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|  | <b>Work Instruction</b> | <b>Medupi Power Station Project</b> |
|-----------------------------------------------------------------------------------|-------------------------|-------------------------------------|

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## Content

|                                                                           | Page |
|---------------------------------------------------------------------------|------|
| 1. Introduction.....                                                      | 3    |
| 2. Supporting Clauses .....                                               | 3    |
| 2.1 Scope.....                                                            | 3    |
| 2.1.1 Purpose.....                                                        | 3    |
| 2.1.2 Applicability .....                                                 | 3    |
| 2.1.3 Effective date.....                                                 | 3    |
| 2.2 Normative/Informative References .....                                | 3    |
| 2.2.1 Normative.....                                                      | 3    |
| 2.2.2 Informative.....                                                    | 4    |
| 2.3 Definitions .....                                                     | 5    |
| 2.4 Abbreviations .....                                                   | 9    |
| 2.5 Roles and Responsibilities .....                                      | 9    |
| 2.6 Related/Supporting Documents.....                                     | 11   |
| 3. Document Content.....                                                  | 11   |
| 3.1 Waste Management Strategy .....                                       | 11   |
| 3.6 Waste Collection Services.....                                        | 15   |
| 3.7 Minimum requirements for management of waste storage facilities ..... | 15   |
| 4. Process for Monitoring.....                                            | 25   |
| 4.1 Key Performance Areas and Indicators .....                            | 25   |
| 4.2 Document Review and Self-Assessment.....                              | 27   |
| 4.2.1 Document Self-Assessment .....                                      | 27   |
| 4.2.2 Revision Period .....                                               | 27   |
| 4.3 Training Requirements .....                                           | 27   |
| 5. Acceptance.....                                                        | 28   |
| 6. Revisions.....                                                         | 28   |
| 7. Development Team .....                                                 | 28   |
| Appendix A – Process Self-Assessment Checklist.....                       | 29   |

## Figures

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| Figure 1: Waste Management Hierarchy.....                                   | 12 |
| Figure 2: Generic process flow waste management with recycling option ..... | 13 |

## Tables

|                           |    |
|---------------------------|----|
| Table 1: RACI Matrix..... | 10 |
| Table 3: KPAs/KPIs .....  | 26 |

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## **1. Introduction**

This document describes the approach in which waste both general and hazardous will be managed on the Medupi construction site. This requires active involvement of both the Team Medupi and its contractors. It does not relieve any employee or contractors from fulfilling requirements set in the environmental legislations.

## **2. Supporting Clauses**

### **2.1 Scope**

#### **2.1.1 Purpose**

The purpose of the Medupi Waste Management Work Instruction is to outline critical elements of managing waste at Medupi Construction Project. The Project aims to avoid, minimise and dispose of waste in an environmentally sound manner and in compliance to the applicable legislative requirements.

#### **2.1.2 Applicability**

This document shall apply to Medupi Power Station.

#### **2.1.3 Effective date**

This work instruction shall be effective as from the authorisation date.

### **2.2 Normative/Informative References**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

#### **2.2.1 Normative**

- [1] ISO 9001 Quality Management Systems – Requirements
- [2] Environmental Conservation Act (Act 73 of 1989) External
- [3] National Water Act (Act No. 36 of 1998) External
- [4] National Environmental Management Act (Act No. 107 of 1998) External
- [5] National Environmental Management: Waste Act (Act No. 59 of 2008) External
- [6] Occupational Health and Safety Act (Act No. 85 of 1993) and Construction Regulations  
External
- [7] National Norms and Standards For the Remediation of Contaminated Land and Soil Quality,  
GN 331, 2 Shall 2014 External
- [8] Waste Classification and Management Regulations, GN 634, 23 August 2013 External

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- [9] National Norms and Standards for the Assessment of Waste for Landfill Disposal, GN 635, 23 August 2013 External
- [10] National Norms and Standard for Disposal of Waste to Landfill, GN 636, 23 August 2013 External
- [11] Hazardous Chemical Substance Act (Act No. 15 of 1973) External
- [12] National Health Act (Act 61 of 2003) as amended External
- [13] National Road Traffic Act (Act No. 85 of 1993) External
- [14] National Waste Information Regulations, GN 625, 13 December 2012 External
- [15] Waste Tyre Regulation, GN 1064, 29 September 2017 External
- [16] National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening, Chipping or Bailing of General Waste, GN 1096, 11 November 2017, GN 926, External
- [17] List of waste management activities that have, or are likely to have, a detrimental effect on the environment, GN 921, 29 November 2013 and its amendments External
- [18] Regulations regarding the control of the import of waste, GN 22, 21 January 2019 External
- [19] Basel Convention on the trans-boundary movement of hazardous waste and their disposal External
- [20] Stockholm Convention on the identification and removal of persistent organic pollutants External
- [21] Rotterdam convention on the banning of hazardous substances External
- [22] Montreal Convention, the phase-out of ozone depleting substance External
- [23] Kyoto Protocol on the removal of greenhouse gases External
- [24] Bamako Convention on the Ban of the Import into Africa and the control of Transboundary movement of Hazardous Waste within Africa External
- [25] National Environmental Management Laws Amendment Act 2 of 2022 External

### **2.2.2 Informative**

- [26] 348-961711 Project Execution Plan
- [27] 348-883902 Project Quality Plan
- [28] 348-653867 Development and Change of Medupi QMS Documents
- [29] 348-883808 Document and Record Management Procedure
- [30] 348-681011 The Environmental Management Plan for the Medupi Coal-fired Power Station in the Lephalale Area, Limpopo Province – The Construction Phase
- [31] 12/12/20/695 Record of Decision for the Medupi Project
- [32] 348-31313 Medupi Power Station Water Use Licence 01/A1042/ABCEFGI/5213, Version: 01-2020
- [33] 348-859607 Medupi Power Station Water Use Licence 07/A42H/IIG/6425, Version: 01-2020

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- [34] 348-859607 Medupi Power Station Water Use Licence 01/A1042/ABCEFGI/5213 & 07/A42H/IIG/6425
- [35] 348-9936873 Registration approval for waste sorting, crushing and bailing facilities 12-9-11-SSGCSB08-5
- [36] 348-9936868 Registration approval for waste storage facilities 12-9-11-ST195-5
- [37] 348-630732 Medupi Ash Disposal Facilities Waste Management Licence 12/9/11/L210323092918/5/R
- [38] 348-860846 Medupi Environmental Policy
- [39] 32-245 Eskom Waste Management Standard
- [40] 348-717685 Procedure for the handling of HSE Non-conformities and Corrective and Preventive Action
- [41] 348-693723 Medupi Environmental Incident Management Procedure

## 2.3 Definitions

| Term                                       | Explanation                                                                                                                                                                                                                                  |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Best Practical Environmental Option (BPEO) | Means the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.                                                    |
| Best practice                              | Means to perform or exercise a particular activity or activities in the most suitable, appropriate, advantageous or best advised manner in order to achieve the highest standards while performing or excising such activity or activities.  |
| Building and demolition waste              | Means waste, excluding hazardous 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. |
| Business waste                             | Means 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 it contains.                                                                                                       |
| Contaminant                                | Means any substance present in an environmental medium at concentrations in excess of natural background concentrations that has a potential to cause harm to human health or the environment.                                               |
| Contractor                                 | An employer who performs construction work and includes principal contractors. Contracted companies are specifically viewed as employers in their own right, as per the OHS Act.                                                             |
| Cradle to grave principle                  | A policy of controlling a waste from its inception to its ultimate disposal.                                                                                                                                                                 |
| Disposal                                   | Means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.                                                                                                                          |
| Domestic waste                             | Means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes.                                                                  |

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| Term                                      | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Duty of care                              | Every person who causes, has caused or shall cause significant pollution or degradation of the environment shall take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.                                                                                         |
| Environment                               | The surrounding in which humans exist that is made up of: <ul style="list-style-type: none"> <li>i. the earth's land, water and atmosphere;</li> <li>ii. micro-organisms, plant and animal life;</li> <li>iii. any part or combination of (i) and (ii) and the interrelationship among and between them; and</li> </ul> the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.                                                |
| Extended Producer Responsibility Measures | Means measures that extend a person's financial or physical responsibility for a product to the post-consumer stage of the product.                                                                                                                                                                                                                                                                                                                                                                          |
| General waste                             | Means waste that does not pose an immediate hazard or threat to health or to the environment, and includes— <ul style="list-style-type: none"> <li>a) domestic waste;</li> <li>b) building and demolition waste;</li> <li>c) business waste;</li> <li>d) inert waste; or</li> </ul> any waste classified as non-hazardous waste in terms of the regulations made under section 69 of the NEMWA.                                                                                                              |
| General Waste Storage Facility            | Means a storage facility that has a capacity to store in excess of 100m <sup>3</sup> of general continuously.                                                                                                                                                                                                                                                                                                                                                                                                |
| Health care risk waste                    | Means the hazardous portion of the waste generated at the health care facility. This is any waste that poses a hazard to human health or the environment.                                                                                                                                                                                                                                                                                                                                                    |
| Hazardous waste                           | Means any waste that contains organic or inorganic elements or compounds that shall, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment                                                                                                                                                                                                                                                                        |
| Hazardous Waste Storage Facility          | Means a storage facility that has a capacity to store in excess of 80m <sup>3</sup> of hazardous continuously.                                                                                                                                                                                                                                                                                                                                                                                               |
| Inert Waste                               | Means waste that— <ul style="list-style-type: none"> <li>a) does not undergo any significant physical, chemical or biological transformation after disposal;</li> <li>b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it shall come into contact; and</li> <li>c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant.</li> </ul> |
| Integrated pollution and waste management | Is a holistic and integrated system and process of management, aimed at pollution prevention and minimisation at source, managing the impact of pollution and waste on the receiving environment and remediating damaged environments.                                                                                                                                                                                                                                                                       |
| Life-cycle assessment                     | Means a process where the potential environmental effects or an impact of a product or service throughout the life of that product or service is being evaluated.                                                                                                                                                                                                                                                                                                                                            |

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| Term                     | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Litter                   | Means any object or matter which is left behind or discarded by a person in any place except in an approved receptacle provided for that purpose or at a waste handling facility.                                                                                                                                                                                                                                                                                                                                                          |
| Precautionary principle  | Where a risk is unknown; the assumption of the worst case situation and the making of provision for such a situation.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Preventive principle     | Reduce risk by ensuring that collection, treatment, and disposal take place as close as possible to the point of generation as is technically and environmentally feasible.                                                                                                                                                                                                                                                                                                                                                                |
| Proximity principle      | Treatment and disposal of general and hazardous waste shall take place as close as possible to the point of production to minimise transportation and environmental risks. Waste shall be managed and disposed of as close to the point of generation as possible. The objective is to minimise transport distances and cost, exposure, and risk associated with waste.                                                                                                                                                                    |
| Pollution                | Any change in the environment caused by substances, radioactive or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provisions or services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such effect in the future. |
| Polluter pays principle. | The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects shall be paid for by those responsible for harming the environment.                                                                                                                                                                                                                                                       |
| Recycle                  | Means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.                                                                                                                                                                                                                                                                                                                   |
| Recovery                 | Means the controlled extraction or retrieval of [any substance,] energy, or material [or object] from waste                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Remediation              | Means the management of a contaminated site to prevent, minimise, or mitigate harm to human health or the environment.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Re-use                   | Means to utilise the whole, a portion of or a specific part of any substance, material or object from the waste stream for a similar or different purpose without changing the form or properties of such substance, material or object.                                                                                                                                                                                                                                                                                                   |
| SANS 10234               | Means the latest edition of the South African National Standard Globally Harmonised System of Classification and Labelling of Chemicals.                                                                                                                                                                                                                                                                                                                                                                                                   |
| Temporary storage        | Means a once off storage of waste for a period not exceeding 90 days.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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| Term                                                     | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste                                                    | Means:<br>(a) any substance, material, or object—<br>(i) that the generator of that substance, material or object has no further use for within its own processes, whether or not it has any commercial value for the generator, but which can be re-used, recycled, recovered or traded in by any person; or<br>(ii) that is rejected, abandoned, discarded, or disposed of, either temporary or permanently, or is intended to be discarded or disposed of by the generator of that substance, material or object, regardless of whether or not that substance, material or object has any commercial value for the generator or can be re-used, recycled, recovered or traded in by any person; or<br>(b) any other substance, material or object that shall be defined as a waste by the Minister by notice in the Gazette; but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste—<br>(aa) once it is re-used, recycled, or recovered or traded in by the holder of that waste or portion of waste in accordance with a condition stipulated in a valid waste management licence, where applicable, or in accordance with an applicable norm or standard made in terms of this Act; or<br>(bb) where the Minister has, in the prescribed manner, excluded the holder of any waste stream or a portion of a waste stream from the definition of waste, enabling the holder thereof to trade in the excluded waste stream or portion of the excluded waste stream, provided that the holder has satisfied the requirements of proving the environmentally safe use of the waste stream or portion of waste stream by it or any other person and committed to provide the Minister with annual reports of the use thereof. |
| Waste classification                                     | Means establishing, in terms of SANS 10234<br>a) whether a waste is hazardous based on the nature of its physical, health and environmental hazardous properties (hazard classes), and<br>the degree or severity of hazard posed (hazard categories).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Waste disposal facility                                  | Means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Waste management facility                                | Means a place, infrastructure, structure, or containment of any kind, wherein, upon or at, a waste management activity takes place and includes a waste transfer station, container yard, landfill site, incinerator, a lagoon, recycling or a composting facility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Waste handling facility/Temporary Waste Storage Facility | Means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment, or waste disposal facility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Waste generator                                          | Means any person whose actions, production processes or activities, including waste management activities, results in generation of waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Waste manager                                            | Means any person that re-uses, recycles, recovers, treats, or disposes of waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Waste transporter                                        | Means any person who conveys or transfers waste (a) between the waste generator and a waste management facility; or (b) between waste management facilities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Waste manifest system                                    | Means a system of control documentation, which accompanies a load of hazardous waste transported from the point of generation to the waste management facility.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Waste stream                                             | Means a type of waste, including building waste; business waste; bulky waste; dailies; domestic waste; garden waste; hazardous waste; health care risk waste; industrial waste; recyclable waste and special industrial waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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| Term                         | Explanation                                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Waste management activity    | Means any activity listed in Schedule 1 or published by notice in the Gazette under section 19 of the NEMWA, 2008 as amended |
| Waste minimisation programme | Means a programme that is intended to promote the reduced generation and disposal of waste.                                  |

## 2.4 Abbreviations

| Abbreviation | Explanation                                           |
|--------------|-------------------------------------------------------|
| DWS          | Department of Water and Sanitation                    |
| DFFE         | Department of Forestry, Fisheries and the Environment |
| EA           | Environmental Authorisation                           |
| ECO          | Environmental Control Officer                         |
| EMP          | Environmental Management Plan                         |
| GWIS         | Gauteng Waste Information System                      |
| GN           | Government Notice                                     |
| HCRW         | Health Care Risk Waste                                |
| NEMWA        | National Environmental Management: Waste Act          |
| ODS          | Ozone-Depleting Substances                            |
| PCB's        | Polychlorinated biphenyl                              |
| SANS         | South African National Standards                      |
| SABS         | South African Bureau of Standards                     |
| SAWIS        | South African Waste Information System                |
| SP           | Stockpile                                             |
| TM           | Team Medupi                                           |
| WML          | Waste Management Licence                              |
| WUL          | Water Use License                                     |

## 2.5 Roles and Responsibilities

### a) Responsible

Those who do the work to achieve the task. There is at least one role with a participation type of responsible, although others can be delegated to assist in the work required.

### b) Accountable (also approver or final approving authority)

The one ultimately answerable for the correct and thorough completion of the deliverable or task, and the one who delegates the work to those responsible. In other words, an accountable shall sign off (approve) work that responsible provides. There **shall** be only one accountable specified for each task or deliverable.

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**c) Consulted (sometimes counsel)**

Those whose opinions are sought, typically subject matter experts; and with whom there is two-way communication.

**d) Informed**

Those who are kept up-to-date on progress, often only on completion of the task or deliverable; and with whom there is just one-way communication.

**Table 1: RACI Matrix**

| Process Step                                                                    | TM Project Director | TM Construction Manager | TM Unit Manager | TM Contracts Manager | TM Construction Site Support | TM Environmental Manager | Environmental Practitioners | Principal Contractors | ECO |
|---------------------------------------------------------------------------------|---------------------|-------------------------|-----------------|----------------------|------------------------------|--------------------------|-----------------------------|-----------------------|-----|
| Ensure that the requirements of this Waste Management Procedure are implemented | I                   | I                       | C,I             | R,I                  | C,I                          | A                        | R                           | R                     | I   |

**Responsibilities:**

TM and contractors shall, within their powers, take all reasonable measures to:

- Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amount of waste that is generated.
- Reduce, re-use, recycle and recover waste.
- Where waste shall be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner.
- Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts.
- Prevent the waste from being used for any unauthorised purpose.
- TM and Contractors shall take reasonable steps to inform the waste transporters and/or managers of the impact of that waste on health and the environment. Waste generated at the project shall be disposed of in an environmentally sound manner and life-cycle approach and/or cradle to grave principle shall be implemented for all waste stream generated.

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- Service providers used for transportation and disposal of waste are responsible to ensure that facilities used complies with the conditions of the permits/licenses issued as well as all applicable legislations, but the ultimate legal responsibility lies with the waste generators to ensure that the waste is treated, recycled and disposed of correctly. It is required that service providers and waste disposal facilities be inspected/audited by the Contractors, TM Environmental Department and the ECO's in order to fulfil the duty of care, the life-cycle approach to waste management and cradle to grave responsibilities with regard to waste management.

## **2.6 Related/Supporting Documents**

- [1] 348-885591 Anti-Litter Policy Statement
- [2] 348-613250 Eskom WIS Registration Certificate for hazardous waste generator
- [3] 348 – 669234 Waste Removal Checklist
- [4] 348-665979 Medupi Waste Inventory Template
- [5] 348-665980 Medupi Waste Hierarchy Implementation Template
- [6] 240 – 47176064 Eskom Waste Reporting Template
- [7] 348-611308 Eskom WIS Registration Certificate for Ash Disposal Facility
- [8] 348-655890 Appendix A-Documents Self-Assessment Checklist

## **3. Document Content**

### **3.1 Waste Management Strategy**

In order to ensure that waste management activities within Medupi Power Station Project (the Project) are undertaken in an environmentally sound manner, contractors are required to develop a strategic planning tool (waste management plan/procedure) that serves as a first step towards informed planning and accountability for waste management within their areas of responsibility.

Waste management plans shall be developed and implemented to meet the requirements stipulated in Part 5 of the National Environmental Management Waste Act, 2008 (herein referred to as NEMWA). The plan/procedure shall amongst others include:

Waste minimisation programme which sets out actions and target dates to minimise waste and improve resource efficiency and meet the objectives of the waste management procedure/plan. The programme

- shall follow the waste hierarchy and look at ways to prevent, reduce and reuse waste, before recycling and responsible disposal. The programme shall also look at actions for education and awareness;
- shall ensure that all waste streams that arise from the activities of the business/company; and
- shall ensure that measures to prevent any employee or person, under his or her supervision from contravening applicable environmental legislation, as well as consequences of non-conformances to applicable standard or procedures (internal and external) are in place.

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### 3.2 Environmental Management Principles

The NEMWA, 2008 introduced a number of guiding principles into South African environmental legislation including the life-cycle approach to waste management, producer responsibility, the precautionary principle and the polluter pays principle. Chapter 5 of the National Environmental Management Act, 1998 (herein referred to as NEMA) provides instruments for integrated waste management. NEMWA also places a duty of care on any person who shall cause significant pollution or degradation of the environment, requiring them to institute measures to either prevent pollution from occurring, or to minimise and rectify the pollution or degradation where it cannot be avoided.

The NEMWA echoes the duty of care provision by obliging holders of waste to take reasonable measures to implement the waste management hierarchy.

### 3.3 Waste avoidance, waste generation and waste minimisation

The Project focus shall no longer be looking at how to handle and dispose of waste once it is generated (End of Pipe), but rather at how to avoid waste generation. This is the first step in a list of actions that relate to managing waste in a sustainable way called the “waste management hierarchy” – trying at first to avoid creating waste, then minimising what is produced by re-using, recycling, recovering and treating where necessary and disposal as a last resort.



Figure 1: Waste Management Hierarchy

Waste is an inevitable consequence of any development and hence it shall be managed in an integrated and sustainable manner. The National Waste Management Strategy defines a waste management hierarchy, which is based on the above-mentioned principles (see Figure 1). One of the mechanisms to resolve this problem is to identify what portions of the waste stream can most readily be avoided, minimised and/or recycled. To do this effectively, quantitative understanding of the total waste stream is necessary.

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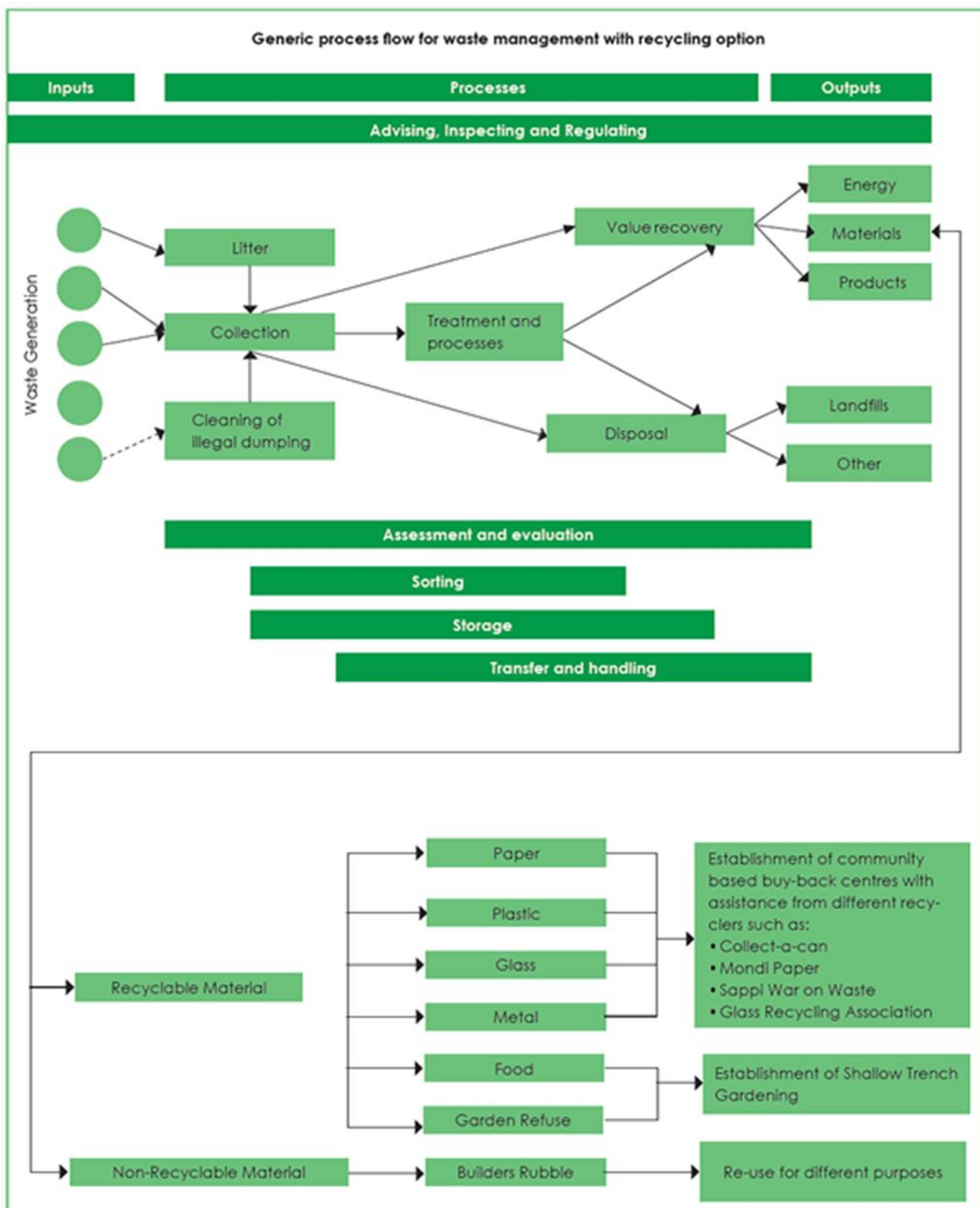


Figure 2: Generic process flow waste management with recycling option

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### 3.4 Waste classification

Waste Classification and Management Regulations, GN 634 (the Regulations) came into effect on the 23 August 2014. All waste generated at the project shall be classified in accordance with SANS 10234 within one hundred and eighty (180) days of generation with the exception of the waste stream mentioned below:

#### 3.4.1 General waste

- Domestic waste;
- Business waste not containing hazardous waste or hazardous chemicals;
- Non-infectious animal carcasses;
- Garden waste;
- Waste packaging;
- Waste tyres;
- Building and demolition waste not containing hazardous waste or hazardous chemicals; and
- Excavated earth material not containing hazardous waste or hazardous chemicals

#### 3.4.2 Hazardous waste

- Asbestos Waste;
- PCB waste or PCB containing waste (> 50 mg/kg or 50 ppm);
- Expired, spoilt or unusable hazardous products and Health Care Risk Waste (HCRW); and
- Mixed waste - general waste which contains hazardous waste or hazardous chemicals

Waste that is classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2nd Edition, 1998; Department of Water Affairs and Forestry), or waste for which an alternative classification was approved by the Department of Water Affairs or Department of Environmental Affairs, prior to the Regulations taking effect, shall be re-classified in terms of Regulation 4(2) within three (3) years from the date of commencement of these Regulations.

Waste shall be separated at source and shall not be mixed or diluted solely to reduce the concentration of its constituents prior to classification. Waste shall be re-classified every five (5) years, or within 30 days of modification to the process or activity that generated the waste, changes in raw materials or other inputs, or any other variation of relevant factors. Waste that has been subjected to any form of treatment shall be reclassified, including any waste from the treatment process.

Generators of hazardous waste shall ensure that a safety data sheet for the hazardous waste is prepared in accordance with SANS 10234 as stipulated in the Regulations.

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### **3.5 Safety Data Sheets**

As from the 24 August 2016 all hazardous waste generators, except HCRW shall ensure that safety data sheet/s prepared in accordance with SANS 10234 are kept.

Safety data sheets for asbestos waste, PCB waste or PCB containing waste (> 50 mg/kg or 50 ppm) and expired, spoilt or unusable hazardous products shall be prepared in accordance with SANS 10234 for the product the waste originates from.

Safety data sheets for 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 less than 100 litres) shall be prepared in accordance with SANS 10234 reflecting details of the specific hazardous waste/s or hazardous chemical/s in the waste.

### **3.6 Waste Collection Services**

TM and Contractors shall develop a waste collection programme which shall amongst others include:

- Network of collection points;
- Provision of clearly labelled waste receptacles and a system for the safe collection and transportation of waste;
- Sufficient suitably capacitated staff (employed or contracted);
- Cleaning services this shall include provision and servicing of street litter bins, street sweeping, litter picking, clearing of illegal dumping and animal carcasses.

Collection vehicles (bakkie, tractor trailers and open trucks) are used to transport waste from the working areas/collections point to temporary waste storage facility/ies. At temporary storage facilities general waste is placed into waste skips which are emptied using compactors trucks whereas hazardous waste is placed inside the 6m<sup>3</sup> and 28m<sup>3</sup> skips, 210L drums and removed by the accredited service providers.

### **3.7 Minimum requirements for management of waste storage facilities**

Waste storage facility means any facility on or in which waste is accepted, accumulated, handled, recycled, sorted, stored or treated prior to its transfer for treatment by way of incineration or for final disposal.

National Norms and Standards for the Storage of Waste, GN 926 of November 2013 provide minimum standards for the design and operation of new and existing waste storage facilities and shall be read in conjunction with requirements stipulated below.

#### **3.7.1 Location and Construction**

Waste storage areas shall be located in such a manner that it can provide optimum handling and transportation of waste material. Location of handling areas shall also take into consideration the hazards associated with flammability and toxicity of the waste stored and applicable codes and standards.

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The foundations of waste storage containers shall be protected from, or resistant to all, forms of internal and external wear, vibration, shock, corrosion, fire, heat, vacuum and pressure which might cause the storage tank foundation to fail.

The liquid waste storage area shall have a firm, impermeable, chemical resistant floors and a roof or a container that is coated to prevent direct sunlight and rainwater from getting in contact with the waste. The facility shall be surrounded by an interception trench with a sump for intercepting and recovering potential spills.

The liquid waste storage area shall have a secondary containment system (e.g. bund, drip tray) of sufficient capacity to contain at least 110% of the maximum contents of the storage facility. Where more than one container/tank is stored, the bund shall be capable of storing at least 110% of the largest tank or 25% of the total storage capacity, whichever is greater (in the case of drums the tray/bund size shall be at least 25% of total storage capacity).

### **3.7.2 Access Control and Notices**

Access to waste storage facility shall be limited to employees who have been trained with respect to the operation of the waste storage facility and emergency response procedures and any other person authorized by the owner of the storage facility.

Notices prohibiting unauthorized persons from entering the waste storage facility, as well as a SABS acceptable sign indicating the risks involved in unauthorized entry, shall be displayed at the entrance. Notice stating the hours of operation, the name, address and telephone numbers of the person responsible for the management of the waste storage facility shall be displayed at the entrance.

### **3.7.3 Operation**

The waste storage facility shall be free from odour or emissions at levels likely to cause annoyance. Waste shall be sorted into various categories (recyclables and non-recyclables). A procedure or protocols shall be developed and implemented to prevent any mixing of hazardous and non-hazardous waste.

The waste storage facility shall be operated within its design capacity.

When the waste storage facility is no longer in use method statement for decommissioning and rehabilitation of the facility shall be submitted to the TM Environmental Department and ECO's for approval prior commencement with disestablishment activities.

Routine inspections which include a review of the adequacy, amount and type waste, secondary containment principle and accessibility of spill response equipment shall be conducted on regular basis.

### **3.7.4 Waste Storage Containers**

A waste container shall be of sufficient strength and structural integrity to ensure that it is unlikely to burst or leak in its ordinary use. Containers shall be handled in accordance with appropriate safety requirements and any waste lost during opening, handling or storage shall be contained.

Waste receptacles (e.g. skips, bins, 210L drums with closing mechanism) shall be closed to prevent the waste from being blown away or rain entering and increasing volume of waste. Waste receptacles containing hazardous waste shall be kept closed unless waste is added or emptied.

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Any container or storage impoundment holding waste shall be labelled, or where labelling is not possible, records shall be kept, reflecting the following:

- Date on which waste was first placed in the container;
- Date on which waste was placed in the container for the last time when the container was filled, closed, sealed or covered;
- Dates when, and quantities of, waste added and waste removed from containers or storage impoundments, if relevant;
- Specific category or categories of waste in the container or storage impoundment as identified in terms of the National Waste Information Regulations, GN 625 of 13 August 2012; and
- Classification of waste.

### **3.8 Waste Treatment**

Unless otherwise approved by authorities, TM and Contractors when planning to undertake treatment of hazardous waste (e.g. crushing of fluorescent tubes, bioremediation) onsite shall first check if the activity will trigger a listed activity or not. Contractors shall consult with TM Environmental Department prior executing such activity.

Waste shall not be mixed or treated where this would reduce the potential for re-use, recycling or recovery; and/or result in treatment that is not controlled and not permanent.

### **3.9 Waste Transportation**

Only an accredited service provider shall transport hazardous waste from site and they shall do so in accordance with the conditions of permit/s issued to them as well as the requirements of any relevant SANS codes, in respect of the type of vehicle, the markings and manner of construction of such vehicle, procedures for safety and cleanliness, and documentation relating to the source, transportation and disposal of such waste, and subject to the requirements of any other legislation.

Contractors shall seek approval from TM Environmental Department prior to removal and disposal of waste. This is done through submission of Waste Removal Checklist (348 - 669234). The checklist shall be submitted 5 days prior removal of waste from site. Gate release permit shall be signed and issued to the applicant/requestor who has waste removal checklist approved by TM Environmental Department

At minimum, waste transporters shall be in possession of the following permits/registration certificates:

- Waste handling permit issued by local authority (e.g. Lephalale Local Municipality, City of Tshwane);
- Waste Information Registration Certificate issued by either provincial or national where applicable; and
- Transportation Permit issued in terms of the emergency services By-Laws (any municipality within South Africa) when transporting hazardous waste.
- Approval granted by the provincial department responsible for environmental matters (e.g. Limpopo Economic Development Environment and Tourism) if applicable or required by law.

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Transporters of waste classified as hazardous shall:

- Complete a waste manifest, at minimum containing the information stipulated on Annexure 2: Waste Manifest System Requirements of the Waste Classification and Management Regulations GN 634 of 23 August 2013;
- Provide the information to the generator before the waste is transported from the premises of the generator; and
- Provide the information to the waste manager at the time of delivery of the waste to the facility for a waste management activity.

Any person engaged in the transportation of waste shall take all reasonable steps to prevent any spillage of waste or littering from a vehicle used to transport waste. Where waste is transported for the purposes of disposal, a person transporting the waste shall, before offloading the waste from the vehicle, ensure that the facility or place, to which the waste is transported, is authorised to accept such waste and shall obtain written confirmation that the waste has been accepted.

Waste transporters shall have emergency response plans. Any environmental incidents that occur whilst transporting waste on the public road shall be managed in accordance with the applicable environmental legislation or municipal bylaws. Such incidents shall also be reported to TM Environmental Department as per Medupi Environmental Incident Management Procedure, SPO. No. 348 - 693723.

### **3.10 Waste Disposal**

No person shall dispose of waste, or knowingly or negligently cause or permit waste to be disposed of, in or on any land, water body or at any facility unless the disposal of that waste is authorised by law or dispose of waste in a manner that is likely to cause pollution of the environment or harm to health and well-being.

Waste managers shall not store waste for more than eighteen (18) months from the date of receipt from the waste generator.

Waste generators shall ensure that the disposal of their waste to landfill is done in accordance with the Norms and Standards for Disposal of Waste to Landfill, GN 636 of 23 August 2013.

### **3.11 Land Contamination and Rehabilitation**

Contaminated in relation to Part 8 of Chapter 4 of the NEMWA, means the presence in or under any land, site, buildings or structures of a substance or micro-organism above the concentration that is normally present in or under that land, which substance or micro-organism directly or indirectly affects or shall affect the quality of soil or the environment adversely.

The land contamination provisions provide for 'high risk activities' which are activities of an organisation which could potentially lead to land contamination. If high risk activities are undertaken or are taking place, the site is likely to have contamination.

In order to avoid confusion disestablishment, Contractors shall inspect the areas allocated to them and document the outcome. The inspection report shall be used tool that provide guidance during development of disestablishment and/rehabilitation plan. The report shall clearly indicate the conditions, potential liabilities and highlight possible future obligations.

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Contractors who suspect that they operate on a land which is contaminated (with respect to different receptors and land use scenarios) or a person who undertakes an activity that caused the land to be contaminated shall notify TM Environmental Department of the contamination as soon as that person becomes aware of that contamination.

No person shall transfer contaminated land without informing the person to whom that land is to be transferred to that the land is contaminated. Requirements stipulated in the National Norms and Standards for the Remediation of Contaminated Land and Soil Quality, GN 331 of 2 Shall 2014 shall be adhered to.

### **3.12 Management of General Waste**

General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes domestic waste, building and demolition waste, business waste and inert waste.

#### **3.12.1 Scrap Metals**

Metals can be divided into two broad categories: ferrous- and non-ferrous metals. Ferrous metals are iron and surface-treated iron, while non-ferrous metals include copper and copper alloys, zinc, lead, aluminium, tin and precious metals such as gold and silver. Metal equipment shall be coated with paints (paint shall be lead-based) or PCB-containing oil, which shall have separate environmental hazards of their own.

In line with the principles of waste minimisation, scrap metal shall first be minimised, reused and/or recycled. Contractors are responsible for ensuring that the facilities used to reuse/recycle scrap metal have the necessary operational permits such as waste management licence, WIS registration certificates, municipal waste handling permits, atmospheric emission licences.

#### **3.12.2 Waste tyres**

Contractors shall manage waste tyres in their possession, control, or causes such tyres to be managed in accordance with the Waste Tyre Regulations GN 1064 of 29 September 2017 as amended.

Contractors shall before remove waste tyres from site ensure that the end of life cycle is clearly understood and all required permits/licences/registration certificates are in place. Records of waste tyres (in categories) removed from site shall be submitted to the TM Environmental Department as part of the Contractors Monthly Environmental Compliance Reports.

No person shall dispose of wholly waste tyres at a waste disposal facility or recycle, recover or knowingly or negligently cause or permit tyres to be recycled or recovered at any site, unless the recycling or recovery of those waste tyres is authorised by law.

#### **3.12.3 Building Rubble/Spoil Material/Concrete Waste**

Arising from construction activities, large quantities of different soil types, rocks, spoil materials and building rubble/concrete waste is generated. Recycling is considered the best option to manage this waste stream.

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Building Rubble/Spoil Material/Concrete Waste shall be disposed of at the demarcated stockpile areas and processed for reuse within the project. Contractors shall ensure that the rubble brought to the stockpile areas is clean and free from other waste materials such as scrap metal, paper, plastic and wood etc.

#### **3.12.4 Incompactable Waste**

This includes any general waste that cannot be loaded into a compactor truck but not limited to PVC pipes, redundant office furniture and wood waste.

All types of uncompactable waste generated on site except wood waste are disposed of inside the 28m<sup>3</sup> skips. Wood waste is placed on the ground and then loaded onto the truck or 28m<sup>3</sup> metres skips and disposed of at the licenced facility.

Wood waste can be re-used by the local communities for different purposes. Burning of waste or use of wood waste for fire purposes is discouraged because some might have chemicals coating that could be unsafe or harmful to human-beings and environment.

#### **3.12.5 Compactable Waste**

This include any waste that can be reduced in volume by compressing or applying pressure to it (compacting) with the intention to minimise transportation cost. It includes items such as cardboard boxes, paper and plastic bottles etc.

Compacted waste is collected using waste receptacles such as 240L wheelie bins, 6 m<sup>3</sup>cubic skips or in some instances refuse bags. Contractors collect waste contained in 210L wheelie bins and refuse bags to the central waste areas where waste is disposed of into the 6m<sup>3</sup> skips. At the central waste areas, Eskom Rotek Industries uses Rear End loader (REL) Compactor Truck to collect waste contained in the 6 cubic metres skip for final disposal at the licenced waste disposal facility.

### **3.13 Management of Hazardous Waste**

Hazardous waste means any waste that contains organic or inorganic elements or compounds that shall, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment

PCB's and Asbestos are not used onsite and will therefore not be addressed in this work instruction. In case of suspicion material shall be assessed/investigated as per applicable legal requirements.

Waste prohibitions and restrictions on the disposal of waste to landfill stipulated under section 5 (1) and 5 (2) of the National Norms and Standards for Disposal of waste to Landfill, GN 636 of 23 August 2013 shall be adhered to.

#### **3.13.1 Sewage Related Waste**

Management of sewage related waste is detailed in the Sewage Management Plan (348-22351). Sewage sludge, soil contaminated with sewage and screenings/rags are disposed of as hazardous waste at the licenced facility (e.g. Holfontein, Rietfontein).

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Recycling of sewage (composting) shall be an option but the sludge needs to meet the requirements as stipulated in the Guidelines for Utilisation and Disposal of Wastewater Sludge - WRC Report No. TT261/06.

### 3.13.2 Health Care Risk Waste (HCRW)

HCRW is waste capable of producing an infectious disease. It includes the following: sanitary waste, infectious waste, sharps and vials and expired medicines. HCRW shall be managed in accordance to SANS 10248 (1, 2, and 3) which gives details on storage, collection, transportation, treatment and disposal. HCRW generated onsite is collected by waste service providers and disposed of at the licensed hazardous waste facility.

### 3.13.3 Electronic Waste

E-waste is the term used to describe discarded appliances that use electricity. It includes computers, printers, cell phones, iPods, iPads and other tablets, gaming consoles, air conditioners, fridges and other household appliances, batteries (wet and dry) and fluorescent light bulbs. E-waste contains valuable materials – such as gold, silver, copper and platinum – and harmful materials, such as lead, arsenic, mercury and brominated flame retardant (BFR) plastics, which require special handling and recycling methods.

The recycling processes and disposal of these components, while being a lucrative business proposition for some, pose serious health risks and environmental dangers. The formation or discharge of hazardous emissions during the recycling of electrical and electronic equipment depends heavily on the handling of electronic waste. Hence hazardous substances contained in computers and televisions do not automatically pose a risk to the environment and human health. Some recycling processes applied in transition and developing countries can cause serious health problems and contaminate air, water and soil.

Electronic waste can be disposed of as solid waste after having completed its life cycle but otherwise shall be refurbished or reused or recycled (remanufactured, restored, renovated, repaired, or recharged). Hazardous materials shall be disposed as per national requirement.

Wet cell batteries or lead acid batteries are used in cars, trucks and dry cell batteries are used in general household appliances (clocks, torches, cameras, remote controls and some hand held equipment's). Wet cell batteries are changed directly at the suppliers or returned to suppliers for recycling. Dry cell batteries (AA Batteries) are to be recycled or disposed at the hazardous waste licensed facility.

### 3.13.4 Ozone-depleting substances (ODSs)

Ozone-depleting substances (ODSs) are compounds that contribute to the depletion of stratospheric ozone. ODSs are generally very stable in the troposphere and degrade under ultraviolet light in the stratosphere, releasing chlorine or bromine atoms, which deplete ozone. ODSs are categorised into two groups such as chlorofluorocarbons (CFCs), and Hydrochlorofluorocarbons (HCFCs). The most common HCFC in use today is HCFC-22 or R-22. Disposal of defected or unwanted equipment's (e.g. air conditioners, refrigeration equipment) shall be done in an environmentally safe manner by either returning them to service provider or recycling.

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TM and contractors shall implement measures that will ensure proper and effective control of ODSs and compliance to the Regulations Regarding the Phasing-out and Management of Ozone Depleting Substances, GN 351 of 2014 as amended. TM and contractors shall develop ODSs Phase-out Program which shall amongst others include an ODS inventory indicating types and quantities of ODSs used, their location and application as well as quantities stored on site.

### **3.13.5 Compact Fluorescent Lamps (CFLs) and Mercury-Containing Devices**

As from the 23 August 2016 (three years after the inception of the National Norms and Standard for disposal of waste to landfill, GN 636 of 23 August 2013) disposal of Hazardous Waste Electronic Equipment (WEEE) Lamps at the landfill site is prohibited or restricted. Based on the above, TM and Contractors are encouraged recycle all their lighting lamps such as fluorescent tube, HID Lamps, and other associated lamp products such as fittings, ballast etc.

A preferred method by the recycling facilities is that generators shall not crush the lamps but rather safely store the lamps in a clearly labelled designated waste receptacle for recycling purpose. Based on the above crushing of CFL's on site is prohibited.

### **3.13.6 Empty printing cartridges**

The ink in the cartridge has certain health effects. The potential routes of over-exposure are the skin and the eyes. Inhalation of vapour and ingestion are not considered to be significant routes of exposure under normal use conditions. Ingestion of the ink will pose acute health hazards.

Toner dust contains hazardous materials whereas inkjet inks can also contain a range of chemicals that are harmful to the environment. These materials pose no threat while they are contained within the cartridge. However, these pollutants can escape when cartridges are pulled apart during poorly managed refilling or recycling operations or when dumped cartridges start to deteriorate in landfill.

Hazardous Waste Electric and Electronic Equipment (WEEE): other has been prohibited or restricted in terms of disposal. TM and Contractors shall explore recycling options and ensure that this waste stream is diverted to recycling facilities.

### **3.13.7 Used Oil or Waste Oil**

Waste oil generated from plant maintenance/services and incidents shall be recycled by the ROSE Foundation accredited service providers. Used oil shall be stored in a sealed container placed in secondary containment. When required the service provider will be contacted for removal or emptying.

Used or contaminated oil that cannot be recycled shall be disposed of as hazardous waste at the licenced facility.

### **3.13.8 Empty Cylinders (B49 SABS 0140)**

SF6 cylinders are classified as Class 1 - Seamless steel containers. The re-use of cylinders for any gas other than SF6 or any other purpose, is subject to the prior approval of the Department of Labour and compliance with the requirements of SABS 019. Cylinders shall be returned to the supplier when empty or leaking. Cylinders contaminated with by-products shall be decontaminated by a licensed facility before re-use.

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### 3.13.9 Solvents e.g. used thinners

Used thinners generated from the painting activities shall be disposed at hazardous waste landfill site and recycled through refining processes. Upon arrival at the refinery the contaminated solvent is put through a series of refining processes which ensure the separation of impurities without any loss of the solvency power of the end product. Once the end product has been thoroughly tested, it is resold into the market as thinners for cleaning purposes only.

As from the 24 September 2018 (five years after the inception of the National Norms and Standard for disposal of waste to landfill, GN 636 of 23 August 2013) disposal of re-usable, recoverable or recyclable used or spent solvents at the landfill site is prohibited or restricted.

### 3.13.10 Pesticides

Pesticides is a term that includes insecticides (for insect control), herbicides (for weed control) rodenticides (for rodent control), fungicides (for control of plant disease fungi) and miticides (for mite control). Pesticides can contain harmful compounds that can bio accumulate in body fats and move up the food chain as well as pollute soil and water. Pesticides products and containers shall be disposed at a licenced hazardous waste facility.

### 3.13.11 Ash

Fly ash material solidifies while suspended in the exhaust gases and is collected by electrostatic precipitators or filter bags. They consist mostly of silicon dioxide ( $\text{SiO}_2$ ), which is present in two forms: amorphous, which is rounded and smooth, and crystalline, which is sharp, pointed and hazardous; aluminium oxide ( $\text{Al}_2\text{O}_3$ ) and iron oxide ( $\text{Fe}_2\text{O}_3$ ).

Fly ash contains trace concentrations of many heavy metals that are known to be detrimental to health in sufficient quantities. These can leach into the ground or surface water and cause contamination. These elements are however, found in extremely low concentrations in fly ash. Fabric filter bags generated during commissioning are disposed at a hazardous waste landfill site.

Fly ash and bottom ash generated during commissioning activities shall be disposed of at Medupi Ash Dump. Records of Ash disposed of at the facility are filed.

## 3.14 Waste Recycling

TM Management Team is committed to reduce the amount of waste sent to landfill sites by ensuring that where possible waste is minimised (reduced, reused, recycled and recovered) and waste landfilling is considered as last option in order to protect the environment and reduce projects carbon footprint.

Contractors are required to develop waste inventory to assess disposal options considering the waste hierarchal approach and ensure that disposal of waste at the landfill sites is the last resort. Examples of waste that can be recycled include but not limited to paper, cardboard, tins, glass, plastic, scrap metal, electronic waste, waste tyres, cartridge, batteries, oil rags, used thinners, used oil and fluorescent tubes.

TM and contractors shall ensure that only permitted/licenced waste recycling facilities are used.

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Records of waste recycled; this include removal slips shall be submitted to the project as part of the Contractor's Monthly Environmental Compliance Report (348-9987623) which is submitted on monthly basis.

### **3.15 Prevention and Management of Litter (Anti-Litter Policy)**

TM and Contractors shall take pride in maintaining the cleanliness onsite.

No person onsite shall throw, drop, deposit, spill or in any other way discard any litter into or onto any place, land, open space, drainage system, storm water channels, street or road except in a container or a place specifically provided for that purpose.

TM and its contractors shall ensure that sufficient waste containers are provided to contain litter that is discarded or left unattended by the employees and that litter is disposed of before it becomes a nuisance, a ground for a complaint or causes a negative impact on the environment.

TM and its contractors shall ensure waste receptacles are provided with external closing mechanism which is scavenger, water and wind proof.

TM and its contractors shall ensure waste receptacles are emptied on a regular basis and removed to the construction camp or Central Waste Facility.

Litter management is governed by Medupi Project's Anti-Litter Policy attached (348-883128). TM and Contractors are required to abide by the principles set in the policy.

### **3.16 Records and Reporting**

Medupi Power Station has been registered on the National Waste Information System established in terms of section 60 of the National Environmental Management Waste Act, 2008 as hazardous waste generator (excess of 20kg per day). The waste information registration number is D01651-01 (348-613250). This shall be provided to all waste transporters and ensure that is reflected on the waste manifest for removal of hazardous waste.

Waste generators shall keep accurate and up to date records of the management of waste they generate. Records shall reflect:

- Classification of the waste;
- Waste manifest, safe disposal certificate and waste disposal notes/slips;
- Quantity/ies of each waste that has either been re-used, recycled, recovered, treated or disposed of expressed in tons or cubic metres per month; and
- Waste handler or manager (transporter and disposal facility).

Contractors shall submit records contemplated above to TM Environmental Department on a monthly basis as part of the Contractor's Monthly Environmental Compliance Report .

Waste manifest and/or safe disposal certificate shall be submitted to the TM on monthly basis as an attachment to the Contractor's Monthly Environmental Compliance Report. It shall be noted that non-conformance with be raised against a contractor that fails to submit safe disposal certificate or waste manifest signed by all parties accompanied by weighbridge slip within 60 days of removal of waste from site.

TM Environmental Department shall compile a monthly waste report and biannual waste report for submission to relevant stakeholders.

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### **3.17 Reporting on South African Waste Information System (SAWIS) and/or Provincial Waste Information System**

Eskom Waste Centre of Excellence is responsible for reporting volumes of ash treated and/or disposed of within Eskom's owned waste disposal facilities. Medupi Ash Dump Facility is operated by Eskom Medupi Generation, the facility is registered on the National Waste Information System for disposal of hazardous waste to land (Eskom WIS Registration Certificate for Ash Disposal Facility is D D06761-01(348-611308). Submission of records of waste handled and/or landfilled at the facility is managed by Eskom Medupi Generation Business Unit.

Contractors shall ensure that waste managers for external facilities used to treat, recover, and dispose waste is registered and records are submitted SAWIS and/or provincial waste information system (GWIS) as required. Proof showing that waste records handled were reported to SAWIS or provincial WIS shall be updated on the Contractors Waste Inventory and submitted to the TM upon request.

Any waste related incidents shall be dealt with and be reported in accordance with the Environmental Incident Management Procedure (348 - 693723).

## **4. Process for Monitoring**

### **4.1 Key Performance Areas and Indicators**

The following Key Performance Areas / Indicators (KPA's / KPIs) shall be measured, analysed and reported. The Process Owner shall be accountable, and assign the responsibility at the frequency as indicated below, documented as part of the QMS measurement, analysis and improvement initiative.

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Table 2: KPAs/KPIs

| Key Performance Area                                                                                                                                                    | Key Performance Indicator                                                                                                                                                  | Target                                                                       | Measure Frequency                  | Responsibility                           | Records                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------|------------------------------------------|------------------------------|
| Implementation of the waste collection services                                                                                                                         | Provision of clearly labelled waste receptacles and servicing/emptying of the receptacles                                                                                  | Maintain Good waste management standards across site                         | Daily collection or when required  | TM Environmental Department /Contractors | Contractors waste procedure  |
| Proper management of waste                                                                                                                                              | Proper disposal of waste                                                                                                                                                   | Conformance to waste management work instruction and attain legal compliance | Monthly removal of waste from site | TM Environmental Department /Contractors | Waste records                |
|                                                                                                                                                                         | Implementation and maintenance of waste inventory                                                                                                                          | Improved waste recovery and reduction in waste disposed to Landfill sites    | Quarterly basis                    | TM Environmental Department /Contractors | Waste Inventory              |
| Proper management of Storage Facilities and Collection Points                                                                                                           | Inspections of the temporary storage facilities and collection points                                                                                                      | Maintain good housekeeping                                                   | Daily basis                        | TM Environmental Department/ Contractors | Inspection records           |
| Implementation of waste minimisation programmes (alternatives to avoid, reduce, reuse, and recycle and implement measures that will lead to effective waste management) | Records of waste recycled                                                                                                                                                  | Waste accounting and reduction                                               | Monthly basis                      | TM Environmental Department/Contractors  | Waste collection notes/slips |
| Revision of Document                                                                                                                                                    | Revision requirements in line with Medupi Procedures 348-653867 "Development and Change of Medupi QMS Documents" and 348-883808 "Document and Record Management Procedure" | Conformance to document control standards and procedures/work instructions   | Annually or as required            | Mumsy Boshomane                          | Revised procedure            |

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## 4.2 Document Review and Self-Assessment

### 4.2.1 Document Self-Assessment

The “Process Owner” identified on the front page of this document along with departmental personnel and the project QMS Engineer shall undertake a “self-check” review of the process defined in this document at six monthly intervals, commencing from the effective date of this document, to check:

- a) the process / procedure operational integrity
- b) process efficiency
- c) the level of stakeholder knowledge and implementation.

Participants and results of the “self-check” review shall be documented by the Process Owner in the “Self-Assessment Checklist” (**Template No. 348-655890**) included as an Appendix to this work instruction which shall be submitted via SharePoint to Medupi Documentation Department Help Desk by the Process Owner once completed.

Process Owner shall proceed with any revision requirements in line with Medupi Procedures, 348-653867 “Development and Change of Medupi QMS Documents” and 348-883808 “Document and Record Management”.

### 4.2.2 Revision Period

All QMS documents shall undergo a 3-yearly compulsory revision.

## 4.3 Training Requirements

Induction training and onsite awareness through toolbox talks serve as training awareness in terms of waste management and recycling onsite. Contractors shall continuously provide awareness to all employees working with waste and all contract workers that might be exposed to waste. The training/ awareness programme shall amongst others include the following:

- Precautionary measures that need to be taken;
- Procedures that they need to apply to their particular type of work;
- Procedures for dealing with spillages and accidents;
- Appropriate use of protective clothing; and
- The risks of the hazardous substances to their health which they are likely to be exposed to.

Sufficient number of employees shall receive training to cover for leave periods, absences due to illness and public holidays.

Training records (signed attendance register and material shared) shall be submitted to TM Environmental Department as part of the Contractors Monthly Environmental Compliance Report

Only trained persons shall be allowed to handle hazardous waste.

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## 5. Acceptance

This document has been seen and accepted by:

| Name             | Designation                               |
|------------------|-------------------------------------------|
| Thabisile Biyela | Senior Manager Portfolio Delivery         |
| Ntahli Molapo    | Safety, Health, and Environmental Manager |
| Brenda Mgidlana  | Project Quality Manager                   |

## 6. Revisions

| Date          | Rev. | Compiler           | Remarks                                                                                                                                                                                                                                           |
|---------------|------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| February 2023 | 8    | Sakutanya Mamabolo | Three yearly revision and alignment to Eskom Waste Management Standards, 32 – 245 and National Environmental Management Laws Amendment Act 2 of 2022. Work instruction change to Template Rev.05 as well as the removal of the Waste expenditure. |
| July 2019     | 7    | Sakutanya Mamabolo | Revision following External ISO 14001 Audit and aligning to revised Eskom Waste Management Standard (32 – 245)                                                                                                                                    |
| February 2018 | 6    | Emile Marell       | New Licence requirements and amend waste removal checklist                                                                                                                                                                                        |

## 7. Development Team

The following people were involved in the development of this document:

- Sakutanya Mamabolo
- Dovhani Mudzielwana
- Mumsy Boshomane

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## Appendix A – Process Self-Assessment Checklist

|              | <b>MEDUPI POWER STATION PROJECT</b> |                                                                                             |           | <b>Template Identifier</b> | <b>348-655890</b>   | <b>Rev</b>                                    | <b>2</b> |
|-----------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------|-----------|----------------------------|---------------------|-----------------------------------------------|----------|
|                                                                                               |                                     |                                                                                             |           | <b>Document Identifier</b> | <b>348-10034274</b> | <b>Rev</b>                                    | <b>0</b> |
|                                                                                               |                                     |                                                                                             |           | <b>Effective Date</b>      | <b>January 2022</b> |                                               |          |
|                                                                                               |                                     |                                                                                             |           | <b>Next Review Date</b>    | <b>January 2025</b> |                                               |          |
| <b>TITLE: Document Self-Assessment Checklist for Medupi Waste Management Work Instruction</b> |                                     |                                                                                             |           |                            |                     |                                               |          |
| Discipline: <b>Environmental</b>                                                              |                                     | Applicable Document No.: <b>348-22367</b>                                                   |           |                            |                     | Self-Assessment Date:<br><b>XX / XX /XXXX</b> |          |
| Item No                                                                                       | Ref Section                         | Self-Assessment Question                                                                    | Compliant |                            |                     | Comment                                       |          |
|                                                                                               |                                     |                                                                                             | Yes       | Part                       | No                  |                                               |          |
| 1                                                                                             |                                     | Has site specific waste management Procedure been developed?                                |           |                            |                     |                                               |          |
| 2                                                                                             |                                     | Does the content of the Waste Management Procedure contain waste minimisation programme?    |           |                            |                     |                                               |          |
| 3                                                                                             |                                     | Is the waste management hierarchy implemented for all waste stream generated                |           |                            |                     |                                               |          |
| 4                                                                                             |                                     | Are the portions of the waste stream that can be readily avoided, minimised and/or recycled |           |                            |                     |                                               |          |
| 5                                                                                             |                                     | Is the waste stream analysis conducted and waste inventory developed?                       |           |                            |                     |                                               |          |
| 6                                                                                             |                                     | Is waste separated as near to the source as possible?                                       |           |                            |                     |                                               |          |
| 8                                                                                             |                                     | Are the service providers and waste disposal facilities inspected/audited?                  |           |                            |                     |                                               |          |
| 9                                                                                             |                                     | Are there any control measures to prevent/minimise waste mixing implemented?                |           |                            |                     |                                               |          |

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|    |  |                                                                                                                                         |  |  |  |  |
|----|--|-----------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| 10 |  | Is the waste collection programme developed, implemented and maintained?                                                                |  |  |  |  |
| 11 |  | Are the waste storage areas accessible?                                                                                                 |  |  |  |  |
| 12 |  | Is hazardous waste stored at the designated area with secondary containment?                                                            |  |  |  |  |
| 13 |  | Is the access control maintained (recording vehicles entering waste area)?                                                              |  |  |  |  |
| 14 |  | Notices prohibiting unauthorised entry, stating hours of operation and contact person in case of emergency displayed?                   |  |  |  |  |
| 15 |  | Does the contractor have waste receptacles?                                                                                             |  |  |  |  |
| 16 |  | Does the waste receptacle/s have closing mechanism?                                                                                     |  |  |  |  |
| 17 |  | Are the waste receptacles labelled?                                                                                                     |  |  |  |  |
| 18 |  | Is there any waste stream treated onsite? If was the project informed? What type of treatment is undertaken and which waste is treated? |  |  |  |  |
| 19 |  | Are the waste service provider used accredited?                                                                                         |  |  |  |  |
| 20 |  | Is prior approval sought from TM Environmental Department prior waste removal from site?                                                |  |  |  |  |
| 21 |  | Does the service provider used have all permit/licences/certificates required to transport waste?                                       |  |  |  |  |
| 22 |  | Is waste generated disposed of the licenced/permitted facility?                                                                         |  |  |  |  |
| 23 |  | Is the contaminated land identified if yes was TM Environmental department informed?                                                    |  |  |  |  |
| 24 |  | Are waste tyres managed in accordance to the Waste Tyre Regulation?                                                                     |  |  |  |  |
| 25 |  | Does the contractor have waste receptacles?                                                                                             |  |  |  |  |

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|                                                                                          |  |                                                                                                   |  |  |  |  |
|------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------|--|--|--|--|
| 26                                                                                       |  | Is sanitary waste disposed of in an environmentally sound manner?                                 |  |  |  |  |
| 27                                                                                       |  | Is there any disposal plan for electronic waste – old/damaged air conditioners?                   |  |  |  |  |
| 28                                                                                       |  | Are worn-out fluorescent tubes and sanitary waste disposed of in an environmentally sound manner? |  |  |  |  |
| 29                                                                                       |  | Is waste recycling option prioritised on site?                                                    |  |  |  |  |
| 30                                                                                       |  | Is the TM litter management policy implemented?                                                   |  |  |  |  |
| 31                                                                                       |  | Are waste records submitted on monthly basis?                                                     |  |  |  |  |
| 32                                                                                       |  | Is training and awareness on this procedure conducted?                                            |  |  |  |  |
| 33                                                                                       |  | Are training records attached to the Contractors Monthly Compliance Environmental Report?         |  |  |  |  |
| Comments:                                                                                |  |                                                                                                   |  |  |  |  |
| Self-Assessment by: Name: Position: Revision Required? (Yes / No) Planned Revision Date: |  |                                                                                                   |  |  |  |  |
| Attendees:                                                                               |  |                                                                                                   |  |  |  |  |

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