

Attachment E

Emissions

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E.1 Emissions to Atmosphere

The following Section E1 includes details of all emissions to atmosphere relating to the existing waste management facility at Foxtown. Refer also to Environmental Monitoring Plan (F.1.0) with respect to location of emission points.

E1(a) Composting Emissions

Not applicable. No composting of green waste takes place at the facility

E1(b) Particulates – waste storage/treatment/handling

The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste. There is no evidence to suggest that dust of respirable sizes (i.e. less than 10 micrometres in diameter) could be present in concentrations to cause effects on human health. Relevant details with respect to fugitive dust emissions are discussed below under Section E 1 (g).i.

E1(c) Landfill Gas Emissions

Not applicable. The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

E1 (d) Landfill Leachate Emissions

Not applicable. The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

E1 (e) Infectious organisms/pathogens (clinical waste handling)

Not applicable. The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

E1 (f) Thermal oxidizer Emissions

Not applicable. The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

E1 (g) Other Emissions.**E1 (g).i. Fugitive Dust Emissions**

The materials to be recovered are principally “soils and stone” and inert construction and demolition waste. Any dust generated by the operation will comprise inert particulate matter.

Experience of reclamation workings indicates that mechanical activity is the most significant factor in material erosion and dust generation. Dust emanates from the placement of materials, the movement of vehicles on internal roads and loading and processing operations. However the effect of wind is also an important factor in dust generation and problems may arise at reclamation workings when both factors arise simultaneously.

The impact of fugitive dust will be direct, temporary and non-cumulative and largely confined to the application site.

Dust emissions from solids stored in the open.

Refer to Table E.1(iv): Emissions to Atmosphere (Minor /Fugitive) with respect to measures to control (abatement) of fugitive (ground) emissions.

Loading and unloading operations.

Refer to Table E.1(iv): Emissions to Atmosphere (Minor /Fugitive) with respect to measures to control (abatement) of fugitive (ground) emissions.

Cleaning operations.

Refer to Table E.1(iv): Emissions to Atmosphere (Minor /Fugitive) with respect to measures to control (abatement) of fugitive (ground) emissions.

Emissions from wastewater/leachate treatment (e.g. volatile organics).

Not applicable. The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

Emissions from any pressure release valves on waste liquid tanks.

Not applicable. The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste.

Emissions from composting, including odour and bioaerosols.

Not applicable. No composting of green waste takes place at the facility.

TABLE E.1(i) LANDFILL GAS FLARE EMISSIONS TO ATMOSPHERE

Emission Point:

Emission Point Ref. N ^o :	NOT APPLICABLE
Location :	
Grid Ref. (12 digit, 6E,6N):	
Vent Details Diameter:	
Height above Ground(m):	
Date of commencement of emission:	

Characteristics of Emission :

CO		mg/m ³
Total organic carbon (TOC)		mg/m ³
NO _x		mg/Nm ³ 0°C. 3% O ₂ (Liquid or Gas), 6% O ₂ (Solid Fuel)
Maximum volume of emission		m ³ /hr
Temperature	°C(max)	°C(min) °C(avg)

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(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)	_____ min/hr _____ hr/day _____ day/yr
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TABLE E.1(ii) MAIN EMISSIONS TO ATMOSPHERE (1 Page for each emission point)

Emission Point Ref. N ^o :	NOT APPLICABLE
Source of Emission:	
Location :	
Grid Ref. (12 digit, 6E,6N):	
Vent Details Diameter:	
Height above Ground(m):	
Date of commencement:	

Characteristics of Emission :

(i) Volume to be emitted:	NOT APPLICABLE		
Average/day	m ³ /d	Maximum/day	m ³ /d
Maximum rate/hour	m ³ /h	Min efflux velocity	m.sec ⁻¹
(ii) Other factors			
Temperature	°C(max)	°C(min)	°C(avg)
For Combustion Sources:			
Volume terms expressed as :	<input type="checkbox"/> wet.	<input type="checkbox"/> 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)	_____ min/hr _____ hr/day _____ day/yr
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TABLE E.1(iii): MAIN EMISSIONS TO ATMOSPHERE - Chemical characteristics of the emission (1 table per emission point)

NOT APPLICABLE

Emission Point Reference Number: _____

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		Avg	Max	Avg	Max		

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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.

TABLE E.1(iv): EMISSIONS TO ATMOSPHERE - Minor /Fugitive

Emission point Reference Numbers	Description	Emission details ¹			Abatement system employed
		material	mg/Nm ^{3/2}	kg/h.	
A2-1*	Internal Haul Roads Tipping Area Processing Area	Dust	Unknown	Unknown	During dry weather the haul roads and stockpiles are sprayed with water to dampen any likely dust blows. A water bowser is maintained on site for this purpose. Consideration will be given to location of mobile plant so as to ensure that any principle dust sources cannot adversely affect sensitive off-site locations. Static and mobile wet dust suppression systems will be located at strategic points in the process if required. Drop heights are kept to a minimum by using short conveyors and maintaining stocks under the head drum load out points. A wheel wash facility has been installed on site and all vehicles are required to pass through the wheel wash on exiting the site. Main site haulage routes within the site shall be maintained with a good temporary surface. All internal roadways will be adequately drained, to prevent ponding. The operator has purchased a road sweeper and ensures that the site entrance and adjoining public roadway is regularly cleaned. The sweeper is readily available at short notice to sweep up any materials which may accidentally fall onto the public roadway. Suitable vegetation is to be provided on restored areas at the earliest opportunity. Ongoing dust monitoring to ensure threshold limits are not exceeded
A2-2*		Dust	Unknown	Unknown	
A2-3*		Dust	Unknown	Unknown	

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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°C/101.3kPa). Wet/dry should be clearly stated. Include reference oxygen conditions for combustion sources.

* **Location Varies dependent on area of site being restore (Refer also to Environmental Monitoring Plan (F 1.0))**

E.2 Emissions to Surface Water

As the only material to be imported to site is "Soil and stone" and inert construction and demolition waste there will be no source of possible contamination of surface waters. The natural drainage pattern existing on site means that rain water falling on the site percolates through the existing soil strata (sand and gravel) to the underlying bedrock. The existing drainage pattern is expected to remain unaltered following cessation of the reclamation operations.

The wash-water from the existing wheel-wash is recycled within a self contained holding tank with overflow to a settlement tanks. The tank is periodically cleaned by a licenced waste disposal contractor.

There are no surface water courses adjoining the site. Surface water-off within the site percolates to ground through the floor of the sand and gravel pit into the underlying limestone bedrock. There is no discharge of surface water run-off from the site.

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

Emission Point: Not Applicable

Emission Point Ref. N ^o :	
Source of Emission:	
Location :	
Grid Ref. (10 digit, 5E,5N):	
Name of receiving waters:	
Flow rate in receiving waters:	_____ m ³ .sec ⁻¹ Dry Weather Flow _____ m ³ .sec ⁻¹ 95%ile flow
Available waste assimilative capacity:	_____ kg/day

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

Emission point reference number : NOT APPLICABLE

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

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E.3 Emissions to Sewer

On site activities will not discharge to any sewerage system. The applicants propose to use the existing toilet facility within the sand and gravel pit. The location of the toilet, septic tank and percolation area is shown on the attached Figure D.1.1 near the southern entrance to the sand and gravel pit. This facility is adequate to meet the continued requirements of the existing development given that the facility will be operated by the existing staff of two to three.

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

Emission Point: NOT APPLICABLE

Emission Point Ref. N ^o :	
Location of connection to sewer :	
Grid Ref. (10 digit, 5E,5N):	
Name of sewage undertaker:	

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

Emission point reference number : NOT APPLICABLE

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

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E.4 Emissions to Groundwater

As the only material to be imported to site is “Soil and stone” and inert construction and demolition waste there will be no source of possible contamination of ground waters.

The natural drainage pattern existing on site (quarry area) means that rain water falling on the site percolates through the existing soil strata (sand and gravel) to the underlying Limestone bedrock.

The wash-water from the existing wheel-wash is recycled within self contained holding tank settlement tanks.

The applicants propose to use the existing toilet facility within the sand and gravel pit. The location of the toilet, septic tank and percolation area is shown on the attached Figure D.1.1 near the southern entrance to the sand and gravel pit. This facility is adequate to meet the continued requirements of the existing development given that the facility will be operated by the existing staff of two to three.

A groundwater monitoring programme will also be put in place to ensure that there is no impact on water quality as a result of the recovery operations.

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

Emission Point or Area: NOT APPLICABLE

Emission Point/Area Ref. N ^o :	
Emission Pathway: (borehole, well, percolation area, soakaway, landspreading, etc.)	
Location :	
Grid Ref. (10 digit, 5E,5N):	
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:	

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Emission Details: NOT APPLICABLE

(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
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E.5 Noise Emissions

The main source of noise and vibration on site is from:

- Movement of trucks on internal haul roads and tipping of material (N1)
- Bulldozer placing and grading the infill material (N2)
- Processing Plant (N3)

Given the nature of the development the location of the above will vary dependent on area of site being restored (Refer to B.2.1 Site Plan). Relevant details with respect to noise sources are provided in the following Table E.5.(i).

Refer to Attachment F for details with respect to attenuation and noise control.

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

Source	Emission point Ref. No	Equipment Ref. No	Sound Pressure ¹ dBA at reference distance	Octave bands (Hz)								Impulsive or tonal qualities	Periods of Emission		
				31.5	63	125	250	500	1K	2K	4K			8K	
Trucks	N1		75												Intermittent 0800 to 1800 hrs
Bulldozer	N2		78.1	68.5	85.5	81.6	65.4	61.3	66.2	60.1	54	45.8	None Discernible during monitoring	Intermittent 0800 to 1800 hrs	
Processing Plant	N3		83.1	76.6	68.7	62.5	74.8	68.4	76.8	65.1	55.4	47.5	None Discernible during monitoring	Campaign basis 0800 to 1800 hrs	

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1. For items of plant sound power levels may be used.

E.6 Environmental Nuisances

E.6.1 Bird Control

It is not envisaged that birds will be a problem as all infill material is inert and no domestic or municipal waste will be accepted on site. As such there will be no need for any specific controls for birds.

E.6.2 Dust Control

Refer to Table E.1(iv): Emissions to Atmosphere (Minor /Fugitive) with respect to measures to control (abatement) of fugitive (ground) emissions i.e.

- During dry weather the haul roads and stockpiles are sprayed with water to dampen any likely dust blows. A water bowser is maintained on site for this purpose.
- Consideration will be given to location of mobile plant so as to ensure that any principle dust sources cannot adversely affect sensitive off-site locations.
- Static and mobile wet dust suppression systems will be located at strategic points in the process if required.
- Drop heights are kept to a minimum by using short conveyors and maintaining stocks under the head drum load out points.
- A wheel wash facility has been installed on site and all vehicles are required to pass through the wheel wash on exiting the site.
- Main site haulage routes within the site shall be maintained with a good temporary surface.
- All internal roadways will be adequately drained, to prevent ponding.
- The operator has purchased a road sweeper and ensures that the site entrance and adjoining public roadway is regularly cleaned. The sweeper is readily available at short notice to sweep up any materials which may accidentally fall onto the public roadway.
- Suitable vegetation is to be provided on restored areas at the earliest opportunity.
- Ongoing dust monitoring to ensure threshold limits are not exceeded

E.6.3 Fire Control

The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste. As such it is not expected that the site activities concerned are likely to give rise to any significant risk of fire.

In the event of a fire, the employee on the scene shall raise the alarm with all staff in the immediate area and confirm that all staff are present and accounted for. Assist in containing the fire using the appropriate extinguisher – only if it is safe and they are confident to do so. All personnel will have also undergone appropriate training and will be aware of potential hazards on site.

In the event where a fire cannot be controlled the appropriate emergency services will be contacted either by dialling “999 or 112” and informing the operator of which service is required. An emergency contact list shall be maintained at the site office.

The incident will also be reported immediately to the Site Foreman/Operations Manager.

If the fire is located adjacent to explosive or further flammable materials the area should be vacated immediately and personnel should retreat a safe distance. Emergency services should be made aware of any potential hazards on site when they arrive.

E.6.4 Litter Control

The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste. As such it is not expected that the site activities concerned are likely to give rise to litter.

The site entrance gates remain locked outside of normal working hours and public warning notices are posted at appropriate locations along the site boundary. The site is also monitored with CCTV at the entrance. These measures are to ensure that there is no unauthorised dumping of unacceptable wastes outside of operating hours likely to give rise to nuisance.

A daily site inspection including site boundaries adjoining public roads shall be carried out. Any litter observed will be removed as soon as possible and disposed of to a suitable Waste Management Facility.

Waste oils, batteries, scrap metal etc, will be removed from site for recycling by approved licensed contractors. A licensed waste collection contractor will remove any domestic waste requiring disposal to a licensed waste management facility.

Occasionally a load will contain minor contaminants (e.g. plastics, rebar, wood and paper). These items are removed on inspection by a site operative and stored in skips in a designated quarantine area pending removal offsite by a licensed waste disposal contractor to an appropriate disposal facility.

E.6.5 Traffic Control

Car parking including visitors parking is provided at the site entrance beside the office facility. Trucks entering the site report to the site office where each load is inspected as to its suitability to be recovered on site.

The site entrance has also been designed to ensure that queuing for vehicles entering the site is accommodated within the curtailage of the site entrance.

All trucks exiting the site leave through the existing wheelwash facility.

Traffic direction signs, warning signs, speed limit signs are established throughout the site.

E.6.6 Vermin Control

The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste. As such the site activities concerned will not give rise to a need to introduce vermin control.

E.6.7 Road Cleansing

The existing wheelwash facility will be maintained and continue to be operated for the duration of the development. The wheelwash is constructed of mass concrete, which forms a trough type structure which all trucks are required to pass through leaving the site. As trucks enter the wheelwash a number of shaker bars aid the release of mud from tyre grooves.

The site access road comprises of clean compacted sand and gravel which is free draining. Imported clean construction and demolition waste (concrete and brick) is used to construct internal haul roads as required on site. The Operator has purchase a road sweeper which is readily available at short notice to sweep up any materials which may accidentally fall onto the public roadway, this is periodically carried out during the course of the working week.

In the event of material being spilled on the public road the operator will ensure that spilled material is removed from the road surface in a safe and timely manner, as soon as they notice or are notified that a spillage has arisen.