Question 9: *Complete and provide the tables which can be found in the Industrial Emissions activities licence Application Form.*

Response

Tables completed as per templates provided.

Table E.1 (i) BOILER EMISSIONS TO ATMOSPHERE (1 Page for each emission point)

Emission Point:

Emission Point Ref. Nº:	A1-1	
Location:	Boiler House	
Grid Ref. (12 digit, 6E,6N):	646054, 697812	
Vent Details	Diameter:	Height above Ground(m): 18
Date of commencement of emission:	TBC	

Characteristics of Emission:

Boiler rating Steam Output: Thermal Input:			kg/hr MW
Boiler fuel Type: Maximum rate at which fuel is burned % sulphur content:			Natural Gas kg/hr
NOx			mg/Nm^3 0°C. 3% O_2(Liquid or Gas), 6% O_2(Solid Fuel)
Maximum volume* of emission			m^3/hr 0°C, 3 % O_2 (liquid or gas), 6 % O_2 (solid fuel)
Minimum efflux velocity			m.sec^{-1}
Temperature	100°C(max)	200 °C(min)	°C(avg)

* Volume flow limits for emissions to atmosphere shall be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa), dry gas; 3% oxygen for liquid and gas fuels; 6% oxygen for solid fuels.

(i) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up/shutdown to be included):*

Periods of Emission (avg)	60 min/hr	12 hr/day	260 day/yr	

TABLE E.1(ii) MAIN EMISSIONS TO ATMOSPHERE (1 Page for each emission point)

Emission Point Ref. Nº:	A2-1
Source of Emission:	A2-1 Regenerative Thermal Oxidiser
Location:	Western boundary of Tank Farm
Grid Ref. (12 digit, 6E,6N):	646055, 697812
Vent Details Diameter: Height above Ground(m):	 0.5m 10m
Date of commencement:	2017

Characteristics of Emission:

(i) Volume to be emitted:			
Average/day	Nm^3/d	Maximum/day	Nm^3/d
Maximum rate/hour	30,000Nm^3/h	Min efflux velocity	$m.sec^{-1}$
(ii) Other factors			
Temperature	144°C(max)	160 °C(min)	150°C(avg)
For Combustion Sources: Volume terms expressed as : ☐ wet. ☐ dry. _____$\%O_2$			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	60 min/hr 12 hr/day 300 day/yr

TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission (1 table per emission point)

Emission Point Reference Number: ***A2-3***

Parameter	Prior to treatment(1)				Brief description of treatment	As discharged(1)					
	mg/Nm^3		kg/h			mg/Nm^3		kg/h.		kg/year	
	Avg	Max	Avg	Max		Avg	Max	Avg	Max	Avg	Max
Total VOCs (as C)Note 2							20				

1. Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C,101.3kPa). Wet/dry should be the same as given in Table E.1(ii) unless clearly stated otherwise.

2 From BAT 41 Waste Treatment Industries (August 2006)

TABLE E.1(iv): EMISSIONS TO ATMOSPHERE - Minor atmospheric emissions

Emission point Reference Numbers	Description	Emission details[1]				Abatement system employed
		material	mg/Nm$^{3(2)}$	kg/h.	kg/year	
A3-1	Tank 1	VOCs	<1			Airborne 10 Condensate Filter
A3-2	Tank 2	VOCs	<1			Airborne 10 Condensate Filter
A3-3	Tank 3	VOCs	<1			Airborne 10 Condensate Filter
A3-4	Tank 4	VOCs	<1			Airborne 10 Condensate Filter
A3-5	Tank 5	VOCs	<1			Airborne 10 Condensate Filter
A3-6	Tank 6	VOCs	<1			Airborne 10 Condensate Filter
A3-7	Tank 7	VOCs	<1			Carbon Filter
A3-8	Tank 8	VOCs	<1			Carbon Filter
A3-9	Tank 9	H2S	<1			Airborne 10 Condensate Filter
A3-10	Tank 10	VOCs	<1			Airborne 10 Condensate Filter
A3-11	Tank 11	VOCs	<1			Airborne 10 Condensate Filter
A3-12	Tank 12	VOCs	<1			Airborne 10 Condensate Filter
A3-13	Tank 13	VOCs	<1			Airborne 10 Condensate Filter
A3-14	Tank 14	VOCs	<1			Airborne 10 Condensate Filter
A3-15	Tank 15	VOCs	<1			Airborne 10 Condensate Filter
A3-16	Tank 16	H2S	<1			Airborne 10 Condensate Filter
A3-17	Tank 18	VOCs	<1			Airborne 10 Condensate Filter
A3-18	Tank 19	VOCs	<1			Airborne 10 Condensate Filter

1 The maximum emission should be stated for each material emitted, the concentration should be based on the maximum 30 minute mean.
2 Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C101.3kPa). Wet/dry should be clearly stated. Include reference oxygen conditions for combustion sources.

Emission point Reference Numbers	Description	Emission details[1]				Abatement system employed
		material	mg/Nm 3(2)	kg/h.	kg/year	
A3-19	Tank 20	VOCs	<1			Airborne 10 Condensate Filter
A3-20	Tank 22	VOCs	<1			Airborne 10 Condensate Filter
A3-21	Tank 23	VOCs	<1			Airborne 10 Condensate Filter
A3-22	Tank 24	VOCs	<1			Airborne 10 Condensate Filter
A3-23	Tank 25	VOCs	<1			Airborne 10 Condensate Filter
A3-24	Tank 26	VOCs	<1			Carbon Filter
A3-25	Tank 32	VOCs	<1			Carbon Filter
A3-26	Tank 33	VOCs	<1			Airborne 10 Condensate Filter
A3-27	Tank 34	VOCs	<1			Airborne 10 Condensate Filter
A3-28	Tank 35	VOCs	<1			Airborne 10 Condensate Filter
A3-29	Tank 36	VOCs	<1			Airborne 10 Condensate Filter
A3-30	Tank 37	VOCs	<1			Airborne 10 Condensate Filter
A3-31	Tank 42	VOCs	<1			Airborne 10 Condensate Filter
A3-32	Tank 43	VOCs	<1			Airborne 10 Condensate Filter
A3-33	Tank 44	VOCs	<1			Airborne 10 Condensate Filter
A3-34	Tank 45	VOCs	<1			Airborne 10 Condensate Filter
A3-35	Tank 51	VOCs	<1			Airborne 10 Condensate Filter
A3-36	Tank 52	VOCs	<1			Airborne 10 Condensate Filter

1 The maximum emission should be stated for each material emitted, the concentration should be based on the maximum 30 minute mean.
2 Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C101.3kPa). Wet/dry should be clearly stated. Include reference oxygen conditions for combustion sources.

Emission point Reference Numbers	Description	Emission details[1]				Abatement system employed
		material	mg/Nm^3[2]	kg/h.	kg/year	
A3-37	Tank 54	VOCs	<1			Airborne 10 Condensate Filter
A3-38	Tank 55	VOCs	<1			Airborne 10 Condensate Filter
A3-39	Tank SS 1	VOCs	<1			Airborne 10 Condensate Filter
A3-40	Tank SS 2	VOCs	<1			Airborne 10 Condensate Filter
A3-41	Tank SS 3	VOCs	<1			Airborne 10 Condensate Filter
A3-42	WW1	H_2S	<1			Airborne 10 Condensate Filter
A3-43	WW2	H_2S	<1			Carbon Filter
A3-44	Decanter Tank 1	H_2S	<1			Carbon Filter
A3-45	Decanter Tank 2	H_2S	<1			Airborne 10 Condensate Filter
A3-46	Reactor 1	H_2S	<1			Airborne 10 Condensate Filter
A3-47	Reactor 2	H_2S	<1			Airborne 10 Condensate Filter
A3-48	Lab Fume Hood 1	NA	Neg.			None
A3-49	Lab Fume Hood 2	NA	Neg.			None
A3-50	Back Up Generator	Combustion	Neg.			None
A3-51	Boiler for Office Areas	Combustion	Neg.			None
A3-52	Carbon Filter for Oil Filtration Plant	VOCs		<0.1		Carbon Filter
A3-53	Carbon Filter for Hodgefield	VOCs		<0.1		Caustic Scrubber and Carbon Filter
A3-54	Carbon Filter for Tank cleaning/Wash Out Bay	VOCs		<0.1		Carbon Filter

1 The maximum emission should be stated for each material emitted, the concentration should be based on the maximum 30 minute mean.
2 Concentrations should be based on Normal conditions of temperature and pressure, (i.e. 0°C101.3kPa). Wet/dry should be clearly stated. Include reference oxygen conditions for combustion sources.

TABLE E.1(v): EMISSIONS TO ATMOSPHERE – Fugitive and Potential atmospheric emissions

Emission point ref. no. (as per flow diagram)	Description	Malfunction which could cause an emission	Emission details (Potential max. emissions)[1]		
			Material	mg/Nm^3	kg/hour
A4-1	Main Oil Intake Area	Spill/Incident	VOC	<1	
A4-2	Vac Tank Unloading Area	Spill or Out of Spec Intake Material	VOC	<1	
A4-3	Oil Filtration Plant	Spill/Incident	VOC	<1	
A4-4	Pump Manifold Area	Spill/Incident	VOC	<1	
A4-5	Tanker Wash Out Area	Spill or Out of Spec Intake Material	VOC	<1	
A4-6	Ship Loading Area (at Tank 20)	Spill/Incident	VOC	<1	
A4-7	Ship Loading Area (Emo)	Spill/Incident	VOC	<1	
A4-8	Oil Filter Processing	Spill/Incident	VOC	<1	
A4-9	Paint Tin Crusher	Spill/Incident	VOC	<1	
A4-10	Soil Recovery Area	Material Hot Spot	VOC	<1	
A4-11	Waste Processing Shed	Spill/Incident	VOC	<1	
A4-12	Waste Water Interceptor	Septic Conditions	VOC/H_2S	<1	
A4-13	Water Treatment Plant	Septic Conditions	VOC/H_2S	<1	

[1] Estimate the potential maximum emission for each malfunction identified.

TABLE E.2(i): EMISSIONS TO SURFACE WATERS (One page for each emission)

Emission Point:

Emission Point Ref. Nº:	SW1 (formerly SW01)
Source of Emission:	Storm Water
Location of discharge :	Western Boundary of the Site in the Processing Area (Area K)
Grid Ref. (12 digit, 6E,6N):	645984, 697830
Name of receiving waters and water body code:	Triogue River
Flow rate in receiving waters:	_____ $m^3.sec^{-1}$ Dry Weather Flow _____ $m^3.sec^{-1}$ 95%ile flow
Available assimilative capacity:	kg/day

Emission Details:

(i) Volume to be emitted			
Normal/day	m^3	Maximum/day	Dependent on Rainfall m^3
Maximum rate/hour	m^3		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

Emission Point:

Emission Point Ref. Nº:	SW2 (formerly SW02)
Source of Emission:	Storm Water
Location of discharge :	At the Northwest Boundary of the Site
Grid Ref. (12 digit, 6E,6N):	645984, 697961
Name of receiving waters and water body code:	Triogue River
Flow rate in receiving waters:	_____$m^3.sec^{-1}$ Dry Weather Flow _____$m^3.sec^{-1}$ 95%ile flow
Available assimilative capacity:	kg/day

Emission Details:

(i) Volume to be emitted			
Normal/day	m^3	Maximum/day	Dependent on Rainfall m^3
Maximum rate/hour	m^3		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number: ***SW1 (formerly SW01)***

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
pH					6.57-8.65 pH units[1]				
COD					250[1]				
Suspended Solids					60				
Mineral Oils					5				
Oils Fats & Greases					15[1]				
BOD					25[1]				

1 Existing Trigger level

Emission point reference number: ***SW2 (formerly SW02)***

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
pH					6.57-8.65 pH units[1]				
COD					250[1]				
Suspended Solids					60				
Mineral Oils					5				
Oils Fats & Greases					15[1]				
BOD					25[1]				

1 Existing Trigger level

TABLE E.3(i): EMISSIONS TO SEWER (One page for each emission)

Emission Point: SE1 (formerly FS1)

Emission Point Ref. Nº:	SE1
Location of connection to sewer:	In the yard behind the canteen
Grid Ref. (12 digit, 6E,6N):	646006, 697809
Name of sewage undertaker:	Irish Water

Emission Details:

(i) Volume to be emitted			
Normal/day	m^3	Maximum/day	40 m^3
Maximum rate/hour	m^3		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

TABLE E.3(ii): EMISSIONS TO SEWER - Characteristics of the emission (1 table per emission point)

Emission point reference number: ***SE1***

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
Temperature					43^0C				
pH					6 – 9 pH units				
COD					200				
Suspended Solids					400				
Sulphates					800				
Chlorides					6,000				
Total phosphorus (as P)					50				
Ammonia					80				
Phenols					50				
Copper					0.5				
Zinc					0.5				
Lead					0.5				
Cadmium					0.05				
Fats, Oils and Greases					300				

TABLE E.4(i): EMISSIONS TO GROUND (1 Page for each emission point)

There are no emissions to ground from the facility.

Emission Point or Area:

Emission Point/Area Ref. Nº:	
Emission Pathway: (borehole, well, percolation area, soakaway, landspreading, etc.)	
Location :	
Grid Ref. (12 digit, 6E,6N):	
Elevation of discharge: (relative to Ordnance Datum)	
Aquifer classification for receiving groundwater body:	
Groundwater vulnerability assessment (including vulnerability rating):	
Identity and proximity of groundwater sources at risk (wells, springs, etc):	
Identity and proximity of surface water bodies at risk:	

Emission Details:

(i) Volume to be emitted			
Normal/day	m^3	Maximum/day	m^3
Maximum rate/hour	m^3		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

TABLE E.4(ii): EMISSIONS TO GROUND - Characteristics of the emission (1 table per emission point)

There are no emissions to ground from the facility.

Emission point/area reference number: _____

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	

Table E.5(i): NOISE EMISSIONS - Noise sources summary sheet

Source	Emission point Ref. No	Equipment Ref. No	Sound Pressure[1] dBA at reference distance	Octave bands (Hz) Sound Pressure[1] Levels dB(unweighted) per band									Impulsive or tonal qualities	Periods of Emission[2]
				31.5	63	125	250	500	1K	2K	4K	8K		
Oil Filtration Room			76.4											
Oil Offloading			69.4											
Tank Farm Steam Valves and Pumps			74.8											
Boiler Room			74.3											
Processing Area			66.6											

1. For items of plant, sound power levels may be used.
2. Periods of emission should state if the plant item in question operates on a continuous or intermittent basis. If intermittent then further details of the hours of operation and any potential impulsive components associated with the source should be clearly identified.

TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number: *A1-1*

Control[1] parameter	Monitoring to be carried out[2]	Equipment [3]	Equipment back-up
Boiler Efficiency	Flue Gas Analysis	Flue Gas Analyser (electrochemical)	Other licensed combustion systems on site.

[1] List the operating parameters of the treatment / abatement system which control its function.
[2] List the monitoring of the control parameter to be carried out.
[3] List the equipment necessary for the proper function of the abatement / treatment system.

Emission point reference number: *A2-1*

Control[1] parameter	Monitoring to be carried out[2]	Equipment [3]	Equipment back-up
Inlet temperature	Temperature	Thermocouple & data logger	Spares
Inlet pressure	Pressure	Pressure indicator	Spares
Inlet concentration of flammable gases	LEL	LEL meters	Spares
Exhaust air temperature	Temperature	Thermocouple & data logger	Spares
Exhaust air flow	Flow	Flow monitor	Spares

[1] List the operating parameters of the treatment / abatement system which control its function.
[2] List the monitoring of the control parameter to be carried out.
[3] List the equipment necessary for the proper function of the abatement / treatment system.

Emission point reference number: *SE1*

Control[1] parameter	Monitoring to be carried out[2]	Equipment [3]	Equipment back-up
pH	In line pH monitor	Balancing Tank and pH probe	Spares
Flow	Volumetric Flow (m^3)	Flow monitor	Spares

[1] List the operating parameters of the treatment / abatement system which control its function.
[2] List the monitoring of the control parameter to be carried out.
[3] List the equipment necessary for the proper function of the abatement / treatment system.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS (1 table per monitoring point)

Emission Point Reference No. : A2-1

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Total VOCs (as C)	Quarterly	As per EPA Guidance Notes AG1 & AG2	IS EN 13284	GC-FID
Volumetric Flow	Quarterly	As per EPA Guidance Notes AG1 & AG2	As per EPA Guidance Notes AG1 & AG2	As per EPA Guidance Notes AG1 & AG2

Emission Point Reference No. : SE1

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Temperature	Daily	Ground Level	Grab sample	Temperature Probe
pH	Daily	Ground Level	Grab sample	pH Meter
COD	Weekly	Ground Level	Grab sample	Standard Method
Suspended Solids	Weekly	Ground Level	Grab sample	Gravimetric
Sulphates	Weekly	Ground Level	Grab sample	Standard Method
Chlorides	Weekly	Ground Level	Grab sample	Standard Method
Total phosphorus (as P)	Weekly	Ground Level	Grab sample	Standard Method
Ammonia	Weekly	Ground Level	Grab sample	Standard Method
Phenols	Weekly	Ground Level	Grab sample	Standard Method
Copper	Weekly	Ground Level	Grab sample	AA/ICP
Zinc	Weekly	Ground Level	Grab sample	AA/ICP
Lead	Weekly	Ground Level	Grab sample	AA/ICP
Cadmium	Weekly	Ground Level	Grab sample	AA/ICP
Fats, Oils and Greases	Weekly	Ground Level	Grab sample	Standard Method
Metal Screen	Quarterly	Ground Level	Grab sample	ICP
Respirometry Testing	Bi-annual	Ground Level	Grab sample	To be agreed

TABLE F.2(ii): AMBIENT ENVIRONMENT MONITORING AND SAMPLING POINTS (1 table per monitoring point)

Monitoring Point Reference No: N1

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
LA_{eq} (30 minutes) Frequency Analysis	Annual	Ground Level (off site)	As per NG4	Type 2 Noise Meter

Monitoring Point Reference No: N2

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
LA_{eq} (30 minutes) Frequency Analysis	Annual	Ground Level (off site)	As per NG4	Type 2 Noise Meter

Monitoring Point Reference No: N3

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
LA_{eq} (30 minutes) Frequency Analysis	Annual	Ground Level (off site)	As per NG4	Type 2 Noise Meter

Monitoring Point Reference No: N4

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
LA_{eq} (30 minutes) Frequency Analysis	Annual	Ground Level (off site)	As per NG4	Type 2 Noise Meter

Monitoring Point Reference No: N5

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
LA_{eq} (30 minutes) Frequency Analysis	Annual	Ground Level (off site)	As per NG4	Type 2 Noise Meter

Monitoring Point Reference No: GW1 (formerly BH101)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Monitoring Point Reference No: GW2 (formerly BH102)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Monitoring Point Reference No: GW3 (formerly BH103)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Monitoring Point Reference No: GW4 (formerly BH104b)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Monitoring Point Reference No: GW5 (formerly MW01)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Monitoring Point Reference No: GW6 (formerly MW02)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Monitoring Point Reference No: GW7 (formerly MW03)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Monitoring Point Reference No: GW8 (formerly MW04)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
Visual/Odour	Monthly	Ground Level	Standard Method	Sensory
GW level	Monthly	Ground Level	Standard Method	Dip Meter
DO	Annually	Ground Level	Standard Method	Standard Method
Conductivity	Monthly	Ground Level	Standard Method	Standard Method
pH	Monthly	Ground Level	Standard Method	Standard Method
Temperature	Monthly	Ground Level	Standard Method	Standard Method
Total Alkalinity	Annually	Ground Level	Standard Method	Standard Method
Calcium	Annually	Ground Level	Standard Method	Standard Method
Maganese	Annually	Ground Level	Standard Method	Standard Method
Sulphate	Annually	Ground Level	Standard Method	Standard Method
List I/II Organics	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Mineral oil	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
BTEX	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
PAH	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Phenols	Quarterly	Ground Level	Standard Method	GC-FID/GCMS
Arsenic	Quarterly	Ground Level	Standard Method	ICP/AA
Cadmium	Quarterly	Ground Level	Standard Method	ICP/AA
Copper	Quarterly	Ground Level	Standard Method	ICP/AA
Chromium (Total)	Quarterly	Ground Level	Standard Method	ICP/AA
Iron	Quarterly	Ground Level	Standard Method	ICP/AA
Magnesium	Quarterly	Ground Level	Standard Method	ICP/AA
Lead	Quarterly	Ground Level	Standard Method	ICP/AA
Mercury	Quarterly	Ground Level	Standard Method	ICP/AA
Potassium	Quarterly	Ground Level	Standard Method	ICP/AA
Zinc	Quarterly	Ground Level	Standard Method	ICP/AA

Table G.1(i) Details of Process related Raw Materials, Intermediates, Products, etc., used or generated on the site

Ref. Nº or Code	Material/ Substance[1]	CAS Number	Danger[2] Category	Amount Stored (tonnes)	Annual Usage (tonnes)	Nature of Use	R[3] - Phrase	S[3] - Phrase	Hazard Statement [4]
1	Sodium Hydroxide	1310-73-2	Corrosive	<10		Wastewater Treatment			H290 and H314
2	Nitric Acid	7697-32-2	Corrosive	<10		Water Treatment(pH Adjustment)			H290
3	Sodium Hypochlorite	7681-52-9	Corrosive	<10		Wastewater Treatment			H290 and H314
4	Hydrogen Peroxide	7722-84-1	Corrosive	<10		Wastewater Treatment (Hodgefield Dosing)			H272, H302, H315, H318 and H335
5	Waste Oil (Garage & Shipping)	NA	Flammable		35,000	Raw Material for Remediation			H226, H304, H315, H332, H351, H373 and H411
6	Aquatreat	107-21-1 (Glycol)	NA	<10		Boiler			H302, H325, H335 and H411
7	Fuel Additive A (Petroleum Distillates)	NA	NA	<10		Oil Processing (Enhance Combustion & Reduce Emissions)			H226, H302, H315 and H411
8	Fuel Additive B	NA	NA	<10		Oil Processing (Inhibitor)			H302
9	Oil De-emulsifier	NA	NA	<10		Oil Processing (Demulsifier)			H302, H315,

Ref. Nº or Code	Material/ Substance[1]	CAS Number	Danger[2] Category	Amount Stored (tonnes)	Annual Usage (tonnes)	Nature of Use	R[3] - Phrase	S[3] - Phrase	Hazard Statement [4]
10	Deashing Chemical	NA	NA	<10		Oil Processing			H318 and H410
11	Recovered Fuels (11LS & 19LS)	NA	Flammable			Product			H302, H314, H318 and H412
12	Marked Kerosene	NA	Flammable			Product			H304, H332, H350, H361, H372 and H410
13	Marked Gas Oil	NA	Flammable			Product			H226, H304, H315, H336 and H411
									H304, H315, H332, H351, H373 and H411

Notes: 1. In cases where a material comprises a number of distinct and available dangerous substances, please give details for each component substance.
2. Article 2(2) of S.I. No. 116/2003.
3. Schedules 9 and 10 of S.I. No. 62/2004 (as amended by S.I. No. 271/2008)
4. EC Regulation 1272/2008 (Chemicals Act 2008 (13 of 2008) and 2010)

Table G.1(ii) Details of Process related Raw Materials, Intermediates, Products, etc., used or generated on the site

Ref. Nº or Code	Material/ Substance	Odour			Pollutants (Tick and specify Group/Family Number)				Controlled Substances	Relevant hazardous substance (3)
		Odourous Yes/No	Description	Threshold $\mu g/m^3$	EC EO (Surface Waters) Regulations 2009		EC EO Groundwater) Regulations 2010		REACH SVHC(2)	y/n
					Specific pollutants	Priority (hazardous) substances	Hazardous[1]	Non-hazardous[1]		
1	Sodium Hydroxide	Yes	Caustic		No		No		No	Yes
2	Nitric Acid	Yes	Acid		No		No		No	Yes
3	Sodium Hypochlorite	Yes	Bleach		No		No		No	Yes
4	Hydrogen Peroxide	Yes	Disinfectant		No		No		No	Yes
5	Waste Oil (Garage & Shipping)	Yes	Oil		No		No		No	Yes
6	Aquatreat	No			No		No		No	Yes
7	Fuel Additive A (Petroleum Distillates)	No			No		No		No	Yes
8	Fuel Additive B	No			No		No		No	Yes
9	Oil De-emuslifier	No			No		No		No	Yes
10	Deashing Chemical	No			No		No		No	Yes
11	Recovered Fuels (11LS & 19LS)	Yes	Oil		No		No		No	Yes
12 15	Marked Kerosene	Yes	Oil		No		No		No	Yes

	Marked Gas Oil	Yes	Oil		No		No		No	Yes

Note 1: The EPA Classification of Hazardous and Non-Hazardous Substances in Groundwater, December 2010.

Note 2: Where relevant, specify whether the substance is on the Authorisation List (Annex XIV Regulation (EC) No 1907/2006 as amended) or Restriction List (Annex XVII Regulation (EC) No 1907/2006 as amended). Also, indicate whether the use has been authorised or exempted in accordance with Regulation (EC) No 1907/2006 as amended.

Note 3: Relevant hazardous substances are those substances or mixtures defined within Article 3 of Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures which, as a result of their hazardousness, mobility, persistence and biodegradability (as well as other characteristics), are capable of contaminating soil or groundwater.

Question 10: *Provide a summary of environmental emissions made from the installation in the last 3 years. The information should be presented in the following format, or an equivalently aggregated format. The presentation of emissions monitoring and other data should enable a comparison of the operation of the installation with the Best Available techniques described n applicable BAT conclusions and the emission levels associated with the best available techniques.*

Response

A summary of the environmental emissions made over the last 3 years were reviewed against BAT, Table 10.1 below sets out a summary of these emissions and their relevant to BAT.

Table 10.1

Emission reference point	**Constituent**	**Emission Limit Values** (Current Licence Limit)	**BAT or BAT conclusion requirement BAT associated emission level**	**Statement of conformity with BAT (for previous 3 years).**
Waste water to Sewer (FS 1)	Temperature	43^{o}C	No relevant BAT conclusion identified for discharges to sewer	No applicable BAT limit determined. Compliant with Emission limit value in place
	pH	6-8.5		
	COD (kg/day)	280		
	Suspended Solids (mg/l)	400		
	Sulphates (mg/l)	1000		
	Chlorides (mg/l)	6000		
	Total Phosphorous (mg/l)	150		
	Ammonia (mg/l)	80		
	Phenols (C6H5OH) (mg/l)	50		
	Copper (mg/l)	1		
	Zinc (mg/l)	1		
	Lead (mg/l)	0.5		
	Cadmium (mg/l)	0.15		
	Fats, Oils, greases (mg/l)	100		

Emission reference point	**Constituent**	**Emission Limit Values** (Current Licence Limit)	**BAT or BAT conclusion requirement BAT associated emission level**	**Statement of conformity with BAT (for previous 3 years).**
Emissions to Surface water (SW01 & 2)	Mineral Oils (mg/l)	5	No relevant BAT conclusion identified	Currently only grab sample data available (for COD) versus daily average for BAT; Discharges comply with licence limits.
	Suspended Solids (mg/l)	60	No relevant BAT conclusion identified	
	pH (Trigger levels)	6.57-8.65	No relevant BAT conclusion identified	
	COD (Trigger levels) (mg/l)	250	Relevant BAT 56 conclusion identified in WT BREF: 120ppm	
	Oils, Fats greases. (Trigger levels) (mg/l)	15	No relevant BAT conclusion identified	
	BOD (Trigger levels) (mg/l)	25	Relevant BAT 56 conclusion identified in WT BREF: 20ppm	Only grab sample monitoring carried out as per licence requirements versus daily average for BAT;. 1 breach of Trigger level in 2015.
Air (A-01)	Ambient Dust (DP-01, 02 & 03) (mg/m^2/day)	350	No relevant BAT conclusion identified	No applicable BAT limit determined. Compliant with Emission limit value in place
	SOx	No limits specified	No relevant BAT conclusion identified	
	NOx	No limits specified		
	CO	No limits specified		

Question 11: *For emissions outside the BAT guidance limit or BAT conclusions levels, provide full evaluation of the existing abatement/treatment system. Provide a planned programme of improvement towards meeting upgraded standard. This should highlight specific goals and a timescale, together with options for modification, upgrading or replacement as required to bring the emissions within the limits as set out in BAT. In Particular describe how it was decided that a regenerative thermal oxidiser was the appropriate technique to employ to abate emissions from the oil drying tanks.*

Response

A review of the activities, proposed and existing, carried out on site was completed as a part of this licence review. This included a documentation review of applicable current BAT/BREF guidance against these activities.

There is no clear identification of what determines BAT for fixed roof tanks within the BREF for Storage however the Waste Treatment BREF provides a number of relevant conclusions including BAT 36, 24, 37 & 41.

BAT 36 includes the provision of vapour recovery for tanker loading & unloading of volatile liquids and this is applied for the loading/unloading of volatile materials such as solvents and mixed fuels.

BAT 24 d is to handle odorous materials in fully enclosed or suitably abated vessels. BAT 37 provides for the application of an extraction system or system to vent gases from storage, mixing/reaction tanks. Since January 2016 a programme of ducting tank vents to abatement filters was commenced. Initially this involved the use of basic odour filters consisting of drums containing water mixed with an odour neutralising chemical (Airborne 10). However subsequently these odour filters have since been replaced (in April/May 2016) with more sophisticated filters which involve the use of activated carbon (a recognised BAT for air emissions abatement). The current abatement systems now being employed on waste storage/processing tanks involves a group of tank vents being joined by a manifold to facilitate them breathing though a common carbon filter with a safety vacuum valve installed (to prevent a vacuum pressure building up beyond the design pressure of the tanks). To maximise the efficiency of the carbon filters many have a vapour trap and coalescence filter fitted to prevent any condensing liquids from saturating the carbon filter.

BAT 37 can also be applied to the processing of oil which includes filtering and centrifuging steps which were historically carried out in an enclosed area. Since March 2016, the oil filtering area has been sealed/enclosed further and has had an air extraction system installed. This abatement system draws air from the filtering area through an activated carbon filter to remove odours and VOCs before discharging to atmosphere. The discharge from this carbon filter is a new minor emission point included in this application (A3-52).

BAT 41 provides for VOC emissions to be a maximum of 20mg/m^3 or use 50mg/m^3 (as a concentration) for low loads but low loads are not defined in the note. There are no mass emission limits specified in BAT 41 or the 2006 BREF Note. Mass emission limits are more applicable to emissions to atmosphere and the German TA Luft sets a general VOC limit of 50mg/m^3 or 0.5kg/hr (Paragraph 5.2.5 of TA Luft 2002). The use of a mass emission limit (in kg/hr) accounts for the volume of discharge as well as the concentration and is a more appropriate measure of actual impact. In this regard, BAT for VOC emissions in Ireland as regulated by the EPA is typically based on compliance with the TA Luft mass emission limit of 0.5kg/hr. Furthermore, the EPA define the significance of the emission as low (and therefore a “minor” emission point) if the mass emission is less than 20% of this limit (i.e. <0.1kg/hr). Measurements to date on the discharges from the carbon filters indicate that VOC levels are not significant (i.e. less than 0.1kg/hr) and hence these emission

sources are classified as “minor” in this application. The proposed RTO (A2-1) has a considerably larger volume flow (max 30,000m^3/hr) and hence high load and a much greater potential for impact. Consequently, Table E.1(iii) of the response to Item 9 of the EPA request, specifies the BAT concentration limit of 20mg/m^3 due to the classification of this as a “main” emission point and this discharge has been simulated using an air dispersion model which indicates no significant impact on the environment.

The next step to improve the abatement of emissions from the waste oil storage/processing tanks is to duct each tank vent to a central (larger) ring duct which would serve to interconnect the vapour space of each tank. This would then provide a means of balancing the vapours between tanks and reduce the volume of air discharged to atmosphere as liquids are pumped from one tank to another within the tank farm. This technique of ‘Vapour Balancing’ is a recognised BAT and is included in the BREF on Storage (4.1.1.13).The vapour balancing system will allow vapours being displaced from one tank (e.g. as it is being filled) to return to the tank being emptied via the central ring duct. The ring duct will be able to vent as necessary through the recently installed activated carbon filter (A3-54) or alternative abatement process (e.g. Regenerative Thermal Oxidation (RTO) – see ‘Proposed RTO’ section below). Note that the emission point A2-1 may be relocated from its current position on Figure 2.2. Installation of the vapour balancing system is currently expected to be completed by October 30th 2016.

Waste Processing (excluding Oil recovery)

Currently there are two existing buildings (Buildings/Areas J & K) where a variety of physical handling and processing activities are carried out on waste prior to the waste being shipped onward to an appropriately licensed facility. These activities include the sorting/ crushing/ shredding/ compacting, mixing and or repackaging prior to onward recovery/disposal of waste. BAT 29, 32, 37 would provide that these activities be carried out under local exhaust ventilation where there is a risk of dust, odours VOCs etc.. The materials being processed currently do not lead to the generation of dust and it was not considered necessary to monitor dust levels. Monitoring of fugitive VOCs within these areas has shown the levels of fugitive VOC emissions to be low, 0-10 ppm. However it is proposed to install an air extraction system discharging through a new carbon filter (located within building K) which would provide an improved level of protection in relation to potential odours. It is planned to have the additional carbon filter and extraction system operational by the 31st of May 2016.

BAT 28 provides for the unloading of solids and sludge in closed areas which are fitted with extractive vent systems linked to abatement equipment when the handled waste can potentially generate emission to air (e.g. odours, dust, VOCs). BAT 35 would similarly provide for suitable abatement measures when storing materials that can generate emissions to the air (e.g. odours, dust, VOCs). Currently the existing Tanker Wash Out Bay (also used for waste repackaging) is not enclosed and it is now proposed to fully enclose this which along with reducing the volume of contaminated rainwater generated in the area would provide better control of potential odorous emissions from tanker cleaning operations. The new building will be fitted with an air extraction system connected to a new activated carbon filter for use when odorous materials are being handled (A3-54). This carbon filter will also provide abatement for the occasional cleaning of oil tanks as outlined below. It is planned to have the area roofed and the additional carbon filter and extraction system in place by the 30th of November 2016.

Tank Cleaning

While not specifically identified under any particular BAT the new large activated carbon filter ((A3-54)) is also proposed to facilitate the cleaning of large oil storage/processing tanks and control associated air emissions. The new carbon filter will be capable of handling ~10,000m^3/hr of air flow and thereby capable of providing between 5-10 air changes per hour to the largest oil processing tanks in use at the facility (tanks 18, 19). As indicated previously this carbon filter will also provide

abatement for the tanker wash out bay as outlined above. It is planned to have the additional carbon filter and extraction system in place by the 30th of November 2016.

Soil Remediation

BAT 24 & 88 provide for the handling and storing of odorous materials in enclosed buildings and connected to abatement. BAT 28 provides for unloading solids and sludge in closed areas which are fitted with extractive vent systems linked to abatement equipment when the handled waste can potentially generate emission to air (e.g. odours, dust, VOCs). Soil remediation facilities across Europe typically involve large open unroofed areas for both biological and chemical processing of contaminated soils (Thermal plants are more varied in nature). Soil remediation activities at the existing Enva facility have not presented any significant odour or air emission impact to date. However to better control dust and potential odour emissions the building has been enclosed on two sides in February/March of 2016.

Furthermore it is now proposed to enclose this area on all sides to further improve the control of fugitive emissions associated with soil handling/processing activities. Available abatement measures include the use of a mobile water vapour/odour neutralising misting unit to reduce the potential for dust and/or odours arising from activities within the building. Fugitive monitoring of VOCs in this area have ranged between 0-5 ppm. It is considered technically difficult to provide any additional useful abatement (i.e. odour/VOC) due to the size/volume of the building and currently it is not considered appropriate or necessary to provide any form of extraction system with abatement. Planning permission has been applied for to carry out the additional works and it is planned to have these works completed by November 2016.

Effluent transfer

BAT 35 & 39 provide for the use of a scrubber system and suitable abatement system for inorganic gaseous emissions. In April 2016 an extraction system was installed on the recently replaced oil water separator (Hodgefield) located in the main tank farm to extract the headspace air from this unit. The oil water separator had been identified as a potential odour source (hydrogen sulphide) when operators have to open its lids to monitor the efficiency of oil removal. The extracted headspace air is now abated through a caustic scrubber followed by a carbon filter (containing copper impregnated for hydrogen sulphide removal) before being discharged to atmosphere (Minor emission point A3-53). By installing the extraction and abatement system the potentially odorous headspace gases can no longer build up and present an odour risk. There are no odours detectable in the exhaust air. VOC emissions have also been monitored and shown no significant level of VOCs being emitted at A3-53 (<0.1kg/hr)).

Surface Water Discharges

BAT 56 provides for certain emission limit values for discharges to surface water bodies. This includes COD & BOD as daily averages. Currently only grab sample data available for surface water discharges as there is no monitoring of the flow on SW2 (SW-1 has a flow measurement device). However discharges comply with current licence limits. The BAT limits for surface water discharges are generally considered to be very challenging for industrial/waste facilities and are the subject of current debate in ongoing review process for the WT BREF review process. There are no current planned measures to improve surface water discharges pending finalisation of the Waste Treatment BREF currently under review.

Regenerative Thermal Oxidiser (RTO) as Chosen Technology to abate emissions from drying tanks

This question is now less relevant as the company has ceased (since January 2016), to use the previously employed oil drying technique (where oil was heated to ~100^{o}C and air sparged to drive off the remaining water). Since January this technique has been replaced with one where the oil is chemically dewatered. This involves heating the waste oil to a maximum temperature of 80^{o}C (with mechanical agitation) when it is then dosed with a chemical de-emulsifying agent. The contents are then left to cool and facilitate the water to drop (out of solution/emulsion) to the base of the tank where it can subsequently be removed. The tanks used to carry out this part of the process have their vents ducted to an air filter (activated carbon). However the company is proposing to introduce an alternative thermal drying technique which would operate as a continuous process rather than the previous batch methods. This continuous process would be more thermally efficient than the previous batch mode and also provide greater operational efficiencies. While the process is still under design, it is proposed to operate whereby the oil is heated (by means of a steam powered heat exchanger) while being forcibly pumped in a pipeline to place it under pressure prior to entry into an (enclosed) expansion vessel. The sudden exposure to the larger volume of the expansion vessel immediately depressurises the liquid causing the more volatile components (including water) to become gaseous where they can be separated from the liquid oil stream. The gaseous fraction (mainly water but including VOCs) would be routed to a new Regenerative Thermal Oxidiser (RTO) for treatment before discharging to the atmosphere via a new chimney stack adjacent to the existing stack associated with the sites' boiler. This new process for drying oils will not be deployed until an RTO plant of sufficient capacity is approved and installed.

Once design of the proposed new thermal oil drying process is completed it will include greater details of the composition and flow rates of the airstream to be treated by the RTO and ensure the RTO is adequately sized to meet BAT. The RTO unit proposed will operate at 850^{o}C and deliver at least a 95% reduction in the levels of VOC and organic odours and ensure there is no significant impact from air emissions arising from this part of the process. Emissions from the RTO unit will meet the BAT emission limits for VOCs of 20mg/Nm^{3}. An air dispersion model of the emissions from the proposed RTO was run and does not show a significant impact associated with operation of the proposed RTO. In addition the RTO, once operational, may be used to replace the abatement provided by activated carbon filters. A copy of the air dispersion model report is provided as part of the submission.

Summary of RTO selection for Drying Tanks

Initially a preliminary review of the various techniques listed in the referenced BREF document was carried out to identify relevant techniques for consideration. A review was then undertaken on the commonly applied air abatement techniques to determine the suitability or otherwise of each system based on the characteristics of the drying technique then employed (where oil was heated to ~100^{o}C and air sparged to drive off the remaining water).

The following options were assessed in the review:

- Adsorption through measures such as carbon filters;
- Biological Treatment;
- Chemical Treatment such as scrubbing;
- Condensation;
- Thermal Oxidation;

Carbon Filter (Adsorption)

The process of adsorption occurs when gas molecules are "captured and retained" on a solid surface (the adsorbent). There is a mass transfer of molecules from the bulk of gas to the gas-solid interface and diffusion through the pores of the solid until the molecule is finally adsorbed onto an internal surface. The most common form of absorption is a carbon filter which is a widely used application in

the abatement of emissions from solvents and fuels. However, carbon filters will not operate in high temperatures (>50^{o}C) or in high moisture content streams (>25% moisture). Where temperature or moisture are elevated other materials can be applied (silica gel, zeolites, etc.) but these are more applicable to polar compounds as opposed to VOCs such as at the Enva site. Carbon filters are a suitable abatement technology for gas streams containing low concentrations of organic compounds. If used to abate high concentration (but low flow) gas streams, saturation will occur very quickly and the running costs will be correspondingly high.

It was concluded that, carbon filters were not an appropriate abatement option for the high temperature oil drying technique due to the high moisture content of the gas stream generated by the process.

Biological Treatment

A range of organic odorous compounds can be biologically metabolised and consequently degraded by naturally-occurring micro-organisms which is widely used as the basis for abatement devices known as biological treatment. These micro-organisms are reasonably robust provided that there is a constant supply of carbon and oxygen. Biological treatment falls into two basic categories:

- Bio-filtration: a bio-filter typically consists of a large bed of soil (earth), compost or fibrous peat through which the malodorous air is passed.

- Bio-absorption: One form of bio absorber is a packed tower in which the packing material supports a microbial film (bio-scrubber)

However, this option was ruled out as biological treatment works best for a continuously fed system as the micro-organisms need a constant supply of food (e.g. VOCs) to sustain biological activity. The irregular nature of the oil drying process and associated downtime was determined to lead to potential degradation of the biological population and therefore present a significant risk of abatement failures.

Scrubbing

Scrubbing is a process involving transfer between a soluble gas and a liquid solvent in a gas/liquid contacting device (a “scrubber”). The liquid phase is generally recirculated with a small amount being continually being bled off and the same amount of fresh reagent being introduced. The liquid fraction is subsequently typically treated in a WWTP on site or disposed of appropriately. Water is the typical scrubber liquid and reagents can be added to increase solubility of the target gas.

However, in the case of the oil drying process, the use of a scrubber was not considered appropriate given the low solubility of the gases (typically non-polar VOCs) regardless of the use of reagents.

Condensing

Condensing has been utilised elsewhere in the abatement of emissions at waste oil processing facilities. The condensing process would return the emitted steam and to a large degree any VOCs present back to the liquid phase for treatment and disposal. While such a process is likely to continue to have some fugitive emissions it has the potential to significantly reduce the level of emissions (including VOC’s) to atmosphere. The company proceeded to progress this option to design stage and obtained approval from the Agency to proceed to install the system however during the final procurement stages the company was not satisfied it could obtain satisfactory performance warranties from the potential system suppliers. Furthermore there was a concern that the system would have limited ability to abate compounds odorous at low temperatures and it was decided to not progress this further.

Thermal Oxidation

Thermal Oxidation can be applied almost universally for abatement because all organic pollutants can be oxidised at high temperature, whereas the application of other methods is more specific. Section 4.6.18 of the Waste Treatment BREF outlines some the environmental benefits and operational data of Regenerative Thermal Oxidation as an abatement option. This document specifically recognises Thermal Oxidation as a waste gas treatment technique in Waste Oil Processing (Table 4.70). Table 4.74 of the BREF compares a variety of VOC abatement techniques and indicates RTO to be the most flexible and well adopted technique.

A more recent related BREF document is the BREF for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector (July 2014 formal draft) which includes draft details on best practice for odour abatement. Section 3.5.1.2.5 of this BREF indicates that regenerative thermal oxidisers can achieve odour abatement rates as high as 98-99.9% (refer Table 3.202 of the BREF) indicating the high efficiency of this system.

These BREF documents are the fundamental basis of best environmental practice in the EU. While it is important to note that these are currently undergoing a review process at EU level it is considered almost certain that Thermal Oxidation will continue to be included as a well-established and recognised technique for odour and VOC abatement.

While initially identified as an effective option it had been ruled out in favour of the condensing technique but subsequent to the difficulties in obtaining the required performance warranties for the condenser based system it was determined to present the best solution to abate emissions from the oil drying tanks (where oil was heated to ~100^{o}C and air sparged to drive off water).

Question 12: *In relation to the BREFs published for :*

- *Waste Treatment Industries (2006)*
- *Emissions from storage (2006)*
- *Energy efficiency (2009)*

Download the Agency's tabulations of BAT conclusions and complete.

Response

Reviews have been carried out on the documents prescribed above. The conclusions of these assessment are set out in the attached documents as follows:

Table 12.1 Conclusions on BAT from the Waste Treatment BAT Reference Document

Table 12.2 Conclusions on BAT from the Emissions from Storage BAT Reference Document

Table 12.3 Conclusions on BAT from the Energy Efficiency (EE) BAT Reference Document

Conclusions on BAT from the Waste Treatment BAT Reference Document

READ ME:

The '*Conclusions on BAT from the Waste Treatment BAT Reference Document'* is a vertical BREF that covers activities for a number of waste (hazardous and non-hazardous) treatments and deals with common waste treatments, biological and physico-chemical treatments of waste, treatments to recover waste materials and treatment to produce solid and liquid fuels from waste.

For each BAT, in the following table, state whether it is applicable to your installation and describe how each BAT applies or not to your installation and provide information on your compliance with the requirement.

It may be useful to first identify all the **'Not Applicable'** BATs and provide your reasoning in the **'Applicability Assessment'** box as to why you consider this particular BAT is not applicable at/to your entire installation having regard to the scope/ definitions, general considerations and the information on applicability. (You may need to make reference to relevant processes/activities or individual emission points to provide a comprehensive response).

Please use the '**Scope**' box to describe the relevant activities/processes that come within the scope of this BREF.

For each applicable BAT, in the following table, state the status; **'Yes'** or **'Will be'** as appropriate in the '**State whether it is in place or state schedule for implementation**' box. The use of each of these terms is described below.

Information on compliance in the '**Applicability Assessment**' box should include, where applicable, the following:

(i) Identification of the relevant process/ activity or individual emission points that the BAT requirement applies to at your installation;

(ii) Where BAT is to use one or a combination of listed techniques, specify the technique(s) implemented/proposed at your installation to achieve the BAT; and

(iii) A comment on how the requirements are being met or will be met, e.g., a description of the technology/operational controls/management proposed to meet the requirements.

Use of terms:

(a) '**Yes**' – To be entered where the installation is currently complaint with this BAT requirement.

(b) '**Will be**' – To be entered where a further technique is required to be installed to achieve compliance with the BAT requirement. In this case you must also specify the date by which the installation will comply with the BAT Conclusion requirement.

Please refer to the EPA BAT Guidance Note for the Waste Sector for BAT associated emission levels. The EPA BAT Guidance Note is the reference for setting emission limit values (without prejudice to the requirements of environmental quality standards).

BAT Guidance Notes are available on the EPA website and the waste guidance note is hyperlinked as follows:

BAT Guidance Note – Waste Sector (Transfer & Materials Recovery)

Conclusions on BAT from the Waste Treatment BAT Reference Document (extracts)

The full and complete Waste Treatment BAT reference document (August 2006) is available at the EIPPC Bureau website: http://eippcb.jrc.ec.europa.eu/reference/

SCOPE

Identify here the particular processes and activities at the installation that come within the scope of the conclusions on BAT in the Waste Treatment BAT reference documents (BREF).

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
	5.1 Generic BAT		
	Environmental Management These are techniques related to the continuous improvement of environmental performance. They provide the framework for ensuring the identification, adoption and adherence to BAT options that nevertheless remain important and can play a role in improving environmental performance of the installation. Indeed, these good house housekeeping/management techniques/tools often prevent emissions.		

[1] If necessary, use attachments numbered according to the relevant BAT, e.g. "Attachment BAT 1".

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
	A number of environmental management techniques are determined as BAT. The scope (e.g. level of detail) and nature of the Environmental Management System (EMS) (e.g. standardised or non-standardised) will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have. BAT is to (**1** to **5**):		
1	Implement and adhere to an EMS that incorporates, as appropriate to individual circumstances, the following features (see Section 4.1.2.8 of BREF):	Applicable	In place; EMS in place. Accredited to ISO 14001
1a	(a) Definition of an environmental policy for the installation by top management (commitment of the top management is regarded as a precondition for a successful application of other features of the EMS).	Applicable	In place; signed off by the Managing Director.
1b	(b) Planning and establishing the necessary procedures.	Applicable	In place

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
1c	(c) Implementation of the procedures, paying particular attention to: • structure and responsibility; • training, awareness and competence; • communication, employee involvement; • documentation; • efficient process control; • maintenance programme; • emergency preparedness and response; • safeguarding compliance with environmental legislation.	Applicable	In place
1d	(d) Checking performance and taking corrective action, paying particular attention to: • monitoring and measurement (see also the Reference document on General Principles of Monitoring); • corrective and preventive action; • maintenance of records; • independent (where applicable) internal auditing in order to determine whether or not the environmental management system conforms to planned arrangements and has been properly implemented and maintained.	Applicable	In place
1e	(e) Review by top management	Applicable	In place
1f (not mandatory)	(f) Having the management system and audit procedure examined and validated by an accredited certification body or an external EMS verifier.	Applicable	In place (accredited to ISO 14001 by SGS)

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
1g (not mandatory)	(g) Preparation and publication (and possibly external validation) of a regular environmental statement describing all the significant environmental aspects of the installation, allowing for year-by-year comparison against environmental objectives and targets as well as with sector benchmarks as appropriate.	Applicable	In place; EMP completed under existing licence
1h (not mandatory)	(h) Implementation and adherence to an internationally accepted voluntary system such as EMAS or EN ISO 14001:1996. This voluntary step could give higher credibility to the EMS. In particular EMAS, which embodies all the above-mentioned features, gives higher credibility. However, non-standardised systems can in principle be equally effective provided that they are properly designed and implemented.	Applicable	In place (accredited to ISO 14001 by SGS)
1i (not mandatory)	(i) Giving consideration to the environmental impact from the eventual decommissioning of the unit at the stage of designing a new plant.	Not Applicable; Facility is an existing plant with an indefinite lifetime;	
1j (not mandatory)	(j) Giving consideration to the development of cleaner technologies.	Applicable	In Place; New technologies monitored and employed as appropriate (e.g. Flash Distillation & RTO proposal)

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
1k (not mandatory)	(k) Where practicable, sectoral benchmarking on a regular basis, including energy efficiency and energy conservation activities, choice of input materials, emissions to air, discharges to water, consumption of water and generation of waste.	Not Applicable (very limited public data available for similar facilities)	
2	Ensure the provision of full details of the activities carried out on-site. A good detail of that is contained in the following documentation (see Section 4.1.2.7 and related to BAT number 1.g)	Applicable	In place, See Licence application

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
2a	a. descriptions of the waste treatment methods and procedures in place in the installation	Applicable	In place, See Licence application
2b	b. diagrams of the main plant items where they have some environmental relevance, together with process flow diagrams (schematics)	Applicable	In place, See Licence application
2c	c. details of the chemical reactions and their reaction kinetics/energy balance	Not Applicable; Reaction chemistry is not complex and has very limited potential for escalation;	

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
2d	d. details on the control system philosophy and how the control system incorporates the environmental monitoring information	Applicable	In place including • Waste Acceptance Procedures • Hazard Identification, Risk Assessments & HAZOPs; • Operating Procedures • Monitoring & measurement Procedures • Change Control Procedures
2e	e. details on how protection is provided during abnormal operating conditions such as momentary stoppages, start-ups, and shutdowns	Applicable	As above. These plans will include procedures for abnormal operating conditions such as momentary stoppages, start-ups, and shutdowns.
2f	f. an instruction manual	Applicable	In place; Standard Operating procedures used to control all significant activities

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
2g	g. an operational diary (related to BAT number 3)	Applicable	In place – records of waste acceptance, waste processing and SCADA system maintains a log of key oil/effluent processing parameters;
2h	h. an annual survey of the activities carried out and the waste treated. The annual survey should also contain a quarterly balance sheet of the waste and residue streams, including the auxiliary materials used for each site (related to BAT number 1.g).	Applicable	In place; Annual and Quarterly returns provided to the EPA;
3	Have a good housekeeping procedure in place, which will also cover the maintenance procedure, and an adequate training programme, covering the preventive actions that workers need to take on health and safety issues and environmental risks (see Sections 4.1.1.4, 4.1.1.5, 4.1.2.5, 4.1.2.10, 4.1.4.8 and 4.1.4.3)	Applicable	In place. Well established procedures for site inspections, maintenance, training, and corrective/ preventative action;
4	Try to have a close relationship with the waste producer/holder in order that the customers sites implement measures to produce the required quality of waste necessary for the waste treatment process to be carried out (see Section 4.1.2.10)	Applicable.	Detailed waste acceptance procedures in place, acceptance involves information exchange at sales stage prior to accepting waste.

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
5	Have sufficient staff available and on duty with the requisite qualifications at all times. All personnel should undergo specific job training and further education (see Section 4.1.2.11. This is also related to BAT number 3)	Applicable	All staff are suitably qualified and undergo on-going job specific training in accordance with EMS procedures.
	Waste IN	[redacted]	
	To improve the knowledge of the waste IN, BAT is to:		

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
6	Have a concrete knowledge of the waste IN. Such knowledge needs to take into account the waste OUT, the treatment to be carried out, the type of waste, the origin of the waste, the procedure under consideration (see BAT number 7 and 8) and the risk (related to waste OUT and the treatment) (see Section 4.1.1.1). Guidance on some of these issues is provided in Sections 4.2.3, 4.3.2.2 and 4.4.1.2.	Applicable	In place: Standard operating procedures are in place for the classification and acceptance of waste prior to collection. Further controls are in place upon collection and at entry to the site. Wastes which are mixed together are assessed prior to mixing e.g. waste liquids are assessed prior to being bulked/mixed together. Wastes which are sorted, segregated and repackaged are inspected prior to processing. Incompatible materials are removed and stored with compatible wastes.

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
			Standard Operating procedures are in place for the handling of all wastes on site. The majority of wastes handled on site have a low emission potential (other than solvents/low flashpoint liquids) The site laboratory operates to good laboratory management practises. Procedures are in place for laboratory tests. All tests are carried out to referenced standards and quality control checks are in place.

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
7	Implement pre-acceptance procedure containing at least the following items (see Section 4.1.1.2):		
7a	a. tests for the incoming waste with respect to the planned treatment	Applicable	In place. All wastes accepted for treatment/blending are subject to incoming testing/inspection requirements. Standard operating procedures are in place for this.
7b	b. making sure that all necessary information is received on the nature of the process(es) producing the waste, including the variability of the process. The personnel having to deal with the pre-acceptance procedure need to be able due to his profession and/or experience to deal with all necessary questions relevant for the treatment of the wastes in the WT facility	Applicable	In place. Wastes are checked prior to acceptance. Acceptance can be based on sample analysis or information supplied for technical data sheets.

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
7c	c. a system for providing and analysing a representative sample(s) of the waste from the production process producing such waste from the current holder	Applicable	In place.
7d	d. a system for carefully verifying, if not dealing directly with the waste producer, the information received at the pre-acceptance stage, including the contact details for the waste producer and an appropriate description of the waste regarding its composition and hazardousness	Applicable	In place; Sales process involves exchange or relevant waste composition/ characterisation information;
7e	e. making sure that the waste code according to the European Waste List (EWL) is provided	Applicable	In place;
7f	f. identifying the appropriate treatment for each waste to be received at the installation (see Section 4.1.2.1) by identifying a suitable treatment method for each new waste enquiry and having a clear methodology in place to assess the treatment of waste, that considers the physico-chemical properties of the individual waste and the specifications for the treated waste.	Applicable	In Place; Wastes are only accepted on the basis of a known recovery/ disposal route;
8	Implement an acceptance procedure containing at least the following items (see Section 4.1.1.3):	[redacted]	

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
8a	a. a clear and specified system allowing the operator to accept wastes at the receiving plant only if a defined treatment method and disposal/recovery route for the output of the treatment is determined (see pre-acceptance in BAT number 7). Regarding the planning for the acceptance, it needs to be guaranteed that the necessary storage (see Section 4.1.4.1), treatment capacity and dispatch conditions (e.g. acceptance criteria of the output by the other installation) are also respected.	Applicable	In place. Procedures in place for the acceptance of waste. Waste is assessed for acceptability taking into consideration handling and treatment options.
8b	b. measures in place to fully document and deal with acceptable wastes arriving at the site, such as a pre-booking system, to ensure e.g. that sufficient capacity is available	Applicable.	In Place; Enva directly control all waste arriving at the facility and do not permit parties to deliver waste without prior approval;
8c	c. clear and unambiguous criteria for the rejection of wastes and the reporting of all non-conformances	Applicable	In place. Procedures in place to control this.
8d	d. a system for identifying the maximum capacity limit of waste that can be stored at the facility (related to BAT number 10.b, 10.c, 27 and 24.f)	Applicable	In Place; regular stock management procedures operated to manage waste inventory;
8e	e. visually inspect the waste IN to check compliance with the description received during the pre-acceptance procedure. *For some liquid and hazardous waste, this BAT is not applicable* (see Section 4.1.1.3).	Applicable	In place. Waste is inspected upon receipt at the site

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
9	**Implement different sampling procedures for all different incoming waste vessels delivered in bulk and/or containers. These sample procedures may contain the following items (see Section 4.1.1.4):**		
9a	a. sampling procedures based on a risk approach. Some elements to consider are the type of waste (e.g. *hazardous* or non-hazardous) and the knowledge of the customer (e.g. waste producer)	Applicable	In place. Procedures are in place for the appropriate sampling of waste once it is accepted on site. Sampling is carried out using a risk based approach.
9b	b. check on the relevant physico-chemical parameters. The relevant parameters are related to the knowledge of the waste needed in each case (see BAT number 6)	Applicable	In place. On site laboratory used to assess the key parameters of waste oils processed at the facility; External analysis used to assess incoming soil;
9c	c. registration of all waste materials	Applicable	In place; All wastes accepted on site are recorded and reported as required;
9d	d. have different sampling procedures for bulk (liquid and solids), large and small containers and laboratory smalls. The number of samples taken should increase with the number of containers. In extreme situations, small containers must all be checked against the accompanying paperwork. The procedure should contain a system for recording the number of samples and degree of consolidation	Applicable.	In Place; Bulk wastes are sampled and analysed while most packaged wastes are not routinely analysed unless these are

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
			recovered or disposed of on site;
9e	e. details of the sampling of wastes in drums within designated storage, e.g. the timescale after receipt	Not Applicable (other than waste oil in drums)	
9f	f. sample prior to acceptance	Applicable	In place; New waste oil customers .data exchange and prior sampling if deemed necessary;
9g	g. maintenance of a record at the installation of the sampling regime for each load, together with a record of the justification for the selection of each option	Applicable	In place. Records maintained for each consignment accepted at the facility;
9h	h. a system for determining and recording: • a suitable location for the sampling points • the capacity of the vessel sampled (for samples from drums, an additional parameter would be the total number of drums) • the number of samples and degree of consolidation • the operating conditions at the time of sampling.	Applicable	In Place for Waste Oil acceptance no formal system in place for packaged wastes accepted for onward shipment as sampling is not routinely carried out;

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
9i	i. a system to ensure that the waste samples are analysed (see Section 4.1.1.5)	Applicable	In place
9j	j. in the case of cold ambient temperatures, a temporary storage may be needed in order to allow sampling after defrosting. This may affect the applicability of some of the above items in this BAT (see Section 4.1.1.5).	Not Applicable. Will not apply to this treatment process	
10	Have a reception facility covering at least the following issues (see Section 4.1.1.5):		
10a	a. have a laboratory to analyse all the samples at the speed required by BAT. Typically this requires having a robust quality assurance system, quality control methods and maintaining suitable records for storing the analyses results. *Particularly for hazardous wastes, this often means that the laboratory needs to be on-site*	Applicable	Not in place. As above. Standardised EMS will be in place for the project including a robust quality assurance system. Laboratory facilities will be provided on site where applicable. Other samples will be analysed in accredited laboratory facilities.

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
10b	b. have a dedicated quarantine waste storage area as well as written procedures to manage non-accepted waste. If the inspection or analysis indicates that the wastes fail to meet the acceptance criteria (including, e.g. damaged, corroded or unlabelled drums) then the wastes can be temporarily stored there safely. Such storage and procedures should be designed and managed to promote the rapid management (typically a matter of days or less) to find a solution for that waste	Applicable	In place. Quarantine procedures and storage areas provided;
10c	c. have a clear procedure dealing with wastes where inspection and/or analysis prove that they do not fulfil the acceptance criteria of the plant or do not fit with the waste description received during the pre-acceptance procedure. The procedure should include all measures as required by the permit or national/international legislation to inform competent authorities, to safely store the delivery for any transition period or to reject the waste and send it back to the waste producer or to any other authorised destination	Applicable	In Place; Procedures in place for when wastes are not as described or outside the acceptance criteria for the process/facility the waste producers is contacted to agree alternative process/destination or the waste returned to the customer;
10d	d. move waste to the storage area only after acceptance of the waste (related to BAT number 8)	Applicable	In place. Packaged waste offloaded to inspection area before storage/processing; Bulk tankered waste oils are analysed for key parameters before offloading;

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
			Bulk soils are stockpiled in storage/treatment area as no dedicated separate storage area.
10e	e. mark the inspection, unloading and sampling areas on a site plan	Applicable	In place. See application drawings;
10f	f. have a sealed drainage system (related to BAT number 63)	Applicable	No underground process pipework; Site drainage is monitored (CCTV) and maintained to ensure integrity;
10g	g. a system to ensure that the installation personnel who are involved in the sampling, checking and analysis procedures are suitably qualified and adequately trained, and that the training is updated on a regular basis (related to BAT number 5)	Applicable	In place. Standard operating procedures in place for the training of personnel.
10h	h. the application of a waste tracking system unique identifier (label/code) to each container at this stage. The identifier will contain at least the date of arrival on-site and the waste code (related to BAT number 9 and 12).	Applicable	Not in place; Packaged waste is identified by a unique number if it is for onward shipment; Waste due for on site processing

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
			including repackaging are not provided with unique reference numbers due to the short retention time;
Only	**Waste OUT**		
11	To improve the knowledge of the waste OUT, BAT is to analyse the waste OUT according to the relevant parameters important for the receiving facility (e.g. landfill, incinerator) (see Section 4.1.1.1).	Applicable	Key parameters are monitored for waste out (e.g. flash point in paint, landfill criteria for soils to landfill); Not applicable for certain wastes (e.g. as not homogenous/ suitable for analysis rags, contaminated PPE, absorbent etc.) or not relevant e.g. waste oil filters fluorescent tubes, batteries)
	Management systems		

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
	BAT is to:	[redacted]	
12	Have a system in place to guarantee the traceability of waste treatment. Different procedures may be needed to take into account the physico-chemical properties of the waste (e.g. liquid, solid), type of WT process (e.g. continuous, batch) as well as the changes that may occur to the physico-chemical properties of the wastes when the WT is carried out. A good traceability system contains the following items (see Section 4.1.2.3):		
12a	a. documenting the treatments by flow charts and mass balances (see Section 4.1.2.4 and this is also related to BAT number 2.a)	Applicable	In place. Process flow charts are provided in licence review submission. Wastes accepted on site are reconciled on a quarterly basis as per existing reporting requirements. An annual mass balance is carried out using the data recorded through the reporting year.
12b	b. carrying out data traceability through several operational steps (e.g. pre-acceptance/acceptance/storage/treatment/dispatch). Records can be made and kept up-to-date on an ongoing basis to reflect deliveries, on-site treatment and dispatches.	Applicable	In place; records maintained of waste acceptance, processing

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	Records are typically held for a minimum of six months after the waste has been dispatched		stages and outputs
12c	c. recording and referencing the information on waste characteristics and the source of the waste stream, so that it is available at all times. A reference number needs to be given to the waste and needs to be obtainable at any time in the process to enable the operator to identify where a specific waste is in the installation, the length of time it has been there and the proposed or actual treatment route	Applicable	In place. Waste tracking in place for all containers which remain in their original package. All other wastes which are intended for bulking processes are checked, accepted sorted, segregated and repacked
12d	d. having a computer database/series of databases, which are regularly backed up. The tracking system operates as a waste inventory/stock control system and includes: • date of arrival on-site, • waste producer details, • details on all previous holders, • an unique identifier, • pre-acceptance and acceptance analysis results, • package type and size, • intended treatment/disposal route, • an accurate record of the nature and quantity of wastes held on-site including all hazards details on where the waste is physically located in relation to a site plan,	Applicable.	In place; Electronic systems in place with support from documentation; Location is not tracked however there are relatively small number of storage locations used for packaged wastes; It is not practical to track bulk wastes through the oil recovery process;

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	• at which point in the designated disposal route the waste is currently positioned		
12e	e. only moving drums and other mobile containers between different locations (or loaded for removal off site) under instructions from the appropriate manager, ensuring that the waste tracking system is amended to record these changes (see Section 4.1.4.8).	Applicable	In place. Procedures are in place for the storage of materials. All waste is stored in accordance with HSG 71. See attached waste storage plan.
13	Have and apply mixing/blending rules oriented to restrict the types of wastes that can be mixed/blended together in order to avoid increasing pollution emission of down-stream waste treatments. These rules need to consider the type of waste (e.g. *hazardous,* non-hazardous), waste treatment to be applied as well as the following steps that will be carried out to the waste OUT (see Section 4.1.5)	Applicable	In place; Procedures in place to control: Bulk soils and other compatible solid bulk solids are combined; Bulk liquids are mixed prior to onward shipment; Waste oils are bulked together for processing;
14	Have a segregation and compatibility procedure in place (see Section 4.1.5 and this is also related to BAT number 13 and 24.c), including:	Applicable.	As above

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14a	a. keeping records of the testing, including any reaction giving rise to safety parameters (increase in temperature, generation of gases or raising of pressure); a record of the operating parameters (viscosity change and separation or precipitation of solids) and any other relevant parameters, such as generation of odours (see Sections 4.1.4.13 and 4.1.4.14)	Applicable.	In place; Laboratory staff maintain records of all analysis and test results;
14b	b. packing containers of chemicals into separate drums based on their hazard classification. Chemicals which are incompatible (e.g. oxidisers and flammable liquids) should not be stored in the same drum (see Section 4.1.4.6)	Applicable.	In place; segregation rules based on ADR/IMDG or HSG 71 are employed as appropriate;
15	Have an approach for improving waste treatment efficiency. This typically includes the finding of suitable indicators to report WT efficiency and a monitoring programme (see Section 4.1.2.4 and this is also related to BAT number 1)	Applicable	In Place; Not on a formal basis but carbon intensity monitoring programme forces a focus on increasing efficiency;
16	Produce a structured accident management plan (see Section 4.1.7)	Applicable	In place; Emergency plan developed for potential emergency scenarios; Standard operating procedure in place for the management of all accidents and incidents which may occur.

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17	Have and properly use an incident diary (see Section 4.1.7 and related to BAT number 1 and to quality management system)	Applicable	In Place; Procedures and system in place to record all incidents and investigate these appropriately to determine the necessary corrective/ preventative actions;
18	Have a noise and vibration management plant in place as part of the EMS (see Section 4.1.8 and this is also related to BAT number 1). For some WT installations, noise and vibration may not be an environmental problem	Applicable	In Place: Annual monitoring carried out on noise while monitoring of vibration is not considered necessary based on site activities;
19	Consider any future decommissioning at the design stage. For existing installations and where decommissioning problems are identified, put a programme to minimise these problems in place (see Section 4.1.9 and this is also related to BAT number 1.i).	Not Applicable. As existing facility with indefinite lifespan;	CRAMP prepared in line with EPA guidance;
	Utilities and raw material management BAT is to:	[redacted]	
20	The type of source (i.e. electricity, gas, liquid conventional fuels, solid conventional fuels and waste) (see Section 4.1.3.1 and related to BAT number 1.k). This involves:		

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20a	a. reporting the energy consumption information in terms of delivered energy	Applicable	In Place; Energy use monitored and converted to carbon footprint/intensity; Energy consumption reported annually as a part of the annual environmental returns.
20b	b. reporting the energy exported from the installation	Not Applicable. No energy will be exported from the site.	
20c	c. providing energy flow information (for example, diagrams or energy balances) showing how the energy is used throughout the process.	Applicable	In place; records maintained of energy use at the site,
21	Continuously increase the energy efficiency of the installation, by (see Section 4.1.3.4):	Applicable	In place; driven by economics with oil process accounting for main energy use; Independent audit carried out and in process of preparing recommendations for consideration

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21a	a. Developing an energy efficiency plan.	Applicable.	Not in place; Independent audit carried out and in process of preparing recommendations for consideration;
21b	b. using techniques that reduce energy consumption and thereby reduce both direct (heat and emissions from on-site generation) and indirect (emissions from a remote power station) emissions	Applicable	Not in place?; Awaiting output from independent energy audit;
21c	c. defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (e.g. MWh/tonne of waste processed) (related to BAT number 1.k and 20).	Applicable	In place, Energy intensity metric used across Enva to drive improvements
22	Carry out internal bench marking (e.g. on an annual basis) of raw materials consumption (related to BAT number 1.k). Some applicability limitations have been identified and these are mentioned in Section 4.1.3.5.	Applicable	Not in place. Limited publically available information on similar facilities
23	Explore the options for the use of waste as a raw material for the treatment of other wastes (see Section 4.1.3.5). If waste is used to treat other wastes, then to have a system in place to guarantee that the waste supply is available. If this cannot be guaranteed, a secondary treatment or other raw materials should be in place in order to avoid any unnecessary waiting treatment time (see Section 4.1.2.2)	Applicable;	In place; Waste generally not suitable but are in the majority sent for further recovery (metal, energy recovery);

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	Storage and handling BAT is to:	[redacted]	
24	apply the following techniques related to storage (see Section 4.1.4.1):		
24a	a. locating storage areas: • away from watercourses and sensitive perimeters, and • in such a way so as to eliminate or minimise the double handling of wastes within the installation	Applicable	In place. Designated bunded waste storage areas located close to processing areas;
24b	b. ensuring that the storage area drainage infrastructure can contain all possible contaminated run-off and that drainage from incompatible wastes cannot come into contact with each other	Applicable	In place. Concrete hardstanding provided throughout waste handling areas with incompatible materials are separately bunded;
24c	c. using a dedicated area/store which is equipped with all necessary measures related to the specific risk of the wastes for sorting and repackaging laboratory smalls or similar waste. These wastes are sorted according to their hazard classification, with due consideration for any potential incompatibility problems and then repackaged. After that, they are removed to the appropriate storage area	Not Applicable (lab smalls are not currently sorted at the facility);	Sorting of packaged wastes (e.g. civic amenity hazardous household and agrichemical wastes) takes place in enclosed buildings which is bunded and has

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			fire extinguishers, emergency showers and spill kits present
24d	d. handling odorous materials in fully enclosed or suitably abated vessels and storing them in enclosed buildings connected to abatement	Applicable.	In Place; All bulk liquid vessels are abated to odour filters; Waste handling carried out in enclosed buildings with appropriate abatement where necessary;
24e	e. ensuring that all connections between the vessels are capable of being closed via valves. Overflow pipes need to be directed to a contained drainage system (i.e. the relevant bunded area or another vessel)	Applicable	In place; all tanks can be isolated and overflows are contained
24f	f. having measures available to prevent the building up of sludge's higher than a certain level and the emergence of foams that may affect such measures in liquid tanks, e.g. by regularly controlling the tanks, sucking out the sludge's for appropriate further treatment and using anti-foaming agents	Not Applicable foams are not an issue for the wastes involved;	Tanks are desludged regularly to prevent blockage of off take pipework and inefficient heating when steam coils are submerged in sludge;
24g	g. equipping tanks and vessels with suitable abatement systems when volatile emissions may be generated, together with level meters and alarms. These systems need to be sufficiently robust (able to work if sludge and foam is present) and regularly maintained	Applicable	In place; Tanks have contents gauges and separate high level alarms; VOC

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			emissions are ducted to odour filters;
24h	h. storing organic waste liquid with a low flashpoint under a nitrogen atmosphere to keep it inertised. Each storage tank is put in a waterproof retention area. Gas effluents are collected and treated	Applicable	Not in place; Low flashpoint liquid (e.g. solvents/mixed fuels) are stored in an underground double walled tank with interstitial monitoring; Any future above ground storage of low flashpoint liquids would have nitrogen blanketing applied and be located in a bunded area;
25	Separately bund the liquid decanting and storage areas using bunds which are impermeable and resistant to the stored materials (see Section 4.1.4.4)	Applicable	Not in place. Although bunds are in place the decanting and storage areas are common and cannot be separately bunded.
26	Apply the following techniques concerning tank and process pipework labelling (see Section 4.1.4.12):		

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26a	a. clearly labelling all vessels with regard to their contents and capacity, and applying an unique identifier. Tanks need to have an appropriately labelled system depending on their use and contents	Applicable	Not in place. While tanks have unique identifying references on site plans these are not placed directly on all tanks.
26b	b. ensuring that the label differentiates between waste water and process water, combustible liquid and combustible vapour and the direction of flow (i.e. in or outflow)	Applicable	Not in place. Pipe work is relatively simple in layout and labelling will provide no benefit;
26c	c. keeping records for all tanks, • detailing the unique identifier; • capacity; • its construction, including materials; • maintenance schedules and inspection results; • fittings; and • the waste types which may be stored/treated in the vessel, including flashpoint limits	Applicable	In place. See tank details provided in application information;
27	Take measures to avoid problems that may be generated from the storage/accumulation of waste. This may conflict with BAT number 23 when waste is used as a reactant (see Section 4.1.4.10).	Applicable.	In Place; Stock control and aging procedures are currently employed at the facility;

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28	apply the following techniques when handling waste (see Section 4.1.4.6):		
28a	a. having systems and procedures in place to ensure that wastes are transferred to the appropriate storage safely	Applicable.	In Place. Standard operating procedures in place for the handling of waste. Operatives trained to handle waste
28b	b. having in place a management system for the loading and unloading of waste in the installation, which also takes into consideration any risks that these activities may incur. Some options for this include ticketing systems, supervision by site staff, keys or colour-coded points/hoses or fittings of a specific size	Applicable	In place. Standard operating procedures in place to ensure that loading and unloading activities are controlled. Unloading and unloading activities controlled by nominated plant personnel.
28c	c. ensuring that a qualified person attends the waste holder site to check the laboratory smalls, the old original waste, waste from an unclear origin or undefined waste (especially if drummed), to classify the substances accordingly and to package into specific containers. In some cases, the individual packages may need to be protected from mechanical damage in the drum with fillers adapted to the packaged waste properties	Applicable.	In Place; Qualified DGSAs/technicians review such wastes to ensure correct classification and integrity of proposed containers.

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28d	d. ensuring that damaged hoses, valves and connections are not used	Applicable	In Place; Procedures in place to prevent use of damaged hoses;
28e	e. collecting the exhaust gas from vessels and tanks when handling liquid waste	Applicable.	In place; The vents from all liquid waste tanks are ducted to odour filters;
28f	f. unloading solids and sludge in closed areas which are fitted with extractive vent systems linked to abatement equipment when the handled waste can potentially generate emission to air (e.g. odours, dust, VOCs) (see section 4.1.4.7)	Applicable.	Not in place; It is proposed to roof the tanker dig out bay where potentially odorous sludge’s are handled) and provide extraction to a carbon filter when required; The soil remediation area will be fully enclosed however it is not considered necessary to provide abatement due to the low levels of VOC/odours measured;

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28g	g. using a system to ensure the bulking of different batches only takes place with compatibility testing (see Section 4.1.4.7 and 4.1.5 and this is also related to BAT number 13, 14 and 30).	Applicable.	In place; wastes to be bulked together are assessed prior to mixing to ensure they are compatible.
29	Ensure that the bulking/mixing to or from packaged waste only takes place under instruction and supervision and is carried out by trained personnel. For certain types of wastes, such a bulking/mixing needs to be carried out under local exhaust ventilation (see Section 4.1.4.8)	Applicable.	In Place; all bulking of packaged waste is supervised and includes segregation and inspection to ensure bulked wastes are compatible; LEV system installed for bulking of certain wastes (e.g. paint);
30	Ensure that chemical incompatibilities guide the segregation required during storage (see Section 4.1.4.13 and 4.1.4.14 and this is also related to BAT number 14)	Applicable.	In Place; HSG71 and ADR/IMDG determine the segregation of wastes of different hazard classes;
31	Apply the following techniques when containerised wastes are handled (see Section 4.1.4.2):		
31a	a. storing of containerised wastes under cover. This can also be applied to any container that is held in storage pending sampling and emptying. Some exceptions on the applicability of this technique related to containers or waste not affected by ambient	Applicable	Not in place. While most containerised waste storage areas are currently

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	conditions (e.g. sunlight, temperature, water) have been identified (see Section 4.1.4.2). Covered areas need to have adequate provision for ventilation		roofed one bay used to store low flashpoint wastes is unroofed. Planning permission has been applied for to roof this area;
31b	b. maintaining the availability and access to storage areas for containers holding substances that are known to be sensitive to heat, light and water, under cover and protected from heat and direct sunlight.	Applicable.	Not in place. While most containerised waste storage areas are currently roofed one bay used to store low flashpoint wastes is unroofed. Planning permission has been applied for to roof this area;
	Other common techniques not mentioned above BAT is to:		
32	Perform crushing, shredding and sieving operations in areas fitted with extractive ventilation systems linked to abatement equipment (see Section 4.1.6.1) when handling materials that can generate emission to air (e.g. odours, dust, VOCs).	Applicable.	Not in Place; Some equipment has extraction fitted (e.g. fluorescent tube crushing, paint de-packing) linked to a particulate/carbon filter. No abatement to plastic

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			shredder or metal crushing. Measured VOCs in the area are observed to be very low circa 1ppm even without abatement;
33	Perform crushing/shredding operations (see Sections 4.1.6.1 and 4.6) under full encapsulation and under an inert atmosphere for drums/containers containing flammable or highly volatile substances. This will avoid ignition. The inert atmosphere is to be abated.	Not Applicable. Will not apply to this treatment process.	
33	Perform washing processes considering:		
33a	(a) Identifying the washed components that may be present in the items to be washed (e.g. solvents).	Applicable	In place; Container/tank washings can contain hydrocarbons, and acidic residues;
34b	(b) Transferring washings to appropriate storage and then treating them in the same way as the waste from which they were derived.	Not Applicable. Will not apply to this treatment process.	In place; Washings are directed to the on site liquid waste treatment process e.g. to recover oils, neutralise pH and precipitate out metals as appropriate)

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34c	(c) Using treated waste water from the WT plant for washing instead of fresh water. The resultant waste water can then be treated in the WWTP or re-used in the installation.	Applicable.	Not in place; Treated waste water is not considered suitable for reuse;
	Air emission treatments To prevent or control the emissions mainly of dust, odours and VOC and some inorganic compounds, BAT is to:	[redacted]	
35	Restrict the use of open topped tanks, vessels and pits by:		
35a	(a) not allowing direct venting or discharges to air by linking all the vents to suitable abatement systems when storing materials that can generate emissions to the air (e.g. odours, dust, VOCs) (see Section 4.1.4.5).	Applicable	Not in Place; All tank vents are currently ducted grouped together to breath through odour filters, by manifolds however it is proposed to connect these further to provide a vapour balancing system;
35b	(b) keeping the waste or raw materials under cover or in waterproof packaging (see Section 4.1.4.5 and this is also related to BAT number 31.a)	Applicable	Not in place; all waste storage area are currently roofed with the exception of the tanker dig out bay and packaged waste offloading

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			area; it is proposed to roof the tanker dig out bay;
35c	(c) connecting the head space above the settlement tanks (e.g. where oil treatment is a pre-treatment process within a chemical treatment plant) to the overall site exhaust and scrubber units (see Section 4.1.4.1).	Applicable	Not in place; currently the tank vents are ducted through multiple filters however it is proposed to combine these into a single manifold and single emissions point with abatement;
36	Use an enclosed system with extraction, or under depression, to a suitable abatement plant. This technique is especially relevant to processes which involve the transfer of volatile liquids, including during tanker charging/discharging (see Section 4.6.1).	Applicable	Not in place; While tanks are ducted to abatement filters there is no system currently in place for tanker loading/offloading; however this is planned
37	Apply a suitably sized extraction system which can cover the holding tanks, pre-treatment areas, storage tanks, mixing/reaction tanks and the filter press areas, or to have in place a separate system to treat the vent gases from specific tanks (for example, activated carbon	Applicable	Not in place; currently the tank vents are ducted through multiple filters however it is proposed to combine these into a single manifold and single

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	filters from tanks holding waste contaminated with solvents) (see Section 4.6.1).		emissions point with abatement;
38	Correctly operate and maintain the abatement equipment, including the handling and treatment/disposal of spent scrubber media (see Section 4.6.11).	Applicable	In Place; Al abatement equipment is managed using an asset management system and all wastes generated (e.g. spent carbon) sent to authorised facilities;
39	Have a scrubber system in place for the major inorganic gaseous releases from those unit operations which have a point discharge from process emissions. Install a secondary scrubber unit to certain pre-treatment systems if the discharge is incompatible, or too concentrated for the main scrubbers (see Section 4.6.11).	Applicable.	In Place; Caustic scrubber used as pre-treatment of Hydrogen sulphide emissions with subsequent discharge passed through a copper impregnated carbon filter;
40	Have leak detection and repair procedures in place in installations a) handling a large number of piping components and storage and b) compounds that may leak easily and create an environmental problem (e.g. fugitive emissions, soil contamination) (see Section 4.6.2). This may be seen as an element of the EMS (see BAT number 1)	Applicable	In place; All pipework is located in contained areas (bunds, concrete areas draining to interceptor)

<table>
<tr><th>BAT No.</th><th>BAT Description</th><th>Applicability Assessment
State “applicable” if the technique applies to your installation.
State “not applicable” if not, and provide a comprehensive explanation[1].</th><th>Status of technique at installation
If applicable, state “in place” if the technique is in place at your installation.
If not, state “not in place”, the date it will be in place and a comprehensive explanation1.</th></tr>
<tr><td>41</td><td>Reduce air emissions to the following levels by using a suitable combination of preventive and/or abatement techniques (see Section 4.6). The techniques mentioned above in the BAT ‘Air emission treatments’ section (BAT numbers 35-41) also contribute to achieve these values.

<table><tr><td>Air parameter</td><td>Emission levels associated to the use of BAT (mg/Nm^3)</td></tr><tr><td>VOC</td><td>7 – 20 [1]</td></tr><tr><td>PM</td><td>5 – 20</td></tr><tr><td colspan="2">[1] For low VOC loads, the higher end of the range can be extended to 50</td></tr></table></td><td>Refer to the EPA BAT Guidance Note for BAT associated emission levels

Applicable.</td><td>In Place; See detailed response to Question 11.</td></tr>
<tr><td></td><td>Waste water management
BAT is to:</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>42</td><td>Reduce the water use and the contamination of water by (see Sections 4.1.3.6 and 4.7.1):</td></tr>
<tr><td>42a</td><td>(a) applying site waterproofing and storage retention methods.</td><td>Applicable</td><td>In place; Rainwater from main warehouse roof is captured into an above ground tank for reuse (eg charging drain jetting units)</td></tr>
</table>

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42b	(b) carrying out regular checks of the tanks and pits especially when they are underground	Applicable	In place; routine monitoring carried out as part of existing EMS procedures on all underground drainage lines and in ground sumps;
42c	(c) applying separated water drainage according to the pollution load (roof water, road water, process water).	Applicable	Not In place; Only some roofwater is diverted away from the site interceptor;
42d	(d) applying a security collection basin.	Applicable.	Excess secondary containment capacity in the main tank farm bund provides for containment of firewater run off etc;
42e	(e) Performing regular water audits, with the aim of reducing water consumption and preventing water contamination.	Applicable.	Not in place; However the site is not major user of water;
42f	(f) segregating process water from rain water (see Section 4.7.2 and this is also related to BAT number 46)	Applicable	In place; Rain water is completely separated from process effluent;

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43	Have procedures in place to ensure that the effluent specification is suitable for the on-site effluent treatment system or discharge (see Section 4.7.1).	Applicable	In place; WT plant can treat effluents with hydrocarbons, metals, suspended solids and high/low pH;
44	Avoid the effluent by-passing the treatment plant systems (see Section 4.7.1).	Applicable	in place. Effluent cannot bypass the treatment plant unless treatment is not required and already meets the discharge parameters
45	Have in place and operate an enclosure system whereby rainwater falling on the processing areas is collected along with tanker washings, occasional spillages, drum washings, etc. and returned to the processing plant or collected in a combined interceptor (see Section 4.7.1).	Applicable	in place. Interceptor receives all surface water run off from tanker offloading areas; All process waste waters are collected and pumped to the oil recovery /effluent treatment plant or on occasion may be sent for onward shipment.
46	Segregate the water collecting systems for potentially more contaminated waters from less contaminated water (see Section 4.7.2).	Not Applicable	

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47	Have a full concrete base in the whole treatment area, that falls to internal site drainage systems which lead to storage tanks or to interceptors that can collect rainwater and any spillage. Interceptors with an overflow to sewer usually need automatic monitoring systems, such as pH checks, which can shut down the overflow (see Section 4.1.3.6 and this is also related to BAT number 63).	Applicable	In place.
48	Collect the rainwater in a special basin for checking, treatment if contaminated and further use (see Section 4.7.1)	Applicable	Not in place. Interceptors gather contaminated run off from roadways; Bunds collect rainfall for inspection before discharge; Reuse not considered suitable as relatively little use of water in processes on site;
49	Maximise the re-use of treated waste waters and use of rainwater in the installation (see Section 4.7.1).	Applicable.	In place; Rainwater from main warehouse roof is captured into an above ground tank for reuse (e.g. charging drain jetting units)
50	Conduct daily checks on the effluent management system and to maintain a log of all checks carried out, by having a system for monitoring the effluent discharge and sludge quality in place (see Section 4.7.1)	Applicable	in place. On site laboratory used to monitor effluent on a daily basis.

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51	Firstly identify waste waters that may contain • hazardous compounds (e.g. adsorbable organically bound halogens (AOX); • cyanides; • sulphides; • aromatic compounds; • benzene or hydrocarbons (dissolved, emulsified or undissolved); and • metals, such as mercury, cadmium, lead, copper, nickel, chromium, arsenic and zinc) (see Section 4.7.2). Secondly, segregate the previously identified waste water streams on-site and thirdly, specifically treat waste water on-site or off-site.	Applicable	In place. Wastewaters will contain hydrocarbons (including aromatics), metals, sulphides and potentially trace levels of halogenated compounds; On site wastewater treatment plant in operation to treat waste water;
52	Ultimately after the application of BAT number 42, select and carry out the appropriate treatment technique for each type of waste water (see Section 4.7.1)	Applicable	In Place; Precipitation used to remove metals; filterpress used to remove precipitated solids, activated carbon can be used to reduce hydrocarbons, including halogenated/ aromatic compounds, chemical oxidation used to reduce sulphides; Sodium Hypochlorite to reduce

<table>
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If applicable, state “in place” if the technique is in place at your installation.
If not, state “not in place”, the date it will be in place and a comprehensive explanation1.</th></tr>
<tr><td></td><td></td><td></td><td>ammonia ;pH adjustment using acid/alkali;</td></tr>
<tr><td>53</td><td>Implement measures to increase the reliability with which the required control and abatement performance can be carried out (for example, optimising the precipitation of metals) (see Section 4.7.1)</td><td>Applicable.</td><td>In place; analysis of effluent by on site lab optimises appropriate treatment e.g. pH adjustment carried out to optimise precipitation of metals;</td></tr>
<tr><td>54</td><td>Identify the main chemical constituents of the treated effluent (including the make-up of the COD) and to then make an informed assessment of the fate of these chemicals in the environment (see Section 4.7.1 and their applicability restrictions identified)</td><td>Not Applicable. Discharges are further treated in municipal WWTP</td><td></td></tr>
<tr><td>55</td><td>Only discharge the waste water from its storage after the conclusion of all the treatment measures and a subsequent final inspection (see Section 4.7.1)</td><td>Applicable</td><td>in place. Discharge is carried on a batch basis;</td></tr>
<tr><td>56</td><td>Achieve the following emissions level values before discharge by applying a suitable combination of techniques mentioned in Sections 4.4.2.3 and 4.7. The techniques mentioned above in this section on ‘waste water management’ (BAT number 42 – 55) also contribute to reach these values.
<table><tr><th>Water parameter</th><th>Emission values associated with the</th></tr></table></td><td>Applicable</td><td>Not in place. Currently only grab sample data available (for COD) for surface water discharges versus daily average for BAT; Discharges comply with licence limits, BAT limits</td></tr>
</table>

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
	<table><tr><th></th><th>use of BAT (ppm)</th></tr><tr><td>COD</td><td>20 – 120</td></tr><tr><td>BOD</td><td>2 – 20</td></tr><tr><td>Heavy metals (Cr, Cu, Ni, Pb, Zn)</td><td>0.1 – 1</td></tr><tr><td>Highly toxic heavy metals: As Hg Cd Cr(VI)</td><td> <0.1 0.01 – 0.05 <0.1 – 0.2 <0.1 – 0.4</td></tr></table>		are very challenging and the subject of debate in current WT BREF review process;
	Management of the process generated residues BAT is to:		
57	Have a residue management plan (see Section 4.8.1) as part of the EMS including:	Applicable.	CRAMP in place with relevant financial provision provided;
57a	(a) Basic housekeeping techniques (related to BAT number 3).	Applicable	In place: Standard operating procedures in place for the maintenance of basic housekeeping requirements.
57b	(b) Internal bench marking techniques (see Section 4.1.2.8 and this is also related to BAT numbers 1.k and 22).	Not Applicable. Will not apply to this treatment process	

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
58	Maximise the use of re-usable of packaging (drums, containers, IBCs, pallets etc.) (see Section 4.8.1)	Applicable	In place. Packaging re-used where appropriate, deemed to be relevant and fit for use.
59	Re-use drums when they are in good working state. In other cases, they are to be sent for appropriate treatment (see Section 4.8.1).	Applicable	In place. Used for repackaging wastes where appropriate (i.e. ADR restrictions);
60	Keep a monitoring inventory of the waste on-site by using records of the amount of wastes received on-site and records of the wastes processed (see Section 4.8.3 and this is also related to BAT number 27)	Applicable.	In place. Volumes of wastes accepted on site are recorded and reported as per existing licence requirements. Regular stock reviews are carried out to ensure that waste inventory is kept up to date.
61	Re-use the waste from one activity/treatment possibly as a feedstock for another (see Section 4.1.2.6 and this is also related to BAT number 23).	Applicable	In place. Where possible residues which are compatible with existing waste streams e.g. oils removed from oil filters are transferred to the waste oil processing plant.

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	Soil contamination To prevent soil contamination, BAT is to:		
62	Provide and then maintain the surfaces of operational areas, including applying measures to prevent or quickly clear away leaks and spillages, and ensuring that maintenance of drainage systems and other subsurface structures is carried out (see Section 4.8.2)	Applicable	In place. A regular maintenance programme is in place to maintain site surface integrity. In addition to this site drainage and chambers are regularly inspected for build up of material.
63	Utilise an impermeable base and internal site drainage (see Section 4.1.4.6, 4.7.1 and 4.8.2)	Applicable	In place. Operational areas are concreted and provided with appropriate drainage infrastructure.
64	Reduce the installation site and minimise the use of underground vessels and pipework (see Section 4.8.2 and this is also related to BAT number 10.f, 25, and 40)	Applicable	In place. All process pipe work is above ground. Underground tanks are limited to one which was installed underground as a safety measure (storage of low flashpoint liquid).

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	5.2 BAT for specific types of waste treatments This section presents the BAT elements for each process/activity covered in this document. It has been structured in a similar way as previous chapters.		
	Biological treatments BAT is to:		
65	Use the following techniques for storage and handling in biological systems (see Section 4.2.2):		
65a	(a) for less odour-intensive wastes, use automated and rapid action doors (opening times of the doors being kept to a minimum) in combination with an appropriate exhaust air collection device resulting in an under pressure in the hall.	Not Applicable. Will not apply to this treatment process	
65b	(b) for highly odour-intensive wastes, use closed feed bunkers constructed with a vehicle sluice.	Not Applicable. Will not apply to this treatment process	
65c	(c) house and equip the bunker area with an exhaust air collection device.	Not Applicable. Will not apply to this treatment process	

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66	Adjust the admissible waste types and separation processes according to the type of process carried out and the abatement technique applicable (e.g. depending on the content of non-biodegradable components) (see Section 4.2.3).	Not Applicable. Will not apply to this treatment process	
67	Use the following techniques when applying anaerobic digestion (see Sections 4.2.4 and 4.2.5):		
67a	(a) application of a close integration between the process with the water management.	Not Applicable. Will not apply to this treatment process	
67b	(b) a recycling of the maximum amount of waste water to the reactor. See some operational issues that may appear when applying this technique in Section 4.2.4.	Not Applicable. Will not apply to this treatment process	
67c	(c) operate the system under thermophilic digestion conditions. For certain types of wastes, thermophilic conditions cannot to be reached (see Section 4.2.4).	Not Applicable. Will not apply to this treatment process	
67d	(d) measure TOC, COD, N, P and Cl levels in the inlet and outlet flows. When a better control of the process is required, or a better quality of the waste OUT, more parameters are necessary for measuring and controlling.	Not Applicable. Will not apply to this treatment process	

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67e	(e) maximise the production of biogas. This technique needs to consider the effect on the digestate and biogas quality.	Not Applicable. Will not apply to this treatment process	
68	Reduce the air emissions of the exhaust gas when using biogas as a fuel by restricting the emissions of dust, NOx, SOx, CO, H_2S and VOC by using an appropriate combination of the following techniques (see Section 4.2.6):		
68a	(a) scrubbing the biogas with iron salts	Not Applicable. Will not apply to this treatment process	
68b	(b) using de-NOx techniques such as SCR	Not Applicable. Will not apply to this treatment process	
68c	(c) using a thermal oxidation unit	Not Applicable. Will not apply to this treatment process	
68d	(d) using activated carbon filtration.	Not Applicable. Will not apply to this treatment process	

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69	Improve the mechanical biological treatments (MBT) by (see Sections 4.2.2, 4.2.3, 4.2.8, 4.2.10, 4.6.23):		
69a	(a) using fully enclosed bioreactors.	Not Applicable. Will not apply to this treatment process	
69b	(b) avoiding anaerobic conditions during aerobic treatment by controlling the digestion and the air supply (by using a stabilised air circuit) and by adapting the aeration to the actual biodegradation activity.	Not Applicable. Will not apply to this treatment process	
69c	(c) using water efficiently.	Not Applicable. Will not apply to this treatment process	
69d	(d) thermally insulating the ceiling of the biological degradation hall in aerobic processes.	Not Applicable. Will not apply to this treatment process	
69e	(e) minimising the exhaust gas production to levels of 2500 to 8000 Nm^3 per tonne. Levels below 2500 Nm^3 per tonne do not have been reported.	Not Applicable. Will not apply to this treatment process	

<table>
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If applicable, state “in place” if the technique is in place at your installation.
If not, state “not in place”, the date it will be in place and a comprehensive explanation1.</th></tr>
<tr><td>69f</td><td>(f) guaranteeing a uniform feed.</td><td>Not Applicable. Will not apply to this treatment process</td><td></td></tr>
<tr><td>69g</td><td>(g) recycling process waters or muddy residues within the aerobic treatment process to completely avoid water emissions. If waste water is generated, then this should be treated to reach the values mentioned in BAT number 56.</td><td>Not Applicable. Will not apply to this treatment process</td><td></td></tr>
<tr><td>69h</td><td>(h) continuously learning of the connection between the controlled variables of biological degradation and the measured (gaseous) emissions.</td><td>Not Applicable. Will not apply to this treatment process</td><td></td></tr>
<tr><td>69i</td><td>(i) reducing emissions of nitrogen compounds by optimising the C:N ratio.</td><td>Not Applicable. Will not apply to this treatment process</td><td></td></tr>
<tr><td>70</td><td>Reduce the emissions from mechanical biological treatments to the following levels (see Section 4.2.12) by using an appropriate combination of the following techniques:
(a) maintaining good housekeeping (related to BAT number 3).
(b) regenerative thermal oxidiser.
(c) dust removal.
<table>
<tr><th>Parameter</th><th>Treated exhaust gas</th></tr>
<tr><td>Odour (ouE/m^3)</td><td><500 – 6000</td></tr>
<tr><td>NH_3 (mg/m^3)</td><td><1 – 20</td></tr>
<tr><td colspan="2">For VOC and PM, see the generic BAT 41</td></tr>
</table></td><td>Not Applicable. Will not apply to this treatment process</td><td></td></tr>
</table>

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	The TWG recognised that N_2O (see section 4.6.10) and Hg also needed to be added to this table, however not enough data were provided to validate values on these issues.		
71	Reduce the emissions to water to the levels mentioned in BAT number 56. In addition, restrict the emissions to water of total nitrogen, ammonia, nitrate and nitrite as well (see Section 4.7.7 and the concluding remarks Chapter 7).	Not Applicable. Will not apply to this treatment process	
	Physico-chemical treatments	[redacted]	
	For the physico-chemical treatment of waste waters, BAT is to:		
72	Apply the following techniques in physico-chemical reactors (see Section 4.3.1.2):		
72a	(a) Clearly defining the objectives and the expected reaction chemistry for each treatment process.	Applicable	In place: Standard operating procedure in place for treatment of waste water from the waste oil process.

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72b	(b) Assessing each new set of reactions and proposed mixes of wastes and reagents in a laboratory-scale test prior to waste treatment.	Applicable	In place: Reaction chemistry does not vary significantly as the waste stream is relatively consistent.
72c	(c) Specifically designing and operating the reactor vessel so that it is fit for its intended purpose.	Applicable	In place: Treatment plant is fit for purpose (simple reaction chemistry).
72d	(d) Enclosing all treatment/reaction vessels and ensuring that they are vented to the air via an appropriate scrubbing and abatement system.	Applicable	In place: Reactors are vented via activated carbon filters
72e	(e) Monitoring the reaction to ensure that it is under control and proceeding towards the anticipated result.	Applicable	In place: The treatment process is monitored and controlled by plant/lab personnel.
72f	(f) Preventing the mixing of wastes or other streams that contain metals and complexing agents at the same time (see Section 4.3.1.3).	Applicable	In place: There is low risk of other waste streams entering the existing process.
73	In addition to the generic parameters identified for waste water in BAT number 56, additional parameters need to be identified for the physico-chemical treatment of waste waters. Some reference is given on this issue in the concluding remark Chapter 7.	Applicable	In Place; Additional parameters include mineral oil, ammonia, FOGs, phenols, Total P,

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			Sulphates, Chlorides, & pH;
74	Apply the following techniques for the neutralisation process (see Section 4.3.1.3)		
74a	a. ensuring that the customary measurement methods are used	Applicable.	In Place; pH testing is carried out using the on-site laboratory and mobile testing methods i.e. pH probe/litmus paper
74b	b. separately storing the neutralised waste water	Applicable.	In Place; Neutralised waste water is stored in dedicated tanks;
74c	c. performing a final inspection of the neutralised waste water after a sufficient storage time has elapsed.	Applicable.	In Place; pH testing is carried out using the on-site laboratory prior to discharge;
75	Apply the following techniques to aid precipitation of the metals in treatment processes (see Section 4.3.1.4):		

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75a	a. adjusting the pH to the point of minimum solubility where the metals will precipitate	Applicable.	In Place; pH is adjusted to ensure the targeted metals precipitate out to the maximum level;
75b	b. avoiding the input of complexing agents, chromates and cyanides	Not Applicable. Will not apply to this treatment process	
75c	c. avoiding organic materials that may interfere with precipitation from entering the process	Not Applicable. Will not apply to this treatment process	
75d	d. allowing the resulting treated waste to clarify by decantation when possible, and/or by the addition of other dewatering equipment	Applicable.	In Place; Filter press used to clarify effluent;
75e	e. using sulphuric precipitation if complex agents are present. This technique may increase the sulphide concentration in the treated waste water.	Not Applicable. Will not apply to this treatment process	
76	Apply the following techniques to break-up emulsions (see Section 4.3.1.5):		

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76a	a. testing for the presence of cyanides in the emulsions to be treated. If cyanides are present, the emulsions need a special pre-treatment first.	Not Applicable. Will not apply to this treatment process	
76b	b. setting up simulated laboratory tests.	Not Applicable. Will not apply to this treatment process	
77	Apply the following techniques to oxidation/reduction (see Section 4.3.1.6):		
77a	a. abating the air emissions generated during the oxidation/reduction	Applicable.	In Place; Tanks are routed to activated carbon filters;
77b	b. having safety measures and gas detectors in place (e.g. suitable for detecting HCN, H2S, NOx).	Not Applicable. Will not apply to this treatment process	
78	apply the following techniques to waste waters containing cyanides (see Section 4.3.1.7):		

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78a	a. destroying the cyanides by oxidation	Not Applicable. Will not apply to this treatment process	
78b	b. adding caustic soda in excess to prevent a decrease in pH	Not Applicable. Will not apply to this treatment process	
78c	c. avoiding the mixing of cyanide wastes with acidic compounds	Not Applicable. Will not apply to this treatment process	
78d	d. monitoring the progress of the reaction using electropotentials.	Not Applicable. Will not apply to this treatment process	
79	Apply the following techniques to waste waters containing chromium (VI) compounds (see Section 4.3.1.8):		
79a	a. avoiding the mixing of Cr(VI) wastes with other wastes	Not Applicable. Will not apply to this treatment process	

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79b	b. reducing Cr(VI) to Cr(III)	Not Applicable. Will not apply to this treatment process	
79c	c. precipitating the trivalent metal.	Not Applicable. Will not apply to this treatment process	
80	Apply the following techniques to waste waters containing nitrites (see Section 4.3.1.9):		
80a	a. avoiding mixing nitrite wastes with other wastes	Not Applicable. Will not apply to this treatment process	
80b	b. checking and avoiding nitrous fumes during the oxidation/acidification treatment of nitrites.	Not Applicable. Will not apply to this treatment process	
81	Apply the following techniques to waste waters containing ammonia (see Section 4.3.1.11):		

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81a	a. using a dual column air stripping system with an acidic scrubber for waste with ammonia solutions up to 20 w/w-%	Not Applicable. Levels of ammonia are too low to necessitate this technique;	
81b	b. recovering the ammonia in the scrubbers and returning it to the process prior to the settlement stage	Not Applicable. Levels of ammonia are too low to necessitate this technique;	
81c	c. removing the ammonia removed in the gas phase by scrubbing the waste with sulphuric acid to produce ammonium sulphate	Not Applicable. Levels of ammonia are too low to necessitate this technique;	
81d	d. extending any air sampling for ammonia in exhaust stacks or filter press areas to cover the VOCs in filtration and dewatering (see Section 4.3.1.12).	Not Applicable. Levels of ammonia are too low to necessitate this technique;	
82	Link the air space above filtration and dewatering processes to the main abatement system of the plant (see Section 4.3.1.12)	Applicable.	Not in Place; Tanks are routed to local activated carbon filters;

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83	Add flocculation agents to the sludge and waste water to be treated, to accelerate the sedimentation process and to facilitate the further separation of solids (see Section 4.3.1.16 for some applicability restrictions identified). To avoid use of flocculation agents, evaporation is better in those cases where it is economically viable (see Section 4.7.6.1)	Applicable.	In place; A range of additives including flocculants are used to maximise sedimentation/precipitation as required;
84	Apply rapid cleaning and steam or high pressure water jet cleaning of the filter apertures of the sieving processes (see Section 4.3.1.17).	Not Applicable. Will not apply to this treatment process	
	For the physico-chemical treatment of solid wastes, BAT is to:		
85	Promote the insolubilisation of amphoteric metals, and to reduce the leaching of toxic soluble salts by a suitable combination of water washing, evaporation, recrystallisation and acid extraction (see Section 4.3.2.1, 4.3.2.8, 4.3.2.9) when inmobilisation is used to treat solid waste containing hazardous compounds for landfilling	Not Applicable. Will not apply to this treatment process	
86	Test the leachability of inorganic compounds, by using the standardised CEN leaching procedures and by applying the appropriate testing level: basic characterisation, compliance testing or on-site verification (see Section 4.3.2.2)	Applicable.	In Place; Bulk wastes (eg soils) undergoing treatment are tested for leachability etc;

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87	Restrict the acceptance of wastes to be treated by solidification/immobilisation treatment to those not containing high levels of VOCs, odorous components, solid cyanides, oxidising agents, chelating agents, high TOC wastes and gas cylinders (see Section 4.3.2.3)	Applicable.	In Place; Physico-chemical treatment process is limited to acceptable wastes;
88	Apply control and enclosure techniques for loading/unloading and enclosed conveyor systems (see Section 4.3.2.3)	Not Applicable. Will not apply to this treatment process	Waste processing activities are carried out within buildings;
89	Have an abatement system(s) in place to handle the flow of air, as well as the peak loadings associated with charging and unloading (see Section 4.3.2.3)	Applicable.	In Place; Activated carbon filters are employed across the site and sized to cope with peak loadings;
90	Use at least a solidification, vitrification, melting or fusion process before landfilling solid waste according to techniques in Sections from 4.3.2.4 to 4.3.2.7.	Not Applicable. Will not apply to this treatment process	
	For the physico-chemical treatment of contaminated soil, BAT is to:		
91	Control the rate of excavation, the amount of contaminated soil area that is exposed, and the duration that soil piles are left uncovered during the excavation and removal of contaminated soil (see Section 4.3.2.11)	Applicable.	In Place; Soil remediation area is enclosed on two sides and it is proposed to enclose the remaining two

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
			sides;
92	Use a bench-scale test to determine the suitability of the process to be applied and the best operational conditions for its use (see Section 4.3.2.11)	Not Applicable; Remediation processes are determined based on the initial waste characterisation;	
93	Have collection and control equipment in place such as afterburners, thermal oxidisers, fabric filters, activated carbon, or condensers for the treatment of the gases from thermal treatments (see Section 4.3.2.11)	Not Applicable. Will not apply to this treatment process	
94	Report the efficiency achieved during the processes for the different components reduced and also for those that have not been affected by the process (see Section 4.3.2.3)	Not Applicable. Will not apply to this treatment process	
	Recovery of materials from waste	[redacted]	
	For the re-refining of waste oils, BAT is to:		

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
95	Operate a careful control of the incoming materials supported by analytical equipment (viscometry, infrared, chromatography and mass spectrometry as appropriate), laboratories and resources (see Section 4.1.1.1)	Applicable.	In place; Viscometry, Gas Chromatography, X-Ray diffraction instruments in place to provide analytical capability ofr incoming and in process streams;
96	Check at least for chlorinated solvents and PCBs (see Sections 4.1.1.1 and 4.4.1.2)	Applicable.	In Place Halogen content analysied by WD-XRF and PCBs by GC-ECD;
97	Use condensation as a treatment for the gas phase of the flash distillation unit (see Section 4.6.8)	Applicable.	Not in place; Flash Distillation process proposal includes RTO rather than condensation;
98	Have vapour return lines for loading and unloading vehicles, routing all vents to a thermal oxidiser/incinerator or an activated carbon adsorption installation (see Sections 4.1.4.6, 4.6.7 and 4.6.14)	Applicable.	Not in place; Current upgrade works include installation of vapour balance system and activated carbon adsorption filter; vapour return from tankers utilised for volatile liquids;

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
99	Direct vent streams to a thermal oxidiser with waste gas treatment if chlorinated species are present in the vent stream. If high levels of chlorinated species are present then condensation followed by caustic scrubbing and an activated carbon guard bed is the preferred treatment path (see Section 4.6)	Not Applicable. No significant chlorinated species are present in the waste stream;	
100	Utilise a thermal oxidation at 850 °C with a two seconds residence time for the vacuum distillation vent of vacuum generators or for the air from process heaters (see Section 4.6)	Not Applicable.	
101	Use a highly efficient vacuum system (see Section 4.4.1.1)	Not Applicable. Will not apply to this treatment process	
102	Use the residues from vacuum distillation or thin-film evaporators as asphalt products (see Section 4.4.1.15)	Not Applicable. Will not apply to this treatment process	
103	Use a re-refining process of waste oil which can achieve a yield higher than 65 % on a dry basis (see Sections from 4.4.1.1 to 4.4.1.12)	Not Applicable. Base oils are not produced as volumes available in Ireland are uneconomic to justify a plant;	

<table>
<tr><th>BAT No.</th><th>BAT Description</th><th>Applicability Assessment
State “applicable” if the technique applies to your installation.
State “not applicable” if not, and provide a comprehensive explanation[1].</th><th>Status of technique at installation
If applicable, state “in place” if the technique is in place at your installation.
If not, state “not in place”, the date it will be in place and a comprehensive explanation1.</th></tr>
<tr><td>104</td><td>Achieve the following values in the discharged waste water from the re-refining unit (see Section 4.4.1.14) by using a suitable combination of process-integrated techniques and/or primary, secondary, biological and finishing treatments (see Sections 4.4.1.14 and 4.7):
<table>
<tr><th>Waste water parameter</th><th>Concentration (ppm)</th></tr>
<tr><td>Hydrocarbons</td><td><0.01 – 5</td></tr>
<tr><td>Phenols</td><td>0.15 – 0.45</td></tr>
<tr><td colspan="2">For other water parameters, refer to BAT number 56 in the Generic BAT section</td></tr>
</table></td><td>Not Applicable. Process water is not discharged to surface waters but discharged to sewer under licence;</td><td></td></tr>
<tr><td></td><td>For the <u>treatment of waste solvent</u>, BAT is to:</td><td></td><td></td></tr>
<tr><td>105</td><td>Operate a careful control of the incoming materials as supported by analytical equipment,
laboratories and resources (see Section 4.1.1.1)</td><td>Not Applicable; Solvents are only stored/bulked for onward shipment;</td><td></td></tr>
<tr><td>106</td><td>Evaporate the residue from the distillation columns and to recuperate the solvents (see Section 4.4.2.4)</td><td>Not Applicable; Solvents are only stored/bulked for onward shipment;</td><td></td></tr>
<tr><td></td><td>For the <u>regeneration of waste catalyst</u>, BAT is to:</td><td></td><td></td></tr>
</table>

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
107	Use bag filters to abate particulates from the fumes generated during the regeneration process (see Sections 4.4.3 and 4.6.5)	Not Applicable. Will not apply to this treatment process	
108	Use a SOx abatement system (see Section 4.4.3.3).	Not Applicable. Will not apply to this treatment process	
	For the regeneration of waste activated carbon, BAT is to:		
109	Have an effective quality control procedure in place to ensure that the operator can differentiate between the carbon used for potable water or food grade carbon and the rest of spent carbons (the so-called 'industrial carbons') (see Section 4.4.4.2)	Not Applicable. Will not apply to this treatment process	
110	Require a written undertaking from customers indicating what the activated carbon has been used for (see Section 4.1.2.3 and this is also related to BAT number 12.c)	Not Applicable. Will not apply to this treatment process	
111	Utilise an indirect fired kiln for industrial carbons –it may be argued that this could equally be applied to potable water carbons. However, limits on capacity and corrosion may deem that only multiple hearth or direct fired rotary kilns may be used (see Section 4.4.4.1)	Not Applicable. Will not apply to this treatment process	

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
112	Utilise an afterburner with a minimum of 1100 °C, two seconds residence time and 6 % excess oxygen for the regeneration of industrial carbons where refractory halogenated or other thermally resistant substances are likely to be present. In other cases, less stringent thermal conditions are sufficient (see Section 4.4.4.2)	Not Applicable. Will not apply to this treatment process	
113	Utilise an afterburner with a minimum heating temperature of 850 °C, two seconds residence time and 6 % excess oxygen for potable water and food grade active carbons (see Section 4.4.4.2)	Not Applicable. Will not apply to this treatment process	
114	Apply a flue-gas treatment train consisting of quench and/or venturi and aqueous scrubbing sections, followed by an induced draft fan (see Section 4.4.4.2)	Not Applicable. Will not apply to this treatment process	
115	Utilise a caustic or soda ash scrubbing solutions to neutralise acid gases for industrial carbon plants (see Section 4.4.4.2)	Not Applicable. Will not apply to this treatment process	
116	Have a WWTP containing an appropriate combination of flocculation, settlement, filtration and pH adjustment for the treatment of potable water carbons. For effluents of industrial carbons, applying additional treatments (e.g. metal hydroxide precipitation, sulphide precipitation) are also considered BAT (see Section 4.4.4.3)	Not Applicable. Will not apply to this treatment process	
	Preparation of waste to be used as fuel		

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
	For the preparation of waste to be used as fuel, BAT is to:		
117	Try to have a close relationship with the waste fuel user in order that a proper transfer of the knowledge of the waste fuel composition is carried out (see Section 4.5.1)	Applicable.	In Place; Cement Kiln who use the waste as a fuel provide a waste acceptance specification;
118	Have a quality assurance system to guarantee the characteristics of the waste fuel produced (see Section 4.5.1)	Applicable.	Not in Place; Samples are currently analysed by the fuel user for acceptance;, however this may be developed in-house
119	Manufacture different type of waste fuels according to the type of user (e.g. cement kilns, different power plants), to the type of furnace (e.g. grate firing, blow feeding) and to the type of waste used to manufacture the waste (e.g. hazardous waste, municipal solid waste) (see Section 4.5.2)	Applicable.	In Place; Waste blending is carried out to ensure waste acceptance criteria of WtE facility is met;
120	When producing waste fuel from hazardous waste, use activated carbon treatment for low contaminated water and thermal treatment for highly polluted water (see Sections 4.5.6 and 4.7). In this context, thermal treatment relates to any thermal treatment in Section 4.7.6 or incineration which is not covered in this document	Not Applicable. Will not apply to this treatment process	
121	When producing waste fuel from hazardous waste, ensure correct follow-up of the rules concerning electrostatic and flammability hazards for safety reasons (see Sections 4.1.2.7 and 4.1.7)	Applicable.	In Place; Explosion Protection Document in place to control handling

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
			and processing of flammable materials;
	For the preparation of solid waste fuels from non-hazardous waste, BAT is to:		
122	Visually inspect the incoming waste to sort out the bulky metallic or non-metallic parts. The purpose is to protect the plant against mechanical destruction (see Section 4.1.1.3 and this is also related to BAT 8.e)	Not Applicable. Will not apply to this treatment process	
123	Use magnetic ferrous and non-ferrous metal separators. The purpose is to protect the pelletisers as well as fulfil the requirements of the final users (see Sections 4.5.3.3 and 4.5.3.4)	Applicable.	In place; band magnet separator in place (no separator currently in place or required for non ferrous metal separation as low non ferrous metal content of waste stream)
124	Make use of the NIR technique for the sorting out of plastics. The purpose is the reduction of organic chlorine and some metals which are part of the plastics (see Section 4.5.3.10)	Applicable.	Not in place; Waste plastics stream (packaging, tanks, bumpers, etc) are not contaminated to any significant degree with chlorinated plastics;

BAT No.	BAT Description	Applicability Assessment State “applicable” if the technique applies to your installation. State “not applicable” if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state “in place” if the technique is in place at your installation. If not, state “not in place”, the date it will be in place and a comprehensive explanation1.
125	Use a combination of shredder systems and pelletisers suitable for the preparation of the specified size waste fuel (see Sections 4.5.3.1 and 4.5.3.12)	Applicable.	Shredder output size is influenced by the facility receiving the shredded waste;
	For some installations preparing solid waste fuels from source-separated waste streams, the use of some or all of the above-mentioned techniques may not be necessary to comply with BAT (see Section 4.5.3.1)	[redacted]	
	For the preparation of solid waste fuel from hazardous waste, BAT is to:		
126	Consider emissions and flammability hazards in case a drying or heating operation is required (see Sections 4.1.2.7 and 4.5.4.1)	Not Applicable. No drying or heating operations proposed;	
127	Consider carrying out the mixing and blending operations in closed areas with appropriate atmosphere control systems (see Sections 4.1.4.5, 4.5.4.1 and 4.6)	Applicable.	In Place; Liquid bulking/blending is vented through carbon filters;
128	Use bags filters for the abatement of particulates (see Section 4.6.26)	Applicable.	Wastes currently being handled do not generate dust;

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not, and provide a comprehensive explanation[1].	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation1.
	For the preparation of liquid waste fuels from hazardous waste, BAT is to:		
129	Use heat-exchange units external to the vessel if heating of the liquid fuel is required (Section 4.5.4.1)	Applicable.	In place; heat exchanger is in place to facilitate heating oils prior to certain processes (e.g. filtering/centrifuging) but not widely utilised.
130	Adapt the suspended solid content to ensure the homogeneity of the liquid fuel (see Section 4.5.4.1)	Not Applicable. Will not apply to this treatment process	

Conclusions on BAT from the Emissions from Storage BAT Reference Document

READ ME:

The '*Conclusions on BAT from the Emissions from Storage BAT Reference Document'* is a horizontal BREF as it addresses the storage and the transfer/handling of liquids, liquefied gases and solids regardless of the sector or industry.

In this case, you are required to identify the Conclusions on BAT relevant to your installation. Please use the '**Scope**' box to describe the relevant activities/processes that come within the scope of this BREF and clearly identify the Conclusions on BAT (sections and subsections) that are **'Not Applicable'**.

For each applicable BAT, in the following table, state the status; **'Yes'** or **'Will be'** as appropriate in the '**State whether it is in place or state schedule for implementation**' box. The use of each of these terms is described below.

Information on compliance in the '**Applicability Assessment**' box should include, where applicable, the following:

(i) Identification of the relevant process/ activity or individual emission points that the BAT requirement applies to at your installation;

(ii) Where BAT is to use one or a combination of listed techniques, specify the technique(s) implemented/proposed at your installation to achieve the BAT; and

(iii) A comment on how the requirements are being met or will be met, e.g., a description of the technology/operational controls/management proposed to meet the requirements.

Use of terms:

(a) '**Yes**' – To be entered where the installation is currently complaint with this BAT requirement.

(b) '**Will be**' – To be entered where a further technique is required to be installed to achieve compliance with the BAT requirement. In this case you must also specify the date by which the installation will comply with the BAT Conclusion requirement.

Please refer to the EPA BAT Guidance Note(s) for BAT associated emission levels. EPA BAT Guidance Notes are the reference for setting emission limit values (without prejudice to the requirements of environmental quality standards).

BAT Guidance Notes are available on the EPA website

Conclusions on BAT from the Emissions from Storage BAT Reference Document (extracts)

The full and complete Emissions from Storage BAT reference document (July 2006) is available at the EIPPC Bureau website: http://eippcb.jrc.ec.europa.eu/reference/

SCOPE

Identify here the particular processes and activities at the installation that come within the scope of the conclusions on BAT from the Emissions from Storage BAT reference documents (BREF).

Conclusions on BAT	Applicability Assessment (describe how the technique applies or not to your installation)	State whether it is in place or state schedule for implementation
5.1 Storage of liquids and Liquefied gases **5.1.1.1 General principles to prevent and reduce emissions**		
BAT 1. BAT for a proper design is to take into account at least the following: • the physico-chemical properties of the substance being stored • how the storage is operated, what level of instrumentation is needed, how many operators are required, and what their workload will be • how the operators are informed of deviations from normal process conditions (alarms) • how the storage is protected against deviations from normal process	Applicable	In Place; Oil recovery & effluent treatment processes are subjected to a HAZOP study; Risk assessments for other smaller processes; Standard operating Procedures in place to control processes, maintenance, modification of change, incident recording and corrective & preventative action;

conditions (safety instructions, interlock systems, pressure relief devices, leak detection and containment, etc.) • what equipment has to be installed, largely taking account of past experiences of the product (construction materials, valve quality, etc.) • which maintenance and inspection plan needs to be implemented and how to ease the maintenance and inspection work (access, layout, etc.) • how to deal with emergency situations (distances to other tanks, facilities and to the boundary, fire protection, access for emergency services such as the fire brigade, etc.).		
BAT 2. BAT is to apply a tool to determine proactive maintenance plans and to develop risk-based inspection plans such as the risk and reliability based maintenance approach; see Section 4.1.2.2.1.	Applicable	In Place; Proactive inspection and maintenance procedures in place for a safety/environmentally critical equipment (derived from HAZOP);
BAT3. BAT is to locate a tank operating at, or close to, atmospheric pressure aboveground. However, for storing flammable liquids on a site with restricted space, underground tanks can also be considered. For liquefied gases, underground, mounded storage or spheres can be considered, depending on the storage volume.	Applicable	In place; ASTs & USTs are operated at or close to atmospheric pressure; No liquefied gas storage tanks;
BAT 4. BAT is to apply either a tank colour with a reflectivity of thermal or light radiation of at least 70 %, or a solar shield on aboveground tanks which contain volatile substances, see Section 4.1.3.6 and 4.1.3.7 respectively.	Applicable	In place; No above ground tanks are currently used to store low flashpoint/volatile liquids;
BAT 5. BAT is to abate emissions from tank storage, transfer and handling that have a significant negative environmental effect, as described in Section 4.1.3.1	Applicable	Not in place; While all tanks are ducted to odour filters, tanker loading/offloading is not subjected to vapour recovery but this is planned for introduction during 2016;
BAT 6. On sites where significant VOC emissions are to be expected, BAT includes calculating the VOC emissions regularly.	Not Applicable	VOC emissions are not significant see monitoring data;
BAT 7. BAT is to apply dedicated systems; see Section 4.1.4.4.	Applicable	In Place; The abatement system for different processes are dedicated (i.e. separate abatement systems for oil processing, effluent processing, waste shredding/crushing etc;)

5.1.1.2 Tank specific considerations		
Open top tanks **BAT 8.** If emissions to air occur, BAT is to cover the tank by applying: • a floating cover, see Section 4.1.3.2 • a flexible or tent cover, see Section 4.1.3.3, or • a rigid cover, see Section 4.1.3.4. Additionally, with an open top tank covered with a flexible, tent or a rigid cover, a vapour treatment installation can be applied to achieve an additional emission reduction, see Section 4.1.3.15. The type of cover and the necessity for applying the vapour treatment system depend on the substances stored and must be decided on a case-by-case basis.	Not Applicable There are no open top tanks at the facility other than associated with site drainage;	
BAT 9. To prevent deposition that would call for an additional cleaning step, BAT is to mix the stored substance (e.g. slurry), see Section 4.1.5.1.	Not Applicable There are no open top tanks at the facility other than associated with site drainage;	Not in place; Settlement is preferred to assist in the removal of solids (interceptors);
External floating roof tank **BAT 10.** The BAT associated emission reduction level for a large tank is at least 97 % (compared to a fixed roof tank without measures), which can be achieved when over at least 95 % of the circumference the gap between the roof and the wall is less than 3.2 mm and the seals are liquid mounted, mechanical shoe seals.	Not Applicable. No floating roof tanks	
BAT 11. BAT is to apply direct contact floating roofs (double-deck), however, existing non-contact floating roofs (pontoon) are also BAT. See Section 3.1.2. A dome can be BAT for adverse weather conditions, such as high winds, rain or snowfall. See Section 4.1.3.5.	Not Applicable. No floating roof tanks	
BAT 12. For liquids containing a high level of particles (e.g. crude oil), BAT is to mix the	Not Applicable. No floating roof	

stored substance to prevent deposition that would call for an additional cleaning step, see Section 4.1.5.1.	tanks	
Fixed roof tanks **BAT 13.** For the storage of volatile substances which are toxic (T), very toxic (T+), or carcinogenic, mutagenic and reproductive toxic (CMR) categories 1 and 2 in a fixed roof tank, BAT is to apply a vapour treatment installation.	Not Applicable. Will not apply to this treatment process	
BAT 14. For other substances, BAT is to apply a vapour treatment installation, or to install an internal floating roof (see Sections 4.1.3.15 and 4.1.3.10 respectively). Direct contact floating roofs and non-contact floating roofs are BAT.	Not Applicable. Will not apply to this treatment process	
BAT 15. For tanks < 50 m^3, BAT is to apply a pressure relief valve set at the highest possible value consistent with the tank design criteria.	Not Applicable. Will not apply to this treatment process	
BAT 16. For liquids containing a high level of particles (e.g. crude oil) BAT is to mix the stored substance to prevent deposition that would call for an additional cleaning step, see Section 4.1.5.1.	Not Applicable.	Not applicable to waste treatment as settlement is preferred to assist in the removal of solids;
Atmospheric horizontal tanks **BAT 17.** For the storage of volatile substances which are toxic (T), very toxic (T+), or CMR categories 1 and 2 in an atmospheric horizontal tank, BAT is to apply a vapour treatment installation.	Not Applicable. Will not apply to this treatment process	
BAT 18. For other substances, BAT is to do all, or a combination, of the following techniques, depending on the substances stored: • apply pressure vacuum relief valves; see Section 4.1.3.11 • up rate to 56 mbar; see Section 4.1.3.11 • apply vapour balancing; see Section 4.1.3.13 • apply a vapour holding tank, see Section 4.1.3.14, or • apply vapour treatment; see Section 4.1.3.15. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	Not Applicable. Will not apply to this treatment process	

Pressurised storage **BAT 19.** BAT for draining depends on the tank type, but may be the application of a closed drain system connected to a vapour treatment installation, see Section 4.1.4. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	Not Applicable.	
Lifter roof tanks **BAT 20.** For emissions to air, BAT is to (see Sections 3.1.9 and 4.1.3.14): • apply a flexible diaphragm tank equipped with pressure/vacuum relief valves, or • apply a lifter roof tank equipped with pressure/vacuum relief valves and connected to a vapour treatment installation. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	Not Applicable.	
Underground and mounded tanks **BAT 21.** For the storage of volatile substances which are toxic (T), very toxic (T+), or CMR categories 1 and 2 in an underground or mounded tank, BAT is to apply a vapour treatment installation.	Applicable. UST used to store petrol/solvents;	Not in place; UST only used for storage, vents manifolded together (vapour balancing) vapour recovery employed during transfer to/from tankers;
BAT 22. For other substances, BAT is to do all, or a combination, of the following techniques, depending on the substances stored: • apply pressure vacuum relief valves; see Section 4.1.3.11 • apply vapour balancing; see Section 4.1.3.13 • apply a vapour holding tank, see Section 4.1.3.14, or • apply vapour treatment; see Section 4.1.3.15. The selection of the vapour treatment technology has to be decided on a case-by-case basis.	Applicable.	Not In place; Vacuum valves in place on manifolded tank vents; Proposed Vapour balancing system with abatement will ensure BAT 22 is fully satisfied;
5.1.1.3 Preventing incidents and (major) accidents		
BAT 23. BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	Applicable	In place; OSHAS 18001 accredited safety management system in place;
BAT 24.	Applicable	In place; Training procedures in place as

BAT is to implement and follow adequate organisational measures and to enable training and instruction of employees for safe and responsible operation of the installation as described in Section 4.1.6.1.1.		part of safety management System
BAT 25. BAT is to prevent corrosion by: • selecting construction material that is resistant to the product stored • applying proper construction methods • preventing rainwater or groundwater entering the tank and if necessary, removing water that has accumulated in the tank • applying rainwater management to bund drainage • applying preventive maintenance, and • where applicable, adding corrosion inhibitors, or applying cathodic protection on the inside of the tank.	Applicable	In place; procedures in place to prevent corrosion;
BAT 26. Additionally for an underground tank, BAT is to apply to the outside of the tank: • a corrosion-resistant coating • plating, and/or • a cathodic protection system.	Applicable.	In place – corrosion resistant coating applied to UST prior to installation;
BAT 27. BAT is to prevent stress corrosion cracking (SCC) by: • stress relieving by post-weld heat treatment, see Section 4.1.6.1.4, and • applying a risk based inspection as described in Section 4.1.2.2.1.	Applicable	In place; inspection regime in place for tanks;
BAT 28. BAT is to implement and maintain operational procedures – e.g. by means of a management system – as described in Section 4.1.6.1.5, to ensure that: • high level or high pressure instrumentation with alarm settings and/or auto closing of valves is installed • proper operating instructions are applied to prevent overfill during a tank filling operation, and • sufficient ullage is available to receive a batch filling.	Applicable	In Place; High level alarms are in place on all waste storage tanks with interlocks to stop pumping if the high-high level is reached; Standard Operating procedures in place. Operational staff trained in standard operating procedures.
BAT 29. BAT is to apply leak detection on storage tanks containing liquids that can potentially cause soil pollution.	Applicable;	In place; UST is double skinned and as leak detection (aboveground storage tanks are located within bunded areas and do not provide potential for soil

		contamination)
BAT 30. BAT is to achieve a 'negligible risk level' of soil pollution from bottom and bottom-wall connections of aboveground storage tanks. However, on a case-by-case basis, situations might be identified where an 'acceptable risk level' is sufficient.	Applicable	In place; Connections to ASTs are within bounded areas;
BAT 31. BAT for aboveground tanks containing flammable liquids or liquids that pose a risk for significant soil pollution or a significant pollution of adjacent watercourses is to provide secondary containment, such as: • tank bunds around single wall tanks; see Section 4.1.6.1.11 • double wall tanks; see Section 4.1.6.1.13 • cup-tanks; see Section 4.1.6.1.14 • double wall tanks with monitored bottom discharge; see Section 4.1.6.1.15.	Applicable	In place; All ASTs are within bunded areas;
BAT 32. For building new single walled tanks containing liquids that pose a risk for significant soil pollution or a significant pollution of adjacent watercourses, BAT is to apply a full, impervious, barrier in the bund, see Section 4.1.6.1.10.	Applicable	In place; All ASTs are located in bunded areas;
BAT 33. For existing tanks within a bund, BAT is to apply a risk-based approach, considering the significance of risk from product spillage to the soil, to determine if and which barrier is best applicable. This risk-based approach can also be applied to determine if a partial impervious barrier in a tank bund is sufficient or if the whole bund needs to be equipped with an impervious barrier. See Section 4.1.6.1.11.	Applicable	In place; All ASTs are located in concrete bunded areas impervious to the materials stored;
BAT 34. For chlorinated hydrocarbon solvents (CHC) in single walled tanks, BAT is to apply CHC-proof laminates to concrete barriers (and containments), based on phenolic or furan resins. One form of epoxy resin is also CHC-proof. See Section 4.1.6.1.12.	Applicable.	Not in place; Currently CHC's are not stored in bulk tanks, any such storage would require installation of a CHC-proof barrier;

BAT 35. BAT for underground and mounded tanks containing products that can potentially cause soil pollution is to: • apply a double walled tank with leak detection, see Section 4.1.6.1.16, or • to apply a single walled tank with secondary containment and leak detection, see Section 4.1.6.1.17.	Applicable.	In place; UST is double skinned and as leak detection
BAT 36. For toxic, carcinogenic or other hazardous substances, BAT is to apply full containment.	Applicable	In place; In Place; Surplus bunding provides for full containment of contaminated fire fighting extinguishant;
5.1.2. Storage of packaged dangerous substances		
BAT 37. BAT in preventing incidents and accidents is to apply a safety management system as described in Sections 4.1.6.1. The minimum level of BAT is to assess the risks of accidents and incidents on the site using the five steps described in Section 4.1.6.1	Applicable.	In Place; Accredited Safety Management System and Emergency procedures;
BAT 38. BAT is to appoint a person or persons who is or are responsible for the operation of the store.	Applicable	In place; Manager and Supervisor staff in place;
BAT 39. BAT is to provide the responsible person(s) with specific training and retraining in emergency procedures as described in Section 4.1.7.1 and to inform other staff on the site of the risks of storing packaged dangerous substances and the precautions necessary to safely store substances that have different hazards.	Applicable	In place; Emergency Core team formed as part of emergency planning;
BAT 40. BAT is to apply a storage building and/or an outdoor storage area covered with a roof, as described in Section 4.1.7.2. For storing quantities of less than 2500 litres or kilograms dangerous substances, applying a storage cell as described in Section 4.1.7.2 is also BAT.	Applicable.	In place; Storage plan in place including segregation based on hazard class/incompatibility;
BAT 41. BAT is to separate the storage area or building of packaged dangerous substances from other storage, from ignition sources and from other buildings on- and off-site by applying a sufficient distance, sometimes in combination	Applicable.	In place; Storage plan in place including segregation based on hazard class/incompatibility based on HSG 71 & ADR; Explosion Protection Document

with fire-resistant walls.		(EPD) prepared to manage flammable substances;
BAT 42. BAT is to separate and/or segregate incompatible substances. For the compatible and incompatible combinations see Annex 8.3.	Applicable.	In place; Storage plan in place including segregation based on hazard class/incompatibility based on HSG 71 & ADR; Explosion Protection Document (EPD) prepared to manage flammable substances;
BAT 43. BAT is to install a liquid-tight reservoir according to Section 4.1.7.5, that can contain all or a part of the dangerous liquids stored above such a reservoir. The choice whether all or only a part of the leakage needs to be contained depends on the substances stored and on the location of the storage (e.g. in a water catchment area) and can only be decided on a case-by-case basis.	Applicable.	In Place; Excess secondary containment capacity of the main tankfarm can be utilised to pump runoff to in an emergency scenario;
BAT 44. BAT is to install a liquid-tight extinguishant collecting provision in storage buildings and storage areas according to Section 4.1.7.5. The collecting capacity depends on the substances stored, the amount of substances stored, the type of package used and the applied fire-fighting system and can only be decided on a case-by-case basis.	Applicable.	All waste storage buildings are bunded and provide for the collection of extinguishant; Site drainage has ability to pump collected runoff to main tank farm bund;
BAT 45. BAT is to apply a suitable protection level of fire prevention and fire-fighting measures as described in Section 4.1.7.6. The appropriate protection level has to be decided on a case-by-case basis in agreement with the local fire brigade.	Applicable	In Place; Site wide fire detection system in place including heat, smoke and flame signature detection; Fire Services consulted and at their request an on site supply of fire fighting foam has provided;
BAT 46. BAT is to prevent ignition at source as described in Section 4.1.7.6.1.	Applicable.	In place; Explosion Protection Document (EPD) prepared to manage flammable substances; Lightning protection installed in 2015;
5.1.3 Basins and lagoons		
BAT 47. Where emissions to air from normal operation are significant, e.g. with the storage of pig slurry, BAT is to cover basins and lagoons using one of the following options:	Not Applicable. No basins or lagoon present	

• a plastic cover; see Section 4.1.8.2 • a floating cover; see Section 4.1.8.1, or • only small basins, a rigid cover; see Section 4.1.8.2. Additionally, where a rigid cover is used, a vapour treatment installation can be applied to achieve an extra emission reduction, see Section 4.1.3.15. The need for and type of vapour treatment must be decided on a case-by-case basis.		
BAT 48. To prevent overfilling due to rainfall in situations where the basin or lagoon is not covered, BAT is to apply a sufficient freeboard, see Section 4.1.11.1.	Not Applicable. No basins or lagoon present	
BAT 49. Where substances are stored in a basin or lagoon with a risk of soil contamination, BAT is to apply an impervious barrier. This can be a flexible membrane, a sufficient clay layer or concrete, see Section 4.1.9.1	Not Applicable. No basins or lagoon present	
5.2 Transfer and handling of liquids and liquefied gases **5.2.1 General principles to prevent and reduce emissions**		
BAT 50. BAT is to apply a tool to determine proactive maintenance plans and to develop risk-based inspection plans such as, the risk and reliability based maintenance approach; see Section 4.1.2.2.1.	Applicable	In Place; Oil recovery & effluent treatment processes are subjected to a HAZOP study; Risk assessments for other smaller processes; Standard operating Procedures in place to control processes, maintenance, modification of change, incident recording and corrective & preventative action;
BAT 51. For large storage facilities, according to the properties of the products stored, BAT is to apply a leak detection and repair programme. Focus needs to be on those situations most likely to cause emissions (such as gas/light liquid, under high pressure and/or temperature duties). See Section 4.2.1.3.	Applicable	In Place; tank & pipework inspection regimes currently in operation; Tanks & pipework located in contained areas;
BAT 52. BAT is to abate emissions from tank storage, transfer and handling that have a significant negative environmental effect, as described in Section 4.1.3.1.	Applicable	In place; Tank vents are ducted to abatement filters,
BAT 53. BAT in preventing incidents and accidents is to apply a safety management system as described in Section 4.1.6.1.	Applicable	In place; OSHAS 18001 accredited safety management system in place;

BAT 54. BAT is to implement and follow adequate organisational measures and to enable the training and instruction of employees for safe and responsible operation of the installation as described in Section 4.1.6.1.1.	Applicable	In place; Training procedures in place as part of safety management System
5.2.2 Considerations on transfer and handling techniques **5.2.2.1 Piping**		
BAT 55. BAT is to apply aboveground closed piping in new situations, see Section 4.2.4.1. For existing underground piping it is BAT to apply a risk and reliability based maintenance approach as described in Section 4.1.2.2.1.	Not Applicable; no underground pipelines other than for drainage;	
BAT 56. BAT is to minimise the number of flanges by replacing them with welded connections, within the limitation of operational requirements for equipment maintenance or transfer system flexibility, see Section 4.2.2.1.	Applicable;	Not in place; Tanks & pipework located in contained areas and present low risk of impact;
BAT 57. BAT for bolted flange connections (see Section 4.2.2.2.) include: • fitting blind flanges to infrequently used fittings to prevent accidental opening • using end caps or plugs on open-ended lines and not valves • ensuring gaskets are selected appropriate to the process application • ensuring the gasket is installed correctly • ensuring the flange joint is assembled and loaded correctly • where toxic, carcinogenic or other hazardous substances are transferred, fitting high integrity gaskets, such as spiral wound, kammprofile or ring joints.	Applicable	In place:
BAT 58. BAT is to prevent corrosion by: • selecting construction material that is resistant to the product • applying proper construction methods • applying preventive maintenance, and • where applicable, applying an internal coating or adding corrosion inhibitors.	Applicable	In place; Risk assessments and Standard operating Procedures in place to control processes, maintenance and modification of change; Preventative maintenance system in place to ensure that piping is maintained as per requirements.
BAT 59. To prevent the piping from external corrosion, BAT is to apply a one, two, or three layer coating system depending on the site-specific conditions (e.g. close to sea). Coating is normally not applied to plastic or stainless steel pipelines. See Section 4.2.3.2.	Applicable	In place; All tanks and pipework is painted to prevent corrosion;

5.2.2.2 Vapour treatment		
BAT 60. BAT is to apply vapour balancing or treatment on significant emissions from the loading and unloading of volatile substances to (or from) trucks, barges and ships. The significance of the emission depends on the substance and the volume that is emitted, and has to be decided on a case-by-case basis. For more detail see Section 4.2.8.	Applicable.	Not in place; Vapour recovery currently being installed as part of ongoing odour/air emissions improvement programme;
5.2.2.3 Valves		
BAT 61. BAT for valves include: • correct selection of the packing material and construction for the process application • with monitoring, focus on those valves most at risk (such as rising stem control valves in continual operation) • applying rotating control valves or variable speed pumps instead of rising stem control valves • where toxic, carcinogenic or other hazardous substances are involved, fit diaphragm, bellows, or double walled valves • route relief valves back into the transfer or storage system or to a vapour treatment system.	Applicable	In place. Valves are correctly specified for the material for which it is to control.
5.2.2.4 Pumps and compressors		
BAT 62. The following are some of the main factors which constitute BAT: • proper fixing of the pump or compressor unit to its base-plate or frame • having connecting pipe forces within producers' recommendations • proper design of suction pipework to minimise hydraulic imbalance • alignment of shaft and casing within producers' recommendations • alignment of driver/pump or compressor coupling within producers' recommendations when fitted • correct level of balance of rotating parts • effective priming of pumps and compressors prior to start-up • operation of the pump and compressor within producers' recommended performance range (The optimum performance is achieved at its best efficiency point.)	Applicable	In place; Operating procedures cover the appropriate operation and maintenance of pumps and compressors;

• the level of net positive suction head available should always be in excess of the pump or compressor • regular monitoring and maintenance of both rotating equipment and seal systems, combined with a repair or replacement programme.		
BAT 63. BAT is to use the correct selection of pump and seal types for the process application, preferably pumps that are technologically designed to be tight such as canned motor pumps, magnetically coupled pumps, pumps with multiple mechanical seals and a quench or buffer system, pumps with multiple mechanical seals and seals dry to the atmosphere, diaphragm pumps or bellow pumps. For more details see Sections 3.2.2.2, 3.2.4.1 and 4.2.9.	Applicable	In place; Pumps and seals are selected to suit the process application;
BAT 64. BAT for compressors transferring non-toxic gases is to apply gas lubricated mechanical seals.	Not Applicable.	
BAT 65. BAT for compressors, transferring toxic gases is to apply double seals with a liquid or gas barrier and to purge the process side of the containment seal with an inert buffer gas.	Not Applicable.	
BAT 66. In very high pressure services, BAT is to apply a triple tandem seal system.	Not Applicable.	
5.2.2.5 Sampling connections		
BAT 67. BAT, for sample points for volatile products, is to apply a ram type sampling valve or a needle valve and a block valve. Where sampling lines require purging, BAT is to apply closed-loop sampling lines. See Section 4.2.9.14.	Not Applicable	Top middle and bottom samples are generally used to ascertain representative results and identify any phase separation;
5.3 Storage of solids **5.3.1 Open storage**		
BAT 68. BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers, to eliminate the influence of wind and to prevent the formation of dust by wind as far as possible by primary measures. See Table 4.12 for these primary measures with cross-references to the relevant sections.	Applicable	Not in place: Further enclosing of the tanker dig out bay (not a dust risk) and the soil remediation buildings are planned with planning permission currently being sought;
BAT 69.	Applicable	In Place; daily site inspections are carried

BAT for open storage is to carry out regular or continuous visual inspections to see if dust emissions occur and to check if preventive measures are in good working order. Following the weather forecast by, e.g, using meteorological instruments on site, will help to identify when the moistening of heaps is necessary and will prevent unnecessary use of resources for moistening the open storage. See Section 4.3.3.1.		out in addition to a dust monitoring programme under the existing licence; Dust suppression equipment also available on site;
BAT 70. BAT for long-term open storage are one, or a proper combination, of the following techniques: • moistening the surface using durable dust-binding substances, see Section 4.3.6.1 • covering the surface, e.g. with tarpaulins, see Section 4.3.4.4 • solidification of the surface, see Table 4.13 • grassing-over of the surface, see Table 4.13.	Not Applicable	
BAT 71. BAT for short-term open storage are one, or a proper combination, of the following techniques: • moistening the surface using durable dust-binding substances, see Section 4.3.6.1 • moistening the surface with water, see Sections 4.3.6.1 • covering the surface, e.g. with tarpaulins, see Section 4.3.4.4.	Applicable	In Place; Soil remediation area is roofed and partially enclosed with full enclosure planned;
5.3.2 Enclosed storage		
BAT 72. BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers. Where silos are not applicable, storage in sheds can be an alternative. This is, e.g. the case if apart from storage, the mixing of batches is needed.	Applicable	Not in place: While silos, tanks and containers provide enclosed storage further enclosing of the tanker dig out bay and the soil remediation buildings are planned with planning permission currently being sought;
BAT 73. BAT for silos is to apply a proper design to provide stability and prevent the silo from collapsing. See Sections 4.3.4.1 and 4.3.4.5.	Applicable	In Place; Lime silo used to hold bulk lime. Silo is fitted with pressure vacuum valve and overfill protection;
BAT 74. BAT for sheds is to apply proper designed ventilation and filtering systems and to keep the doors closed. See Section 4.3.4.2.	Applicable.	Not in place: Further enclosing of the tanker wash out bay (not a dust risk) and the soil remediation buildings are planned

		with planning permission currently being sought; The wash out bay is proposed to have extraction to a carbon filter while no abatement is considered necessary for the soil remediation building other than door closing;
BAT 75 BAT is to apply dust abatement and a BAT associated emission level of 1 – 10 mg/m^3, depending on the nature/type of substance stored. The type of abatement technique has to be decided on a case-by-case basis. See Section 4.3.7.	Applicable;	In Place; Lime silo fitted with an dust filter (electrostatic precipitator)
BAT 76. For a silo containing organic solids, BAT is to apply an explosion resistant silo (see Section 4.3.8.3), equipped with a relief valve that closes rapidly after the explosion to prevent oxygen entering the silo, as described in Section 4.3.8.4.	Not Applicable.	
5.3.4 Preventing incidents and (major) accidents		
BAT 77. BAT in preventing incidents and accidents is applying a safety management system as described in Section 4.1.7.1.	Applicable	In place; OSHAS 18001 accredited safety management system in place;
5.4 Transfer and handling of solids **5.4.1 General approaches to minimise dust from transfer and handling**		
BAT 78. BAT is to prevent dust dispersion due to loading and unloading activities in the open air, by scheduling the transfer as much as possible when the wind speed is low. However, and taking into account the local situation, this type of measure cannot be generalised to the whole EU and to any situation irrespective of the possible high costs. See Section 4.4.3.1.	Applicable	In Place: handling of solids is primarily in buildings with plans to enclose the Tanker dig out bay and complete enclosure of the soil remediation building;
BAT 79. When applying a mechanical shovel, BAT is to reduce the drop height and to choose the best position during discharging into a truck; see Section 4.4.3.4.	Applicable	In Place; Loading of trucks is carried out to minimise the drop height as much as possible;
BAT 80. BAT then is to adjust the speed of vehicles on-site to avoid or minimise dust being swirled up; see Section 4.4.3.5.2.	Applicable	In Place; Speed limit in place throughout the facility;

BAT 81. BAT for roads that are used by trucks and cars only, is applying hard surfaces to the roads of, for example, concrete or asphalt, because these can be cleaned easily to avoid dust being swirled up by vehicles, see Section 4.4.3.5.3. However, applying hard surfaces to the roads is not justified when the roads are used just for big shovel vehicles or when a road is temporary.	Applicable	In place; Site Roadways are concrete;
BAT 82. BAT is to clean roads that are fitted with hard surfaces according to Section 4.4.6.12.	Applicable	In Place; Yard & roadway cleaning carried out as necessary using vacuum sweeper truck
BAT 83. Cleaning of vehicle tyres is BAT. The frequency of cleaning and type of cleaning facility applied (see Section 4.4.6.13) has to be decided on a case-by-case basis.	Applicable	In Place: Wheel wash available on the site to prevent exiting vehicles carrying debris on their tyres;
BAT 84. Where it neither compromises product quality, plant safety, nor water resources, BAT for loading/unloading drift sensitive, wettable products is to moisten the product as described in Sections 4.4.6.8, 4.4.6.9 and 4.3.6.1. Risk of freezing of the product, risk of slippery situations because of ice forming or wet product on the road and shortage of water are examples when this BAT might not be applicable.	Not Applicable	
BAT 85. For loading/unloading activities, BAT is to minimise the speed of descent and the free fall height of the product; see Sections 4.4.5.6 and 4.4.5.7 respectively. Minimising the speed of descent can be achieved by the following techniques that are BAT: • installing baffles inside fill pipes • applying a loading head at the end of the pipe or tube to regulate the output speed • applying a cascade (e.g. cascade tube or hopper) • applying a minimum slope angle with, e.g. chutes.	Applicable	In place; e.g. soil screener has adjustable height outputs which are used to minimise the fall distance during screening;
BAT 86. To minimise the free fall height of the product, the outlet of the discharger should reach down onto the bottom of the cargo space or onto the material already piled up. Loading techniques that can achieve this, and that are BAT, are:	Applicable	In place; e.g. soil screener has adjustable height outputs which are used to minimise the fall distance during screening;

• height adjustable fill pipes • height adjustable fill tubes, and • height adjustable cascade tubes. These techniques are BAT, except when loading/unloading non drift sensitive products, for which the free fall height is not that critical.		
5.4.2 Considerations on transfer techniques		
BAT 87. For applying a grab, BAT is to follow the decision diagram as shown in Section 4.4.3.2 and to leave the grab in the hopper for a sufficient time after the material discharge.	Not Applicable	
BAT 88. BAT for new grabs, is to apply grabs with the following properties (see Section 4.4.5.1): • geometric shape and optimal load capacity • the grab volume is always higher than the volume that is given by the grab curve • the surface is smooth to avoid material adhering, and • a good closure capacity during permanent operation.	Not Applicable	
BAT 89. For all types of substances, BAT is to design conveyor to conveyor transfer chutes in such a way that spillage is reduced to a minimum. A modelling process is available to generate detail designs for new and existing transfer points. For more details see Section 4.4.5.5.	Not Applicable	
BAT 90. For non or very slightly drift sensitive products (S5) and moderately drift sensitive, wettable products (S4), BAT is to apply an open belt conveyor and additionally, depending on the local circumstances, one or a proper combination of the following techniques: • lateral wind protection, see Section 4.4.6.1 • spraying water and jet spraying at the transfer points, see Sections 4.4.6.8 and 4.4.6.9, and/or • belt cleaning, see Section 4.4.6.10.	Applicable	In Place; measures employed include application of water mist, cleaning of belts and processing in a building to reduce lateral wind exposure;
BAT 91. For highly drift sensitive products (S1 and S2) and moderately drift sensitive,	Not Applicable (soils and sludges	

not wettable products (S3) BAT for new situations, is to: apply closed conveyors, or types where the belt itself or a second belt locks the material (see Section 4.4.5.2), such as: • pneumatic conveyors • trough chain conveyors • screw conveyors • tube belt conveyor • loop belt conveyor • double belt conveyor or to apply enclosed conveyor belts without support pulleys (see Section 4.4.5.3), such as: • aerobelt conveyor • low friction conveyor • conveyor with diabolos. The type of conveyor depends on the substance to be transported and on the location and has to be decided on a case-by-case basis.	are generally considered to be S4 or S5 with transfer taking place within buildings)	
BAT 92. For existing conventional conveyors, transporting highly drift sensitive products (S1 and S2) and moderately drift sensitive, not wettable products (S3), BAT is to apply housing; see Section 4.4.6.2. When applying an extraction system, BAT is to filter the outgoing air stream; see Section 4.4.6.4.	Not Applicable (soils and sludges are generally considered to be S4 or S5 with transfer taking place within buildings)	
BAT 93. To reduce energy consumption for conveyor belts (see Section 4.4.5.2), BAT is to apply: • a good conveyor design, including idlers and idler spacing • an accurate installation tolerance, and • a belt with low rolling resistance.	Applicable	Not in place; as not appropriate for heavy solids such as soil;

Conclusions on BAT from the Energy Efficiency (EE) BAT Reference Document

READ ME:

The *Energy Efficiency BAT Reference Document' February 2009* is a horizontal BREF which addresses energy efficiency techniques regardless of the sector or industry.

In this case, you are required to identify the Conclusions on BAT, set out in section 4.2 of this document ('*Best Available Techniques'*) relevant to your installation. Please use the '**Scope**' box to describe the relevant activities/processes that come within the scope of this BREF and clearly identify the Conclusions on BAT (sections and subsections) that are **'Not Applicable'**.

For each applicable BAT, in the following table, state the status; **'Yes'** or **'Will be'** as appropriate in the '**State whether it is in place or state schedule for implementation**' box. The use of each of these terms is described below.

Information on compliance in the '**Applicability Assessment**' box should include, where applicable, the following:

(iv) Identification of the relevant process/ activity or individual emission points that the BAT requirement applies to at your installation;

(v) Where BAT is to use one or a combination of listed techniques, specify the technique(s) implemented/proposed at your installation to achieve the BAT; and

(vi) A comment on how the requirements are being met or will be met, e.g., a description of the technology/operational controls/management proposed to meet the requirements.

Use of terms:

(a) '**Yes**' – To be entered where the installation is currently complaint with this BAT requirement.

(b) '**Will be**' – To be entered where a further technique is required to be installed to achieve compliance with the BAT requirement. In this case you must also specify the date by which the installation will comply with the BAT Conclusion requirement.

Conclusions on BAT from the Energy Efficiency BAT Reference Document (extracts)

The full and complete Energy Efficiency BAT reference document (February 2009) is available at the EIPPC Bureau website: http://eippcb.jrc.ec.europa.eu/reference/. You may need to refer to this document in completing the form below.

SCOPE

Identify here any particular processes and activities at the installation that may have particular relevance with regard to the scope of the conclusions on BAT from the Energy Efficiency reference document (BREF).

The main use of energy at the facility is the generation of steam to heat waste oils as part of the oil recovery process. This accounts for approximately 75-80% of the energy used at the facility (excluding transport of wastes to and from the facility).

Conclusions on BAT	Applicability Assessment (describe how the technique applies or not to your installation)	State whether it is in place or state schedule for implementation
BAT 1. BAT is to implement and adhere to an energy efficiency management system (ENEMS) that incorporates, as appropriate to the local circumstances, all of the following features (see Section 2.1. The letters (a), (b), etc. below, correspond those in Section 2.1): a. commitment of top management (commitment of the top management is regarded as a precondition for the successful application of energy efficiency management); b. definition of an energy efficiency policy for the installation by top management; c. planning and establishing objectives and targets (see BAT 2, 3 and 8) ; d. implementation and operation of procedures paying particular attention to:	Applicable	Not In Place; Informal systems in operation to manage energy costs;

i) structure and responsibility ii) training, awareness and competence (see BAT 13); iii) communication iv) employee involvement v) documentation vi) effective control of processes (see BAT 14) vii) maintenance (see BAT 15) viii) emergency preparedness and response ix) safeguarding compliance with energy efficiency-related legislation and agreements (where such agreements exist). e. benchmarking, f. checking performance and taking corrective active, g. review of EMS		
BAT 2. BAT is to continuously minimise the environmental impact of an installation by planning action & investments on an integrated basis and for the short, medium and long term, considering the costs/benefits & cross media effects.	Applicable	In Place; Informal system monitors energy and carbon footprint with main drivers being economic (i.e. cost reduction);
BAT 3. BAT is to identify the aspects of an installation that influence EE by means of an audit.	Applicable	In Place; Energy audit carried out by Independent Specialist;
BAT 4. When carrying out an audit, BAT is to ensure that the audit identifies the following aspects (See BREF Section 2.11) : This BATC lists the aspects to be considered (a) - (f):	Applicable	In Place; Completed as part of Energy Audit;

a. energy use and type in the installation and its component systems and processes; b. energy-using equipment, and the type and quantity of energy used in the installation; c. possibilities to minimise energy use, such as: • controlling/reducing operating times, e.g. switching off when not in use (e.g. see Sections 3.6, 3.7, 3.8, 3.9, 3.11) • ensuring insulation is optimised, e.g. see Sections 3.1.7, 3.2.11 and 3.11.3.7 • optimising utilities, associated systems, processes and equipment (see Chapter 3); d. possibilities to use alternative sources or use of energy that is more efficient, in particular energy surplus from other processes/ systems, see Section 3.3; e. possibilities to apply energy surplus to other processes and/or systems, see Section 3.3; f. possibilities to upgrade heat quality (see Section 3.3.).		
BAT 5. BAT is to use appropriate tools/methods to identify/quantify energy optimisation, eg models databases & balances; techniques such as pinch technology, thermoeconomics; estimates & calculations.	Applicable	In Place; Specialist contractor employed advises on appropriate tools relevant to the main energy usages;
BAT 6. BAT is to Identify opportunities to optimise energy recovery within and between systems at the installation, including 3rd parties as per BREF 3.2-3.4	Not Applicable. Lack of reference data available	
BAT 7. BAT is to Optimise EE through a systems approach to energy management.	Applicable	In Place; Specialist contractor employed ensures appropriate systems approach;
BAT 8. BAT is to establish EE indicators by carrying out all of the following: to be developed	Applicable	Not in Place; Carbon Intensity indicator

as per section 4.2.2.4 a. identifying suitable energy efficiency indicators for the installation, and where necessary, individual processes, systems and/or units, and measure their change over time or after the implementation of energy efficiency measures. b. identifying and recording appropriate boundaries associated with the indicators. c. identifying and recording factors that can cause variation in the energy efficiency of the relevant process, systems and/or units.		used currently for entire company (not individual facilities) Facility specific indicators to be developed following energy audit;
BAT 9. BAT is to carry out sectoral/regional/national benchmarking.	Not Applicable. No available data	
BAT 10. BAT is to optimise EE when planning a new installation, unit, system or significant upgrade by considering the list in 4.2.3: a. the energy efficient design (EED) should be initiated at the early stages of the conceptual design/basic design phase b. the development and/or selection of energy efficient technologies c. additional data collection may need to be carried out to supplement existing data or fill gaps in knowledge d. the EED work should be carried out by an energy expert e. the initial mapping of energy consumption should also address which parties in the project organisations influence the future energy consumption, and should optimise EED of the future plant with them.	Applicable	In Place; Change Management procedures take energy efficiency into account;
BAT 11. Optimise EE/Energy recovery between systems/processes /parties at installations.	Not Applicable. Previously assessed and limited potential for heat/energy recovery due to the irregular nature of the oil recovery process;	
BAT 12. Maintain impetus of EE initiatives as per list	Applicable	Not in Place; Informal approach to energy efficiency to date, further measures planned subsequent to recent

		energy audit;
BAT 13. Maintain expertise in EE/energy using systems through recruitment/training; use of specialist staff/systems/functions; resource sharing.	Applicable	In Place. Independent specialists engaged to advise and assist in energy management; Participation in wider Energy forum within DCC plc;
BAT 14. Implement effective process control through: compliance with procedures; EE performance parameters identified & optimised, and documented/recorded. a. having systems in place to ensure that procedures are known, understood and complied with. b. ensuring that the key performance parameters are identified, optimised for energy efficiency and monitored. c. documenting or recording these parameters	Applicable	In Place; Operational procedures/system in place with records maintained as appropriate;
BAT 15. Carry out maintenance to optimise EE through measures specified in 4.2.8. a. clearly allocating responsibility for the planning and execution of maintenance. b. establishing a structured programme for maintenance based on technical descriptions of the equipment, norms, etc. as well as any equipment failures and consequences. Some maintenance activities may be best scheduled for plant shutdown periods. c. supporting the maintenance programme by appropriate record keeping systems and diagnostic testing. d. identifying from routine maintenance, breakdowns and/or abnormalities possible losses in energy efficiency, or where energy efficiency could be improved. e. identifying leaks, broken equipment, worn bearings, etc. that affect or control energy usage, and rectifying them at the earliest opportunity.	Applicable	In Place; Maintenance procedures/system in place with records maintained on electronic Asset management application;
BAT 16. Establish & maintain documented procedures to measure characteristics of operations with a significant impact on EE.	Applicable	In place; Key metric is boiler efficiency which is monitored

		annually;
BAT 17. **BAT is to optimise EE of combustion by related techniques such as:** i) Advanced computer control of combustion conditions. ii) reduced excess air. iii) pre-heating of fuel gas. **iv)** pre-heating of combustion air.	Applicable	In place; As above boiler efficiency including combustion efficiency is monitored annually; No preheating of fuel or combustion air available;
BAT 18. BAT for steam systems is to optimise EE by using techniques such as: those measures listed in 4.3.2 in regard to design, operation/control, generation and distribution, recovery of condensate.	Applicable.	In Place; Steam system operates to high level of efficiency (>80%). Annual maintenance on boiler, boiler water managed in line with BAT, auto blowdown system installed, insulated lines and valves , maintenance programme on steam traps;
BAT 19. Maintain heat exchanger efficiency by monitoring efficiency & preventing/removing fouling.	Applicable.	In place; Boiler and Process heat exchangers are cleaned as required to minimise efficiency;
BAT 20. BAT is to seek possibilities for cogeneration inside and /or outside the installation (with a third party).	Not Applicable. Low potential for cogeneration due to irregular nature of steam generation ;	

BAT 21. **Increase power factor according to local power distributor requirements:** a. Installing capacitors in the AC circuits to decrease the magnitude of reactive power. or lightly loaded motors. b. Minimising the operation of idling. c. Avoiding the operation of equipment above its rated voltage. d. When replacing motors, using energy efficient motors.	Applicable.	In Place; Power factor correction system installed; plant and equipment do not operate when not required (i.e. no idling) ; Motors operate at the correct voltage and are replaced with higher efficiency units as appropriate;
BAT 22. Check for harmonics & apply filters if required.	Applicable.	In Place; Power factor correction system installed;
BAT 23. Optimise various power supply efficiency measures. a. Ensure power cables have the correct dimensions for the power demand. b. Keep online transformer(s) operating at a load above 40 50 % of the rated power. c. Use high efficiency/low loss transformers.	Applicable	In Place; Independent consultants used to advise on cable sizing; No transformers used other that operated by ESB.
BAT 24. **Optimise electric motors as per section 4.3.6a.** a. Using energy efficient motors (EEM). b. Proper motor sizing c. Installing variable speed drives (VSD) d. Installing high efficiency transmission/reducers e. Use direct coupling where possible, synchronous belts or cogged V-belts in place of V belts and helical gears in place of worm gears. f. Energy efficient motor repair (EEMR) or replacement with an EEM. g. Rewinding: avoid rewinding and replace with an EEM, or use a certified rewinding contractor (EEMR).	Applicable	In Place; Energy efficiency considered but can be limited by Ex requirements; Motors are sized appropriate to equipment; VSDs used where appropriate; Direct coupling employed

h. Power quality control I. Integrate lubrication, adjustments and tuning into system operation and maintenance.		on majority of pumps; Power factor correction;
BAT 25. Optimise compressed air systems (CAS) as per table 4.6.	Applicable.	In Place; Compressors are relatively new (<8 yrs) and have variable speed drives; Air intake is fresh cool air; Maintenance programme in place including air leak detection;
BAT 26. Optimise pumping systems as per 4.3.8	Applicable	In Place; Pumps are sized appropriately for specific uses with appropriate sized motors; Pumps are scada controlled and only operate when needed (auto shut off at low/high level); VSDs/staged pumps no advantage to site uses; Distribution system has minimal bends and valves necessary for operation with pipework sized for the pumps used;
BAT 27.	Not Applicable. No HVAC systems;	

Optimise HVAC systems as per 4.3.9		
BAT 28. Optimise lighting systems as per 4.3.10.	Applicable.	In Place; Natural light maximised; increasing use of low energy lighting and occupation sensors; External lighting on timers/light sensors (subject to appropriate security lighting);
BAT 29. BAT is to optimise drying, separation and concentration processes by using techniques such as those in Table 4.10 according to applicability, and to seek opportunities to use mechanical separation in conjunction with thermal processes.	Applicable.	Not in Place; Tanks and steam pipework associated with these processes are lagged; Heat recovery options assessed previously and provide little opportunity due to the irregular nature of the process timing; Planned improvements include increased use of heat exchangers to heat oil for drying and processing rather than batch processes; Proposed systems will include heat recovery to preheat incoming stream;

Question 13: *State whether there are other BREFs, not mentioned in item 12 above, that are relevant at the installation. In each case address the relevant BAT conclusions contained in the BREF.*

Response

A review of the existing BREFs developed under the IPPC and IE Directives and published by the Joint Research Centre (JRC) was carried out. This included both Adopted and Draft documents as published by the JRC.

In relation to adopted documents no additional BREFS were identified as being relevant to the Facility activities or emissions that are not otherwise covered in the BREFs reviewed as part of the response to question 12.

In relation to drafts documents published the review identified the first draft of the revised Waste Treatment BREF (published in December 2015) as relevant to the Facility activities. However this document has received a substantial volume of comments from interested parties since its publication and it is understood that a second draft will now be prepared to take into account the submissions received. On the basis of this it is not considered to be useful to respond in detail to proposed conclusions that are subject to further change. However the revised document would appear to be consistent with the existing controls in place at the facility with no significant gaps identified. In relation to the current emissions improvement programme the revised document would support the introduction of vapour balancing across the tank farm and the use of activated carbon or thermal oxidation in relation to the abatement of air emissions.