4-7-1 National BAT Assessment-Waste Sector

1. Introduction

Sancom Ltd propose on establishing and operating a Material Recovery Facility at a former quarry site situated in Graney West, Co. Kildare. The principal activity will involve the use of imported, uncontaminated soil and stone, sourced from construction sites, to backfill and restore the worked out quarry.

It is also proposed to carry out a number of secondary waste recovery activities on-site, namely the recovery of a number of construction and demolition waste streams. A Waste Licence is required from the EPA to undertake the proposed waste activities. Sancom Ltd are required to adhere to the Best Available Techniques for environmental management for the waste sector defined in the following EPA BAT Documents:

> Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Waste Transfer and Materials Recovery.

Sancom Ltd has always operated under best practice in line with the EPA Guidance Document Environmental Management in the Extractive Industry Guidelines (2006) in determining best practice on-site given the nature of the site and the proposed activity.

2. Review of Applicable National BAT

This report provides an assessment of conformity of proposed facility with National Best Available Techniques (BAT) for the activity of recovery of uncontaminated soil and stones in the restoration of the former quarry and for the secondary waste recovery activities proposed on-site

BAT is defined in Section 5 of the Environmental Protection Agency Acts, 1992 to 2007, and Section 5(2) of the Waste Management Acts 1996 to 2010, as the "most effective and advanced stage in the development of an activity and its methods of operation, which indicate the practical suitability of particular techniques for providing, in principle, the basis for emission limit values designed to prevent or eliminate or, where that is not practicable, generally to reduce an emission and its impact on the environment as a whole".

It is considered that the EPA, 2011 *Final Draft BAT Guidance Notes for the Waste Sector: Waste Transfer and Material Recovery* (referred to as BAT from here forth) is the only current published National BAT which is applicable to the proposed activity of recovery of inert soil waste at the facility. The BAT details process description, risk to the environment and control techniques, best available techniques, BAT associated emission levels and compliance monitoring for waste transfer and materials recovery facilities.

The BAT states that the licensee must demonstrate to the satisfaction of the Agency, during the licensing process, that the installation/facility will be operated in such a way that all the appropriate preventative measures are taken against pollution through the application of BAT and justify the application of other than the most stringent ELV in the range. The below assessment demonstrates evidence for conformance with BAT.

3. Relevant Key Issues

3.1 Site Location

An Environment Impact Assessment Report was completed for the site which considered suitability of the location of the proposed facility. The EIAR covers the requirements of the BAT with regard to assessment of suitability of site location including:

- Consideration of the distance from the boundary of the site to residential and recreational areas, waterways, water bodies and other agricultural or urban sites;
- Taking account of any relevant Waste Management Plans or Development Plans;
- Identification of any groundwater, coastal water or nature protection zones in the area;
- Completion of a site investigation;
- Identification the potential environmental effects and risks; and
- Determination if emission control measures can prevent the developed site posing an environmental risk during its operation.

It can be concluded from the EIAR that the facility will not cause environmental pollution, taking into account the characteristics of the location, the waste types it will handle, the nature of the facility and the control measures to be employed.

3.2 Design Consideration

As part of the design of the proposed development, an EIAR was completed for the site which considered the following key design issues as defined under BAT i:

- Facility location- Location of facility with respect to sensitive receptors; housing; access; adjacent premises
- Type of Facility- Land requirement; layout; site services
- Nature and Quantity of Waste- Environmental control measures; present and future storage requirements
- Water Control Rainfall; surface water run-off; groundwater protection; containment; flooding risks
- Emergency Planning Protection of sensitive receptors; preparation and routine review and testing of emergency plan; provision of firewater retention facilities
- Visual Appearance- Landscaping and visual aspect

3.3 Decommissioning

The activity of waste recovery at the facility is proposed to successfully decommission the quarry and return the site to its original landform so that it will be suitable for use as agriculture.

BAT state that for a waste transfer and/or materials recovery facility to be decommissioned it must be:

• Free of contamination from waste: the facility should be clear of deposited residues, waste and any contamination resulting from the waste transfer activities and materials recovery facilities. The land should be decontaminated to restore it to a state established prior to licensing in agreement with the EPA. For existing facilities the standards for decontamination must be agreed with the EPA; and

• Free from continuing emissions: there should be no releases from the site that are required to be managed by the operator, for example contaminated surface water run off, dust, odour, etc.

It is considered that the site will conform with BAT and that following full restoration / decommissioning of the site that the facility will be free of contamination from waste and free from continued emissions.

3.4 Environmental Management System (EMS)

As per BAT, the key environmental issues for the waste transfer stations and materials recovery facilities sector are air emissions and soil contamination (BREF 2004). The following primary measures are considered BAT for the handling and recovery/disposal of waste at a transfer station/materials recovery facility:

An EMS that incorporates the following features:

- Management and Reporting Structure.
- Schedule of Environmental Objectives and Targets.
- Annual Environmental Report (AER).
- Environmental Management Programme (EMP).
- Documentation System.
- Corrective Action Procedures.
- Awareness and Training Programme.
- Communications Programme.
- Waste acceptance procedure.
- Waste management system for all incoming wastes and wastes on-site.
- Appropriate storage and handling.

In accordance with the BAT an Environmental Management System (EMS) has been developed for the facility and shall be implemented at the proposed Waste Recovery Facility. The EMS incorporates all relevant features listed and incorporates features specified in the Agency EMS Guidance. Other features listed under BAT considered not be applicable to the subject site have been excluded from the list above. Implementation of the EMS will ensure standards are maintained, including incident and complaints management procedures.

3.4.1 Waste Acceptance

As per BAT, controlling the waste input to a transfer station/material recovery facility is an important operational matter that has a direct effect upon the pollution/nuisance potential of the facility. It is essential that measures be introduced to ensure that waste acceptance is restricted to those wastes for which the facility was designed, and which are permitted by the licence.

The EMS for the facility includes a Waste Acceptance Procedure which shall be implemented. The Waste Acceptance Procedure specifies that the following actions be taken and records be maintained as per BAT:

- Upon entry into the facility:
 - all loads should be weighed;
 - any description of the waste should be checked in a dedicated waste inspection/tipping area to confirm they comply with the licence, and
 - o a record should be made of the waste type, quantity, source and haulier.
- Basic Characterisation will be undertaken by or on behalf of the waste producer/contractor prior to acceptance of waste at the facility.
- Compliance Testing. Will be undertaken periodically (1 in every 500 loads or as specified by the Agency) to verify the imported waste complies with the waste acceptance criteria for inert soil or criteria as specified by the agency.
- On-Site Verification consisting of visual inspection of each load of waste before and after unloading at the facility.

3.4.2 Waste Dispatch

Waste to be dispatched from the site is considered to be minimal. Recovered C&D materials that that have been repurposed will be consigned in loads . the movement of this product will displace the requirement for raw materials to be extracted elsewhere.

Waste generated at the facility may including quarantine material determined unsuitable for acceptance at the facility will be sent for disposal/ recovery in accordance with BAT and shall conform with the following BAT:

- Waste recovery or disposal should be transported only by an authorised waste contractor to the site of recovery/disposal, in a manner that will not adversely affect the environment and in accordance with the appropriate National and European legislation and protocols.
- In advance of transfer to another person, waste should be classified, packaged and labelled in accordance with National, European and any other standards that are in force in relation to such labelling.
- All wastes sent for recovery and disposal should be sent to facilities appropriately authorised to accept the particular waste types. Record should be kept of the ultimate disposal/recovery destination facility for the waste and its permit/licence details and issuing authority, if required.

4. Risk to the Environment - Conformance with EPA BAT for the Waste Sector

The underlying objective of BAT is to prevent, eliminate, or reduce emissions from processes. Emissions, and hence environmental pollution, can be prevented, eliminated or reduced by:

- proper design of the facility;
- effective management of the facility; and
- the selection of appropriate processes, technologies and facility operations.

The BAT Guidance notes state Material Backfilling and Recovery operations generate the following emissions that pose environmental risk:

- Emissions to air
- Emissions to water
- Noise Emissions
- Mud on public roads

The below sets out the techniques for the prevention and minimisation of emissions and nuisances in accordance with BAT. In accordance with BAT the proposed Waster Recovery Facility will be monitored throughout the entire life of the facility with monitoring programmes undertaken as set out under planning and by the Agency

The following measures will be employed to ensure the proposed waste activity is carried out in accordance with aforementioned EPA BAT for the Waste Sector and Extractive Industry Guidelines:

	Mitigation and Control Measure/Technique	
General Measures for controlling emissions from the facility	 An Environmental Management System will be operated for the facility and will cover the following areas. The Environmental Management System will focus on continual environmental monitoring and improvement. Environmental Policy Environmental Compliance Obligations Environmental Objectives and Targets and Environmental Management Programmes Waste Acceptance Procedures Operational Control and Mitigation Measures Waste Record Keeping and environmental reporting Environmental Monitoring Emergency Response Procedures Operational and Environmental Staff Training Programme Environmental Register summarizing environmental incidents, complaints, non-conformances and corrective/preventative actions. A Closure Plan is in place to ensure site closure occurs in an orderly manner and that known environmental liabilities are addressed before site decommissioning. 	
Measures for controlling emissions to air	In accordance with BAT, the operational procedures and emissions abatement procedure under the EMS for the facility include techniques to minimise and control potential nuisance from dust. The effectiveness of these shall be reviewed as part of the site monitoring; the annual environmental review report and the sites EMS procedures in accordance with BAT.	
 BAT describe potential emissions to air arising from inert waste transfer and materials recovery facilities as: Dust from operational activities; Vehicle emissions; Noise from fixed plant; 	 Tall trees will be planted along the northern, eastern and southwestern boundaries of the site in order to minimise dust impacts and minimise the generation of windblown dust on-site. Existing vegetation along the western boundary of the site will also be retained. These trees will remain in place for the 	

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 Noise and vibration from vehicles and machinery 	stockpiling, soil screening, concrete crushing and sand and gravel washing at significant distances away from th application site boundary.
used in waste operations;	• The carrying out of operations at deeper than ground level within the fill area and behind earth mounds, quarry face
and	and natural raised topography will minimize potential dust impacts upon sensitive receptors. These topographica
• Noise and vibration during	features as well as landscaping situated along the norther, eastern and southern site perimeter in the form of raise mounds and high treelines will minimize wind impacts on-site and reduce the potential for airborne dust.
handling and removal of	•
wastes offsite.	 All waste material accepted on-site and all materials being transported off-site will be in sealed or covered vehicle only to prevent dust emissions on local roads and internally on-site.
	 Roadsweeping will be carried out to ensure the access road to the site, internal haul roads and public roads are kep clean from dusty materials.
	 Water spraying using water bowsers will take place on haul roads and stockpiles to dampen dust and prevent airborn dust generation, particularly during summer months where dry conditions potentially result in increased dus generation.
	 A wheel wash will be installed on the site access road 100 metres from the site entrance to prevent tracking of dust material and mud along the proposed site access road and public roads. The first 100 metres of the proposed sit access road will be layered with asphalt/concrete.
	• Long term exposed surfaces e.g. topsoil and overburden storage mounds will be vegetated/planted to reduce due emissions.
	• A speed limit of 10 kph will be strictly enforced on-site to prevent the turning up of dust associated with traff movements on-site.
	• Long term exposed surfaces e.g. topsoil and overburden storage mounds will be vegetated/planted to reduce du emissions.
	Soil handling will be minimized during adverse weather.
	 The timing of operations will be optimized having regard to meteorological conditions.
	 Imported soil will be compacted in-situ immediately after being unloaded to minimize wind-blown dust.
	 Drop heights will be minimized to minimize dust generation.
	 Site access roads and internal haul routes will be regularly re-gravelled in order to prevent deterioration of roa conditions and consequent dust generation due to traffic movement.
	• Plant operatives will avoid working in windy locations insofar as practicable. Operations will be carried out primarily more sheltered locations.
	 Training on dust mitigation measures will be provided to plant operatives. Plant operatives will be made aware of the nearest sensitive receptors to the site and the good housekeeping practices that should be implemented to preven dust impacting upon these receptors.

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	 The slopes and the crest of the fill areas will be reseeded on a phased basis as the project progresses in order to bind the soil and prevent dust blow off. Periodic dust monitoring at Site boundary locations will be carried out in order ensure dust from the activity is not having an adverse off-site impact.
Measures for controlling emissions to water BAT describes potential emissions to water (including groundwater) and land arising from inert waste transfer and materials recovery facilities as: • Run-off – during operations; • Fuels/oils; • Effluents; and • Mud.	In accordance with BAT, handling and storage of waste will be conducted in a way that does not result in damage to surface water systems. There shall be no direct discharges to surface or ground water from the facility. The site will be operated so to prevent spillage or escape of substances that could pollute the surface water system. Emergency procedures have been included with the EMS for the facility. There will be no fuel/oil storage on site unless within the designated, re fuelling/oil storage areas.
	• Fuel will be stored in suitably sized covered, bunded tanks on-site. This bund has been designed in accordance with the EPA's IPC <i>Guidance Note on Storage and Transfer of Materials for Scheduled Activities</i> , taking into account criteria for bund requirements.
	 Oils and lubricants will be stored within sump pallets in a farm store on-site. Testing of bund /sump pallet integrity shall be conducted upon commencement of site operations and every three years thereafter in accordance with good practice to verify the water tightness and integrity of bunds on-site. Where bund testing fails a programme of works shall be established by a Chartered Engineer to fix the bund and ensure its water tightness and integrity.
	 Good hazardous material practice on-site will be observed. Fuel, oil, chemical storage tanks and drums shall be labelled. Fuel pumps and attachments shall be located within bunded areas. Bunded areas are roofed to prevent rainwater accumulating in bunds.
	• Re-fuelling shall take place in a designated, roofed hardstanding re-fuelling area which drains to a silt trap and an oil interceptor to protect against oil spills.
	• Waste Acceptance Procedures and a Waste Inspection/Quarantine Area will be provided on-site to ensure any hazardous wastes accidentally arriving on-site are identified and safely segregated. As a policy, the site operator will arrange for the dispatch of such hazardous waste as soon as possible upon identification.
	• A number of existing settlement lagoons are present on-site to ensure settling of sediment contained in surface water run-off on-site.
	• Surface water arising in the re-fuelling area will drain to a silt trap and a Klargester interceptor, before discharging to a soakaway.
	• Re-contouring of the site will take place as Land Restoration progresses to ensure that any stormwater run-off generated on-site will be directed towards a drainage ditch along the western boundary of the site. Temporary

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	 settlement ponds will be used as the land restoration project progresses to protect against run-off of sediments to this ditch/the River Graney. Re-seeding of filled areas will also take place as soon as possible to minimize the run-off of sediment on-site. The wheel wash unit will be served by an integrated silt tank and oil interceptor. The wheel wash unit on-site will be a self-contained unit that utilizes recycled water originating from a GW abstraction point (by way of bowser). The silt tank/oil interceptor will be in place for when excessive rainfall causes overflow from the system. The wheel wash system will be desludged and cleaned ca. every 6 months at a minimum or as needed by an appropriate provider. Waste sludge from the unit will be dispatched to an appropriate authorized destination waste facility. Emergency Response Procedures will be in place to ensure the prompt and thorough response to any spills of hazardous materials. Spill kits will be present on-site for this purpose. An interceptor maintenance and inspection programme will be implemented - the interceptors on-site should be inspected every 6 months by suitably qualified persons and should be cleaned and serviced regularly as necessary Composting curing/maturation will take place on a hard standing area which drains to an 180,000 litre slatted effluent storage tank to prevent the discharge to the environment of potentially polluting materials associated with this process. This effluent storage tank will be regularly inspected and emptied, cleaned and serviced when necessary. Waste Acceptance Procedures will be in place to ensure that hazardous waste or putrescible waste are prevented from arriving on-site and, were found to be present on-site, temporarily stored in a bunded waste quarantine area prior to being dispatched off-site to an authorized waste facility within 24 hours.
	 A surface water drainage inspection, maintenance and monitoring programme should be established and surface water emanating from the site shall be tested periodically.
Measures for controlling Noise Emissions BAT states that noise and vibration can arise from the operation of fixed or mobile plant	 Site operations will be restricted to between 07:00 - 18:00 Monday to Friday and 08:00 - 16:00 Saturday. No activity will take place outside these hours. The facility will operate under an EPA Waste Licence which will prescribe noise limit values to adhere to. Raised mounds and high treelines will be situated along the northern, eastern and southern site boundaries which will serve to attenuate noise emanating from site operations.
used in waste handling and treatment or when delivering waste to site. This can potentially create a nuisance to site neighbours and the environment.	

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	 A Machinery Maintenance Programme will be in place to prevent noise being emitted from inefficient or faulty plan and equipment. A maintenance log will be developed, maintained and available for inspection on site. Periodic noise monitoring at Noise Sensitive Locations will be carried out in order ensure noise from the activity is no having an adverse impact upon sensitive receptors. 	
Measures for controlling mud	 A wheel wash will be situated on-site for prevent trackout of mud from the facility. Hard standing surface will be situated between the wheelwash and the public road entering the site. A Roadsweeper will be used to clean the public road entering the site, the site entrance and the site access road on a regular basis in order to prevent the generation of mud. Regular inspections of the public road, the site entrance and internal routes will take place to ensure these areas are free of mud. Waste tipping areas will be kept clean and free of loose waste materials to prevent materials forming into mud and being picked up by vehicle tyres. Routes will be re-gravelled where there is evidence of deterioration or the excessive building up of mud o moisture. 	
Measures for controlling litter nuisances	 Waste recovered to site shall be inert soil only and as such should not include litter. Litter could be generated from sit office and weighbridge as a result of poor housekeeping. Quarantined waste determined unacceptable at the facility may also include small volumes of waste which may give rise to litter. Operational procedures shall include monitoring of litter generation and control of potential nuisance. Control techniques for litter prevention shall be in compliance with BAT and include: Maintenance of site roads. Office and weighbridge waste shall be placed within enclosed bins. Quarantined waste with the potential to give rist to wind-blown litter will be contained within skips and covered. 	

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Measures for controlling Vehicle nuisance • Vehicles operated by the licensee (on-site and off- site) should be subject to regular maintenance and service programmes to ensure that vehicles are running as efficiently as possible. Procedures for assessing fuel use on site could also be implemented in order to monitor efficiency.	 Switching off of vehicle engines when not in use (both on site and visiting vehicles).
Measures for controlling other nuisance issues (e.g. vermin, insects etc)	Waste proposed to be accepted at the facility includes inert soil which is non-putrescible and shall not contain material likely to attracted vermin or insects. There shall be no chemical storage on site and as such no associated environmental risk. Clinical waste shall not be accepted at the facility and as such there shall be no potential infection hazards to human health.

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5. BAT Associated Emissions levels and Compliance Monitoring

It is proposed to carry out the following types of environmental monitoring to ensure emissions emanating from the site do not adversely impact off-site environmental and human receptors.

5.1 Dust monitoring

Dust monitoring will be carried out on a Quarterly basis at three site boundary dust monitoring locations as indicated in the Site Layout Plan. The Bergerhoff method will be used to determine dust levels on-site. Dust Monitoring results will be compared with the EPA conventional limit value for dust of 350 mg/m2/day in order to assess potential dust emission impacts.

5.2 Groundwater monitoring

Groundwater Monitoring shall be carried out at the three groundwater monitoring points onsite (GW1, GW2 and GW3) in accordance with the schedule detailed below. Groundwater Monitoring results will be compared with Groundwater Threshold Values defined the Groundwater Regulations 2016, or otherwise Interim Guideline Value prescribed by the EPA.

Parameter	Monitoring Frequency
Level	Quarterly
Visual Inspection	Quarterly
рН	Quarterly
Conductivity	Quarterly
Ammonia (as N)	Biannually
Nitrate	Biannually
Nitrite	Biannually
Orthophosphate (as P)	Biannually
Total Dissolved Solids	Biannually
Dissolved Metals	Annually
Total Petroleum Hydrocarbons	Annually
Diesel Range Organics	Annually
Petrol Range Organics	Annually
Total Coliforms	Annually
Faecal Coliforms	Annually

5.3 Surface water monitoring

Surface water monitoring will be carried out at the surface water emission point (SW1) from the site as indicated on the Site Layout Plan in accordance with the schedule below. Surface Water Monitoring Results will be compared with BAT Associated Emission Limits defined in EPA BAT Guidance Notes for the Waste Sector.

Parameter	Monitoring Frequency
Visual Inspection	Daily
Flow	Daily
рН	Weekly
BOD	Monthly
Suspended Solids	Weekly
Ammonia (as N)	Monthly
Orthophosphate (as P)	Monthly
Dissolved metals	Quarterly
Total Dissolved Solids	Quarterly

TotalPetroleumBiannuallyHydrocarbonsDiesel Range OrganicsBiannuallyPetrol Range OrganicsBiannually

5.4 Noise Monitoring

Day-time environmental noise monitoring will be carried out at NSL's in the vicinity of the site annually to ensure that relevant noise limits are not exceeded. The following noise limits should apply on-site:

> Limits During Working Hours between 7am to 6pm Monday to Friday, and from 8am to 2pm on Saturdays (Day-time hours as defined by NG4)

55dB LAr,T

6. Conclusions

Based on the above it had been demonstrated that the facility will be operated in such a way that all the appropriate preventative measures are taken against pollution through the application of BAT.

An Environmental Management System has been developed for the proposed waste recovery facility which shall ensure that BAT is applied at the facility and that appropriate pollution prevention measures are undertaken to minimise the risk to the receiving environment. Appropriate abatement measures shall be undertaken at the facility to ensure emissions (dust and noise) are minimised. Monitoring shall be undertaken in accordance with BAT to ensure emission limit values and any trigger values set are in compliance with BAT, planning conditions and the Agency's requirements.

The EMS for the facility will be audited annually ensuring that any new relevant BAT are adopted at the facility.

It is considered that the design of the facility and the proposed operational procedures, control measures and monitoring programme conform with BAT. The facility operators (Sancom Ltd) are committed to operating the facility in accordance with BAT and in a manner so to minimise impact to the receiving environment.