ESKOM TRANSMISSION INDUSTRY WASTE MANAGEMENT PLAN UPDATE 2023-2028

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1. INTRODUCTION AND BACKGROUND

The Eskom Transmission(Tx) Industry Waste Management Plan (Ind WMP) aims to assess the current waste management and develop measures to ensure that the waste is appropriately managed with the ultimate purpose of waste avoidance and minimisation. The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) assented on the 10th of March 2009. Part 7 of the Act provides details on the legislative provisions regarding the process to be followed towards the preparation of Ind WMPs. Subsequently, the industry WMP has been prepared per the requirements as detailed in Section 30 of NEM: WA. Therefore the scope primarily entails the following:

- Measures to prevent pollution or ecological degradation – details of steps taken to protect environmental impacts.
- Targets for waste minimisation through waste reduction, re-use, recycling, and recovery;
- Measures or programmes to minimise the generation and the final disposal of waste;
- Measures or actions to be taken to manage waste;
- The phasing out of specified substances – identification of hazardous substances and identification of opportunities to reduce or phase out the use of these substances from production processes and products;
- Opportunities for reduction of waste generation through changes to packaging, product design, or production processes;
- Mechanisms for informing the public of the impact of the waste-generating products or packaging on the environment – education programs, labelling, and other mechanisms for addressing Extended Producer Responsibility (EPR);
- The extent of any financial contribution to be made to support consumer-based waste reduction programs;
- The period that is required for the implementation of the plan – a program including target dates for implementation of the waste management plan;
- Methods for monitoring and reporting – details of how the waste implementation plan will be monitored and the scope of reporting; and
- Any other matter that may be necessary to give effect to the objects of the Act.

Eskom Tx has an existing Ind WMP approved by the Group Executive on 21 August 2019 titled Transmission Industry Waste Management Plan 2019 - 2022. Subsequently, the plan is due for an update that provides an opportunity for Eskom to consolidate and align its Ind WMP with the requirements of the changing legislation and improved best practices. Therefore, Eskom Holdings appointed Nsovo Environmental Consulting (hereafter Nsovo) to update the Tx Waste Management Plan which will be a guideline for the management of waste throughout all Eskom Tx activities.

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The Ind WMP is a management tool that ensures that undue or reasonable avoidable adverse impacts emanating from waste generated throughout the lifecycle of the operation are prevented or mitigated and that the positive benefits are enhanced. The primary aim of waste management planning is to guide all parties involved to effectively manage waste, debris, and materials generated, including reducing the amount of waste generated at the source. A general overview, informed by data collected from the BUs visited in the Gauteng, Mpumalanga, Free State, and North West Provinces is provided herein regarding the state of waste management in the Tx Division. This is the context in which the 2019-2022 Ind WMP was updated. This review and update aim to determine the status quo, identify the current challenges in waste management practices, briefly refer to the applicable legislative framework for general and hazardous waste management, and draw attention to the waste minimization strategies being implemented by the division.

Therefore, the updated Ind WMP is prepared in terms of the provisions of Sections 29 and 30 of the National Environmental Management: Waste Act (Act No. 59 of 2008) as amended, the Constitution of the Republic of South Africa, National Environmental Management Act (Act No. 107 of 1998) as amended and various Norms and Standards published in terms of Section 7 of the NEM: WA.

2. SUPPORTING CLAUSES

2.1 SCOPE

The Transmission Ind Waste Management Plan (Tx Ind WMP) aims to assess the waste management status quo and develop measures to ensure that the waste is appropriately managed with the ultimate purpose of waste avoidance and minimization.

2.2 PURPOSE

The Ind WMP aims to avoid deterioration of the natural environment and negative impacts on the health and safety of communities within the Eskom Tx areas of operation by providing a plan for managing waste through waste reduction, segregation, collection, and disposal practices in line with national best practices. The Ind WMP will ensure that waste management is in line with the statutory waste management hierarchical approach resulting in the following benefits:

- Waste reduction and improve resource efficiency;
- Better yields and efficiencies;
- Cost savings;
- Reduced environmental impacts;
- Greater safety for workers and minimising the impact on surrounding communities; and
- Improve awareness through empowering workers and communities.

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The Ind Waste Management Plan must be read with the Eskom Waste Management Standard (32-245) approved in December 2021.

2.3 APPLICABILITY

This plan shall apply to the National Transmission Company for the implementation, maintenance, and continual improvement of waste management practices within the business.

The Transmission mandate is to provide a reliable and efficient transmission network, system operator, and energy market services in South Africa and designated electricity markets.

The context Transmission comprises of the regional grid areas for operation and maintenance, the system operator, energy market services, grid planning and development, asset management, engineering, customer services, project delivery, and international trader. Service functions include human resources, finance, OGE and P&SCM. The National Transmission Company South Africa (NTC) establishment will create a fair and transparent platform for procuring new, least cost power sustainably, unlock competition and independent player participation. Transmission strives to become financially sustainable, foster an inclusive market, and ensure a reliable and sustainable power system.

The Transmission Business Areas (Table 1)and Business Areas and Units (BU) (Table 2) are presented below.

Table 1: Business Units

Transmission Businesses	
Unit	**Mandate**
Network Service Provider	Providing network access for generators and consumers. The TNSP is responsible for expansion planning, maintenance, and operations of the extra-high-voltage network (generally above 132kV).
Systems Operator	System operator manages real-time balancing of supply and demand on the integrated powers system (IPS). The System operator will procure ancillary services (from generators and demand response) and dispatch resources to manage balance. Eskom telecommunications has a presence at all 1 758 Eskom sites and are critical to the real-time operations of Eskom's national and regional control centres across southern Africa. Telecommunication sites are part of homogenous. Eskom's telecommunication

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Transmission Businesses	
Unit	**Mandate**
	infrastructure, which is a singular system to ensure the reliability and resilience of the telecommunication services and products to all the line divisions.
Market Operator /CPA	The Market Operator offers platforms/trading mechanisms for market participants. It does not take ownership of the energy traded on the platforms. Thus, the risks are related to the systemic failure arising from non-payment and can be dealt with through appropriate prudential requirements. The MO receives revenue based on participation charges and/or brokerage fees for transactions. The Central Purchasing Agency (CPA) takes ownership of energy (and capacity) purchased under legacy contracts, stranded investments, and subsidy mechanisms. The CPA takes on the risk associated with the price paid for energy and capacity relative to wholesale tariffs. The CPA is a transition mechanism to bridge from the single buyer model to a competitive market. Non-payment is a clear danger for the CPA

Table 2: NTC Business Areas and Units

Business Area	Units	Mandate
Transmission Network Service Provider	Network solutions Development	• To develop optimal plans and solutions for the expansion and refurbishment of the power transmission network as well as provide a technology and asset management service to ensure that the integrated power system is reliable, adequate and secure.
	Network Solutions Delivery	• To execute projects related to the capital expansion, strengthening, and refurbishment of transmission assets as well as construction management of transmission networks required for the integration of new generators and loads

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Business Area	Units	Mandate
	Network OMR	• To ensure a reliable and sustainable transmission network through operating, maintaining, and commissioning new assets.
Systems Operator	Systems Operator	• To control the operation of and be responsible for the short-term reliability of the interconnected power system (IPS) as defined in the South African Grid Code (SAGC).
	Telecoms	• To ensure a reliable and sustainable telecommunication network for Eskom through planning, expanding, operating, maintaining, and refurbishing.
Market Operator	Central Purchasing Agency	• To facilitate the market to sign long-term PPA with generators and sell energy at regulated tariffs and prices.
	Market Operator	• To operate and/or facilitate the market and administer the market participants. • To conduct market clearing, settlements, and invoicing. • To ensure that no risk taken in buying and selling.
International Trader	To participate in markets as a buyer and seller (Trader) within SAPP and take risks in buying and selling. To take advantage of arbitrage between SAPP and the domestic market	

2.4 EFFECTIVE DATE

This document shall be effective as soon as it is approved and signed.

2.5 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs. Note that the below list is not exhaustive.

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2.5.1 Normative

1) ISO 9001:2015 Quality Management Systems
2) ISO 14001: 2015 Environmental Management Systems – Requirements with guidance for use
3) 32 - 727: SHEQ Policy
4) 32 - 245: Eskom Waste Management Standard
5) 240 - 84908008: Polychlorinated Biphenyl Phase out Standard
6) 240 - 9272991:Transmission Framework to Phase Polychlorinated Biphenyl
7) 240-103644804: Environmental Monitoring and Measurement Procedure
8) 240-125809509: Eskom Greenhouse Gas Emission Reporting Procedure

2.5.2 Informative

9) South African Constitution (Act 108 of 1996)
10) National Environmental Management: Act 1998, (Act No. 107 of 1998), as amended
11) National Environmental Management: Waste Act,2008 (NEM: WA) Act 59 of 2008 (as amended)
12) National Water Act, 1998 (Act 36 of 1998)
13) National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
14) Hazardous Substances Act, 1973 (Act 5 of 1973)
15) Environment Conservation Act, 1989 (Act 73 of 1989)
16) Occupational Health and Safety Act, 1993 (Act 85 of 1993)
17) The National Road Traffic Act,1993 (Act 96 of 1993)
18) Municipal Systems Act, 2000 (Act 32 of 2000)
19) National Waste Information Regulations (GN R 625, 2012)
20) Waste Classification and Management Regulations (GN R 634 OF 2013)
21) National Norms and Standard for the Assessment of Waste for Landfill Disposal (GNR 635 of 2013)
22) National Norms and Standards for the storage of Waste (GN 926 of 2013)
23) National Norms and Standards for the sorting, shredding, grinding, crushing, screening, or baling of general waste (GN 1093 of 2017)
24) National Waste Management Strategy (GN 56 OF 2021)
25) Asbestos Abatement Regulations (GN R 1196 of 10 November 2020)
26) Asbestos Regulations (GNR 342 OF 2008)
27) Extended producer responsibility scheme for the portable battery sector (GN 3179 of 2023)
28) White Paper on Integrated Pollution and Waste Management for South Africa, 2000
29) The Polokwane Declaration on Waste Management, 2001

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30) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
31) The Bamako Convention
32) Rio Earth Summit 1992 and Agenda 21
33) Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
34) Stockholm Convention on Persistent Organic Pollutants
35) Montreal Protocol
36) UNFCCC Framework Convention on Climate Change (1992)
37) Paris Agreement (2015)
38) SANS 290, Mineral Insulating Oils–Management and handling of Polychlorinated Biphenyls
39) SANS 10228, The identification and classification of dangerous goods for transport
40) SANS 10229, Transport of dangerous goods - Packaging and large packaging for road and rail transport - Section 11.
41) SANS 10231, Transport of dangerous goods - Operational requirements for road vehicles
42) SANS 10232, Transport of dangerous goods - Emergency information system for road transport
43) SANS 10234, Globally Harmonized System of classification and labelling of chemicals (GHS)
44) SANS 1518: for the design of road vehicles and portable tanks
45) Waste-related regulations, policies, and procedures as relevant must be consulted and complied with
46) Municipal by-laws as relevant must be consulted and complied with

2.6 DEFINITIONS

Definitions herein are not necessarily a comprehensive list, but those deemed applicable for this report. Any additional definitions must be interpreted in consultation with the applicable legislation.

Table 3: Definitions

Definitions	Explanation
Asbestos	includes the following minerals: (a) amosite, (b) chrysotile, (c) crocidolite, (d) fibrous anthophyllite, and (e) fibrous tremolite, or any mixture containing any of these minerals.
Asbestos-containing material	Includes any material that contains asbestos, and includes asbestos cement products, asbestos coating, asbestos insulation board, asbestos insulation, asbestos textured decorative coatings, asbestos-contaminated soil, and other asbestos-containing materials.

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Definitions	Explanation
Asbestos disposal site	A site specifically designed for asbestos disposal in terms of the National Environmental Management: Waste Act 59 of 2008.
Building and demolition waste	Waste produced during the construction, alteration, repair, or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition which include a) discarded concrete, bricks, tiles, and ceramics b) discarded wood, glass and plastic c) discarded metals d) discarded soil, stones and dredging spoil e) Other discarded building and demolition wastes.
Business waste	Waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment, or government administration purposes.
Colour coding	means the use of colour on a container or bag or the label attached to such that serves to identify the category of waste that it contains.
Contaminant	means any substance present in an environmental medium at concentrations above natural background concentrations that has the potential to cause harm to human health or the environment.
COVID-19-type waste	includes used tissues, disposable cleaning cloths, gloves, masks, etc.
Cradle to cradle	Extended producer responsibility is a strategy to add all of the estimated environmental costs associated with a product throughout the product life cycle to the market price of that product, contemporarily mainly applied in the field of waste management.
Cradle to grave	Any generator of waste is legally responsible for its disposal from point of generation to the final disposal. Responsibility for the waste and the considerations of the waste exist throughout its life cycle.
Disposal	means the deposit, discharge, dumping, placement, or release of any waste into, or onto, any land.
Domestic waste	means waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes which include: (a) garden and park wastes (b) municipal waste (c) food waste.
Environment	The surroundings within which humans exist, which is made up of – • the land, water, and atmosphere of the earth; • micro-organism, plant, and animal life; and

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Definitions	Explanation
	• any part or combination of the above and the interrelationships among and between them; and the physical, chemical, aesthetic, and cultural properties and conditions of the above that influence human health and wellbeing (NEMA, 1998).
Extended Producer Responsibility	Extended producer responsibility is a strategy to add all of the estimated environmental costs associated with a product throughout the product life cycle to the market price of that product, contemporarily mainly applied in the field of waste management.
General Waste	Hazard or threat to health or the environment, and includes— (a) domestic waste (b) building and demolition waste (c) business waste (d) inert waste; or (e) any waste classified as non-hazardous waste in terms of the regulations made under section 69 and includes non-hazardous substances, materials or objects within the business, domestic, inert, building and demolition wastes.
General waste storage facility	means a storage facility that can store more than 100 m^3 of general waste continuously.
Hazardous Waste	means any waste that contains inorganic elements or compounds that may, owing to the inherent, physical, chemical, or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within the business waste, residue deposits, and residue stockpiles.
Hazardous waste storage facility	means a storage facility that continuously stores more than 80 m^3 of hazardous waste.
Health Care General Waste	means the non-hazardous portion of the waste generated at a healthcare facility. This is any waste that comprises uncontaminated plastics, paper, flowers, cardboard, or food residues.
Health Care Risk Waste	means the hazardous portion of the waste generated at a healthcare facility. This is any waste that poses a hazard to human health or the environment.
Ind Waste Management Plan	Means the 2019 -2022 Ind Waste Management Plan Rev 4.

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Definitions	Explanation
PCB-contaminated material	means oil or articles with polychlorinated biphenyl (PCB) concentration greater than 51 mg/kg, but less than 500 mg/kg.
Polychlorinated Biphenyl (PCB)	Any one of several 209 congeners containing one to ten chlorine atoms attached to a biphenyl group. NOTE: PCBs are synthetic products not known to occur naturally. New oil produced from crude oil does not contain PCBs.
PCB material	means oil or articles with a PCB concentration greater than 500 mg/kg.
PCB waste	means waste as defined in the National Environmental Management Act 59 2008, that contains PCB materials or PCB-contaminated materials; and "SANS 290" means the latest edition of the South African National Standards for mineral insulating oils management of polychlorinated biphenyls (PCBs).
Pollution	means a change in the environment caused by— (i) substances; (ii) radioactive or other waves; or (iii) noise, odours, dust, or heat; emitted from any activity,including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change harms human health or well-being or on the composition, resilience, and productivity of natural ormanaged ecosystems, on materials useful to people, or will have such an effect in the future (NEMA, 1998).
Priority waste	The Minister may, by notice in the Gazette, declare a waste to be a priority waste if the Minister on reasonable grounds believes that the waste poses a threat to health, well-being, or the environment because of the quantity or composition of the waste and a) that specific waste management measures are required to address the threat; or b) that the imposition of specific waste management measures in respect of the waste may improvereduction, reuse, recycling, and recovery rates or reducehealth and environmental impacts (NEMA, 1998).

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Definitions	Explanation
Recycle	A process where waste is reclaimed for further use includes separating waste from a waste stream for further use and processing that separated material as a product or raw material. (NEM: Waste Act, 2008).
Remediation	means the management of a contaminated site to prevent, minimise, or mitigate harm to human health or the environment.
Re-use	To utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of thearticles (NEM: Waste Act, 2008).
Registered Waste Service Provider	means a person or entity Registered on the Eskom suppliers database to provide a waste management service for Eskom.
Safety data sheet	is a detailed informational document prepared by the manufacturer or importer of a hazardous chemical. It describes the physical and chemical properties of the product. It also provides the physical, health, and environmental health hazards, protective measures, and safety precautions for handling, storing, and transporting the chemical. Was then referred to As Material Safety Data Sheet (MSDS).
Storage	means the accumulation of waste in a manner that does not constitute treatment or disposal of that waste (NEM: Waste Act,2008).
Temporary Storage	means a once-off storage of waste for a period not exceeding 90 days (GNR 921 in terms of NEM: Waste Act, 2008).
Waste	means: (a) any substance, material, or object, that is unwanted, rejected, abandoned, discarded, or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object canbe re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act or (b) any other substance, material, or object that is not included in Schedule 3 that may be defined as a wasteby the Minister by notice in the Gazette but any wasteor portion of waste, referred to in paragraphs (a) and (b) ceases to be a waste— (i) once an application for its re-use, recycling, or recovery has been approved or, after such approval, once it is, or has been re-used, recycled, or

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Definitions	Explanation
	recovered; (ii) where approval is not required, once the waste is, or has been re-used, recycled or recovered; (iii) where the Minister has, in terms of Section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste or; (iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.
Waste Classification	means establishing, in terms of SANS 10234: a) whether a waste is hazardous based on the nature of its physical, health, and environmental hazardous properties (hazard classes); and b) the degree or severity of the hazard posed (hazard categories).
Waste-Disposal Facility	means any site or premises used for the accumulation of waste to dispose of = waste at that site or on those premises.
Waste Facility	means a commercial place, infrastructure, or containment of any kind, including associated structures or infrastructure, where there is sorting, shredding, grinding, crushing, screening, chipping, or baling of general waste.
Waste Generator	A property owner, a household, organisation or business entity, the inhabitants, occupants or employees of which generate waste and includes sorters of waste such as recycling or waste minimisation groups, scrap EFFlers, and buy-back centres.
Waste Manager	means any person who reuses, recycles, recovers, treats, or disposes of waste.
Waste Transporter	means any person who conveys or transfers waste between the waste generator and a waste management facility, or between waste management facilities.
Waste Manifest System	means a system of control documentation, which accompanies a load of waste transported from the point of generation to the waste management facility.

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2.7 ABBREVIATIONS

Table 4: Abbreviations

Abbreviation	Full Caption
ACM	Asbestos Containing Material
ACW	Asbestos-Containing Waste
BPEO	Best Practical Environmental Option
BU	Business Unit, Includes Grids
BUER	Business Unit Environmental Representative
CCP	Coal Combustion Product
DFFE	Department Of Forestry Fisheries and the Environment
DWS	Department Of Water And Sanitation
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ESC	Environmental Steering Committee
GG	Government Gazette
GHG	Greenhouse Gas
GN	Government Notice
GNR	Government Notice Regulation
HCGW	Health Care General Waste
HCRW	Health Care Risk Waste
HCW	Health Care Waste
Ind WMP	Industry Waste Management Plan
ISO	International Organisation For Standardisation
kV	Kilovolts
NEM: WA	National Environment Management: Waste Act (Act 59 of 2008)
NEMA	National Environmental Management Act (Act 107 of 1998), As Amended
NiCd	Nickel Cadmium
NWMS	National Waste Management Strategy
ODS	Ozone-Depleting Substance
OU	Operation Unit
PCB	Polychlorinated Biphenyl
POP	Persistent Organic Pollutants

Abbreviation	Full Caption
PPE	Personal Protective Equipment
SABS	South African Bureau Of Standards
SANS	South African National Standards
SAWIS	South African Waste Information System
SDS	Safety Data Sheet
SEMA	Specific Environmental Management Act
SF_6	Sulphur Hexafluoride
SHE	Safety, Health, and Environment
Tx	Transmission
WCMR	Waste Classification And Management Regulation
WCMS	Waste Classification And Management System
WIS	Waste Information System
WMH	Waste Management Hierarchy
WML	Waste Management Licence
WMP	Waste Management Plan

2.8 ROLES AND RESPONSIBILITIES

It is the responsibility of BU managers to ensure that this plan is implemented within their BUs. Environmental Management System (EMS) roles, responsibilities, and authority are defined, documented, and communicated at relevant functions and levels within Transmission.

3. STATUS QUO

The section aims to assess the Eskom Transmission operation and the associated business processes to understand the current waste management practices, identify shortcomings and propose the best practicable options based on national benchmarking. The 2019-2022 Tx Ind WMP (Rev 4) was used as a baseline against which any problem areas or gaps in waste management practices, process technology, and environmental authorizations have been identified, while the 2023 status quo will be the backdrop against which future performance goals, objectives, targets, and activities will be set.

3.1 APPROACH AND METHODOLOGY

The following approaches were adopted to determine the status quo.

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3.1.1 Desktop Review

The Project Team reviewed work completed in the 2019-2022 Ind WMP and the internal policies, strategies and guidelines. The list below is not exhaustive.

- Health Care Risk Procedure (240-115842952).
- Disposal of Material/Equipment Work Instruction (240-120131666).
- Aspect Impact Registers.
- Waste Inventory.
- Waste Management Standards (32-245).
- Waste Management Plans.
- Tx Environmental Management System (EMS) Manual.
- RT&D Environmental Management System (EMS) Manual.

3.1.2 Site Assessment

A physical inspection of the waste management functions at the sampled BUs was done. Functions assessed included types of waste generated, storage, minimization initiatives, legal compliance, and disposal procedures. This was done as a preliminary step to update the Ind WMP. The visited sites are included in Table 5 below.

Table 5: Sampled Sites

Business / Operating Unit	Sites
Procurement	1. Simmerpan Hum Building Stores
	2. Simmerpan Tele-protection Storeroom
Human Resources	3. Simmerpan Clinic
Engineering	4. Simmerpan
Office of GE	5. Information Technology
Finance	6. Fleet
Asset Management	7. Rotek Tower Testing Station Laboratory
	8. Rosherville ERIC Research and Testing Laboratory – (ICT Lab)
	9. Real Estate
Apollo Centralised Services	10. Aviation Grand Central
	11. Centralised Services DC Laboratory
	12. Apollo Converter Station

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Business / Operating Unit	Sites
Transmission Project Delivery	13. Kusile Lulamisa 400kV Line Construction Site
	14. Project at Hermes Substation
System Operator	15. System Operator Duvha Power Station
	16. Systems Operator Simmerpan
	17. Telecommunication Duvha Power Station
South Grid	18. Makalu Substation
North East Grid	19. Duvha Substation

3.2 STATUS QUO AND GAP ANALYSIS

The current waste management practices were further assessed against the Ind WMP baseline and milestones reached. As such the following Chapters provide a status quo and a gap analysis with a specific focus on the highlights and identified areas of improvement that are prioritised in the implementation plan detailed in Chapter 5. The focus areas include the following:

- Regulatory compliance
- Waste Minimisation and recycling initiatives
- Waste Handling (Storage, Labeling, Collection, and Transportation)
- Waste Information System
- Monitoring and Record Keeping
- Awareness and Training

3.2.1 Regulatory Compliance

This section focuses on regulatory compliance with the statutory requirements to waste generation and management thereof. The 2019 review noted that there was a lack of understanding of the applicable waste-related legislation (national and local). Subsequently, the current review observed that through practice, there is a general understanding of the legislation, notwithstanding the notable room for improvement. Table 6 below is indicative of the permits or authorisations required for waste generation and handling activities. Based on the assessment undertaken, the identified permits have been gauged against Eskom Tx operation to assess if they apply to the operations.

Table 6: Eskom Tx Waste Permitting (Authorisations, Licences, Registrations, etc.)

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Permit Type	Description of Listed Activity	Status
Waste Management Licence	NEM: WA Section 19 (2) Listed Activities	None of the operations triggers listed activities under NEM: WA. The quantities stored[1]/recycled at the different facilities are below the threshold.
Environmental Authorisation	Listed Activities in terms of NEMA	Some operations trigger listed activities under NEMA, as such they have EAs and EMPrs as required. The Management of waste is in line with the EMPr issued to the facilities as well as internal standards.
WUL	National Water Act Section 21 Water Uses	Where applicable Water Use Licences are in place for the triggered water uses. E.g. S21(g) [2] Apollo (reed bed) Pinotage Substation (Septic tanks near the watercourse). Other sites may trigger Section 21 (f) [3]e.g., Simmerpan Discharge of oil-containing effluent into the environment, e.g. oil containing structures.
Effluent Discharge Permit	Effluent Discharge in terms of the applicable Municipal By-Laws	None of the operations reported any form of effluent discharge.
Registration Certificate	Norms and Standards for Storage and Handling of Waste (GN 926)	None of the sites exceeds the threshold that triggers registration, i.e., the storage of more than 80m^3 and 100m^3 of hazardous and general waste respectively.
Waste Classification	Waste Classification Management Regulations (GN R 634)	The hazardous waste generated at Tx falls under substances that have been pre-classified in terms of Regulation 4(2) of WCMR and do not require classification in terms of Regulation 4 (1). The list of pre-classified waste is attached in Appendix I.
Waste Information System (WIS) Registration	National Waste Information Regulation GN R 625	Some Tx operations are registered as hazardous waste generators with the provincial and national Waste Information System.

1 Storage Quantities is 100 m^3 for general and 80 m^3 for hazardous
2 NWA S21(g) Disposing waste in a manner which may detrimentally impact on a water resources.
3 Discharging waste or water containing waste into a water resource

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3.2.2 Waste Minimisation and Recycling Initiatives

Table 7: Waste Minimisation and Recycling Initiatives

Waste Practices	Findings/Observation (2019)	Findings/Observation (2023)	Highlights	Lowlights
PCBs and Asbestos	• The review concluded that there were slight efforts toward overall waste minimisation at Transmissions.	• The Polychlorinated Biphenyl Phase-out Standard (240-8908008) and Requirements for Safe Processing, Handling, Storing, Disposal, and Phase-out of Asbestos (32- 303) are in place. The former has been successfully implemented while the latter is in progress.	PCB phase-out plan was successfully implemented. PCBs were phased out in December 2022, within the set timeframes as per Regulation 4(1) GN R 549 of 2014.	Phasing out of asbestos remains a priority, however, progress has been slow.
Waste Reduction/Minimisation	• Only a few of the grids had set targets, however, no baseline was set. • The implementation plan identified the need to set short-term targets for waste reduction.	• Based on the waste inventories reviewed, most of the waste still goes to landfill which is indicative that the reduction practices are still in the infancy stages. • Transmission operations do not conduct Waste	None identified.	Omission of waste reduction/minimisation strategies within the reviewed operation documents.

Waste Practices	Findings/Observation (2019)	Findings/Observation (2023)	Highlights	Lowlights
		Contractor Audits to qualify and vet their compliance status. • Waste minimisation is not included as an objective in the reviewed Environmental Management Plans.		
Waste Recycling	• Waste recycling is mainly for paper, used oil, fluorescent tubes, and lead-acid batteries. • The recycling of waste is managed by more than one business unit; however, accurate information has not been provided. • Distance from the recycler increases the undesirability of recycling as sites would be required to store more waste to ensure that the	• Waste recycling is mainly for paper, used oil, fluorescent tubes, and lead-acid batteries. • The recycling of waste is managed by more than one Business Unit; however, accurate information has not been provided. • Distance from the recycler increases the undesirability of recycling as sites would be required to store more waste to ensure that the act of	None identified.	No targets are set.

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Waste Practices	Findings/Observation (2019)	Findings/Observation (2023)	Highlights	Lowlights
	act of recycling is financially viable.	recycling is financially viable.		

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3.3 WASTE HANDLING PRACTICES

This section details the status quo in terms of waste handling practices at the different Tx Operations with a specific focus on the following:

- The correct location of the storage areas and the adequacy of storage receptacles.
- Segregation and labelling consistency.
- Collection and transportation.
- Adequate landfilling practices.

Table 8: Waste Handling Practices

Waste Management Practice	Findings/Observation (2019)	Findings/Observation (2023)	Highlights	Lowlights
Storage Areas and Receptacles	• Not all sites have suitably built designated waste storage areas and the receptacles are susceptible to weather. • Not all waste sites have an impermeable and chemical-resistant floor surface for hazardous waste storage.	• Properly demarcated waste storage facilities with controlled access were noted at most operations. • The waste receptacles are provided at all Operations. Depending on the quantities expected facilities have provided wheelie bins while other sites have waste skips. • Waste such as batteries, e-waste, and fluorescent light bulbs is kept indoors awaiting collection. Waste such as old furniture is also segregated and stored under-roof at demarcated locations within the facilities. • Health Care Risk Waste from the clinic at Simmerpan was also stored in a labelled and sealed container. • It was noted that Health Care Risk Waste generated during Covid is	• A notable improvement in the storage receptacles and storage facilities. • Odourless storage areas. • Good housekeeping.	• Sites not observing the storage timeframes for waste identified as highly toxic, e.g. the storage of medical waste for more than 180 days from the time of generation. • Burning and dumping of waste on Eskom servitudes. • Non-compliance with Section 6 (4) of the WCMR.

Waste Management Practice	Findings/Observation (2019)	Findings/Observation (2023)	Highlights	Lowlights
		still awaiting collection and i.e. over 2 years.		
Segregation and Labelling	• Each waste service provider uses their own markings or colour coding system, which may further confuse the staff.	• Segregation of waste is practiced at the various sites with most sites having separated hazardous and general waste storage areas. • Sites have tried to ensure that hazardous waste is in covered bins and labelled as such. However, the labelling and colour coding system is still not uniform across the operations.	• The neat labelling and colour coding of waste receptacles at the Simmerpan, Apollo, and Duvha battery rooms.	• Inconsistency of labelling and colour coding of receptacles which is a misalignment with best practices. • Mixing of the different waste streams.
Collection and Transportation	• Nothing was noted in 2019.	• Tx has fully contracted the waste management services to competent Waste Service Providers. The appointed Contractors are fully responsible for ensuring that the different waste streams are properly handled and disposed of in line with the requirements of the	• Registered and competent Waste Service Providers are used.	• Cradle to grave approach is not wholly embraced. • Delayed or non-receipts of waste manifest resulting in inaccurate waste accounting. • Non-adherence to Section 244 of NEM: WA

[4] Collection of Waste (NEM:WA Section 24) and Transportation of Waste (NEM:WA Section 25)

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Waste Management Practice	Findings/Observation (2019)	Findings/Observation (2023)	Highlights	Lowlights
		legislation. Eskom must note that Cradle to grave principle requires that a generator be responsible for its waste from generation to ultimate disposal. Nothing will relinquish a generator of this responsibility and hiring someone else to transport and dispose of your waste does not transfer responsibility. • No confirmation was provided that contractor audits are undertaken as required. • The collection of waste is not as frequent because of the remoteness of the sites and the quantities of waste generated.		
Disposal	• Nothing was noted in 2019	• The submitted inventories indicate that waste management is largely centered on disposal to landfills with registered service providers being contracted to collect,	• Registered Service Providers are appointed and proof of adequate disposal of hazardous waste is provided.	• No evidence of adequate disposal where landfills do not have weighbridges.

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Waste Management Practice	Findings/Observation (2019)	Findings/Observation (2023)	Highlights	Lowlights
		transport, and dispose of waste at approved landfills. • Waste Manifests are submitted for the disposal of hazardous waste however proof of adequate disposal is not submitted where landfills do not have weighbridges.		
Sewage Handling	N/A	• The transportation of mobile toilets during construction activities in remote and mountainous areas is a challenge and this has resulted in poor management and thus contraventions.	N/A	N/A

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3.4 AWARENESS AND TRAINING

Table 9: Waste Awareness and Training

	Findings/Observation (2019)	Findings/Observation (2023)	Highlight	Lowlight
Training	• Ongoing education on the importance of waste minimisation should be conducted throughout the year.	• A training matrix that includes waste management is in place. • Ongoing training is conducted, however, there is still a need to focus the training on the importance of waste minimisation should be conducted throughout the year.	• Not applicable	• The focus must be on areas where misalignment or misunderstanding is identified e.g., Waste reduction and minimisation, distinction between aspects and impacts, etc.

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3.5 WASTE MONITORING AND RECORD KEEPING

The Tx divisions' waste streams generated and the waste management strategies implemented are indicated in **Appendix B**. Reference is also made to the WMS for the management and handling of the different waste streams.

Table 10: Waste Information System

Waste Management	Findings/Observation (2019)	Findings/Observation (2023)	Highlight	Lowlight
Waste Information System	• Waste management accounting was found to be inaccurate.	• The assessment revealed that sites have proof of adequate disposal for both general and hazardous waste, although there is no central storage location for the records. • The WIS is in place, however, it is still a work in progress. • The Waste Manifest System as required is not adequate or standardised across operations.	• Voluntary SAWIS registration despite the sites not exceeding the threshold as per the compliance letter received from DFFE dated 29 November 2013.	• Waste inventory is not inclusive of all the waste streams. • Unavailability of manifest in some instances.

3.6 SWOT Analysis

Considering the level of achievement of the various measures indicated above, a SWOT analysis technique was implemented, to identify the overall strength and weaknesses of waste management within the Transmission Division and its associated Business Units.

Table 11: Comprehensive SWOT analysis for waste management at Eskom Tx

STRENGTHS	WEAKNESSES
• The Ind WMP is in place • Alignment with Regulatory requirements • Competent resources available at each BU • Operational Controls relating to waste are in place (e.g., Method Statements and Aspect Impact Registers, Procedures) • Environmental Management Systems Implementation • Monitoring and Reporting • Waste Handling • Tx operations are aware of the need to phase out PCBs and asbestos and their risks	• Lack of waste minimisation and recycling initiatives • Non-compliance with the timeframes for storage of hazardous waste • Lack of understanding of the waste regulatory universe • Lack of Supervision • Inconsistent labelling and coding of waste receptacles • A poor distinction of activities, aspects, and impacts • Delayed implementation • Inaccurate waste accounting • Incorrect or insufficient information provided by the transporter, contractor, and generator • Inconsistent monitoring and reporting templates (i.e., Aspect Impact Registers) • Low quantity of recyclable and compostable products available to consumers • Poor or lack of proper waste storage areas (e.g., not all sites have suitably built designated waste storage areas and the receptacles are not weatherproof. • Delayed issuance of evidence of waste disposal. • Inefficient waste handling procedures. • Inadequacy of the waste inventory
OPPORTUNITIES	**THREATS**
• Awareness and training • Research new technologies • Opportunities for reduction through changes in packaging and processes • Circular economy (resource reuse) • Negotiating with authorities • Engage the responsible authority for amendment • Detailed RACI-Matrix • Eskom Tx must register as a waste transporter • Factoring in waste management costs in new projects.	• Climate Change (harsh weather conditions) • Change in the regulatory universe could be a threat to certain existing product categories • High staff turnover • Improper handling of hazardous waste (e.g., batteries, hydrocarbons) • Impractical targets • Inadequate Accounting • Risk of the longer storage period of waste on site • Long distance between the waste generation and waste management facility.

• Awareness and Training on aspect and impact registers • Implement a Waste Information System • Appraisal of all personnel on WIS • Development of standardised templates and appraisal on the use of the templates across the BUs • Appointment of registered, competent, and well-vetted waste management service providers. • Recycling and composting on site • Audit of Registered Service Providers	• Health risks due to asbestos • Noncompliance with legislative and regulatory requirements.

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4. BEST PRACTICES

This section of the Plan indicates the Best Practices of the themes discussed in the previous section with a focus on national guidelines and practices. It is noted that waste management strategies implemented in developed nations might not necessarily be the best for developing countries due to the economic environment and country-specific peculiarities. The following documents together with other relevant references have been consulted in identifying the Best Practices for the waste generated and handled by Tx Operations:

i. Eskom Waste Management Standard (32-245).
ii. National Waste Management Strategy, 2020.
iii. Circular Economy Guideline for Waste.
iv. Various waste-related legislation and regulations.

4.1 WASTE MINIMIZATION AND RECYCLING INITIATIVES

The Waste Hierarchy ranks waste management options according to what is best for the environment. Waste prevention is the top priority in waste management. When waste is created, it gives priority to reuse, recycling, recovery, and lastly disposal (e.g. landfill). The WMH replaces the traditional waste management approach of “the three Rs” (reduce, reuse and recycle), expanding it into a five-step process where the most preferred is waste minimisation.

The use of the waste management hierarchy came alongside the emergence of life cycle thinking in waste management policy, which looks at the totality of a product or service’s environmental impact — from raw material extraction, processing, and manufacturing to distribution, usage, and disposal. In terms of the National Waste Management Strategy (NWMS), 2020, the two (2) strategic entry points of the waste sector into waste minimisation and the circular economy is waste prevention and waste as a resource, and these are described in the Figure and Table below. The concept of the circular economy is a useful way of understanding the implementation of the waste management hierarchy in terms of its contribution to the green economy and other measures of Extended Producer Responsibility (EPR).

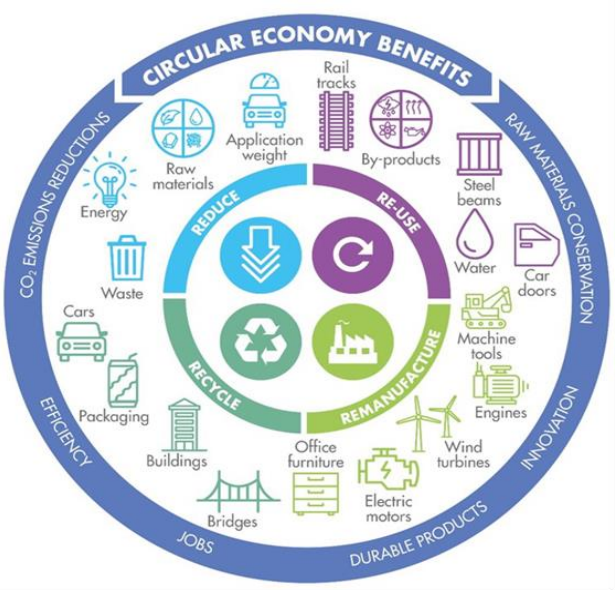

Figure 1: Circular economy (Circular Economy Guideline for the Waste Sector— A Driving force towards Sustainable Consumption and Production, 2020)

Furthermore, Figure 3 below provides waste minimisation approaches that are further detailed in the table below.

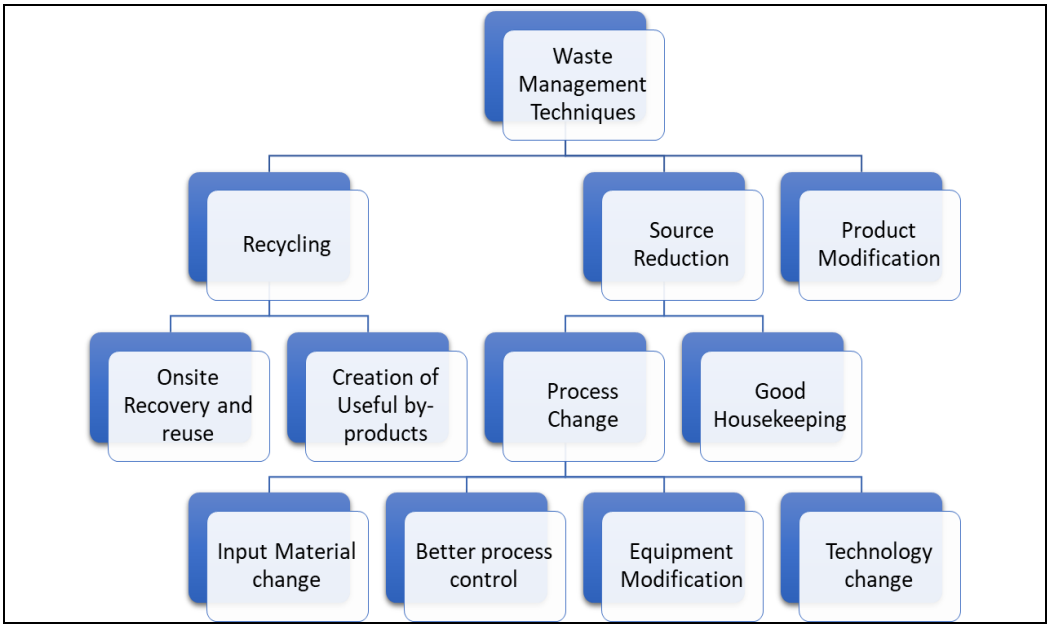

Figure 2: Waste Management Techniques (Waste Minimisation and Resource Conservation: Bureau of Energy Efficiency (2023)

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Table 12: Waste Minimisation and Recycling Best Practices

STRATEGY	DESCRIPTION
Data Analysis	Waste minimisation is characterised as the reduction of waste from sources and the reuse of waste through recycling. The goal is to reduce the volume of waste going to facilities for energy recovery, treatment, and disposal. Thus, treatment procedures that change the physical, chemical, or biological makeup of waste are not included in waste minimisation. Making processes more efficient and reducing inputs are the best ways to reduce waste outputs and this is often referred to as cleaner production. Examples of waste minimisation strategies are given below. **Regulations** In South Africa, regulations relating to the phasing out of substances deemed to be of high concern have been published. These include the Phasing out of the use of Polychlorinated Biphenyls (PCB) materials and PCBs contaminated materials by end of 2023. As a result, all businesses must monitor the chemicals used in their raw materials/ products and take steps to systematically phase out those that are hazardous. **Data Analysis** Data analysis of waste generated can provide useful information that can assist in identifying areas where reductions can be made on the purchase, production, and use of materials that cannot be reused or recycled. This will assist in implementing effective waste reduction strategies.
Waste as a Resource	Recycling involves the reprocessing or transformation of waste materials into other forms. When waste is recycled or treated, it becomes a valuable resource rather than waste. Paper waste can be transformed into new paper products that can be used for different purposes, whilst metal waste and glasses can be melted and transformed into other useful metal and glass products; plastic (PET or HDPE) bottles can be transformed into plastic ropes or coating rubbers for electric wires. Benefits of the circular economy include: • Reducing greenhouse gas emissions that contribute to climate change; • Preventing releases of air and water pollutants; • Saving energy; • Supplying valuable raw materials to industry; • Creating jobs;

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STRATEGY	DESCRIPTION
	• Stimulating the development of greener technologies; • Conserving resources for our children's future; and • Reducing the need for new landfills

4.1.1 Applicability to Tx Operations

The phasing out of PCBs by the Tx Division has been completed, whilst the responsibility of phasing out asbestos lies with Occupational Hygiene and Safety, a fraternity of the division but the responsibility for disposal lies with the Environment Department. The inventories availed for the period 2019 to date, have shown that waste management is largely centered on disposal to landfills. There is a need for operations to practice/ implement waste recycling initiatives and measures indicated in the WMS (32-245). Goals for ensuring that minimisation initiatives are implemented are indicated in Chapter 5 of this Plan. Examples of minimisation initiatives include:

Table 13: Proposed Waste Minimisation Practices

Operational Areas	Proposed Initiatives
Procurement	1) Project-based waste recovery targets to be included in contracts. 2) Ensure that EPR is a standard in supplier contracts. 3) Purchasing preference must be given to recyclables.
Projects	4) The compilation of site-specific Method Statements must include the following: a. Detail the material and waste that will be generated to ensure that the waste storage facility provided are adequate for each phase of the development. b. how contractors will reuse and recycle material to reduce the amount of waste going to landfill. c. targets for the duration of the contract and periodic reports d. Projects must have a detailed waste inventory 5) Avoid the creation of waste by carrying out works in the correct order to minimise the need for remedial actions. 6) Efficient project schedule e.g. plan deliveries in line with the schedule to avoid material storage on sites for longer, thus reducing damage. 7) Continuous awareness of housekeeping to avoid undue spillages and damage the to material.
Admin/Offices	8) Encourage electronic communication to minimise the use of paper, cartridges

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Operational Areas	Proposed Initiatives
	9) Electronics to be used to the end of its product life 10) Discourage the use of disposable water bottles and coffee cups 11) Reduce food waste e.g., canteens
Research	12) Research on industrial symbiosis [5]and identify waste that can be beneficial to other companies e.g. waste scrap, waste oil, packaging, and wooden pallets. Most provinces have set up those platforms under the Industrial Symbiosis Program (ISP). More information is to be obtained from CSIR.

4.2 WASTE HANDLING

4.2.1 Waste Storage, Collection, Transportation, and Disposal

Part 5 of NEM: WA sets out provisions for the storage, collection, and transportation of waste. The general requirements for the storage of waste are that "*any person who stores waste must at least take steps to ensure that the containers where waste is stored are intact and not corroded and are fit for the storage of waste*". Adequate measures must be taken to prevent:

- Accidental spillage or leaking.
- Waste from blowing away.
- Nuisances such as foul odour; visual impact and breeding of vectors.
- The pollution of the environment and harm to health.

Most Tx operations do not require registration as waste quantities stored are below the threshold, however, the conditions indicated in the Eskom Waste Standard (32-245) should be practiced as they ensure negligible to minimal environmental impact. In addition, it is Transmission's duty in terms of the NEMA and NEM: WA to ensure the safe disposal of all waste generated by its operations. It is therefore recommended that the BU Manager and Environmental Representative ensure that they can prove that the appointed contractors used to transport waste are registered on SAWIS/ Provincial WIS and that the contractors adhere to the Regulations.

The table below indicates the Best Practices in terms of waste handling.

[5] Industrial symbiosis is a resource efficiency approach were unused or residual resources of one company are used by another, thus reducing waste to landfill and greenhouse gas emissions.

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Table 14: Waste Handling Best Practices

DESCRIPTION	BEST PRACTICE
Storage	1. A facility that can store more than 80m3 of hazardous waste and/or 100m3 of general waste should be registered under Government Notice 926 of 2013. 2. Government Notice 926 of 2013 indicates: • Registration requirements for a waste storage facility (if thresholds are exceeded). • General requirements for Waste Storage Containers. • Minimum requirements for above-ground storage facilities • Minimum requirements for underground storage facilities • Monitoring and Inspection • Auditing • Record keeping. • HCRW storage areas shall be demarcated for the storage of HCRW and shall be marked "Health care risk waste storage area". As such, storage practices must be in line with the Norms and Standards for storage (GN 926) Regulation 10 which provides detail on the requirements for waste storage containers. 3. The timeframes for the storage and management of waste are as follows: • Temporary storage is 90 days • Storage of waste is 18 months • Indefinite storage is disposal to landfill
Segregation and Labelling	4. Segregation of waste should be done to minimise the cross-contamination of waste 5. Eskom Transmission must have a standardised documented labelling or colour coding system to designate different types of waste. An example of general solid waste bin colour coding is provided below.

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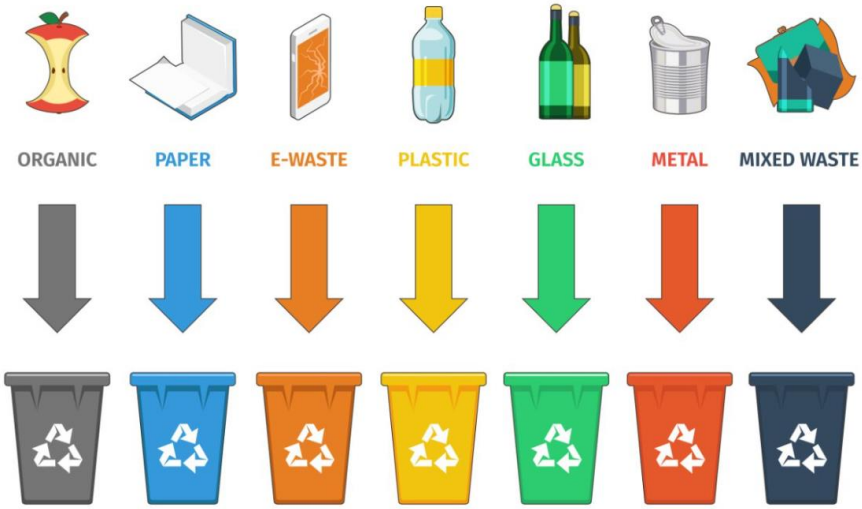
DESCRIPTION	BEST PRACTICE
	
Collection and Transportation	1. Section 24 of NEM: WA indicates that no person may collect waste for removal from premises unless such person is- a. a municipality or municipal service provider; b. authorised by law to collect that waste, where authorisation is required; or c. not prohibited from collecting that waste. 2. Eskom Transmission must ensure that waste collection at all sites is in line with Section 24. 3. The transporter is required to have full details regarding the waste that they are carrying. This will ensure that waste is disposed of at the correct landfill. 4. The waste generator is also responsible for ensuring that the waste and waste transportation methods meet the National or Provincial Department of Roads and Transportation requirements. This means waste must be properly labeled, stored in appropriate containers, and sealed to prevent leaks and contamination. 5. Based on the current challenges experienced by business units in terms of the prolonged storage of waste, Transmission should assess the viability of registering as waste transporters.
Disposal	6. NEM: WA prohibits the unauthorised disposal of waste and the National Norms and Standards for Disposal of Waste to Landfill, Government Notice R 636, indicates the different classes of landfills where specific waste can be disposed of.

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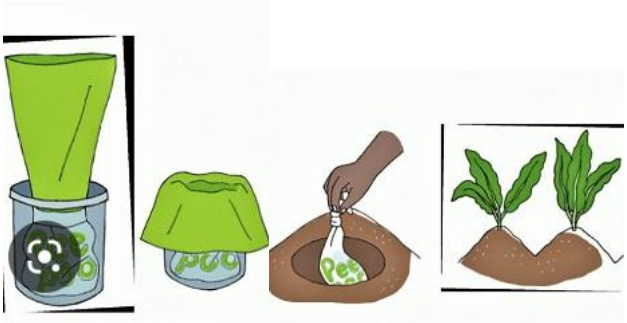
DESCRIPTION	BEST PRACTICE
	7. Contractors who transport waste to landfills must submit proof of disposal, however, where a landfill does not have a weighbridge, transmittals must be used, or dated photographs time-stamped photos) taken at the point of disposal must be submitted.
Storage Facility	8. The Norms and Standards for storage (GN 926) provides detail on the requirements for waste storage facilities, hence the need to include the specification in the waste management contract.
Sewage Handling	9. Introduce biodegradable bags for Eskom employees and contractors in remote and mountainous areas were transporting mobile chemical toilets prove to be a challenge to get them to site. Business to consider the usage of peepoo bags as an example. The usage of bio gradable bags is illustrated below. 

4.3 WASTE CLASSIFICATION

The WCMR was developed to replace the Minimum Requirements for the Handling and Disposal of Waste. Shortcomings in the Minimum Requirements saw the disposal of waste to landfills being the major waste management option used by waste generators in South Africa. The regulations on Waste Classification and Management aim to provide mechanisms

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that could implement the waste hierarchy to move away from landfill to treatment, reuse and recovery, and to put measures in place to monitor this progress. Amongst others, the Waste Classification and Management Regulations are meant to:

- Enable the improved and more efficient classification and management of hazardous waste.
- Provide for safe and appropriate handling, storage, reuse, recycling, recovery, treatment and disposal of waste.
- Enable accurate and relevant reporting on waste generation and management.

The minimal quantities of hazardous waste generated and the remoteness of some of Tx operations have resulted in waste being stored for more than the specified timeframes which contravenes the requirements as stated in the WCMR. The regular collection and transportation of small amounts of waste are not sustainable, hence there is a need for the BU manager to consult with the Competent Authority regarding compliance with the specified timeframes as per Regulation 6(4) of WMCR, 2013.

To achieve best practice the following regulations must be followed:

1. Regulation 4 (2) of WCMR indicates that waste must be classified in accordance with SANS 10234 within 180 days of generation.
2. Regulation 4(4) indicates that waste must be reclassified in terms of Regulation 4(2) every 5 years or within 30 days of modification to the process or activity that generated the waste, changes in raw material or other inputs, or any other variation of relevant factors.
3. Regulation 4(5) indicates that waste that has been subjected to any form of treatment must be reclassified in terms of sub-regulation 2 including any waste from the treatment process.

In light of the above, all unknown waste should be classified whilst hazardous waste that has been diluted /changed chemical composition must be reclassified. Transmission must ensure that laboratories used for waste analysis are SANS accredited and safety data sheet is in accordance with Regulation 5. Appendix O of the Eskom Waste Management Standards (32-345) provide an overview of the waste classification process. See attached Appendix I for waste that does not need classification.

4.4 Waste Manifest

The Waste Manifest (WM) is a basic document used to facilitate the waste information system. The WM provides information about the waste and its origin, transport, and destination, and establishes joint responsibility between the generator, transporter and receptor, including the final destination of the waste. The table below indicates the information that is required from all role players.

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Table 15:Information Requirements for waste management role players

Information to be Supplied by the Waste Contractor	Information to be Supplied by the Waste Transporter	Information to be supplied by the Waste Manager
• Unique consignment identification number (bar code); • Generator's contact details (contact person, physical & postal address, phone (landline &/or cell phone), fax, email); • Physical address of the site where the waste was generated (if different); • Emergency contact number; • Origin/source of the waste (process/activity); • Description of the waste (waste classification and waste category; waste risk profile if relevant for disposal); • Chemical composition of the waste; • Physical nature/consistency of the waste (liquid, solid, sludge; pumpable, non-pumpable); • Quantity of waste; • Packaging (bulk, small containers, tank); • Transport type (tanker, truck, container); • Special handling instructions; • Date of collection/dispatch;	• Name of transporter; • Address of transporter; • Vehicle registration number; • Transport permit number; • Safe disposal certificates; and • Declaration acknowledging receipt of the waste.	• Name, address, and contact details; • Receiving waste management facility name, address and contact details (where different); • Waste management facility licence number and issuing authority; • Date of receipt; • Quantity of waste received, recycled, and disposed of; • Waste management options applied (re-use, recycling, recovery, treatment, disposal); • Any discrepancies in information (related to waste quantity, type, classification, physical and chemical properties); Waste management reporting description and code in terms of the Draft National Waste Information Regulations, 2010. • Details, including quantity, on any waste diverted to another waste management facility, and details of the facility.

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Information to be Supplied by the Waste Contractor	Information to be Supplied by the Waste Transporter	Information to be supplied by the Waste Manager
• Intended receiver (facility/waste manager); • Declaration (the content of the consignment is fully and accurately described, classified, packed, marked, and labelled, and in all respects in proper condition for transportation per the applicable laws and regulations).		• Certification and declaration of receipt and final management of the waste.

4.5 WASTE MANAGEMENT INFORMATION SYSTEM

According to CSIR, the South African Waste Information System (SAWIS) gave researchers the chance to investigate if gathering data for a national waste information system alters how waste is managed through a process of learning. It was noted that private corporations were successful in gathering statistics on waste as obligations related to environmental reporting and business sustainability were considered the driving forces behind the data collection. The National and Provincial WIS requires the registration of hazardous waste generators, however, the waste information system that has been developed for Tx operations requires the recording of all waste generated and the management process utilised. It has also been noted that a successful Waste Information System is dependent on competent resources. The table below indicates the best practices.

Table 16: Waste Management Information System Best Practice

Description	Best Practices
SAWIS Registration	In terms of Regulation 5 and Annexure 1 of the Waste Information Regulations, GNR 634 in GG 36784 of 23 August 2013, anyone who conducts the following activities is required to register on the National or Provincial WIS (List is not exhaustive): • Generation of more than 20kg of hazardous waste per day. • Recycling of general waste at a facility that has an operational area of more than 500m^2. • Recycling of hazardous waste (more than 500kg per day) calculated as a monthly average.

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Description	Best Practices
Waste Inventory	Chapter 5 GNR 634, 2013, indicates that hazardous waste generators must keep the following records for five (5) years: i. the classification of the waste. ii. the quantity of each waste generated, expressed in tons or cubic meters per month. iii. the quantities of each waste that has either been re-used, recycled, recovered, treated, or disposed of. iv. by whom the waste was managed.

4.5.1 Roles and Responsibilities

To operate with utmost care of the environment effectively and efficiently within Tx operation, all parties must understand their duties and responsibilities throughout all phases of the project lifecycle. The duly appointed employees are fully responsible for all activities taking place and ensuring that they are undertaken in compliance with the requirements of the Ind WMP, legislation as well as best practices. The following sections describe the roles and responsibilities of the key team members.

Tx must ensure that all activities comply with the requirements of all authorisations and permits, and obligations emanating from other relevant legislation throughout the project lifecycle, and this would include the following:

- Ensuring that all personnel is aware of their roles and responsibilities.
- Taking overall responsibility for all activities within the operation; and
- Ensuring that all commitments/conditions attached to authorisations, permits, and licenses are communicated and adhered to by waste management officers, including third parties.

Tx must employ the RACI matrix as roles and responsibility assignment chart that maps out tasks, milestones, or key decisions involved in waste management within the operation. The RACI indicates who is responsible for implementation, who is accountable, and, where appropriate, who needs to be consulted and/or informed. The acronym RACI stands for the four roles that stakeholders might play in any plan as indicated below.

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Table 17: RACI Matrix

R	Responsible	Who is assigned to work on the task
A	Accountable	Who has the authority to take a decision?
C	Consulted	Anyone who can tell more about the task. Any stakeholders already identified
I	Informed	Anyone whose work depends on this task. Who has to be kept updated about the progress

The RACI must be prepared in line with the Eskom Transmission Waste Management process, and it must appropriately apportion accountability to the nominated person or team. The BU- specific RACI for the implementation plan must be developed within 0-3 months of approval of the Ind WMP.

4.6 Training and Awareness

It takes committed employees who are knowledgeable about the approach to successfully implement a waste management plan. To achieve this, it is necessary to create an awareness-raising campaign for waste minimisation and management that targets all Transmission employees. The significance of waste minimisation or reduction and useful techniques for doing so should be the main points of discussion and it is also crucial to have communication training as the implementation of the waste management strategy will require a variety of types of coordination and cooperation.

Interviews undertaken at the sampled sites have indicated that training is done, and a training skills matrix has been developed. A gap was however noted concerning the understanding of legislation and regulatory compliance. The following is therefore recommended for implementation:

- Development of human capacity on effective recycling technologies.
- Improvement of suitable structure, practical awareness, and know-how.

4.7 Monitoring and Reporting

Waste generators/ operating units must submit monitoring reports on the management of waste to the BU Manager who may at any time, require such information. A uniform and appropriate mechanism and indicators must be established by the waste generators in co-operation with BU Manager and Environmental Representative, to monitor implementation and to support the reporting of accurate data into the WIMS, as received from all operating units throughout the Tx division on waste generated, recovered, recycled, treated, or disposed of.

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5. IMPLEMENTATION PLAN

The following section presents an implementation plan to assist Tx operations in meeting the objectives and targets identified. Table 18 below outlines the implementation plan.

Table 18: 5-Year Implementation Plan

Objective No.	Goal	Objectives	Measures	Monitoring Criteria	Targets	Responsible Person
A. REGULATORY COMPLIANCE						
A.1	• Regulatory compliance	• To ensure compliance at all levels of operations.	• Ensure that all employees are knowledgeable on waste-related legislation through regular regulatory updates and awareness. • Monitor changes in legislation to ensure compliance. To ensure compliance with the South African statutory waste-related requirements all operations must be screened annually to ascertain compliance.	• Knowledgeable resources. • No deviations from regulatory requirements.	Ongoing	BU Environmental Representative

Objective No.	Goal	Objectives	Measures	Monitoring Criteria	Targets	Responsible Person
B. WASTE MINIMISATION AND RECYCLING INITIATIVES						
B.1	• Promote waste minimisation and recycling.	• To reduce the amount of waste that goes to landfill	• Implement the best practicable initiatives proposed in Section 4. • Review progress and set new objectives and targets for the initiatives, annually as per Appendix D. • Monitor amounts, types, and sources of solid waste going to landfills from each area quarterly, implementing changes to work practice where necessary to achieve the reductions. • Develop procurement procedures that encourage waste minimisation in contracts. • Continuous training and awareness raising on waste minimisation practices.	• Reduced waste to landfill • Behavioral change	1-2 years	Office of Group Executive.
		• To actively participate in the circular	• Identify process input and outputs for each Business Unit to identify material that can be	• Cost saving • Reduced waste to landfill	1-2 years	Office of Group Executive Transmission BU

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Objective No.	Goal	Objectives	Measures	Monitoring Criteria	Targets	Responsible Person
		economy through industrial symbiosis.	reused and recycled internally and externally (industrial symbiosis). • Identify companies/organisations to partner with.	• Skills Development		
C. WASTE HANDLING						
C.1	• Effective management of waste to prevent environmental degradation.	• To align waste handling (storage, collection, and transportation) practices with the statutory requirements and best practices.	• Undertake a detailed site assessment to verify the adequacy of waste storage facilities and receptacles. • All Business Units must have waste storage facilities that align with the national norms and standards in terms of waste storage. • To comply with storage timeframes, Transmission must assess the viability of being registered waste transporters. • Transmission should consult the Competent Authority to establish the possibility of being exempted	• No Legal Contravention. • Authority Consent/Agreement • Transmission Waste Transporter Registration • Annual progress reports	0-4 years.	BU Environmental Representative.

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Objective No.	Goal	Objectives	Measures	Monitoring Criteria	Targets	Responsible Person
			from complying with the timeframes for hazardous waste.			
C.2		• To ensure waste separation at source is done across Transmission.	• Development of awareness-raising material with specific focus on waste separation. • Provide adequate waste receptacles. • Develop and implement a waste receptacle standard in line with best practices to be used across Transmission.	• Increased recyclables. • Reduced waste to landfill • All operations have uniformly labelled /color-coded receptacles.	0 -1 year.	BU Management.
C.3		• To embrace and entrench the cradle-to-grave principle and duty of care for all waste going to landfills	• Registered Waste Service Provider must be audited biannually to ensure compliance with all statutory requirements and Tx Standards. The Registered Waste Service Provider must provide Tx with the assurance that the disposal sites are registered.	• Audit Report. • No Contravention	Ongoing.	BU Management.

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Objective No.	Goal	Objectives	Measures	Monitoring Criteria	Targets	Responsible Person
C.4		• Sensitise communities on the risk of illegal dumping on Eskom servitudes.	• Waste awareness campaigns biannually to discourage communities from illegal dumping and improve waste practices.	• Reduced encroachment and illegal dumping. • Change in mindset.	Ongoing	BU Management BU Environmental Representative.
D. WASTE MANAGEMENT INFORMATION SYSTEM						
D1	Waste Accounting	• To account for all waste in the Transmission Operational Cycle and set meaningful targets.	• Review and update waste inventories to include any operational changes annually. • Training on the use of the waste online reporting across Transmission by end of the financial year (2023/2024) • Registered sites on SAWIS must update the information as required. • Waste Information from the responsible parties must be in line with Table 15 above.	• Comprehensive inventories, inclusive of all waste streams. • Waste Balance[6]	Ongoing	BU Environmental Representative.

[6] Waste balance is the inventory of all waste produced or recovered during a certain time period classified by type and quantity.

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6. FINANCIAL PROVISIONS

Transmission must provide budgets for the implementation of the waste management plan.

7. MONITORING AND REVIEW OF THE IND WMP

Monitoring and evaluation of the Ind WMP should be undertaken. The Ind WMP should be a living document, with the review process being an ongoing activity. The plan must therefore be reviewed and revised periodically whenever new information on waste management practices, standards, legislation, etc, or if any changes must be made to the plan. The plan should be reviewed on a five (5) yearly basis. Monitoring and review schedule templates are attached in Appendix D.

APPENDIX A: APPLICABLE LEGISLATION

Legislation/Guideline/Treaties	Main Objective
INTERNATIONAL	
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	The Basel Convention addresses the need to control the transboundary movement of hazardous waste and its disposal, setting out the categorization of hazardous waste and the policies between member countries.
The Bamako Convention	The Bamako is a treaty of African nations prohibiting the import of any hazardous (including radioactive) waste into Africa. It is a response to Article 11 of the Basel convention which encourages parties to enter into bilateral, multilateral, and regional agreements on Hazardous Waste to help achieve the objectives of the convention.
Rio Earth Summit 1992 and Agenda 21	Advocates the following four major waste-related programs: • Minimising waste. • Maximising environmentally sound waste reuse and recycling. • Promoting environmentally sound waste disposal and treatment. • Extending waste service coverage.
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	The convention promotes and enforces transparency in the importation of hazardous chemicals. It helps Parties to protect themselves against unwanted imports of hazardous chemicals.
Stockholm Convention on Persistent Organic Pollutants	Requires that member countries phase out Persistent Organic Pollutants and prevent their import or export.
Montreal Protocol	Phases out the production of certain substances and so protects the ozone layer.
UNFCCC Framework Convention on Climate Change (1992)	Stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference by managing waste.
Paris Agreement (2015)	To strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. It aims to end climate financing for waste incineration.

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Legislation/Guideline/Treaties	Relevance to Waste Management	Regulations, Norms, and Standards relevant to Waste Management
NATIONAL		
South African Constitution (Act 108 of 1996)	**Section 24:** deals with the environment and enshrines the rights of all individuals to an environment that is not harmful to their health or well-being. **Section 24(b)** requires that the environment is protected through reasonable legislation and other measures that inter alia prevent pollution and ecological degradation and that secure ecologically sustainable development. Waste management practices have the potential to cause pollution and adversely impact human health.	
National Environmental Management: Act 1998, (Act No. 107 of 1998), as amended	NEMA prescribes the over-arching environmental legal framework within which inter alia industry, waste managers, and all spheres of government in South Africa operate. NEMA introduced several guiding principles such as: • A life-cycle approach to waste management. • Producer responsibility. • Precautionary principle • Polluter pays principle, as well as ''duty of care.''	Environmental Impact Assessment Regulations, and Associated Listing Notices of December 2014 as amended in 2017 and 2021

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Legislation/Guideline/Treaties	Relevance to Waste Management	Regulations, Norms, and Standards relevant to Waste Management
	• Sustainable Development.	
National Environmental Management: Waste Act (NEM: WA) Act 59 of 2008 (as amended)	The Act serves to regulate waste management to protect human health and the environment. This is managed by providing reasonable measures for the prevention of pollution and ecological degradation. NEM: WA aims to secure ecologically sustainable development while promoting justifiable economic and social development and achieves this by placing minimum requirements on activities producing or handling waste. The 'handling' of waste includes the storage, transportation, and processing (treatment, re-use, or recycling) of waste. NEM: WA aims to provide: • National Norms and Standards for regulating the management of waste by all spheres of government; • Specific waste management measures; and • For the licensing and control of waste management activities.	• National Waste Information Regulations, GNR 625 of 2012 as amended. • List of waste management activities that have, or are likely to have, a detrimental effect on the environment, Government Notice 921 of 2013 as amended. • Waste Classification and Management Regulations, GNR 634 of 2013 • National Norms and Standards for the Assessment of Waste for Landfill Disposal, GNR 635 of 2013 • National Norms and Standards for the Disposal of Waste to Landfill, GNR 636 of 2013 • National Norms and Standards for the Storage of Waste, GNR 926 of 2013. • National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening, Chipping or Baling of General Waste, GN R 1096, 11 October 2017. • Regulations regarding the exclusion of a waste stream or a portion of a waste stream

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Legislation/Guideline/Treaties	Relevance to Waste Management	Regulations, Norms, and Standards relevant to Waste Management
		from the definition of waste (G 41777 GoN 715). • Regulations regarding extended producer responsibility (G 43879 GoN 1184) of 2020. • Extended producer responsibility scheme for the electrical and electronic equipment sector (G 43880 GoN 1185) of 2020. • National Norms and Standards for the treatment of organic waste, GN 1984 of 2022.
National Water Act (Act 36 of 1998)	Section 19(1) of the NWA places a pollution prevention duty on landowners, persons in control, users or occupiers of land to take all reasonable measures to prevent water pollution from occurring, continuing, or recurring. Waste activities will therefore be subject to this provision.	• Section 21 (f) • Section 21 (g)
National Environmental Management: Air Quality Act, NEM: AQA (Act No. 39 of 2004)	Certain waste-related activities, such as waste incineration are subject to various licensing provisions.	• National Greenhouse Gas Emission Reporting Regulations • Government Notice R 549 on the 10th of July 2014, "Proposed Regulation to Phaseout the use of Polychlorinated Biphenyls

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Legislation/Guideline/Treaties	Relevance to Waste Management	Regulations, Norms, and Standards relevant to Waste Management
		(PCB) Materials and Polychlorinated Biphenyl Contaminated Materials"
Hazardous Substances Act (Act 5 of 1973)	The Hazardous Substances Act provides for- *The control of substances, which may cause injury or ill-health to or death of human beings because of their toxic, corrosive, irritant, strongly sensitising or flammable nature or the generation of pressure thereby …' and for '…prohibition and control of importation, manufacture, sale, use…. disposal or dumping of such substances or products.*	
Environment Conservation Act (Act 73 of 1989)	The Environment Conservation Act (ECA) is historically the main Act that governs waste disposal in South Africa. Although many sections of the ECA have been repealed, those dealing with waste are still in effect. Section 19 provides for the general prohibition against littering and illegal dumping.	
Occupational Health and Safety Act (Act 85 of 1993)	The Occupational Health and Safety Act (OHSA) provides for the health and safety of persons at work and the protection of persons other than persons at work against hazards to health and safety arising out of, or in	• Hazardous Chemical Substances Regulations • The Asbestos Regulations • The Lead Regulations • The Hazardous Biological Agents Regulations

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Legislation/Guideline/Treaties	Relevance to Waste Management	Regulations, Norms, and Standards relevant to Waste Management
	connection with, the activities of persons at work. It places duties on employers and employees not to endanger the health of others and to provide a safe place of employment. Several regulations promulgated under the Act are important for the management of hazardous substances (and therefore) hazardous wastes.	
The National Road Traffic Act (Act 96 of 1993)	Chapter 8 of the Road Traffic Act deals with the Transportation of Dangerous Goods. Regulations in terms of Section 75 of the Act have been promulgated which set out responsibilities about the transport of dangerous goods and substances which include hazardous wastes, inter alia: the prohibition of transportation of dangerous goods; the duties of operator, consignor, and consignee; exemptions; compatibilities; classification of hazardous substances; driver training requirements; and documentation requirements. Several South African National Standards have been incorporated into the regulations; thus are enforceable by law.	
Guidelines Strategies and Standards		

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Legislation/Guideline/Treaties	Relevance to Waste Management	Regulations, Norms, and Standards relevant to Waste Management
National Waste Management Strategy, 2020		
The Polokwane Declaration on Waste Management, 2001		
White Paper on Integrated Pollution and Waste Management for South Africa, 2000		
SANS 290, Mineral Insulating Oils–Management and handling of Polychlorinated Biphenyls		
SANS 10228, The identification and classification of dangerous goods for transport		
SANS 10229, Transport of dangerous goods - Packaging and large packaging for road and rail transport - Section 11.		
SANS 10231, Transport of dangerous goods - Operational requirements for road vehicles		
SANS 10232, Transport of dangerous goods - Emergency information systems Part 1: Emergency information system for road transport		
SANS 10234, Globally Harmonized System of classification and labelling of chemicals (GHS)		
SANS 1518: for the design of road vehicles and portable tanks		
Provincial		
Waste-related regulations, policies, and procedures as relevant must be consulted and complied with.		
Local		
Municipal by-laws as relevant must be consulted and complied with.		

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APPENDIX B: TRANSMISSION INDUSTRY WASTE MANAGEMENT INVENTORY

Transmission site	Region/Section	Sources of waste	Types of waste	Waste Category	Current Handling	Responsible Party
Grid connection	Substation (remote) Substation (Apollo)	Admin work	Papers	General	Recycling and landfill disposal	Engineering Assistant (EA)
		Maintenance	Silica gel	Hazardous	Landfill	Registered Service Provider
			Oil samples			
			Fluorescent tubes			
			Grease			
			Asbestos			
			Redundant Batteries			First National Batteries (PMT)
			Scrap metal	Hazardous	Landfill	Registered Service Provider
Business Unit						
Human Resources	Clinic	Health Care Facility	Health Care Waste (Swabs, used bandages, etc)	Medical Waste	Landfill	Registered Medical Waste Service Provider
			SHE bins,			
			Expired medication			
			Medical sharp waste (needles and syringes)			Medical Waste Contractor

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Transmission site	Region/Section	Sources of waste	Types of waste	Waste Category	Current Handling	Responsible Party
			Pressurised Containers (empty aerosol can, empty spray cans)	General (Must be empty)	Landfill/Recycle	Medical Waste Contractor
			Glass (Contaminated, Expired Laboratory Specimen Tubes, broken ampoules)	Hazardous/General	Incineration	Medical Waste Contractor
			Expired Pharmaceutical (Solid liquid and powdered)	Hazardous	Incineration	Medical Waste Contractor
	Asset Management	Cafeteria	Food waste	General	Landfill	Eskom Rotek industries
Systems Operator/ Telecommunication	SHEQ	Administration	Papers	General	Recycling and landfill disposal	Landlord
			Cartridges	Hazardous	Landfill disposal	Registered Service Provider
		Maintenance	Fluorescent tubes	Hazardous	Landfill disposal	Registered Service Provider

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Transmission site	Region/Section	Sources of waste	Types of waste	Waste Category	Current Handling	Responsible Party
	Substation and telecommunication	Battery	Redundant Batteries	Hazardous	Recycled by the supplier	First National Batteries (FNB)
	Customer Services (KAM)	Administration	Papers	General	Recycling and landfill disposal	Landlord
	OPS&FS	Electrical work	Electric cables, parts, and other components	Hazardous	Recycling	Eskom Transmission
	Aircon	Replacement of air conditioners	Old air conditioners and empty gas containers	Hazardous	Asset disposal	Eskom: Assets Management
	Offices	Daily office activities	Papers, plastics, bottles, and food, E-Waste	General	Landfill	Landlord
	Radio sites	Battery charging and maintenance	Empty containers of sulphuric acid	Hazardous	Re-use by supplier	First National Batteries (PMT)
	Fibre Optic Network	Fibre optic management	Fibre off-cuts	Hazardous	Landfill	Registered Service Provider
Group Executive Office	Offices	Daily office activities	Papers, plastics, bottles, and food	General	Landfill	Eskom Rotek industries

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Transmission site	Region/Section	Sources of waste	Types of waste	Waste Category	Current Handling	Responsible Party
Energy planning and market			Cartridges	Hazardous	Landfill disposal	Registered Service Provider
Grid planning						
Grid access unit						
Business integration and performance management						
Integrated Demand management						

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APPENDIX C: HAZARDOUS RATING MATRIX

LEVEL 1	LEVEL 2			LEVEL 3 – SPECIFIC WASTE TYPE
GENERAL WASTE	GW01	General: municipal waste		
	GW10	General: commercial and industrial waste		
	GW13	General: brine		
	GW14	Fly ash and dust from miscellaneous filter sources		
	GW15	General: bottom ash		
	GW16	Slag	GW1601	Slag: ferrous metal slag
			GW1602	Slag: non-ferrous metal slag
			GW1603	Slag: Other
	GW17	Mineral waste	GW1701	Foundry sand
			GW1702	Refractory waste
			GW1703	Mineral waste: Other
	GW18	Waste of electrical andelectronic equipment (WEEE)	GW1801	Large household appliances
			GW1802	Small household appliances
			GW1803	Office, information, and communication equipment
			GW1804	Entertainment and consumer electronics and toys,leisure, sports, and recreational equipment, and automatic issuing machines
			GW1805	Lighting equipment
			GW1806	Electrical and electronic tools
			GW1807	Security and healthcare equipment
			GW1808	Mixed WEEE
	GW20	Organic waste	GW2001	Organic waste: garden waste
			GW2002	Food waste
			GW2003	Wood waste
	GW21	Sewage sludge	GW2101	Sewage sludge
	GW30	Construction anddemolition waste	GW3001	Construction and demolition waste
	GW50	Paper	GW5001	Newsprint and magazines
			GW5002	Brown grades
			GW5003	White grades
			GW5004	Mixed grades
	GW51	Plastic	GW5101	Polyethylene terephthalate
			GW5102	High-density polyethylene
			GW5103	Polyvinylchloride
			GW5104	Low-density polyethylene
			GW5105	Polypropylene
			GW5106	Plastic: polystyrene
			GW5107	Plastic: Other
	GW52	Glass	GW5201	Glass
	GW53	Metals	GW5301	Ferrous metal
			GW5302	Non-ferrous metal
	GW54	Tyres	GW5401	Tyres

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	GW99	Other	GW99	Other

Hazardous waste classes according to SAWIS

LEVEL1	LEVEL2			LEVEL 3 – SPECIFIC WASTE TYPE
HAZARDOUS WASTE	HW01	Gaseous waste	HW0101	Gases (excluding greenhouse gases)
			HW0102	Obsolete ozone-depleting gases
	HW02	Mercury-containing waste	HW0201	Liquid waste containing mercury
			HW0202	Solid waste containing mercury
	HW03	Lead batteries	HW0301	Lead batteries
			HW0302	Mercury batteries
			HW0303	Ni/Cd batteries
			HW0304	Manganese dioxide and alkali batteries
			HW0305	Lithium and lithium-ion batteries
			HW0306	Nickel-metal hydride batteries
			HW0307	Mixed batteries
	HW04	POP waste	HW0401	PCB-containing waste (> 50 mg/kg)
			HW0402	Other POP-containing waste
	HW05	Inorganic waste	HW0501	Liquid and sludge inorganic waste
			HW0502	Solid inorganic waste
			HW0503	Spent pot lining (inorganic)
	HW06	Asbestos-containing waste	HW0601	Asbestos-containing waste
	HW07	Waste oils	HW0701	Waste oil
	HW08	Organic halogenated and/or sulphur-containingsolvents	HW0801	Solvents containing halogens and/or sulphur
	HW09	Organic halogenated and/or sulphur-containingsolvents	HW0901	Liquids and sludges containing halogens and/or sulphur
			HW0902	Solids containing halogens and/or sulphur
	HW10	Organic solvents withouthalogens and sulphur	HW1001	Solvents without halogens and sulphur
	HW11	Other organic waste without halogens or sulphur	HW1101	Liquid and sludge organic waste
			HW1102	Solid organic waste
			HW1103	Spent pot lining (organic)
	HW12	Tarry and bituminouswaste	HW1201	Tarry waste
			HW1202	Bituminous waste
	HW13	Brine	HW1301	Brine
	HW14	Fly ash and dust from miscellaneous filter sources: fly ash	HW1401	Fly ash
	HW15	Bottom ash	HW1501	Bottom ash
	HW16	Slag	HW1601	Ferrous metal slag
			HW1602	Non-ferrous metal slag
			HW1603	Other
	HW17	Mineral waste	HW1701	Foundry sand
			HW1702	Refractory waste
			HW1703	Other
	HW18	Waste of electrical	HW1801	Large household appliances

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		andelectronic equipment (WEEE)	HW1802	Small household appliances
			HW1803	Office, information, and communication equipment
			HW1804	Entertainment and consumer electronics and toys,leisure, sports, and recreational equipment, and automatic issuing machines
			HW1805	Lighting equipment
			HW1806	Electrical and electronic tools
			HW1807	Security and health care equipment
			HW1808	Mixed WEEE
	HW19	Health care risk waste: pathological waste	HW1901	Pathological waste
			HW1902	Infectious waste and sharps
			HW1903	Health care risk waste: chemical waste
	HW20	Sewage sludge	HW2001	Sewage sludge
	HW99	Miscellaneous	HW9901	Miscellaneous

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APPENDIX D: MONITORING SCHEDULE TEMPLATE

MONITORING IMPLEMENTATION SCHEDULE	ON SCHEDULE	IF NOT WHY	ACTIONS/ ACTIVITIES	RESPONSIBLE PERSON	NEXT REVIEW
Objective A1					
Objective A2					
Objective A3					
Objective A4					
Objective A5					

APPENDIX E: REVIEW SCHEDULE

REVIEW	ARE THESE STILL RELEVANT	AMENDMENTS REQUIRED?	IF YES, PROVIDE DETAILS	RESPONSIBLE PERSON	NEXT REVIEW
Goals, Objectives, and Targets					
Implementation Schedule					
Best Practices					
Legislative Developments					
Training of Personnel					

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APPENDIX F: SAWIS GUIDELINE

WHO SHOULD REGISTER

In terms of the National Waste Information Regulations (GNR 652 of 2012) and the Department of Environmental Affairs (EFF) Central Registry, the following list of persons conducting the following activities must register on the South African Waste Information System (SAWIS) in terms of Regulation 5 and Annexure 1.

Only the activities applicable or that may become for Eskom have been listed. However, Eskom should have a copy and review the Regulations to ensure that compliance with Regulations is achieved.

GENERATORS OF WASTE

Generators of hazardous waste over 20kg per day.

- This activity is most applicable to Eskom. Based on the recorded Waste information,Eskom will be required to register all sites that have the potential to generate 20kg ofhazardous waste, measured based on a monthly average.

RECOVERY OR RECYCLING OF WASTE

- Recovery of energy from general waste (more than 3 tons per day).
- Recovery of waste at a facility that has a capacity to process more than 10 tons of general waste per day or more than 500kg of hazardous waste per day.
- Recycling of general waste at a facility that has an operational area of more than500m2.
- Recycling of hazardous waste (more than 500kg per day) calculated as a monthlyaverage.

Although not directly applicable, the above activities would apply if Eskom should decide to establish a Central Material Recovery Facility for its waste.

TREATMENT OF WASTE

- Treatment of general waste at a facility that can process more than 10tons of general waste per day or 500 kg of hazardous waste per day excluding the treatment of effluent, wastewater, or sewage.

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- Treatment of hazardous waste at a facility that has the capacity to process (> 500kgper day).
- *Treatment of health care risk waste (HCRW) regardless of the size or capacity of the facility.*

As with the recovery and recycling of waste, these activities are not directly applicable. The above activities would apply if Eskom should decide to establish awaste treatment facility.

EXPORTATION OF HAZARDOUS WASTE

- Hazardous waste exported from the Republic of South Africa.

HOW TO REGISTER Before registering with the EFF's Central Registry, the Transmission Division should check that site and/or activities have not already been registered. To do so, the SAWIS website provides a Search Registrations1 option. The following fields areavailable to check if the site or activity has been previously registered:

- Type of registration,
- EFF registration number,
- Site name,
- Province located in,
- Municipality located in,
- Sic Code (generators only), and
- Year Registered

Once a category has been chosen and searched, a list of all matching registrations will be given below the search function.

- Please note, all activities are listed against a site, on which the activities take place.The site and the associated activities are identified by their unique ID, for example, asite will carry the ID - D00018, while the associated activities on the site will carry theID - D00018-01, D00018-02 etc.
- If the site has been already registered, but not the specific activity, theTransmission Division should log on to the Central Registry using the username andpassword previously provided to and register any additional activities.
- If the activity is already registered, the EFF registration number, username, and password provided should be used to access the central registry through the login. For more information on this, contact the EFF Central Registry Administrator.

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- If the site and activities are is not already registered, the flowing stepswould apply:

1. The first requirement is to go to the registration page2, chose a location (the provincethe activity is taking place in), and select the registration 'type' for which you are applying.
2. All new registrations are required to fill in some basic information about the registration type, the site, the company, and the contact person. Certain of these fields are compulsory (indicated by an *) and must be provided to ensure a successful registration. When choosing a “SIC Code division” code 41 would apply for the Transmission Division.
3. Upon saving the registration, an email will be sent to the provided email address that has been entered, notifying you that your registration is currently awaiting authorisation by the Department.
4. Depending on the validity of your registration, the responsible system administrator will either approve or decline your registration. You will be notified of your registrationapproval via email (provided that an email address has been entered upon registration). Should no email address be provided, you will be notified telephonically,or via fax or post.
5. All successful registrations will be issued with an EFF unique registration number, ausern,ame and a password, which may be used to then login into the central registryto change any information as and when required.

APPENDIX G: WASTE INFORMATION SYSTEM TEMPLATE

Refer to the excel template

Year	*BU*	*Waste type*	*Unit*	*Waste category*	*Waste Class*	*treatment*	*Jan*	*Feb*	*Mar*	*Dec*

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APPENDIX H: WASTE MANAGEMENT CONTRACT

TYPES OF WASTE MANAGEMENT CONTRACTS

This guide aims to provide a better understanding of the opportunities that exist whendeveloping a waste management contract and to provide assistance when working with waste and recycling contractors to ensure proper management and feedback on waste information. There are several types of contracts including:

- **Contracts that charge based on the number of times a skip is emptied**
  - These contracts will typically charge for each occasion that the contractor visits the premises to empty the waste containers. The charges levied for contracts of this typeremain largely consistent from month to month.

- **Contracts that charge based on the weight of waste collected**
  - These contracts charge based on the amount of waste collected from the premises. The charges levied for contracts of this type may fluctuate based onthe weight of the waste collected.

- **Contracts offering reduced charges for source separated recyclable materials**
  - Recyclable materials may be of considerable value to a waste contractor. This value can be maximised by ensuring the material is of high quality and is not contaminated.
  - Some contractors offer discounts to businesses that effectively segregate recyclable materials. Extra waste containers for recyclable materials are likely to be needed, so extra space will be needed on the site for these.
  - Staff training will be required to ensure that high-value recyclable materials are not contaminated with general waste.

- **Contracts that provide income for high-value recyclable materials**
  - Some recyclable waste streams are so valuable that waste contractors will buy the material. However, collection and transport fees may still be charged. This may generate income and reduce the amount of waste to be collected by the mainwaste contractor.
  - Scrap metals have historically accounted for most of these opportunities. However, some specialised contractors will also pay for high-quality office paper waste, and waste plastics, provided that significant amounts are collected.

It is recommended that the contracts should be based on how much waste is collected and disposed of as opposed to the number of lifts or collections done. This is a better reflectionof the cost of waste. It is also providing real data where waste could be minimised.

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The following outline provides an example of what could be included i a Terms ofReference when a new waste management contract is being advertised:

EXAMPLE OF TERMS OF REFERENCE

The Eskom's (SOC Ltd) Transmission Division is responsible to transport power optimally and reliably from the source "Generation Division" to the end-user supplier the "Distribution Division". Eskom's transmission network consists of 9 Grids and Apollo, 153 substations and 28 995km of transmission lines, throughout South Africa, with voltages ranging between 132 kilovolts (kV) and 765kV. The substations generate hazardous, general waste and recyclable material (refer to the Waste Inventory). The suitable waste management service provider is requested to submit a proposal and quotation to undertake the waste management services for the name Grid. The proposal should consider the following factors:

- **The collection and disposal of general and hazardous waste;**

How best to separate and prepare recyclables for collection;
  - Paper and cardboard,
  - Plastics,
  - Glass,
  - Wood pallets,
  - Waste oils and lubricants, and
  - Based on the waste inventory recommend other wastes that can be recycled

- **The provision and cost of suitable receptacles;**
  - Receptacles should be weather, scavenger, and leak proof[1],
  - Suitable for their use (i.e. paper and cardboard, plastic, waste oil, etc.)

- **Provision and cost of ad-hoc receptacles or additional collection;**
  - Time required for this to be arranged,
  - Time required for removal of the ad-hoc skip (once no longer required)

- **Collection schedules – when will waste be removed;**

  - Types of the vehicles that will be required to access the site;

- **Tracking of waste;**
  - Waste manifests and safe disposal certificates

- **Billing structure for removal of waste**
  - Charged by weight (per ton),
  -
- Cost for removing recyclables and if rebates are offered

Tx has developed a Waste Information System (see Ann C); the appointed waste management contractor will be required to provide each Business with the required information:

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A detailed breakdown of the quantity of waste collected listed by the waste category as per the classification, in the National Waste Information Regulations (NWIR) Notice 625 of Government Gazette 35583.

- **Quantities of waste disposed of vs. recycled (listed by waste category)**

The waste monthly register will be used for the waste disposed/recycled to be collected.

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APPENDIX I: WASTE THAT DOES NOT REQUIRE CLASSIFICATION AS PER ANNEXURE 1 OF WCMR, 2013

1) The wastes specified in item 2 of this Annexure do not require classification in terms of Regulation 4(1), nor assessment in terms of Regulation 8(1)(a).

2) (a) General waste-

(i) Domestic waste;

(ii) Business waste not containing hazardous waste or hazardous chemicals;

(iii) Non-infectious animal carcasses;

(iv) Garden waste;

(v) Waste packaging;

(vi) Waste tyres;

(vii) Building and demolition waste not containing hazardous waste or hazardous chemicals; and

(viii) Excavated earth material not containing hazardous waste or hazardous chemicals.

2) (b) Hazardous waste

(i) Waste Products: Asbestos Waste;

- PCB waste or PCB containing waste (> 50 mg/kg or 50 ppm); and
- Expired, spoilt, or unusable hazardous products.

(ii) Mixed Waste:

- General waste, excluding domestic waste, which contains hazardous waste or hazardous chemicals; and
- Mixed, hazardous chemical wastes from analytical laboratories and laboratories from academic institutions in containers of less than 100 litres.

(iii) Other:

- Health Care Risk Waste (HCRW).

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