Waste Classification and Management Regulations and supporting standards

Waste Classification System Workshop

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Background

- Waste is currently classified in terms of the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (MRHW); 2nd Ed.1998
- Developed in 1998 – when landfill was the predominant method of waste management
- MR – first guidance documents for the management of waste
  - Protection of water resources was the focus
  - Implemented through the landfill permit system
  - Classified waste into general and hazardous
  - Separate landfill for general waste and hazardous waste
  - Specified different liners for different landfills
  - Set different management measures for different landfill types
  - All waste is hazardous until proven otherwise

Minimum Requirements – criticism of the system

- Philosophy of MR does not support the principles of the waste hierarchy - classification of waste for landfill
- The current waste classification system is only based on leachable concentrations of the hazardous components in a waste - should also consider total concentration - encourages recycling & exposes potential risk
- The standard leaching concentration or acceptable risk limits for many species are too low – Mn is 0.3mg/l (based on mismanagement scenario) – over emphasis of environment risks of many large waste streams
- MR only allows for TCLP and Acid rain leaching procedure, TCLP for putrescible waste and the ARLP for inorganic waste - both are acid based – overly conservative for a mono disposal situation – e.g. slag
- MR is not legislated but enforced through permit conditions

Minimum Requirements – criticism of the system

- Origins of the ARLP is not referenced
- Total load promotes dilution - increases the disposal footprint
- Test methods are not specified – results are not comparable
- No requirement to document and keep records of classification
- The recording of waste disposed of to landfill is not auditable – condition merely indicates that a landfill can only accept certain waste types – based on word of the landfill owner
- Onus on Department to approve delisting
- Long term storage of waste in lagoons – no solution, air impacts, high risk
- System does not support reuse – waste managed through permit system – utilisation of waste requires a permit

Minimum Requirements – classification system

- Landfill bias will not promote the development of alternative technologies - landfill cheapest option
- Onus for classification on landfill operator; generator has little understanding of waste generated and makes no interventions to reduce waste volumes
- Allows for co-disposal of waste – sterilizes waste for recovery – and increases risk reactions between waste – excessive leaching
- Administrative discretion – industry could motivate
- MR allows for the delisting –treatment with lime and then disposal of hazardous waste to a general waste site – treatment is not always permanent
- Blending of wastes to reduce risk – increases waste stream and complicates treatment and sterilizes waste for reuse

Revised Waste Classification system – legal framework

- NEM:WA – Part 2, 7(1)(a) requires the Minister to set national norms & standards for the classification of waste
- Chapter 8, Part 1, 69(1) allows the Minister to make regulations regarding:
  - The categorisation of waste
  - The manner in which particular waste types must be dealt with and managed
  - Measures that are required for the environmentally sound management of waste
  - The utilisation of waste by way of recovery , reuse and recycling
  - Labelling requirements in respect of waste management

Revised Waste Classification system – Objectives

- The legislative framework for waste management is changing
- The NEM:WA emphasises the management of waste in relation to the waste hierarchy
- The Waste Classification System is a key tool to manage waste in relation to the waste hierarchy
- Waste can be reused – a waste to one industry is an input for another and as a substitute product (slag as road building material)
- Waste can be recovered – energy (high calorific value) or raw material (mineral properties)
- A project to revise the Waste Classification and Management System was initiated in March 2009

Revised Waste Classification system – Objectives & Process

- The revised system aims to addressed the following issues:
  - Separate waste classification from the management of waste
  - Move the emphasis of management to support the waste hierarchy
  - Divert waste from landfill and into utilisation where possible
- Drafting done in partnership with DWA i.t.o containment barriers
- Legal Services for input on drafting and legality
- Inputs from Government and Industry – providing their practical experience

Consultation process

- An extensive consultation process has been undertaken
- Process was advertised in the Sunday Papers and Business Day – request for registration
- Focus group meetings held over 3 days in May 2009 – Chemical & Metallurgical industry, NGOs, Waste Managers
- Inputs through the Technical Reference Group & General Stakeholder meetings
- 6 meetings held between March 2009 – June 2010 – first set of meetings included a specific provincial meeting, TRG, general stakeholder meeting
- Presented progress at each WGII meeting
- Requested the Institute of Waste Management to organise a meeting of its members - was held in 9th June 2010

Consultation process

- 2 day GHS training session held March 2010
- Stakeholder meeting requested for KZN – 30 July 2010
- Several focus group meetings held – BUSA , FAPA & GIGSA
- Special Municipal meeting held - September 2010
- Presented regulations at Wastecon – October 2010
- Presented the regulations at the NWMS road shows in all nine provinces between November – December 2010
- Regulations were published for comment – April 2011 with 45 day comment period
- Currently awareness raising being done – workshops in each province September – November
- The regulations and standards are being presented at the Municipal Managers training sessions

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Draft Waste Classification and Management Regulations – drafted in terms of the NEM:WM Act

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Waste Classification

- Classification according to GHS – SANS 10234
- Must classify waste within 90 days – no holder of waste may be in possession of unclassified waste after 90 days
- All waste other than pre-classified waste must be classified
- May not mix or dilute waste prior to classification
- Reclassify if change input material or process
- A safety data sheet must be prepared - accompany waste at all times
- Waste containers must be labelled identifying content & date of containerisation - within 2 months
- Waste must be treated, reused, recovered or disposed of within 18 months of generation

Schedule 1 – Pre-classified waste

General Waste

- Domestic waste;
- Uncontaminated Building and Demolition Waste;
- Business waste not containing hazardous waste
- Inert waste;
- Waste tyres;
- Garden waste
- Post consumer packaging
- Non-infectious animal carcasses
- Uncontaminated, excavated earth

Hazardous Waste

- Health Care Risk Waste (HCRW);
- Asbestos Waste
- General waste, excluding domestic waste which contains hazardous waste or hazardous chemicals
- Mixed hazardous chemical waste from analytical laboratories and laboratories from academic institutions in containers less than 100 litres

Waste Classification

- Safety Data Sheet records the waste classification
- Waste Generator is required to keep records of the management of their waste – keep for 5 years
- Waste currently stored must be managed within 5 years
- Waste disposal – prior to disposal waste must be assessed for landfill management
- If waste is acceptable for disposal it must be disposed of in accordance with waste disposal standards

Waste Management Activities that do not require a licence

- Any person may motivate to the Minister to list a specific waste activity as an activity which does not require a licence
- The activity must be able to be conducted consistently and repeatedly in a controlled manner without unacceptable impact to the environment or health
- There is specific information required to be submitted to support the motivation – comprehensive assessment of possible impacts – once off
- Conditions can be imposed or standards of operation set
- The Minister may repeal the listing at any time should there be non-compliance
- Implication is that whoever uses the waste identified does not require a licence to undertake the activity

Record keeping

- Within 6 months
  - Waste generators must keep records of waste
    - Classification
    - Quantity of waste generated
    - Quantity of waste reused, recycled, recovered, treated or disposed of
- Waste managers must keep records of waste managed
- A waste manifest must be maintained for hazardous waste
- Waste managers may not accept hazardous waste without a waste manifest
- Records must be kept for 5 years

Transitional arrangements

- Waste that has been classified i.t.o Minimum Requirements can retain that classification for 2 years
- Waste classified i.t.o Minimum Requirements does not have to be assessed i.t.o the standards for the assessment of waste for 2 years
- Waste classified i.t.o Minimum Requirements does not need to be assessed i.t.o the standards for disposal of waste to landfill for 2 years
- Requirement for use of accredited laboratories will be phased in over 2 years

Draft National Standard for the Assessment of Waste for Landfill Disposal

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Standards for Assessment of Waste for Landfill Disposal

- Approach – in order to determine the risk level associated with the disposal of waste to landfill
  - Identify the chemical substances that could be in the waste
  - Sample and analyse to determine the total concentration and leachable concentration
  - TC to be determined for all possible substances in the waste
  - Analysis to be undertaken by accredited laboratory – 2 years grace if waste has been classified using MR
  - Analysis to be undertaken using national or international analytical methods

Standards for Assessment of Waste for Landfill Disposal

- LC determined using the Australian Standard Leaching Procedures - using accredited laboratories
- Three different leach solutions depending on the disposal method
  - Putrescible waste – use acetic acid solution
  - Waste to be disposed of with non-putrescible waste – use sodium tetraborate decahydrate solution & acetic acid solution (to be phased out)
  - Waste for mono-disposal – reagent water
- Compare the TC and LC with risk levels identified in a table assign a risk level for landfill - organic & inorganic

Standards for Assessment of Waste for Landfill Disposal

- Waste with any chemical substance with a LC > LCT2 or TC > TCT2 are Type 0 waste – very high risk waste – cannot be landfilled
- Waste with any chemical substance with a LCT1 < LC ≤ LCT2 or TCT1<TC ≤ TCT2 are Type 1: High risk waste – Class A landfill (H:H or H:h)
- Waste with any chemical substance with LCT0 < LC ≤ LCT1 and TC ≤ TCT1 are Type 2: Moderate risk waste – Class B landfill (GLB+)
- Waste with chemical substances with a LCTi < LC < LCT0 are Type 3: low risk waste – Class C landfill (GMB+)
- Wastes with all TC < 20 x TCTi or LC ≤ LCTi and TC ≤ TCTi are Type 4: inert wastes – Class D landfill (GSB-)

Chemical substance	LCTi Mg/l	TCTi Mg/kg	TCT0 Mg/l	TCT0 Mg/kg	LCT1 Mg/l	TCT1 Mg/kg	LCT2 Mg/l	TCT2 Mg/kg
Toluene	N/A	0.05	35	1150	70	1150	280	4600

Additional Provisions

- If particular contaminant is not listed, and the waste is classified as hazardous in terms of GHS health or environmental hazard, the waste is considered Type 1 Waste (so disposal to Class A landfill)
- If a representative sample of hazardous waste can't be taken/obtained for proper LC & TC analysis (e.g. oily rags, PPE), then assume waste is Type 1.

Landfill acceptance Criteria

Waste Risk Level	Disposal Requirements
Type 0: Very High Risk	Disposal **not allowed**. The waste must be treated first and then re-tested to determine the risk profile for disposal.
Type 1: High Risk	Disposal only allowed at a landfill with a **Class A** or **Hh/HH** containment barrier design.
Type 2: Moderate Risk	Disposal only allowed at a landfill with a **Class B** or **GLB+** containment barrier design (or Class A).
Type 3: Low Risk	Disposal only allowed at a landfill with a **Class C** or **GLB+** containment barrier design (or Class B or A).
Type 4: Inert Waste	Disposal allowed at a landfill with a **Class D** or **GSB-** containment barrier design.
Non-hazardous Waste (Pre-classified)	Disposal only allowed at a landfill with a **Class B** or **G S/M/L B-/B+** containment barrier design.

Permitted landfills may accept wastes in any currently operating cells, but the design and operation of future cells must be upgraded to the new containment barrier designs.

Draft National Standard for the Disposal of waste to Landfill

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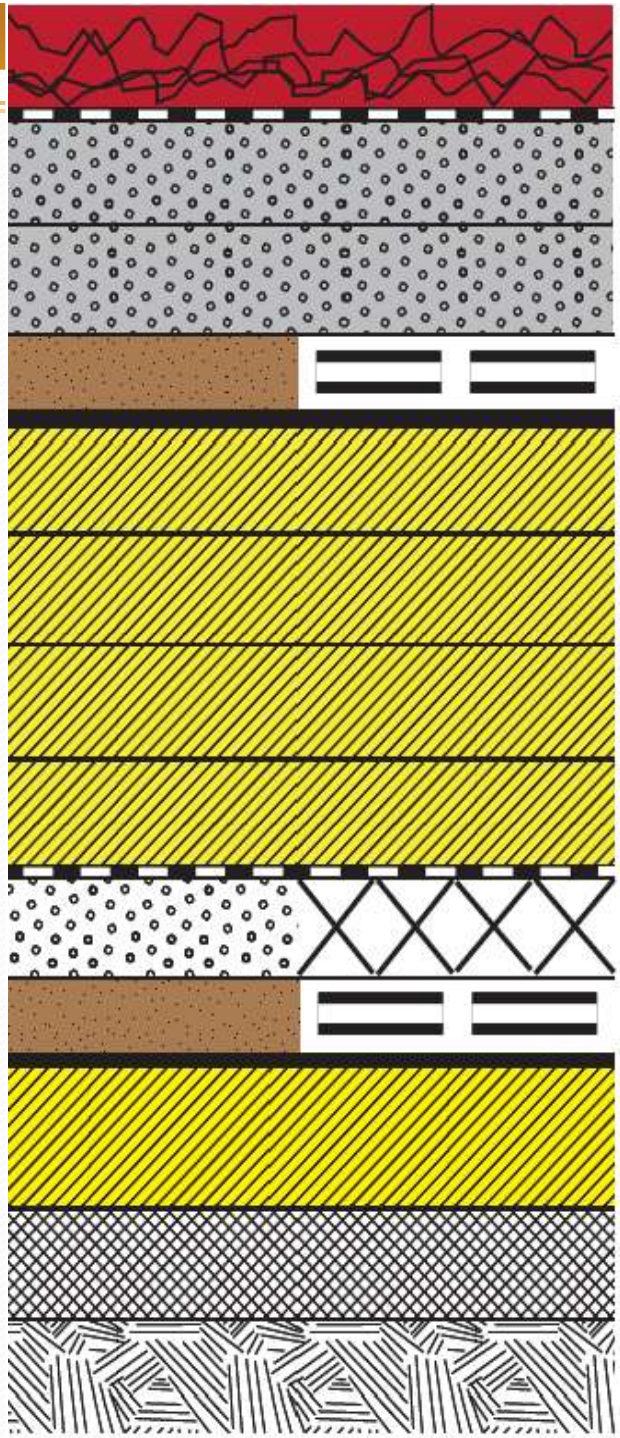
Landfill classes

- Currently landfill management systems – General and Hazardous Waste
- No longer managing waste in terms of General and hazardous landfills but rather risk based
  - Class A – High risk waste – H:H or H:h
  - Class B – Moderate risk waste – (GLB+)
  - Class C – Low risk waste – (GMB+)
  - Class D – inert waste – (GSB-)

Class A Containment Barrier Design



Waste body
Geotextile

300 mm Stone leachate collection system

100 mm Protection layer of silty sand
or a Geotextile of equivalent performance
2 mm HDPE Geomembrane

600 mm Compacted clay liner (in 4 x 150 mm layers)

Geotextile layer
150 mm Leakage detection system of granular material or geosynthetic equivalent

100 mm Protection layer of silty sand
or a Geotextile of equivalent performance
1,5 mm HDPE Geomembrane

200 mm Compacted clay liner

150 mm Base preparation layer

In situ soil

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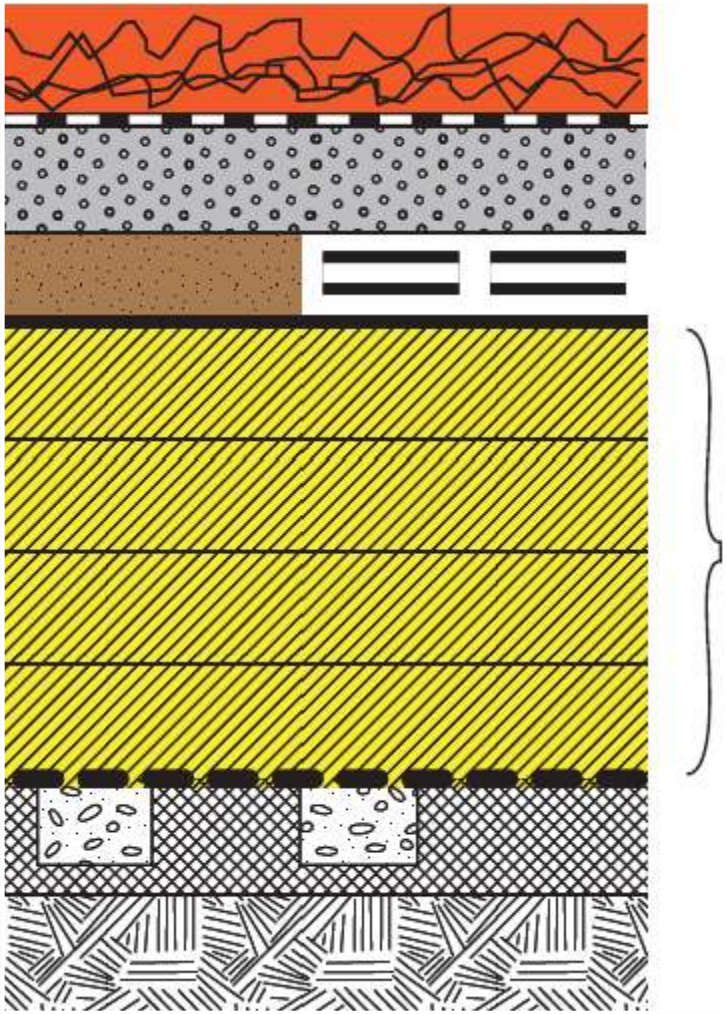
Class B Containment Barrier Design



Waste body

Geotextile
150 mm Stone leachate
collection system

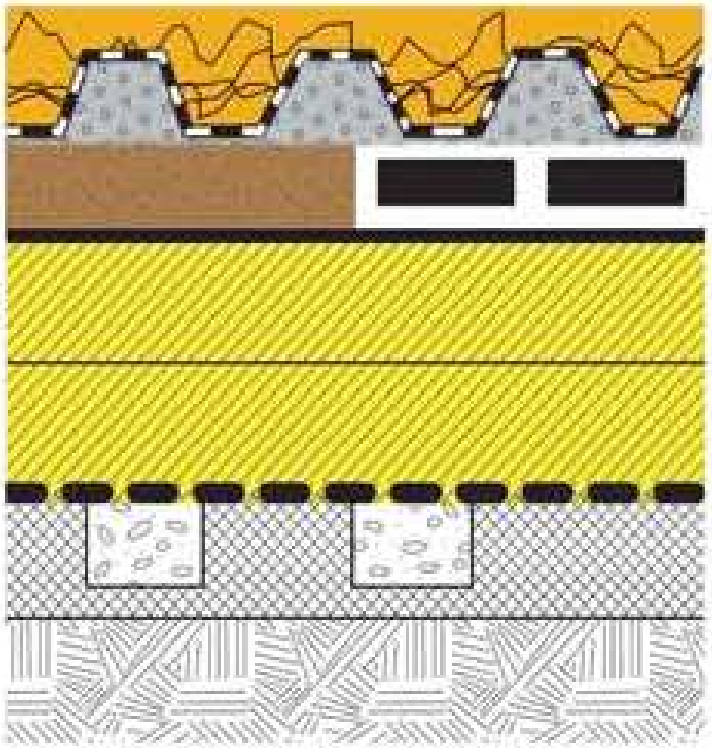
100 mm Protection layer of silty sand
or a Geotextile of equivalent performance
1,5 mm HDPE Geomembrane

600 mm Compacted clay
liner (in 4 x 150 mm layers)

Under drainage and monitoring system
and 150 mm Base preparation layer

In situ soil

Class C Containment Barrier Design



Waste body

300 mm thick finger drain of geotextile covered aggregate

100 mm Protection layer of silty sand or a geotextile of equivalent performance

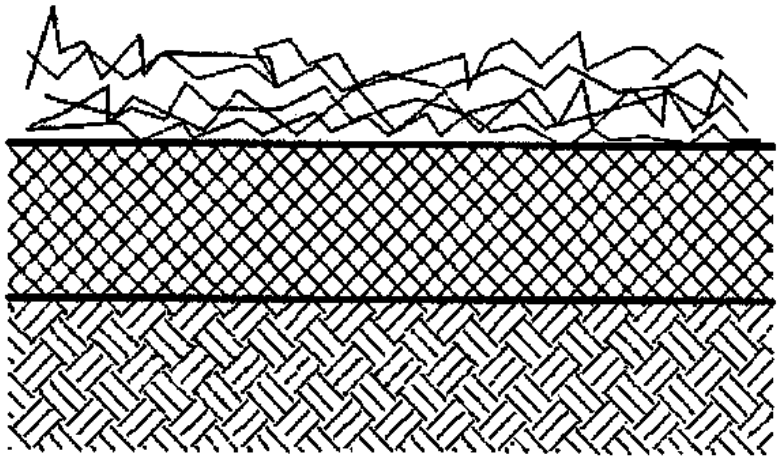
1,5 mm thick HDPE geomembrane

300 mm clay liner (of 2 X 150 mm thick layers)

Under drainage and monitoring system in base preparation layer

In situ soil

Class D Containment Barrier Design



Waste body

150mm Base preparation layer

In situ soil

Standards for Disposal of Waste to Landfill

- In all containment barrier types certain approval and construction requirements apply
  - Design drawings approved by Regional Director DWA
  - Consider temperature effects on liners
  - Seepage shall be calculated in determining leakage rates
  - Alternative elements of approved equivalent performance may be considered
  - All drainage layers shall contain drainage pipes

Standards for Disposal of Waste to Landfill

- Alternative designs for slopes exceeding 1:4 can be considered
- Construction Quality Assurance is required on site
- Geosynthetic materials shall comply with SABS specifications
- Chemical compatibility testing of proposed clay components with wastes containing salt is required

- May continue to dispose of waste in cells designed to MR standards until cell is full then must change
- Containment barriers for new landfills as well as new working cells at existing landfills must be built according to new requirements

Landfill Restrictions

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
Waste which, in the conditions of a landfill, is explosive, corrosive, oxidizing, or flammable (according to SANS 10234).	Immediate
Waste with a pH value of <6 or >12.	Immediate
Reactive waste that may react with water, air, acids or components of the waste, or that could generate unacceptable amounts of toxic gases within the landfill.	Immediate
Waste compressed gases (according to SANS 10234).	Immediate
Untreated Healthcare Risk Waste (HCRW).	Immediate
(i) POPs pesticides listed under the Stockholm Convention. (ii) Residue pesticides and pesticide containers.	Five (5) years Three (3) years
Lead acid batteries.	Immediate
Other batteries	Eight (8) years
Reclaimable or recyclable used oil, as well as oil filters, but excluding other oil containing wastes.	Four (4) years
Reclaimable or recyclable used or spent solvents.	Five (5) years
PCB wastes (>50 mg/kg or 50 ppm).	Five (5) years
Waste Electric and Electronic Equipment (WEEE) – Lights.	Three (3) years
Waste Electric and Electronic Equipment (WEEE) – Other.	Eight (8) years

Landfill Restrictions

Waste Prohibited or Restricted in terms of Disposal	Compliance Timeframe
Waste tyres: Whole.	Immediate
Waste tyres: Quartered.	Five (5) years
Liquid waste– Waste which has an angle of repose of less than 5 degrees, or becomes free-flowing at or below 60 ºC or when it is transported, or is not generally capable of being picked up by a spade or shovel; or Waste with a moisture content of >40% or that liberates moisture under pressure in landfill conditions, and which has not been stabilised by treatment.	Five (5) years
Hazardous waste with a calorific value of: > 25 MJ/kg. > 20 MJ/kg. > 10 MJ/kg. > 6% TOC.	 Four (4) years Six (6) years Eight (8) years Ten (10) years
Brine or waste with a high salt content (TDS > 5%), and an LC concentration for TDS of more than the LCT2 value prescribed for TDS.	Eight (8) years
Disposal of garden waste: 25% diversion from baseline. 50% diversion from baseline.	 Five (5) years Ten (10) years
Infectious animal carcasses and animal waste.	Immediate

Landfill Restrictions

Prohibited or Restricted Waste Disposal Activities	Timeframe
Disposal of– Type 0: Very High Risk waste that has been treated with Pre-classified non-hazardous waste; Pre-classified non-hazardous waste with hazardous waste; and Disposal of inert waste with any other waste.	Five (5) years
Macro encapsulation of waste.	Eight (8) years

Implications for Provinces

- Provinces issue waste management licences for general landfill sites:
  - Need to enforce the new containment barrier requirements through landfill licences
  - Need to enforce the landfill restrictions through amending acceptable waste types in the waste licences:
    - Inert landfill sites
    - Landfill diversions
- Landfill audit reports must be used to:
  - Enforce classification system
  - Enforce SDS

Implications for Local Government

- Local Government are owners of landfill sites – waste managers – domestic waste is pre-classified and is not hazardous
  - Must budget for new containment barrier requirements
  - Must develop inert landfill sites
  - Prepare cells for industrial waste
  - Must enforce the landfill restriction on LG landfill sites
  - Must plan for the diversion of garden waste
  - Will need to work with industry to ensure waste segregation to be able to achieve diversion targets – liquid waste, calorific waste
- Must take note of the requirements of reporting to the WIS – categorisation and against generator number

Implications for Local Government

- Will need to enforce manifest/SDS/classification system on landfill sites – may not accept unclassified waste or waste without manifest

THANK YOU FOR YOUR ATTENTION