

WASTE MANAGEMENT SUMMARY REPORT

Waste Identification	Boiler Ash
Source	Sappi Tugela Mill

Authorisation

WSP Environment & Energy (WSP) was appointed by Sappi Southern Africa Ltd (Sappi) to undertake an assessment of Boiler Ash currently generated at its Tugela Mill in terms of the National Environmental Management: Waste Act (NEM:WA) (as amended) as well as certain requirements under the Waste Classification and Management Regulations (Government Notice 634 of 2013, GN 634) together with the associated National Norms and Standards for the Assessment of Waste to Landfill Disposal (GN 635 of 2013), and the National Norms and Standards for Disposal of Waste to Landfill (GN 636 of 2013).

Scope of Assessment

Included	Element	Description
ü	Defined and Listed Waste Appraisal	Assessment of whether the waste is defined under Schedule 3 of the National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014) and/or listed in Annexure 1 (Regulation 4(1) of GN 634 of 2013). Where a discrepancy is apparent, Act 26 of 2014 takes precedence. Wastes either defined or listed do not necessarily require classification in terms of South African National Standard (SANS) 10234:2008 'Globally Harmonised System of Classification and Labelling of Chemicals (GHS)' (SANS 10234).
ü	Appraisal of Disposal Prohibitions	Determination of disposal prohibitions in terms of GN 636 of 2013.
ü	Waste Type Profiling for Landfill Disposal	Unless listed in Annexure 1 of GN 634, wastes which are to be managed by landfill disposal must be profiled in terms of GN 635 of 2013.
ü	SANS 10234 Classification	Classification as hazardous or non-hazardous in accordance with SANS 10234 (Regulation 4(2) of GN 634 of 2013). This is not necessarily relevant where a waste can categorically be defined by either Schedule 3 (Act 26 of 2014) or Annexure 1 to GN 634.
ü	Safety Data Sheet	Preparation of a Safety Data Sheet (SDS). A SDS is required for all hazardous wastes (excluding Health Care Risk Waste (HCRW) in terms of Regulation 5(1) of GN 634.
ü	Beneficiation/Treatment Appraisal	Not included within scope of assessment.

Waste Description

Process Origin	Chemical Inputs	Physical Characteristics
Boiler Ash	None known	Light grey fine ash

Defined Waste Appraisal

Waste listed in Schedule 3 (Act 26 of 2014)	Yes
Schedule 3 descriptor	<p>Category A: Hazardous Waste, 7) Wastes from thermal processes (a) hazardous portion of wastes from power stations and other combustion plants; or,</p> <p>Category B: General Waste, 4) Wastes from thermal processes (a) waste from power stations and other combustion plants not otherwise specified in Category A.</p>

Listed Waste Appraisal

Waste listed in Annexure 1 (GN634)	No
Annexure 1 category descriptor	N/A

Sampling & Laboratory Analysis

Sampler	Date	Comments	
WSP	October 2015	Composite and representative sample obtained by WSP.	
Laboratory Analysis		Matrix	
Suite		Total	Leachate
Metals and metalloids, as listed in GN 635			
§ Antimony, arsenic, barium, boron, cadmium, chromium (total and hexavalent), cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium and zinc		Ü	Ü
Inorganics, as listed in GN 635			
§ Chloride, nitrate, sulphate and Total Dissolved Solids		N/A	Ü
§ Cyanide and fluoride		Ü	Ü
Organics, as listed in GN 635			
§ Benzene, toluene, ethylbenzene and xylenes (BTEX)		Ü	Ü
§ Petroleum hydrocarbons		Ü	N/A
§ Polychlorinated Biphenyls (PCB)		Ü	Ü
§ Polycyclic Aromatic Hydrocarbons (PAH)		Ü	N/A
§ Volatile and Semi-Volatile Organic Compounds (VOC and SVOC)		Ü	Ü
Pesticides, as listed in GN 635			
§ Aldrin + Dieldrin		Ü	Ü
§ DDT + DDD + DDE		Ü	Ü
§ 2,4-D		Ü	Ü
§ Chlordane		Ü	Ü
§ Heptachlor		Ü	Ü
General Parameters, to support classification and disposal restrictions appraisal			
§ Calorific Value		Ü	N/A
§ Flashpoint		Ü	N/A
§ Moisture Content		Ü	N/A
§ pH		Ü	N/A
§ Total Organic Carbon (TOC)		Ü	N/A

N/A = Not applicable. Refer **Annexure 1** for laboratory certificates of analysis.

Notes to Laboratory Analysis

§ Leachate preparation undertaken using acetic acid as per GN 635.

Appraisal of Disposal Prohibitions

Restrictive Condition	Recommendation
None.	Not applicable.

Waste Type Profiling for Landfill Disposal

Type 3

Waste Type

Class C or GLB+

Landfill Class (subject to any prohibitions)

Notes to Waste Type Profiling

- Type Profiling is based on consideration of total concentrations of substances published in Paragraph 6 of GN 635 and the appropriate landfill class determined with reference to the Waste Acceptance Criteria in Paragraph 4 of GN 636.
- Refer **Annexure 2** for indicative profiling assessment.
- It is noted that while reference is made in GN 635 to the application of SANS 10234 classification to Waste Type Profiling, the Department of Environmental Affairs has confirmed during stakeholder engagement that Hazard Statement Codes for transportation and handling are not intended to be utilised for Waste Type Profiling for landfill disposal.

SANS 10234 Classification

Hazardous

ü

Non-hazardous

Refer **Annexure 3** for full assessment.

Notes to SANS 10234 Classification

- Assumptions in terms of the chemical form (speciation) in which elemental components of the waste stream are likely to occur have generally been conservative taking into account plausible thermodynamic and mineralogical assemblages.
- Where applicable to the sample medium, results of laboratory analysis have been corrected according to sample-specific moisture content. This is not relevant for liquid streams.
- Where SANS 10234 guidance is either not available, unclear or relatively incomplete, cognisance has been taken of European Regulation (EC) No. 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) which adopts, within the European community, the GHS as published by the United Nations Social and Economic Council.
- Hazard Statement Codes for the ingredients have been sourced from either the supplement to SANS 10234:2008 Edition 1, Table 3.1 of Annex VI of the CLP Regulations, or the European Chemicals Agency, Classification & Labelling Inventory Database.
- Cognisance must be taken of the need to re-classify the waste every five years, or if the generation process changes or, otherwise if more data becomes available.

Safety Data Sheet

Required

ü

Not required

A SDS is not required for the Boiler Ash.

Annexures

- Annexure 1: Laboratory Analytical Certificates
- Annexure 2: Type Profiling Assessment (GN 635/636)
- Annexure 3: Material Classification (SANS 10234)

Annexure 1: Laboratory Analytical Certificates



Jones Environmental Laboratory - South Africa

Unit 2/5
9 Quantum Road
Firgrove Business Park
Somerset West
7130
South Africa

WSP Environmental & Energy Africa
WSP House
Bryanston Place
199 Bryanston Drive
Bryanston 2191
South Africa

Attention : Zaffar Hussain
Date : 5th November, 2015
Your reference :
Our reference : Test Report 15/14449 Batch 1
Location :
Date samples received : 8th October, 2015
Status : Final report
Issue : 1

Eleven samples were received for analysis on 8th October, 2015 of which eleven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

All analysis was undertaken at Jones Environmental Laboratory in the UK, which is ISO 17025 accredited under UKAS (4225).

NOTE: Under International Laboratory Accreditation Cooperation (ILAC), ISO 17025 (UKAS) accreditation is recognised as equivalent to SANAS (South Africa) accreditation.

Compiled By:

A handwritten signature in black ink, appearing to read 'Paul Lee-Boden'.

Paul Lee-Boden BSc
Project Manager

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINAT ED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
Antimony	3	<1	1	2	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Arsenic #	<0.5	<0.5	2.2	5.1	1.5	8.3	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM30/PM15
Barium #	25	15	65	303	228	531	1027	<1	34	14	<1	mg/kg	TM30/PM15
Cadmium #	0.4	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Calcium	9015	1597	7926	25170	6686	13520	189500	2022	1101	774	<500	mg/kg	TM30/PM15
Chromium #	18.1	0.8	45.5	107.4	23.4	28.0	25.0	<0.5	0.9	0.6	<0.5	mg/kg	TM30/PM15
Cobalt #	0.5	<0.5	3.1	18.5	8.0	17.3	5.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM30/PM15
Copper #	15	4	61	35	5	22	14	<1	3	4	<1	mg/kg	TM30/PM15
Iron	1539	497	3362	39700	10140	22760	16130	<20	174	105	<20	mg/kg	TM30/PM15
Lead #	36	<5	18	12	<5	<5	<5	<5	<5	<5	<5	mg/kg	TM30/PM15
Magnesium	553	277	1438	5549	813	1730	6947	656	982	279	<25	mg/kg	TM30/PM15
Manganese #	39	42	49	646	49	106	1166	<1	121	46	<1	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	2.0	<0.1	2.4	2.4	1.8	1.8	1.8	<0.1	0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	2.2	1.3	18.5	33.7	24.8	35.5	19.4	<0.7	1.2	0.9	<0.7	mg/kg	TM30/PM15
Potassium	116	179	236	1170	534	848	1696	1040	1437	1519	<5	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Sodium	1019	6149	854	4690	1198	2396	10640	408	261	511	<5	mg/kg	TM30/PM15
Sulphur	0.12	0.35	0.39	0.53	0.27	0.14	0.61	0.02	0.02	0.02	<0.01	%	TM30/PM15
Vanadium	1	<1	10	93	20	56	12	<1	<1	<1	<1	mg/kg	TM30/PM15
Boron (Aqua Regia Soluble)	7.86	0.70	4.48	5.51	10.42	38.78	7.19	1.58	1.04	1.02	<0.25	mg/kg	TM30/PM15
Zinc #	42	9	87	44	<5	21	14	<5	6	<5	<5	mg/kg	TM30/PM15
Methyl Ethyl Ketone (MEK)	<100	<100	<100	<100	<100	<100	<100	<500AC	<1000AD	<500AC	<100	ug/kg	TM15/PM10
Formaldehyde	12.1	12.8	23.2	12.8	15.2	9.8	18.4	1.6	16.3	12.6	<0.5	mg/kg	TM51/PM12

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCREEN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINATED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
Pesticides MS													
Organochlorine Pesticides													
Aldrin	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Alpha-HCH (BHC)	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Beta-HCH (BHC)	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Chlorothalonil	<2AA	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<1	ug/kg	TM42/PM8
cis-Chlordane	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Delta-HCH (BHC)	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Dieldrin	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Endosulphan I	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Endosulphan II	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Endosulphan sulphate	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Endrin	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Gamma-HCH (BHC)	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Heptachlor	<2AA	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<4AB	<1	ug/kg	TM42/PM8
Heptachlor Epoxide	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Hexachlorobenzene	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Isodrin	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
o,p'-DDE	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<1	ug/kg	TM42/PM8
o,p'-DDT	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<200AG	<1	ug/kg	TM42/PM8
o,p'-Methoxychlor	<2AA	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<1	ug/kg	TM42/PM8
o,p'-TDE	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
p,p'-DDE	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
p,p'-DDT	<2AA	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<1	ug/kg	TM42/PM8
p,p'-Methoxychlor	<2AA	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<40AE	<1	ug/kg	TM42/PM8
p,p'-TDE	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Pendimethalin	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Permethrin I	33AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Permethrin II	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Quintozene (PCNB)	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Tecnazene	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Telodrin	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
trans-Chlordane	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Triadimefon	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Triallate	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
Trifluralin	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<2AA	<1	ug/kg	TM42/PM8
2,3,6 – TBA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.1	mg/kg	TM42/PM8
2,4 – D	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.1	mg/kg	TM42/PM8
2,4 –DB	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.1	mg/kg	TM42/PM8
2,4,5 – T	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.1	mg/kg	TM42/PM8
4- CPA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.1	mg/kg	TM42/PM8
Benazolin	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.1	mg/kg	TM42/PM8
Bentazone	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.2AA	<0.1	mg/kg	TM42/PM8

Please include all sections of this report if it is reproduced

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Location:
Contact: Zaffar Hussain
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Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
Bromoxynil	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Clopyralid	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Dicamba	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Dichloroprop	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Diclofop	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Fenoprop	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Flamprop	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Flamprop – isopropyl	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Ioxynil	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
MCPA	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
MCPB	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Mecoprop	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Pentachlorophenol	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Picloram	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
Triclopyr	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.2 ^{AA}	<0.1	mg/kg	TM42/PM8
EPH (C10-C36)	2236	846	3500	<10	<10	<10	1032	897	1037	376	<10	mg/kg	TM5/PM8
GRO (C6-C9)	<0.1	<0.1	<0.1	<0.1	<0.5 ^{AC}	<0.5 ^{AC}	<0.1	0.7 ^{AC}	3.4 ^{AC}	<0.5 ^{AC}	<0.1	mg/kg	TM36/PM12
PCBs (Total vs Aroclor 1254)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Total Phenols HPLC	14.83	<0.15	3.46	<0.15	<0.15	<0.15	0.58	0.36	0.35	1.29	<0.15	mg/kg	TM26/PM21
Moisture Content	82.1	84.2	84.4	16.4	19.0	43.1	53.8	22.9	9.7	27.6	<0.1	%	PM4/PM0
Fluoride	NDP	NDP	NDP	1.1	0.7	0.7	<0.3	NDP	8.0	0.5	<0.3	mg/kg	TM27/PM20
Hexavalent Chromium #	<0.3	<0.3	11.6	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	40.31	38.49	44.22	2.93	26.42	23.40	3.88	51.04	48.23	48.29	<0.02	%	TM21/PM24
Calorific Value	13	13	14	<1	9	8	1	17	16	16	<1	MJ/kg	TM21/PM24
Flashpoint	>50	>50	>50	>50	>50	>50	>50	>50	>50	>50	>50	Degrees C	TM79/PM0
pH #	NDP	NDP	7.69	8.26	8.69	10.56	9.10	NDP	NDP	NDP	<0.01	pH units	TM73/PM11

Client Name: WSP Environmental & Energy Africa
 Reference:
 Location:
 Contact: Zaffar Hussain
 JE Job No.: 15/14449

Report : ASLP (20:1)-Acetate pH 5 or 2.9

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINAT ED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
Dissolved Antimony	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM30/PM14
Dissolved Arsenic	8.1	7.6	7.8	6.1	6.0	10.1	21.9	4.8	5.6	7.1	<2.5	ug/l	TM30/PM14
Dissolved Barium	83	67	130	170	872	934	1767	275	215	209	<3	ug/l	TM30/PM14
Dissolved Boron	160	18	17	70	393	539	214	38	35	33	<12	ug/l	TM30/PM14
Dissolved Cadmium	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	ug/l	TM30/PM14
Dissolved Chromium	3.7	<1.5	2.6	2.8	<1.5	5.6	2.9	1.8	1.6	<1.5	<1.5	ug/l	TM30/PM14
Dissolved Cobalt	<2	<2	<2	6	6	8	3	<2	<2	<2	<2	ug/l	TM30/PM14
Dissolved Copper	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/l	TM30/PM14
Dissolved Lead	<5	<5	<5	<5	<5	6	<5	<5	<5	<5	<5	ug/l	TM30/PM14
Dissolved Manganese	155	197	111	3530	302	402	1649	2338	3765	1824	<2	ug/l	TM30/PM14
Dissolved Mercury	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM30/PM14
Dissolved Molybdenum	<2	<2	<2	<2	<2	<2	16	<2	<2	<2	<2	ug/l	TM30/PM14
Dissolved Nickel	<2	<2	11	14	18	16	12	5	6	5	<2	ug/l	TM30/PM14
Dissolved Selenium	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM30/PM14
Dissolved Vanadium	<1.5	<1.5	<1.5	4.7	11.5	5.4	4.4	<1.5	<1.5	<1.5	<1.5	ug/l	TM30/PM14
Dissolved Zinc	80	43	158	13	41	101	3	22	77	28	<3	ug/l	TM30/PM14
EPH (C10-C36)	750	<10	2440	<10	<10	<10	130	500	400	50	<10	ug/l	TM5/PM30
GRO (C6-C9)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM36/PM88

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : ASLP (20:1)-Acetate pH 5 or 2.9

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINAT ED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Methyl Tertiary Butyl Ether	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM88
Chloromethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Vinyl Chloride	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM88
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM88
Chloroethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Trichlorofluoromethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,1-Dichloroethene (1,1 DCE)	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Dichloromethane (DCM)	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
trans-1-2-Dichloroethene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,1-Dichloroethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
cis-1-2-Dichloroethene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM88
Bromochloromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Chloroform	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,1,1-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,1-Dichloropropene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Carbon tetrachloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,2-Dichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM88
Trichloroethene (TCE)	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,2-Dichloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Dibromomethane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Bromodichloromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Toluene	<2	<2	<2	<2	2	<2	<2	5	<2	<2	<2	ug/l	TM15/PM88
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,1,2-Trichloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Tetrachloroethene (PCE)	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,3-Dichloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Dibromochloromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,2-Dibromoethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Chlorobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,1,1,2-Tetrachloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Ethylbenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
p/m-Xylene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
o-Xylene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Styrene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Bromoform	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
Isopropylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/l	TM15/PM88
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,2,3-Trichloropropane	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : ASLP (20:1)-Acetate pH 5 or 2.9
Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINAT ED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
VOC MS Continued													
Propylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,3,5-Trimethylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
tert-Butylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,2,4-Trimethylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
sec-Butylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
4-Isopropyltoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,3-Dichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,4-Dichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
n-Butylbenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,2-Dichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Naphthalene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM88
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM88
Toluene-D8	92	92	95	96	97	93	95	95	93	94	<0	%	TM15/PM88
4-Bromofluorobenzene	93	89	88	88	91	89	87	89	88	86	<0	%	TM15/PM88
Methyl Ethyl Ketone (MEK)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM88
SVOC MS													
Phenols													
2-Chlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylphenol	1.6	3.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1	<1	<1	<1	<1	6	2	<1	<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
4-Methylphenol	21	7	7	2	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : ASLP (20:1)-Acetate pH 5 or 2.9

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINAT ED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
SVOC MS													
PAHs													
2-Chloronaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylnaphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Naphthalene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Acenaphthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Pyrene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	27	<5	5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Di-n-butyl phthalate	84.7	<1.5	10.6	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Diethyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : ASLP (20:1)-Acetate pH 5 or 2.9

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINAT ED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,3-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,4-Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4-Dinitrotoluene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Bromophenylphenylether	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chlorophenylphenylether	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Azobenzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Carbazole	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Dibenzofuran	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Hexachlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorobutadiene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Isophorone	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Nitrobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
PCBs (Total vs Aroclor 1254)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ug/l	TM16/PM30
Total Phenols HPLC	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	mg/l	TM26/PM0
Fluoride	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.8	1.0	0.8	<0.3	mg/l	TM27/PM0
Sulphate	0.37	4.53	0.60	445.16	51.24	39.57	0.99	3.94	39.12	45.44	<0.05	mg/l	TM38/PM0
Chloride	5.1	8.6	2.9	3.7	2.8	2.7	19.2	37.7	45.3	16.7	<0.3	mg/l	TM38/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	mg/l	TM38/PM0
Nitrate as N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/l	TM38/PM0
Total Cyanide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	mg/l	TM89/PM0
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Alpha-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Beta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Chlorothalonil	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : ASLP (20:1)-Acetate pH 5 or 2.9
Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINATED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
cis-Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Delta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Endosulphan I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Endosulphan II	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Endosulphan sulphate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Endrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Gamma-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Hexachlorobenzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Isodrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
o,p'-DDE	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<0.01	ug/l	TM42/PM30
o,p'-DDT	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<1.00 _{AF}	<0.01	ug/l	TM42/PM30
o,p'-Methoxychlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
o,p'-TDE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
p,p'-DDE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
p,p'-DDT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
p,p'-Methoxychlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
p,p'-TDE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Pendimethalin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Permethrin I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Permethrin II	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Quintozene (PCNB)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Tecnazene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Telodrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
trans-Chlordane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Triadimefon	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Triallate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Trifluralin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ug/l	TM42/PM30
Benazolin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Bentazone	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Bromoxynil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Clopyralid	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
4- CPA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
2,4 - D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
2,4 -DB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Dicamba	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Dichloroprop	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Diclofop	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Fenoprop	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Flamprop	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Flamprop - isopropyl	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30

Client Name: WSP Environmental & Energy Africa
Reference:
Location:
Contact: Zaffar Hussain
JE Job No.: 15/14449

Report : ASLP (20:1)-Acetate pH 5 or 2.9
Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINAT ED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
Ioxynil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
MCPA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
MCPB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Mecoprop	<0.1	0.6	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Picloram	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Pentachlorophenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
2,4,5 – T	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
2,3,6 – TBA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
Triclopyr	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM42/PM30
pH of leaching fluid	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	<	pH units	NONE/PM80
pH of leaching fluid	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	<	pH units	NONE/PM88
Formaldehyde	7.9	7.1	8.3	8.0	8.2	8.1	<0.5	4.3	1.3	3.2	<0.5	mg/l	TM51/PM0
pH	6.56	4.98	5.06	6.28	5.50	5.14	7.79	4.92	5.11	4.96	<0.01	pH units	TM73/PM0
Total Dissolved Solids	7262	4269	4263	7488	5696	5174	7898	5270	5295	4562	<35	mg/l	TM20/PM0

Client Name: WSP Environmental & Energy Africa

SVOC Report : Solid

Reference:

Location:

Contact: Zaffar Hussain

JE Job No.: 15/14449

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINATED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	1763	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	27250	92227	<10	<10	<10	<10	<10	<10	1744	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenol #	1271	3169	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	51	49	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Naphthalene	<10	<10	<10	<10	33	35	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	19	18	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenanthrene #	128	<10	<10	<10	32	39	43	<10	<10	<10	<10	ug/kg	TM16/PM8
Anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluoranthene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pyrene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	7109	<100	2421	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	119828	<100	4894	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8

Client Name: WSP Environmental & Energy Africa

SVOC Report : Solid

Reference:

Location:

Contact: Zaffar Hussain

JE Job No.: 15/14449

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINATED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	16	19	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8

Client Name: WSP Environmental & Energy Africa

SVOC Report : Solid

Reference:

Location:

Contact: Zaffar Hussain

JE Job No.: 15/14449

J E Sample No.	22											
Sample ID	TIMBER BARK											
Depth												
COC No / misc												
Containers	B											
Sample Date	<>											
Sample Type	Soil											
Batch Number	1											
Date of Receipt	08/10/2015											
Please see attached notes for all abbreviations and acronyms												
		LOD/LOR	Units	Method No.								
SVOC MS												
Phenols												
2-Chlorophenol #	<10	<10	ug/kg	TM16/PM8								
2-Methylphenol	<10	<10	ug/kg	TM16/PM8								
2-Nitrophenol	<10	<10	ug/kg	TM16/PM8								
2,4-Dichlorophenol #	<10	<10	ug/kg	TM16/PM8								
2,4-Dimethylphenol	<10	<10	ug/kg	TM16/PM8								
2,4,5-Trichlorophenol	<10	<10	ug/kg	TM16/PM8								
2,4,6-Trichlorophenol	<10	<10	ug/kg	TM16/PM8								
4-Chloro-3-methylphenol	<10	<10	ug/kg	TM16/PM8								
4-Methylphenol	<10	<10	ug/kg	TM16/PM8								
4-Nitrophenol	<10	<10	ug/kg	TM16/PM8								
Pentachlorophenol	<10	<10	ug/kg	TM16/PM8								
Phenol #	<10	<10	ug/kg	TM16/PM8								
PAHs												
2-Chloronaphthalene #	<10	<10	ug/kg	TM16/PM8								
2-Methylnaphthalene #	<10	<10	ug/kg	TM16/PM8								
Naphthalene	<10	<10	ug/kg	TM16/PM8								
Acenaphthylene	<10	<10	ug/kg	TM16/PM8								
Acenaphthene	<10	<10	ug/kg	TM16/PM8								
Fluorene	<10	<10	ug/kg	TM16/PM8								
Phenanthrene #	<10	<10	ug/kg	TM16/PM8								
Anthracene	<10	<10	ug/kg	TM16/PM8								
Fluoranthene #	<10	<10	ug/kg	TM16/PM8								
Pyrene #	<10	<10	ug/kg	TM16/PM8								
Benzo(a)anthracene	<10	<10	ug/kg	TM16/PM8								
Chrysene	<10	<10	ug/kg	TM16/PM8								
Benzo(bk)fluoranthene	<10	<10	ug/kg	TM16/PM8								
Benzo(a)pyrene	<10	<10	ug/kg	TM16/PM8								
Indeno(123cd)pyrene	<10	<10	ug/kg	TM16/PM8								
Dibenzo(ah)anthracene	<10	<10	ug/kg	TM16/PM8								
Benzo(ghi)perylene	<10	<10	ug/kg	TM16/PM8								
Benzo(b)fluoranthene	<10	<10	ug/kg	TM16/PM8								
Benzo(k)fluoranthene	<10	<10	ug/kg	TM16/PM8								
Phthalates												
Bis(2-ethylhexyl) phthalate	<100	<100	ug/kg	TM16/PM8								
Butylbenzyl phthalate	<100	<100	ug/kg	TM16/PM8								
Di-n-butyl phthalate	<100	<100	ug/kg	TM16/PM8								
Di-n-Octyl phthalate	<100	<100	ug/kg	TM16/PM8								
Diethyl phthalate	<100	<100	ug/kg	TM16/PM8								
Dimethyl phthalate #	<100	<100	ug/kg	TM16/PM8								

Client Name: WSP Environmental & Energy Africa

SVOC Report : Solid

Reference:

Location:

Contact: Zaffar Hussain

JE Job No.: 15/14449

J E Sample No.	22									LOD/LOR	Units	Method No.
Sample ID	TIMBER BARK											
Depth												
COC No / misc												
Containers	B											
Sample Date	<>											
Sample Type	Soil											
Batch Number	1											
Date of Receipt	08/10/2015											
Please see attached notes for all abbreviations and acronyms												
SVOC MS												
Other SVOCs												
1,2-Dichlorobenzene	<10									<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10									<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10									<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10									<10	ug/kg	TM16/PM8
2-Nitroaniline	<10									<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10									<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10									<10	ug/kg	TM16/PM8
3-Nitroaniline	<10									<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10									<10	ug/kg	TM16/PM8
4-Chloroaniline	<10									<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10									<10	ug/kg	TM16/PM8
4-Nitroaniline	<10									<10	ug/kg	TM16/PM8
Azobenzene	<10									<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10									<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10									<10	ug/kg	TM16/PM8
Carbazole	<10									<10	ug/kg	TM16/PM8
Dibenzofuran #	<10									<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10									<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10									<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10									<10	ug/kg	TM16/PM8
Hexachloroethane	<10									<10	ug/kg	TM16/PM8
Isophorone #	<10									<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10									<10	ug/kg	TM16/PM8
Nitrobenzene #	<10									<10	ug/kg	TM16/PM8

Client Name: WSP Environmental & Energy Africa

VOC Report : Solid

Reference:

Location:

Contact: Zaffar Hussain

JE Job No.: 15/14449

J E Sample No.	1-6	7-12	13	14	15	16	17-18	19	20	21	Please see attached notes for all abbreviations and acronyms		
Sample ID	HYDROSCRE EN WASTE	WASTE SAMPLE REJECTS	CLARIFIER PULP	EXCAVATION SOIL	ASH FROM BOILERS	ASH FROM ASH PIT	LANDFILL LEACHATE CONTAMINATED MUD	TIMBER FINES	BROKEN LOGS	NSSC SLIVERS			
Depth													
COC No / misc													
Containers	V J T	V J T	B	B	B	B	J T	B	B	B			
Sample Date	<>	<>	<>	<>	<>	<>	<>	<>	<>	<>			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	08/10/2015	LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<10AC	<20AD	<10AC	<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2	<10AC	<20AD	<10AC	<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	76	<3	114AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<10AC	<20AD	<10AC	<2	ug/kg	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<5AC	<10AD	<5AC	<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<10AC	<20AD	<10AC	<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<10AC	<20AD	<10AC	<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<30AC	<60AD	<30AC	<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7	<7	497	758	<7	<35AC	<70AD	<35AC	<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	22	475	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	6	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6	<6	<30AC	<60AD	<30AC	<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
Toluene #	<3	<3	58	23	921	680	<3	67AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5	<5	<5	<5	<5	<25AC	<50AD	<25AC	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Xylenes (sum of isomers) #	<8	<8	<8	<8	<8	<8	<8	<40AC	<80AD	<40AC	<8	ug/kg	TM15/PM10
Styrene	<3	<3	<3	16	184	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<10AC	<20AD	<10AC	<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<15AC	<30AD	<15AC	<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5	<25AC	<50AD	<25AC	<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6	<6	<30AC	<60AD	<30AC	<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	26	<4	<4	<4	43	45AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<35AC	<70AD	<35AC	<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4	<20AC	<40AD	<20AC	<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	849	<27	<27	<135AC	<270AD	<135AC	<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<35AC	<70AD	<35AC	<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	113	111	102	108	73	80	96	104AC	105AD	106AC	<0	%	TM15/PM10

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NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 15/14449

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

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All solid results are expressed on a dry weight basis unless stated otherwise.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x2 Dilution
AB	x4 Dilution
AC	x5 Dilution
AD	x10 Dilution
AE	x40 Dilution
AF	x100 Dilution
AG	x200 Dilution

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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	No
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM88	A 20:1 ratio of deionised water to as received soil, is leached for 18 hours with zero headspace.			AR	No
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	No
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified USEPA 8163. Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	No

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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	No
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (Ion-Chromatography).	PM0	No preparation is required.			AR	No
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (Ion-Chromatography).	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.			AR	No
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM88	A 20:1 ratio of deionised water to as received soil, is leached for 18 hours with zero headspace.			AR	No
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.			AR	No
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes		AR	Yes
TM42	Modified US EPA method 8270. Pesticides and herbicides by GC-MS	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	No
TM42	Modified US EPA method 8270. Pesticides and herbicides by GC-MS	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM51	Formaldehyde determination by reaction with Ammonium Ions and acetylacetone which is analysed spectrophotometrically.	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM79	Determination of Flashpoint using a Closed Cup Flashpoint Analyser	PM0	No preparation is required.			AR	No
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser.	PM0	No preparation is required.			AR	No

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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
NONE	No Method Code	PM80	A 20:1 ratio of leaching fluid to as received soil, is leached for 18 hours. The client can choose to use any of the following leaching fluids a) deionised water b) pH5 c) pH 5/pH2.9 depending on pH of sample d) pH9.2			AR	No
NONE	No Method Code	PM88	A 20:1 ratio of deionised water to as received soil, is leached for 18 hours with zero headspace.				No

Annexure 2: Type Profiling Assessment (GN 635/636)

WSP Environmental (Pty) Ltd: Screening Waste Type Profiling & Disposal Prohibition Appraisal

Based on National Norms and Standards for the Assessment of Waste for Landfill Disposal GNR. 635 (23 August 2013)



Source of Waste: Sappi Southern Africa Limited - Tugela Mill, Sappi Tugela Mill, Long St, Mandini, 4490, Boiler Ash											
Waste Matrix (Liquid / Solid): Solid											
Leachate Preparation (Solids Only): Putrescible: 0.1M Acetic Acid Solution (altered pH)											
Substance	Concentration (ppm) - Solid/Total				Waste Type (based on TCTs and subject to LCTs)	Concentration (ppm) - Leachate/Liquid				Assessed Concentration	Waste Type (based on LCTs and subject to TCTs)
	TCT0	TCT1	TCT2	Assessed Concentration		LCT0	LCT1	LCT2	LCT3		
Metal Ions											
Arsenic	5.8	500	2000	1.5	2, 3 or 4 - LCT Dependent	0.01	0.5	1	4	0.006	4
Boron	150	15000	60000	10.42	2, 3 or 4 - LCT Dependent	0.5	25	50	200	0.393	4
Barium	62.5	6250	25000	228	2 or 3 - LCT Dependent	0.7	35	70	280	0.872	3
Cadmium	7.5	260	1040			0.003	0.15	0.3	1.2		
Cobalt	50	5000	20000	8	2, 3 or 4 - LCT Dependent	0.5	25	50	200	0.006	4
Chromium	46000	800000	-	23.4	2, 3 or 4 - LCT Dependent	0.1	5	10	40		
Chromium (Hexavalent)	6.5	500	2000			0.05	2.5	5	20		
Copper	16	19500	78000	5	2, 3 or 4 - LCT Dependent	2	100	200	800		
Mercury	0.93	160	640			0.006	0.3	0.6	2.4		
Manganese	1000	25000	100000	49	2, 3 or 4 - LCT Dependent	0.5	25	50	200	0.302	4
Molybdenum	40	1000	4000	1.8	2, 3 or 4 - LCT Dependent	0.07	3.5	7	28		
Nickel	91	10600	42400	24.8	2, 3 or 4 - LCT Dependent	0.07	3.5	7	28	0.018	4
Lead	20	1900	7600			0.01	0.5	1	4		
Antimony	10	75	300			0.02	1	2	8		
Selenium	10	50	200			0.01	0.5	1	4		
Vanadium	150	2680	10720	20	2, 3 or 4 - LCT Dependent	0.2	10	20	80	0.0115	4
Zinc	240	160000	640000			5	250	500	2000		
Inorganic Anions											
Total Dissolved Solids	-	-	-		Not Applicable	1000	12500	25000	100000	5696	3
Chloride	-	-	-		Not Applicable	300	15000	30000	120000		
Sulphate	-	-	-		Not Applicable	250	12500	25000	100000		
Nitrate	-	-	-		Not Applicable	11	550	1100	4400		
Fluoride	100	10000	40000	0.7	2, 3 or 4 - LCT Dependent	1.5	75	150	600		
Cyanide	14	10500	42000			0.07	3.5	7	28		
Organics											
Benzene	-	10	40			-	0.01	0.02	0.08		
Benzofluorene	-	1.7	6.8			-	0.035	0.07	0.28		
Carbon tetrachloride	-	4	16			-	0.2	0.4	1.6		
Chlorobenzene	-	8800	35200			-	5	10	40		
Chloroform	-	700	2800			-	15	30	120		
2-Chlorophenol	-	2100	8400			-	15	30	120		
Bis(2-ethylhexyl)phthalate	-	40	160			-	0.5	1	4		
1,2-Dichlorobenzene	-	31900	127600			-	5	10	40		
1,4-Dichlorobenzene	-	18400	73600			-	15	30	120		
1,2-Dichloroethane	-	3.7	14.8			-	1.5	3	12		
1,1-Dichloroethene	-	150	600			-	0.35	0.7	2.8		
1,2-Dichloroethene	-	3750	15000			-	2.5	5	20		
Dichloromethane	-	16	64			-	0.25	0.5	2		
2,4-Dichlorophenol	-	800	3200			-	10	20	80		
2,4-Dinitrotoluene	-	5.2	20.8			-	0.065	0.13	0.52		
Ethylbenzene	-	540	2160			-	3.5	7	28		
Formaldehyde	-	2000	8000	15.2	2, 3 or 4 - LCT Dependent	-	25	50	200	8.2	3 or 4
Hexachlorobutadiene	-	2.8	5.4			-	0.03	0.06	0.24		
Methyl Ethyl Ketone (2-Butanone)	-	8000	32000			-	100	200	800		
Methyl Tertiary Butyl Ether	-	1435	5740			-	2.5	5	20		
Nitrobenzene	-	45	180			-	1	2	8		
Total PAHs	-	50	200			-	-	-	-		Not Applicable
>C6-C9	-	650	2600			-	-	-	-		Not Applicable
>C10-C36	-	10000	40000			-	-	-	-		Not Applicable
Phenol	-	560	2240			-	7	14	56		
Polychlorinated Biphenyls (PCBs)	-	12	48			-	0.025	0.05	0.2		
Styrene	-	120	480			-	1	2	8		
1,1,1,2-Tetrachloroethane	-	400	1600			-	5	10	40		
1,1,2,2-Tetrachloroethane	-	5	20			-	0.65	1.3	5.3		
Tetrachloroethene	-	200	800			-	0.25	0.5	2		
Toluene	-	1150	4600			-	35	70	280		
Trichlorobenzenes (Sum)	-	3300	13200			-	3.5	7	28		
1,1,1-Trichloroethane	-	1200	4800			-	15	30	120		
1,1,2-Trichloroethane	-	48	192			-	0.06	1	4		
Trichloroethene	-	11600	46400			-	0.25	2	8		
2,4,6-Trichlorophenol	-	1770	7080			-	10	20	80		
Vinyl chloride	-	1.5	6			-	0.015	0.03	0.12		
Xylenes (Sum)	-	890	3560			-	25	50	200		
Pesticides											
Aldrin + Dieldrin	0.05	1.2	4.8			-	0.015	0.03	0.03		
DDT + DDD + DDE	0.05	50	200			-	1	2	2		
2,4-Dichlorophenoxyacetic Acid (2,4-D)	0.05	120	480			-	1.5	3	3		
Chlordane	0.05	4	16			-	0.05	0.1	0.1		
Heptachlor	0.05	1.2	4.8			-	0.015	0.03	0.03		
Supplementary Consideration for Confirmation of Type 4 Waste Type						Notes to Waste Type Profiling					
Organics	Concentration (mg/kg), unless stated				Satisfy Type 4	1. The final waste type is determined from the highest type calculated for any individual substance, whether this be based on Total (TCT) or Leachable (LCT) concentrations. 2. Where a number of waste types are applicable for any given substance (i.e. the consideration of TCTs in isolation cannot result in a Type 4 profile), the final waste type is determined by considering both the TCT and LCT analytical data simultaneously. 3. Only where laboratory analysis has resulted in positive identification of substances (i.e. above laboratory limits of detection) have these been compared to their respective TCTs and LCTs (i.e. substances determined to be at concentrations less than laboratory limits of detection have been assumed to be irrelevant for determining the waste type). 4. Notwithstanding disposal prohibitions, profiling of liquid wastes is undertaken by comparing the analytical results obtained directly from the liquid media to the LCT thresholds given that liquid wastes cannot provide a leachate extract for analysis.					
	Threshold			Assessed Concentration							
Metals (all concentrations <TCT0 & LCT0):				As above	No						
Anions (all concentrations <TCT0 & LCT0):				As above	No						
Total Organic Carbon	(%)	3	26.42	No							
BTEX (Sum)	6			To Clarify							
Polychlorinated Biphenyls (PCBs)	1			To Clarify							
Mineral Oil (>C10-C40)	500			To Clarify							
Pesticides											
Aldrin + Dieldrin	0.05			To Clarify							
DDT + DDD + DDE	0.05			To Clarify							
2,4-Dichlorophenoxyacetic Acid (2,4-D)	0.05			To Clarify							
Chlordane	0.05			To Clarify							
Heptachlor	0.05			To Clarify							
Overall Screened Waste Type (notwithstanding potential disposal prohibitions, see below)						Category of Landfill (Based on GNR. 636, 23 August 2013)					
Type 3 Waste						Class C / GLB+					
Disposal Prohibitions (notwithstanding other potential restrictions associated with Waste Type)											
PCBs > 50ppm	PCBs (ppm):			No	Not applicable, PCBs not detected						
Explosive, corrosive or oxidising according to SANS 10234				No	Not applicable						
pH <6 or >12	pH:	8.69		No	Not applicable						
Flashpoint < 60°C (Closed)	Flashpoint (°C):	>50		Yes	Landfill Disposal Prohibited						
Moisture Content > 40%	Moisture Content (%):	19		No	Not applicable						
Hazardous with Calorific Value >10MJ/kg	CV (MJ/kg):	9		No	Not applicable						
Hazardous with Total Organic Carbon >6%	TOC (%):	26.42		No	Not applicable						
Brine (high salt content) >5% TDS	TDS (%):	N/A		N/A	Not applicable to a solid waste						
Leachable TDS >100 000mg/l	TDS (mg/l):	5696		No	Not applicable						

Annexure 3: Material Classification (SANS 10234)

WSP Reference: 47470, 0001	Prepared For: Sappi Southern Africa Limited - Tugela Mill
Material Source: Sappi Tugela Mill, Long St, Mandini, 4490	
Geographic Coordinates: 29° 09' 17.58"S 31° 24' 44.86"E	
Production Process: Boiler Ash	

General Appearance	Classification Summary
Light grey fine ash	Not Hazardous (General)

Applicable Hazard Statement Codes

Composition & Quantitative Classification
<p>Composition assessed in general accordance with the following hierarchy:</p> <ol style="list-style-type: none"> 1. South African National Standard, Globally Harmonised System of Classification and Labelling of Chemicals (GHS), SANS 10234:2008, Edition 1.1; and, 2. European Regulation (EC) No. 1272/2008, 'Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation). <p>Hazard Statement Codes for individual ingredients are sourced from:</p> <ol style="list-style-type: none"> 1. Supplement to SANS 10234:2008 Edition 1; 2. Table 3.1 of Annex VI of the CLP Regulations; 3. European Chemicals Agency, Classification & Labelling Inventory Database; or, 4. Product (Material) Safety Data Sheet.

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
Physical Hazard Statements								
H200	Unstable explosive	0	0	If >0% then classified under H200 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H201	Explosive; mass explosion hazard	0	0	If >0% then classified under H201 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H202	Explosive; severe projection hazard	0	0	If >0% then classified under H202 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H203	Explosive; fire blast or projection hazard	0	0	If >0% then classified under H203 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H204	Fire or projection hazard	0	0	If >0% then classified under H204 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H205	May explode in fire	0	0	If >0% then classified under H205 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H220	Extremely flammable gas	0	0	If >0% then classified under H220 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H221	Flammable gas	0	0	If >0% then classified under H221 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H222	Extremely flammable aerosol	0	0	If >0% then classified under H222 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H223	Flammable aerosol	0	0	If >0% then classified under H223 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H224	Extremely flammable liquid and vapour	0	0	If >0% then classified under H224 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H225	Highly flammable liquid and vapour	0	0	If >0% then classified under H225 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H226	Flammable liquid and vapour	0	0	If >0% then classified under H226 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H227	Combustible liquid	0	0	If >0% then classified under H227 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H228	Flammable solid	0	0	If >0% then classified under H228 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H229	Pressurised container: may burst if heated	0	0	Relevant only for pressurised containers	Not applicable	Not applicable	No	
H230	May react explosively even in the absence of air	0	0	If >0% then classified under H230 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H231	may react explosively even in the absence of air at elevated pressure and/or temperature	0	0	If >0% then classified under H231 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H240	Heating may cause an explosion	0	0	If >0% then classified under H240 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H241	Heating may cause a fire or explosion	0	0	If >0% then classified under H241 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H242	Heating may cause a fire	0	0	If >0% then classified under H242 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H250	Catches fire spontaneously if exposed to air	0	0	If >0% then classified under H250 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H251	Self-heating; may catch fire	0	0	If >0% then classified under H251 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H252	Self-heating in large quantities; may catch fire	0	0	If >0% then classified under H252 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
		0	0	If >0% then classified under H260 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H260	In contact with water releases flammable gases that may ignite spontaneously	0.0076	76.1	Element-specific assessment Concentration of aluminium phosphide required to evolve sufficient volume of phosphine in contact with water to render hazardous; based on stoichiometry.	No analysis for aluminium	Not applicable	No	
		1.177	11773	Element-specific assessment Concentration of free caesium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry.	No analysis for caesium	Not applicable	No	
		0.061	614.7	Element-specific assessment Concentration of free lithium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry.	No analysis for lithium	Not applicable	No	
		0.108	1076	Element-specific assessment Concentration of free magnesium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry.	All magnesium assumed to be bound/complexed	Not applicable	No	
		0.346	3463	Element-specific assessment Concentration of free potassium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry.	All potassium assumed to be bound/complexed	Not applicable	No	
		0.757	7571	Element-specific assessment Concentration of free rubidium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry.	No analysis for rubidium	Not applicable	No	
		0.204	2036	Element-specific assessment Concentration of free sodium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry.	All sodium assumed to be bound/complexed	Not applicable	No	
		0.388	3881	Element-specific assessment Concentration of free strontium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry.	No analysis for strontium	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H261	In contact with water releases flammable gas	0	0	If >0% then classified under H261 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
		0.608	6082	<u>Element-specific assessment</u> Concentration of free barium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry	All barium assumed to be bound/complexed	Not applicable	No	
		0.177	1775	<u>Element-specific assessment</u> Concentration of free calcium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry	All calcium assumed to be bound/complexed	Not applicable	No	
		0	0	<u>Compound-specific assessment</u> Ferrosilicon may evolve sufficient hydrogen in contact with water to render hazardous; based on ratio of iron:silicon	Ferrosilicon not identified	Not applicable	No	
		0.696	6964	<u>Element-specific assessment</u> Concentration of free gadolinium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry	No analysis for gadolinium	Not applicable	No	
		0.666	6659	<u>Element-specific assessment</u> Concentration of free samarium required to evolve sufficient volume of hydrogen in contact with water to render hazardous; based on stoichiometry	No analysis for samarium	Not applicable	No	
H270	May cause or intensify fire; oxidiser	0	0	If >0% then classified under H270 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H271	May cause a fire or explosion; strong oxidiser	0	0	If >0% then classified under H271 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H272	May intensify fire; oxidiser	0	0	If >0% then classified under H272 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H280	Contains gas under pressure; may explode if heated	0	0	If >0% then classified under H280 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H281	Contains refrigerated gas; may cause cryogenic burns or injury	0	0	If >0% then classified under H281 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	
H290	May be corrosive to metals	0	0	If >0% then classified under H290 unless further information and/or testing proves otherwise	No substances identified	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
Health Hazard Statements								
H300	Fatal if swallowed	1	10000	If cumulative/additive >1% classified under H300 (Category 1 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H301	Toxic if swallowed	1	10000	If individual substance >1% classified under H301 (Category 3 Acute Toxicity); pending further assessment	12.31	Further assessment not necessary	No	
H302	Harmful if swallowed	1	10000	If individual substance >1% classified under H302 (Category 4 Acute Toxicity); pending further assessment	206.20	Further assessment not necessary	No	
H303	May be harmful if swallowed	1	10000	If individual substance >1% classified under H303 (Category 5 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H304	May be fatal if swallowed and enters airways	1	10000	If cumulative/additive >1% classified under H304 (Category 1 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H305	May be harmful if swallowed and enters airways	1	10000	If individual substance >1% classified under H305 (Category 5 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H310	Fatal in contact with skin	1	10000	If cumulative/additive >1% classified under H310 (Category 1 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H311	Toxic in contact with skin	1	10000	If individual substance >1% classified under H311 (Category 3 Acute Toxicity); pending further assessment	12.31	Further assessment not necessary	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H312	Harmful in contact with skin	1	10000	If individual substance >1% classified under H312 (Category 4 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H313	May be harmful in contact with skin	1	10000	If individual substance >1% classified under H313 (Category 5 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H314	Causes severe skin burns and eye damage	1	10000	If cumulative/additive >1% classified under H314 (Category 1 Skin Corrosion/Irritant); pending further assessment	12.31	Further assessment not necessary	No	
		≤2 pH Units ≥11.5		<i>pH-specific assessment</i> If ≤2 or ≥11.5 pH then classified as corrosive	8.69	Not applicable	No	
H315	Causes skin irritation	1	10000	If cumulative/additive >1% classified under H315 (Category 3 Skin Corrosion/Irritant), >10% then Category 2; pending further assessment	7577.57	Further assessment not necessary	No	
H316	Causes mild skin irritation	10	100000	If cumulative/additive >10% classified under H316 (Category 3 Skin Corrosion/Irritant); pending further assessment	No substances identified	Not applicable	No	
H317	May cause an allergic skin reaction	1	10000	If individual substance >1% classified under H317 (Category 1 Skin Sensitisation); pending further assessment	25.56	Further assessment not necessary	No	
H318	Causes severe eye damage	1	10000	If cumulative/additive >1% classified under H318 (Category 2 Skin/Eye Sensitisation); pending further assessment	7577.57	Further assessment not necessary	No	
H319	Causes severe eye irritation	10	100000	If cumulative/additive >10% classified under H319 (Category 2 Eye Sensitisation); pending further assessment	21.29	Further assessment not necessary	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H320	Causes eye irritation	10	100000	If cumulative/additive >10% classified under H320 (Category 2 Eye Sensitisation); pending further assessment	No substances identified	Not applicable	No	
H330	Fatal if inhaled	1	10000	If cumulative/additive >1% classified under H330 (Category 1 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H331	Toxic if inhaled	1	10000	If individual substance >1% classified under H331 (Category 3 Acute Toxicity); pending further assessment	12.31	Further assessment not necessary	No	
H332	Harmful if inhaled	1	10000	If individual substance >1% classified under H332 (Category 4 Acute Toxicity); pending further assessment	206.20	Further assessment not necessary	No	
H333	May be harmful if inhaled	1	10000	If individual substance >1% classified under H333 (Category 5 Acute Toxicity); pending further assessment	No substances identified	Not applicable	No	
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled	0.1	1000	If individual substance >0.1% classified under H334 (Category 1 Respiratory Sensitisation); pending further assessment	No substances identified	Not applicable	No	
H335	May cause respiratory irritation	20	200000	If cumulative/additive >20% classified under H335 under Generic Limits; pending further assessment	7598.86	Further assessment not necessary	No	
H336	May cause drowsiness or dizziness	20	200000	If cumulative/additive >20% classified under H336 under Generic Limits; pending further assessment	No substances identified	Not applicable	No	
H340	May cause genetic defects	0.1	1000	If individual substance >0.1% classified under H340 (Category 1 Mutagen); pending further assessment	No substances identified	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H341	Suspected of causing genetic defects	1	10000	If individual substance >1% classified under H341 (Category 2 Mutagen); pending further assessment	12.31	Further assessment not necessary	No	
H350	May cause cancer	0.1	1000	If individual substance >0.1% classified under H350 (Category 1 Carcinogen); pending further assessment	25.56	Further assessment not necessary	No	
H351	Suspected of causing cancer	0.1	1000	If individual substance >0.1% classified under H351 (Category 2 Carcinogen); pending further assessment	No substances identified	Not applicable	No	
H360	May damage fertility or the unborn child	0.1	1000	If individual substance >0.1% classified under H360 (Category 1 Teratogen); pending further assessment	No substances identified	Not applicable	No	
H361	Suspected of damaging fertility or the unborn child	0.1	1000	If individual substance >0.1% classified under H361 (Category 2 Teratogen); pending further assessment	No substances identified	Not applicable	No	
H361d	Suspected of damaging the unborn child	0.1	1000	If individual substance >0.1% classified under H361d; pending further assessment	No substances identified	Not applicable	No	
H362	May cause harm to breast-fed children	0.1	1000	If individual substance >0.1% classified under H362 (Additional Category Teratogen); pending further assessment	No substances identified	Not applicable	No	
H370	Causes damage to organs	1	10000	If individual substance >1% classified under H370 (Category 1 Single Exposure); pending further assessment	No substances identified	Not applicable	No	
H371	May cause damage to organs	1	10000	If individual substance >1% classified under H371 (Category 2 Single Exposure); pending further assessment	No substances identified	Not applicable	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H372	Causes damage to organs through prolonged or repeated exposure	1	10000	If individual substance >1% classified under H372 (Category 1 Repeat Exposure); pending further assessment	25.56	Further assessment not necessary	No	
H373	May cause damage to organs through prolonged or repeated exposure	1	10000	If individual substance >1% classified under H373 (Category 2 Repeat Exposure); pending further assessment	No substances identified	Not applicable	No	
		0.005	50	<u>PCB-specific assessment</u> If PCBs are present >0.005% then classified hazardous under H373	No substances identified	Not applicable	No	
Environmental Hazard Statements								
H400	Very toxic to aquatic life	1	10000	If cumulative/additive >1% classified under H400 (Category 1 Acute Aquatic Toxicity); pending further assessment	19.31	Further assessment not necessary	No	
H401	Toxic to aquatic life	25	250000	If modified cumulative/additive >25% classified under H401 (Category 2 Acute Aquatic Toxicity); pending further assessment	193.05	Further assessment not necessary	No	
H402	Harmful to aquatic life	25	250000	If modified cumulative/additive >25% classified under H402 (Category 3 Acute Aquatic Toxicity); pending further assessment	1930.52	Further assessment not necessary	No	
H410	Very toxic to aquatic life with long lasting effects	1	10000	If cumulative/additive >1% classified under H410 (Category 1 Chronic Aquatic Toxicity); pending further assessment	19.31	Further assessment not necessary	No	
H411	Toxic to aquatic life with long lasting effects	25	250000	If modified cumulative/additive >25% classified under H411 (Category 2 Chronic Aquatic Toxicity); pending further assessment	193.05	Further assessment not necessary	No	

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
H412	Harmful to aquatic life with long lasting effects	25	250000	If modified cumulative/additive >25% classified under H412 (Category 3 Chronic Aquatic Toxicity); pending further assessment	1930.52	Further assessment not necessary	No	
H413	May cause long lasting harmful effects to aquatic life	25	250000	If modified cumulative/additive >25% classified under H413 (Category 4 Chronic Aquatic Toxicity); pending further assessment	44.87	Further assessment not necessary	No	
H420	Harms public health and the environment by destroying ozone in the upper atmosphere	0.1	1000	If individual substance >0.1% classified under H420 (Category 1). Substances based on Annexes to the Montreal Protocol.	No substances identified	Not applicable	No	

Assumptions and Comments

- Acute Toxicity Estimates (ATE) have not been derived from LD50 data or conversion factors presented in SANS 10234; classification has been based on generic screening thresholds. Where more detailed assessment is recommended, appropriate LD50 should be sourced based on current available data.
- Ecotoxicity for Category 1 Acute and Chronic Hazards have assumed 1% threshold and additive compounds rather than utilisation of Modification Factors presented in SANS 10234. Where more detailed assessment is recommended, this should follow the mixture-specific principles defined in SANS 10234.
- Classification does not include European Union (EU Codes), or other territory specific, Hazard Statement Codes that may be applicable outside of the Republic of South Africa.
- Only where data is presented, or where laboratory analysis has resulted in positive identification of compounds (i.e. above laboratory limits of detection), have the applicable Hazard Statement Codes been appraised (i.e. substances determined to be at concentrations less than laboratory limits of detection have been assumed to be absent).
- Unless exact speciation has been established through detailed analysis (i.e. X-Ray Fluorescence (XRF), X-Ray Diffraction (XRD)), classification has been based on reasonable assumptions of substances most-likely present based on expected behaviour within the material - it is recognised that this may not be applicable in all instances and, for clarity, a list of the individual substances appraised where assumptions have been made are listed below.
- Hazard Statement Codes for individual substances have been sourced from either i) SANS 10234, ii) CLP Regulations, iii) European Chemicals Agency C&L Inventory Database, or iv) appraised existing (M)SDS.
- Where laboratory analysis has reported concentrations on a dry weight basis, these have been converted to take account of sample moisture content using the formula:
Wet Weight Concentration = Dry Weight Concentration x ((100 - %moisture content)/100).
- Where assessment has been undertaken on liquids, it has been assumed that 1-litre (volume) is equivalent to 1-kg (mass).
- For additional details in respect of the individual substances that may render any given material type as hazardous, reference should be made to the appropriate Safety Data Sheet (SDS) which takes account of this classification or, if the SDS has not been prepared by WSP, the Waste Management Summary Report relevant for this classification.

Hazard Statement Code	Hazard Statement	Threshold (%)	Threshold (ppm)	Threshold and Test Comments	Assessment Concentration (ppm)	Outcome(s) of Further Testing	Hazardous (Yes / No)	Additional Comments
List of Assumed Substances								
Arsenic Compounds, Barium Oxide, Boron, Calcium Oxide, Chromium (iii) Oxide, Cobalt Sulphide, Copper (i) Oxide, Iron (ii) Oxide, Magnesium Oxide, Manganese Dioxide, Molybdenum, Nickel (ii) Oxide, Potassium Oxide, Sodium Sulphate, Sulphur, Vanadium (ii) Oxide,								

End of Material Classification