NATIONAL BAT COMPLIANCE

The following sections describe how the inert soil waste recovery facility at Huntstown complies with the relevant requirements of BAT. In the absence of any specific BAT guidance in respect of the proposed waste recovery activity, it is considered that BAT for this sector is best addressed by the guidance given in the Agency's *BAT Guidance Note for Waste Sector : Landfill Activities (December 2011),* and specifically guidance presented therein in respect of inert waste landfills.

Environment impacts associated with soil waste recovery activities could include

(i) Potential dust emissions arising from unloading, placement and compaction of imported topsoil, soil and stone and trafficking of HGVs over unpaved haul roads;

(ii) Potential carbon dioxide (CO_2) emissions from plant and equipment working at the facility;

(iii) Potential noise emissions / noise nuisance associated with working plant and HGVs;

(iv) Potential contaminant emissions to land, surface waters and groundwater, specifically from placement of non-inert waste and spills / leaks of fuel and oil;

(v) Potential nuisance associated with transport of mud onto the regional road network;

(vi) Inadequate planning and financial provision for potential environmental liabilities, closure, restoration and aftercare of the proposed facility;

(vii) Poor environmental management and control of waste activities at the facility;

The waste materials imported to, managed and recovered at the Huntstown soil waste recovery facility are inert (physically, chemically and biologically unreactive) and will not alter or adversely affect any other matter in contact with it in a way which would give rise to environmental pollution or harm human health. As such, the waste will not generate leachate, landfill gas or odour emissions, nor will it give rise to litter nuisance or attract vermin or birds, which would also create further potential nuisance.

It is considered that each of the potential impacts of the facility can be addressed through the application of the following best available techniques to minimise emissions or to manage / control them.

Air (Dust) Emissions

A number of measures are in place to minimise and manage air (principally fugitive dust) emissions at the existing licensed facility at Huntstown and will continue to be applied when recovery activities are extended to the western side of the South Quarry. The following BAT measures in respect of potential dust generation activities are implemented at the waste recovery facility in order to minimise and control dust emissions:

All Activities

- Use of mobile water bowsers to damp down particulate materials across the entire licensed site, as and when required, principally in windy periods during extended dry spells.

Soil Placement and Backfilling

- Damp down particulate materials as and when required;
- Restrict access to areas once they are backfilled / restored;
- Avoid soil handling during adverse (dry, windy) weather conditions and optimising timing of any site operations and/or development works;
- Place and compact imported soil in-situ immediately after being unloaded (to minimise windblown particulate matter);

- Minimise drop heights at all times (to minimise emissions); and
- Consider installation of sprinkler systems along haul roads and/or around perimeter of the waste recovery facility if required to achieve compliance with emission limits.

Stockpiling

- Minimise stockpiling of imported soils;
- Use water sprays on soil stockpiles when necessary;
- Site stockpiles to take advantage of shelter from wind; and
- Minimise stockpile mound heights at all times (to minimise emissions).

Traffic Movements

- Require traffic to adhere to defined haul routes within the recovery facility;
- Regularly maintain unpaved road sections by grading hardcore to minimise particulate matter generation;
- Maximise length of travel over paved road sections within the facility;
- Maximise separation distances between internal haul roads and sensitive receptors;
- Implement and enforce speed controls on all paved and unpaved roads;
- Direct all HGV / trucks departing the facility through the existing wheelwash; and
- Use road sweepers on paved road sections as and when required.

Monitoring

- Undertake dust deposition monitoring close to sensitive receptors around the perimeter of the recovery facility and undertake reviews of ambient emissions at regular intervals to determine the effectiveness of dust management and control systems.

The *BAT Guidance Note for the Waste Sector : Landfill Activities (2011)* and the *Environmental Management Guidelines for the Extractive Industry (2006)*, both published by the EPA, indicate that a total dust deposition limit of 350mg/m^2/day measured close to sensitive receptors / at site boundaries is appropriate for waste recovery activity (and adjoining concrete production activities).

Air (CO_2) Emissions

The backfilling and restoration of the South Quarry at Huntstown will, for the most part, entail use of conventional diesel-powered HGV trucks and earthmoving equipment (mechanical excavators and/or bulldozers). There is only minor scope to increase the efficiency of HGV's, plant and earthworking equipment and to reduce emissions arising from their use and deployment at the recovery facility.

The following BAT measures are / will be implemented in order increase efficiency and to limit, abate and/or reduce carbon dioxide emissions generated by HGVs and plant at the facility:

- Ensure all vehicles, plant and equipment based at the facility are regularly serviced and maintained and operating efficiently;
- Replace plant and/or vehicles at the end of their operational life;
- Ensure plant and equipment are switched off when not in use;
- Minimise, insofar as possible, vehicle movements across the facility
- Review opportunities to increase the proportion of sustainable biofuel used by HGVs travelling to and from the facility and incentivise its use wherever practicable.

Noise Emissions

The following BAT measures in respect of potential noise generation activities are implemented at the existing licensed facility in order to minimise and control noise emissions and will also be extended to the recovery activity at the South Quarry:

Facility Layout / Design

- Retain and maintain perimeter screening banks / vegetation around the property boundary to provide acoustic as well as visual screening;
- Ensure plant and equipment at the facility work below original ground level within the existing quarry inasmuch as possible in order that former quarry faces can be used to provide additional acoustic screening;

Management and Working Practices

- Ensure noise generating activities within the facility are undertaken in locations where noise attenuation would minimise the potential noise related impact at nearby noise-sensitive properties;
- Ensure that, wherever possible, internal haul roads are routed so as to maximise the separation distances to nearby noise-sensitive properties;
- Ensure all haul roads are kept clean and maintained in a good state of repair (i.e. any potholes would be filled and large bumps removed, to avoid unwanted rattle and "body-slap" from heavy goods vehicles);
- Ensure heavy goods vehicles entering and leaving the facility have tailgates securely fastened;
- Ensure all mobile plant and equipment used at the facility have noise emission levels that comply with the limiting levels defined in EC Directive 2000/14/EC and any subsequent amendments thereof (transposed into Irish law under S.I. No. 632 of 2000, as amended);
- Ensure plant is operated in a proper manner with respect to minimising noise emissions (e.g. minimisation of drop heights, no unnecessary revving of engines, plant used intermittently not left idling);
- Ensure all plant is subject to regular maintenance (i.e. all moving parts kept well lubricated, all cutting edges kept sharpened, the integrity of silencers and acoustic hoods maintained);
- Ensure all plant and equipment at the facility is fitted with effective exhaust silencers which are maintained in good working order to meet manufacturers' noise rating levels. Defective silencers to be replaced immediately.

Monitoring

- Undertake noise monitoring close to sensitive receptors around the perimeter of the recovery facility and undertake reviews of emissions at regular intervals to determine the effectiveness of noise management and control systems.

The *Guidance Note for Noise in Relation to Scheduled Activities (2007)* and the *Environmental Management Guidelines for the Extractive Industry (2006)*, both published by the EPA, indicate that a rated noise emission limit of 55dB(A) L_{Ar} during daytime working hours and 45dB(A) L_{Ar} during night-time hours is appropriate for the waste recovery facility.

Emissions to Land / Water

The Huntstown Quarry complex straddles two surface water catchments. The South Quarry is located at the top of the Tolka River catchment. Much of the existing licenced site area (comprising the North Quarry and West Quarry) is located in the Ward River catchment which lies immediately to the north.

The closest surface water body to the South Quarry is the Finglas Stream, which runs along the eastern boundary of the South Quarry and the Roadstone landholding. The Finglas Stream is a tributary of the River Tolka. The closest surface water quality monitoring point along the River Tolka is located at Glasnevin, approximately 4.5km south-east of the quarry and results indicate that at this location the river has a Q-value rating of Q3, indicating it to be of poor status.

Treated discharge from the South Quarry is discharged off-site to the headwaters of the Finglas Stream and is currently regulated by way of a Local Authority discharge licence from Fingal County Council (Ref. WPW/F/075) . At the discharge point, almost the entire flow in the stream comprises discharge from the South Quarry. The Finglas Stream is reliant on discharge of water from the quarry to provide baseflow at the top of its catchment. In the absence of any discharge, it is likely that this watercourse would periodically run dry, except during periods of heavy or prolonged rainfall.

Bedrock aquifer maps published by the GSI indicate that the South Quarry area comprises the Malahide (Boston Hill) Formation, as well as Waulsortian Formation. Both the Waulsortian and Malahide (Boston Hill) Formations are classified as Locally Important Aquifers (LI), i.e., Bedrock which is Moderately Productive only in Local Zones. The locally important bedrock aquifer has been identified as a sensitive receptor in the receiving environment.

Groundwater vulnerability mapping indicates that the South Quarry extends across lands which are rated as being of medium to extreme groundwater vulnerability. The vulnerability rating reflects the exposed nature of the quarried area due to non-existent or thin subsoil cover.

Groundwater monitoring indicates that existing dewatering operations at Huntstown have lowered groundwater levels around the quarry complex and have locally altered the regional groundwater flow regime in the aquifers, diverting groundwater toward sumps on quarry floors. Groundwater levels in monitoring wells are controlled by both distance from quarry voids, the presence of water bearing fractures and variations in bedrock geology.

Groundwater quality results from the wells around the South Quarry indicate that groundwater quality is acceptable, with contaminant levels generally below the relevant groundwater quality threshold values, albeit there is some slight impact, most likely from agricultural activity in the surrounding local area. Some trace quantities of organics / hydrocarbons were detected at levels just above detection limits.

Although the waste streams imported to the soil waste recovery facility at Huntstown are inert and expected to be free from contamination, there is a minor risk that the recovery activities could result in contaminant emissions to land and groundwater, specifically from placement of non-inert waste, the presence of suspended solids in surface water run-off and spills / leaks of fuel and oil. The following BAT measures are implemented at the facility in order to minimise uncontrolled release of polluting materials or liquids / liquors to land, surface waters and groundwater:

Land

- Implement waste acceptance procedures and management systems to identify the source of imported soil waste materials in advance and confirm that contaminant concentrations do not exceed permitted intake trigger levels;

- Any waste consignment observed to have other non-approved wastes intermixed with it on the basis of a CCTV / visual inspection at the weighbridge will not be accepted for intake and re-directed off-site;
- Implement a multi-level soil testing regime for imported waste materials, comprising characterisation testing, compliance testing and on-site verification and ensure detailed records are kept of all soil intake testing;
- Ensure that any imported waste which is suspected to be non-inert is transferred to the waste inspection and quarantine area (a covered shed constructed over a concrete slab) and held there pending receipt of test results;
- Remove any quarantined materials that prove to be non-inert off-site, for disposal or recovery at an authorised waste facility.

Water

- Collect all dewatered groundwater and surface water in sumps (and/or at low points) and pump it to existing settlement / attenuation ponds before then passed through drains and hydrocarbon interceptor before discharging off-site;
- Store all fuels, oils, lubricants and potentially hazardous chemicals held at the facility in
  (a) large tanks surrounded by protective concrete barriers / containment bunds in order to eliminate the potential for mobile plant to collide or impact with them;
  (b) smaller drums or intermediate bulk containers (IBCs) on bunded pallets surrounded by protective barriers; or
  (c) double skinned containers and/or mobile bowsers.
- Ensure fuel tanks are constructed on sealed concrete surfaces and bunded to provide a storage volume equivalent to 110% of the tank storage volume;
- Undertake regular visual inspection and testing of the integrity of tanks, drums, bunded pallets and double skinned bowsers / containers;
- Divert all domestic wastewater from staff welfare facilities via existing septic tanks / wastewater treatment facilities prior to discharging effluent to ground;
- Undertake vehicle re-fuelling on sealed hardstand areas adjacent to the fuel storage tank or from mobile, double skin fuel bowsers or fuel lorries on the quarry floor or hardstanding areas;
- Ensure all refuelling of mobile plant undertaken within the quarry void or on hardstand areas is undertaken using drip trays to contain any spillages;
- Instruct drivers refuelling bowsers / containers directly from fuel trucks to carry spill kits, cut off delivery when bowsers / containers full and limit deliveries to a maximum of 200 litres;
- Arrange for waste oil collecting in tanks / containers to be emptied at intervals by a licensed waste contractor and disposed off-site at an authorised waste facility;
- Maintain and test the integrity of drainage infrastructure, including drainage pipework and the hydrocarbon interceptor at regular intervals ;
- Undertake maintenance of plant and machinery over paved surfaces or at existing (or off-site, if appropriate);
- Ensure all plant is regularly maintained and inspected daily for leaks of fuel, lubricating oil or other contaminating liquids / liquors
- Ensure spill kits (with containment booms and absorbent materials) are available on-site to contain / stop the migration of any accidental spillages, should they occur;

- Establish a traffic management system at the facility to reduce conflicts between vehicles, and the potential risk of collisions and associated fuel spills or oil leaks;
- Establish and enforce speed limits across the facility to further reduce the likelihood and significance of collisions (and associated fuel spills or oil leaks);
- Ensure plant operators are regularly briefed in 'toolbox' talks and site inductions on where spill kits are kept and how and when they are deployed;

Monitoring

- Continue regular monitoring of groundwater quality (at existing groundwater wells);
- Undertake ongoing reviews of emissions at regular intervals to determine the effectiveness of water management systems.

It is expected that by implementing these measures, emissions to surface water will meet the quality threshold values for key indicator parameters (BOD, suspended solids, total ammonia, total nitrogen and total phosphorous set by the *BAT Guidance Note for Waste Sector : Landfill Activities (2011)* and/or the waste licence (or any review thereof).

Environmental Liabilities

Operation of the proposed waste recovery facility could give rise to both known and potentially unknown future liabilities, principally in respect of land and/or groundwater and also, to a lesser extent, to atmosphere. Some potential liabilities could also arise in respect of the future closure, restoration and aftercare of the facility. Failure to make adequate financial provision for these liabilities could give rise to adverse impacts on the environment.

In order to identify and quantify these prospective liabilities, a Closure, Restoration and Aftercare Management Plan (CRAMP) and Environmental Liabilities Risk Assessment (ELRA) were previously prepared and submitted to the Agency for approval.

The amount of financial provision required in respect of an unexpected facility closure or site remediation works following a significantly adverse environmental incident was previously agreed with the EPA and a bond has been put in place to provide the required level of financial security (in the unlikely event either scenario should ever materialise).

Transport of Mud onto Roads

The quarry restoration and backfilling activities at the Huntstown Quarries generates traffic movements of HGVs over areas of unpaved ground within the waste recovery facility and as such, in unfavourable weather conditions, could result in mud being carried off-site and onto the public road network, giving rise to potential health and safety risks to other road users.

The following BAT measures are implemented in order to limit, abate and/or minimise deposition of mud on public roads by HGV's and other vehicles exiting the waste recovery facility.

- Direct all traffic exiting the licensed facility through the existing wheelwash and over paved internal roads thereafter out to the public road network;
- Regularly clean and maintain the wheelwash facility;
- Use a road sweeper to clean along local public roads as and when required
- Maximise travel over paved road sections within the facility;
- Regularly inspect and maintain any unpaved road sections within the facility so as to minimise potential accumulation of mud on wheels of HGV lorries.

Environmental Management Systems

Roadstone Ltd. currently implements its Environmental Management System (EMS) in respect of waste recovery activities at the Huntstown facility. The EMS is subject to ongoing review and development and Roadstone will update the existing EMS as required in due course to incorporate any additional mitigation measures and management procedures which may be necessary on foot of this waste licence review application to mitigate specific impacts and emissions arising from the transfer of waste recovery activities to the South Quarry.

The existing environmental monitoring programme at Huntstown will continue in force for the duration of the backfilling and recovery operations at the South Quarry. Emission limit values for the backfilling and recovery activity are set by the existing quarry planning permissions and current waste licence.