



**Bangladesh Power Development Board**  
**INTEGRATED MANAGEMENT SYSTEM**  
**(BASED ON ISO 9001:2015, ISO 14001:2015 & ISO**  
**45001:2018 STANDARDS)**

**WASTE MANAGEMENT PLAN**



# INTEGRATED MANAGEMENT SYSTEM

Document No.:  
BPDB-IMS-PR-068

Revision No.: 00

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### 1. Purpose

The purpose of this document is to set out the process by which BPDB will manage hazardous & non-hazardous waste materials generated at sites. This is to ensure that all waste materials are:

- Reduce and reuse as far as possible.
- Properly categorized for proper collection, storage, handling, treatment, recycle based on sound health and environmental consideration.
- To ensure the 3<sup>rd</sup> party disposal is done in a manner desired by BPDB policy and according to statutory laws.
- Traceable from generation source through to final disposal.
- Managed in accordance with the relevant applicable regulations.
- Segregate and store hazardous waste in separate area with labeling

### 2. Scope

This document is mandatory for handling all waste (hazardous and non-hazardous) under the management control of BPDB, including contract work scope and contractor personnel performing work for BPDB.

### 3. Terms and Definition

**Waste** - An unusable or unwanted substance or material; wide ranging term taken to include effluent or unwanted surplus substance or article which requires to be disposed of.

**Waste Producer** - Any department representative or contractor representative who is assigned to bring the waste materials (i.e. pallets, electrical wastes etc.) inside the waste yard(s)

**Authorized Vendor/Service Providers** - Waste collector and transporter with a valid license and permit from Municipal authority or Dept. of Environment.

**Hazardous waste** - Hazardous waste is waste that has substantial or potential threats to public health or the environment. Any waste, which by their nature and quality may be potentially harmful to human health and/or environment and which require special treatment and disposal. These may be generated as undesirable by-products, process residues and spent/used chemicals from Plant Operations.

**Non-Hazardous Waste** - Non-hazardous waste is any waste that does not cause harm to people or the environment. Any waste item, which is not hazardous to human being, environment or microorganism, is known as non-hazardous waste. This waste can be recycled.

**Recycle / Reuse** - Minimizing waste generation by recovering and reprocessing usable products that might otherwise become waste (i.e. reduce and reuse of aluminum cans, paper, and bottles, etc.)

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**Reduction / Minimization** - Process of reducing the quantity of waste produced through the review of operational practice and optimal use of raw materials.

### Abbreviations

**HOD** - Head of Department

**BPDB** – Bangladesh Power Development Board

**MR** – Management Representative

**MSDS** - Material Safety Data Sheet

### 4. Roles and Responsibility

#### Plant Manager

- Ensure there is a waste management plan and fully followed.
- Conduct regular audit to make that the procedure is adhered.
- ensure sufficient resources available to implement the waste management plan
- Ensure competency resources deployed to implement the procedure.
- Ensure only qualified contractor deployed to perform tasks assigned by the plant.

#### MR

- Ensure the procedure is implemented and communicated to all staff and contractors.
- Responsible for maintaining the records relevant to this procedure.
- Responsible for maintaining training to educate regarding this issue.
- Coordinate with HOD for implementation this procedure at site

#### Procurement Manager

- to source the service provider Assist during execution if there is any dispute between end user and vendor

#### HOD/Site Supervisor

- Where solid or liquid waste is generated, the supervisor or person in charge of the activity generating the waste will ensure that it is disposed of in the correct containers, that incompatible wastes are not mixed together and that all wastes are disposed of correctly.
- This must be undertaken frequently to avoid unnecessary accumulation of waste.
- Supervisor in charge is responsible for monitoring the contractors and confirm that the waste is discarded properly.

#### Contractors

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- All independent contractors are committed to dispose safely the wastes generated as a result of the course of their work within BPDB premises.
- Contractors are responsible for removing the waste from the site after completion of work and they are not allowed to use the existing storage facilities of BPDB

### 5. Procedure

#### 5.1 Risk Assessment and Control

As part of the efforts to ensure a safe working environment, BPDB shall make sufficient risk assessments of the health and safety risks arising from the use of handling hazardous waste. The assessment shall include the work on any process, plant, vessel or machinery that is liable to produce or release any hazardous waste and shall cover process operators and those who work in the vicinity and could be affected. On the other hand, hazard can be arisen from handling of hazardous waste collection and transportation.

a. BPDB have a documented Risk Assessment and reviewed every three years or when there is a significant change in the work process or change in the chemical formula, or an incident involving the chemical. The risk assessment shall determine the following:

- Potential of the hazards to harm health and safety;
- Assessment of the level of exposure to the hazardous waste;
- An estimate of the frequency and duration of exposure;
- Assessment of the number of people who may be exposed to the hazards;

b. The hierarchy of control is as follows: hazard elimination, process or chemical substitution, engineering control (e.g., process modification, containment, automation, and local exhaust ventilation), administrative measures (e.g., safe work practices, reduction of exposure duration) and personal protection. Selection and Procurement.

c. The manufacturer's MSDS must be updated every five years or when there is any changes in formula and is obtained from the manufacturer or supplier. Contracts for the supply of hazardous substances to the Company must include provision for the supplier to supply the appropriate MSDS and must notify any changes in formulation.

d. Secondary containment for hazardous storage area should be at least 110 percent of the largest storage container, or 25 percent of the total storage capacity (whichever is greater), in that specific location.

e. Training and Communication on Waste (Hazardous and Non-Hazardous) Management Plan, MSDS with a retention time for refresher training within two years. Training to ERT Personnel responding to incident involving hazardous waste (pollution, spill, accidents and environmental emergency situation) will be conducted once in a year.

#### 5.2 SOURCES OF WASTE:

Some of the sources of wastes are:

1. Waste generated from kitchen and dining

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2. Office works
3. Maintenance Job
4. Sludge from Effluent Treatment Plant
5. Empty Container
6. Electrical Waste (Light, cable, battery, cable)
7. Waste oil from process
8. Mechanical Jhut
9. Construction waste during any new establishment
10. Medical waste (Used gloves, musk, overall.
11. Gardening waste etc.

### 5.3 Waste Identification:

Person in charge (Waste Producers) must be aware of the wastes which arise in their areas, and must make provision for the collection, storage, transportation, disposal and record keeping of such wastes. Prior to the disposal of any waste, an accurate classification and description of the waste is necessary.

### Classification of waste:

Waste is classified into two main categories, hazardous waste and non-hazardous waste:

- Non-Hazardous Waste: Any waste item, which is not hazardous to human being, environment or microorganism, is known as non-hazardous waste. This waste can be reused and recycled.
- Hazardous Waste: Any waste, which by their nature and quality may be potentially harmful to human health and/or environment and which require special treatment and disposal. These may be generated as undesirable by-products, process residues and spent/used chemicals from Plant Operations.

### 5.4 Waste description:

- A full description of the waste is required, detailing the type of waste and attaching Safety Data Sheets (SDS) as required;
- If the waste cannot be identified, samples should be taken and analysis carried out to enable the waste to be accurately described.
- The record system should be expanded to cover:
  - Type of waste, hazardous and non-hazardous.
  - Its characteristic
  - type of disposal methods
  - For hazardous waste, also record its location where the waste is generated.
  - MSDS of the materials before being converted into waste

### 5.5 Waste Segregation

The appropriate containers, for example bins, should be provided at suitable locations around the facility. There are 3 different of colored bins allocated in various locations at BPDB for disposal of General waste (blue), Plastic waste (yellow), Food waste (green), metal waste

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(non-hazardous waste) (yellow) and electrical waste, chemical waste & oily waste (hazardous waste) will be collected in red color separate bin. They should be fixed and for any outage should provide other bins. The non-hazardous waste will be segregated in the skips, which are handled by Authorized vendor. Medical Waste (Generated at First Aid Room) will be stored in four different color closed bin like General Medical Waste (Non-Hazardous and Non-infectious) in Black color bin, Hazardous Medical waste (Infectious & Non-infectious) in yellow color bin, Sharp Medical Waste (Infectious & Non-infectious) in Red color Bin and Liquid Medical Waste (Infectious & Non-infectious) in Blue color bin (according to Medical waste management and processing rules 2008). Waste type and associated bin color are represented in the following table. These bins for medical waste are placed in the First Aid Room of BPDB.

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### Waste Collection Bin Classification:

BIN FOR	COLOR
<b>Oily Waste:</b> Waste oil, Spilled oil, Oily rags etc.	Red (Hazardous)
<b>Plastic Waste:</b> All kinds of plastic bags, plastic foam, plastic packaging, disposable plastic lunch boxes, tableware, hard plastic, plastic toothbrush, plastic cups, mineral water bottles	Yellow
<b>General Waste:</b> Including paper, paper, newspaper, periodical books, all kinds of wrapping paper, including discarded clothes, tablecloths, wash towels, bags, shoes, Ceramic tiles, muck, toilet paper, paper towels, nutshell, dust etc. including a variety of glass bottles, broken glass, mirrors, thermos bottle and so on.	Blue
<b>Food Waste:</b> Including leftovers, bones, vegetable leaves, fruits and other food waste.	Green
<b>Metal Waste:</b> mainly include metal waste, can etc.	Yellow
<b>Electrical waste:</b> Including batteries, fluorescent tubes, Cable, light bulbs, mercury thermometer.	Red (Hazardous)
Oily Waste	Red (Hazardous)
<b>Chemical Waste:</b> different kinds of acids and bases, laboratories and other liquid chemical waste, paint, thinner etc.	Red (Hazardous)
<b>Medical Waste</b> (generated at First Aid Room): syringes, needles, disposable scalpels, blades, expired drugs etc.	<b>General Medical Waste (Non-Hazardous and Non-infectious)</b>
	<b>Hazardous Medical waste (Infectious &amp; Non-infectious)</b>
	<b>Sharp Medical Waste (Infectious &amp; Non-infectious)</b>
	<b>Liquid Medical Waste (Infectious &amp; Non-infectious)</b>

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#### 5.6 Waste Handling

- Hazardous wastes such as waste oil, chemical empty chemical container & waste & Electrical waste etc. are stored at designated place for disposal through authorized 3rd party. Designated place for storing hazardous waste storage area will be properly marked with safety signage and MSDS box so that no one can mis-handle it by accident.
- Procedure for handling hazardous waste must be communicated to all the staff and sub-contractors so that no one can mis-handle it by accident.
- Non-hazardous waste as food waste, plastic waste, general waste, metal waste etc. will be stored in the designated bin and will be collected and transported by authorized 3<sup>rd</sup> party vendor to municipal designated landfill. Solid sludge will be directly received by authorized 3<sup>rd</sup> party vendor for transport to municipal designated landfill.
- The following items of safety equipment must be available and worn as and when required:
  - Safety Shoes
  - Safety Helmet
  - Safety Glasses
  - Disposable Mask
  - Surgical hand gloves
  - And other PPE as applicable

#### 5.7 Quantity

A weighing scale will be used by the waste producer to quantify the weight for individual waste. For weighing the solid sludge volumetric calculation by multiplying the unit weight of sludge can be done.

#### 5.8 Medical waste management:

Medical Waste will consist of syringes, needles, disposable scalpels, blades, expired drugs etc. This will be classified into four categories according to the type of medical waste generated in First Aid Room of BPDB such as General Medical Waste (Non-Hazardous and Non-infectious), Hazardous Medical waste (Infectious & Non-infectious), Sharp Medical Waste (Infectious & Non-infectious), Liquid Medical Waste (Infectious & Non-infectious) etc.

This medical waste will be disposed in very careful way. Medical waste collecting vendor certified by Dept. of Environment (DoE) for transporting and disposing of medical waste will collect the medical waste and dispose in their own incinerator. Frequency of the medical waste collection will depend on the amount of medical waste generated.

#### 5.9 Waste Minimization:

The potential for minimizing the quantity of waste requiring disposal, through for example changes in engineering / process, practice or design, recycling or re-use, should always be considered as part of planning for any activity which involves the generation of wastes.

Examples of methods to minimize the generation of waste include, but not limited to:

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- Waste generated by routine office activities shall be minimized through reduce and re-use wherever practicable.
- Waste generated from plant and equipment shall be minimized through its efficient operation and maintenance in accordance with manufacturers' instructions.
- Waste from refurbishment and other construction activities will be minimized by appropriate design specifications.

### 5.10 Waste Transferring (Internally):

- The waste should be containerized, labeled, palletized and strapped correctly in safe manners details such as waste classification, code number, hazards associated with waste disposal activities should be observed.
- The available Material Safety Data Sheet (MSDS) should also be used as reference when handling waste disposal. This can be done by posting MSDS box in the designated waste storage location.
- Waste transfer Permit Form (internal) along with MSDS of waste should be applied for all types of waste handling and disposal purposes. Each waste producer will fill up this form and submit to MR for obtaining the acceptance.
- MR's duties are to verify the overall condition of the waste and its packing prior to the issuing of the approval for transferring the waste to the designated areas.
- All relevant records are to be kept to ensure that all of the wastes are handled safely and quantified.
- After MR's approval, the waste producer can transfer the waste from his area to the designated waste storage area (Appendix 01) for hazardous waste. BPDB will have sufficient waste bin for Non-Hazardous waste which will be collected, transported and dumped to municipal designated landfill by Authorized vendor.
- Waste producer dept. will keep its records individually and one register of waste will be kept at nearby the designated waste storage location with MSDS box. Inventory of waste will be maintained monthly basis.

### 5.11 Waste Transfer (External)

- The wastes stored temporarily in the bins and the designated areas will be monitored and managed by the MR in order to avoid excessive accumulation.
- MR along with Procurement & Maintenance and Operations Manager will liaise with Registered Service Providers for removing the waste externally from the site.
- MR in coordination with Maintenance and Operations Manager & his personnel will facilitate transferring the waste externally as appropriate.
- Requirement of Dept. of Environment is that the vendor need prior certification from DoE for collection, transportation and disposal of hazardous and non-hazardous waste from site. So, Waste must only be transferred to municipal landfill or incinerator by Department of Environment (DoE) approved vendors with proven experience and infrastructure for the transport and/or disposal of wastes.
- BPDB will make an agreement with the vendor by verifying the license of the vendors approved for collecting, transporting and dumping waste from site to municipal owned designated landfill BPDB will take action if the vendor do not follow the guidelines of the DoE as well as do not renew the existing license for collection, transporting and disposal of hazardous and non-hazardous waste.

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- Need to inspect the truck deployed by the transporter to ensure that the waste would not be leaked out during the transport.
- Waste Disposal & Transfer Permit Form (external) will be completed when the Waste Handling Contractor removes waste from the plant site and must be submitted to the HSSE department.

### 5.12 Waste Disposal:

3<sup>rd</sup> party vendor certified by DoE will collect the General waste, Plastic waste, Food waste and Metal waste accumulated in the designated bin stored in different location of site. Frequency of waste collection will be weekly basis (depending on the waste generation frequency may be changed).

Solid sludge generated from the wastewater treatment system will be transferred and disposed to municipal landfill by 3<sup>rd</sup> party vendor immediately after every time sludge dewatering system get filled up.

This authorized 3<sup>rd</sup> party vendor will collect the waste from the site then transport and dispose the waste to designated municipal landfill. HSSE Dept. will audit the 3<sup>rd</sup> party vendor's activity monthly basis.

Other hazardous waste (Waste oil, Electrical waste, Chemical waste) will be stored in designated places located in Area A and Area B of the site. This shall include proper labelling of waste according to the national or international codes, proper waste storage guidelines by statutory, IFC, and proper emergency action plan to deal with any accidental release of hazardous waste.

Secondary containment for hazardous storage area should be at least 110 percent of the largest storage container, or 25 percent of the total storage capacity (whichever is greater), in that specific location.

This stored hazardous waste will be transported and disposed to 3<sup>rd</sup> party vendor who has certification regarding transport and dispose of hazardous waste from DoE. If some of the hazardous waste has monetary value, then HSSE dept. will engage procurement dept. to negotiate price of the waste items.

Stored medical hazardous waste will also be transported and disposed by 3<sup>rd</sup> party vendor who has certification regarding transport and dispose of hazardous waste from DoE.

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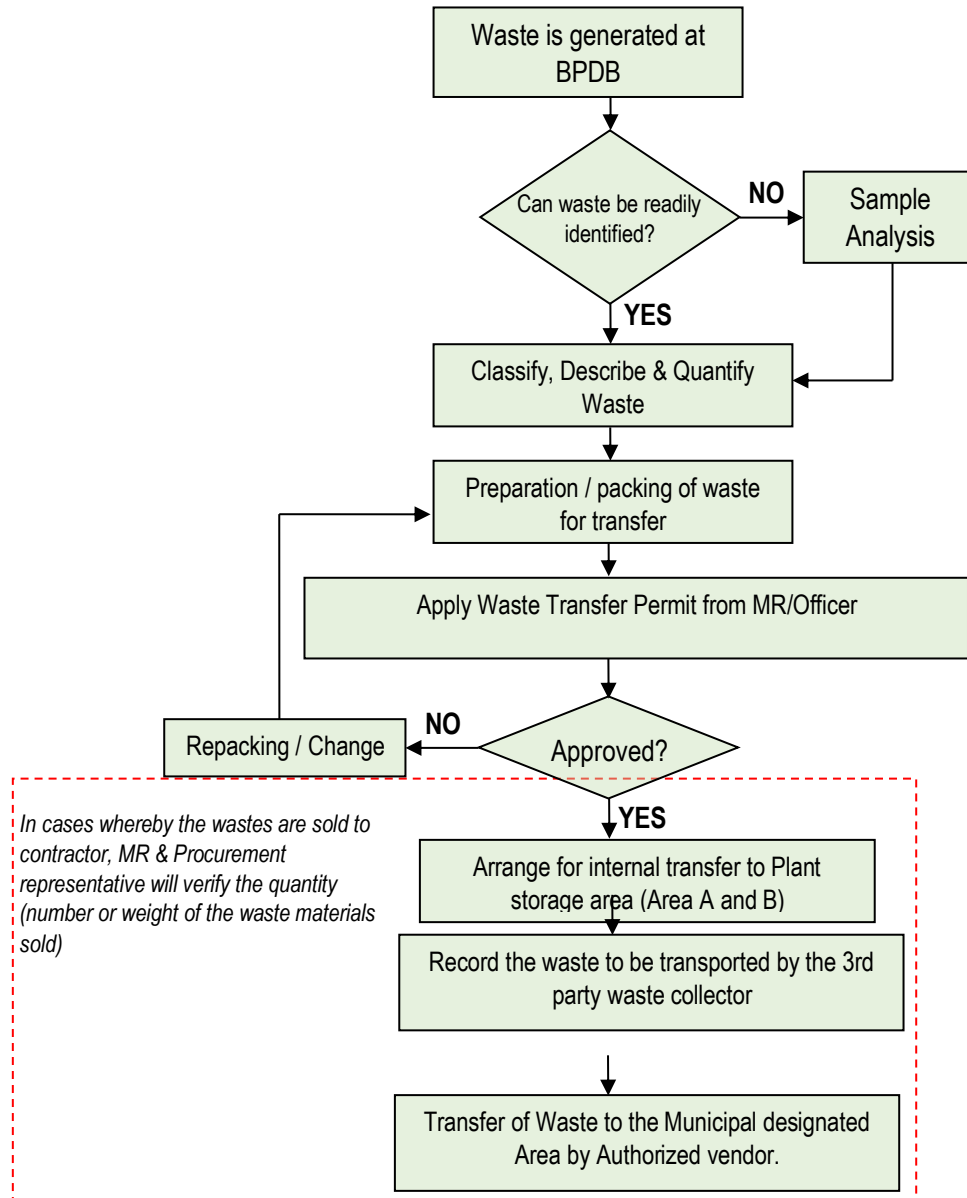
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**The following flowchart demonstrates the steps, which are stipulated for disposing of wastes through an Authorized waste collector:**



**Figure 01:** Steps of waste generation to disposal at BPDB.

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### 5.13 Emergency Plan

Emergency plan during handling hazardous waste is required to respond to all reasonably foreseeable events such as fire, explosion, major spillage, or toxic release. Emergency procedures shall be established so that the source of release can be promptly rectified, and the area of contamination can be contained and decontaminated properly. The procedures shall also indicate how contaminated materials shall be safely disposed of. The basic information to be included in the Emergency Plan shall cover:

- List of hazardous substances and their properties in the hazardous waste storage area;
- A clear site plot plan and MSDS with locations of the chemical storage areas clearly marked;
- Details on fire protection system, emergency exits and spillage control equipment;
- A list of internal emergency contacts for incident response team and for internal incident notification and escalation;
- A list of external emergency contacts such as local fire authority, local authorities such as the police force, health and safety authorities, environmental authority.
- Clear description on actions to be taken during an emergency, including communication protocols.
- Emergency drills shall be conducted at suitable intervals to ensure that all employees are trained to take necessary actions during an emergency.
- Refer to Hazardous Substance Spill Control for more information on emergency planning and first aid procedures.

### 5.14 Monitoring

- BPDB HSSE team will monitor waste disposal site as well as 3<sup>rd</sup> party vendor's activity through Waste permit for disposal and waste generated and no. of waste collector's trip at site will be audited once in a month and records will be kept for five years.
- Audit of Hazardous storage area waste bins will be conducted by monthly basis.
- Housekeeping campaign will be conducted once in a month.
- BPDB will keep register for all waste generated at plant. The MR will maintain waste Data Base Sheet register and such register will include date, type of waste, quantity, type, waste classification, current storage area. Commercial license/s of the approved service providers (waste collection) shall be kept MR
- The BPDB will make HSSE inspection a daily routine covering waste site.
- BBS observation

### 5.15 Training

To ensure the effective implementation of these procedure trainings shall be conducted to all personnel who are responsible for the waste generation and handling.

- Training and Communication on Waste (Hazardous and Non-Hazardous) Management Plan, MSDS with a retention time for refresher training within two year.
- Training to ERT Personnel responding to incident involving hazardous waste (pollution, spill, accidents and environmental emergency situation) will be conducted once in a year.

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### 5.16 Handling, Storage and Disposal Method of Different Type of Wastes

#### Dry/Wet Cell Battery:

It is a hazardous production waste sourced from production works. Controlling officers from all department ensure the storage of these wastes in the designated area of waste storage on a daily basis. Measuring instrument is weighing scale. 100% are externally recycled.

#### Medical Waste

SOMBCORP preserve different type of medical wastes in different colored bins. We also have medical waste disposal agreement with PRISM. They come on demand basis to our plant to collect waste. We dispose all our PPE through the same contractor.

#### Used Lube Oil:

It is a hazardous production waste sourced from production works. Controlling officers from admin department ensure the storage of these wastes in the designated area of waste storage on a daily basis. We are now searching for a compliant contractor to whom we can handover the used lube oil for safe disposal.

#### General Waste

All nonhazardous wastes – i.e., food waste, paper, normal polybag etc. – are hand over to a local vendor who has license from the local municipality for disposing those kinds of waste.

#### Electronic waste

We segregate those wastes at source and store at the designated place at waste storage area. We dispose electronic waste to a vendor who has license from DoE.

#### Insulating material

As a new plant we have not generated much insulating waste. We store those discarded insulating material to the designated place at waste storage facility. We are searching a suitable contractor to dispose those safeties.

### 6 Reference

1. Environmental conservation Rules 1997
2. Waste Management Guideline-International Finance Corporation
3. Hazardous waste and ship breaking waste rules 2011
4. Medical Waste (management and processing) Rules 2008
5. Bangladesh Standards and Guidelines for Sludge Management
6. National 3R Strategy for waste management
7. ISO 14001:2015 & ISO 45001: 2018 standards

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### 7 Appendix

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### 8 Revision History

SI No.	Revision Number	Section	Change Made	Date of Revision

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