LIG Landfill Interest Group

Disposal Treatment Utilisation Management

Specialist interest group within the
Institute of Waste Management of Southern Africa (IWMSA)
www.iwmsa.co.za/ligwc

Institute of Waste Management of Southern Africa

New Landfill Classifications

Richard Emery, Jeffares & Green
emeryr@jgi.co.za

Jeffares & Green
ENGINEERING & ENVIRONMENTAL CONSULTING

Waste Management Hierarchy

- Included in objectives of the NEMWA
- Promote alternatives to landfilling
- Landfill no longer the preferred waste management option in SA
- What can be expected?
    - Smaller volumes of low hazard waste disposed at landfills
    - Mostly non-recyclable waste disposed at landfills

(CSIR, 2013)

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Waste Stream Classification

Must be based on the **"Globally Harmonised System of Classification and Labelling of Chemicals (SANS 10234).**

(key focus is on transportation)

- *all waste needs to be classified and re-done every 5 years – cannot transport or dispose without it (except for a few pre-classified waste streams).*
- *This system deals with chemical concentrations and leachable concentrations using accredited laboratories.*
- *Australian-based (leaching) system.*

Past system used was from **Minimum Requirements for Disposal by Landfill, 1998**

and

Minimum requirements for the Handling, Classification and Disposal of Hazardous Waste, 1998.

(there is a time lag of 18 months to 3 years of phasing this out- depending on)

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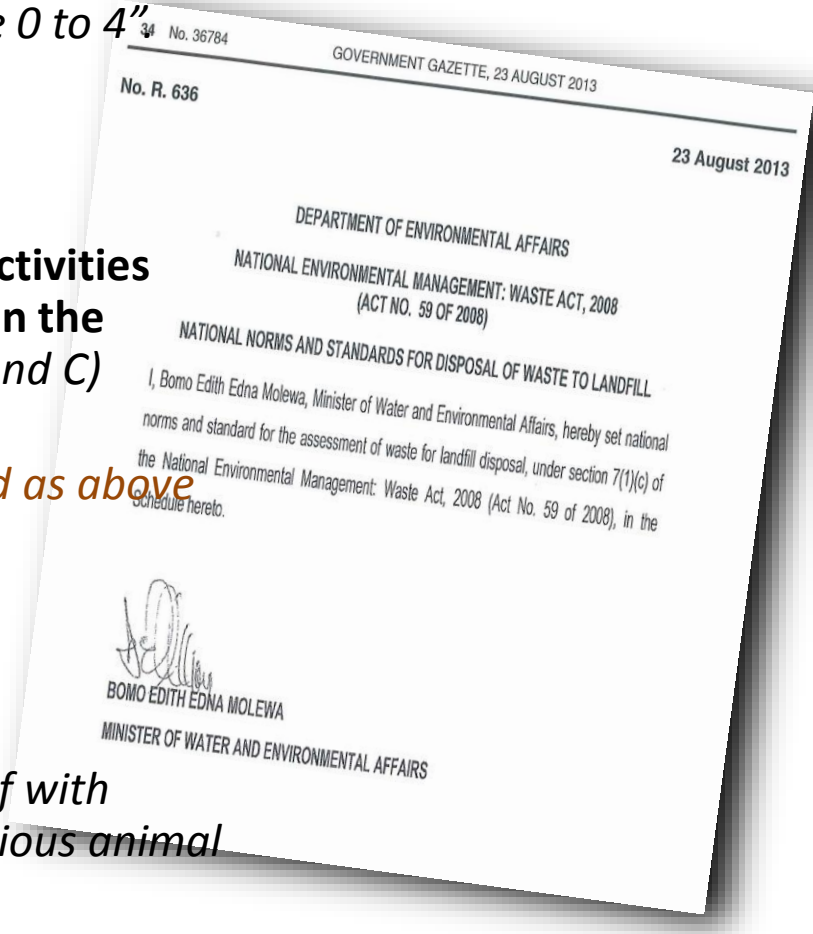
New regulations came into affect:

GNR 634 (23 August 2013): Waste Classification and Management Regulations – *talks to SANS 10234 and "talks to" the requirements for disposal, record keeping, etc.*

GNR 635 (23 August 2013): National Norms and Standards for the assessment of Waste for Landfill Disposal – *Assessment of waste prior to landfilling. Prescribes limits relating to chemical composition of wastes from lab testing such as LCT (Leachable Concentration Threshold), etc.*

GNR 636 (23 August 2013): National Norms and Standards for Disposal of Waste to Landfill – *aligns waste classification and character to default "simplified" basal lining systems (containment) being "Class A, B, C and D" versus "Type 0 to 4". Also refer to "Leakage rates" to be estimated.*



34 No. 36784 GOVERNMENT GAZETTE, 23 AUGUST 2013

No. R. 636

23 August 2013

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008
(ACT NO. 59 OF 2008)

NATIONAL NORMS AND STANDARDS FOR DISPOSAL OF WASTE TO LANDFILL

I, Bomo Edith Edna Molewa, Minister of Water and Environmental Affairs, hereby set national norms and standard for the assessment of waste for landfill disposal, under section 7(1)(c) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), in the Schedule hereto.

BOMO EDITH EDNA MOLEWA

MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

GNR 921 (29 Aug 2013): List of Waste Management activities that have, or are likely to have, a detrimental effect on the environment – *divides activities into categories (A, B and C) giving thresholds and "transitional provisions".*

(assessment of waste for disposal to landfill is assessed as above and aligned with classification under SANS10234)

- *Only four classes of landfills listed,*
- *No allowance for exemptions*
- *Certain waste items are not allowed to be disposed of with immediate effect (certain batteries, whole tyres, infectious animal wastes, etc),*
- *Certain waste items are not allowed to be disposed of after 3 to 5 years (WEEE, oils, certain solvents, PCB containing wastes, etc),*

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GNR 926 (29 November 2013) : National Norms and Standards for the Storage of Waste

Relates to the management of storage facilities, best practice, refers to minimum standards for design and operation of new and existing waste storage facilities.

Specifically on “disposal” :

- Must have documentation verifying authorised collector(s)

Note:

NEM:WA on contaminated land (with respect to “disposal” or engineered landfill site (Section 35-41) is not yet in force.

Where has classification changed?

Landfill classification <u>was</u> based on:

- Type of waste
- Size of waste stream
- Potential for leachate generation (climate, etc)

New Landfill Classification *focusses on barrier design* (GNR 635) and *chemical characteristics of the waste* (SANS 10234, GNR 636, etc)

Implications:

- *Far more chemical analysis and laboratory testing of waste sample,*
- *More cautious (simplified) approach to basal lining systems – increased cost,*
- *Improved record keeping and controls on sites,*
- *No delisting of waste streams generally accepted.*

Waste Classification - example

Sample – ash waste from a metals processing facility

Waste Classification (2nd edition, 1998)

- Sample Analysis detected Contaminants of Concern (CoCs) in concentrations higher than Acceptable Risk Levels (ARLs).
- CoCs identified are Li; Mg; Mn; Sr (Strontium) and Sb (Antimony)

The majority of the waste characteristics have a HR2 or HR1 hazard rating, these wastes have to be disposed on a H:H landfill site. The Char, Shredder Waste and Limestone – Bed waste can be disposed on a H:h landfill because it has a HR4 hazard rating.

Waste Classification WCMR

- The blended Char waste streams are classified as Type 3 which can be disposed on a landfill site with a Class C barrier system (G:L:B+ landfill)

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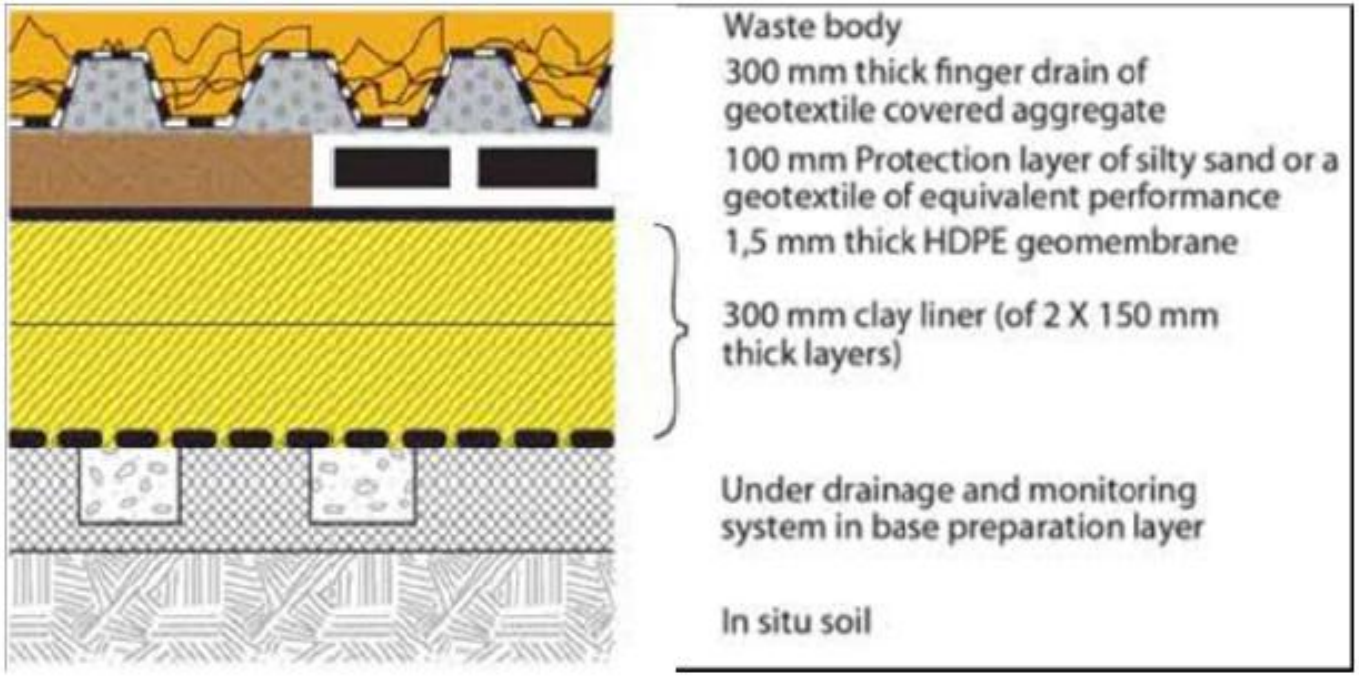
Liner Requirements



Class C Landfill Liner for the disposal of Type 3 Waste
Thickness above excavation level=approx. 800mm

Total Cost of Liner/m2 = R300

Legge (DWAF):
-preference to composite lining systems (GCL + geomem)
-- heat of hydration of deposit.
-- opportunity for research on existing pile?

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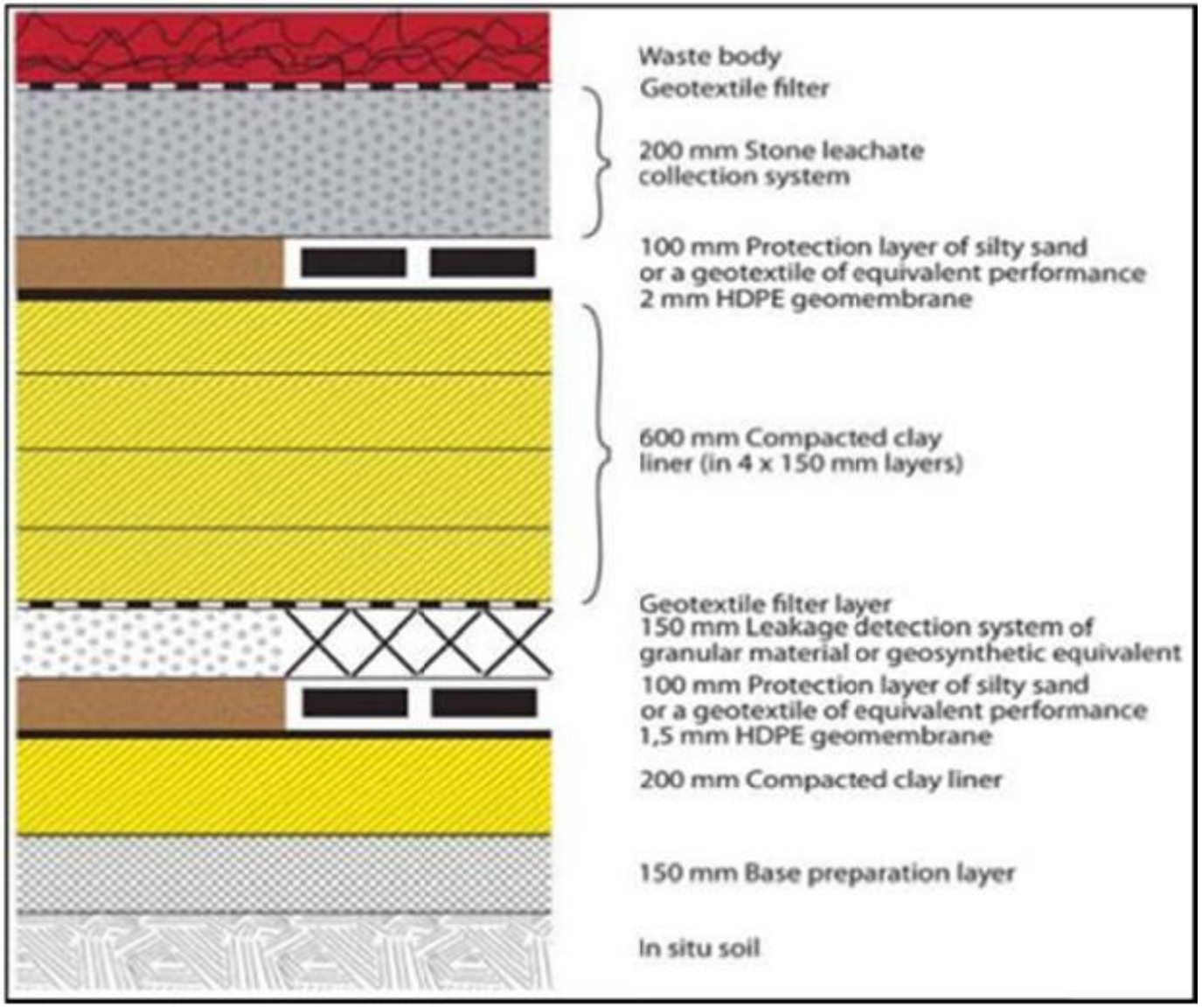

Class A Landfill Liner for the disposal of Type 1 Waste.

Thickness above excavation level=approx. 1500mm

Total Cost of Liner/m2 = R500

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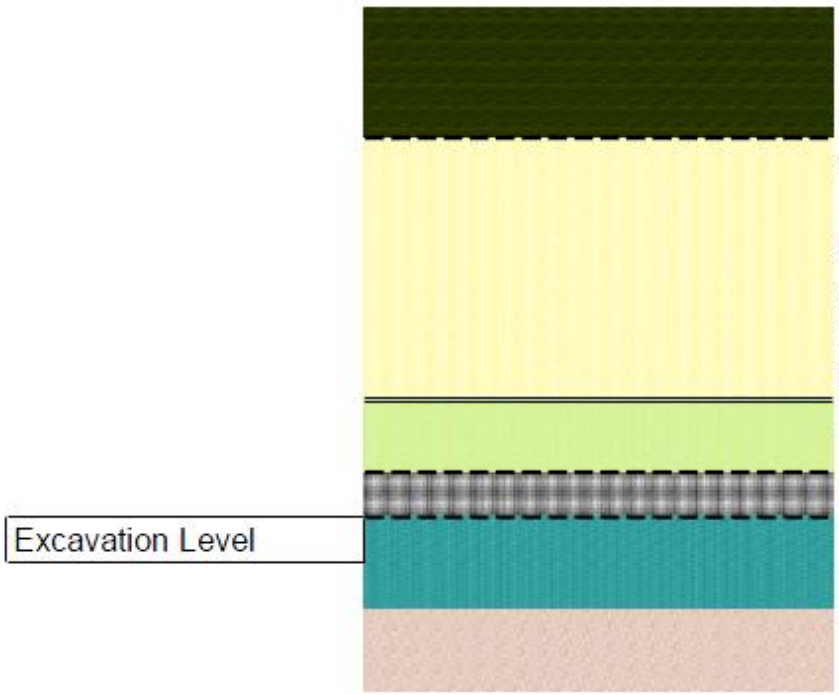
Possible Alternative Basal Liner Designs



OPTION 4	Description	Cost per m^2
	Drainage layer	
	150mm 38mm stone drainage layer	R 37.50
	Separation layer	
	separation geotextile	R 10.00
	Sand Protection Layer	
	300mm In-situ Sand	R 10.50
	Protection geotextile	R 20.00
	Hydraulic Barrier: 2.0mm HDPE	R 45.00
	Hydraulic Barrier: 70 mm Trisoplast	R 80.00
	Detection Layer : Cuspated Drain with sand	R 31.00
	1.0mm LLDPE Geomembrane	R 23.00
	Sand Leveling / Protection Layer	
	150mm base prep (in-situ) Rip & Recomp	R 6.75
	Insitu Sand	R 0.00
	TOTAL COST OF LINER/m^2 =	**R 264**

Excluding earthworks and infrastructure

Thickness above excavation level=approx. 550mm

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Thank you

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