2. Description Of The Proposed Development

2.1 General Description of the Site -

The application is for a proposed composting facility using the Bedminster technology. The proposed facility is located at Killowen, Portlaw, County Waterford. It is approximately 2km from the main Waterford /Clonmel Road and approximately 19kms from Waterford City. The proposed facility is adjacent to the R680 road 7km southeast of Carrick on Suir and 3km north of Portlaw. The location of the site is shown in Figure 2.1. The site application boundary is shown in Figure 2.2. The facility was previously operated as a tannery under IPC licence Reg No. 238. The existing wastewater treatment plant on site will be used to treat wastewaters.

The site slopes downwards from the R680 road to the River Suir. The buildings are screened from the roadway by embankments, which were put in place as part of the landscape works for the Michell Ireland factory. The proposed activity will take place in the building, which will be modified for the specific purpose of composting, used previously as a factory by Michell Ireland. The proposed facility is approximately 3.2 hectares in size.

Land uses in the area include grazing and forestry. An orchard plantation can be found approximately 1km south east of the proposed facility.

2.2 Nature of Facility

The proposal is for a Bedminster composting facility with a maximum capacity of 40,000 tonnes per annum. The proposed facility layout is shown in Figure 2.3 and internal layout in Figure 2.3.1. The compost facility will be designed to receive 40,000 tonnes per annum of commercial, industrial and household waste containing biodegradable waste and sludges. The facility will be able to accept the waste in a mixed state or source segregated. It is anticipated that waste will be initially delivered to the facility in a mixed state but once source segregation commences that waste will be segregated prior to delivery

The existing wastewater treatment plant on site will be used to treat wastewaters generated on site (e.g. domestic wastewater from staff facilities and any leachate from the composting process) and effluents tankered to the site from other industries. The throughput to the wastewater plant will be approximately 60,000 tonnes per annum.

2.2.1 Classes of activity

In accordance with the Third and Fourth Schedules of the Waste Management Act, 1996 (WMA, 1996), as amended, it is proposed to carry out the following classes of activity at the facility:

Waste Disposal Activities, in accordance with the Third Schedule of the Waste Management Acts 1996 to 2003

Class 6.	**Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 5 or paragraphs 7 to 10 of this Schedule.** This activity relates to the production of composted material not meeting specified compost quality requirements
Class 11.	**Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.** This activity relates to the blending or mixing of wastes, which cannot be recycled or recovered or do not meet compost standards, prior to disposal off site.
Class 13.	**Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.** This activity relates to the storage of waste, which cannot be recycled or recovered or do not meet compost standards, prior to disposal off site.

Waste Recovery Activities, in accordance with the Fourth Schedule of the Waste Management Acts 1996 to 2003

Class 2. **This is the Principal Activity**	**Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes):** This activity relates to the recycling of organic substances including composting and biological treatment of waste at the facility.
Class 3.	**Recycling or reclamation of metals and metal compounds:** This activity relates to the recycling or reclamation of metals and metal compounds prior to further recovery off-site.
Class 4.	**Recycling or reclamation of other inorganic materials:** This activity relates to the recycling or reclamation of inorganic materials prior to further recovery off-site.
Class 13.	**Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced:** This activity relates to the storage of waste prior to further recovery off-site.

2.2.2 Quantity & Nature of Wastes to be Recovered or Disposed of at the Facility

It is proposed to accept 100,000 tonnes per annum at the facility. The main aim is to compost waste and treat wastewaters.

Proposed quantity of wastes to be accepted at the compost facility:

Waste Type	**European Waste Catalogue Codes**	**Tonnes/Annum**
Household	20 01 08 biodegradable kitchen and canteen waste 20 02 01 biodegradable waste 20 03 01 mixed municipal waste	23,000 -Household biodegradable waste which can be collected source segregated or mixed (sorted at the waste facility)
Commercial Waste	As above 20 03 03 street-cleaning residues 19 12 12 other wastes (including mixtures of materials) from mechanical treatment of waste other than those mentioned in 19 12 11	8,000-Commercial biodegradable waste which can be collected source segregated or mixed (sorted at the waste facility)
Industrial Non-Hazardous Solids	Similar to Household and Commercial Waste above	2,000 – industrial biodegradable waste which can be collected source segregated or mixed (sorted at the waste facility)
Sewage Sludges	19 08 05 sludges from treatment of urban waste water 20 03 04 septic tank sludges	4,500
Industrial Non-Hazardous Sludges	19 08 14 sludges from other treatment of industrial waste water other than those mentioned in 19 08 13 19 02 06 sludges from the physico / chemical treatment other than those mentioned in 19 02 05	2,500
Total		**40,000**

The proposed quantity of wastewater to be accepted at the wastewater treatment plant:

Waste Type	**European Waste Catalogue Codes**	**Tonnes/Annum**
Industrial waste not elsewhere specified (Trade and sewage effluent)	02 02 01 sludges from washing and cleaning 02 02 99 waste not otherwise specified 02 05 99 wastes not otherwise specified 02 07 01 wastes from washing, cleaning and mechanical reduction of raw materials Other suitable for on site treatment non-hazardous effluents	60,000
Total		**60,000**

2.3 Plant Details

2.3.1 Materials & Energy Utilisation

The facility will use materials, substances, fuels and energy during construction and during operation. During construction materials will be used to build all the components of the facility e.g. tipping area, Eweson digester, aeration hall, and biofilter. The facility will use diesel fuel, electricity, and water during construction and operation and small amounts of vermin controls will be used during operation. Annual audits will be carried out to ensure that energy is being used efficiently.

2.3.2 Waste Acceptance Hours and Hours of Operation

Waste will be accepted at the Facility Monday to Friday inclusive between the hours of 08.00 to 19.00 and on Saturdays 08.00 to 17.30. Waste handling (sorting, mixing etc) will be from the hours of 07.00 to 20.00 hours Monday to Friday inclusive and 08.00 to 18.00 on Saturdays. The compost plant and wastewater plant will be operated continuously.

2.3.3 Plant

The facility will compromise some or all of the following plant:

- Bedminster technology for composting waste – the key elements of the process/plant are:

1. Tipping area – enclosed area for receiving the waste. Associated infrastructure to sort mixed waste may also be located in this area;
2. Eweson digesters (revolving compartmentalised aerobic drums that accelerate the natural process of biological decomposition). The digesters vary in size depending on waste quantity to be processed. The digester at this facility will be approximately 60m long and 4m diameter and will be capable of processing 40,000 tonnes per annum.
3. Primary screen – to screen compost as it is discharged from the digesters.
4. Aeration building – temperature and humidity controlled area to achieve compost maturity.
5. Final screen – to screen compost to market quality
6. Biofilters – air from within the building is passed to atmosphere through biofilters to remove odour.

- Plant for recovery/storage of non-compostable wastes – this may include:

1. Picking lines
2. Magnet to remove metals
3. Eddy current (aluminium)
4. Air compressor with blower to remove light wastes

The installation of the above plant will depend on the state of the waste accepted at the facility i.e. source segregated or not and the degree of contamination if source segregated.

- Wastewater treatment plant. This is operated on the sequencing batch reactor (SBR) process. Components include balancing tank, tanks where SBR process is carried out, sludge holding tank.

2.3.4 Methods, Processes & Operating Procedures - Compost Facility

The process of waste composting is described in the sections below. A flow diagram of the process is provided in Figure 2.4. Standard operating procedures for the acceptance, handling and processing of waste will be developed prior to commencement of waste operations at the facility.

2.3.4.1 Tipping Area

The Tipping Area will be constructed with lower walls of block/concrete (2m) and cladding to upper walls and roof. During normal weekday operation, waste will be tipped onto the floor. Solid waste and sludges will have separate dedicated areas. Any oversize items will be manually removed prior to the waste being sorted (if not pre segregated), mixed (solid waste and sludges) and loaded into the digester. Towards the end of the week, waste will be stockpiled in the Tipping Area to allow continuous processing over the weekend when there are no deliveries. The storage area would have sufficient capacity for 1 to 2 days waste therefore the facility would require deliveries over 6 days per week. The Tipping Area may also house ancillary equipment for separation of mixed municipal waste e.g. metal separators.

The Tipping Area will be maintained under negative air pressure and the delivery entrance will be provided with automatic roller shutter doors.

2.3.4.2 Eweson Digesters

The core of the Bedminster process is the 'Eweson Digester', a revolving compartmentalised aerobic drum that accelerates the natural process of biological decomposition. Solid waste and sludges are fed into the digester in optimum balance. Temperature and moisture are controlled to encourage a dense and varied microbial population. All of the waste in the Eweson Digester is constantly turned and aerated to ensure total waste sanitation. The digester will be turned at a rate of approximately 1 rpm by hydraulic motors. The patented Eweson Digester contains three separate compartments with the waste material being retained for 1 day in each section. A time temperature regime of 1 hour at greater than 70 C can be achieved. An Eweson Digesters (rotating composting drums) of approximately 4m diameter and 60m in length will be provided.

Within 3 days, the organic fraction is transformed into a new product. The rough compost is automatically unloaded onto a conveyor and is screened through a trommel screen to remove large residues, which will go for further recycling or disposal to an appropriate facility. The cleaned rough compost will then be transferred to the Aeration Hall.

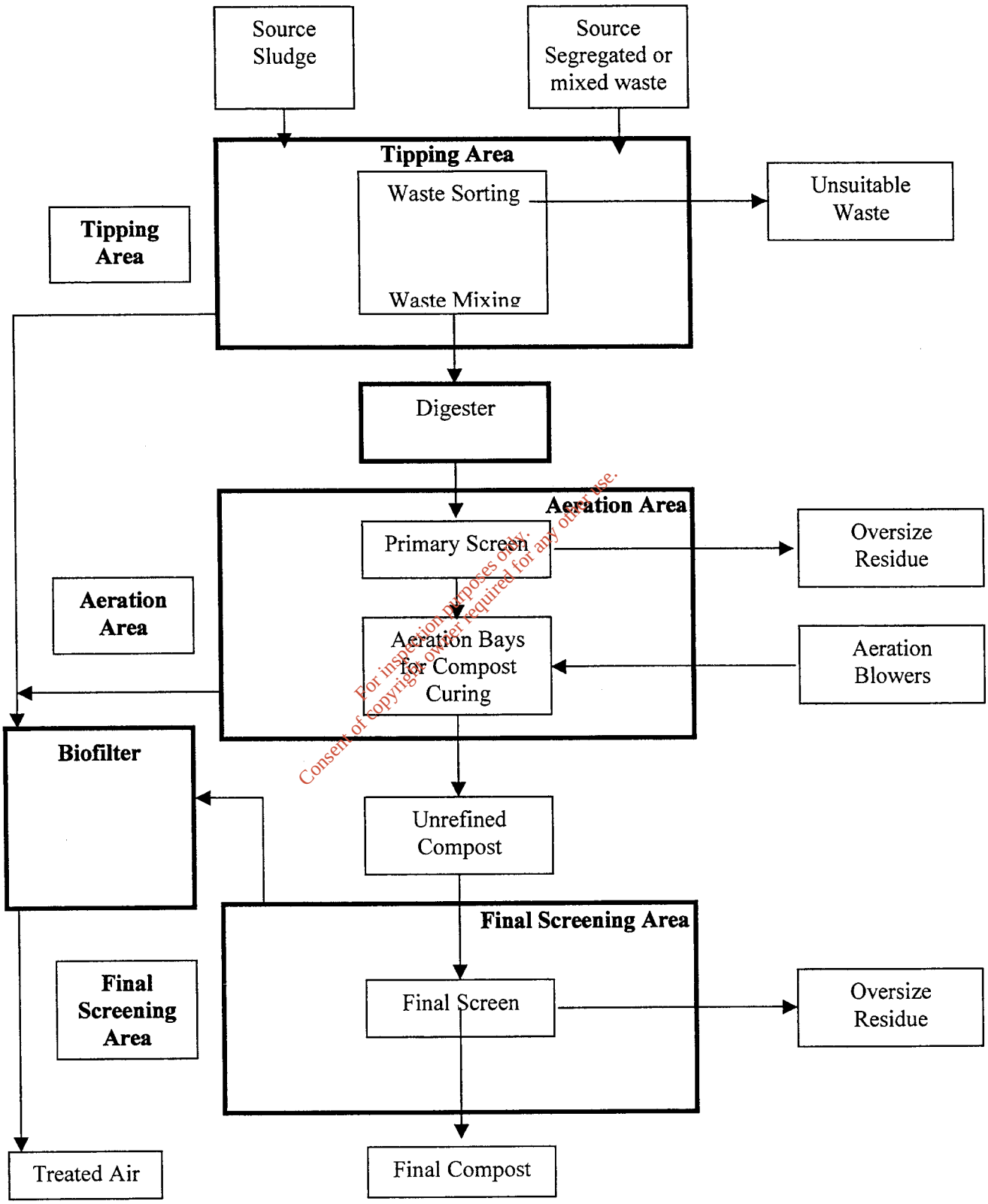

Figure 2.4 Process Flow Diagram

2.3.4.3 Aeration Hall

For the next three weeks, the product undergoes controlled secondary composting and curing in the aeration hall before final screening. The material will be turned on a frequent basis. This will ensure that aerobic conditions are maintained within the enclosed windrows. The temperature and moisture content levels of the composting material will be monitored and adjusted to obtain optimum maturation.

2.3.5 Methods, Processes & Operating Procedures - Wastewater Treatment Plant

The wastewater treatment plant (WWTP) operates on the sequencing batch reactor (SBR) process, which is a form of activated sludge treatment in which aeration, settlement, and decanting can occur in a single reactor. The process employs a five-stage cycle: fill, react, settle, empty and rest. Wastewater enters the reactor during the fill stage; it is aerobically treated in the react stage; the biomass settles in the settle stage; the supernatant is decanted during the empty stage; sludge is withdrawn from the reactor during the rest stage; and the cycle commences again with a new fill stage.

The location of the WWTP and layout are shown in Figures 2.5 and 2.6.

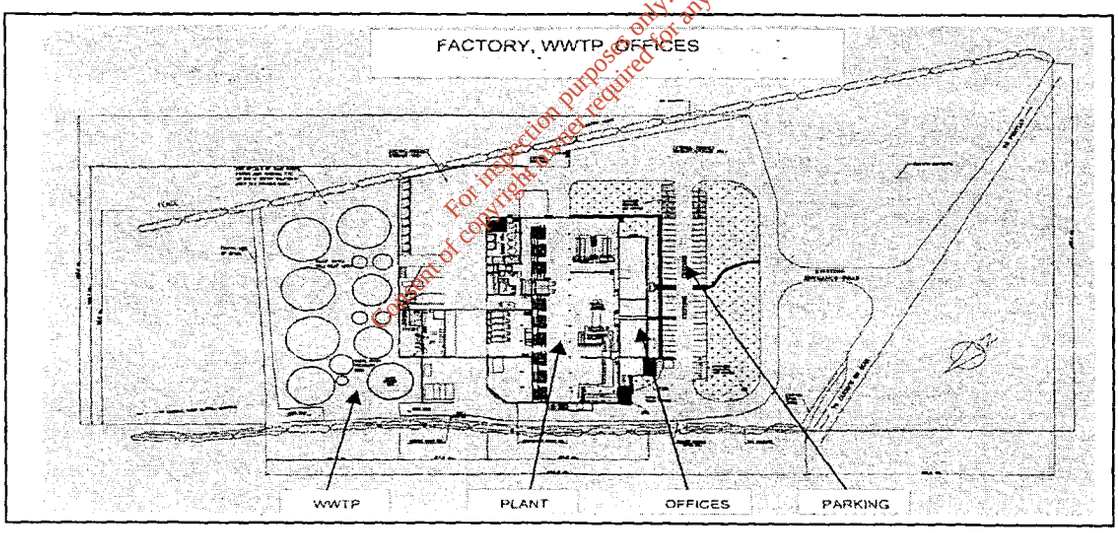

Figure 2.5 Site Layout

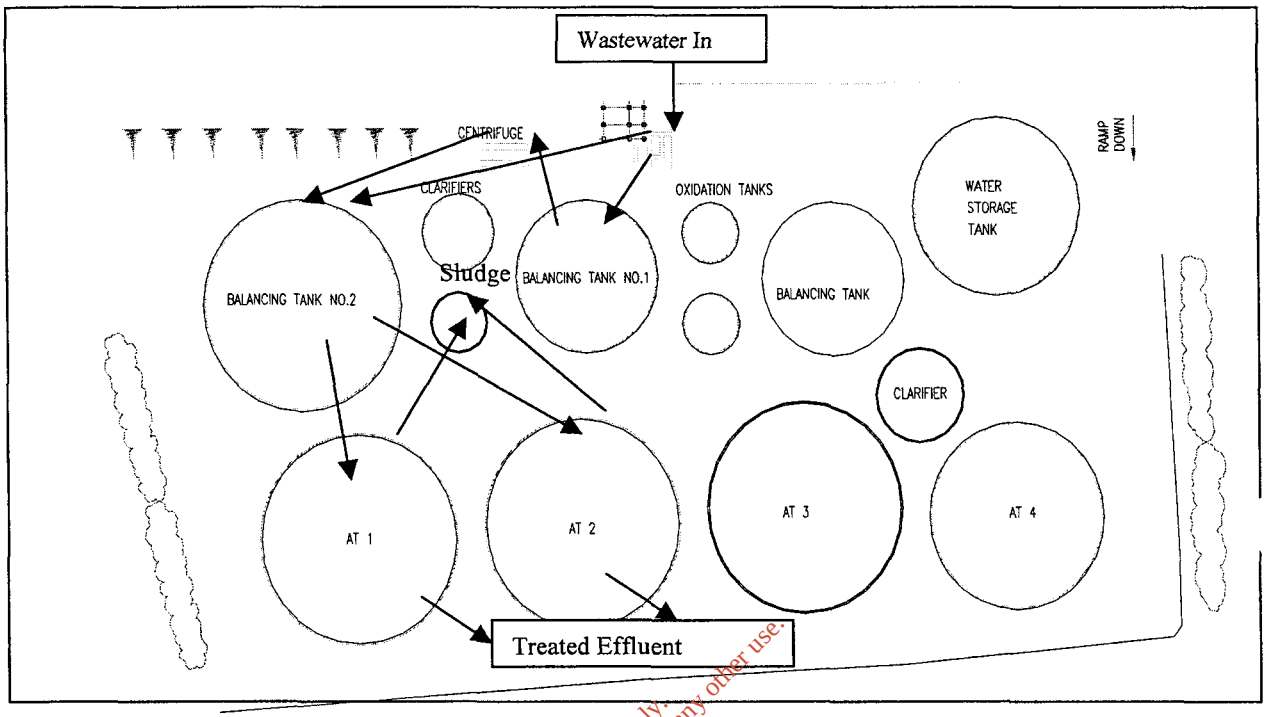

Figure 2.6 WWTP Layout

Wastewater Treatment Plant

The plant contains the following equipment:

Equipment	Equipment Purpose	Capacity
Water holding tank	Tank that is fed from on site borehole.	1800 m^3
Balancing tank	Previously used to balance (sulphide) inflows from the tannery process – this tank will be used as a balancing / equalisation tank for effluents tankered to the site.	830 m^3
2 oxidation tanks	Previously used as sulphide oxidation tanks	100 m^3
Balance tank No. 1	Holding tank where liquor is aerated.	700 m^3
Centrifuge	2 centrifuges take the feed from balancing tank No. 1. Solids are removed and the liquor fed into Balancing Tank No.2.	30 m^3 /hr / centrifuge
Primary clarifiers	2 tanks	Tank No. 1 250 m^3 Tank No. 2 150 m^3
Balancing tank No. 2	Liquor is held in this tank for aeration and then used to feed aeration tanks (AT1 to AT4), which run on the sequencing batch reactor (SBR) process.	2100 m^3

AT1 to AT4	Tanks are fed from Balancing tank No. 2. There is flexibility to use only some or all of the four tanks to cater for varying production levels. These tanks run on the SBR process.	AT1, AT2 and AT3 tanks with capacity of 1800 m^3. AT4 tank capacity of 1400 m^3.
2nd clarifier	1 tank	250 m^3
Jettox blowers	Blowers are installed in all tanks.	1000 m^3 / hr/ tank

The wastewater to be treated, typically from the following industries - brewery and food processing, will be brought to the site by tankers. The typical characteristics of these wastewaters, which are presented in Table 2.1 below, are similar to tannery wastewater (Table 2.2), which was previously treated at the plant.

Table 2.1: Typical characteristics of wastewaters to be treated.

Parameter	Range	Maximum
PH	4.5 – 12	12
COD	2000 – 6000 mg/l	2500 mg/l
BOD	1200 – 3600 mg/l	2100 mg/l
TSS	200 – 1000 mg/l	900 mg/l
TDS	1500 – 3700 mg/l	4000 mg/l
Nitrogen	25-80 mg/l	
Phosphorous	10-50 mg/l	

Table 2.2 Tannery Wastewater Prior to Treatment (From IPC Licence Application)

	Hourly (mg/l)	Daily Average (mg/l)
pH	-	12.5
Ammonia	70	50
Nitrates	0	0
SS	8000	7620
BOD	3820	2850
COD	18900	14500
Chlorides	5210	4548
Sulphides	1400	1200
Chromium (Total Cr)	14.6	10
Chromium (Total Cr vi)	0	0
Phosphorous (total)	21.24	15.39
Phosphorous (Ortho)	14.22	10.92
Oils, Fat, Grease	1800	1000

2.4 Other Facility Infrastructure

2.4.1 Facility security arrangements

The facility will be accessed via the gate on the R680 Regional Road. The facility is secured by existing mature hedgerows and fencing.

2.4.2 Designs for facility roads & hard-standing areas

The facility is accessed via the R680 Regional Road. Existing internal areas are all constructed of hard standing materials e.g. macadam and concrete.

2.4.3 Weighbridge
A weighbridge will be installed (see Figure 2.3 Proposed Facility Layout).

2.4.4 wheel-wash
As all internal areas are hard standing (concrete/macadam) there is not a need for a wheel wash. However, if required, a wheel wash will be installed.

2.4.5 Laboratory facilities
Off-site laboratory facilities will be used.

2.4.6 Fuel storage areas
Any fuels stored on site will be kept in appropriately bunded areas.

2.4.7 Waste quarantine areas
A waste quarantine area will be provided at the facility.

2.4.8 Waste inspection areas
All wastes accepted at the compost plant will be tipped on the tipping floor and examined prior to mixing with sludges. If waste is deemed unacceptable it will either be reloaded, in the case of a full load, or picked out in the case of specific no conforming wastes, for removal from the facility. Wastewaters effluents will only be from agreed sources.

2.4.9 Traffic control
Site management will control traffic around the facility. Traffic signs will also be used.

2.4.10 All services
The site has existing services on site including electricity, gas, water via groundwater supply, and telephone. There is also a sub station at the site.

2.4.11 Plant sheds, garages and equipment compound
Plant will be parked on hardstand areas of the facility.

2.4.12 Sewerage and surface water drainage infrastructure
Domestic wastewater from the staff managing the facility will be directed to the adjacent wastewater treatment plant. Surface water drainage will be collected in a sump and tested prior to release to the River Suir.

2.4.13 Facility accommodation
Offices exist at the facility and will be used.

2.4.14 Fire control system, including water supply
A fire control system will be incorporated into the design of the facility. This will likely take the form of a sprinkler system. Water supply is readily available from groundwater wells.

2.5 Compost & Sludge Outlets

The mature compost would be ideal for many applications such as agriculture, landscaping, soil blending and land remediation.

The high quality compost produced by the Bedminster process is a good soil conditioner as well as fertilizer. It can be used to replace peat as a growing medium. AES will use existing markets e.g. fertiliser for agriculture and endeavour to find new markets for the compost from the process. Land spreading of sludges and compost, derived from wastes containing food, will be in line with current Regulations including the Animal By-Products Regulations, and best practice guidance.

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