keranji	1
41	UNIMAS City Campus	1
	Total	53 set = 159 bins

Organisational structure



ROLE	TASK
Advisor	Strategic Oversight & Institutional Alignment
UNIMAS Facilities Head	Executive Oversight
University Sustainability Center	
Operations Manager	
Data and Monitoring	
Faculty Waste Management Champions	
Janitorial Staff	
Waste Valorisation Unit	
Compost Management	
Recycling Management Unit	

Standard Operating Procedures for general waste Management

Summary

These standard operating procedures (SOPs) contain instructions on how to manage three types of waste commonly found in UNIMAS: general solid waste, recyclable waste, and organic waste. They outline the specific handling, segregation and disposal methods for each waste type to ensure compliance with UNIMAS and local waste management policies. It also assigns responsibilities to relevant staff.

Scope and affected parties

This document is **not relevant** to hazardous, universal, and electronic waste management within UNIMAS

The SOPs listed in this document apply to all university facilities, staff, students, contractors, and visitors involved in waste generation at UNIMAS.

Effective date, author/s, revision information, and approving authorities

Effective date	
Date approved	
Date reviewed	
Date revised (if applicable)	
Author/s	
Approving authorities	

SOP for General Waste

Definitions

General waste are items that are not recyclable and not hazardous. They are safe to handle by the general public and do not cause immediate harm to the environment.

Examples include:

01



Used tissue paper and napkins

02



Broken glass or ceramics

03



Non-recyclable plastics (e.g., plastic bags, bubble wrap)

04



Dirty recyclable materials (e.g., soiled paper, greasy cardboard)

05



Food packaging materials (e.g., plastic wrappers)

06



Dust and swept-up debris

Safety and Hygiene Considerations

1. Wash hands thoroughly with soap after handling or disposing of waste.
2. Avoid overfilling bins to prevent spillage and pest attraction.

Procedure

	Instruction	Who is responsible?	Contact person/information
Step 01	Ensure general waste is not mixed with recyclables or organic waste.	All staff, students, guests, and contractors	N/A
Step 02	Place general waste in labelled rubbish bins lined with plastic bags. Keep lids closed. <i>PHOTO OF LABELLED BINS FOR GENERAL WASTE</i>		
Step 03	Collect waste from bins daily or as scheduled. Replace liners after removal. <i>SCHEDULE OF PICK-UP WITHIN UNIMAS</i>	Janitorial staff	Janitorial person-in-charge
Step 04	Tie bags securely and move to the designated waste collection point safely.		
Step 05	Ensure timely pick-up and disposal by municipal services. <i>SCHEDULE OF PICK-UP AND DISPOSAL</i>	Facilities management unit	Facilities person-in-charge phone number
Step 06	Monitor disposal records for: <ul style="list-style-type: none"> • Volume? • Contamination? • Other information? 	Waste management officer	Person-in-charge and phone number

SOP for Recyclable Waste

Definitions

Recyclable waste are items that can be made of plastic, metal, paper or glass. After use, these items are still clean (or can be cleaned) and easily sorted into their respective categories.

Examples include:

- Plastic bottles and containers
- Glass bottles and jars
- Tetrapak cartons (milk or juice cartons)
- Clean paper and cardboard (printed paper, newspapers, magazines, books, cardboard packaging)



Safety and Hygiene Considerations

1. Wash hands thoroughly with soap after handling or disposing of waste.
2. Avoid overfilling bins to prevent spillage and pest attraction.
3. Ensure that glass bottles and jars are not broken to avoid injuries on sharp glass pieces.

Procedure

	Instruction	Who is responsible?	Contact person/information
Step 01	Ensure recyclables are clean.	All staff, students, guests, and contractors	N/A
Step 02	Place recyclables in appropriately labelled recycling bins. Keep lids closed. <i>PHOTO OF LABELLED BINS FOR RECYCLABLES</i>		
Step 03	Collect waste from bins daily or as scheduled. Replace liners after removal. <i>SCHEDULE OF PICK-UP WITHIN UNIMAS</i>	Janitorial staff	Janitorial person-in-charge
Step 04	Tie bags securely and move to the designated waste collection point safely.		
Step 05	Ensure timely pick-up and disposal by municipal services. <i>SCHEDULE OF PICK-UP AND DISPOSAL</i>	Facilities management unit	Facilities person-in-charge phone number
Step 06	Monitor disposal records for: <ul style="list-style-type: none"> • Volume? • Contamination? • Other information? 	Waste management officer	Person-in-charge and phone number

SOP for Compostable Waste

Definitions

Compostable waste is organic waste, which include materials such as garden waste, plant-based leftovers, and agricultural waste. These types of organic waste can break down into carbon dioxide, water, and organic matter in the composting environment.

Examples include:

- **Food scraps:** Vegetable peels, fruit cores, coffee grounds, eggshells
- **Garden waste:** Leaves, twigs
- **Paper products:** Greasy brown corrugated cardboard, paper towels unsoiled by chemicals



Safety and Hygiene Considerations

1. Wash hands thoroughly with soap after handling or disposing of waste.
2. Avoid overfilling bins to prevent spillage and pest attraction
3. These food wastes are NOT compostable:



Procedure

	Instruction	Who is responsible?	Contact person/information
Step 01	<p>Ensure waste is compostable.</p> <p>If waste is not compostable or recyclable, dispose of waste in general waste bins.</p>	All staff, students, guests, and contractors	N/A
Step 02	<p>Place compostables in compostable waste bins, located at:</p> <p><i>PHOTO OF LABELLED BINS FOR RECYCLABLES AND LOCATIONS.</i></p>		
Step 03	<p>Collect waste from compostable bins daily or as scheduled. Replace liners after removal.</p> <p><i>SCHEDULE OF PICK-UP WITHIN UNIMAS</i></p>	Janitorial staff	Janitorial person-in-charge
Step 04	<p>Place compostable waste in grinders.</p> <p><i>AT WHAT VOLUMES SHOULD WE FEED WASTE TO GRINDERS?</i></p>		
Step 05	<p>Compost macerated waste into compost bins.</p> <ul style="list-style-type: none"> • Temperature and moisture: Check temperature, ensure it is within range of 55 deg C - 65 deg C. • Compost pile turning: Aerate compost every 3 - 5 days using a mechanical tumbler. • Harvest compost end-product from base of compost bin. Sift compost to remove un-composted chunks. • Package compost end-product. 	Compost management unit	Facilities person-in-charge phone number
Step 06	<p>Monitor disposal records for:</p> <ul style="list-style-type: none"> • Volume? • Rates of contamination • Volume of compost 		

Proposed UNIMAS Recycling Center



Glass

**Paper
&
Cardboard**

Can

Plastic

**Food waste
composting**

Reward Scheme

- Cash
- Voucher
- Cafeteria around UNIMAS

Thank you

Terms of Reference for Waste Management Taskforce

The Waste Management Taskforce within each PTJ that serves as the primary liaison between the central waste management office [REPLACE WITH RELEVANT NAME OF WASTE MANAGEMENT AUTHORITY] and the academic community. Members of the taskforce have two key responsibilities – raising awareness, as well as monitoring and reporting on waste management initiatives within their PTJ.

Key responsibility 1: Raising awareness

- Promote waste reduction and proper sorting practices among PTJ members
- Disseminate information on waste management policy, procedures, and initiatives among PTJ members
- Encourage participation in awareness campaigns and training sessions for waste management

Key responsibility 2: Monitoring and reporting

- Stay alert to waste management issues and potential problems within the PTJ's working area
- Share observations and recommendations with the central waste management office
- Be aware of general waste generation patterns and alert the central waste management office to any concerns

Prepared by **Institute of Sustainable and Renewable Energy, Universiti Malaysia Sarawak**

Hadir

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Dr Edris Bin Aden
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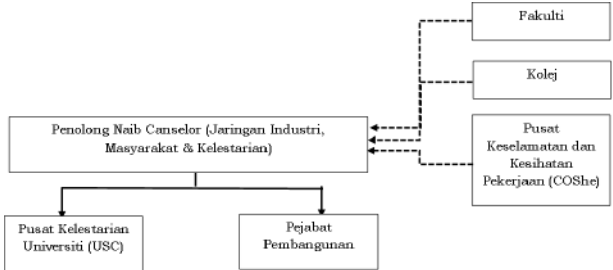
Cik Loveline Ubung Martin
Penolong Penyelidik

Cik Nahdia Binti Ghani – Pencatat Minit
Pelajar Latihan Amali Institut Tenaga Lestari dan Diperbaharui (ISuRE)

Aluan Pengerusi

Pengerusi mengalu – alukan kehadiran ahli-ahli ke mesyuarat Perbincangan dan Penyerahan Dokumen SOP Pengurusan Sisa dan Polisi Alam Sekitar Universiti Malaysia Sarawak.

Perkara		Makluman/Keputusan/Tindakan	
1.0	Pelaksanaan Prosedur Operasi Standard (SOP) dan Pengurusan Sisa Pepejal di UNIMAS		
	1.1	Hebahan Pelaksanaan Kitar Semula Dikalangan Warga Kampus	1.1.1 Mesyuarat dimaklumkan bahawa tahap kesedaran dalam kalangan warga kampus (pelajar dan staf) adalah penting sebelum pelaksanaan penuh pengasingan sisa di peringkat operasi. Tanpa pemahaman dan kerjasama komuniti kampus, keberkesanan sistem pengasingan sisa akan terjejas. 1.1.2 Mesyuarat mengambil maklum bahawa pelaksanaan dan kejayaan aktiviti kitar semula sangat berhubung kait dengan tahap kesedaran dikalangan warga kampus. 1.1.3 Mesyuarat bersetuju bahawa sebelum pelaksanaan program kitar semula ini, SOP diedarkan melalui e-mel kepada semua PTj, staf dan pelajar. ISuRE telah menyerahkan SOP yang jelas mengenai tindakan pihak-pihak yang berkenaan dalam bentuk infografik telah diedarkan kepada Pejabat Pembangunan. <p style="text-align: right;">Tindakan: USC dan Pejabat Pembangunan</p>

	<p>1.2 Peranan USC dalam pemantauan dan analisis data</p> <p>1.3 Penubuhan Struktur Tadbir Pengurusan Sisa (STPS)</p>	<p>1.2.1</p> <p>1.3.1</p> <p>1.3.2</p> <p>1.4 Penubuhan Unit-unit berkaitan</p> <p>1.4.1</p> <p>1.4.2</p> <p>1.4.3</p>	<p>Mesyuarat mengambil maklum pihak USC bertanggungjawab dalam membuat pemantauan dan analisis data berkaitan pelaksanaan sistem pengasingan sisa. Ini termasuk menyusun aliran data, mengenal pasti indikator prestasi, dan menyediakan laporan kemajuan kepada pihak pengurusan untuk rujukan dan penambahbaikan berterusan.</p> <p style="text-align: right;">Makluman/Tindakan: USC</p> <p>Mesyuarat bersetuju untuk mewujudkan Struktur Tadbir Pengurusan Sisa (STPS) sebagai penambahbaikan tadbir urus pengurusan sisa di UNIMAS.</p>  <pre> graph TD DVC[Penolong Naib Canselor (Jaringan Industri, Masyarakat & Kelestarian)] USC[Pusat Kelestarian Universiti (USC)] PO[Pejabat Pembangunan] F[Pakulti] K[Kolej] COSHe[Pusat Keselamatan dan Kesihatan Pekerjaan (COSHe)] DVC --> USC DVC --> PO F -.-> DVC K -.-> DVC COSHe -.-> DVC </pre> <p>Mesyuarat dimaklumkan bahawa semua pengurusan sisa akan dilaporkan kepada Penolong Naib Canselor (Jaringan Industri, Masyarakat & Kelestarian) UNIMAS. Kertas cadangan akan dibentangkan dalam Mesyuarat Jawatankuasa Eksekutif Khas yang dicadangkan pada bulan November atau Disember 2025</p> <p style="text-align: right;">Makluman/Tindakan: USC</p> <p>Mesyuarat telah mengenal pasti keperluan untuk menubuhkan unit-unit berkaitan di semua Pusat Tanggungjawab (PTj).</p> <p>Pejabat Pembangunan telah melaksanakan inisiatif pengurusan sisa by giving 53 buah tong sampah kitar semula di kampus UNIMAS.</p> <p>Mesyuarat bersetuju untuk menyarankan penubuhan unit khusus atau melantik wakil yang bertanggungjawab dalam pengurusan sisa di PTj masing-masing. Penubuhan unit atau pelantikan wakil ini bertujuan untuk memastikan pelaksanaan aktiviti pengurusan sisa dilaksanakan secara berkesan, termasuk pemantauan, pelaporan, dan pematuhan terhadap garis panduan yang ditetapkan oleh pihak institusi.</p> <p style="text-align: right;">Makluman/Tindakan: Semua PTj</p>
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	1.5	Tema Rujukan (TOR) <i>Taskforce</i> Pengurusan Sisa	1.5.1	Penolong Penyelidik ISuRE telah dipertanggungjawabkan untuk menyediakan Tema Rujukan (TOR) bagi <i>taskforce</i> dengan tanggungjawab untuk meningkatkan kesedaran serta pemantauan dan pelaporan pengurusan sisa. 1.5.2. TOR tersebut perlu dimuktamadkan dalam Mesyuarat JKPP ke-4/2025. <p style="text-align: right;">Tindakan: ISuRE</p>
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Mesyuarat ditangguh pada jam 11.30 pagi dengan ucapan terima kasih daripada Pengerusi.

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 Prof Ts. Ir Dr. Al-Khalid bin Hj Othman
Pengerusi

23 September 2025

Tarikh