

## **MD Recycling Ltd Non Technical Summary of Processes to be Undertaken on the site.**

- 1) Composting in Open Systems**
- 2) Inert and Excavation Waste Transfer Station with Treatment,**
- 3) Use of Waste in Construction**

### **Introduction to the Site**

MD Recycling Ltd was formed in 2012 as an element of Crugmore Farm, Penparc, Cardigan SA43 1RD. The farm itself is a mixed arable and livestock business.

MD Recycling Ltd was developed to help the farm diversify into other markets including the treatment of aggregates for sale as a local building material and the treatment of green waste to produce a soil improver/compost. This compost is for use on the arable element of the farm and to sell as a product for other local farmers.

The aggregate treatment area forms a series of segregated areas for the collection of different grades of aggregate. Raw material is bought onto the site then graded as appropriate and stored ready for sale.

The green waste aerobic composting site is designed as open windrow composting system on an impermeable surface with sealed catchment drainage and three linear flow lagoons. The site is designed to recycle green and bio-degradable waste through aerobic composting to produce a soil conditioner/compost for use on local farmland.

The ethos of the company is that all waste handled on the farm be produced locally, and that all compost produced will be used on the farm or locally as a soil improver and fertilizer to reduce the usage of agrochemicals.

It is also proposed to use the aggregate on the site to build the pad for the compost area.

### **1) Composting in Open Systems**

#### **Waste Type and Delivery Method**

Registered waste carriers will deliver the waste to the site that will originate from a number of sources. The majority will be from local authority green waste collections, registered waste transfer sites collecting green waste and landscape contractors.

MD Recycling Ltd will also collect its own bio-degradable waste from factories (waste Carrier's License No. CB/SE5903GT) wastes from these factories would be non Animal By Product wastes suitable for composting under the sites permitting conditions (types of waste as listed in Form B4 Q1 Table 1b document ref CF008).

Waste will enter the site by compactor, articulated vehicle, container trailer or other suitable licensed waste carriers vehicle.

The delivery vehicles would enter the site and drive onto a 15m weighbridge, the tonnage, type of waste, where it come from and the carrier waste transfer note would be collected from the carrier and logged. The weighbridge ticket will be numbered and this will be recorded to identify a batch of waste material.

### **Process**

The process utilises a four open windrow system designed to meet the Environment Permit Standard Rules SR2912No7 Composting in Open Systems.

Once weighed the waste would then enter the site and be unloaded into the reception bunker. The waste would be visually inspected for contaminants and quality. If contaminants are found and deemed to be either hazardous or excessive the waste will be refused reloaded and taken off site by the carrier.

The waste would then be shredded through a 40mm cut shredding machine; this operation would take place on the composting pad close to the reception bunker. The shredding machine will have a metal separator magnet system to separate out any metal contaminants that have been missed. Waste metal would go into a designated skip on site and would be removed by licensed carrier for recycling. The shredded waste would then be placed in windrows, and will be logged and allocated a batch number.

Four windrows would be laid on the composting pad a self propelled shredding machine would be used to shred at a final rate (25mm - 35mm cut), positioned to lay a 5m high 8m wide windrow 40m long in parallel lines across the composting pad, leaving a 5m turning area at each end of the windrow. This machine shreds the waste and at the same time lays a windrow by conveying out cut waste at the back of the machine as it moves across the composting pad.

The windrows on site will be a maximum of 5m high x 8m wide and 40m long, each windrow will have approximately 1,400 m<sup>3</sup> (560 tonnes 2.5 m<sup>3</sup> to 1 tonne, high moisture small partial size compared to traditional composting) of compost in them. The windrows will be turned with a windrow turner to produce to encourage the composting process and ensure the entire waste batch is composted correctly before the maturation phase.

The waste/compost is left to compost for 15 days. Then the adapted windrow turner aerates all the windrows, the adaption to the windrow turner is to the paddle arms, the adaption aerates and cuts the composts down to smaller particle sizes, this accelerates breakdown of organics. In the 15 days there will be two aerations with the windrow turner cutter.

At this stage the waste is ready to be placed in maturation windrows. The maturation windrows are left for 60 to 90 days to produce a soil conditioner/compost, during this time a long forked front loader will aerate these maturing windrows at least 5 times. This final product is then passed through a screener to meet the requirements of the end product user. The screening would be carried out by a 25mm star screener. The screened compost would then be placed into the end product bunker.

The finished compost will be pas100 accredited and can go to farm land, any oversize from screening will go back to the reception bunker and be re-shredded and mixed in with fresh waste, we are not expecting large amounts of oversize as the compost would have gone through at least three shredding points (main fine shred in the shredder, then two times through the windrow turner cutter). When soil conditioner/compost leaves the site, the batch number of the compost and its final location will be logged at the site office.

### **Potential Contaminates**

Any contaminant in the incoming loads would be picked out of the waste and put into a covered skip located near the reception bunker; this will be removed regularly. Authorised local waste sites permitted to deal with the waste would be used, waste transfer notes completed and logged in the site office.

If any hazardous waste is found after the carrier has left the site, if safe to do so and the waste can be identified, the hazardous waste would be removed and put into a hazardous waste skip for disposal. Authorised local waste sites permitted to deal with the waste would be used, waste transfer notes completed and logged in the site office. If the waste is unidentifiable the Environment Agency will be informed and guidance on disposal requested.

### **Monitoring**

The compost will be visually inspected daily, and monitored and logged weekly for moisture content, temperature, humus growth and PH levels.

Temperature readings from core and sub-surface, the process requires core temperatures of above 70c and sub-surface temperatures (30cm depth) of +50c every 5m length of the windrow. (high temperatures in small particle size, breakdown organic matter quicker, high temperatures also show healthy microbial colony growth. High temperatures will also mean low leachate release

from the windrow. To create high temperatures you will require small particle size, good moisture content, good carbon/nitrogen ratio and plenty of aeration.

PH testing staff testing will be looking slightly acidic levels and as the compost ages the levels should move towards neutral but still staying slightly acidic. The only way to change acidic levels towards neutral is by heat, so keeping a check on temperature will help in keeping PH levels right, keeping the PH data helps with suitability grading for use on land as the finished product.

White humus; staff checking will dig into the compost along the flanks of the windrows approximately 30cm deep. They will be looking for a humus layer a few cm below the surface. A lack of a good humus layer can mean a number of things are going wrong, the main reason in most cases is lack of moisture, the cure would be to add water on next turn and extend the time between next turn by a few days, another common reason in winter months is a high level of carbon and low level of nitrogen in the mix, one cure would be to turn more frequently and add plenty of water if in a dry spell, but leave the compost in the same windrows longer.

Moisture checks; There is a very simple way to check moisture and it will be done at the same time as humus checks. It is known as the grip test; you check moisture content at a depth of around 30cm along the flanks of the windrow. You take a handful of compost and squeeze it firmly in one hand, open your hand and if there is no liquid release and the compost stays locked together, the moisture content is right. Cure for too much moisture (liquid dripping off the squeezed compost) is extra turning, too little moisture (compost will not hold together when squeezed and released) Cure is to add water on next turn, and leave the windrow for a few days longer before turning again.

There are other checks that would be conducted every 3 or 4 days; Looking for uniformed venting: (steam rising from natural vents along the windrow). Odour; take a handful of compost from the flanks of the windrow, and smell it, it should smell like an earthy woody smell as the compost matures. It will be a part of daily checks to pick off any contaminants that were mist on initial picking when waste was delivered.

## **Record Keeping**

All waste received onto the site will be fully recorded as to where it has come from, where it is on site as it moves through the process, and where it goes when it leaves the facility. This will be achieved by attributing a batch number to each batch of waste as it enters the site, electronic weighbridge tickets and Duty of Care documentation.

All data will be held on site computer, also electronically backed up. A hard copy of the information along with a site manager daily diary will be kept.

All information and data will be readily available on reasonable request to Defra and the Environment Agency.

Total tonnage stored or in process on site at any one time at maximum turnover; 5,040 tonnes. Total daily tonnage throughput 63 tonnes working on a 6 day week 52 weeks. Total maximum not to exceed tonnage through site per year 20,000 tonnes.

## **2) Inert and Excavation Waste Transfer Station with Treatment,**

### **Waste type & delivery method.**

Registered Waste Carriers will deliver Inert Waste to the site by tipper lorries, skips, trailers or other suitable licensed waste carrier vehicles. The waste originated from a number of sources, building contractors, waste transfer sites, site clearance and demolition sites. MD Recycling Ltd will occasionally collect Inert Waste off sites (waste Carrier's License No. CB/SE5903GT)

Vehicles would enter the site and drive onto a 15m weighbridge, where tonnages, type of waste, where it has come from and Carrier Waste transfer note would be collected and logged.

### **Process**

Once weighed the waste would then enter the site and be unloaded. The waste would be visually inspected for contaminants and quality. If contaminants are found and deemed to be either hazardous or excessive the waste will be refused, reloaded and taken off site by the carrier.

Inert materials awaiting processing will be stored in stockpiles depending on the type of waste eg clean concrete, blocks, bricks etc or soil, sub soil, clay etc. These will be stockpiled in one area of the site whilst reclaimed materials will be stockpiled on another part of the site in designated bays.

The process will involve screening, dry crushing and screening again of the materials and a wheeled loading shovel will be used to transport materials to and from the processing machines, which will have their own factory fitted water suppression systems to dampen down the material during each stage of the recycling process. A mobile water bowser with a pressurised system will be used to dampen down both the incoming and the reclaimed material stockpiles and the site roads during periods of windy or dry weather.

### **Potential contaminates**

The waste will be screened to remove any contaminates and these will be removed to designated skips on site and removed by a licensed carrier for recycling elsewhere. All dry waste eg concrete, blocks, bricks will be crushed to different grades. During this process any metal contaminates will be removed by a metal separator magnet. Waste metal would go into a designated skip on site and removed by licensed carrier for recycling. For different grades, waste will be screened again and stored in specific bays.

### **Record Keeping**

All waste received onto site will be fully recorded as to where it has come from by using weighbridge tickets and duty of care documentation. All data will be held on site computer, also electronically backed up. A hard copy of the information along with a site manager daily dairy will be kept.

### **3) Use of Waste in Construction**

Materials generated by the aggregate recycling facility will be used to create some of the infrastructure for the facility including bunds, roads and hard standings. Recycled inert materials will be utilised to: -

Create a level working platform at the compost recycling facility;

create access roads for the development;

construct bunds which will line the road sides and surround the compost pad. Use of inert aggregate and soils from the recycling facility will prevent the need to import virgin materials for construction.

Further details are provided in the Waste Recovery Plan that has been produced to support the application for use of the recycled materials within the construction of the facility.