Rooivleis Red Meat Abattoir
Vereniging - Association

WASTE MANAGEMENT: RED MEAT ABATTOIRS

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Red Meat Abattoir Association
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science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

INDUSTRY meets SCIENCE Waste Sector

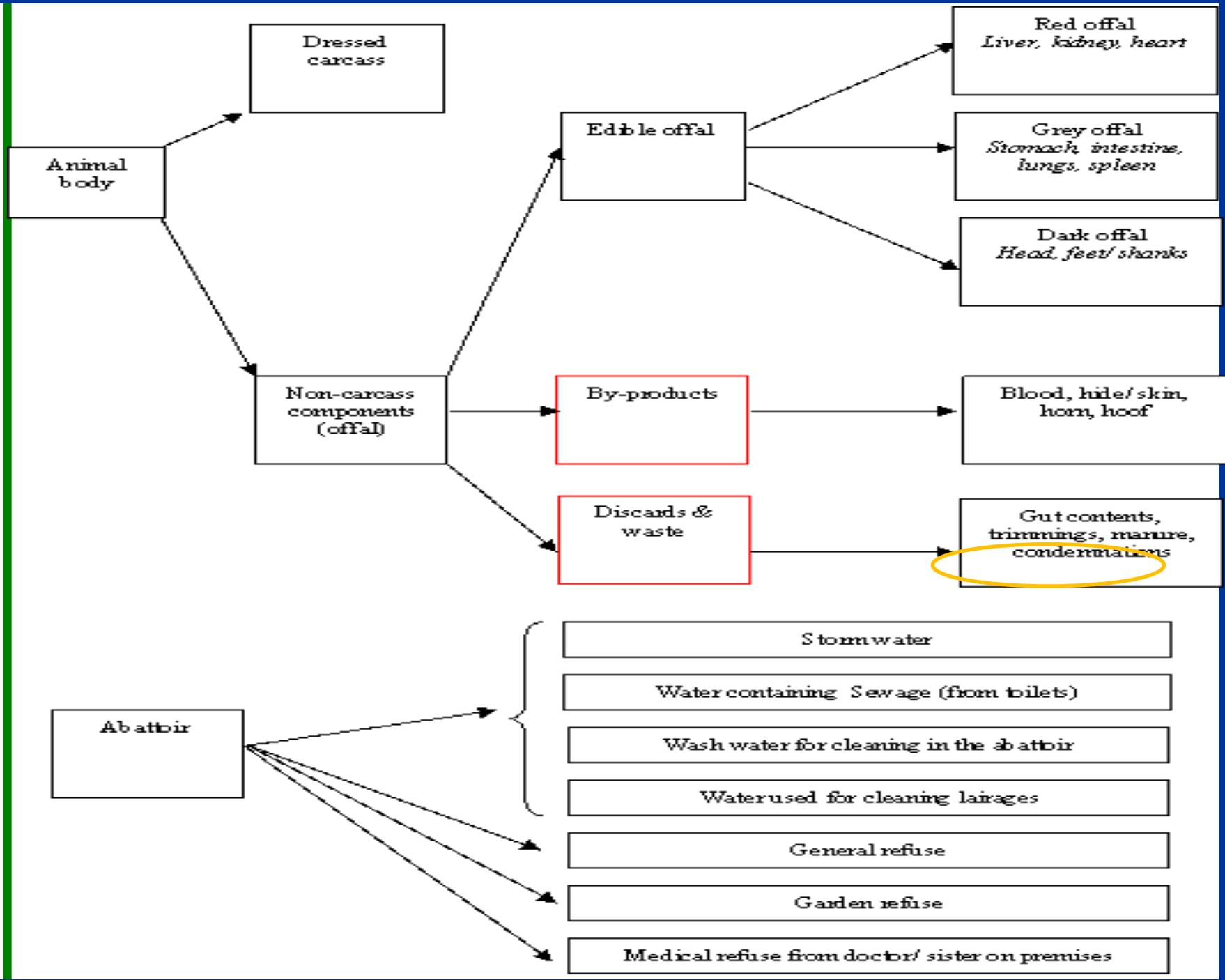
Waste management has become a serious challenge for the abattoir industry. Traditional methods of rendering (sterilisation plants, incineration and even denaturing) are out of fashion as a result of disease risk, environmental emissions or environmental contamination. NEM:WA further restricted the transport, handling and processing of abattoir by-products and waste. Alternative methods of handling waste materials are crucial to the success of abattoir industry.

1. Organic Waste Stream(s) in the Red Meat Abattoir Industry

- Blood
- Effluent & Sewerage
- Paunch and Dung
- Inedible usable material- hides, skins, hooves, horns (= by-products)
- Condemned Material

Beef	% Weight
Dressed Carcass	55
Hide / Skin	7
Blood	4
Offal	9
Paunch contents	15
Other wastes*	10

WASTE SOURCES

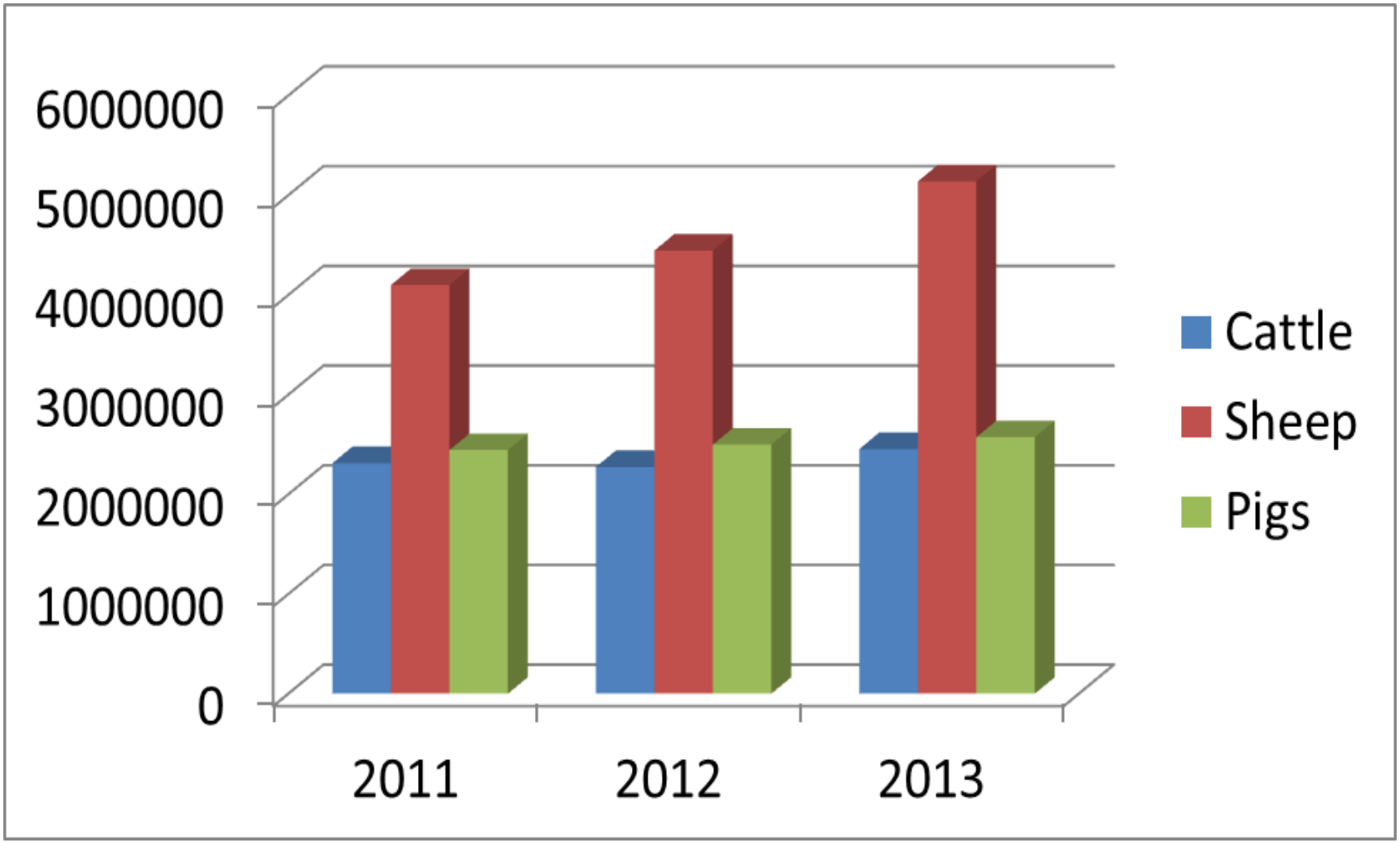


2. Nature and Magnitude of Red Meat Abattoir Waste

SA ABATTOIRS

Province	January 2013			
	HT (100+)	HT (21-99)	LT (10-20)	LT (<10)
GP	15	10	9	4
LP	0	7	4	17
NW	7	1	7	16
FS	9	13	20	41
KZN	10	7	8	26
EC	9	7	15	58
WC	12	6	16	24
MP	5	10	11	15
NC	10	4	12	34
	77	**65**	**102**	**235**
	Total = 479			

SLAUGHTER TOTALS



5 000 000 sheep

2 000 000 pig

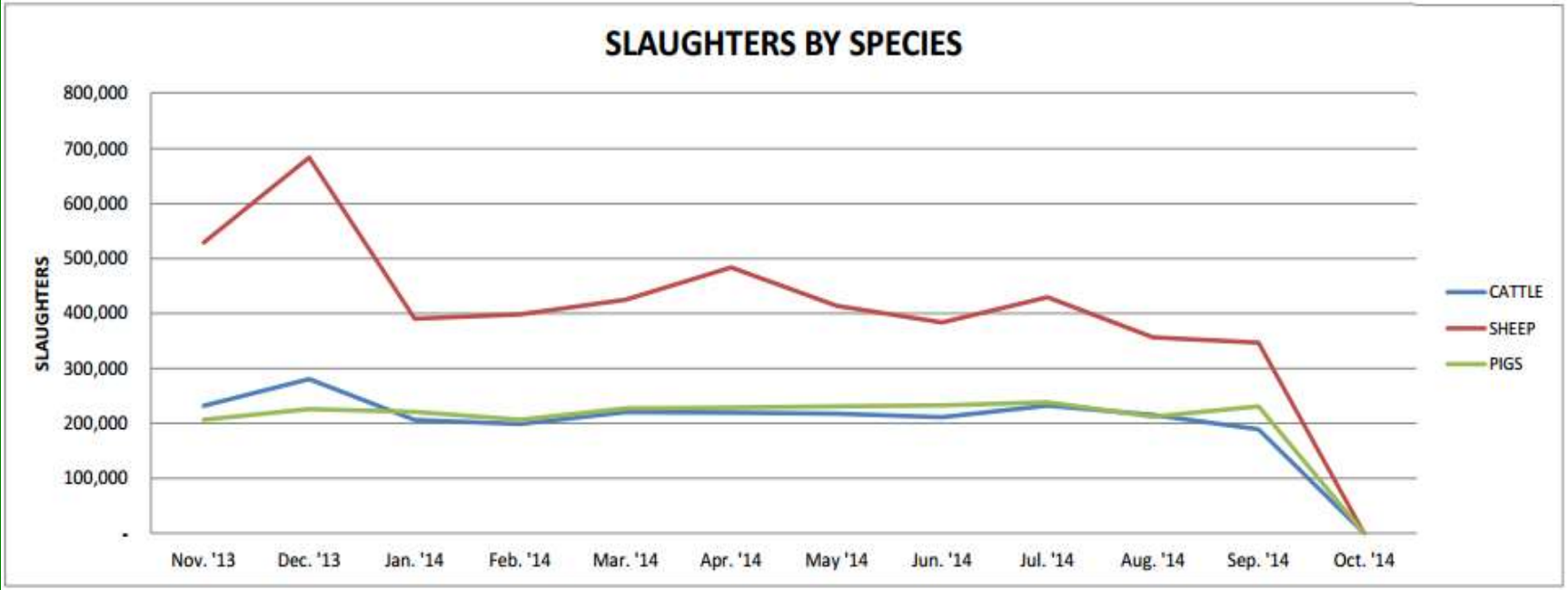
2 000 000 beef = **9 million carcasses for 2013**

SLAUGHTER TOTALS

PROVINCE	Total		
	Cattle	Sheep	Pigs
EASTERN CAPE	164,905	516,286	145,495
FREESTATE	477,187	772,155	185,502
GAUTENG	322,772	612,913	1,063,911
KWAZULU NATAL	271,193	99,327	332,040
LIMPOPO	121,854	15,134	49,650
MPUMALANGA	533,756	90,359	138,633
NORTHERN CAPE	197,984	1,632,852	69,064
NORTH WEST	183,339	48,929	71,173
WESTERN CAPE	149,599	1,053,520	405,767
TOTAL	**2,422,589**	**4,841,475**	**2,461,235**

Nov. 2013 - Oct. 2014

4 841 475 sheep
2 461 235 pig
2 422 589 beef =
9 725 299 or approximately
8 million carcasses for 2014



CALCULATION OF QUANTITIES

A Slaughter Unit is an estimation based on weight and may be equivalent to:

- 1 cow, bull or ox OR
- 2 calves OR
- 1 horse OR
- 6 sheep / goats OR
- 4 porkers OR
- 2 baconers OR
- 1 sausage pig OR

WASTE AMOUNTS

BOVINE

✦ Rumen / stomach content	18 kg
✦ Manure (Lairages)	4 kg
✦ Condemned material/Trimmings	9 kg
✦ Blood from bleeding area	12 L
✦ Bloody water (rinse off)	2 L
✦ Waste Water (Inflow = 880 liter x 85%)	748 L

<u>Waste per slaughter unit =</u>

Effluent & Waste Water: 818.0 liter

Solid Waste: 31.0 kg

DAFF DRAFT MODELS

Regulations for Red Meat Abattoirs – Meat Safety Act, 2000 (Act no 40 of 2000)

Disposal of CONDEMNED material

119. Any condemned material must be disposed of by –

(a) total incineration;

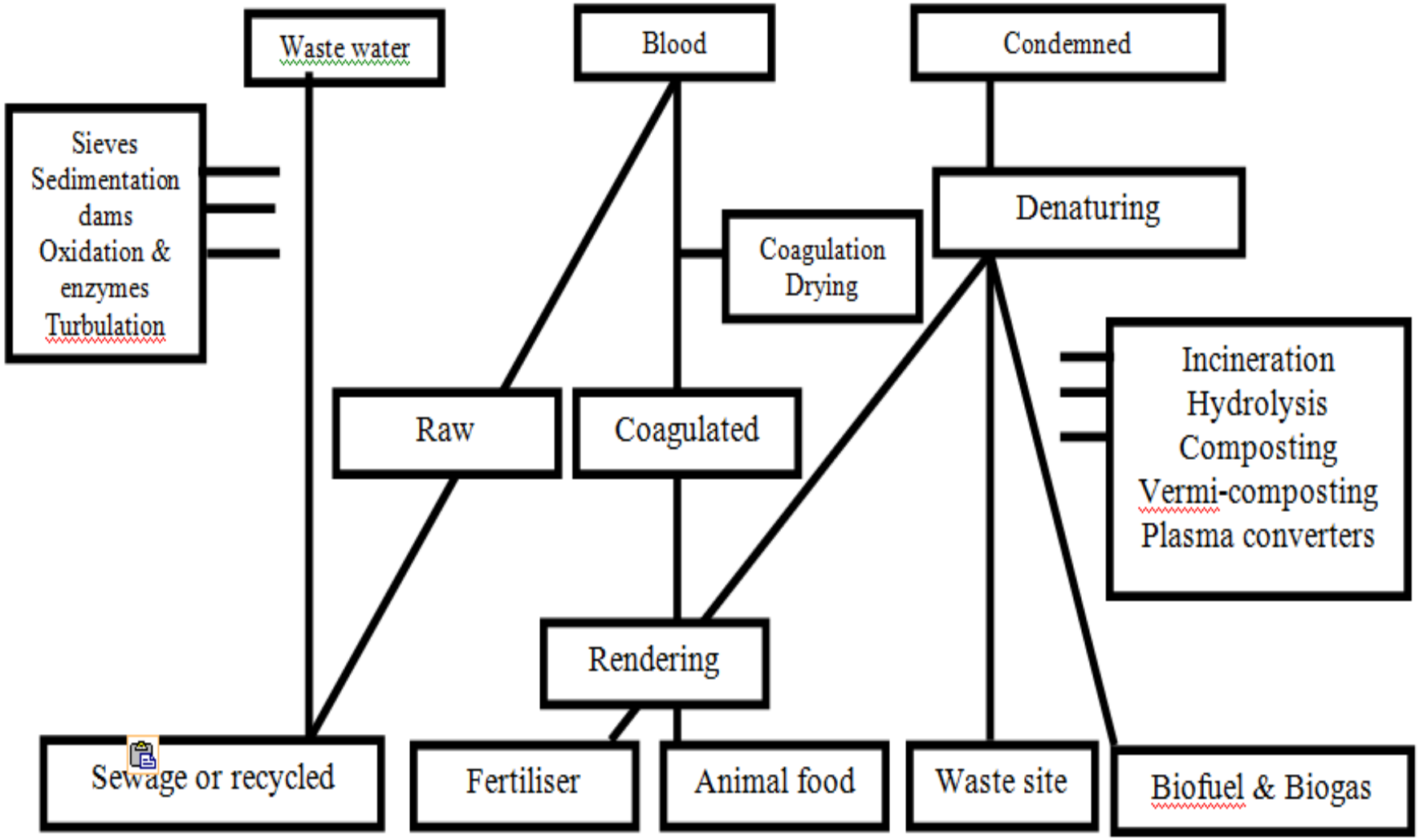
(b) denaturing and burial of condemned material at a secure site, approved by the provincial executive officer and local government, by –

(i) slashing and then spraying with, or immersion in, an obnoxious colorant approved for the purpose; and

(ii) burial and immediate covering to a depth of at least 60 cm and not less than 100 m from the abattoir, providing such material may not deleteriously affect the hygiene of the abattoir; or

(c) processing at a registered sterilizing plant.

3. Current Initiatives by Red Meat Abattoirs for Alternative Solutions

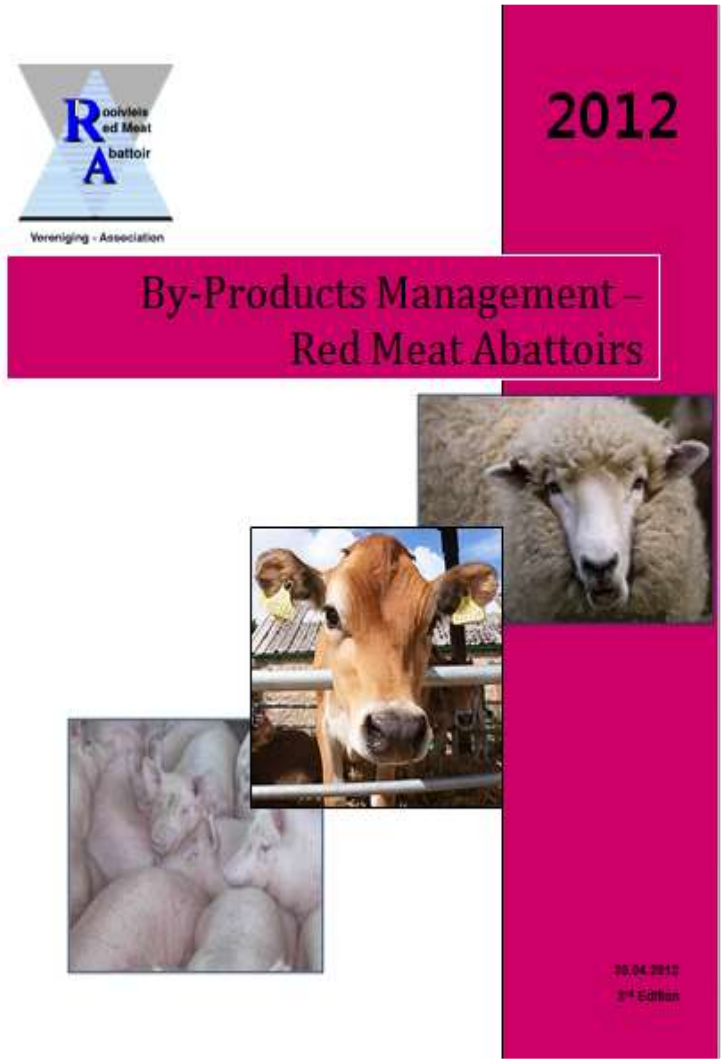


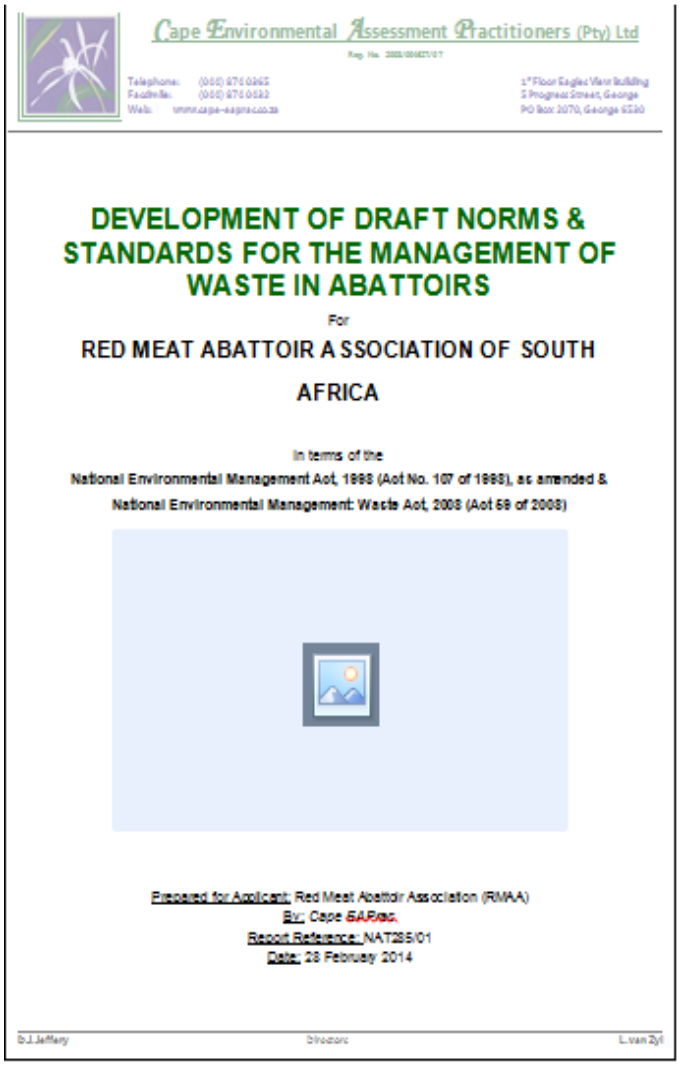
Composting

Bio-Gas

Alkaline Hydrolysis

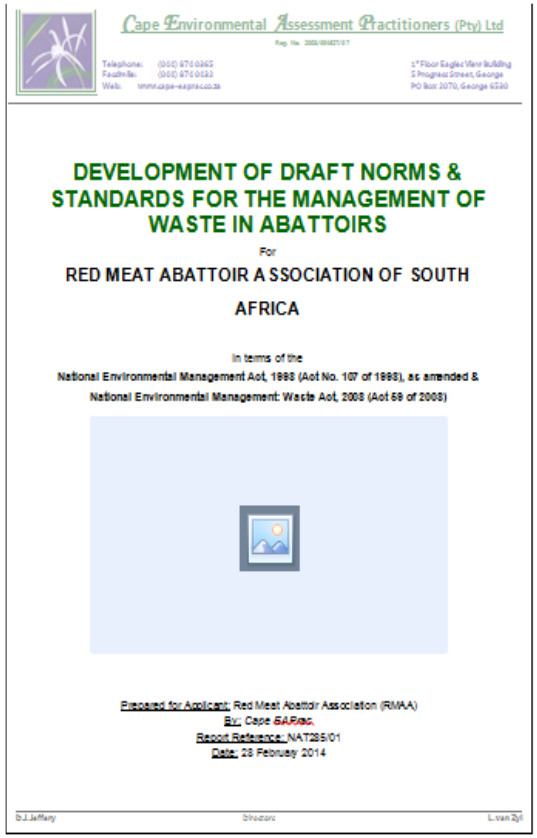
3. Current Initiatives by Red Meat Abattoir Association to Assist Red Meat Industry





3. Current Initiatives by Red Meat Abattoir Association to Assist Red Meat Industry

Chapter 1: Legislative Requirements
Chapter 2: Administrative Requirements
Chapter 3: Environmental Management Standards
1 Process And Sources Of Waste In Red Meat Abattoirs
2 Types Of Waste Generated In Red Meat Abattoirs
3 Utilisation Of Waste
4 Methods Employed For Dealing With Waste
5 Solid Waste
7. Wastewater
8. Impacts & Mitigation Measures
9. Performance Indicators
Chapter 4: Monitoring and Compliance
1. Monitoring Requirements
2. Record Keeping
3. Reporting
4. Departmental Inspections
Chapter 5: Miscellaneous
1. Transitional Provisions
2. References, Tables, Figures, Abbreviations, Acronyms



Cape Environmental Assessment Practitioners (Pty) Ltd

DEVELOPMENT OF DRAFT NORMS & STANDARDS FOR THE MANAGEMENT OF WASTE IN ABATTOIRS

For

RED MEAT ABATTOIR A SSOCIATION OF SOUTH AFRICA

In terms of the
National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended &
National Environmental Management: Waste Act, 2008 (Act 59 of 2008)

Prepared for Applicant: Red Meat Abattoir Association (RMAA)
By: Cape EAPrac
Report Reference: NAT285/01
Date: 28 February 2014

3. Desktop Study – Innsbruck University

++	Total inactivation		
+	Inactivation	(-)	No information found, but predicted survival of pathogen
-	Survival	NI	No information found
(++)	No information on process, but predicted inactivation of pathogen	C	Contradictory information

Pathogen	Inactivation by					
	Pasteurize (70°C)	Anaerobic digestion at 37°C	Anaerobic digestion at 55°C	Pre-pasteurize & Anaerobic digestion at 37°C	Composting	Alkaline hydrolysis
Escherichia coli	++	+	+	(++)	+	(++)
Salmonella	++	+	++	(++)	++	(++)
Clostridium	-	-	-	(-)	-	(++)
Brucella abortus	++	NI	(++)	(++)	NI	(++)
Bacillus antracis	_	-	-	(-)	-	(++)
Mycobacterium bovis	++	(+)	(++)	(++)	++	++
Erysipelothrix	++	+	++	(++)	++	(++)

4. Gaps in Research (to guide future targeted R&D in support of industry)

- Risk of pathogens after treatment options eg Composting / Biogas /Alkaline hydrolysis
- Utilization of animal byproducts as organic compost
- Cost effective options for smaller plants
- Centralized communication / technology transfer on effective utilisation of organic waste

THANK YOU!