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ENVIRONMENTAL IMPACT STATEMENT

MILTOWN COMPOSTING SYSTEMS LTD. PROPOSED INCREASE IN TONNAGE THROUGHPUT AT THE COMPOSTING FACILITY LOCATED AT MILTOWNMORE, FETHARD, CO. TIPPERARY

Prepared For:

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NON TECHNICAL SUMMARY

Introduction

This Environmental Impact Statement (EIS) was prepared to address the potential environmental impacts of the increased throughput of organic waste material through the Miltown Composting Systems Ltd. (Miltown) in-vessel aerobic composting facility located at Miltownmore, Fethard, Co. Tipperary. The proposed development will consist of continued aerobic digestion of organic waste within Shed 1 and include the new reception building to the west of Shed 1 and the storage sheds to the east. The proposed development will not involve any construction works and all activities will be completed within existing building structures. A site layout drawing outlining the proposed development is provided in Attachment A.1.

Overview of Milltown Ltd.

The Milltown Composting Ltd. (Milltown) in-vessel composting facility at Milltown More, Fethard, County Tipperary operates under an Environmental Protection Agency (EPA) Waste Licence (Ref. W0270-01) issued on the 9th of September 2010, a copy of which is included in Attachment A.2. The facility also has approval from the Department of Agriculture Food and the Marine (DAFM) to operate as a composting plant accepting Category 2 and Category 3 animal by-products, a copy of which is also included in Attachment A.3.

The facility originally began operations in 2004 under a Waste Permit (Ref. WP 019 02) issued by South Tipperary County Council. The predominant materials accepted was organic fines material from the treatment of mixed municipal solid waste, with smaller amounts of non-hazardous industrial and municipal wastewater sludges, and off specification animal feed. The actual amount processed on site is dependent on market conditions and fluctuates to meet market demand. The roll out of source segregated collection of household organic waste in the Southern Region, and the increased source segregation for commercial activities has increased the volume of organic bio-waste and organic fines material requiring biological processing in the Southern Waste Management Region. To meet the market demand for the requirements for increased biological treatment, Milltown proposes to increase its capacity to a maximum of 50,000 tonnes/year. The company has eight staff members managing and operating the facility.

The company's customer base encompasses waste collection companies collecting non-hazardous domestic and commercial waste in the Southern region and beyond. Current company operations are limited and involve only 8 staff (5 full time and 3 part-time) managing and operating the facility. Miltown's objective is to provide an aerobic treatment and recovery outlet for biological waste materials collected in the Southern region and beyond. It is Miltown's ambition to provide this treatment option with respect to the surrounding environment and the best available technologies that can practicably be employed at the facility. The company's registered Headquarters are located at Sarfields House, Sarfileds Road, Wilton, Cork. A copy of the company certificate of incorporation is provided in Attachment A.4.

Existing Site

The site is located in the townland of Miltownmore, approximately 6 km to the east of Fethard and 10 km south west of Cashel. The site is accessed by a laneway off the Rosegreen to Fethard L1409. The site encompasses approximately 5.9 hectares. It is at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the east. It is occupied by a new waste reception building and process building (i.e., Shed 1), a covered yard, sheds 2 and 3 for storage of material and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, bio filter and agricultural sheds. The area to the north of the sheds is undeveloped and formerly used for animal grazing, the area to the southwest of the Sheds is a series of constructed wetlands, further south of the wetlands, to the east and to the west are all agricultural lands.

The composting is an in-vessel system that accepts a broad range of compostable materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal waste water sludges and organic fines generated in the treatment of mixed municipal solid waste (MSW).

The treatment process, depending on the nature of the source material, can involve blending with bulking agents, composting in separate process bays, maturation and post treatment to remove impurities. Due to the modular lay-out, the tunnels/bays can be operated independently, which provides flexibility in treating the different organic waste streams. The finished product can, depending on quality, be used for horticultural and agricultural purposes, or as landfill cover.

Composting Operations

The materials are blended and mixed in the reception building and then transferred from the reception area to the process bays using the telescopic loaders. The material placed in each of the bays is assigned an individual batch number to allow performance monitoring during the treatment stages and ensure the maintenance of accurate records. Five temperature probes are placed within the body of the material before sheeting is placed over the top of the bay. There is a computerized process control system, located in the site office, which records the temperature in each vessel to ensure that optimum composting conditions are maintained. In addition to the constant temperature monitoring, oxygen levels are monitored daily using a hand held probe, the vessels consist of a forced air system and oxygen levels are maintained through on going positive air input to the vessels. The moisture level is assessed either visually or using a hand held moisture meter. In order to comply with the Animal By-Products Regulations a 'two barriers' system is operated in the MSW/kitchen/catering waste processing area. The objective is to ensure a maximum particle size of 40mm and to achieve a sustained temperature of 60^{o}C over two separate 48 hour periods. The MSW fines typically have a particle size less than 40mm and do not require additional processing. Large items are manually removed before the materials are composted. Maintaining the temperature at 60°C for the required two separate time periods is achieved by composting the same compost batch in two different vessels. In the first vessel, or Barrier 1, the process usually takes one week and when completed, the material is transferred to a second vessel (Barrier 2) where it is thoroughly mixed and again composted until the temperature requirements are met. To avoid

cross contamination different loaders and buckets are used to move the materials into and out of the composting vessels.

Proposed Changes

Miltown propose to increase the throughput of material at the composting facility to approximately 160 tonnes per day (not exceeding 50,000 tonnes per annum) and to apply to the Environmental Protection Agency for an Industrial Emissions Licence continue to regulate the facility. The future licenced area will be the same as the current waste licence (Ref. W0270-01) for the site. The reception area for organic material is a new building located west of Shed 1 where delivery trucks back in and deposit their loads to the new reception area. The new reception building provides additional control over potential impacts to surface water quality from runoff from the deposited feedstock material. The new construction allows for diversion of surface water from the facility buildings roofs and outside yard surface to the dedicated surface water drainage system and also provides a control for leachate runoff inside the reception building whereby it is directed to a closed re-circulation system. Any leachate or minor surface water discharge in the reception area will be directed to the collection sump and pumped back to the process bays for reuse as part of the re-circulation system (see Chapter 7).

The range of waste materials currently accepted at the composting facility (see Table 1.1) will not change. The site will continue to only accept biological waste material for treatment and it is envisaged that future operation of the facility will serve to accept increased volumes of these organic materials from waste collectors. The bio wastes (e.g., food waste and screened organic fines material) will continue to be delivered to site in enclosed trailers for aerobic composting and stabilisation. The increased compost processing throughput at the facility will allow the facility deal with a greater volume of bio-waste and increase the facility's capability to service the Southern Regions waste needs.

Under Condition 1.1 of the existing Waste Licence the facility can currently accept waste materials on site between 08:00 and 18:00 from Monday to Saturday. The facility can operate between 06:00 and 18:00 Monday to Saturday.

Surrounding Land Use

The site is located in a rural area used predominately for agriculture purposes, mainly grassland and tillage. A farm yard, approximately 600 meters (m) to the west, is the closest property to the site. The nearest residential property is approximately 900m to the north along the access road. There are three more residences within 1km of the site to the north, north east and south east of the facility (Attachment B.1). The facility is not within the boundaries of any designated sites, such as candidate Special Areas of Conservation (cSACs), and Special Protection Areas (SPA's) for birds, or sites of national importance, such as proposed Natural Heritage Areas (pNHA's). Power's Woods, which is a proposed pNHA, is approximately 7 km to the north of the site. Grove Wood and Moneypark, which are both pNHAs, are approximately 7 km to the east of the site. These can be seen in Attachment B.2.

Proposed Development

The proposed development will be a continuation of the existing composting process at the facility albeit at an increased throughput. The proposed development will continue to operate as an aerobic composting plant accepting a broad range of compostable organic materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal waste water sludges and organic fines generated in the physical treatment of mixed municipal waste (MMW).

To achieve the increase in tonnage throughput in the plant from 24,500 tonnes per annum to up to 50,000 tonnes per annum, it is intended to upgrade the composting technology at the facility. While the mixing regime completed in the reception area will not change, upgraded aeration and control technology will be installed to enable Miltown to keep the composting batches in the optimum composting range of 50°C -55°C with an oxygen percentage of 13%. The composting procedure at the Miltown facility will remain flexible whereby it can adapt to changes in the marketplace when it comes to the treatment of biowaste material (i.e., production of compost material or stabilization of organic fines material). The capacity of the facility to handle and treat the proposed increased tonnages of either feedstock material are outlined in section 3.3.1.

To ensure that disruption to any neighbours along the delivery route to/from the site and in the vicinity of the facility is minimised, Miltown propose to accept material at the facility between 07:00 and 19:00, Monday to Saturday with a restriction on truck movements between 08:30 and 09:30 each morning to avoid disruption to neighbours at that peak traffic period. The operational hours of the proposed site will be 06:00 – 19:00. The adjustment to acceptance and processing hours would be to spread out deliveries over the day to avoid traffic issues related to the site.

Planning Policy & Context

The site was originally used for agricultural purposes. The cattle sheds and Shed 1 were originally constructed to house pigs, cattle, meat and bone meal and animal feed. In 2004 South Tipperary County Council granted planning permission and a Waste Permit for composting (in-vessel and maturation) to be carried out in Shed 1. In January 2008 there was a fire at the site, when the compost turner went on fire. The turner was destroyed and the fabric of Shed 3 was damaged. In March 2009 the Council granted planning permission for the retention of the offices, canteen/changing room, underground leachate storage tanks, and weighbridge. In 2014, Milltown made an application to Tipperary County Council to build an enclosure over the reception yard to the West of Shed 1, relocate communication masts, extend 3 agricultural amendment stores, incorporating existing staff facilities and associated site works. Permission for these works were granted on 12/8/2015. In 2015, Milltown made two applications to Tipperary County Council for the retention of an integrated constructed wetlands associated site works, which was granted on 08/02/2016. The full planning history of the site can be seen in Attachment A.5

Need for the Development

The need for additional capacity in the region has been determined by examining the current levels of biological capacity in the region, specifically the capacity which is consented by the DAFM to accept animal by-products, and the expected increases in biowaste and organic waste which is expected to come into the market over the plan period. The increased penetration of segregated food waste collections from household and commercial customers is expected to increase the quantities of this stream collected and requiring treatment. A review of the licensed and permitted compost facilities currently operating in the Southern Region was completed and are outlined in Table 1-3 of the document.

The existing estimated shortfall of 40,000 tonnes of biological treatment capacity in the Southern Waste Region is based on the current capacities of composting facilities existing in the Southern Waste Region. Therefore, it is determined that there is capacity for the extension of the Miltown facility to treat approximately 25,000 tonnes of the 40,000 tonne shortfall identified in the Southern Waste Region Plan.

It is expected that the food waste generated in each region will not be transported long distances but will rather be primarily treated in each region. The nature of the material, which is wet and odorous, can limit the distances such loads are transported although the current movement of biowaste to Northern Ireland is noted. The treatment capacity proposed is to ensure that sufficient capacity is approved – in particular, facilities which have animal by-product approval – and there is a balanced distribution of capacity in the region.

Biological treatment facilities for the primary and co-treatment of agricultural waste, along with bio-wastes and other organic wastes, are also required in the region and the waste plan supports the development of such facilities. Managing waste from a growing agricultural sector is a challenge which needs to be addressed to support Ireland's growing agri-food sector.

Section 19 of the South Region Waste Management Plan (SRWMP) indicated the 3 main overarching targets of the plan, target 3 states "*Reducing to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous Recovery practices*".

The requirements of the SRWMP indicated the need for new waste management methods, moving away from the previous method of landfill, and biological treatment is clearly an activity which sits on the recycling tier of the hierarchy. It is considered that the proposed increase of throughput at Miltown fits well with the current and future policy of the SRWMP.

A number of National waste management policies have been implemented since the initial national waste management policy document "Changing Our Ways" was issued by the Department of the Environment and Local Government in 1998. The policy was linked to the EU waste management hierarchy and was supported by EU legislation (i.e., EU Landfill Directive 99/31/EC) that set targets for reducing volumes of biodegradable waste based on 1995 figures. Under this directive a target was set that biodegradable waste in BMW must be reduced by 65% by 2016, compared with 1995 figures.

The Southern Waste Plan supports the development of at least 40,000 tonnes of additional biological treatment capacity in the region for the treatment of bio-waste (food waste and green waste) primarily from the region to ensure there is adequate active and competitive treatment in the market. The waste plan also supports the development of biological treatment capacity in the region in particular anaerobic digestion (AD); to primarily treat agro-wastes and other organic wastes including industrial organic waste. However, in the absence of AD facilities in the Southern Region there is a continued need for aerobic treatment of organic waste materials. A letter of support for the proposed development based on the requirements of the SRWMP is included in Attachment A.7.

Additionally, as of July 2013 the Waste Management (Landfill Levy) (Amendment) Regulations 2013 (SI No 194 of 2013) increased the landfill levy by 10 euro to 75 euro per tonne for each tonne of waste disposed of at authorised landfill facilities. This levy will make pre-treatment more cost effective - particularly in respect of biodegradable municipal waste (BMW) - thereby reducing the quantities and costs of residual disposal to landfill.

Miltown's proposed decision to increase the tonnage throughput at their existing facility is based on the need to meet market demands for organic waste recovery and stabilisation in the Southern Region and to meet the needs of the National Waste Management Plan and the Southern Waste Management Plan to treat biodegradable wastes to produce a useful product from waste and to reduce as far as possible the volume of biodegradable waste being disposed of to landfill.

The increased throughput is as a result of market pressures. A number of waste collection and process companies have requested increased capacity for organic materials they collect. Copies of support for increasing the material throughput at the facility are included in Attachment A.7.

The existing composting facility is suited for the recovery of organic waste materials for the following reasons:

- The facility is in a good location in terms of distance from waste generation areas such as Waterford, Cashel, Thurles, Carrick on Suir, Kilkenny and the Southeast.
- The facility is situated in a secluded rural area with the closest sensitive receptor located approximately 900m away;
- The proposed activities are compatible with existing operations taking place on-site;
- The facility has existing controls on site to mitigate potential environmental impacts from the existing or proposed facility;
- Additionally, with new mitigation measures in place any leaks or spillages will be contained within the facility and managed appropriately to prevent contamination.

If the project were not to proceed then it would result in reduced tonnages of biodegradable waste being treated within close proximity to its source and require an increase in transportation of waste material from the Southern Region to other composting processing facilities or to landfill.

Environmental Controls

The main perceived nuisance associated with the development may be odour and noise from increased volumes of organic waste material delivered to the facility. The existing aspiration system for the facility will be augmented to provide air control to the extended reception building, this will be achieved by extending the ductwork into the new structure. The new reception building has been added to the existing air extraction system and exhausted through the existing biofilter. In order to meet the requirements of the current 'Draft BAT Conclusions specific to indoor composting for Vessel or enclosed building design - Air extraction should be designed and maintained to move and handle the volume of air to provide a clear working environment. The atmosphere inside the new reception building is exhausted at 2 Air Changes per hour, this has resulted in additional air to be treated in the existing biofilter.

The increased air volume requiring treatment resulted in a requirement to increase the treatment media (wood chip) volume within the Biofilter which was achieved by placing 200mm of additional media on top of the existing filter and extending the height of the perimeter walls by 225mm to contain the additional media. To maintain the proposed aspiration rate in the new reception area an additional loading of approximately 30% additional air volume will be required to pass through the biofilter, the odour loading from the reception building is significantly less than the odour loading from the air extracted from Shed 1 where air is forced through the composting material in the processing bays and exhausted through the extraction ductwork. Based on the volume of air required to be extracted from the facility. The existing ducting system is shown on Drawing No 32.02.03 (Attachment C.1). The ducting system is currently arranged with two (2) 900 mm ducts from the fan at the biofilter to the centre of the roof of shed 1 with one duct directed towards the east of the shed with nine (9) inlet grills, the other duct is directed west and has six (6) inlet grills. The air control within the new reception building is through an extension to the west side ducting into the new reception area and fitting 2 additional extraction grills on the extended section. The ducting system is balanced by inlet grills on each of the air inlets. It is proposed to utilize the existing air fan to extract the full air load capacity. The motor on the existing fan is fitted with variable speed controller which controls the air volume extracted from the building.

As the process adapts to changing process materials and volumes of materials the odour management system will adapt to meet any additional requirements. It is proposed that any additional air extraction required at the facility will be directed through surface mounted modular biofilter. The use of mobile surface modules would negate the requirement for any excavation or construction works and would also allow for a modular approach to odour management whereby additional units could be added if required based on the air volume extracted.

Site Checks

Miltown personnel are pro-active and will continue to be pro-active in completing daily checks around the facility for odour and any other housekeeping issues. Where an odour issue has been identified it will be

dealt with as soon as possible by implementing or assessing the effectiveness of aspects of the odour control mechanisms in place at the facility.

Existing Environment & Potential Impacts & Mitigation

Human Beings

Analysis of the effect of the proposed development on the human environment was completed in compliance with the requirements of "Guidelines on the Information to be contained in Environmental Impact Statements" (EPA, 2002) and "Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)" (EPA, 2003). Relevant information has been obtained from public bodies with regard to planning and development context, employment statistics, demographic statistics and community aspects. The primary bodies concerned were the Central Statistics Office (CSO), and Tipperary County Council.

Desktop information reviewed in the process of information gathering are outlined below:

- CSO data, including the censuses for 2006, 2011 and 2016; the Quarterly National Household Register; Live Register figures;
- Tipperary County Development Plans and the Fethard LAP;
- Site visit on 1st November, 2016 to inform the EIA with respect to land use, development and change.

The existing human environment in relation to the planned development comprises those residing and working in the immediate vicinity of Miltownmore and also the wider community in Fethard, Rosegreen, Clonmel Town and Tipperary County. The nearest residential property is approximately 900m to the north along the access road. There are three more residences within 1km of the site to the north, north east and south east of the facility. The only other business that exists in the immediate vicinity of the existing Miltown Composting facility is a dairy farm located approximately 600 m to the southwest.

The most recent census was carried out in April 2016, but at the time of writing, only preliminary information was available, because of this, where the information from 2016 is not available, information from the April 2011 and April 2006 censuses were used. Census data is compiled for the State as a whole, as well as smaller areas including counties, cities, towns and electoral divisions. Given the location of the proposed development the census information on population, age profile, employment and social class, has been analysed with respect to County Tipperary.

The population statistics for South Tipperary were considered relevant for the demographic catchment of the proposed facility. For completeness, the population statistics for North Tipperary were also included to act as a comparison. Table 1 outlines the population of North and South Tipperary in the last two censuses, 2006 and 2011.

Table 1 Population Changes in Tipperary County, between the 2006 and 2011 Censuses

Location	2006 Census Population	% Change since 2002 Census	2011 Census Population	% Change since 2006 Census
South Tipperary	83,221	+5.05%	88,432	+1.44%
North Tipperary)	66,023	+ 7.89%	70,322	+6.30%

The operation of the development with a higher throughput will result in the continued use of the existing buildings within the existing site area. The development will result in the continuation of existing activity at the site building and will not have an impact on existing land use in the area. The operation of the development is predicted not to have any significant impact on the land use of the surrounding areas, be it for agricultural, woodland or residential purposes in the surrounding areas.

The proposed development will continue to operate in such a way as to minimise environmental impacts as far as practicable. The operation of the facility will be carried out in accordance with good practice and Best Available Techniques (BAT) guidelines. Emissions from the development may include ambient odour emissions from open facility doors during the reception of waste and when trucks exit the facility building. There may also be some noise emissions from the facility operations but are not considered significant in the context of the facility setting (i.e., distance to sensitive receptors). There may be some impacts to human receptors from traffic movements associated with the operation of the proposed development. However, Miltown have put forward a number of management control measures to minimize impacts as much as possible.

There are no existing amenities in the immediate area of the proposed development.

Flora & Fauna

The ecological interests in the area of the proposed development at Miltownmore, Co. Tipperary. Likely impacts are evaluated and where necessary mitigation measures are outlined to lessen any impacts. The aims of this Ecological Impact Assessment were to:

- Establish baseline ecological data for the development site
- Determine the ecological value of the identified ecological features
- Assess the impact of the proposed development on ecological features of value
- Apply mitigation measures to avoid, reduce, remedy or compensate impacts
- Identify any residual impacts after mitigation

An Appropriate Assessment Stage 1 Screening was completed for the site as part of the site assessment works for the EIA in December 2015 and a copy of the Appropriate Assessment Screening report is included in Attachment F.1.

The main habitat types identified in the immediate environs of the facility are outlined in Table A and are included on the Habitat Map (Attachment F.4) which outlines the extent of all habitat types present within the environs of the facility.

Table 2: Habitats Recorded in Vicinity of Miltown Facility

Habitats Located in The Environs of Miltown Facility	
Habitat Type*	**Relation to Facility**
Improved Agricultural Grasslands (GA1)	Lands to the south and west of the proposed development, beyond the surrounding hedgerow.
Scrub (WS1)	Within the hedgerow immediately west and northwest of the proposed development.
Hedgerows (WL1)	Immediately west and northwest of the proposed development.
Treelines (WL2)	Within the hedgerow immediately west and northwest of the proposed development.
Buildings and Artificial Surfaces (BL3)	The facility itself and the areas to the south, east and north

*- Based on Fossitt, 2000.

Water

The existing water environment in the vicinity of the Miltown facility (i.e., surface water and groundwater) and the potential impacts and mitigation measures were assessed as part of the Water Chapter in the EIS. The assessment of waters at the site was completed with reference to the following:

- The EPA's Guidelines on the Information to be contained in Environmental Impact Statements, 2002; and
- The EPA's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2003;

In the assessment of water at the site the following published information and regional hydrological data was reviewed;

- Available information from the National Parks and Wildlife Service (NPWS) and Environmental Protection Agency with respect to water quality in the area;
- Available information for the area from the Geological Survey of Ireland.

Surface Water

The site lies within the catchment of the River Moyle, which is approximately 1.6 km to the west of the site. An unnamed tributary of the Moyle, approximately 1 km southwest of site boundary (Attachment G.1), is the closest surface watercourse to the site. The facility is located at a local high point with falls to the west, south and north. Drainage from the operational area inside the facility building is directed to the dedicated recirculation drainage area in Shed 1 and the drain located in the reception area. Surface water from the open yard and building roofs are directed towards an existing oil water separator and then to a surface water drainage ditch to the southwest. Drainage from the undeveloped fields north of the operational area is to the north.

The River Moyle has experienced impacts in recent history which were caused mainly by diffuse agricultural, or point source pollution from waste water treatment plants, septic tanks and industry. In 2001 a report from the south eastern river basin district the river Moyle was found to have two locations

that were found to be moderately polluted at times and seriously polluted at times. In 2002 the EPA published an interim report on the biological survey of river quality. This report included the river Moyle and indicated biological Quality ratings at various monitoring locations on the river Moyle from 1981 to 2002.

As part of licence compliance, Miltown Composting retained Matrix Environmental to perform bi-annual monitoring of surface waters at the site. The monitoring location SW1 can be seen in Attachment A.1. The parameters sampled are outlined in the facility's EPA Waste Licence and include; BOD, Suspended Solids and Ammonia (NH_4-N).

Milltown Composting is located at an elevated position in relation to the surface water bodies. Generally, there is a low risk of flooding at the site. This was checked on the Flood Maps Ireland website. The increase of waste to 160 tonnes per day but not exceeding 50,000 tonnes per annum will have a negligible impact on surface waters due to the improved mitigation measures at the site as part of previous developments at the site (i.e., covered waste reception building and closed impacted water re-cirulation system).

Groundwater

According to the GSI and the groundwater vulnerability map in Attachment G.4 the site has been designated an extreme vulnerability category. However, the site is not in any groundwater protection zones. Miltown Composting are required to carry out environmental monitoring of groundwater as part of the facility's EPA Waste Licence compliance. The results of these monitoring events can be seen in detail in Chapter 7 of this report. The results indicated that the majority of groundwater samples were compliant with groundwater regulation values and EPA guideline values. Some elevated concentrations of ammonia were observed but given the surrounding agricultural land use, it is possible that this could be effecting the levels of ammonia in the groundwater.

All areas where composting processes are being carried out are concrete paved floors which are enclosed in sheds, this includes storage areas. The main threat to groundwater's is from leachate spills, leakages and contaminated surface water runoff. However, the proposed increase in throughput at Miltown will be completed in the process sheds where mitigation measures are in place to ensure the protection of groundwater.

Mitigation Measures

Below are the mitigation measures which are in place to ensure that the operation of the proposed development does not result in a negative impact on the hydro-geological environment.

- As part of the existing development, a new containment tank (47.54 m^3) was installed as part of the recirculation system at the southwest corner of Shed 1. This tank will be used for the storage and recirculation of potentially contaminated surface water runoff from the ramped waste intake area to ensure that any runoff is directed in a controlled manner to the on-site contaminated water/leachate recirculation system. The impacted water will be used as part of the composting process (dampening the pre-composting bays in Shed 1).

- As part of the revised leachate collection system, collected impacted water will be directed initially to a new pump/sump tank located south of the amendment storage area, from where it will be pumped to the recirculation tank for recirculation into the process.
- An impermeable surface for the new turntable area for vehicles delivering organic waste to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which will be directed to the dedicated contaminant/recirculation system and will not allow any discharge to ground.
- To manage any possible spillage risk to ground from the turntable area Miltown will update their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure, if required.
- All leachate from the process in Shed 1 and the waste reception building will be contained within a closed recirculation system for reuse in the composting process, this will negate any potential discharge to ground from the process. As part of the revised leachate/impacted surface water collection system, collected water will be directed initially to a new pump sump tank located south of the amendment storage area. Depending on the volume of liquid directed to the pump sump tank through the leachate collection system the collected liquid will be manually pumped from the pump/sump tank back up to the filtration system in the pump house for re-circulation to the pre-composting bays. For large volumes of liquid release (i.e., large spill or firewater) automatic pumping will take place to pump any possible initial firewater or major spillage liquid back up the new contaminated water storage tank. This pump/sump tank has a high level liquid alarm which sends a text to the site managers and operators in the event of a problem.
- Installing a new roof and impermeable concrete floor at the waste reception area will reduce the potential for run off of impacted surface water to open ground, where it could potentially migrate to ground and the underlying aquifer.
- All potentially impacted surface water runoff at the reception area will be collected and recirculated back into the process. No water from the reception area will be allowed to migrate from the building.
- All non-impacted surface water will be diverted to the oil/water interceptor and released from there to the surface water drain. It is envisioned by Miltown that this non-impacted water will be released to the Integrated Constructed Wetlands (ICW) onsite, pending EPA approval. The ICW ponds will provide treatment on the non-impacted water to ensure that there are minimal emissions from the facility.

Although it is not anticipated that there will be any impacts from the facility operations on the underlying site groundwater or hydrogeology, the implementation of the mitigation measures along with the improved drainage system will help ensure that potential for the migration of contaminants from the building surface into the underlying aquifer are negligible.

Soils & Geology

The Geological Survey of Ireland (GSI) Bedrock Map for Milltown indicates that the underlying bedrock at Miltownmore is comprised of muddy siltstone and silty mudstone belonging to the Killeshin siltstone Formation. The subject lands are not at risk of subsidence. There were no fault lines identified on the GSI map for the area around the site. There were no karst features identified at the site and the bedrock type is not conducive to karst formations.

A review of the Teagasc soils map for the area indicated that the soils in the area are deep poorly drained mineral soils derived from mainly non- calcareous parent materials. The parent materials are mostly shale and sandstone till derived chiefly from Naumarian rocks. The soil maps can be seen in Attachment H.1.

The mitigation measures employed for the protection of groundwater will also serve to protect soils and geology ion the area, and include;

- a new containment tank (47.54 m^3) was installed as part of the leachate / process water recirculation system at the southwest corner of Shed 1. This tank will be used for the storage and recirculation of potentially contaminated surface water runoff from the ramped waste intake area to ensure that any runoff is directed in a controlled manner to the on-site contaminated water/leachate recirculation system.
- As part of the revised leachate collection system, collected impacted water will be directed initially to a new pump/sump tank located south of the amendment storage area, from where it will be pumped to the recirculation tank for recirculation into the process.
- The provision of an impermeable surface for the new turn table area for vehicles delivering organic waste to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which will be directed to the dedicated contaminant/recirculation system.
- To manage any possible spillage risk on the turntable area Miltown will update their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure. The updated SOPs will ensure that the turntable area is inspected after every delivery for spillage and if in the event of a minor spillage that a spill kit including a suitable absorbent material will be at hand in order to undertake a clean-up if required, meeting license condition
- Construction of a 0.7m high kerb around the footprint of the new reception building and connecting the kerbing to the eastern end of the south wall of the pump house and the south wall of Shed 1, thereby allowing the use of this area for the retention of any runoff and ensuring that any possible spillage is directed into the leachate collection system via the new pump house drainage and not to soils surrounding the process building.
- As part of the revised leachate/impacted surface water collection system, collected water will be directed initially to a new pump sump tank located south of the amendment storage area.

Depending on the volume of liquid directed to the pump sump tank through the leachate collection system the collected liquid will be manually pumped from the pump/sump tank back up to the filtration system in the pump house for re-circulation to the pre-composting bays. For large volumes of liquid release (i.e., large spill or fire water) automatic pumping will take place to pump any possible initial firewater or major spillage liquid back up the new consigned contaminated water storage tank. This pump/sump tank has a high level liquid alarm which sends a text to the site managers and operators in the event of a problem.

- Installing a new roof and impermeable concrete floor at the waste reception area will reduce the potential for run off of impacted surface water to open ground, where is could potentially migrate to soils and the underlying aquifer.
- All potentially impacted surface water runoff at the new reception building will be collected and recirculated back into the process. No water from the reception area will be allowed to migrate from the building to surrounding soils.
- All non-impacted surface water will be diverted to the oil/water interceptor and released from there to the surface water drain. It is envisioned by Miltown that in future that this non-impacted water will be released to the Integrated Constructed Wetlands (ICW) onsite, pending EPA approval. The ICW ponds will provide treatment on the non-impacted water to ensure that there are no emissions from the facility.

Although it is not anticipated that there will be any impacts from the facility operations on the underlying site soils, geology or hydrogeology, the implementation of the mitigation measures will help ensure that potential for the migration of contaminants from the building surface into the underlying soils and geology are negligible.

The proposed increase in waste acceptance does not require any additional construction works and all processing areas are concrete paved with adequate drainage for leachate collection. Based on these criteria it is not considered that operation of the proposed development would have a negative impact on soils or geology in the area.

Noise

Miltown are required to monitoring environmental noise at the nearest sensitive location as part of their waste licence compliance requirements. The main noise sensitive receptor is a residential property to the northwest of the site. Annual monitoring at the NSL location indicated exceedances of the ELV's set in the site Waste Licence. The source of this noise was mainly from animals associated with agricultural lands in the area and traffic both associated with the farm and the composting facility.

Potential noise sources during the operational phase of the composting facility would be:

- A maximum of 38 vehicle (i.e., cars, vans and HGV) movements per day for 6 days per week
- Operation of processing equipment inside the facility building that may be audible if doors are open;

- Movement of waste from the facility.
- Extraction fans for air exchanges within the facility building.

Noise emissions from the facility itself is not seen as an issue even with increased throughput due to the location of the site in relation to the nearest noise sensitive receptors. However, with an increased throughput at the Miltown facility there may be noise impacts related to vehicle movements associated with the proposed development. The mitigation measures to mitigate noise impacts will be updated, including;

- Although there will be an increase of up to five truck movements per day these will be managed so that noise impacts are spread over the working day to ensure a minimal effect on the noise sensitive receptors surrounding the Miltown facility;
- All machinery at the Miltown facility will have frequent maintenance carried out to ensure that the machinery is operating optimally and not emitting at a high noise output;
- With the increased levels of traffic owing to the increase of throughput at the facility, Miltown will ensure that no queuing of incoming lorries will occur on the laneway to prevent the noise emitted from the lorries effecting noise sensitive receptors in the vicinity;
- Miltown will ensure that there are no deliveries or transfer of material off site occurring outside of the operational hours of the facility;
- It will be advised by Miltown that the trucks arriving and leaving the facility avoid using air brakes to reduce the potential noise emitted from their movements;
- During operational activities occurring at the facility, all doors will be closed to ensure that no unnecessary noise emissions occur;
- All doors to the processing sheds must be kept closed when processing operations are being completed;
- Assessment of noise levels outside the facility should be monitored to identify potential sources.

The main noise contribution from the facility on noise sensitive receptors in the vicinity of the Miltown facility is mainly due to intermittent traffic movement related to deliveries to and from the site. Due to the distance of the facility from the closest noise sensitive receptor it is not considered that the site operations are impacting on the noise climate of any noise sensitive receptors in the area. The increase in traffic due to the proposed development will result in approximately 10 additional truck movements per day (5 in and 5 out) to the site which is not considered significant over a 12 hour working day and as such the noise impact from the increase in traffic volumes is not considered significant.

Air Quality

The main potential impact to air quality from composting facilities is considered to be odour emanating from the breakdown of organic matter. The existing facility has a number of control measures in place to mitigate against odour pollution being released by the Miltown facility. These measures include an

aeration system for the composting process to prevent anaerobic digestion which will produce odourous compounds. The onsite staff also physically turn the compost to ensure aeration. The composting sheds also have extraction fans to replenish the air within the processing sheds. Finally, a biofilter is located along the southern side of Shed 1, which is monitored at the two inlets and the outlet as part of licence compliance criteria.

Odour monitoring carried out in accordance with Schedule C of the site Waste Licence indicated that the sites odour emissions do not have an impact on the environment. Monitoring results, as seen in Chapter 10 of the EIS, indicated that no odours from the facility operation were noted at sensitive receptors.

Monitoring of emissions from the inlets and outlet of the biofilter system for treating extracted air from the process sheds indicated that all samples contained concentrations of parameters of concern far below the emission limit values outlined in Schedule B of the site Waste Licence. Dust and particulate monitoring also indicated concentrations less than the applicable emission limit values and the air quality standards.

The proposed increase in organic waste throughput will lead to an increase in the volume of air that needs to be extracted and treated from the process sheds to ensure that odour is not an issue.

Air Emissions from the proposed development will be from the extended operation of the existing activates at the Miltown facility. Emissions from the operation of the facility will be on-going as long as the facility is accepting and processing waste material. The proposed development processes as described in Chapter 3 of this EIS will result in ambient odour emissions from the entrance / exit roller doors and the air extract fan. Also, there will be engine combustion emissions from the increased traffic associated with the proposed development. These emissions from the proposed development are discussed below;

Traffic Emissions

Pollutant emissions from road traffic has the potential to cause impacts at both the local and national level. The National Roads Authority has produced a set of *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes,* 2011. The proposed development at Miltown Composting will not require any construction works (i.e., roads), and the proposed increase in traffic during the operational phase of the proposed development (i.e., from 20 movements per day to approximately 38 movements per day). This increased traffic at the proposed development will include 5 additional truck movements per day and 4 additional employee vehicles. The limited increase in traffic in the area would not be considered to impact air quality in the area.

Odour Emissions

The existing odour management system at Miltown is already designed to mitigate odourous ambient air removed from Shed 1 and the reception building. This would continue to be the case for the proposed development as processing will continue to take place in that building. As part of the future operations at the facility, material accepted at the site will be unloaded in the reception building. To control any potential odours from this area the air extraction system in Shed 1 has been extended to include the new reception building.

The proposed development will have the potential to emit ambient odours during future operations. However, the proposed development will consist of extending the existing odour management system which will then be adequate to mitigate potential odours emitted from the increased throughput at the Miltown facility.

Mitigation Measures

The odour monitoring results for the site indicated that the composting facility does not have a negative impact in terms of odour. However, with the new enclosed reception building, adjustments to the air collection and the biofilter system will be made to cater for the potentially odorous air removed from the new reception building to the biofilter. The new reception building has been added to the existing extraction system and exhausted through the existing increased biofilter. In order to meet the requirements of the current 'Draft BAT Conclusions Specific to Indoor Composting for Vessel or Enclosed Building Design'- air extraction should be designed and maintained to move and handle the volume of air to provide a clear working environment. It is intended to aspirate the reception building at 2.5 air changes per hour, this will require the additional air to be treated in the biofilter as calculated in Table 3

Table 3: Size and Capacity of Biofilter for the Addition of Reception Building

		Volume (m^3)
Shed 1 volume		12,935.32
Reception Building		4,773.00
TOTAL		**17,708.32**
Air Volume to be Treated in Biofilter	2.5 x Air changes per hour	**44,270.80**

Table 4: Residence Time Calculation for the Inclusion of the New Reception Building

Residence Time Calculations		
Air volume arriving at the biofilter	44,270.32	m^3/hr
	12.30	m^3/s
Biofilter surface area	520	m^2
Calculated Speed of Air through Filter	0.0278	m/s
Media Depth	0.85	m
Residence time in media	35.93	seconds

To treat the air extracted from the reception building will result in an additional loading of approximately 30% to the biofilter, the odour loading in the additional air from the reception area will be significantly less than the odour loading from the air extracted from Shed 1, where air is forced through the composting media in the processing bays and exhausted through the extraction ductwork.

The existing ducting system is shown in Attachment C.1. The existing extraction duct system is arranged with two 900 mm ducts, linked to the fan at the biofilter. These run to the centre of the roof of Shed 1 with one duct branching off to the east of the shed with 9 inlets running along the ducting. The second duct branches to the west of the shed, with 6 inlets running along the duct. The air extraction from the reception building is achieved by extending the west side duct into the reception building area and fitting 2 additional extraction inlets on the extended section.

The increased volume of treatment media (i.e., wood chip) volume within the existing biofilter is achieved by placing 200mm of additional material on top of the existing filter and extending the height of the perimeter walls by 225mm to contain the additional media. The increased biofilter volume will allow for an appropriate residence time for extracted air from shed 1 and the reception building within the biofilter to allow for appropriate odour treatment.

Landscape & Visual Impact

The assessment on landscape and visual impact of the facility was completed with reference to the guidelines included in the document entitled 'Landscape and Landscape Assessment, Consultation Draft of Guidelines for Planning Authorities' published by the Department of the Environment and Local Government in June 2000. Terminology used in the assessment for the description of the quality of visual impacts are outlined below:

- **Landscape Effects –** The likely nature and scale of changes to landscape elements and characteristics and the effect on the landscape character and quality resulting from the development; and
- **Visual Effects –** The change in the character of the views resulting from the development and the change in the visual amenity of its receptors (i.e., those viewing the area).

In considering the significance of the visual and landscape changes due to the development the following elements were also considered;

- The sensitivity of the view, taking into account the public accessibility of the land where views are possible and the likely sensitivity of that view given the distance, intervening vegetation and land use;
- The quality and value of the existing landscape at Visual Reference Points;
- The degree to which the proposal will be visible within the surrounding area; and
- The buildings are not clearly visible from the public road and the overall impact of the proposed development on the landscape is considered negligible due to its location and the surrounding area.

Potential Visual Impacts

The proposed development comprises of the increased throughput of tonnage in the existing shed units for waste acceptance, pre-processing and temporary storage of compostable materials and therefore there are no increased potential visual impacts on the landscape of the surrounding area.

Mitigation Measures

The purpose of mitigation is to avoid, reduce and potentially remedy any significant negative effects arising from the development. As the facility buildings are already constructed and the change to the operations will be an increased throughput, it is not considered that any mitigation measures are required to offset visual impact from the facility.

Conclusion

As the buildings for the proposed increase in throughput are already in place at the site there will be no change to the character of the landscape at the site, and in the surrounding areas. The physical elements and the visual characteristics will remain unaffected by this development.

Traffic

In January 2016, DBFL Consulting engineers and Transportation Planners (DBFL) completed a traffic and transport assessment report for the Miltown Composting Facility as part of the requirements of the Environmental Impact Statement (EIS) for the proposed development at Miltown, Co. Tipperary. The objective of this assessment was to assess the impact that the increased throughput of waste material (and the subsequent increase in traffic volumes) at the Miltown facility will have with respect to traffic considerations. The report calculated the expected volume of traffic that will be generated by the extended throughput of material and assess the impact that this traffic will have on the operational capacity of the road network in the vicinity of the development. Road safety conditions are also considered as part of the assessment.

Current and Predicted Traffic Levels

The recorded HGV trip movements associated with the existing operation for (i) average, (ii) peak, and (iii) quiet periods. The average trips to/from the existing facility are based on data received from Miltown Composting for the 2015 year.

Three potential HGV arrival/departure scenarios have been observed including;

- Full load truck in / Full load truck out (Dual Trips) – Lin-Lout
- Full load truck in / Empty load truck out - Lin-Eout
- Empty load truck in / Full truck load out – Ein-Lout

Influenced by numbers of parameters dual trips proportions have traditionally been quiet low, however over the past 24 months a notable increase in dual trips to approximately 24%. As dual trips benefit both the supplier of materials and the exporter, this trend is expected to continue and therefore it is assumed that the number of dual trips will increase by 15% above the existing quantum.

Due to the existing material transfer regime, the proportion of dual trips is generally relatively low and therefore in the proposed development trip generation process it has been assumed that an additional 15% of material transferred to / from the subject site will be dual trips due to the proposed structured delivery program to be introduced as part of the proposals.

A comparison of the existing on-site operations vehicle trips and the proposed development's vehicle trips are summarized in Table 5 below for the 'average' daily January scenario, which is considered the worst case scenario.

Table 5:

Period / Vehicle Trip	AM Peak Hour (08:30-09:30)		PM Peak Hour (17:00-18:00)		Daily	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Inbound	5	7	1	1	10	19
Outbound	1	1	5	7	10	19
Two Way	6	8	6	8	20	38

The analysis reveals that the proposed development results in a modest increase in all vehicles during peak hour movements however due to the proposed new materials transfer structure there is not expected to be an increase in HGV trips during peak hours. The daily average increase in two-way vehicle trips has been estimated at 18 additional vehicles, eight of which are attributed to the additional staff movements (i.e. cars and vans) and ten HGV movements (i.e., five trucks in and five trucks out). However, the ten truck movements would be considered to be only on days when the maximum volume of material is transported to the site.

Mitigation

With the objective of reducing the scale, frequency and severity of the potential impacts generated by the subject proposals in addition to improving the operational efficiency of the on-site composting activities a number of mitigation measures are planned as part of the subject proposals.

- Currently all 'inbound' material loads sent to the subject Milltown facility by suppliers generally arrives with little to no prior notification given in regard to the day or time of arrival at the subject site. This current arrangement is particularly insufficient from an operational perspective for the compost facility management. As a result, a new management regime is proposed which requires the supplier (or their transport operator) to pre-book a 'delivery slot' (e.g. specific prearranged time based window of arrival) at the composting facility. This practice will be similar to the concept operated at national / regional distribution centres in the retail sector. This new system will enable the composting facility to actively manage the arrival of material on-site through the implementation of a fixed number of delivery slots (e.g. 30 to 60-minute duration or similar) over the entire working day. In addition to assisting the operation of the composting facility this measure will ensure that existing peak arrival rates of 'inbound' HGV's at the site no longer arise resulting in a more even distribution of HGV's over both (i) the entire day, and (ii) days of week.
- With the objective of minimising the number of HGV's traveling across the local L1409 'haul route' during the networks peak hour period (e.g. AM between 08:30 and 09:30) it is proposed that a delivery slot for this specific period each weekday is not issued to suppliers during these hours. To accommodate this initiative, it is proposed to allow 'inbound' vehicles enter the subject site during an initial delivery slot of 07:00-08:00, so that they have delivered and left the facility before the peak traffic hour.

With the objective of minimising the occurrence of site generated HGV traffic meeting one another when travelling in opposite directions) along the L1409 'haul route' a new 'notification and hold' management measure is proposed and is outlined below.

(a) All inbound HGV vehicle drivers traveling inbound to the composting facility will be required to contact (via hands free telephone) the plants office to inform the onsite operatives that they are approaching one of the 'strategic notification locations' detailed below and request permission to proceed straight to site via the R688 corridor and the L1409 'haul route'. The strategic 'notification' points have been identified as follows;

- M8 Southbound approach – Junction 7 which lies approximately 10.5 km from Rosegreen (R688 / L1409 junction).
- M8 Northbound approach – prior to departing motorway slip road at Junction 8 which lies approximately 8 km from Rosegreen (R688 / L1409 junction).
- N74 (Tipperary) / R505 (Dundrum) Eastbound approach – Cashel Rd Roundabout junction (N74 / R639) which lies approximately 8.5 km from Rosegreen (R688 / L1409 junction).
- R688 Northbound approach – prior to reaching Ballyclerahan which lies approximately 8km from Rosegreen (R688 / L1409 junction).

(b) In the potential situation where a HGV is about to leave the Milltown facility the outbound vehicle will be held on-site (until the inbound vehicle arrives) with the inbound vehicle driver instructed to proceed straight to site.

(c) In the potential situation where a HGV has just left the Milltown site the inbound vehicle driver will be instructed to proceed to the site. This instruction is considered appropriate as the outbound vehicle will have already cleared Rosegreen (and entered the R488 corridor) prior to the arrival of the inbound vehicle at Rosegreen due to the additional journey time it will take the inbound HGV vehicle to travel from each of the identified strategic notification points, compared to the shorter journey time that the outbound HGV require (to reach Rosegreen).

d) In any potential emergency where the on-site operative considers that it is inappropriate to instruct the inbound vehicle driver to proceed straight from the adopted strategic notification point into the Milltown facility via Rosegreen, the operative will instruct the inbound vehicle driver to proceed to the HGV lorry parking area (and await further instructions) as located at the Motorway Service Area (Topaz) at Junction 8 of M8. As illustrated in the photograph below this dedicated HGV parking area is now (due to recent enhancements) completely segregated from the service area.

This new arrangement will remove the need for inbound HGV lorry drivers to pull-in off the regional road carriageway whilst waiting for an instruction to proceed inbound to the Milltown facility thereby removing any road safety concerns relating to vehicles pulling in on the side of the road. Should a HGV be ready to leave the compost site within the next ten minutes; the outbound HGV will be 'held' on-site until such time that the 'inbound' vehicle has arrived on-site within the compost facility compound.

Over the last number of years' transport operators have increased the number of 'reverse load' HGV trips due to the operational and financial benefits such practices offer to the supplier / haulage operator. The practice considers the delivery of a full load of waste material followed by the same vehicle (now empty) being loaded with stage 6 compost. Whilst such practices have been relatively infrequent in the past they now account for over 24% (on average) of all HGV movements to/from the subject site (based upon 2015 data). It is reported that this trend has continued to increase during 2016 with such 'reverse load' practices now predicted to increase to levels where it has the potential to account for approximately 50% of all HGV traffic movements in the future. Nevertheless, for the purpose of this assessments 2017 and 2032 design years we have assumed a 'reverse load' average of only 39% (e.g. 2015 level of 24% plus 15%).

- The findings of both the site audit and the traffic surveys reveals that the opposing (e.g. vehicles traveling in opposite directions) vehicle movements along the L1409 'haul route' predominately consist of (i) car with car; (ii) Car with Van, and (iii) Car with HGV / Agricultural Vehicle. In the majority of such instances these opposing vehicle movements can generally safely maneuver past one another with not too much difficultly. Nevertheless, the analysis reveals that on rare occasions when HGV's meet either other HGV's or large agricultural vehicles one or both vehicles may (i) need to encourage onto the adjoining verge, or (ii) yield right of way to the other large vehicle; thereby ensuring that they can pass one another when traveling along the L1409 haul route. Notwithstanding the above mitigation measures (the implementation of which will actively reduce the occurrence of such opposing vehicle movements) a number of areas along the L1409 haul route have been identified which through the provision of localised road carriageway widening works will provide additional opportunities for opposing large HGV's and agricultural vehicles to safely pass one another (Pass-by facilities). Figures 2.5 and 2.6 of the Traffic and Transportation Assessment in Attachment L.1 indicates 3 potential sites which could readily accommodate such localised carriageway enhancements. In the context of the low level of vehicle flows travelling along the L1409 haul route (e.g. AADT of 300) and the other mitigation measures being implemented as part of the subject proposals; it is recommended that new pass-by facilities incorporating local carriageway widening works are implemented in Area 2, Area 3 and Area 5 with the objective of mitigating the impact of the subject development works.

Conclusion

Based upon the information and analysis detailed within the TTA (Attachment L.1) it has been demonstrated that;

- The analysis of the traffic survey data reveals that the L1409 'haul' route is lightly trafficked even considering the existing on-site operations currently direct all HGV traffic along this access route. In reference to the survey data in Appendix B of Attachment L.1, the busiest section of the L1409 haul route has an AADT value in the region of less than 300 vehicles.
- The proposed increased throughput from the existing 24,500 tonnes per year to up to 50,000 tonnes per year can be accommodated within the existing onsite facilities and plant. Accordingly, no additional construction activities are proposed onsite.

- The proposals will result, when operating at full capacity, in an additional 10 to 18 two-way vehicle movements on average per day.
- A package of mitigation measures (Reference Section 5.9 of Attachment L.1) have been identified to manage the impact arising from this modest increase in vehicle numbers across the local road network.
- The analysis of the adopted worst case scenario (e.g. month of January) demonstrated the specific impact of these additional vehicle movements upon the local road network as being sub-threshold in terms of TII and IHT 'material' thresholds.
- The assessment of the impact upon the operational performance of the key R688/L1409 junctions demonstrates that the proposed development will not generate a material impact at this junction. The PICADY analysis revealed that the modest increase in vehicle flows (as generated by proposed development) will have an insignificant influence upon the junction's performance (RFC, queue lengths etc.) with a significant level of reserve capacity remaining at this key junction in the 2032 post development scenario.
- The assessment of the seasonal peak development traffic flow periods (i.e. December-January) for the proposed development do not coincide with the local areas peak agricultural periods (i.e. August – September). Accordingly, the potential for such traffic to occur along the L1409 'haul' route is minimised.
- The DBFL site audit noted the presence of a number of informal vehicle passing opportunities (of sufficient size to enable HGV's and large agricultural vehicles to pass one another travelling in opposite directions) along the L1409 and the local lane leading to the subject site. These are presented in Figures 2.5 and 2.6 of Attachment L.1. There are existing pass-by locations that currently facilitate the low number of opposing vehicles (maximum of 14 to 16 during the peak hour periods) to conveniently and safely pass one another. These existing informal passing opportunities come in the form of local road widenings located;
    - along frontages of dwellings / farmyards,
    - at junctions with rural lanes / private accesses, and
    - a small number of localised wider road sections.
- Also, during the site audit, a total of three potential new pass-by areas were identified, the location of both the existing and potential pass-by areas are presented in Figures 2.5 and 2.6 of Attachment L.1.

In conclusion, it is considered that the impact on the surrounding road network, as a result of the proposed intensification of use at the Miltown Composting facility will be negligible compared to the existing on-site operations. This is based on the anticipated levels of traffic generated by the proposed development, and the information and analysis summarised in the above 'worst case' assessment.

Archaeology & Cultural Heritage

The site of the proposed development is located in the Townland of Milltown More (Baile an Mhuilinn Mór), Civil Parish of Mora (Baile na Móna), Barony of Middlethird (An Trian Meánach) in the county of Tipperary (Tiobraid Árainn). Milltown More townland is located 4.5 km southeast of Rosegreen and 5 km southwest of Fethard. The centre of the proposed development is situated at National Grid XY co-ordinates 615612/633471, latitude/ longitude co-ordinates 52º27'08''/07º46'13'' and is situated at c. 135 m OD. The townland name Milltown More is an anglicised rendering of the original Irish place name meaning "The settlement/ homestead of the big Mill". Milltown More as a place name is recorded as early as 1308-1309 on the Calendar of Ormond Deeds. Milltown is first depicted on the Down Survey map of 1656-1658.

The site is situated in an agriculturally productive, undulating landscape with several small hills interspersed with flat agriculturally productive lowland in the south east of county Tipperary. Overall the landscape in the vicinity of the proposed development site has moderate surface water resources as well as widely occurring agriculturally useful soil deposits. The proposed development site is situated near the crest of a low ridge. The landscape falls away to form a shallow valley to the west and south of the proposed development. The elevated site of the proposed development provides views of the surrounding countryside in all directions. The Galtees, Slievenamon and the Kill Hills are within the visual territory of the site.

The proposed increase in waste acceptance on site and cover over the reception yard will not have a negative impact on the heritage and archaeological elements on site. The proposed does not require any excavation works, in which will not impact the archaeological remains as depicted in Section 6 of the excavation report as seen in Attachment M.1. Secondly, as the increase in production onsite will not require any additional buildings or developments, it will not require excavation work and will not impact the heritage and areas of archaeological importance on site.

Section 9 of the excavation report in Attachment M.1 recommends that all archaeological remains that would have been impacted by the proposed development have been fully resolved through excavation (preservation by record) and no further mitigation measures are deemed necessary in relation to planning application (14/600521). Because the proposed development does not further impact on archaeological artefacts, it is not considered that further mitigation measures are required.

Material Assets

Projections of resource usage associated with the proposed increase throughput on site. No projections of resource usage were required for construction with regards to increased production on site as the existing facility can cater for the proposed increase in tonnage.

Land Use and Ownership

The facility is owned by the client (Milltown Composting ltd) and has been in operation at this location since 2004.

Local Settlement Patterns

The land use in the immediate surrounding area is agricultural and the site is located in a rural area used predominately for agriculture purposes, mainly grassland and tillage. A farm yard, approximately 600 meters (m) to the southwest, is the closest property to the site. The nearest residential property is approximately 900m to the north along the access laneway. There are three more residences within 1km of the site to the north, north east and south east of the facility. Neither the facility or its immediate environs have a significant leisure or amenity value.

The proposed development will have no impact on the existing land settlement pattern.

Local Infrastructure & Utilities

The proposed development will result in a limited increase in traffic volumes on local roads. However, the design capacity of the local road network will be more than adequate to facilitate the increase, as is highlighted in Chapter 12 and Attachment L.1.

Resource Consumption

The increase in the amount of organic waste material accepted at the site will result in additional diesel and electricity usage for the process and may require additional transporting and turning equipment such as JCBs etc. The proposed development will also require an increase in diesel usage used by delivery trucks bringing material to the facility and for increased use of facility equipment.

Assessment of Impact

The proposed development will have no impact on local amenity value and have a negligible impact on the local road network, as outlined in Attachment M.1. There will be an associated resource usage increase with the proposed development to operate the fixed and mobile equipment and the increased truck movements (i.e., increase in diesel usage used by delivery trucks bringing material to the facility). The proposed development will have no impact on the archaeology, architecture or cultural heritage in the vicinity of the proposed development.

Cumulative Impacts and Interaction Between Factors

A review was completed to assess the significance of the actual and potential direct, indirect and cumulative effects of the proposed development based on interaction between receptors. Only those receptors between which there is an identifiable existing or potential relationship are addressed.

Human Beings / Air

Composting activities have the potential to impact on human beings from odours, dust and air emissions from vehicle emissions. Effective mitigation measures are in place at the facility and will be sufficient in mitigating any potential emission from onsite activities. There will be a limited increase in exhaust gases from the additional vehicle movements. Given the location of the facility in relation to the closest residence and the surrounding land use in the area, the main source of odours is from agricultural activities outside of the facility. Based on on-going ambient air quality and emission monitoring results completed

of the site as part of their licence compliance (Chapter 10), the site does not have a negative impact on human beings and the surrounding environment in terms of air quality.

Human Beings / Traffic

The proposed increase in tonnage at the facility will result in increased traffic at the facility. The existing road network has the design capacity to handle the traffic related to the facility and the increase in traffic will have a negligible impact on residents or the public according to the Traffic and Transportation Assessment carried out by DBFL Consulting Engineers and Transportation Planners. Mitigation measures have been outlined in Chapter 12 to ensure minimum impact on neighbours of the facility.

Human Beings / Landscape

The proposed increase in tonnage at the site will not require any additional land or construction. The existing buildings are not clearly visible from the public road and the overall impact of the proposed development on the landscape is considered negligible due to its location and the surrounding area.

Ecology / Water

The location of the facility is not in close proximity to any SAC or SPA. The closest SAC is the Lower Suir which is approximately 7 km to the east of the site, outside Fethard. The closest water body to the facility is the River Moyle, which was a poor Q value as mentioned in Chapter 7 of this report. The Habitats Directive and Bird Directive do not apply to this water body according to water framework Ireland. The only concern for ecology and water quality is the ammonia (NH_4N) concentrations at SW1. The elevated concentrations main source is from condensate and surface water runoff from the main composting sheds. The construction of an enclosure over the reception yard and a new recovery system have been developed to mitigate the potential discharge of ammonia to surface waters. There is also a proposal to direct surface water runoff not associated directly with the process (i.e., yard and roof) to an existing wetland system on site prior to discharge. This would act as a further mitigation measure against potential impacts to surface water from the site.

Ecology / Air

As seen in Chapter 10, the existing air quality at the facility does not have a negative impact on the ecology of the surrounding area in terms of air quality and it is not expected that this will change with the proposed increase throughput.

Traffic / Ecology / Water

The development of three pass-by areas on the local road network may have the potential during construction to cause nuisance or impact to the local ecology, receiving waters or residents. The main impact to ecology would be disturbance of birds or mammals living in the immediate area. However, because the three locations are no located in protected areas or contain any known protected species the potential impact is considered minimal. Similarly, impacts from the development and construction of the pass-by areas may have potential for impacts to surface water receptors from run-off (e.g., sedimentation or fuel impacted water). Control measures put in place during construction (e.g., no re-fuelling at the

construction location and silt barriers to control sediment run-off) would protect the receptors during the pass-by construction phase.

Noise / Ecology / Human Beings

Chapter 9 of this report details the environmental noise monitoring results as required by the facility's Waste Licence. The main potential noise of noise pollution and impacts on the noise sensitive locations are from the movement of vehicles to and from the site. There have been occasional exceedances of the day time elv of 55 dB(A) seen in Table 9.2, which has been attributed to facility operations and outside sources elevating the L_{afMAX} readings. However, an increase in production at the facility will increase the traffic which will in turn have a negative impact on noise sensitive locations if the mitigation measures outlined in Chapter 9 are not followed.

Cumulative Effects

The assessment of impacts took into consideration the existing facility and the proposed increase in waste throughput at the facility. With the completion of the enclosure of the reception yard and recirculating system the main potential impact on the environment is related to traffic increase and the associated impact on the road network and noise impacts on neighbours.

However, the traffic review indicated that the increase in traffic associate with the facility would have a negligible impact on the local road network and the air quality assessment indicated that air emissions from increased exhaust output would be negligible.

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1.0 INTRODUCTION

This Environmental Impact Statement (EIS) was prepared to address the potential environmental impacts of the increased throughput of organic waste material through the Miltown Composting Systems Ltd. (Miltown) in-vessel aerobic composting facility located at Miltownmore, Fethard, Co. Tipperary. The proposed development will consist of continued aerobic digestion of organic waste within Shed 1 and include the new waste reception building located immediately west of Shed 1 and the covered yard and storage sheds to the east (Sheds 2 and 3). The proposed development will not involve any construction works and all activities will be completed within existing building structures. A site layout drawing of the proposed development is provided in Attachment A.1.

1.1 The Applicant

The Milltown Composting Ltd. (Milltown) in-vessel composting facility at Milltown More, Fethard, County Tipperary operates under an Environmental Protection Agency (EPA) Waste Licence (Ref. W0270-01) issued on the 9th of September 2010, a copy of which is included in Attachment A.2 The facility also has approval from the Department of Agriculture Food and the Marine (DAFM) to operate as a composting plant accepting Category 2 and Category 3 animal by-products, a copy of which is also included in Attachment A.3.

The facility originally began operations in 2004 under a Waste Permit (Ref. WP 019 02) issued by South Tipperary County Council. The predominant materials accepted was organic fines material from the treatment of mixed municipal solid waste, with smaller amounts of non-hazardous industrial and municipal wastewater sludges, and off specification animal feed. The actual amount processed on site is dependent on market conditions and fluctuates to meet market demand. The roll out of source segregated collection of household organic waste in the Southern Region, and the increased source segregation for commercial activities has increased the volume of organic bio-waste and organic fines material requiring biological processing in the Southern Waste Management Region. To meet the market demand for the requirements for increased biological treatment, Milltown proposes to increase its capacity to a maximum of 50,000 tonnes/year. The company has eight staff members managing and operating the facility.

Miltown Composting was established to biologically treat bio-waste collected by waste contractors in the form of food waste (i.e., brown bin) and the bio-stabilisation of organic fines material produced following physical treatment (i.e., tromelling) of mixed municipal waste by waste contractors as part of the diversion of biological municipal waste from landfill, thereby helping landfill operators meet their landfill diversion targets while simultaneously creating sustainable jobs.

The company's customer base encompasses waste collection companies collecting non-hazardous domestic and commercial waste in the Southern region and beyond. Current company operations are limited and involve only 8 staff (5 full time and 3 part-time) managing and operating the facility. Miltown's

objective is to provide an extended aerobic treatment and recovery outlet for biological waste materials collected in the Southern region and beyond. It is Miltown's ambition to provide this treatment option with respect to the surrounding environment and the best available technologies that can practicably be employed at the facility. The company's registered Headquarters are located at Sarfields House, Sarfileds Road, Wilton, Cork. A copy of the company certificate of incorporation is provided in Attachment A.4.

1.2 Facility Overview

Existing Facility

The site is located in the townland of Miltownmore, approximately 6 km to the east of Fethard and 10 km southwest of Cashel. The site is accessed by a laneway off the Rosegreen to Fethard L1409. The site encompasses approximately 5.9 hectares. It is at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the east. The main process buildings for the facility consist of the new feedstock reception building and the main compost process building (i.e., Shed 1) and enclosed compost storage areas east of Shed 1. The site surrounding the buildings consists of paved open yard areas; a weighbridge, office; canteen/changing room; storage shed; wetlands, bio filter and agricultural sheds. The area to the north of the facility buildings is undeveloped and formerly used for animal grazing, the area to the southwest of the facility building consists of a series of constructed wetlands, further south of the wetlands, to the east and to the west of the site are all agricultural lands.

The composting is an in-vessel system that accepts a broad range of compostable materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal waste water sludges and organic fines generated in the treatment of mixed municipal solid waste (MSW). The organic waste materials that can be accepted at the facility under the existing EPA Waste License are outlined in Table 1-1 below.

Table 1-1 Wastes Accepted at Milltown Facility

European Waste Catalogue (EWC) Code	Description
19 12 07	Waste from the mechanical treatment of food waste
20 02 01	Garden and Park waste from municipal sources
19 12 12	Organic Fines
02 01 03	Waste from agriculture – Plant tissue waste
20 01 08	Biodegradable kitchen & canteen waste

The treatment process, depending on the nature of the source material, can involve blending with bulking agents, composting in separate enclosed tunnels, maturation and post treatment to remove impurities. Due to the modular lay-out, the tunnels/bays can be operated independently, which provides flexibility in treating the different organic waste streams. The finished product can, depending on quality, be used for horticultural and agricultural purposes, or as landfill cover.

The site office consists of a porta cabin located at the north-west corner of Shed 1. A small canteen/changing room is located to the south west of Shed 1. There is an open- fronted bay inside the new reception building which is used for the storage of bulking materials (i.e. wood chips). A container located at the northern side of the canteen is used to store lubricating/hydraulic oil and the power washer. The covered yard and sheds 2 and 3 to the east of Shed 1 are paved with concrete. The biofilter is located on the southern side of Shed 1 and is accessed by an unpaved road running along the southern side of Shed 1. The site layout can be seen in Attachment A.1

Proposed Development

The proposed development will involve increased processing through the existing composting facility and will not include any construction works or extensions to existing buildings and as such the potential environmental impact from construction works have not been included as part of this study. However, due to the increased traffic volumes that will be associated with the proposed increased throughput a number of pull-in areas along the approach roads to the site have been proposed to allow larger vehicles to pass at strategic locations. These are discussed in Chapter 12 and Attachment L.1.

Miltown propose to increase the throughput of material at the composting facility to 160 tonnes per day (not exceeding 50,000 tonnes per annum) and to apply to the Environmental Protection Agency for an Industrial Emissions Licence to regulate the facility. The future licenced area will remain the same as the current waste licence area. The facility will continue to accept similar waste types to those already handled and processed at the site.

1.3 Composting Procedure

Waste Reception

Waste reception, blending and in-vessel composting is carried out in the new reception shed (i.e., covered yard area to the west of Shed 1) and Shed 1, which occupies an area of approximately 1,700 square meters (m^2). Compost storage is carried out in Sheds 2 and 3 to the east, which combined occupy approximately 2,840 m^2. In the reception area the organic waste material may, depending on composition, be shredded to enhance the composting process and source segregated household and catering organic waste may be screened to remove contaminants (e.g. plastic). Wastewater treatment sludges or fine structured materials are mixed with a bulking agent (e.g. shredded green waste) to improve porosity to help with the composting process.

Thermophilic Stage

The materials are transferred from the reception area to the vessels using the telescopic loaders. The material placed in each of the vessels is assigned an individual batch number to allow performance monitoring during the treatment stages and ensure the maintenance of accurate records. Five temperature probes are placed within the waste body before sheeting is placed over the top of the vessel. There is a computerized process control system, located in the site office, which records the temperature in each vessel to ensure that optimum composting conditions are maintained. In addition to the constant

temperature monitoring, oxygen levels are monitored daily using a hand held probe, the vessels consist of a forced air system and oxygen levels are maintained through on going positive air input to the vessels. The moisture level is assessed either visually or using a hand held moisture meter. In order to comply with the Animal By-Products Regulations a 'two barriers' system is operated in the MSW/kitchen/catering waste processing area. The objective is to ensure a maximum particle size of 40mm and to achieve a sustained temperature of 60^{o}C over two separate 48 hour periods. The MSW fines typically have a particle size less than 40mm and do not require additional processing. Large items are manually removed before the materials are composted. Maintaining the temperature at 60°C for the required two separate time periods is achieved by composting the same compost batch in two different vessels. In the first vessel, or Barrier 1, the process usually takes one week and when completed, the material is transferred to a second vessel (Barrier 2) where it is thoroughly mixed and again composted until the temperature requirements are met. To avoid cross contamination different loaders and buckets are used to move the materials into and out of the composting vessels.

Mesophilic Stage

When the material has completed the thermophilic stage it is removed from the second vessel and transferred to Sheds to the east where it is formed into windrows. Depending on the source of the waste materials it may be blended with wood chip to improve porosity. The windrows are formed using the telescopic loader and are turned as required using the loader. Temperature, oxygen and moisture content are regularly monitored and the moisture and turning regime revised as required to ensure optimum conditions. The mesophilic stage can take up to 6 weeks to complete and the finished compost may, depending on the nature of the source material, need to be screened to remove contaminants (e.g., plastics). These contaminants are stored on site, pending consignment to off-site disposal/treatment facilities.

Proposed Changes

Miltown propose to increase the throughput of material at the composting facility to approximately 160 tonnes per day (not exceeding 50,000 tonnes per annum) and to apply to the Environmental Protection Agency for an Industrial Emissions Licence continue to regulate the facility. The future licenced area will be the same as the current waste licence (Ref. W0270-01) for the site. The reception area for organic material will be in the new covered yard area, where delivery trucks will back in and deposit their loads to the new reception area. The reasoning for enclosing the reception area is to provide additional controls over potential impacts to surface water quality from the yard surface. The new roof construction will allow for diversion of rainwater from the yard surface and reduce potential interaction between residual waste material and surface water in that area. Any leachate or minor surface water discharge in that area will be controlled and managed through a dedicated drainage system (see Chapter 7).

The range of waste materials currently accepted at the composting facility (see Table 1.1) will not change. The site will continue to only accept biological waste material for treatment and it is envisaged that future operation of the facility will serve to accept increased volumes of these organic materials from waste collectors. The bio wastes (e.g., food waste and screened organic fines material) will continue to be

delivered to site in enclosed trailers for aerobic composting and stabilisation. The increased compost processing throughput at the facility will allow the facility deal with a greater volume of bio-waste and increase the facility's capability to service the Southern Regions waste needs.

The current hours for accepting waste at the facility under the existing waste licence are between 08:00 and 18:00 with the current operational hours at the facility between 06:00 to 18:00 Monday to Saturday. Under the proposed development Miltown Composting propose to slightly increase the waste acceptance hours to 07:00 – 19:00 and the operational hours to 06:00 – 19:00. The adjustment to acceptance and processing hours would be to spread out deliveries over the day to avoid traffic issues related to the site.

1.4 Site Planning History

The site was originally used for agricultural purposes. The cattle sheds and Shed 1 were originally constructed to house pigs, cattle, meat and bone meal and animal feed. In 2004 South Tipperary County Council granted planning permission and a Waste Permit for composting (in-vessel and maturation) to be carried out in Shed 1. In January 2008 there was a fire at the site, when the compost turner went on fire. The turner was destroyed and the fabric of Shed 3 was damaged. In March 2009 the Council granted planning permission for the retention of the offices, canteen/changing room, underground leachate storage tanks, and weighbridge. In 2014, Milltown made an application to Tipperary County Council to build an enclosure over the reception yard to the West of Shed 1, relocate communication masts, extend 3 agricultural amendment stores, incorporating existing staff facilities and associated site works. Permission for these works were granted on 12/8/2015. In 2015, Milltown made two applications to Tipperary County Council for the retention of an integrated constructed wetlands associated site works, which was granted on 08/02/2016. The full planning history of the site can be seen in the following Table 1-2 and Attachment A.5

Table 1-2 Milltown Composting Planning History

File Number	Application Status	Decision Due Date	Decision Date	Decision Code	Received Date	Development Description	Local Authority Name
8446	Incomplete Application				22/04/2008	Demountable office, toilet and canteen, 2 No. over ground water tanks, 1 underground tank, transformer...	Tipperary County Council
8565	Incomplete Application				13/05/2008	Demountable office, toilet and canteen, septic tank and percolation area, weigh bridge, 2 No. overgrow...	
8736	Incomplete Application				20/06/2008	Demountable office, toilet, canteen and changing room with septic tank, percolation area, 2 overgrow...	
8744	Incomplete Application				23/06/2008	(A) Change of use of existing Agricultural Stores 2 and 3 to commercial storage, (B) construction of...	
8834	Application Finalised	16/03/2009	03/03/2009	Conditional	16/12/2014	Demountable office, toilet, canteen and changing room with septic tank, percolation area, 2 overground tanks.	

14600521	Application Finalised	16/08/2015	12/08/2015	Conditional	16/12/2014	To construct an enclosure over the reception yard, relocate communication masts, extend 3 no. agricultural amendment stores, incorporating existing staff facilities and associated site works. The development forms part of lands on which a Waste Licence currently operates	
15600041	Incomplete Application				28/01/2015	Retention of an integrated constructed wetlands associated site works. The development forms part of lands on which a Waste Licence currently operates	
15600089	Application Finalised	10/02/2016	08/02/2016	Conditional	13/02/2015	Retention of an integrated constructed wetlands associated site works. The development forms part of lands on which a Waste Licence currently operates	

The introduction of the Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013 affect the licensed composting activities currently carried out by Miltown. Miltown are requesting planning permission to increase the daily throughput of at the facility to approximately 160 tonnes per day which would exceed the 75 tonnes per day threshold under the Industrial Emissions Licencing Regulations whereby the facility would require an Industrial Emissions (IE) licence. According to the First Schedule to EPA Act 1992 as amended;

11.4. (b): Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, (other than activities to which the Urban Waste Water Treatment Regulations 2001 (S.I. No. 254 of 2001) apply): (i) biological treatment.

This EIS has been prepared as part of the planning application to allow for the proposed increase in tonnage throughput whereby a licence review for an Industrial Emissions Licence would be required.

1.5 Requirement for an Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a process for anticipating the potential environmental effects of a development. EIA requirements arise from the European Communities Directive 85/337/EEC, as amended, on the assessment of the effects of certain public and private projects on the environment. The approach adopted in the Directive is that EIA is mandatory for all projects listed in Annex I of the Directive, (i.e. those which will always have significant environmental effects), while projects listed in Annex II of the Directive are determined on a case-by-case basis.

The EC Directive is implemented in Ireland by the European Communities (Environmental Impact Assessment) Regulations, 1989 to 2001. In addition to implementing the mandatory requirements of Annex I, these Regulations set thresholds for each of the project classes in Annex II. The Irish EIA system

is implemented primarily through integration of the requirements into the land-use planning consent system.

Schedule 5 of the Planning and Development Regulations, 2001, S.I. No. 600 of 2001, sets out a comprehensive list of project types and development thresholds that are subject to Environmental Impact Assessment. It has been determined that the proposed development falls within the scope of the European Communities (Environmental Impact Assessment) Regulations, 1989 to 2001, and Part 10 of the Local Government (Planning and Development) Regulations, 2007. The minimum information that must be contained in an EIS is specified in Part 10 of the Planning and Development Act, 2000 and Schedule 6 of the Planning and Development Regulations, 2001. The structure and content of this EIS has been based on the legislative requirements as set out in Part 10 of the Planning and Development Act, 2000 and Part 10 of the Planning and Development Regulations, 2001 and the guidance documents published by the Environmental Protection Agency.

Under the Planning and Development Regulations, 2001 (Schedule 5, Part 2, 11(b) and the EIA Regulations 1989 (as amended), the proposed development, being an "Installation for the disposal of waste with an annual intake greater than 25,000 tonnes", requires an Environmental Impact Statement (EIS). The function of the EIS is to:

- Establish the existing environmental characteristics of the proposed site;
- Provide details on the proposed development, its emissions and discharges; and
- Predict the likely significant effect(s) of the development on the environment.

This EIA has taken into account the Best Available Technology (BAT) Guidance Notes issued by the EPA "Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Waste Transfer and Materials Recovery", 2011. A listing of the BAT notes reviewed and deemed applicable to the proposed development as part of the operational requirements as an Industrial Emissions facility are provided in Attachment A.6

The Environmental Impact Assessment process and results are outlined in an Environmental Impact Statement (EIS) and Non-Technical Summary. The emphasis of the study is on prevention of impacts, with the resulting information taken into account by the appropriate planning authority when forming their judgements on whether the development should proceed. The EIS contains information on the scale and nature of the proposed development, a description of the existing environment, impact assessment of the proposed development and mitigation measures to control and/or reduce the impact on the receiving environment.

The structure and content of this Environmental Impact Statement has been based on the following Guidance publications; "Advice Notes on Current Practice in the preparation of Environmental Impact Statements, EPA (2003)", and "Guidelines on the information to be contained in Environmental Impact Statements, EPA (2002).

To allow for a consistent and simplistic approach to the EIS document when addressing the various components of the environment a systematic structure was adopted for the main section of the EIS, known as a "Grouped Format". The structure was used for each particular environmental aspect outlined below. The EIS is presented in three volumes:

- Volume I: Non-Technical Summary;
- Volume II: Environmental Impact Statement;
- Volume III: Attachments;

A breakdown of the EIS sections is outlined in Table 1-3.

Table 1-3 EIS Document Outline

EIS Section	Description
Volume I – Non Technical Summary	This document provides an overview and summary of the main EIS using non-technical terminology. It is a means for non-professionals to review the information included in the main EIS document. It is a stand-alone document and provides a clear and concise summary of the existing environment, characteristics of the development and mitigation measures for the development.
Volume II – Main EIS Document	To allow for ease of presentation and consistency when considering the various elements of the environment, a systematic structure will be adopted for the main body of the statement.
Chapter 1	Provides an introduction and a brief background to the project, the legislative requirements under which the document is prepared, EIS consultation and scoping the layout of the EIS.
Chapter 2	Detailed description of the existing site infrastructure, facility operations, nuisance controls, environmental sampling and monitoring and facility management.
Chapter 3	Detailed description of the proposed development, site infrastructure, facility operations, nuisance controls, environmental sampling and monitoring and facility management.
Chapter 4	Details the alternatives to the development accounting for planning, development plans and waste management policies.
Chapter 5	Human Beings/Socio-Economic Impacts
Chapter 6	Flora and Fauna
Chapter 7	Water
Chapter 8	Soils/Geology and Hydrogeology
Chapter 9	Noise
Chapter 10	Air Quality and Climate
Chapter 11	Landscape and Visual Impact
Chapter 12	Traffic
Chapter 13	Archaeology & Cultural Heritage
Chapter 14	Material Assets
Chapter 15	Interaction of the Foregoing
Volume III - Attachments	All supporting documentation and drawings

1.6 Scoping of the Environmental Impact Assessment

As part of the EIA process, Miltown contacted the Tipperary Co. Co. Planning Department (Planning Authority) and a formal pre-planning meeting was held on February 26th, 2016 to discuss the scope and extent of the proposed development and a follow up meeting was conducted on November 18th, 2016.

JRE, in consultation with Miltown, also undertook a process of consultations with interested parties in the area of the composting facility. In accordance with Section 4 of the Advice Notes on Current Practice in the preparation of Environmental Impact Statements (EPA, 2003), the consultation process consisted of consultation with competent bodies, statutory bodies and interested parties. The primary objective of involving interested parties in the Environmental Impact Assessment process is to aid scoping of the Environmental Impact Assessment and to allow parties to highlight issues of concern.

1.7 Technical Difficulties and Availability of Data

No significant technical difficulties or lack of data were experienced in preparing the Environmental Impact Statement for the proposed development.

1.8 Study Team & Contributors

JRE has completed this EIA with inputs from Matrix Environmental, DBFL Consulting Engineers and Miltown Composting Ltd.

1.9 Governing Strategy and Policy

This section describes the planning policy statements that affect the proposed increased throughput at the facility and describes how it is consistent with national and regional planning and waste management objectives. It is based on the South Tipperary County Development Plan 2009 - 2015, the Southern Region Waste Management Plan and National Waste Policy and Regulations.

National Spatial Strategy

The National Spatial Strategy 2002-2020 (NSS) is a 20-year planning framework for all parts of Ireland. It aims to achieve a better balance of social, economic and physical development between regions. Its focus is on the relationship between people and the places where they live and work. The Strategy seeks ways to unlock potential for progress, growth and development in a more balanced way across Ireland, supported by more effective planning. Balanced regional development is fundamental to the programme for Government.

The commitment to prepare the spatial strategy was included in the National Development Plan 2000 – 2006. Structures and mechanisms to integrate the Strategy into planning and activities at government, departmental, state agency, regional and local levels have been put in place. The Strategy has been rolled out through regional and local authorities, starting with the preparation and adoption of regional planning

guidelines. Integrated planning frameworks will be put in place to set the foundations for the process of strengthening, consolidating and developing new and existing gateways and hubs.

A key policy link between national development priorities and local planning was put in place with the adoption in mid-2004 of Regional Planning Guidelines. At County and City level, Integrated Planning Frameworks are in place for almost all gateways.

Regional Planning Guidelines

The Regional Planning Guidelines for the South-East Region, 2010 - 2022, sets out the aim to "Invest in long-term environmental sustainability to achieve our national goal of preserving the integrity of our natural environment for future generations as well as meeting our international responsibilities and Climate Change obligations; this also involves a more balanced, efficient and sustainable use of our land resources" as referred to in Section 1 of the Planning Guidelines.

South Tipperary County Development Plan 2009

The South Tipperary Development Plan 2009 sets out Tipperary County Council's policies and objectives for the proper planning and sustainable development in the south of the County from 2009. County Development Plans have had their lifetime extended until such a time as a new single County Development Plan is produced for Tipperary. The preparation of a new, single County Development Plan cannot commence until a new Regional Spatial and Economic Strategy is made by the Southern Regional Assembly. In order to ensure consistency between the two Plans a variation process was carried out to both Plans. Variations Number 2 of the North Tipperary County Development Plan 2010 and Variation Number 2 of the South Tipperary County Development Plan 2009 was adopted on the 14th December 2015.

In preparing the Tipperary County Development Plan (CDP) 2009, South Tipperary County Council had regard to the relevant National and Regional Regulations, plans, policies and strategies which relate to the proper planning and sustainable development of the area, including:

- The Planning and Development Act 2000 (as amended)
- The National Spatial Strategy 2002 – 2020
- The National Development Plan 2007 – 2013
- South East Regional Planning Guidelines 2004 – 2020
- Sustainable Development: A Strategy for Ireland 1997
- National Climate Change Strategy 2007-2012
- The Water Framework Directive 2000
- Draft Flood Guidelines (DoEHLG September 2008)
- Sustainable Residential Development in Urban Areas 2008
- Delivering Homes, Sustaining Communities 2007
- Sustainable Rural Housing Guidelines 2005

The CDP allowed for the preparation of separate local area plans (LAPs) for a number of areas, including

Fethard which is the closest town to the Miltown composting facility. The fethard LAP is described in section 1.9.4.

Local Area Plan

The closest local area plan to the site is the Fethard Local Area Plan (LAP), 2011. The LAP contains an overall strategy setting out:

- the future development of the area,
- land use zonings promoting particular use in appropriate locations,
- policies and objectives with the intent of guiding development, and
- development guidelines which will be applied to future planning applications in the area.

This will ensure that such development occurs in a planned and orderly manner. It addresses:

- The need to develop a core strategy for the future planning and development of the area
- The need to protect the heritage of the town centre and the distinct environmental quality of the study area
- The need for increased community services and facilities, such as recreational facilities, commercial and retail facilities, etc.
- The need to provide a range of new housing appropriate to the needs of the population in conjunction with the above services and facilities
- The need for adequate economic and employment opportunities in the area
- The need to provide various types of open space to meet the demands of a growing community (e.g., playgrounds, playing fields and public parks).

The LAP is for an area located approximately 4.43 km east of the site and does not have a direct impact on the area where the site is located. Therefore, it is not considered that any development at Miltown would impact on the Fethard LAP.

Zoning

The Miltown site is outside the LAP boundary for Fethard and under section 3.5 on settlement strategy Miltown is at the bottom of the settlement hierarchy (open country side). Under rural settlements Fethard is described as a district service centre. These centres are robust settlement forms that have a capacity to accommodate a reasonable degree of growth and an ability to facilitate employment and other appropriate uses. The District Service Centres are so designated because they are important resources for their sub-region, providing community, commercial and infrastructural facilities and services with a population base to maintain them. These settlements have also been targeted for infrastructural improvements (upgrade of water supply and waste water treatment plants, communications and improved transportation linkages) and again, have the supporting environment to enable this to happen.

Strategic Environmental Assessment (SEA)

It is a requirement of the Planning and Development Acts 2000-2010 that a LAP shall contain information on the likely significant effects on the environment of implementing the plan. The purpose of the SEA Directive is to ensure that environmental consequences of certain plans and programmes are identified and assessed during their preparation and before their adoption and that the plans or programmes are modified where adverse impacts are likely and/or that appropriate mitigation measures are incorporated to alleviate potential impacts. The DoEHLG have prepared guidelines on the implementation of the SEA process into Irish plan making. SEA Screening is required in the case of an LAP where the population concerned is less than 10,000. An SEA screening exercise has been undertaken and the SEA Screening Report concluded that an SEA was not required for the Fethard LAP

Archaeology

Section 6.4.3 of the South Tipperary Development Plan 2009 deals with archaeological heritage and the obligations of the state in relation to planning. The European Convention on the Protection of the Archaeological Heritage (Valetta, 1992) was ratified by Ireland in 1997. Article 1(3) of the Convention states that 'archaeological heritage shall include structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water. 'Therefore the archaeological heritage of South Tipperary includes any archaeological site that may not have been recorded yet, as well as archaeology beneath the ground surface and the context of any site. The Convention provides the basic framework for policy on the protection of the archaeological heritage in Ireland. The obligations of the State under the Convention relating to the planning and development process can be summarised as follows:

i. Providing for statutory protection measures, including the maintenance of an inventory of the archaeological heritage and the designation of protected monuments and areas;
ii. The authorisation and supervision of excavations and other archaeological activities;
iii. Providing measures for the physical protection of the archaeological heritage including acquisition or protection by other means; and,
iv. Providing for consultation between archaeologists and planners in relation to the drawing up of development plans and development schemes so as to ensure that full consideration is given to archaeological requirements.

The Irish Archaeology Society and National Monument Service provide an online mapping service for the identification of archaeological sites in Ireland. A number of archaeological sites have been identified in the vicinity of Milltown Composting facility. These can be seen in Attachment M.1

A Rath ringfort has been identified within the facility, aerial photograph reference (GSI S.656/5). The next site was identified as an enclosure reference (S.655/654) located approximately 380.4m to the east of the facility. A moated area was identified approximately 590.3 m to the northwest, reference (GSI S.656/5). Finally, a graveyard and ritual site (Holy Well) was identified approximately 900 m to the south west. However, the well has since been filled or removed as part of drainage works in the area. The remaining locations seen in Attachment M1 are not of any significance.

1.10 Waste Management Strategy & Policy

Section 7.8 of the South Tipperary Development Plan 2009 – 2015 discusses the objectives for waste management in South Tipperary with reference to the Joint Waste Management Plan for the South East (JWMPSE), 2006-2011. The main objectives included

- Promote waste prevention and minimisation through source reduction, producer responsibility and public awareness.
- Provide a management plan for the recovery/recycling/disposal of waste arising on a regional basis.

The JWMPSE was replaced in 2012 by the Southern Region Waste Management Plan which is discussed in more detail in section 1.10.2.

National Waste Management Policy

A number of national waste management policies have been implemented since the initial national waste management policy document "Changing Our Ways" was issued by the Department of the Environment and Local Government in 1998. The policy was linked to the EU waste management hierarchy and was supported by EU legislation (i.e., EU Landfill Directive 99/31/EC) that set targets for reducing volumes of biodegradable waste based on 1995 figures. The targets were:

- Minimum 25% reduction by 2010 (4-year derogation);
- Minimum 50% reduction by 2013 (4-year derogation); and
- Minimum 65% reduction by 2016.

The follow up Policy statement in 2002 "Preventing and Recycling Waste – Delivering Change" looked at initiatives to achieve targets in the Waste Hierarchy and achieve increased recycling rates nationally.

In 2004 the document "Waste Management – Taking Stock and Moving Forward "identified and acknowledged the improved recycling rates being achieved in Ireland since 1998 and that increased efforts were also required.

The EU Waste Framework Directive 2008/98/EC was introduced to ensure coordination on waste management within Member States to limit waste generation and optimise waste management and treatment options. The Directive was transposed into Irish law by the European Communities (Waste Directive) Regulations 2011. Under the requirements of the Directive Member Stares must reuse or recycle 50% of certain household wastes and reuse, recover or recycle 70% of C&D waste by 2020.

The most recent Waste Policy Statement "A Resource Opportunity- Waste Management Policy in Ireland 2012" is also based on the original EU waste hierarchy and includes requirements for waste prevention, reuse, recycling, recovery and disposal. The document includes ways that the Country can reduce reliance on finite resources, almost entirely reduce dependence on landfill and minimise the impact of waste

management on the environment. A key objective of the policy is that when waste is created the maximum value should be extracted from it by ensuring that it is recycled, reused or recovered.

Southern Region Waste Management Plan

In 2012, the Government's blueprint for a circular waste economy, as set out in *A Resource Opportunity– Waste Management Policy in Ireland*, established a new framework for the provision of effective and efficient waste management services through the establishment of three waste management planning regions. The Southern Region (SR), serving a population of 1,541,439, includes the administrative areas of the following local authorities – Carlow County Council, Clare County Council, Cork City Council, Cork County Council, Kerry County Council, Kilkenny County Council, Limerick City & County Council, Tipperary County Council, Waterford City & County Council and Wexford County Council.

The new approach aims to promote the following:

- prevent or minimize the production and harmful nature of waste,
- encourage and support the recovery of waste,
- ensure that such waste as cannot be prevented or recovered is safely disposed of, and
- address the need to give effect to the polluter pays principle, in relation to waste disposal.

Section 15.4.1 of the Southern Region Waste Management Plan assessed the waste projection in Ireland and according to the ESRI, reliance on landfill is projected to "*decrease significantly below current levels with recovery and recycling activities expected to dominate"*. It anticipates that incineration and other treatment technologies such as composting, refuse derived fuel manufacture etc., will play a key role in achieving waste management plan policy targets. The ESRI also notes that "*figures suggest that, while pre collection activity (e.g. segregation waste for recycling) is important, increasingly greater capacity will be needed in post collection treatment of the residual bin*". This indicates that the post collection processing of residual waste including the removal and treatment of the organic fraction is projected to increase.

Section 19 of the Southern Region Waste Management Plan (SRWMP) indicates three main targets. Of the three targets, two are directly related to ensuring that recycling materials and reducing direct disposal of unprocessed waste to landfill. The main targets that relate the development of the Miltown facility are:

- Target 2 – achieving a recycling rate of 50% of managed municipal waste by 2020
- Target 3 – reducing to 0% the direct disposal of *Reducing to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous Recovery practices*". *(Unprocessed residual waste means residual municipal waste collected at kerbside or deposited at landfills/CA sites/transfer stations that has not undergone appropriate treatment through physical, biological, chemical or thermal processes, including sorting)*

To achieve the targets the SRWMP indicates that there will be a need to increase the level of kerbside collection, implement and regulate a pay-by-weight system, plan and develop higher quality waste treatment infrastructure (including biological treatment) and grow the biological treatment sector, in particular composting and anaerobic digestion.

Under the Waste Framework Directive, the recycling of waste is defined as ""any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes" and "includes the reprocessing of organic material". Under this definition biological treatment is clearly an activity which sits on the recycling tier of the hierarchy, including the biological treatment of organic fines.

Section 16.4.6 sets out the levels of potentially composted waste within the Southern Region and the policy as outlined below:

"*In the region 137,300 tonnes of treatment capacity is authorised to treat animal by-products between local authority and EPA sites*. *The national quantity of municipal brown bin material being treated in 2012 was over 94,000 tonnes and it is expected that this will continue to grow over the plan period, with a heightened focus on increasing the separate collection of food waste. Over 37,371 tonnes of garden waste was treated nationally in 2012, primarily by composting. Bio-waste materials tend to move shorter distances for treatment by comparison to residual wastes, which may be hauled across the country to treatment outlets. Over the plan period it is expected that bio-waste material generated will be principally treated within the region, and the capacity need has been examined on the basis of serving regional needs. This approach will support the development of treatment facilities of varying scales*".

The above increased penetration of segregated food waste collections from household and commercial customers is expected to increase the quantities of this stream collection. It is expected that the food waste generated in each region will not be transported long distances but will rather be primarily treated in each region. The nature of the material, which is wet and odorous, can limit the distances such loads are transported although the current movement of biowaste to Northern Ireland is noted. The treatment capacity put forward in the proposed development is to ensure that there is sufficient capacity approved, in particular facilities which have animal by-product approval, and that there is a balanced distribution of capacity in the region.

Also in section 16.4.6 the policy in relation to biological treatment and composting outlines that;

- The waste plan supports the development of at least 40,000 tonnes of additional biological treatment capacity in the region for the treatment of bio-waste (food waste and green waste) primarily from the region to ensure there is adequate active and competitive treatment in the market. The development of such treatment needs to comply with the relevant environmental protection criteria in the plan
- The waste plan supports the development of biological treatment capacity in the region in particular anaerobic digestion; to primarily treat agro-wastes and other organic wastes including industrial organic waste. The development of such treatment facilities need to comply with the relevant environmental protection criteria in the plan

As outlined in section 16.4.6, the national quantity of municipal brown bin material being treated in 2012 was over 94,000 tonnes and it is expected that this will continue to grow over the plan period, with a heightened focus on increasing the separate collection of food waste. Over 37,371 tonnes of garden waste was treated nationally in 2012, primarily by composting. Biowaste materials tend to move shorter distances for treatment by comparison to residual wastes, which may be hauled across the country to treatment outlets. Over the plan period it is expected that biowaste material generated will be principally treated within the region, and the capacity need has been examined on the basis of serving regional needs. This approach will support the development of treatment facilities of varying scales.

The need for additional capacity in the region has been determined by examining the current levels of biological capacity in the region, specifically the capacity which is consented by the DAFM to accept animal by-products, and the expected increases in biowaste and organic waste which is expected to come into the market over the plan period. The increased penetration of segregated food waste collections from household and commercial customers is expected to increase the quantities of this stream collected and requiring treatment. A review of the licensed and permitted compost facilities currently operating in the Southern Region was completed and are outlined in Table 1-3.

Table 1-3: Licensed and Permitted Compost Facilities Operating in Southern Waste Region

Facility Name	Permit/ Licence Ref.	Authorized Annual Tonnage
Acorn Recycling Ltd.	W0249-01	45,000
Custom Compost	W0123-01	43,750
McGill Environmental	W0180-01	20,800
Molaisin Compost Ltd.	W0245-01	20,000
Waterford City Council	W0234-02	22,000
O'Toole Composting	WFP-CW-14-0005-01	24,999
Waddock Composting	WFP-CW-13-001-01	24,999
Cremins Farm Compost Ltd	WFP/LK/2012/23A/R2	16,000
OD Agri Ltd t/a OD Recycling	WFP-TS-10-0002-04	17,000

Based on the feedstock material to the Custom Compost site (i.e., poultry litter and horse manure) and to the Waterford City Council facility (i.e., biowaste and industrial non-hazardous organic liquids) these facilities would not compete directly with Miltown in terms of the feedstock material they process. The existing estimated shortfall of 40,000 tonnes of biological treatment capacity in the Southern Waste Region is based on the current capacities of composting facilities existing in the Southern Waste Region. Therefore, it is determined that there is capacity for the extension of the Miltown facility to treat approximately 25,000 tonnes of the 40,000 tonne shortfall identified in the Southern Waste Region Plan.

Biological treatment facilities for the primary and co-treatment of agricultural waste, along with bio-wastes and other organic wastes, are also required in the region and the waste plan supports the

development of such facilities. Managing waste from a growing agricultural sector is a challenge which needs to be addressed to support Ireland's growing agri-food sector.

The requirements of the SRWMP indicate the need for new waste management methods, moving away from the previous method of landfill, and biological treatment is clearly an activity which sits on the recycling tier of the hierarchy. It is considered that the proposed increase of throughput at Miltown fits well with the current and future policy of the SRWMP. To meet the targets set out in the SRWMP there is a requirement for the increased processing of municipal waste prior to landfill with a subsequent need for treatment of the residual organic fine fraction resulting from that treatment as well as treatment of source segregated brown bin waste material.

1.11 Need for the Project

A number of National waste management policies have been implemented since the initial national waste management policy document "Changing Our Ways" was issued by the Department of the Environment and Local Government in 1998. The policy was linked to the EU waste management hierarchy and was supported by EU legislation (i.e., EU Landfill Directive 99/31/EC) that set targets for reducing volumes of biodegradable waste based on 1995 figures. Under this directive a target was set that biodegradable waste in BMW must be reduced by 65% by 2016, compared with 1995 figures.

The Southern Waste Plan supports the development of at least 40,000 tonnes of additional biological treatment capacity in the region for the treatment of bio-waste (food waste and green waste) primarily from the region to ensure there is adequate active and competitive treatment in the market. The waste plan also supports the development of biological treatment capacity in the region in particular anaerobic digestion (AD); to primarily treat agro-wastes and other organic wastes including industrial organic waste. However, in the absence of AD facilities in the Southern Region there is a continued need for aerobic treatment of organic waste materials.

Additionally, as of July 2013 the Waste Management (Landfill Levy) (Amendment) Regulations 2013 (SI No 194 of 2013) increased the landfill levy by 10 euro to 75 euro per tonne for each tonne of waste disposed of at authorised landfill facilities. This levy will make pre-treatment more cost effective - particularly in respect of biodegradable municipal waste (BMW) - thereby reducing the quantities and costs of residual disposal to landfill.

Miltown's decision to increase the tonnage throughput at their existing facility is based on the need to meet market demands for organic waste recovery and stabilisation in the Southern Region and to meet the needs of the National Waste Management Plan and the Southern Waste Management Plan to treat biodegradable wastes to produce a useful product from waste and to reduce as far as possible the volume of biodegradable waste being disposed of to landfill.

The increased throughput is as a result of market pressures. A number of waste collection and process companies have requested increased capacity for organic materials they collect. Copies of support for increasing the material throughput at the facility are included in Attachment A.7.

The existing composting facility is suited for the recovery of organic waste materials for the following reasons:

- The facility is in a good location in terms of distance from waste generation areas such as Cashel, Thurles, Carrick on Suir, Kilkenny and the South East.
- The facility is situated in a secluded rural area with the closest sensitive receptor located approximately 900m away;
- The proposed activities are compatible with existing operations taking place on-site;
- The facility has existing controls on site to mitigate potential environmental impacts from the existing or proposed facility;
- Additionally, with new mitigation measures in place any leaks or spillages will be contained within the facility and managed appropriately to prevent contamination.

If the project were not to proceed then it would result in reduced tonnages of biodegradable waste being treated within close proximity to its source and require an increase in transportation of waste material from the Southern Region to other composting processing facilities or to landfill. Miltown complete a recovery activity with the biological treatment of organic fines, transforming the organic fraction material into a lighter and dryer compost like output with a much reduced moisture content. This also facilitates the separation of ferrous metals which would not otherwise be separated due to the wet sticky nature of the organic material before it is composted for recycling. Miltown also separate out the oversized light plastic which go as recovery, to make a Solid Derived Fuel (SRF) for incineration in a cement kiln thereby moving that part of the process up to the recycling level of the waste pyramid and helping to achieve Target 2 of the SRWMP "Achieving a recycling rate of 50% of managed municipal waste by 2020".

The targets outlined in the SRWMP look to increase the capacity for biological treatment of bio waste in the region. However, the introduction of the pay by weight charging system that was to be brought in on July 1st 2016 has been postponed. Therefore, the projected increase in source separated bio-waste has not yet taken place and the production of organic fines from the processing of municipal waste has continued. Even in areas that have a three bin system EPA waste characterization surveys have found significant quantities of BMW in residual bins.

To be flexible in the market place Miltown are proposing to increase the capacity of the Miltown Composting facility to be in a position to cater for the predicted increase in source segregated bio-waste (i.e., brown bin waste) as well as continuing to currently stabilize organic fines from waste processing facilities. As already outlined in 16.4.6 of the SRWMP, biological treatment is an activity which sits on the recycling tier of the hierarchy. It should be noted that biological treatment of organic fines is considered a recovery activity and increasing the capacity would help meet the requirements of the SRWMP targets.

1.12 Conclusions

The proposed development is consistent with current land zoning use. The proposed changes will not constitute a significant impact and an increase in tonnage throughput will allow for further consistency

with the national and regional waste policy objectives. Additionally, it will help the Southern Region to achieve the maximum value from the organic waste stream and will help meet national and regional recovery targets.

2.0 EXISTING FACILITY

2.1 Introduction

This chapter describes the existing facility and current activities. It outlines the environmental controls in place at the facility and used on a daily basis during operations. Where relevant, other chapters of the EIS are referenced where they contain more detailed descriptions or evaluations of impacts or control measures.

2.2 The Applicant

The Milltown Composting Ltd. (Milltown) in-vessel composting facility at Milltownmore, Fethard, County Tipperary operates under an Environmental Protection Agency (EPA) Waste Licence (Ref. W0270-01) issued on the 9th of September 2010, a copy of which is included in Attachment A.2. The facility also has approval from the Department of Agriculture Food and the Marine (DAFM) to operate as a composting plant accepting Category 2 and Category 3 animal by-products, a copy of the permit is included in Attachment A.3.

The facility originally began operations in 2004 under a Waste Permit (Ref. WP 019 02) issued by South Tipperary County Council. The predominant materials accepted was organic fines material from the treatment of mixed municipal solid waste, with smaller amounts of non-hazardous industrial and municipal wastewater sludges, and off specification animal feed. The actual amount processed on site is dependent on market conditions and fluctuates to meet market demand. The commencement of source segregated household and commercial organic waste in the Southern Region has increased the volume of organic bio-waste as well as organic fines material requiring biological processing in the Southern Waste Management Region. To meet the market demand for the requirements for increased biological treatment, Milltown proposes to increase its capacity to a maximum of 50,000 tonnes/year.

The roll out of source segregated collection of household and commercial organic waste in the Southern Region will increase the requirement for biological treatment capacity due to the anticipated increase in source segregated 'brown bin' wastes as well as the on-going requirement for treating organic fines material produced from physical treatment of MSW. Milltown has been approached by a number of customers requesting increased throughput to process organic waste materials and the company are reacting to these requests by requesting a proposed increase in capacity to 160 tonnes/day, with a maximum of 50,000 tonnes/year. The company has eight staff (five full time and three part-time) members managing and operating the facility.

It is Miltown's objective to provide a recovery outlet for bio-waste materials collected in the southern region and beyond and to do that with respect to the surrounding environment and the best available technologies that can practicably be employed at the facility. The company's Headquarters are at Sarfields

House, Sarfileds Road, Wilton, Cork. A copy of the company certificate of incorporation is provided in Attachment A.4

2.3 Current Facility Overview

The current facility is an aerobic composting plant that accepts a broad range of compostable materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal waste water sludges and organic fines generated in the treatment of mixed municipal solid waste (MSW). The treatment process, depending on the nature of the source material, can involve blending with bulking agents, composting in separate enclosed bays, maturation and post treatment to remove impurities. Due to the modular lay-out, the composting tunnels/bays can be operated independently, which provides flexibility in treating the different organic waste streams. The finished product can, depending on quality, either be used for horticultural and agricultural purposes, or as landfill cover.

The waste feedstock material is received in the new reception shed located immediately to the west of Shed 1, which occupies an approximate area of 1,700 square meters (m^2). Storage is carried out in sheds to the east, which combined occupy an approximate area of 2,840 m^2. The site office is a porta cabin located at the north-west corner of Shed 1 and a small canteen/changing room is located to the south west of Shed 1. A Container located at the northern side of the canteen is used to store lubricating/hydraulic oil and the power washer. The covered yard to the east of Shed 1 and the new reception building to the west of Shed 1 are paved with impermeable concrete. The biofilter is located on the southern side of Shed 1 and is accessed by an unpaved road running along the southern side of Sheds 1 and 2.

The materials are transferred from the reception area to the vessels using the telescopic loaders. The material placed in each of the vessels is assigned an individual batch number to allow performance monitoring during the treatment stages and ensure the maintenance of accurate records. Five (5 No.) temperature probes are placed within the waste mass before sheeting is placed over the top of the vessel. There is a computerised process control system, located in the site office, which records the temperature in each vessel to ensure that optimum composting conditions are maintained. In addition to the constant temperature monitoring, oxygen levels are monitored daily using a hand held probe. The moisture level is assessed either visually or using a hand held moisture meter. In order to comply with the Animal By-Products Regulations a 'two barriers' system is operated in the MSW/kitchen/catering waste processing area. The objective is to ensure a maximum particle size of 40mm and achieve a sustained temperature of 60°C over two separate 48 hour periods (the MSW fines as delivered typically have a particle size less than 40mm). Large items are manually removed and reused back in the process as bulking agents for future compost batches.

Maintaining the temperature at 60°C for the two separate time periods is done by composting the same batch in two different bay vessels. In the first vessel, or Barrier 1, the process usually takes one week. When completed, the material is removed to a second Vessel-Barrier 2-where it is thoroughly mixed and

again composted until the temperature requirements are met. To avoid cross contamination different loaders and buckets are used to move the materials into and out of the vessels.

When the material has completed the thermophilic stage it is removed from the Vessel Barrier 2 and matured. Temperature, oxygen and moisture content are regularly monitored to ensure optimum conditions. The mesophilic stage can take up to 6 weeks. When complete the compost may, depending on the nature of the source material, be screened to remove oversized contaminants. These are stored on-site in Shed 3 pending consignment to off-site disposal/treatment facilities.

In order to increase visibility within Shed 1 and treat odorous air, an air extraction fan removes air from the building and channels it into the woodchip biofilter located to the south of the building. The biofilter consists of a large concrete box, in which a thick layer of coarse shredded wood chips is placed, with a manifold and a system of air ducts on the bottom to ensure an even distribution of air. The biofilter is visually monitored every working day by the operator on duty. This includes a check on the moisture content and temperature. The moisture content is the single most important parameter for the efficient microbial activity. For a typical natural biofilter media (e.g. wood chips plus peat) the moisture content should be maintained in the range of 40 to 60 percent. Water is applied to the filter as required to ensure optimum efficiency. Every 1 - 2 years, part of the biofilter material (wood chips) are replaced by fresh material, in order to maintain the odour removal efficiency of the filter. Since bio-filtration is a microbiological process, a sudden mechanical breakdown or failure of a complete biofilter is unlikely to happen. However, in the unlikely event a failure of the biofilter, or during the regular replacement of biofilter media, no process air will be directed to the biofilter.

Five people are currently employed full time at the facility and three are employed part time comprising of managers and operatives. The current operational hours at the facility are 06:00 to 18:00 Monday to Saturday.

Services

Three phase electricity is provided by the Electricity Supply Board. Water for potable and sanitary use is obtained from the on-site well. There is no connection to a foul sewer and sewage from the toilets and canteen is currently discharged to an on-site septic tank located to the southwest of Shed 1. Leachate from the process is recirculated back into the process and surface water from the yard and building roofs are directed to a surface water drain on-site.

Surrounding Land Use

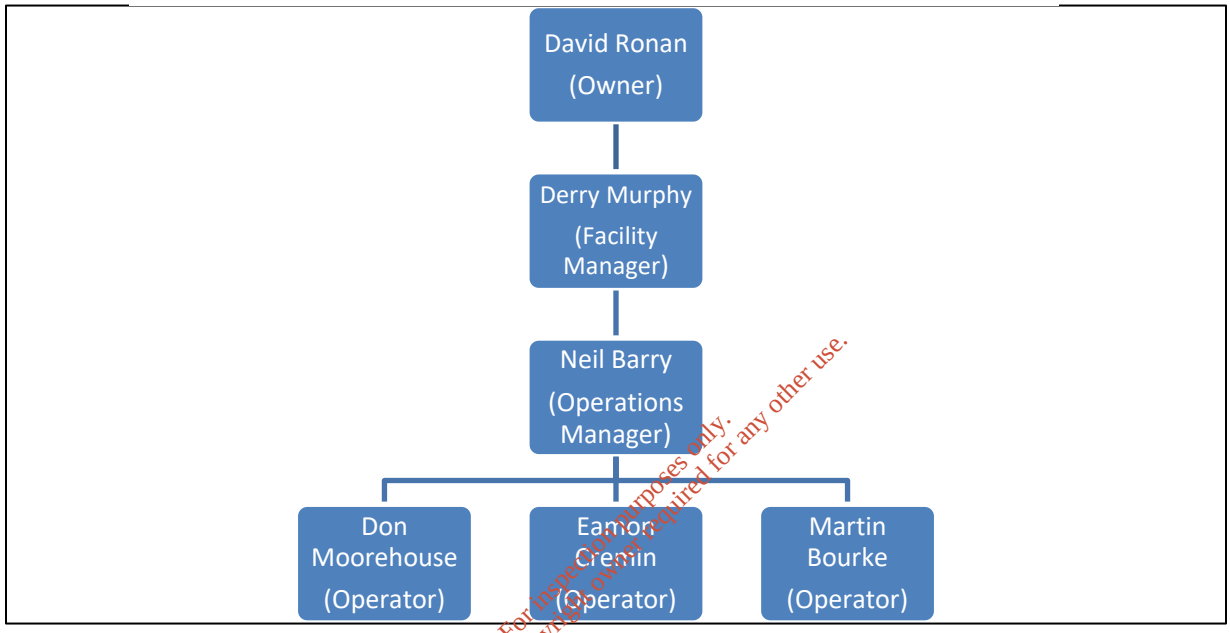
The site is located in a rural area used predominately for agriculture purposes, mainly grassland and tillage. A farm yard, approximately 600 meters (m) to the west, is the closest property to the site. The nearest residential property is approximately 900m to the north along the access road. There are three more residences within 1km of the site to the north, north east and south east of the facility (Attachment B.1). The facility is not within the boundaries of any designated sites, such as candidate Special Areas of Conservation (cSACs), and Special Protection Areas (SPA's) for birds, or sites of national importance, such as proposed Natural Heritage Areas (pNHA's). Power's Woods, which is a proposed pNHA, is

approximately 7 km to the north of the site. Grove Wood and Moneypark, which are both pNHAs, are approximately 7 km to the east of the site. These can be seen in Attachment B.2.

Site Management Structure

The site management structure for Miltown Composting is outlined in Figure 2-1 below. The experience and training of the main facility management personnel is also provided.

Figure 2-1 Milltown Composting Management Structure



Facility Manager

The facility manager, Derry Murphy has extensive experience in the Waste Management Industry. Derry has managed Miltown Composting Systems for four years, previous to this he has installed and serviced Waste Water Treatment systems and has set up a waste cooking oil collection service for use in the Biofuel Industry. He has produced composts from manures for horticulture and Agriculture, and has researched and advised on its best use. Derry has the following qualifications:

- Diploma in Environmental Science awarded by University College Cork (2007)
- Certificate in Compost Facility Operation awarded by CRE/Sligo IT (2011)
- Certificate in Hazard Analysis and Critical Control Point (HACCP)CRE (September 2013)
- First Aid Basic course (Feb 2014) FRS Training
- Certificate of attendance at the Professional development short course on Anaerobic Digestion of Waste Cranfield University (November 2014)
- Certificate of attendance at the International Intensive Biogas Training– Practical Digester Biology -Abertay University Dundee (July 2015)

Operations Manager

The Operations Manager, Neil Barry, acts as the facility manager deputy. Mr Barry has been operations manager since 2004 under the previous waste permit and under the current waste licence since 2010. Neil Barry has the following qualifications:

- CRE Certificate in Compost Facility Operation course in 2008
- FAS Waste Management Course in 2007.
- First Aid Basic course (Feb 2014) FRS Training

Site Operatives

The Milltown Composting facility has four permanent operators

- Eamonn Cremin – four years' experience
- Don Moorhouse – two years' experience
- John Breen – recently recruited

The Milltown Composting facility has three-part time operators

- David Smith - Certificate in Compost Facility Operation awarded by CRE/Sligo IT (2015)
- Patrick Smith
- Jack Smith

All above permanent and temporary operators are briefed regularly by the facility manager and the health and safety officer on the requirements of the waste licence, all also hold Certificate's in Teleporter safety and operations, and Manual Handling.

Operational Hours

Under condition 1.1 of the existing Waste Licence the facility can currently accept waste materials on site between 08:00 and 18:00 from Monday to Saturday. The facility can operate between 06:00 and 18:00 Monday to Saturday.

Waste Types & Quantities

The existing waste licence for the Miltown facility has a maximum annual acceptable tonnage of 24,500 tonnes of waste that can be accepted and composted on site, this tonnage is a mix of the materials included in Table 2.1;

Table 2-1 Current Waste Types Accepted and Processed at the Milltown Compost Facility

European Waste Catalogue (EWC) Code	Description
19 12 07	Waste from the mechanical treatment of food waste
20 02 01	Garden and Park waste from municipal sources
19 12 12	Organic Fines
02 01 03	Waste from agriculture – Plant tissue waste
20 01 08	Biodegradable kitchen & canteen waste

Waste Acceptance Procedure

All wastes will be accepted at the facility based on the existing waste acceptance procedures developed as part of the existing site Waste Licence. The Standard Operating Procedures for Waste Acceptance at the Miltown facility is provided in Attachment B.3.

Waste is delivered to the facility by suitably permitted waste contractors and is not accepted from members of the public or waste collection contractors that do not have a contract with Milltown. Waste deliveries are delivered in closed trailer containers. All deliveries must weigh in at the entrance to Milltown Composting and any accompanying documentation is checked.

Prior to gaining access to the site the vehicle operator is required to provide the necessary information, such as the waste type, source of the waste, vehicle type, vehicle operators name, and any other relevant information deemed necessary by the weighbridge operator. The load information will be verified and logged prior to the delivery being accepted. Deliveries are visually inspected prior to acceptance by the facility operator to ensure that the waste type is allowed to be accepted under the requirements of the Waste Licence. Any loads found to contain unsuitable wastes will be rejected and returned to the source, see Attachment B.4.

Waste Handling

The delivery vehicle operator is directed to the new covered waste reception area. An inspection of the incoming load is carried out and if it identifies non-conforming waste materials, the vehicle operator will be required to remove the entire load from the facility. The material conforming with the accepted waste streams for the facility is tipped in the designated reception area for the composting process to being. The process the materials goes through is outlined in Figure 2-2 and is also shown on Drawing 32-02 in Attachment C-1.

From being tipped in the new reception area, the load is moved to the western end of Shed 1, which consists of eight (8) composting bays/tunnels. Six (6) of the bays/tunnels are 11-12 meters long by 6 meters wide, while the other two (2) are double width bays/tunnels (i.e. 11-12m long by 12m wide). Incoming wastes are blended in the waste acceptance area with appropriate bulking agents (mainly woodchip, compost overs or green waste). Source segregated domestic/commercial (Brown Bin) organic waste and various sludges may be mixed together and blended with woodchip. MSW fines are kept separate from other wastes to prevent cross contamination.

Figure 2-2 – Miltown Composting Process Outline

Material Intake Ramp

Reception Building

Waste Acceptance and Pre-Treatment

Shed 1

Feedstock Preparation

Pre-Composting

ABP Pasteurisation

Dispatch

Shed 2

Processed Material Storage

Processed Material Storage

Shed 3

Following blending the materials are placed to a height of approx. 1.8 – 3m high within the bay/tunnel. The floor of each tunnel has a series of concrete channels that contain perforated 4inch pipes. Air is blown through these pipes from a stainless steel fan located outside the building. Each bay/tunnel has its own fan. The air provided maintains adequate oxygen for optimum biological activity within the tunnel.

Once a compost batch has been processed at 60°C for 48hrs on two consecutive occasions in the western end of the building, it is deemed to be treated in terms of the animal by-products regulations (ABPR). It is then moved to the east end of Shed1, which is separated from the west end by a wall to ensure no mixing of loads at different stages of processing does not occurs.

Although sanitised in terms of the ABPR, the material is still biologically active and must be further treated in the east end of Shed 1. This section contains eight (8) equally sized composting tunnels (6m wide by 11m long). The material is loaded into these tunnels for further composting. During loading the material is mixed, which helps stabilise and homogenise the product further. In many cases a batch is moved into another bay, within the eastern section of Shed 1, solely to homogenise and reactivate biological activity. Screening can also reactivate biological activity, as this breaks up any small clumps within the waste. Screening may be carried out at this stage in the process, after which the material resembles a finished compost product. Precisely when screening is carried out depends on the moisture content and physical properties of the material. Composted MSW fines are generally not be screened until after maturation.

Following the high rate composting in Shed 1, the finished product is transferred to Sheds 2 and 3 to the east for storage.

Facility Equipment

The current processing activities involve the composting of organic waste to create a compost material or a stabilised bio-waste material (i.e., organic fines). The equipment used within the facility for the processing and movement of material and product are provided below:

- 3 Telescopic Loaders
  - The teleporters are used for transferring biowaste into, and between, composting bays within Shed 1. They are also used for construction and turning of windrowed material following the composting process and the loading of matured materials for transfer offsite.
- 1 Specialised Compost Turner
- 1 Vibrating Screen,
- Power Washer.

The site equipment provides 100% duty and 50% standby for compost processing up to 24,500 tonnes annually and could also be used for processing the proposed increased throughput. If there is a break down, additional plant may be hired for use on-site for short periods to augment standby capability and ensure continued site operations.

Transport & Deliveries

The site is accessed by a private laneway off the Fethard –Rosegreen third class road. The facility access is through an electronic gate that is opened remotely by facility staff. There are separate internal roads to

access the composting facility and to access the adjacent dairy farm, which was provided to comply with the European Communities (Animal By-products) Regulations 2003, as amended. Vehicles delivering organic waste materials to the facility must first cross the weighbridge and log in the load. Once trucks have completed the weigh in they will advance to the facility reception building where the material is unloaded, and if required wood chip bulking agent is mixed through the material in this area. From here the waste is taken to the aerobic digestion bays/tunnels in the west end of Shed 1. Loads are accepted in bulk sealed trailers to reduce odours and allow for efficient deposit of waste onto the reception area floor with approximately 6 to 8 waste deliveries per day. There are two access gates to the site. The first gate is directly after the turnoff to the dairy farm located approximately 600m to the south of the site. The second gate is the main access to the compost facility and is located approximately 200m further up the lane. There is room to queue approximately 4-5 trucks and trailer between the two gates (i.e. on the Miltown owned section of the laneway and not impact other laneway users.

Fuel / Chemical Storage

Facility activities involve the storage and handling of diesel and lubricating/hydraulic oil for the mobile plant. Diesel is stored in a double skinned 1,000 litre plastic tank located in a bund structure at the north west corner of Shed 1. Lubricating and hydraulic oil are stored in drums in the container unit located beside the canteen. Waste oils generated during plant maintenance are stored in drums inside the container unit prior to removal by a licensed contractor. Oil spill containment and clean-up equipment are provided on site.

Surface Water

All areas within the sheds and reception areas consist of paved concrete. The new surface water drainage system completed as part of the new reception area will ensure that all surface water runoff from the ramped intake area is directed to the leachate collection system. The new drainage system ensures that any surface water from the ramped area is directed to the closed leachate management system for re-circulation in the composting process and will not be released to the environment. This can be seen in Attachment A.1.

Surface Water from the turntable area will drain to a grated silt trap gulley which will then be directed via 150mm PVC pipework beneath the covered yard area to the existing silt trap and oil interceptor to the south of the amendment store. Once the surface water passes through the interceptor it will pass through the diverting gulley and through the existing 150mm piping across the internal roadway to the south and then in a southwest direction to a surface water drainage ditch. There will also be a diversion valve on the drainage system whereby any spillages in the yard or turntable that enter the pipework can be diverted to the leachate collection system in the event of a spill etc.

Sewer

There is no connection to a foul sewer mains system from the site and sanitary and sink wastewater from the site welfare facilities (i.e., toilets and canteen) is currently discharged to an on-site septic tank and percolation area (Attachment A.1). No waste water from the compost process is discharged to the septic

tank system. All waste water/leachate is recirculated back through the process via a holding tank located south of Shed 1.

Waste Generation

The facility is designed to consistently produce a Class 1 or Class 2 compost and/or stabilised biowaste. Class I and Class 2 compost is not categorised as a waste and can be used for agricultural, horticultural, and gardening purposes. The stabilised biowaste is currently used as landfill cover and for other suitable engineering/restoration applications as may be approved by the Agency. The oversize materials recovered during the pre and post screening of the materials are stored on site and depending on their nature may either be added to the bulking agents used in subsequent composting batches or sent off-site for disposal/recovery. Milltown Composting is investigating potential alternative recovery outlets for this material. The facility generates small volumes of wastes from the canteen and office and Milltown Composting operates a source segregation policy to maximise the recovery of potential recyclable and compostable materials from these waste streams. There is also plastic material from the screening process that is disposed of.

Milltown Composting collects the leachate which comes off the waste during the composting process. This leachate is stored and recirculated into the composting process. The recirculation system can be seen on Drawing 3201-001 in Attachment A.1.

The mobile plant used on site are subject to on-site maintenance. Waste oils and batteries generated during maintenance are stored in the container pending removal off-site for disposal/recovery at appropriately permitted licensed treatment/recovery facilities. The oil interceptor on the surface water drainage system will be routinely cleaned and the contents removed off-site for disposal at an appropriately licensed waste treatment/disposal facility.

Milltown Composting only uses appropriately licensed or permitted waste disposal/treatment facilities for all wastes generated at the facility. Details of those currently used are included in the 2015 AER in Attachment B.5. All wastes leaving the facility are weighed at the on-site weighbridge and Milltown Composting retains records of the waste types (EWC codes), volumes (tonnes) and the destination.

The waste generated on site is transported to approved facilities within Ireland. Stabilised biowastes other than those mentioned in EWC 19 03 04 were delivered to Garyshane, Donehill, County Tipperary (W074-03). Wastes not otherwise specified were delivered to Gortadroma landfill in County Limerick (W0017-04) and Scoth Corner Landfill in County Monaghan (W020-03). Off specification compost were delivered to Bord na Mona landfill in Kildare (W0203-03). Any metals were taken by Southern Truck Recycling Ltd (NWCPO-09-04587-02).

Nuisance Control

As the material accepted at the facility is organic in nature it has the potential to be odorous and attract vermin. Milltown have employed the services of a vermin control contractor to ensure that vermin control measures are in place and maintained on an ongoing basis. A vermin control contractor conducts regular visits and a schedule is maintained of his actions and vermin activity at each visit. There are routine

inspections made by site staff for the presence of flies or vermin. Milltown strive to ensure that any accepted waste spends a minimal amount of time on the reception area floor and is transferred to the compost bays as soon as possible. This aids in reducing attractants and reduces vermin issues.

To control odours within the facility building and to control odour impacts on the surrounding area all waste delivered on site must be in closed containers or trucks, seen in Odour Management Plan (Attachment B 6). Shed 1 has an internal extraction ducting, air extractors and a deeper biofilter. Each composting bay has a 3.0kw stainless steel fan. These fans have been specifically developed for compost aeration purposes and have the correct fan characteristics. Each fan is controlled by its own independent temperature controller and a speed regulator. When the system is operating under automatic control, the fan air supply varies in response to temperature changes. Under manual operation, the fans have three levels of air supply, with 100% air flow generally used for drying and cooling. All present speeds can be changed to any desired airflow from 0% to 100%.

Effective operational management, including monitoring and control of key process parameters help control the formation of odour and reduce emissions of odour:

- Control of waste input characteristics (e.g. C: N ratio, particle size);
- Control of water content;
- Control of air diffusion through the waste;
- Control of temperature

Miltown Composting currently have a biofilter in place located south of Shed 1. The existing exhaust air ductwork system is suspended from the structural steel at the apex of the reception building. The apex ductwork runs to an externally located fan centrally on the southern side of the reception building, the exhaust from the fan passes through a biofilter. The calculations below show that the design capacity of the apex ductwork runs to an externally located fan centrally on the southern side of the reception building, the exhaust from the fan passes through a biofilter. The calculations below show that the design capacity of the biofilter;

Table 2-2 Current Biofilter Size and Capacity

	Width(m)	Length (m)	Depth (m)	Volume (m^3)
Bio filter dimensions	13	40	0.6	312
Shed 1 volume	31.8	54.2	5.76	9,927.706
Roof	31.8	54.2	1.745	3,007.612
Total				12,935.32
Bio filter air volume	2.5	Air changes per hour		32,338.3

The design of the biofilter was based on a capacity to treat an air volume equal to 2.5 air changes from Shed 1 (i.e., 32,338 m^3/hr). Section 4.1.33 of Reference Document on Best Available Techniques in the Slaughterhouses and Animal By-products industries states that the residence time required to effectively abate an odour depends on the odour strength and which pollutants are present in the gas. For low

intensity odours a residence time of at least 30 seconds should be aimed for, rising to up to 60 seconds for very strong odours. Table 2-3 provides the calculated retention time within the existing biofilter;

Table 2-3 Calculation of Residence Time in Biofilter

Biofilter Residence Time Calculation		
Air volume arriving at the biofilter	32,338.2	m^3/hr
	8.982833	m^3/s
Biofilter Surface Area	520	m^2
Media Depth	0.6	m
Biofilter media volume	312	m^3
Calculated Air Speed through Bio-filter		
Flow Through Filter Media	0.01727	m/s
Media Depth	0.6	m
Residence time in filter media at 2.5 Air Changes	34.7328	seconds

Operational experience of the facility has found that it has not been necessary to continuously operate at maximum capacity, and an air change rate of 1.5 air changes volumes per hour from Shed 1 has been effective in controlling odour emissions. An input volume of 1.5 air changes within Shed 1 would calculate to a volume of approximately 19,402.92 m^3 per hour (5.3897 m^3/s) of odorous air being filtered through the biofilter, with a calculated residence time of 57.88 seconds.

Site Checks

Miltown personnel are pro-active in completing daily checks around the facility and liaising with neighbours on whether an odour issue is being experienced (TRUE?). Where an odour issue has been identified it is dealt with as soon as possible by implementing or assessing the effectiveness of aspects of the odour control mechanisms in place at the facility.

Site Security

The facility is located within a secure site and is surrounded by security fencing. A CCTV surveillance system is also in place at the site entrance and in the yard and lighting is in place at the process sheds during night time hours.

Safety & Hazard Control

All site personnel and visitors to the site including waste collectors are obliged to comply with Miltown Composting safety guidelines. The guidelines regulate access to and from the site and traffic movement within facility. All Miltown Composting staff are provided with and obliged to wear the requisite personal protective equipment (PPE), which includes face masks, gloves, safety goggles, steel boots, overalls, reflective jackets and helmets. Fire extinguishers are provided at the site offices, the wood chip storage

shed and at various locations on site and are serviced annually. There is an accident prevention (Attachment B.7) and an emergency procedure for the site (Attachment B.8).

3.0 PROPOSED DEVELOPMENT

3.1 Introduction

This chapter describes the proposed changes, including increased tonnage reception, process changes, if any, traffic management for increased traffic movements, odour management, surface water management and the use of the new reception building to the west of Shed 1 and the storage sheds 2 and 3 to the east of Shed 1 as part of the proposed development. It provides details of the proposed infrastructure, equipment and operation activities at the facility to meet the requirements of the regulatory authorities. It also describes the emission control measures that will be used at the facility to effectively mitigate environmental impacts.

3.2 The Applicant

The applicant for the proposed development will continue to be Miltown Composting Systems Ltd. Details of the Applicant are provided in section 2.2 of this document.

3.3 Proposed Development Overview

The proposed development will be a continuation of the existing composting process at the facility albeit at an increased throughput. The proposed development will continue to operate as an aerobic composting plant accepting a broad range of compostable organic materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal waste water sludges and organic fines generated in the physical treatment of mixed municipal waste (MMW).

To achieve the increase in tonnage throughput in the plant from 24,500 tonnes per annum to up to 50,000 tonnes per annum, it is intended to upgrade the composting technology at the facility. While the mixing regime completed in the reception area will not change, upgraded aeration and control technology will be installed to enable Miltown to keep the composting batches in the optimum composting range of 50°C -55°C with an oxygen percentage of 13%. When optimum composting procedures are adhered to maturation of the material can be achieved in a 6 week period. The composting procedure at the Miltown facility will remain flexible whereby it can adapt to changes in the marketplace when it comes to the treatment of biowaste material (i.e., production of compost material or stabilization of organic fines material). The capacity of the facility to handle and treat the proposed increased tonnages of either feedstock material are outlined in section 3.3.1.

Increased Tonnage Throughput Capacity at Existing Facility

To increase material throughput and to be able to process up to 50.000 tonnes per annum Miltown will have a flexible system whereby they can continue to biostabilize organic fines material or processing of

brown bin organic waste for the production of compost. Miltown have allowed for both scenarios with regard to Animal By-Product (ABP) Regulation compliance and adherence to the effective biostabilization of organic fines and/or the production of Class 2 compost material. The processes involved in each scenarios are outlined below;

Scenario 1: Organic Fines Stabilisation

As long as the demand for processing organic fines continues in the market place Miltown would adhere to the Type 8 processing standard which would negate the requirement for pasteurisation because the material would still be considered waste and could only be used at licensed waste facilities. The Type 8 process allows for an efficient composting and biostabilization regimen which would result in full maturation of the material in a 6 week period.

The proposed development will continue to process material in the same way as the existing facility (i.e., initial screening to remove contaminants, blending with bulking agents, composting in separate enclosed bays, pasteurisation, maturation and post treatment to remove impurities). Due to the modular lay-out, the composting tunnels/bays will be able to be operated independently, which will provide flexibility in processing different organic waste streams. The finished product can, depending on quality, either be used for horticultural and agricultural purposes, or as landfill cover.

Waste reception and blending will continue in the new reception area and storage will continue to be carried out to the east of Shed 1, which combined occupy an approximate 2,840 m^2. The site office, canteen/changing room and the container used to store lubricating/hydraulic oil and the power washer will remain in the same location as present. The biofilter location will not change but the volume will be increased to accommodate increased air flow from the process bays and the new reception area, see section 3.3.15.

Miltown have a newly constructed reception area to the west of the process shed (Shed 1). The new reception building allows for feedstock mixing in this new area and frees up the mixing area in Shed 1 to allow for an increased material flow through the facility. It also includes one 250 tonne bay that can be converted for use as a process bay to supplement the existing process in Shed 1. In addition to the 9 existing composting bays at the front end (i.e., west) of Shed 1, there are also 8 pasteurisation bays at the back end (i.e., east) of Shed 1. If Type 8 processing is being completed in the facility then all bays (i.e., process bays and pasteurization bays) can be used for composting and biostabilization. Each bay has the capacity to hold 150 tonnes of feedstock and so at any one time the facility can biostabilize 2,550 tonnes of organic fines or 2,800 tonnes if the additional bay in the reception shed was operational.

Based on the current processing regimen at the Miltown facility the retention time in the process bays during the intensive composting process would be approximately 3 weeks allowing for 2,550 to 2,800 tonnes of material to be stabilized at the facility every 3 weeks. Based on the calculated throughput, the facility would have the capacity to process close to 50,000 tonnes per year.

The covered yard area to the east of the process shed is 1,415m² in area. Based on the floor area and processed tonnage per square meter in Shed 1 the storage capacity is between 1.45 and 1.62 t /m^2. This is based on a floor area of 1,724m^2 holding between 2,500 and 2,800 tonnes in the process shed. The storage areas can hold a similar weight per m^2 due to the lower bulk density which allows it to be stacked slightly higher as the moisture level drops. The storage areas at the site (Sheds 2 and 3) have a combined floor area of 2,840 m^2 which would allow for significant storage capacity at the site.

Scenario 2: Brown Bin Compost Production

In the event of a change in the market and the supply of brown bin organic waste is increased as has been predicted in the Regional waste plans, Miltown would change their intake to this material. In order to adhere to the ABP regulations Miltown would switch over to the European processing standard (all the material is kept equal to or above 70°C for 1 hour with a particle size of 12mm) to allow for proper pasteurization to take place. In order to achieve this Miltown would convert four of the current 150 tonne APB bays at the eastern end of the process shed (by the exit to the middle covered yard) into 2 x 300 tonne EU standard pasteurisation bays. As pasteurisation can normally be achieved in 3-4 days, this will give adequate pasteurisation scope to cater for the proposed increased tonnage. Also as the material would be in the pasteurisation units for only 3-4 days and is aerated when filling and emptying, the rate of composting is not reduced to any significant degree.

Five people are currently employed full time at the facility and three are employed part time comprising of managers and operatives. It is proposed that the number of people employed at the facility will increase by 2 initially increasing to 4 additional employees if the increased throughput is approved.

The proposed development will not include any construction works or extensions to existing Buildings and as such the potential environmental impact from construction works have not been included as part of this study.

Miltown propose to increase the throughput of material at the composting facility to 160 tonnes per day (not exceeding 50,000 tonnes per annum) and to apply to the Environmental Protection Agency for an Industrial Emissions Licence to regulate the facility. The future licenced area will remain the same as the current waste licence area The facility will continue to accept similar waste types to those already handled and processed at the site. The composting process will not be changed if the proposed increased throughput occurs. The outline of the proposed flow process at the Miltown Composting facility is illustrated in Figure 3-1 below and is also shown on Drawing 32-02 in Attachment C-1.

Services

There will be no additional services supplied to the facility Buildings. The only additional demand with the proposed facility will be on electricity during extended operations for running the fans and air extraction system and there will also be more electricity demand when shredding additional bulking material and screening of additional compost and biostabilised material prior to transfer off-site. Because

Figure 3-1 – Miltown Composting Process Outline

Material Intake Ramp

Reception Building

Waste Acceptance and Pre-Treatment

Feedstock Preparation

Shed 1

Pre-Composting

ABP Pasteurisation

Dispatch

Shed 2

Processed Material Storage

Processed Material Storage

Shed 3

there are no extended operational times there will be no requirement for additional power for lighting inside the buildings.

Surrounding Land use

The land use surrounding the facility will not change as part of the proposed development at the Miltown Facility.

Site Management Structure

The site management structure will not change as part of the proposed development at the Miltown Facility.

Operational Hours

To ensure that disruption to any neighbours along the delivery route to/from the site and in the vicinity of the facility is minimised, Miltown propose to accept material at the facility between 07:00 and 19:00, Monday to Saturday with a restriction on truck movements between 08:30 and 09:30 each morning to avoid disruption to neighbours at that peak traffic period. It is proposed that the operational hours will change slightly to facilitate deliveries (i.e., change from 06:00 - 18:00 to 06:00 – 19:00 Monday to Saturday).

Waste Types

The increase in throughput tonnage at the proposed development will be for processing of approximately 160 tonnes of waste per day up to a maximum of 50,000 tonnes per year. The anticipated waste types that will be accepted are outlined in Table 3-1:

Table 3-1 Waste Types to be accepted at the Proposed Development

European Waste Catalogue (EWC) Code	Description
19 12 07	Waste from the mechanical treatment of food waste
20 02 01	Garden and Park waste from municipal sources
19 12 12	Organic Fines
02 01 03	Waste from agriculture – Plant tissue waste
20 01 08	Biodegradable kitchen and canteen waste

Table 3-2 Waste Types to be accepted at the Proposed Development

Description	Daily Maximum Intake (Tonnes)	Annual Maximum Intake (Tonnes)
Non-Hazardous Biowaste which include source segregated: household kitchen waste and catering wastes; non-hazardous industrial and municipal waste water sludges; and organic fines generated in the treatment of mixed municipal solid waste (MSW).	160	50,000

The facility will remain flexible to market changes relating to the organic materials they process on site. The increased tonnage will be related to the same materials currently included on the site waste licence, as outlined in Table 3-2 above.

Waste Acceptance Procedure

Miltown already have a documented waste acceptance procedure (see Attachment B.3) for the current operations on site. Because the nature of the waste materials being accepted at the proposed development will not differ to the current waste streams at the facility, and no hazardous wastes will be accepted at the facility, the existing waste acceptance procedures will continue to be implemented at the proposed development (Attachment B.3). The waste acceptance procedures will be reviewed and updated as required as part of the site environmental management system.

Waste Handling

Because the nature of the waste materials being accepted at the proposed development are not different to the current waste streams at the facility the waste handling procedures will be similar to those currently used in the existing process. Material accepted at the facility will be received and blended in the new waste reception building and transferred to a composting process bay on the day of arrival at the facility.

The only changes that may require changes to the existing waste handling procedures would be where the facility is processing segregated food waste for Class 1 or 2 Compost production and the processing of organic fines for bio-stabilised waste production at the same time. A full segregation regimen would be implemented in this case to ensure that cross contamination of compost material does not take place. The current waste handling procedures are provided in Attachment B.3.

Facility Equipment

The facility equipment will be the same as that that is in use at the existing site as an increase in throughput will not see a change in the process procedure at the facility and it will require the same plant to load, transfer and transport materials. Details of the plant can be seen in Section 2.3.8.

Transport and Deliveries

The facility will continue to be accessed via the Rosegreen to Fethard road and it is proposed that the traffic to and from the facility will increase marginally due additional waste accepted and transferred from the site. Vehicles delivering waste materials to the facility will be mainly enclosed trailer units with some staff vehicles also moving into and out of the facility. Vehicles delivering waste materials to the facility will be enclosed trailer units. Delivery trucks will first cross the weighbridge before unloading any material onsite at the new waste reception building. There will also be a new traffic management plan implemented on site to avoid large trucks using the facility meeting on the surrounding road network.
A Traffic and Transportation Assessment was carried out by DBFL Engineering Consultants and Transportation Planners found that the proposed impact on the surrounding road network due to increased throughput at Miltown Composting would be negligible when compared to traffic movements on the surrounding road network. This is discussed further in Chapter 12 and in Attachment L.1.

Fuel/Chemical Storage

Facility activities involve the storage and handling of diesel and lubricating/hydraulic oil for the mobile plant and these will continue at the facility following the proposed changes at the facility. Diesel is stored in a double skinned 1,000 litre plastic tank located in a bund structure at the north of the new waste reception building (beside rapid action door). The bund area also holds drums of hydraulic and lubricating oil. Lubricating and hydraulic oil for small repairs and servicing are stored in drums in the container unit located beside the canteen at the southwest of Shed 1. Waste oils generated during plant maintenance are stored in drums inside the container unit prior to removal by a licensed contractor. Oil spill containment and clean-up equipment are provided on site.

Surface Water

As part of the proposed mitigation measures changes to the existing surface water drainage and contaminated water management system to effectively prevent environmental impacts. A new surface water drainage connection has been installed that connects the new ramped waste reception area to the new leachate circulation system. The drainage system will ensure that all surface runoff from the new waste reception area floor is directed to the leachate collection system. The floor runoff is diverted to the new pump sump tank where it is then pumped through the pump filtration system to be re-circulated back to the process bays in Shed 1. In the event that a significant volume of liquid is discharged at the reception area floor then the runoff collected in the new leachate collection pump sump tank can be diverted to the 5,000 litre containment tank located at the southwest corner of Shed 1 and then added to the process bays when required. The new contaminated runoff collection and drainage system ensures that any runoff from inside the new reception building is directed to the closed leachate management system for re-circulation in the composting process and will not be released to the environment. See Drawing 3201-01 in Attachment B-9.

The surface water drainage system for the turntable where trucks reverse into the waste reception area will have a diversion system in place to divert the surface water flow from that area to the leachate collection and circulation system if required in the event of an emergency spillage or release at the

turntable area. During normal operations surface water from that area will drain to a grated silt trap gulley which will then be directed via a 150mm PVC pipework beneath the new reception area to the existing silt trap and oil interceptor to the south of the new reception building. Once the surface water passes through the interceptor it will pass through the diversion gulley and through the existing 150mm piping across the internal site roadway to the south and then in a southwest direction to the surface water drainage ditch. A diversion pipeline with a lockable valve has been installed at the access to the new reception area so that in the event of a spillage at the turntable area, site personnel will be able to divert potentially contaminated surface water to the leachate collection system by changing the installed lockable valve from the storm water line to the leachate line.

In addition to being used for the collection of potentially contaminated surface water, the containment tank can also be used as part of the firewater containment system, if required. Miltown have constructed a 0.7m high kerb around the tank, connecting the kerbing to the eastern end of the south wall of the pump house and the south wall of shed 1, thereby allowing the use of this area as part of the firewater retention area while ensuring that any possible spillage is directed into the leachate collection system via the new pump house drainage.

Sewer

There are no connections to the foul sewer from the facility and foul water from the facility toilets and sinks are treated by the existing on-site septic tank system and percolation area. Any leachate or impacted surface water is recirculated through the composting process as discussed in section 3.3.12 above, and will not be released to the surface water drainage or sewer system.

Waste Generation

The wastes generated at the proposed facility will be similar in nature to those currently produced at the existing facility (e.g., vehicle servicing wastes, screened non-organic material, canteen and office wastes) alsthough due to the proposed increase in throughput it will be expected that up to double the existing tonnage of wastes such as screened plastics and biostabilised waste material. The wastes produced on site will continue to be transferred off-site to appropriately licensed or permitted facilities as outlined in section 2.3.13.

Nuisance Control

The main perceived nuisance associated with the development may be odour and noise from increased volumes of organic waste material delivered to the facility. The existing aspiration system for the facility will be augmented to provide aspiration to the extended enclosed reception area, this will be achieved by extending the ductwork into the new structure.

The new reception building has been added to the existing air extraction system and exhausted through the existing biofilter. In order to meet the requirements of the current 'Draft BAT Conclusions specific to indoor composting for Vessel or enclosed building design - Air extraction should be designed and maintained to move and handle the volume of air to provide a clear working environment. The atmosphere inside the new reception building is exhausted at 2 Air Changes per hour, this has resulted in additional air to be treated in the existing biofilter as outlined in Table 3.3

Table 3-3 Size and Capacity of Biofilter for the Addition of New Reception Area

		Volume (m^3)
Shed 1 volume		12,935.32
New Reception Area		4,773.00
TOTAL		**17,708.32**
Air Volume to be Treated in Biofilter	2.5 x Air changes per hour	**44,270.80**

Table 3-4 Residence Time Calculation for the Inclusion of the New Reception Area

Residence Time Calculations		
Air volume arriving at the biofilter	44,270.32	m^3/hr
	12.30	m^3/s
Biofilter surface area	520	m^2
Calculated Speed of Air through Filter	0.0278	m/s
Media Depth	0.85	m
Residence time in media	35.93	seconds

The increased air volume requiring treatment resulted in a requirement to increase the treatment media (wood chip) volume within the Biofilter which was achieved by placing 200mm of additional media on top of the existing filter and extending the height of the perimeter walls by 225mm to contain the additional media. To maintain the proposed aspiration rate in the new reception area an additional loading of approximately 30% additional air volume will be required to pass through the biofilter, the odour loading from the reception building is significantly less than the odour loading from the air extracted from Shed 1 where air is forced through the composting material in the processing bays and exhausted through the extraction ductwork. Based on the volume of air required to be extracted from the facility . The existing ducting system is shown on Drawing No 32.02.03 (Attachment C.1). The ducting system is currently arranged with two (2) 900 mm ducts from the fan at the biofilter to the centre of the roof of shed 1 with one duct directed towards the east of the shed with nine (9) inlet grills, the other duct is directed west and has six (6) inlet grills. The air control within the new reception building is through an extension to the west side ducting into the new reception area and fitting 2 additional extraction grills on the extended section. The ducting system is balanced by inlet grills on each of the air inlets. It is proposed to utilize the existing air fan to extract the full air load capacity. The motor on the existing fan is fitted with variable speed controller which controls the air volume extracted from the building.

As the process adapts to changing process materials and volumes of materials the odour management system will adapt to meet any additional requirements. It is proposed that any additional air extraction required at the facility will be directed through surface mounted modular biofilters. The use of mobile surface modules would negate the requirement for any excavation or construction works and would also allow for a modular approach to odour management whereby additional units could be added if required based on the air volume extracted.

Site Checks

Miltown personnel will continue to be pro-active in completing daily checks around the facility for odour and any other housekeeping issues. Where an odour issue has been identified it will be dealt with as soon

as possible by implementing or assessing the effectiveness of aspects of the odour control mechanisms in place at the facility.

Site Security

The facility is located within a secure site and is surrounded by security fencing. A CCTV surveillance system is also in place at the site entrance and in the yard and lighting is in place at the process sheds during night time hours.

Safety and Hazard Control

All site personnel and visitors to the site including waste collectors will be obliged to comply with Miltown Composting safety guidelines. The guidelines regulate access to and from the site and traffic movement within facility. All Miltown Composting staff are provided with and obliged to wear the requisite personal protective equipment (PPE), which includes face masks, gloves, safety goggles, steel boots, overalls, reflective jackets and helmets. Fire extinguishers are provided at the site offices, the wood chip storage shed and at various locations on site and are serviced annually. There is an accident prevention and an emergency procedure for the site (Attachment B.7 and B.8).

4.0 ALTERNATIVES CONSIDERED

4.1 Introduction

This Chapter describes the alternatives to the proposed development.

4.2 Alternatives to the Composting Facility

The alternatives to increasing production at the Miltown facility would be to ship the waste internationally for recovery or to send the waste to landfill. However, both of these scenarios cannot be implemented due to revised regulations and standard procedures from recovery companies. Under the National Strategy on Biodegradable Waste (2006) the Irish State has implemented objectives to reduce biodegradable municipal waste (BMW) sent to landfill by 65%. Additionally, as of July 2013 the Waste Management (Landfill Levy) (Amendment) Regulations 2015 (SI No 189 of 2015) increased the landfill levy by 10 euro to 75 euro per tonne for each tonne of waste disposed of at authorised landfill facilities. This levy makes pre-treatment more cost effective - particularly in respect of BMW - thereby reducing the quantities and costs of residual disposal to landfill.

4.3 Site Selection and Other Options Considered

The facility is already an operating and licensed in-vessel composting facility. Because the proposed increase in tonnage throughput can be processed at the existing facility without any additional construction than is already approved for the site, it is considered an appropriate location. The facility is located in the open countryside where it is considered not to be a nuisance to the environment and surrounding population. Due to the site location and distance to the closest sensitive receptor, it is considered that one of the main nuisance impacts for composting facilities (i.e., odour) is not a significant issue. Other potential locations owned by the facility owner were considered but were ruled out due to lack of infrastructure and/or proximity to sensitive receptors (e.g., residential properties).

4.4 Alternative Locations in the Area

Other locations in the were not assessed because the existing facility is currently licensed and operational and it will not require additional development to increase to the proposed production throughput. The site is regulated under an EPA waste licence which requires that the facility operate in compliance with the environmental constraints imposed upon it by the conditions of that licence. It was considered that the continued management of the existing site including new management systems (e.g., traffic management) would be the most feasible option for the proposed development. Any alternative green-field location would result in increased use of natural resources for development and construction and may result in increased environmental impact.

5.0 HUMAN BEINGS

5.1 Introduction

This chapter describes the existing human environment in the vicinity of the proposed development in terms of population, employment and land-use. The likely impacts on the human environment from the proposed development are assessed. The impacts of other human related environmental aspects associated with the proposed development such as noise, traffic and air quality are discussed in the relevant chapters of the EIS.

5.2 Methodology

Analysis of the effect of the proposed development on the human environment was completed in compliance with the requirements of "Guidelines on the Information to be contained in Environmental Impact Statements" (EPA, 2002) and "Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)" (EPA, 2003). Relevant information has been obtained from public bodies with regard to planning and development context, employment statistics, demographic statistics and community aspects. The primary bodies concerned were the Central Statistics Office (CSO), and Tipperary County Council.

Desktop information reviewed in the process of information gathering are outlined below:

- CSO data, including the censuses for 2006, 2011 and 2016; the Quarterly National Household Register; Live Register figures;
- Tipperary County Development Plans and the Fethard LAP;
- Site visit on 1st November, 2016 to inform the EIA with respect to land use, development and change.

5.3 Existing Environment

The existing human environment in relation to the planned development comprises those residing and working in the immediate vicinity of Miltownmore and the wider community in Fethard, Rosegreen, Clonmel Town and Tipperary County.

Local Residents and Businesses

The nearest residential property is approximately 900m to the north of the facility along the public access lane. There are three more residences within 1km of the site to the north, north east and south east of the facility. The only other business that exists in the immediate vicinity of the existing Miltown Composting facility is a dairy farm located approximately 600 m to the southwest.

The Greater Community

In order to assess the potential effects of the project on the wider community it was necessary to establish the demography of the population. Attributes of the population which are examined in this chapter

include population, age profile including dependency, employment profile and social class. Data on these elements have been compiled from the 2006, 2011 and 2015 censuses, as well as some information from Quarterly National Household Surveys, all of which are compiled by the CSO.

5.3.2.1 Census Data

The most recent census was carried out in April 2016, but at the time of writing, only preliminary information was available, because of this, where information from 2016 was not available, information from the April 2011 and April 2006 censuses were used. Census data is compiled for the State as a whole, as well as smaller areas including counties, cities, towns and electoral divisions. Given the location of the proposed development the census information on population, age profile, employment and social class, has been analysed with respect to County Tipperary.

5.3.2.2 Population

The proposed development is located in South Tipperary, approximately 5km southwest of Fethard, approximately 4.5km southeast of Rosegreen and approximately 12km north of Clonmel Town and as such, the population statistics for South Tipperary were considered relevant for the demographic catchment of the proposed facility. For completeness, the population statistics for North Tipperary were also included to act as a comparison. Table 5-1 outlines the population of North and South Tipperary in the last two censuses, 2006 and 2011.

Table 5-1 Population Changes in Tipperary County between the 2006 and 2011 Censuses

Location	2006 Census Population	% Change since 2002 Census	2011 Census Population	% Change since 2006 Census
South Tipperary	83,221	+5.05%	88,432	+1.44%
North Tipperary)	66,023	+ 7.89%	70,322	+6.30%

5.3.2.3 Quarterly National Household Survey

The Quarterly National Household Survey (QNHS) is a large-scale, nationwide survey of households in Ireland in which 39,000 households are surveyed each quarter. The survey is designed to produce quarterly labour force estimates that include the official measure of employment and unemployment in the State. The most recent Quarterly Survey for which results have been published was undertaken in Quarter 2 (Q2) of 2016.

Main Results

In the State as a whole, there were 2,014,900 persons in employment and 187,800 unemployed in Q2, 2016 making up a labour force of 2,202,700. This represents an increase in employment of 1.94% between Q1 2016 and Q2 2016.

The latest available comparable figures for all EU-28 (28 EU member states) and Irish employment figures are for Quarter 2 (Q2) of 2016. The employment rate in Ireland remained the same (8.4%), from Q1 2016 to Q2 2012 while the employment rate in the EU-28 increased by 0.2% over the same period.

5.3.2.4 Employment

The most recent data related to specific County levels of employment and unemployment were gathered from the 2006 and 2011 census information available through the Central Statistics Office (CSO), as the 2016 Census data had not been released at the time of writing. The data from 2006 and 2011 is presented in Table 5-2.

Table 5-2 Employment Changes in Tipperary County between the 2006 and 2011 Censuses

Location	2006 Unemployment Rate (%)	2011 Unemployment Rate (%)	% Change between 2006 and 2011 Census
South Tipperary	7.5%	19.4%	- 11.9%
North Tipperary	8.1%	21.6%	-13.5%

The rate of unemployment in the area increased significantly between 2006 and 2011 with the national economic downturn. Tipperary is considered to be located in the South Region[2]. The most recently available employment figures for the South region and the State from the Quarterly National Household Survey (QNHS) are presented in Table 5.3[3]. The figures for the European Union are from the Eurostat website[1].

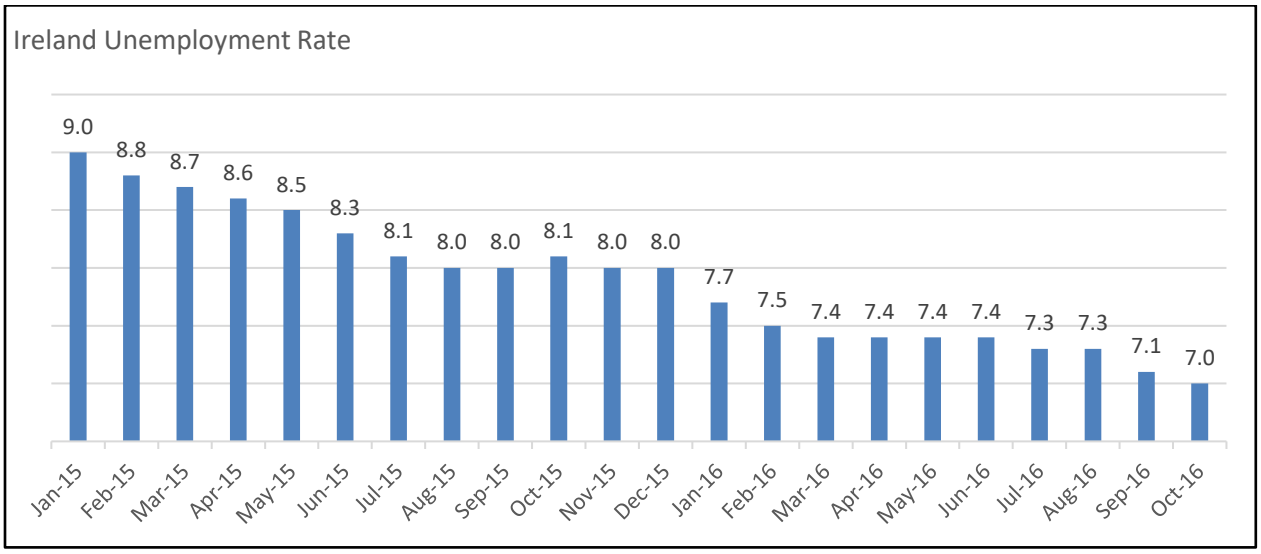
Table 5-3 QNHS Employment Figures (Quarter 2 2016)[2]

Region Area	Labour Force	Employed	Unemployed	Unemployment Rate (%)	Change in Unemployment Rate since Q1 2016
South East	236,600	204,400	32,200	13.61%	- 0.2%
Nationally	2,202,700	2,014,900	187,800	9.32%	-2.1%

[1] - NUTS2 (Nomenclature of Territorial Units) classifications, as proposed by the Irish Government and agreed by Eurostat in 1999, are groupings of the Regional Authorities

[2] - The unemployment rate represents unemployed persons as a percentage of the labour force based on International Labour Office (ILO) definition. The labour force is the total number of people employed and unemployed. Unemployed persons comprise persons aged 15 to 74 who:
- are without work during the reference week;
- are available to start work within the next two weeks;
- and have been actively seeking work in the past four weeks or had already found a job to start within the next three months

It is clear that there has been an increase in employment in the southern region in the 12 months up to Quarter 2, 2016. Although there has been an improvement in the numbers of unemployed in the southern region they are still behind the National average in terms of persons in full employment.



Latest CSO figures show that the unemployment numbers in Tipperary have fallen since January, 2015, but this fall could be attributed to those who are returning to education or to upskill as well as those who have emigrated in search of work. According to the CSO unemployment figures as of October 2016, there are 6,312 unemployed in North Tipperary and 7,864 unemployed in South Tipperary; some 14,176 people in total.

5.4 Existing Environment

Health & Safety Management

The health and safety of site personnel will be proactively managed at the existing facility and proposed development. This is achieved by identifying the hazards associated with site activities, assessing the risk associated with the hazards and implementing measures to eliminate and/or minimise the risks (e.g., staff training, procedural control and engineering measures).

The air emissions, traffic, noise, effluent and wastes generated on site will not give rise to a significant impact on the environment and are not considered to be hazardous to the health of the local population. These topics are dealt with individually in the relevant sections of the EIS.

The proposed development will continue to operate in such a way as to minimise environmental impacts as far as practicable. The operation of the facility will be carried out in accordance with good practice and Best Available Techniques (BAT) guidelines. Emissions from the development may include ambient odour emissions from open facility doors during the reception of waste and when trucks exit the facility building. There may also be some noise emissions from the facility operations but are not considered significant in the context of the facility setting (i.e., distance to sensitive receptors).

There will be no direct discharge to groundwater, sewer or surface water from the facility operations. The potential impacts of environmental emissions discharges are discussed in other chapters of this EIS (e.g.,

Chapter 10; Air & Climate). All discharges from the facility will comply with the relevant regulatory limits designed for the protection of human health and the environment. Therefore, the operation of the development will not have a significant impact on human health. The site lies in a low radon area (i.e., <1% exposure) and workers at the proposed facility will not be potentially exposed to high levels of radon. The National Reference Level for radon in workplaces is 400 Becquerel's per cubic metre (Bq/m^3) measured over a 3-month period. This Reference Level is specified by law in S.I. No. 125 of 2000. If radon concentrations above 400 Bq/m^3 are found, the employer must protect the health of workers, usually by reducing the radon levels present. The proposed development is located in an area with a very low potential for radon and the operation of the facility will not impact on the existing levels within the general area.

Amenities and Tourism

There are no immediate local amenities in the vicinity of the proposed development. Land in the immediate vicinity is predominantly agricultural to the east, west and south of the existing facility and privately owned commercial woodland to the north. These lands do not have significant amenity value for members of the general public.

As the proposed development will not change the existing visual impact from the site it is not envisaged that the continued operation of the site will result in any added negative aesthetic impact on the surrounding area. Visual images have been generated as part of this EIS to show the existing impact of the facility on these areas and no perceptible impacts have been found – refer to Chapter 11 of this EIS.

5.5 Potential Impacts of the Proposed Development

Likely significant impacts have been assessed for Human Being Receptors in the area of the proposed development. An impact is considered to be significant if it is predicted to affect the amenity or living standard of people living in the vicinity of the proposed development. Due to the fact that the facility already exists and operates, and is not significantly impacting residents due to excessive noise, traffic or odour, which would be considered the main impacts on the local community, it is not considered that the continued use of the facility, albeit with increased throughput, will have a high potential for impact. However, it is recognised that to accommodate the increased throughput volumes at the facility the main impact on residents in the vicinity of the facility would most likely be from increased traffic movements related to the activity.

5.6 Mitigation Measures

The following mitigation measures should be put in place to ensure continued protection of local human receptors:

- Development of a workable traffic management system that will allow for movement of site traffic and transport trucks without undue impact on the quality of living of local residents living along the haul road and laneway accessing the facility. This would be in the form of a system whereby

trucks travelling to the site call ahead to alert the facility that they are delivering to the site and advising the facility of their location. If the truck delivering to the site is within ten minutes of the facility then any trucks due to leave the site will be held on site until that truck enters the site. This will eliminate trucks entering and leaving the site passing each other on the lane or local road network.

- No truck movements to be completed along the approach laneway between 08:30 and 09:30 in the morning to avoid impacting peak time traffic movements in the area when people are going to school or work.
- Facility operations will be completed to ensure minimal noise impact on local noise sensitive receptors through ensuring no truck movements outside the permitted time frame for the site.
- Ensuring that the odour control system is operating to optimum capacity. Preventative maintenance should be completed on the air extraction system motors and fans to ensure that the system is operating at optimum level. This will ensure that odour impacts in the area continue to not be an issue at the site.

5.7 Residual Impacts

If all mitigation is properly and fully implemented there are no foreseen residual impacts from the facility on the local community.

5.8 Conclusions

The operation of the proposed development with a higher throughput will result in the continued use of the existing shed buildings within the existing site area. The development will result in the continuation of existing activity at the site buildings and will not have an impact on existing land use in the area. The operation of the proposed development within the existing licensed area is not expected to have any significant impact on the land use of the surrounding areas, be it for agricultural, woodland or residential purposes.

The proposed development will directly employ approximately two (2) additional personnel in the short-term with an extension of operations increasing that number to four (4). The roles will comprise technical, administrative and operations workers. Accordingly, the development will have a positive impact on employment in the area. The direct expenditure on employee salaries will have a multiplier effect on employment, household income, government income and Gross National Product (GNP). Goods and services required during the operation of the facility will be sourced locally where possible, which will have a further positive impact on the local economy and employment in the area.

No significant impact is predicted to occur due to the proposed development. The main impact to residents in the area of the facility is predicted to be mainly related to increased traffic movements to service the facility at a higher throughput. The mitigation measures outlined in section 5.6 and also outlined in the traffic, air, noise, landscape and water chapters of this EIS will ensure that the operation of the proposed development will not have a significant impact on the human environment.

6.0 FLORA & FAUNA

6.1 Introduction

This Chapter of the EIS describes the ecological interests in the area of the proposed development at Miltownmore, Co. Tipperary. Likely impacts were evaluated and where necessary mitigation measures are outlined to lessen any impacts. The aims of this Ecological Impact Assessment were to:

- Establish baseline ecological data for the development site
- Determine the ecological value of the identified ecological features
- Assess the impact of the proposed development on ecological features of value
- Apply mitigation measures to avoid, reduce, remedy or compensate impacts
- Identify any residual impacts after mitigation

An Appropriate Assessment Stage 1 Screening was completed for the site as part of the site assessment works for the EIA in December 2015 and a copy of the Appropriate Assessment Screening report is included in Attachment F.1.

6.2 Methodology

Relevant Legislation and Policy Guidelines

The assessment of the likely impacts of the proposed development on ecological resources was completed with regard to the following legislation, policy documents, and guidelines:

National and International Legislation

- The Planning and Development (Amendment) Act 2010, as amended
- Wildlife Act, 1976 and Wildlife (Amendment) Act (2000) (as amended); hereafter collectively referred to as the Wildlife Acts
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011 (as amended); hereafter the 'Birds and Habitats Regulations'
- EU Birds Directive 2009/147/EEC
- EU Habitats Directive 92/43/EEC (as amended)
- Flora (Protection) Order, 1999

Relevant Policies and Plans

- National Biodiversity Plan 2011 – 2016
- Tipperary County Development Plan 2008-2014

- Fethard Local Area Plan 2009-2015

Relevant Guidelines

- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA, 2003)
- Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2002)
- Guidelines for Ecological Impact Assessment in the United Kingdom (IEEM, 2006).
- Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011)
- A Guide to Habitats in Ireland (Fossitt, 2000)
- Bat Mitigation Guidelines for Ireland (National Parks and Wildlife Service, 2006)

6.3 Desk Study

In addition to those listed in the References section, key resources included:

- Ordnance Survey Ireland mapping available online at http://www.osi.ie/Home.aspx
- Data on rare/protected/threatened species and designated sites held online by the National Park and Wildlife Service (NPWS); and National Biodiversity Data Centre
- British Trust for Ornithology and Birdwatch Ireland Bird Atlas 2007-2011 Data

6.4 Field Survey Methodology

Habitats and Flora Survey

The existing site buildings and surrounding areas were surveyed on the 16th September, 2015 in calm conditions. All habitat types were classified using the Guide to Habitats in Ireland (Fossitt, 2000). Within each habitat dominant and abundant plant species, indicator species and/or species of conservation interest were recorded. Plant nomenclature follows that of the Checklist of the Flora of Britain & Ireland (BSBI, 2007).

Fauna Survey

Fauna were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, and by direct observation. Habitats on site were assessed for signs of usage by protected/rare fauna species, and for their potential to hold these species. Because of the industrial and developed nature of the site and the area to the south, north and east of the development buildings, only the hedges, tillage and grassland areas to the west were searched for signs of badger and other protected species. There was also note taken of the proximity of the facility with relation to the Lower Suir SAC and the potential for impacts to fish and other aquatic and benthic species from the continued operation of the process with increased tonnage throughput.

6.5 Ecological Evaluation & Impact Assessment

Site Evaluation Criteria

The criteria used to assess the ecological value and significance of habitats follows Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009a and is consistent with the Guidelines for Ecological Impact Assessment (IEEM, 2006).

Physical and Data Limitations

Vegetation surveys were undertaken in September at the optimal time of year. Mammal surveys are best conducted in winter when vegetation dieback affords unhindered views of field signs and potential breeding/resting places. However, the hedgerow, tillage field and grasslands to the west of the facility were surveyed for potential mammal activity. The walkover was also completed to identify birds in the area but because of the time of year it could not be determined if the birds observed had nested in the area.

6.6 Description of Existing Environment

Site Overview

The facility is located in Miltownmore, an agricultural area south east of Fethard. The site is accessed by a laneway off the Rosegreen to Fethard L1409. The site encompasses approximately 5.9 hectares. It is at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the east. It is occupied by the three main composting Buildings, a covered reception area and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, bio filter and former cattle sheds. The area surrounding the sheds is undeveloped and formerly used for animal grazing. A series of integrated constructed wetlands exist to the south west of the main composting buildings.

Protected Areas

Special Areas of Conservation (SAC) are designated under the EC Habitats Directive (92/43/EEC) as amended, which is transposed into Irish law through a variety of legislation including the Birds and Habitats Regulations and the Planning and Development Acts. The legislation enables the protection of certain habitats (listed on Annex I of the Directive) and/ or species (listed on Annex II). Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC). This allows for the protection of protected bird species listed on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for migratory birds.

National Heritage Areas (NHAs) are designations under the Wildlife Acts in order to protect habitats, species or geology of national importance. Many of the NHAs in Ireland overlap with Natura 2000 sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning legislation which requires that planning authorities give due regard to their protection in planning policies and decisions.

The closest SAC to the Milltown facility is the Lower River Suir SAC (site code: 001237) situated approximately 17 km east of the site, flowing south from Fethard to the river Suir east of Clonmel. There are no SPAs in the vicinity of the Miltown site and the nearest NHA or pNHA is Powers Wood (site code: 000969) approximately 4.62 km northwest of site.

Table 6-1 Closet Nautura 2000 Sites

Distance	Site	No.
5km	Powers Wood PNHA	000969
5.3km	Money Park PNHA	000966
13 km	Slievenamon Bog NHA	002388
17.62km	The Lower River Suir SAC	002137

Records of Protected and/or Rare Flora & Fauna Species

A search of records of Red Data Book and protected species held by the NPWS and the National Biodiversity Data Centre was completed as part of the site assessment.

A search of records of Red Data Book and protected species held by the NPWS and the National Biodiversity Data Centre was completed as part of the site assessment. Records were also obtained from the online database of the National Biodiversity Centre (www.biodiversityireland.ie) in January 2016, see Attachment F.2. The data review concentrated on a 10km grid in which the facility is located and indicated protected fauna species including Northern Lampwing *(Vanellus vanellus),* Erasian Curlew *(Numenius arquata)* European Otter (*Lutra lutra)*, Eurasian red squirrel (*Sciurus vulgaris)*, Heath snail (*Helicella itala)*, Slender Amber Snail (*Oxyloma sarsii),* Freshwater White Clawed Crayfish *(Austropotamobius pallipes).* The results of the data review are provided in Tables below

The following table's (6.2 & 6.3) presents recordings of bird sightings found within a 10km distance from the sampling area in Miltown. The conservation concern of each sighting falls within one of two categories, red and amber.

Amber list species are thought to fall under unfavourable conservation status in Europe and possess a moderate population decline. Species that fall under the Red list are in steep decline and our thought to be globally threatened.

The majority of the sightings found within the area fall under the amber list. With the common kestrel, common koot, common snipe and common linnet being the most recorded. These are birds that migrate long distances starting off in warm temperate regions.

The species that fall within the red list are the corn crake, yellow hammer, peregrine falcon and northern shoveler, these are annex I bird species under the EU bird's directives (2009/147/EEC) and are found in designated SPAs (Special Protection Areas) as they fall under current management plans in operation. The main threat for these birds along with the amber list species stated above is increased land use and agricultural intensification along with increased use of pesticides and hunting.

The use of the facility within the monitored area is thought to not have a significant impact on the species recorded as these species are not in relevant range of the facility.

Table 6-2 Protected and listed birds within 10 km Grid where site is located

Species name	Species group	Record count	Conservation Concern	Date	Source
Common Sandpiper (*Actitis hypoleucos*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wet+F3:F38land Birds Survey (I-WeBS) 1994-2001.*
Sky Lark (*Alauda arvensis*)	bird	7	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Kingfisher (*Alcedo atthis*)	bird	1	Amber List - Least Concern	31/07/1972	*The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.*
Northern Shoveler (*Anas clypeata*)	bird	1	Red List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Eurasian Teal (*Anas crecca*)	bird	8	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Eurassian Wigeon (*Anas penelope*)	bird	3	AmbeL - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Greylag Goose (*Anser anser*)	bird	2	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Swift (*Apus apus*)	bird	3	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Common Pochard (*Aythya ferina*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Tufted Duck (*Aythya fuligula*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Greater Scaup (*Aythya marila*)	bird	1	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Goldeney(*Bucephala clangula*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Common Linnet (*Carduelis cannabina*)	bird	10	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Rock Pigeon (*Columba livia*)	bird	4	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Corn Crake (*Crex crex*)	bird	1	Red List - Least Concern	31/07/1972	*The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.*
Mute Swan (*Cygnus olor*)	bird	9	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
House Martin (*Delichon urbicum*)	bird	5	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Yellow Hammer (*Emberiza citrinella*)	bird	6	Red List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Merlin (*Falco columbarius*)	bird	1	Amber List - Least Concern	29/02/1984	*The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.*
Peregrine Falcon (*Falco peregrinus*)	bird	3	Red List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Kestrel (*Falco tinnunculus*)	bird	11	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Coot (*Fulica atra*)	bird	12	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Snipe (*Gallinago gallinago*)	bird	13	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Barn Swallow (*Hirundo rustica*)	bird	8	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Herring Gull (*Larus argentatus*)	bird	4	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*

Table 6-3 Listed Birds continued

Species name	Species group	Record count	Conservation Concern	Date	Source
Mew Gull (Larus canus)	bird	2	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Lesser Black Backed Gull (*Larus fuscus*)	bird	5	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Great Black backed Gull *(Larus marinus*)	bird	3	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Black headed Gull (*Larus ridibundus*)	bird	8	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Grasshoper Warbler (*Locustella naevia*)	bird	2	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Jack Snipe (*Lymnocryptes minimus*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Spotted Flycatcher (*Muscicapa striata*)	bird	5	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Eurasian Curlew (*Numenius arquata*)	bird	5	Red List - **Near Threatened**	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
House Sparrow (*Passer domesticus*)	bird	12	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Great Cormorant *(Phalacrocorax carbo*)	bird	2	Amber List - Lesser Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Pheasant (*Phasianus colchicus*)	bird	9	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
European Golden Plover (*Pluvialis apricaria*)	bird	2	Red List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Water Rail (*Rallus aquaticus*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Sand Martin (*Riparia riparia*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Erasian Woodcock (*Scolopax rusticola*)	bird	4	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Arctic Tern (*Sterna paradisaea*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Common Starling (*Sturnus vulgaris*)	bird	8	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Little Grebe (*Tachybaptus ruficollis*)	bird	7	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Greenshake (*Tringa nebularia*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Common Redshank (*Tringa totanus*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Barn Owl (*Tyto alba*)	bird	2	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Northern Lapwing (*Vanellus vanellus*)	bird	9	Red List - **Near Threatened**	31/12/2011	*Bi+H2:M24rd Atlas 2007 - 2011*

Table 6-4 Protected terrestrial mammals within 10km of site

Species Name	Species Group	Recordings	Conservation Concern	Date	Source
European Otter (*Lutra lutra*)	terrestrial mammal	5	Red List - Near Threatened	15/03/1991	*Badger and Habitats Survey of Ireland*
Eurasian Badger (*Meles meles*)	terrestrial mammal	67	Red List - Lesser Concern	16/12/2008	*Irish National Badger Sett Database*
Lesser Noctule - Bat (*Nyctalus leisleri*)	terrestrial mammal	35	Red List - Lesser Concern	21/07/2014	*National Bat Database of Ireland*
Pipistelle - Bat (*Pipistrellus pipistrellus sensu lato*)	terrestrial mammal	25	Red List- Lesser Concern	10/08/2009	*National Bat Database of Ireland*
Soprano Pipistrelle (*Pipistrelluspygmaeus*)	terrestrial mammal	35	Red List - Lesser Concern	22/08/2014	*National Bat Database of Ireland*
Eurasian Red Squirrel (*Sciurus vulgaris*)	terrestrial mammal	1	Red List- Endangered	15/03/1991	*Badger and Habitats Survey of Ireland*

The recordings of terrestrial mammals within a 10km distance is presented within table 6.4. The Eurasian badger, lesser noctule, pipistrelle, sopranao pipistrelle and eurasian red squirrel is thought to originate from the nier valley woodlands an SAC (IE 000668) located 15km south of the site. The species are all Annex II species of the Wildlife Act. The main threats present are habitat fragmentation, deforestation and increased competition from invasive species. The European Otter originates from the Lower River Suir SAC (IE 000668) which is located 10 to 15km east of the site. The main relevant threats to this species include use of pesticides, fertilization and canalisation of inland water.

The use of the compost facility is thought to have no relevant impact on these species as the facility is not in close range of the sighted recordings.

Table 6-5 Protected Mollusc species within 10km of site

Species Name	Species Group	Recordings	Conservation Concern	Date	Source
Heath Snail (*Helicella itala*)	mollusc	1	Red List Threatened	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Slender Amber Snail (*Oxyloma sarsii*)	mollusc	1	Red List - Critically Endangered	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Marsh Whorl Snail (*Vertigo antivertigo*)	mollusc	1	Red List - Near threatened	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Blunt Fruited Pottia (*Tortula modica*)	moss	2	Red List - Threatened Specied	31/12/2004	*Bryophytes of Ireland*
Weissia controversa var. crispata	moss	3	Species: Data deficient	08/02/2007	*Bryophytes of Ireland*
Freshwater White Clawed Crayfish (*Austropotamobius pallipes*)	crustacean	6	Red List - Endangered	31/12/2007	*Irish National Crayfish Database*

There were critically endangered mollusc species and endangered crustaceans identified within the 10 km grid. Given the last sighting of the slender amber snail was in 1982 and the nature of the site, this is not of concern. Additionally, the freshwater white clawed crayfish is thought to be located in the river Suir SAC which is not significantly affected by the Miltown Facility.

Table 6.6 outlines the Protected Species from Wildlife Act (Terrestrial mammals) and Bird Directive Annex II (Birds) within 2km of site

Table 6-6 Protected Species from Wildlife Act (Terrestrial mammals) and Bird Directive Annex II (Birds) within 2km of site

Species name	Species Group	Date	Conservation concern
Mallard (*Anas platyrhynchos*)	Bird	31/07/1991	Red List - Least Concern
Common Wood Pigeon (*Columba palumbus*)	Bird	31/07/1991	Red List - Least Concern
Common Coot (*Fulica atra*)	Bird	31/07/1991	Amber List - Least Concern
Great Black-Backed Gull (*Larus marinus*)	Bird	31/07/1991	Amber List- Least Concern
Eurasian Curlew (*Numenius arquata*)	Bird	31/07/1991	Red List - Near Threatened
House Sparrow (*Passer domesticus*)	Bird	31/07/1991	Amber List - Least Concern
Eurassian Badger (*Meles meles*)	Terrestrial mammal	25/10/2006	Red List - Least Concern
Stock Pigeon (*Columba oenas*)	Bird	31/12/2011	Amber List - Least Concern
Common Kestrel (*Falco tinnunculus*)	Bird	31/12/2011	Amber List - Least Concern
Whooper Swan (*Cygnus cygnus*)	Bird	18/01/2015	Red List - Least Concern

The search for protected species within 2km of the Miltown site outlined in Table 6.6 above indicates a number of species. The proposed development will not include any increased land use or other activities that could adversely impact on listed species.

6.7 Field Survey Results

Habitats

The main habitat types identified in the immediate environs of the facility are outlined in Table 6.6 and are included on the Habitat Map (Attachment F.3) which outlines the extent of all habitat types present within the environs of the site.

Table 6.6: Habitats Recorded in Vicinity of Miltown Facility

Habitats Located in The Environs of Miltown Facility	
Habitat Type*	**Relation to Facility**
Improved Agricultural Grasslands (GA1)	Lands to the south and west of the proposed development, beyond the surrounding hedgerow.
Scrub (WS1)	Within the hedgerow immediately west and northwest of the proposed development.
Hedgerows (WL1)	Immediately west and northwest of the proposed development.
Treelines (WL2)	Within the hedgerow immediately west and northwest of the proposed development.
Buildings and Artificial Surfaces (BL3)	The facility itself and the areas to the south, east and north

*- Based on Fossitt, 2000.

Improved Agricultural Grassland (GA1)

The majority of the area to the west of the facility is dominated by Improved Agricultural Grassland (GA1) traversed with Hedgerows (WL1) and Treelines (WL2). Perennial Rye-grass *Lolium perenne* was the dominant species along with Daisy *Bellis perennis,* Ribwort Plantain *Plantago lanceolata* and White Clover *Trifolium repens*.

Buildings and Artificial Surfaces (BL3)

Buildings and artificial surfaces (BL3) are the areas of built land that include the facility itself, the hard standing areas surrounding the facility and the roadways within the site.

6.8 Potential Impacts of the Proposed Development

Likely significant impacts have been assessed for Sensitive Ecological Receptors, as listed in Table 6-1. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a Sensitive Ecological Receptor at a specified geographical scale. Due to the fact that the facility already exists and operates, and is not impacting on sensitive ecological receptors due to the closed operations system in place whereby no leachate or excessive noise is released from the facility building, it is not considered that the continued use of the facility will have a high potential for impact.

6.9 Mitigation Measures

The following mitigation measures should be put in place to ensure continued protection of sensitive ecological receptors:

- The facility has a concrete bunded floor in place within the process facility which results in no process discharge to sewer or surface water drains that could potentially impact sensitive receptors. This mitigation measure will continue for all future operations and no outputs to septic or surface water drains from inside the facility will take place.
- All leaks and spills of leachate will be directed to the dedicated leachate drainage system in the new reception area and all leachate will be recirculated back through the process.
- All operations will continue to take place within the facility sheds with no tonal noise output from the building (see Chapter 9 of this EIS).
- Rodent control will be restricted to inside the facility building and in appropriately designed receptacles to avoid potential for other fauna to be affected by potential ingestion of poisons used for controlling vermin.
- Refuelling of machinery, will be carried out on concrete surfaced designated areas that are drained to an oil/water separator system.
- An emergency response plan will be followed to deal with any emergency that has the potential to impact on protected species or habitats.

6.10 Residual Impacts

If all mitigation is properly and fully implemented there are no foreseen residual impacts from the facility.

6.11 Conclusions

The facility is developed with either buildings or hard standing surfaces which support little or no significant habitat for flora and fauna. The majority of the area to the surrounding the facility is dominated by Improved Agricultural Grassland (GA1) traversed with Hedgerows (WL1) and Treelines (WL2). It is not envisioned that the proposed increase of tonnage at the Miltown facility will adversely affect the flora and fauna surrounding the facility.

7.0 WATER

7.1 Introduction

JRE have prepared this section of the EIS, which assesses the impact of Miltown composting facility on the water environment due to increased operations on site. The surface water flow from the shed roofs exits the site at SW1 at the southwest corner of the site. There are three on-site wells one of which is used for production purposes and the other two were installed for monitoring purposes in 2008. The production well (GW-1) is located in the west of the site and down gradient of the composting activities. GW-3 is up gradient in the northeast corner of the site and up gradient of the composting facility and GW-2 is west of Shed 1 and is down gradient. The monitoring locations can be seen in Drawing 032-02C (Attachment A.1). The groundwater gradient is estimated to flow in a southwest direction towards the River Moyle.

7.2 Methodology

This chapter describes the existing water environment in the vicinity of the Milltown Composting facility and the potential impacts resulting from the proposed development (i.e., increased facility operations). It also outlines the potential surface water and hydrogeological impacts from the development and the controls and mitigation measures to be implemented during various phases of the development where required. The assessment of waters at the site was completed with reference to the following:

- The EPA's Guidelines on the Information to be contained in Environmental Impact Statements, 2002; and
- The EPA's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2003;

This section describes the hydrological and hydrogeological setting of the site and outlines the information collected from a number of public and published sources.

The information contained in this section has been divided into sub-sections, so as to describe the various aspects related to the water environment. In the preparation of this section the site was assessed using published information and regional hydrological data including;

- Available information from the National Parks and Wildlife Service (NPWS) and Environmental Protection Agency with respect to water quality in the area;
- Available information for the area from the Geological Survey of Ireland.

7.3 Surface Water

Existing Environment

The site is located in the townland of Miltownmore, approximately 5 km to the southwest of Fethard and 12 km to the north of Cashel. The site is accessed by a private laneway off the L1409 Rosegreen to Fethard third class road. The site encompasses approximately 5.9 hectares. It is at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the east. It is occupied by the three main buildings, a new cover reception area, and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, biofilter and former cattle sheds. The area surrounding the sheds is undeveloped and formerly used for animal grazing. A series of integrated constructed wetlands exist to the southwest of the main composting buildings.

The site lies within the catchment of the River Moyle, which is approximately 1.6 km to the west of the site. An unnamed tributary of the Moyle, approximately 1 km south west of site boundary is the closest surface water course to the site. The facility is located at a local high point with falls to the west, south and north. Drainage from the operational area within the building is directed to the dedicated recirculation drainage area in Shed 1 and the drain located in the new covered reception area and surface water from the open yard and building roofs are directed towards an existing surface water drainage ditch to the southwest. Drainage from the undeveloped fields north of the operational area is to the north.

The River Moyle has experienced impacts in recent history which were caused mainly by diffuse agricultural, or point source pollution from waste water treatment plants, septic tanks and industry. In 2001 a report from the south eastern river basin district the river Moyle was found to have two locations that were found to be moderately polluted at times and seriously polluted at times. In 2002 the EPA published an interim report on the biological survey of river quality (Attachment G1). This report included the river Moyle and indicated biological Quality ratings at various monitoring locations on the river Moyle from 1981 to 2002, see Figure 2.

Figure 2 River Moyle Biological Quality Ratings 1981-2002

River and Code : **MOYLE** **16/M/01**
Tributary of : Anner OS Catchment No: 182
OS Grid Ref : S 248 275 Date(s) Surveyed : 10/07/02

Sampling Stations		Biological Quality Ratings (Q Values)								
No.	Location	1981	1983	1986	1988	1992	1994	1996	1999	2002
0025	Tullamain Bridge	-	-	4	3-4	3-4	-	-	-	-
0050	Br NW of Mocklerstown	3-4	2	2	1	1	1	2-3	2	3
0100	Moyle Br	2	2	-	1	1	1	-	-	-
0200	Ballinavoher Br	-	-	-	1	3	-	3	dry	3
0270	Br S of Baptistgrange	-	-	-	-	-	-	3	3	3
0400	Br u/s Anner R confl	4-5	4	4	3-4	3-4	-	3-4	3	3-4

Three further reports were published on river quality in south Tipperary from 2011 – 2013. Each report stated that the river Moyle had been seriously polluted downstream from national proteins in the past.

These reports found that

- In 2011 it was found that four monitoring locations were moderately polluted at times. Conditions at the national proteins site were slightly improved and there were indications of eutrophication at the Anner confluence monitoring location. Overall an improvement on previous years. A Quality rating of 3 at the Anner confluence was given.
- In 2012 the upper stations were found to have very low or no flow in dry weather. Nitrate and ortho-phosphate were high on occasion at the first two stations. Poor ecological quality where sampled. No change on 2011
- In 2013 ammonia was elevated in January and March. The upper stations can have very low or no flow in dry weather with station 0200 (Ballinvoher Br) dry in August. Nitrates are elevated throughout the river. Poor ecological quality at Station 0400 in 2011.

The current quality status of the River Moyle is Q3 (poor) according to the water matters reports and the status report can be seen in Attachment G.2.

The Water Framework Directive (WFD) requires measures to ensure that waters achieve at least "Good Status" by 2015 and that the current status does not deteriorate. The objectives for particular watercourses are based on Pressure and Impact assessments of human activity, including point sources (e.g., wastewater treatment plants) and diffuse sources (e.g., fertiliser land spreading), land use (e.g. quarrying, mining and turf harvesting) and morphological conditions (e.g., river depth, width, substrate of river bed etc.) on surface waters to identify those water bodies that are at risk of failing to meet the WFD objectives. The River Moyle failed the objective of meeting good status by 2015 and a revised objective for the river has been set to meet good status by 2021.

Flood Risk

Miltown Composting is located at an elevated position (139m ODM) in relation to the local surface water bodies. There is a low risk of flooding at the site. The occurrence of flooding at Miltown More area was completed on www.floodmaps.ie prepared by the Office of Public Works (OPW). There are no recorded instances of flooding in the Miltown More area.

Surface Water Monitoring

As part of licence compliance, Miltown composting retained Matrix Environmental to perform bi-annual monitoring of surface waters at the site. The monitoring location SW1 can be seen in Attachment A.1. The parameters to be sampled are outlined in the facility's EPA Waste Licence and are BOD, Suspended Solids and Ammonia (NH_4-N). The results of the sampling programme at the Miltown Composting facility can be seen in the following Tables 7-1 through 7-3 and Figures 4 through 6. The laboratory reports are provided in Attachment G.3.

Table 7-1 BOD results for SW-1

Location	Month & Year	BOD Concentration mg/l O_2	Regulatory Value mg/l O_2
SW1	Jun-13	315	5
	Oct-13	127	5
	Oct-14	6	5
	Nov-14	4	5
	Jan-15	5	5
	May-15	5	5
	Feb-16	3	5
	Mar-16	<2	5
	June-16	<2	5
	Aug-16	<2	5

Figure 3 Graph of BOD Concentrations SW-1

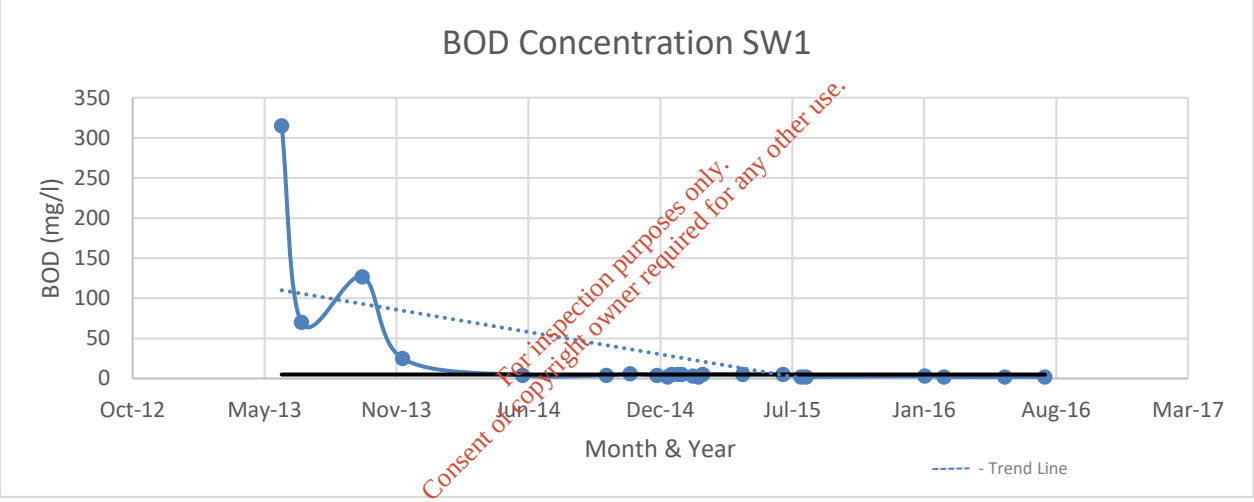


Table 7-2 Results for ammonia (NH_3) at SW-1

Location	Month & Year	Ammonia Concentration mg/l	Regulatory Value (NH3) mg/L
SW1	Jun-13	15.31	0.02*
	Oct-13	27.81	0.02*
	Nov-14	0.84	0.02*
	Dec-14	0.65	0.02*
	Jan-15	0.73	0.02*
	Feb-15	0.56	0.02*
	Feb-16	0.99	0.02*
	Mar-16	0.47	0.02*
	June-16	0.53	0.02*
	Aug-16	0.27	0.02*

*0.02 mg/l is stated as an EQS for surface waters in the interim report for the protection of groundwater 1993

Figure 4 Ammonia Concentrations at SW-1

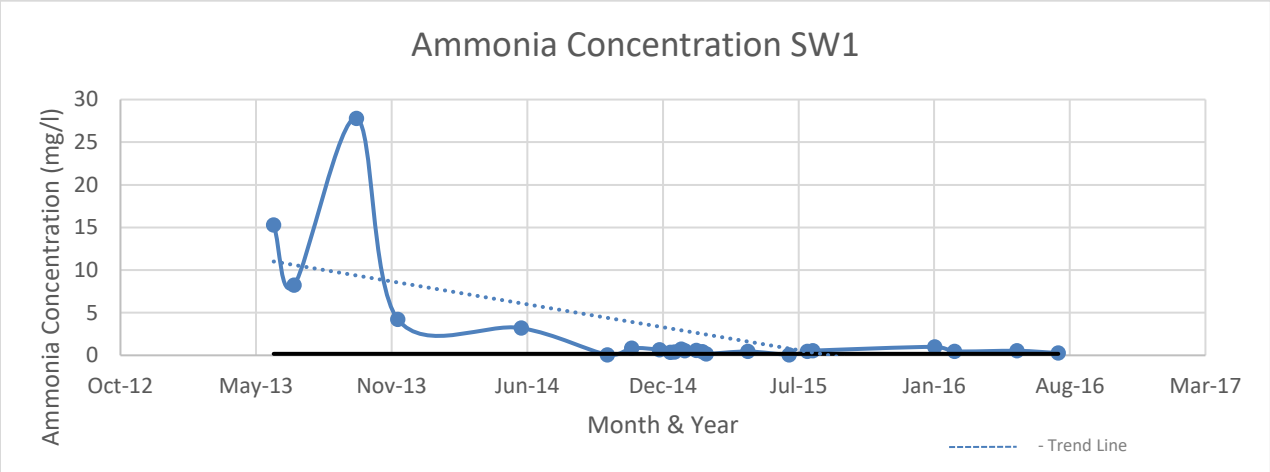
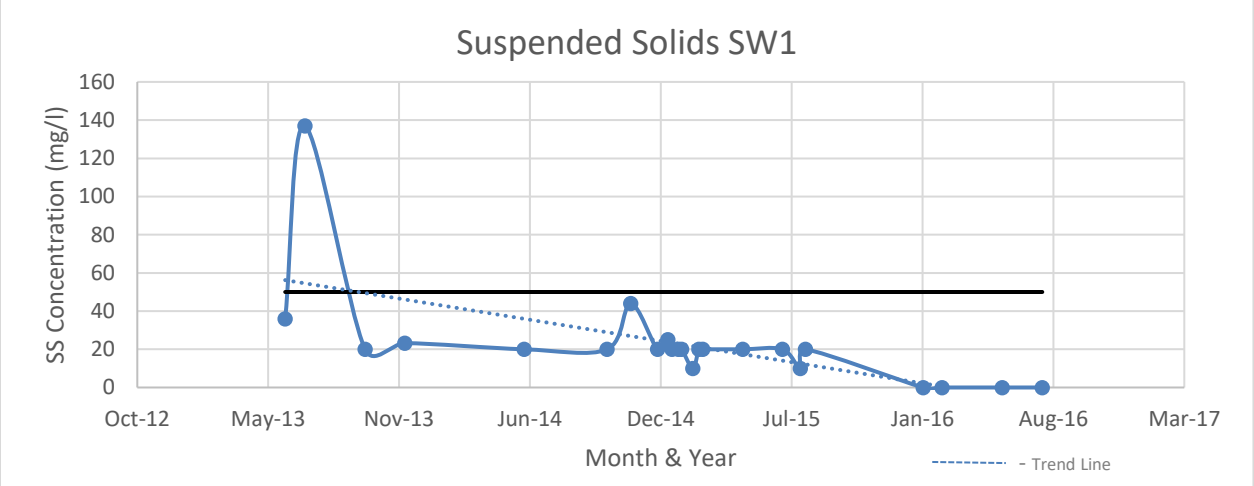


Table 7-3 Results for suspended solids at SW-1

Location	Month & Year	Suspended Solids Concentration mg/l	Regulatory Value mg/l
SW1	Jun-13	36	50
	Dec-13	137	50
	Nov-14	20	50
	Dec-14	44	50
	Jan-15	25	50
	May-15	20	50
	Feb-16	<5	50
	Mar-16	<5	50
	June-16	<5	50
	Aug-16	<5	50

Figure 5 Suspended Solids Concentrations at SW-1



Impacts from the Proposed Development

The increase of throughput to 160 tonnes per day will have a negligible impact on surface waters if the improved mitigation measures are completed with continuing environmental monitoring of surface waters.

Mitigation Measures

A number of improvements and replacements have been proposed to the existing mitigation measures on site for the protection of surface water bodies. Below are the mitigation measures which are proposed to ensure that the operation of the proposed development does not result in a negative impact on the hydro-geological environment surrounding the Miltown facility. The mitigation measures are described below;

- As part of the proposed development, a new containment tank (47.54 m^3) will be installed as part of the recirculation system at the southwest corner of Shed 1. This tank will be used for the storage and recirculation of potentially contaminated surface water runoff from the ramped waste intake area to ensure that any runoff is directed in a controlled manner to the on-site contaminated water/leachate recirculation system. The impacted water will be used as part of the composting process (dampening the pre-composting bays in Shed 1).
- As part of the revised leachate collection system, collected impacted water will be directed initially to a new pump/sump tank located south of the amendment storage area, from where it will be pumped to the recirculation tank for recirculation into the process.
- The provision of an impermeable surface for the new turn table area for vehicles delivering organic waste to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which will be directed to the dedicated contaminant/recirculation system.
- To manage any possible spillage risk on the turntable area Miltown will update their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure. The updated SOPs will ensure that the turntable area is inspected after every delivery for spillage and if in the event of a minor spillage that a spill kit including a suitable absorbent material will be at hand in order to undertake a clean-up if required, meeting license condition
- Construct a 0.7m high kerb around the base of the new reception building connecting the kerbing to the eastern end of the south wall of the pump house and the south wall of Shed 1, thereby allowing the use of this area within the new reception building footprint for firewater retention and also ensuring that any possible spillage is directed into the leachate collection system via the new pump house drainage.
- As part of the revised leachate/impacted surface water collection system, collected water will be directed initially to a new pump sump tank located south of the amendment storage area.

Depending on the volume of liquid directed to the pump sump tank through the leachate collection system the collected liquid will be manually pumped from the pump/sump tank back up to the filtration system in the pump house for re-circulation to the pre-composting bays. For large volumes of liquid release (i.e., large spill or fire water) automatic pumping will take place to pump any possible initial firewater or major spillage liquid back up the new consigned contaminated water storage tank. This pump/sump tank has a high level liquid alarm which sends a text to the site managers and operators in the event of a problem.

- Installing a new roof and impermeable concrete floor at the waste reception area will reduce the potential for run off of impacted surface water to open ground, where is could potentially migrate to the underlying aquifer.
- All potentially impacted surface water runoff at the reception area will be collected and recirculated back into the process. No water from the reception area will be allowed to migrate from the building.
- All non-impacted surface water will be diverted to the oil/water interceptor and released from there to the surface water drain. It is envisioned by Miltown that this non-impacted water will be released to the Integrated Constructed Wetlands (ICW) onsite, pending EPA approval. The ICW ponds will provide treatment on the non-impacted water to ensure that there are no emissions from the facility.

Conclusions

Historically there have been some issues with ammonia in the surface water sample location at the Miltown Composting facility. Each monitoring event at surface water monitoring location (SW-1) contained ammonia concentrations which exceeded the environmental quality standard of 0.02 mg/l. The values ranged from 0.56 mg/l (February 2015) to 27.81 mg/l (October 2013). Since the spike in October 2013 there has been a steady decrease in the concentrations of ammonia at SW1. As can be seen in Figure 5 above, the trend for ammonia concentrations is downward. With the proposed mitigation measures being introduced at the site there will no longer be any discharge to surface water from the yard area to the west of Shed 1 as this is now part of the covered reception area and surface water from this area will now be re-circulated back into the process. Any emissions which are not collected by the recirculation tank will be sent to the Integrated Constructed Wetlands (ICW) for treatment.

There will also be an option for Miltown (subject to EPA approval) to use the integrated constructed wetlands (ICW) for the further natural attenuation of surface water discharged from the site whereby the biomass within the ICW would take up any excess ammonia in surface waters flowing through the system.

As seen with the ammonia results, elevated BOD concentrations were observed in 2013 and as can be seen in Figure 4, BOD concentrations have decreased significantly since and the trend is going in a downward direction. In all sampling events during 2016, all BOD concentrations have been less than the Laboratory Method Detection Limit Detection (i.e., <2 mg/l O_2).

Suspended solid concentrations spiked in the December 2013 sampling event and exceeded the EPA Water Quality limit of 50 mg/l. All other sampling events carried out at SW1 since the beginning of 2013 consisted of suspended solid concentrations less than 50 mg/l, with the most recent sampling event in August 2016 indicating concentrations were less Laboratory Method Detection Limit Detection (i.e., <5 mg/l).

It is expected the proposed mitigation measures on site will see a continuation in the reduction of contaminants of concern in surface water discharge from the Miltown site.

7.4 Groundwater Monitoring

Existing Environment

The site is located in the townland of Miltownmore, approximately 5 km to the southwest of Fethard and 12 km to the north of Cashel. The site is accessed by a private laneway off the Rosegreen to Fethard L1409. The site is approximately 5.9 hectares and has an area of approximately 35,000 m^2. It is at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the east. The site consists of one reception building, one main composting building, one covered yard area and two storage sheds, paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, biofilter and former cattle sheds. The area surrounding the sheds is undeveloped and formerly used for animal grazing. A series of integrated constructed wetlands exist to the southwest of the main composting buildings.

Groundwater Monitoring

Milltown Composting retained Matrix Environmental to perform annual groundwater monitoring at three groundwater monitoring wells (i.e., GW1, GW2 and GW3) to comply with their EPA Waste Licence. The locations of GW1, GW2 and GW3 are outlined in Drawing in Attachment A.1. The following parameters are outlined in the facility's Waste Licence for sampling and analysis;

- pH
- Nitrate
- Total Ammonia
- Total Nitrogen
- Conductivity
- Chloride
- Organic Compounds

The results of the groundwater monitoring programme for the facility for the past five years are outlined in Tables 7-4 through Table 7-11 can be seen in the following tables:

Table 7-4 Nitrate Concentrations in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Nitrate	2011	2.49	0.54	13.71	25
	2012	2.07	0.87	8.42	25
	2013	2.04	0.82	10.39	25
	2014	1.42	1.02	12.23	25
	2015	3.14	0.27	8.48	25
	2016	9.0			25

Figure 6 Graph of Nitrate Concentrations at Monitoring Well Locations GW1, GW2 and GW3

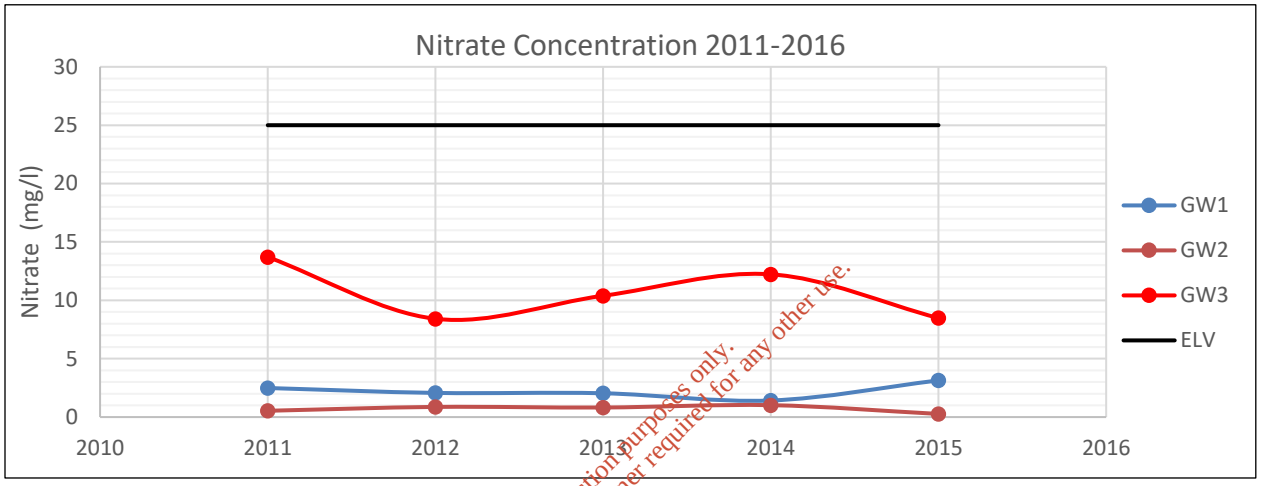


Table 7-5 pH Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Regulatory Value	Year	GW1	GW2	GW3
pH	≥ 6.5 and ≤ 9.5	2011	6.5	6.4	6.1
		2012	7.1	6.8	6.9
		2013	6.6	6.4	6.1
		2014	6.9	6.9	6.6
		2015	6.8	6.7	6.4
		2016	6.6		

Table 7-6 Conductivity Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (us/cm)	GW2 (us/cm)	GW3 (us/cm)	Regulatory Value (us/cm)
Conductivity	2011	602	789	310	1000
	2012	589	757	278	1000
	2013	598	794	289	1000
	2014	578	807	297	1000
	2015	589	799	284	1000
	2016	504			1000

Table 7-7 Ammonium (NH_4) Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Ammonia	2011	0.137	0.083	0.06	0.175
	2012	0.174	0.06	0.009	0.175
	2013	0.056	0.219	0.035	0.175
	2014	0.256	0.138	0.017	0.175
	2015	0.144	0.113	0.115	0.175
	2016	0.03			0.175

Figure 7 Graph of Ammonium Concentrations at Monitoring Wells GW1, GW2 and GW3

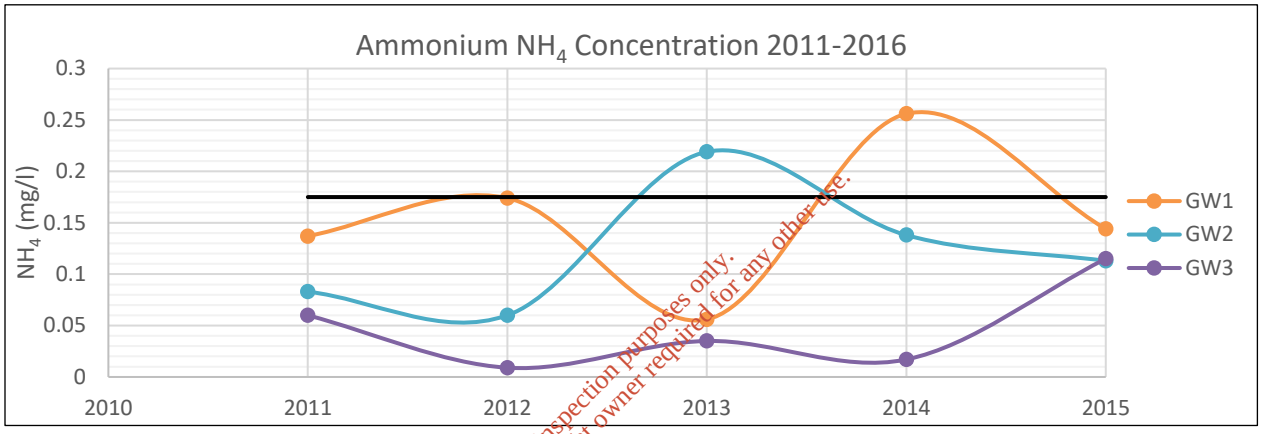


Table 7-8 Total Ammonia Concentrations in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Total Ammonia	2011	0.267	0.161	0.117	0.5*
	2012	0.338	0.116	0.021	0.5*
	2013	0.109	0.426	0.068	0.5*
	2014	0.498	0.268	0.175	0.5*
	2015	0.28	0.22	0.223	0.5*

*The regulatory value of 0.5 was taken from the drinking water directive

Figure 8 Total ammonia concentration at monitoring well locations

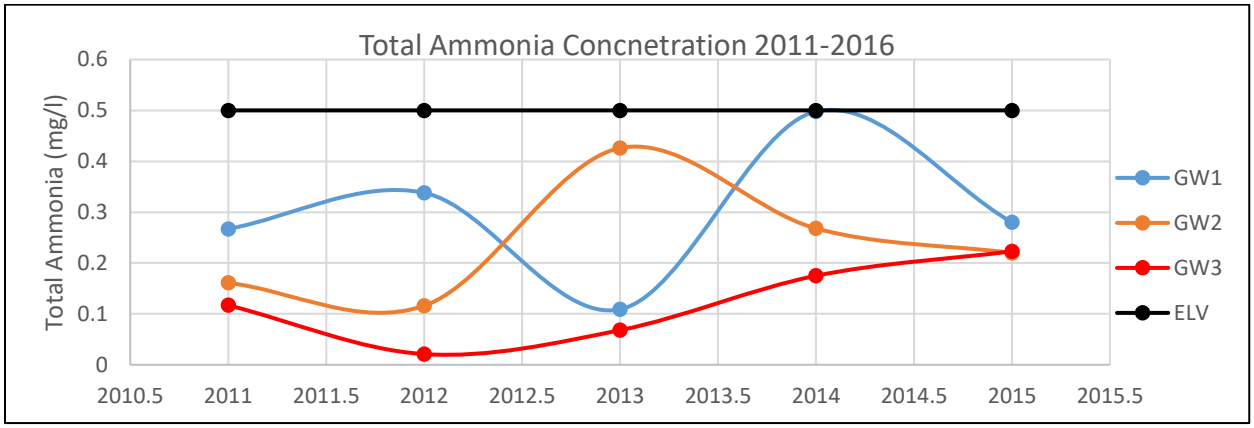


Table 7-9 Total Nitrogen monitoring results

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	Regulatory Value (mg/l)
Total Nitrogen	2011	4.7	1	13.1	
	2012	4.8	2.7	11.2	
	2013	2.8	1.2	9.8	
	2014	2.6	1	10	
	2015	4.1	1	11.1	

Table 7-10 Chloride Monitoring Results

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	ELV (mg/l)
Chloride	2011	74.6	121.4	27.8	187.5
	2012	75	152	27.9	187.5
	2013	77	188.5	2.6	187.5
	2014	68.4	137.9	28.5	187.5

Figure 9 Chloride concentrations at monitoring well locations

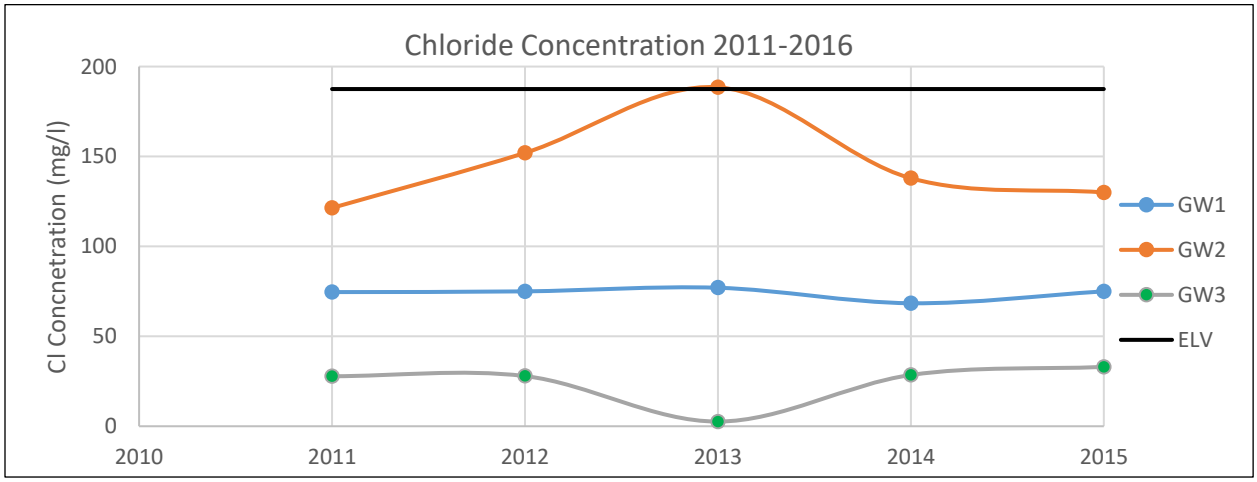


Table 7-11 BTEX Monitoring Results for GW-3 - 2011-2015

Sample Location	Benzene	Toluene	Ethyl Benzene	Xylene
2011	<0.1	<0.5	<0.5	<0.5
2012	<0.1	<0.5	<0.5	<0.5
2013	<0.1	11.2	<0.5	<0.5
2014	<0.1	<0.5	<0.5	<0.5
2015	<0.1	<0.5	<0.5	<0.5

VOC concentrations were less than the method detection limits (MDL) for all sampling events except for monitoring well GW3 in 2013 when an elevated concentration of toluene was observed. The concentration measured was above the regulation value of 10 µg/l.

Mitigation Measures

A number of improvements and replacements have been proposed to the existing mitigation measures on site for the protection of groundwater bodies. Below are the mitigation measures which are proposed to ensure that the operation of the proposed development does not result in a negative impact on the hydro-geological environment. The mitigation measures are described below;

- As part of the new reception building, a new containment tank (47.54 m^3) was installed as part of the recirculation system at the southwest corner of Shed 1. This tank will be used for the storage and recirculation of potentially contaminated surface water runoff from the ramped waste intake area to ensure that any runoff is directed in a controlled manner to the on-site contaminated water/leachate recirculation system. The impacted water will be used as part of the composting process (dampening the pre-composting bays in Shed 1).
- As part of the revised leachate collection system, collected impacted water will be directed initially to a new pump/sump tank located south of the amendment storage area, from where it will be pumped to the recirculation tank for recirculation into the process.
- The provision of an impermeable surface for the new turn table area for vehicles delivering organic waste to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which will be directed to the dedicated contaminant/recirculation system and will not allow any discharge to ground.
- To manage any possible spillage risk to ground from the turntable area Miltown will update their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure. The updated SOPs will ensure that the turntable area is inspected after every delivery for spillage and if in the event of a minor spillage that a spill kit including a suitable absorbent material will be at hand in order to undertake a clean-up if required, meeting license condition
- All leachate from the process in Shed 1 and the new waste reception area will be contained within the site buildings for re-circulation into the system, this will negate any potential discharge to

ground from the process. As part of the revised leachate/impacted surface water collection system, collected water will be directed initially to a new pump sump tank located south of the amendment storage area. Depending on the volume of liquid directed to the pump sump tank through the leachate collection system the collected liquid will be manually pumped from the pump/sump tank back up to the filtration system in the pump house for re-circulation to the pre-composting bays. For large volumes of liquid release (i.e., large spill or fire water) automatic pumping will take place to pump any possible initial firewater or major spillage liquid back up the new consigned contaminated water storage tank. This pump/sump tank has a high level liquid alarm which sends a text to the site managers and operators in the event of a problem.

- Installing a new roof and impermeable concrete floor at the waste reception area will reduce the potential for run off of impacted surface water to open ground, where is could potentially migrate to the underlying aquifer.
- All potentially impacted surface water runoff at the reception area will be collected and recirculated back into the process. No water from the reception area will be allowed to migrate from the building.
- All non-impacted surface water will be diverted to the oil/water interceptor and released from there to the surface water drain. It is envisioned by Miltown that this non-impacted water will be released to the Integrated Constructed Wetlands (ICW) onsite, pending EPA approval. The ICW ponds will provide treatment on the non-impacted water to ensure that there are no emissions from the facility.

Conclusions

Annual groundwater monitoring carried out on site has indicated that ammonia concentrations down gradient of the waste activities are higher than the monitoring locations up gradient. However only one reading in the last five years in GW1 (0.256 mg/l) and GW2 (0.219 mg/l) were above the 2010 Groundwater Regulation Limit value of 0.175 mg/l. Sampling of Total ammonia also indicated higher concentrations down gradient of site (i.e. GW1 & GW2). One monitoring event in 2013 at GW2 measured a chloride value (188mg/l) marginally higher than the threshold value of 187.5 mg/l. One monitoring event in 2013 indicated a toluene concentration marginally higher than the EPA guideline value of 10µg/l (GW3 11.1µg/l). All other BTEX parameters for all other sampling events were below the method detection limit (MDL).

All other parameters measured were below the 2010 Groundwater Regulations Limits or the applicable EPA guideline values. Based on these criteria it is considered that operation of the composting facility does not have a negative impact on groundwater quality in the area.

With the completion of mitigation measures outlined in Section 7.4.6 the potential source of groundwater contamination from site activities will be negligible. With these measures in place the main sources (e.g. slurry, spreading or fertilizer application) of total ammonia in the groundwater may be from surrounding agricultural activities.

7.5 Hydrogeology

Existing Environment

The local geological and hydrogeological conditions were established from a review of databases maintained by the Geological Survey of Ireland (GSI) and the logs of groundwater monitoring wells installed at the site. The subsoils at the site comprise Namurian Shale & Sandstone till (TNSS). The subsoils are shallow, ranging from 1 to 3 m below ground level. The underlying bedrock comprises muddy siltstone and silty mudstone belonging to the Killeshin Formation. The inferred direction of groundwater flow is to the southwest, towards the River Moyle.

Aquifer Classification

In Ireland, aquifer potential is divided into three broad categories, including: Regionally Important, Locally Important, and Poor. Based on the GSI Guidelines on Aquifer Classification and Vulnerability, the bedrock aquifer beneath the proposed development is considered to be a Regionally Important Aquifer in productive fissured bedrock. The site is located within an area of permeable till subsoil underlain by shale and siltstone where the groundwater vulnerability is classified as extreme. A copy of the GSI aquifer map is provided in Attachment G.5

The subsoils are not significantly water bearing. The Killeshin Formation is classified by the GSI as a 'Poor Aquifer' which is generally unproductive except for local zones.

The European Communities Environmental Objectives (Groundwater) Regulations 2010 was passed into law to protect, enhance and restore all bodies of groundwater and to ensure a balance between abstraction and recharge of groundwater. The objective is for achieving ''good groundwater status'' by 2015. The regulations provide specific threshold values for a variety of parameters such as, ammonia, nitrate, sulphate, lead etc. to provide criteria for calculating the groundwater chemical status. The regulations also provide % criteria for calculating the quantitative status of groundwater by comparing abstraction from a groundwater body against the recharge of the groundwater body. The aquifer classification map can be seen in Attachment G.5

Groundwater Vulnerability

The GSI classifies groundwater vulnerability into four general categories: Extreme, High, Moderate, and Low. The classification system is further divided into bedrock and sand/gravel aquifers. This classification system is based on the permeability and thickness of the soil overlying the aquifer. In principle, thicker layers of fine grained soils overlying an aquifer would generally provide more protection to the aquifer and such a setting would tend towards a low vulnerability rating. Owing to the outcropping bedrock, the vulnerability of the immediate groundwater surrounding the facility is classified as having an extreme vulnerability rating. The direction of groundwater flow is expected to the southwest, towards the River Moyle. The Groundwater vulnerability map can be seen in Attachment G.4

Groundwater Resource Receptor

Groundwater is considered a receptor when it is being used or can be used for either public or private water supply. This assessment is divided into two groups: existing abstractions and potential abstractions. There are no major groundwater abstractions in the area surrounding the Miltown facility. There is no municipal mains water supply and the facility and private residences in the area obtain potable water from individual wells. There are two types of Source Protection Areas regarding the protection of water abstraction, there are;

- Inner Protection Area (SI) – the SI is designed to protect groundwater quality from immediate impacts from human activities. The SI area in non-karst areas is delineated based on a 100-day time of travel for groundwater (and or associated contaminants) from the source defined from the groundwater velocity and hydrogeological gradient or from a fixed radius distance of 300m from the source.
- Outer Protection Area (SO) - The SO covers the whole catchment area of a groundwater source and is defined by the GSI as "the area needed to support an abstraction from long-term groundwater recharge (i.e. the proportion of effective rainfall that infiltrates to the water table)". A conservative factor can be used to calculate the SO where the maximum daily abstraction rate is increased (usually by 50%) to allow for possible future increased abstraction rates and for extension of ZOC in dry weather periods. A flow direction variation has also been included by the GSI (i.e. ±10-20°) when estimating ZOC area to take account of the heterogeneity of Irish aquifers and possible errors in estimating groundwater flow direction. An arbitrary radius distance approach from source of approximately 1000m can also be used in the absence of technical hydrogeological data.

The closest Source Protection Area to the composting facility is approximately 26 km northeast of the site (SPA Code: SO) in the townland of Callan, Co. Kilkenny. Under EPA (2011), potential abstraction is assessed with the aquifer potential rating and the aquifer vulnerability rating (i.e. the pathway assessment). For the proposed facility, the underlying aquifer is considered to be of high vulnerability to pollutants. However, the design of the buildings is such that they have impermeable concrete floors to ensure that the potential for discharge from the facility to ground is as low as practicable.

Where applicable, a series of suitable mitigation measures has been listed. Adherence to these mitigation measures and the best practice construction methods presented herein will ensure that no potential negative impact from migration of contaminants from the facility buildings that could impact site hydrogeology will take place during the operation phase.

Impacts from the Proposed Development

Given the poor aquifer and extreme vulnerability category for groundwater the main risk to groundwater quality would be an increase in ammonia concentrations. Upon completion of new mitigation measures and management systems at the facility there will be increased controls in place to minimise impacts on groundwater quality from onsite activities.

Mitigation Measures

A number of improvements and replacements have been proposed to the existing mitigation measures on site for the protection of the hydrogeology of the area surrounding Miltown Composting. These mitigation measures are proposed to ensure that the operation of the proposed development does not result in a negative impact on the hydro-geological environment. The mitigation measures are outlined previously in Sections 7.3.5 and 7.4.3 of this chapter.

Residual Impacts

If the mitigation measures are adhered to there are no anticipated residual impacts as a result of the proposed development.

7.6 Conclusions

As outlined in the previous sections of this chapter, the surface water, groundwater and hydrogeology have been assessed as part of this EIS. It is envisioned that with the completion of mitigation measures, as outlined in sections 7.3.5 and 7.4.3 of this chapter, the potential source of surface water and groundwater contamination from site activities will be negligible.

8.0 SOILS AND GEOLOGY

8.1 Introduction

This chapter describes the existing soils and geology in the vicinity of Milltown Composting and the impacts resulting from composting activities on site. The subsoil at the site comprise Namurian Shale & Sandstone till (TNSS). The subsoil is shallow, ranging from 1 to 3 m below ground level. The underlying bedrock comprises of muddy siltstone and silty mudstone belonging to the Killeshin Formation. The assessment of soils and geology of the site was completed with reference to the following:

The EPA's Guidelines on the Information to be contained in Environmental Impact Statements, 2002;

- The EPA's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2003; and
- The Institute of Geologists of Ireland's guidance document, Geology in Environmental Impact Statements – A Guide, 2002

8.2 Existing Environment – Geology

Site Description

The topography of the site is gently sloped from east to south west with the far southwest corner of the site looking down a slope of 30 m. The site is surrounded by hedgerow and there are no visible bedrock outcrops at the site that indicates shallow bedrock in the area. The surrounding land is agricultural land. The increased throughput of material will not require any additional excavation; construction or development works that could impact underlying soils or geology.

Bedrock Geology

The Geological Survey of Ireland (GSI) Bedrock Map for Miltownmore indicates that the underlying bedrock is comprised of a Namurian Shales formation.

Land Subsidence

The subject lands are not at risk of subsidence. There were no fault lines identified on the GSI map for the area around the site.

Karst Features

There were no karst features identified at the site and the bedrock type is not conducive to karst formations.

Soils

A review of the Teagasc soils map for the area indicated that the soil in the area of the facility consists of deep, poorly drained mineral soil, mainly acidic, derived from mainly non-calcareous parent materials

(Attachment H.1). The parent materials are shale and sandstone till which derive chiefly from Naumarian rocks.

8.3 Impacts from the Proposed Development

The proposed development is to increase the throughput of material at the composting facility to 160 tonnes per day (not exceeding 50,000 tonnes per annum) and to apply to Tipperary County Council for planning permission for the increase. It is intended that if planning permission is granted that Miltown will apply to the Environmental Protection Agency for an Industrial Emissions Licence to regulate the facility. The proposed development will not include any construction works or extensions to existing buildings and as such the potential environmental impact from construction works have not been included as part of this study. The contamination of surface waters, groundwater and soils will be negligible due to improved mitigation measures, fire water retention/containment, leak/spill containment and management systems/procedures on site.

8.4 Mitigation Measures

Below are the mitigation measures which are proposed to ensure that the operation of the proposed development does not result in a negative impact on the soil and geological environment:

- As part of the new reception building, a new containment tank (47.54 m^3) was installed as part of the recirculation system at the southwest corner of Shed 1. This tank will be used for the storage and recirculation of potentially contaminated surface water runoff from the ramped waste intake area to ensure that any runoff is directed in a controlled manner to the on-site contaminated water/leachate recirculation system. The impacted water will be used as part of the composting process (dampening the pre-composting bays in Shed 1).
- As part of the revised leachate collection system, collected impacted water will be directed initially to a new pump/sump tank located south of the amendment storage area, from where it will be pumped to the recirculation tank for recirculation into the process.
- The provision of an impermeable surface for the new turn table area for vehicles delivering organic waste to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which will be directed to the dedicated contaminant/recirculation system.
- To manage any possible spillage risk on the turntable area Miltown will update their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure. The updated SOPs will ensure that the turntable area is inspected after every delivery for spillage and if in the event of a minor spillage that a spill kit including a suitable absorbent material will be at hand in order to undertake a clean-up if required, meeting license condition

- Construction of a 0.7m high kerb around the footprint of the new reception building and connecting the kerbing to the eastern end of the south wall of the pump house and the south wall of Shed 1, thereby allowing the use of this area for the retention of any runoff and ensuring that any possible spillage is directed into the leachate collection system via the new pump house drainage and not to soils surrounding the process building.
- As part of the revised leachate/impacted surface water collection system, collected water will be directed initially to a new pump sump tank located south of the amendment storage area. Depending on the volume of liquid directed to the pump sump tank through the leachate collection system the collected liquid will be manually pumped from the pump/sump tank back up to the filtration system in the pump house for re-circulation to the pre-composting bays. For large volumes of liquid release (i.e., large spill or fire water) automatic pumping will take place to pump any possible initial firewater or major spillage liquid back up the new consigned contaminated water storage tank. This pump/sump tank has a high level liquid alarm which sends a text to the site managers and operators in the event of a problem.
- Installing a new roof and impermeable concrete floor at the waste reception area will reduce the potential for run off of impacted surface water to open ground, where is could potentially migrate to soils and the underlying aquifer.
- All potentially impacted surface water runoff at the new reception building will be collected and recirculated back into the process. No water from the reception area will be allowed to migrate from the building to surrounding soils.
- All non-impacted surface water will be diverted to the oil/water interceptor and released from there to the surface water drain. It is envisioned by Miltown that in future that this non-impacted water will be released to the Integrated Constructed Wetlands (ICW) onsite, pending EPA approval. The ICW ponds will provide treatment on the non-impacted water to ensure that there are no emissions from the facility.

Although it is not anticipated that there will be any impacts from the facility operations on the underlying site soils, geology or hydrogeology, the implementation of the mitigation measures will help ensure that potential for the migration of contaminants from the building surface into the underlying soils and geology are negligible.

8.5 Residual Impacts

If the mitigation measures are adhered to there are no anticipated residual impacts as a result of the proposed development.

8.6 Conclusions

As the existing buildings can facilitate the increase in material processing and if the improved mitigation measures are adhered to the proposed development will have a negligible impact on soils or geology in the area.

9.0 NOISE

9.1 Introduction

This chapter describes the results obtained from noise assessments as completed at the facility as part of the facility EPA waste licence compliance. Matrix Environmental were contracted to complete annual noise monitoring events at the site which consisted of both daytime and night time measurements at noise sensitive receptors. Details of the noise monitoring results are provided in Attachment I.1. The noise impacts from the delivery of waste material and the operation of the pre-treatment facility within the main composting shed are the main identified potential noise sources associated with the facility, however there are no residential, noise sensitive receptors in the immediate vicinity of the facility. Any noise impacts related to traffic are intermittent depending on traffic movements and volumes. Noise sources related to the facility activities (i.e., movement of compost, pre-process and screening) are localised to the site and are not considered to impact any external noise sensitive receptors. These impacts will be assessed in the context of the Milltown Composting operations and any increases in throughput and related predicted traffic volumes.

9.2 Methodology

The followings sections of this chapter outline the methodology used and the criteria addressed in the impact assessment. The potential sources of noise resulting from the operation of the onsite operations are also described. The methodology for the assessment of potential noise impacts from operations at the proposed development included the following:

- A desktop review of the relevant codes, standards and guidelines.
- Identification of noise sensitive receptors using aerial photography and a site visit to the site and surrounding area. A noise sensitive location is defined by the Environmental Protection Agency (EPA), "Environmental Noise Survey Guidance Document, 2014," as "any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels". Designated conservation sites are also considered to be sensitive noise receptors.
- Site screening was completed to assess if the proposed facility is a "Quiet Area" or an area of "Low Background Noise" as designated in Section 4 of the EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4); and
- Baseline noise monitoring (Section 9.3.3) was undertaken in accordance with EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

One (1) representative noise monitoring location (N2) was chosen at the entrance to the field north of the main processing area to assess noise emissions from the site facility building, and additional monitoring was completed at monitoring completed at NSL located at the entrance to the facility, monitoring completed at NSL was completed to assess any potential impacts to noise sensitive receptors located further to the northwest of the facility.

Monitoring was completed between 2011 and 2016 at each selected location to determine ambient noise levels as part of the existing composting process and to describe the existing noise environment The monitoring included the following:

- Day-time 30-minute noise measurements at the 2 selected locations during a typical working day (i.e., between 06.00 and 18.00) to assess day-time noise climate in the vicinity of the Milltown site during normal operations;
- Night time measurements (i.e., after 23.00 hrs) at the 2 selected locations to assess the typical night-time noise climate in the vicinity of the Milltown site when the site is not operational;

The selected noise monitoring locations are illustrated in Drawing 032-02C (Attachment A.1)

9.3 Existing Environment

Quiet Area Screening

A screening assessment was completed to determine if the site was located in a 'Quiet Area' to ascertain the noise criteria and noise monitoring approach that would be applicable in the area of the site. The screening was conducted as per the EPA guidance ''Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4). The results of the initial screening are provided in Table 9.1 below.

Table 9-1 Quiet Area Screening Results

	Yes	No
Is the site >3km away from urban areas with a population >1,000 people?	x	
Is the site >10km away from urban areas with a population >5,000 people?	x	
Is the site >15km away from urban areas with a population >10,000 people?		x
Is the site >3km away from any local industry?		x
Is the site >10km away from any major industry centre?		x
Is the site >5km away from any national primary route	x	
Is the site >7.5km away from any motorway or dual carriageway	x	
QUIET AREA?		x

Based on the results of the screening assessment, the site is not located in a "Quiet Area"

Previous Noise Monitoring

Milltown Composting contracted Matrix Environmental to carry out onsite and offsite noise monitoring between 2011-2016. Copies of the environmental noise assessments completed by Matrix Environmental Ltd. is provided in Attachment I.1. The main results of the assessment are provided in Table 9.4 – 9.8.

9.3.1.1 Methodology & Procedure

The noise assessments were carried out in accordance with International Standard Organisation (ISO) 1996 Acoustics – Description and Measurement of Environmental Noise Part 1, 2, and 3 in addition to the Environmental Protection Agency: Environmental Noise Survey – Guidance Document NG4. All measurements were recorded at 1.5 m height above local ground level and 1-2 m away from reflective surfaces. The monitoring criteria set out in NG4 are provided in Tables 9.2 and 9.3 below. Because the site does not receive or ship material during evening hours, no evening measurements were completed. However, night time readings were recorded as these were perceived to be the times when noise sensitive receptors would be most impacted from any potential noise source related to the facility.

Table 9.2 – Typical Limit Values for Noise from licensed Sites

Measurement Period	Timeframe	Limit
Daytime	07:00 – 19:00	55dB $L_{Ar,\ T}$
Evening	19:00 – 23:00	50 $L_{Ar,\ T}$
Night-time	23:00 – 07:00	45 $L_{Ar,\ T}$

Table 9.3 – NG4 Noise Survey Schedule

Period	Minimum Survey Duration
Daytime (07:00 to 19:00hrs)[1]	4-hour survey with a minimum of 3 sampling periods at each noise monitoring location.
Evening (19:00 to 23:00hrs)[1]	2-hour survey with a minimum of 1 sampling period at each noise monitoring location.
Night-time (23:00 to 07:00hrs)[2]	3-hour survey with a minimum of 2 sampling periods at each noise monitoring location.

[1] Sampling period is to be the time period T stated within the relevant licence. Typically, this will be either 15 minutes or 30 minutes in duration. This applies to day, evening and night time periods.
[2] Night-time measurements should normally be made between 23:00hrs and 04:00hrs, Sunday to Thursday, with 23:00hrs being the preferred start time.

The parameters measured were as follows:

L_{AeqT} Values

L_{AeqT} values represent the continuous equivalent sound level over a specified time (t). This value expresses the average levels over time and is a linear integral.

$L_{AF\ Max}$

The maximum RMS, A-Weighted sound pressure level occurring within a specified time period.

L_{90} and L_{10} Values

The L_{90} and L_{10} values represent the sound levels exceeded for a percentage of the instrument measuring time. L_{10} indicates that for 10% of the monitoring period, the sound levels were greater than the quoted value. L_{10} is a good statistical parameter for expressing event noise such as passing traffic. The L_{90} represents post event sound levels and is a good indicator of background noise levels

Instrumentation

The following equipment was employed during the noise assessment completed on 14th of December 2015, and was representative of equipment used for previous noise monitoring events.

Table 9-4 Specification on Bruel & Kjear Light Noise Monitor

Noise Meter Specification	
Model No: 2250 Light	Serial No. 2754170
Date of Certificate and Calibration	12/08/2015
Microphone Type: B & K Type 4950	Serial No: 2585972
Calibrator: B & K Type 4231	Serial No: 2343370

9.3.1.2 Results of Historical Noise Monitoring

The results of the historical noise monitoring which has taken place at the Miltown Composting site can be seen in Table 9-5 through Table 9-9;

Table 9-5 Environmental Noise Results 2011

2011 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	46	45	35	76	55
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	58	57	56	85	55
2011 Night Time Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250m from processing building	215514.54 E, 133557.45 N	38	38	31	68	45
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	62	62	61	68	45

Table 9-6 Environmental Noise Results 2012

2012 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	47	44	32	71	55
			43	39	31	71	55
			60	55	34	84	55
N2	On road to the north of main processing buildings	215514.54 E, 133557.45 N	52	54	47	68	55
			56	55	49	77	55
			60	64	49	81	55

Table 9-7 Environmental Noise Results 2013

2013 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	56	45	36	78	55
			44	40	34	60	55
			48	45	38	61	55
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	65	57	45	87	55
			59	57	42	74	55
			58	56	43	74	55

Table 9-8 Environmental Noise Results 2014

2014 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.549 E, 133557.45 N	48	47	33	76	55
			52	47	33	83	55
			46	40	30	78	55
N2	On road to the north of main processing buildings	215770.916 E, 133473.469 N	54	53	43	81	55
			67	67	44	92	55
			62	66	52	67	55
2014 Night Time Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	43	48	37	63	45
			48	51	38	71	45
			52	50	36	81	45
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	50	54	43	57	45
			50	52	43	49	45
			50	53	44	55	45

Table 9-9 Environmental Noise Results for 2015

2015 Daytime Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	49	53	40	80	55
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	58	55	43	85	55
2015 Night Time Noise Results							
Monitoring ID	**Location Description**	**Coordinates**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL	On entrance road into facility app 250 m from processing building	215514.54 E, 133557.45 N	35	40	32	46	45
N2	On road to the north of main processing buildings	215770.91 E, 133473.46 N	37	44	33	50	45

9.3.1.3 Broadband Monitoring Results 2011-2016

The results of broadband measurements completed at the Miltown Composting facility between 2011 and 2016 indicated the following;

- Daytime noise readings at NSL ranged between 43 dB L_{Aeq} in 2012 and 60 dB L_{Aeq} during the same monitoring event in 2012. All other dB L_{Aeq} daytime readings recorded between 2011 and 2016 were less than the EPA licence limit of 55 dB L_{Aeq}
- All L_{A90} readings for day time measurements at NSL were less than the 55 dB L_{Aeq} limit.
- Night time noise readings at NSL ranged between 38 dB L_{Aeq} in 2011 and 52 dB L_{Aeq} in 2014. There was one other reading at NSL that marginally exceeded the 45 dB L_{Aeq} night time limit (i.e., 48 dB L_{Aeq} in 2014).
- All L_{A90} readings for night time measurements were less than 38 dB and were the significantly less than the 45 dB L_{Aeq} limit.
- Daytime noise readings at N2 ranged between 52 dB L_{Aeq} in 2012 and 67 dB L_{Aeq} during the monitoring event in 2014. All but one of dB L_{Aeq} daytime readings recorded between 2011 and 2016 were greater than the EPA licence limit of 55 dB L_{Aeq}
- All L_{A90} readings for day time measurements were less than the 55 dB L_{Aeq} limit, with the exception of the 2011 monitoring event, which marginally exceeded the 55 dB L_{Aeq} limit (N2 2011-56 dB L_{Aeq}).
- Night time noise readings at NSL ranged between 37 dB L_{Aeq} in 2015 and 62 dB L_{Aeq} in 2011. There was one reading at N2 that was less than the 45 dB L_{Aeq} night time limit (i.e., 37 dB L_{Aeq} in 2015).
- All L_{A90} readings for night time measurements were less than 45 dB, with the exception of 61 dB L_{Aeq} during the 2011 monitoring event.

9.4 Operational Phase Impacts

There will be limited noise generated during the operational phase of the proposed development that will impact external receptors in the vicinity of the composting facility. All process equipment (i.e., front loaders and screeners) will be located inside the process building and noise impacts will be contained, to a large extent, within the process building as is the case with the existing facility.

Transportation of material to and from the site will result in increased traffic and associated noise levels on the roads passing the NSL. (see Chapter 12). The main potential noise sources during the operational phase of the facility are:

- Transport of material to and from site
- Extraction fans for air exchanges within the facility building.

If the mitigation measures are followed, it is not believed that the increased throughput at the facility and the increased traffic associated with the increase will cause noise pollution when the facility is operational.

9.5 Mitigation Measures

The current operations are not considered to be having an impact on the surrounding area or on noise sensitive receptors. However, with an increased throughput at the Miltown facility the mitigation measures to ensure no noise pollution will be updated;

- According to the traffic assessment, as outlined in Chapter 12 of this report, there will be an increase of five truck movements which will be spread over the whole day to ensure that the noise impacts are spread over the day to ensure a minimal effect on the noise sensitive receptors surrounding the Miltown facility
- All machinery at the Miltown facility will have frequent maintenance carried out to ensure that the machinery is operating optimally and not emitting at a high noise output.
- With the increased levels of traffic owing to the increase of throughput at the facility, Miltown will ensure that no queuing of incoming lorries will occur on the laneway to prevent the noise emitted from the lorries effecting noise sensitive receptors in the vicinity
- Miltown will ensure that there are no deliveries or transfer of material off site occurring outside of the operational hours of the facility
- It will be advised by Miltown that the trucks arriving and leaving the facility avoid using air brakes to reduce the potential noise emitted from their movements
- During operational activities occurring at the facility, all doors will be closed to ensure that no unnecessary noise emissions occur

9.6 Conclusions

The main noise contribution from the facility on noise sensitive receptors in the vicinity of the Miltown facility is mainly due to intermittent traffic movement related to deliveries to and from the site. Due to the distance of the facility from the closest noise sensitive receptor it is not considered that the site operations are impacting on the noise climate of any noise sensitive receptors in the area. The increase in traffic due to the proposed development will result in approximately 10 additional truck movements per day (5 in and 5 out) to the site which is not considered significant over a 12 hour working day and as such the noise impact from the increase in traffic volumes is not considered significant.

10.0 AIR QUALITY & CLIMATE

10.1 Introduction

Matrix environmental were contracted by Milltown composting facility to perform ambient air quality and bio filter inlets and outlets air streams as outlined in their waste licence. The facility is located in a rural area surrounded by predominantly agricultural lands. Milltown complete bi-annual dust deposition and PM_{10} monitoring. Additionally, the biofilter emissions are monitored for ammonia, mercaaptans, bioaersols and hydrogen sulphide concentrations.

The parameters by which air quality and climate at the Miltown site will be assessed by are outlined in the following;

Ammonia gas (NH_3) is a colourless gas with a characteristic pungent smell. Ammonia can be released into the atmosphere by a wide range of biological process as well as industrial or combustion processes. While NH_3 has many beneficial uses, it can detrimentally affect the quality of the environment through acidification and eutrophication of natural ecosystems, the associated loss of biodiversity, and the formation of secondary particles in the atmosphere, which can reduce visibility. Possible health effects of ammonia gas in the atmosphere include short-term irritation of the eyes and lungs and the long-term effects on the cardiovascular system through inhalation of fine particulate matter formed from ammonia in the atmosphere.

Particulate Matter sampling involves the sampling of airborne particulate matter. The matter varies widely in its physical and chemical composition, source and particle size. Particles are often classed as either primary (those emitted directly into the atmosphere) or secondary (those formed or modified in the atmosphere from condensation and growth). Particulate matter arises from both man-made and natural sources. Natural sources include wind-blown dust, sea-salt and biological particles e.g. pollen. Man-made sources include large carbon particles from incomplete combustion, ash, dust particles from quarrying and construction activities and road traffic generated dust. In general, large particles do not stay in the atmosphere for long and are deposited close to their source, whereas small particles can be transported long distances. Particles, which are deposited to ground, give rise to problems such as soiling of buildings and other materials and also cause a general nuisance. The Technical Instructions on Air Quality Control TA Luft - 1986 recommended guideline value for dust emissions is 350 $mg/m^2/day$.

In recent years, interest has focused on the levels of particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}) which have been shown to have health implications at elevated levels, due to their ability to penetrate into the trachea-bronchial system. A major manmade source of fine primary particles is combustion processes, primarily road transport and coal burning activities. However, road transport is estimated to be the single biggest primary manmade source of PM_{10} in most EU countries. Of particular concern is diesel combustion, where transport of hot exhaust vapour into a stack can lead to spontaneous nucleation of 'carbon' particulates before emission.

- Dust Deposition is characterised as encompassing particulate matter (PM) with a particle size of 1 and 75 microns. Deposition generally occurs in close proximity to the source and potential dust impacts may occur 500 m of the generating activity as dust particles falling out of suspension in the air. Larger particles deposit closer to the source. Particles which are deposited to ground may give rise to such problems as soiling of buildings and other materials.
- Bioaersols are airborne particles that are biological in origin. Bioaersols can be formed from nearly any process that involves biological materials and generates enough energy to separate small particles from the larger substance, such as wind, water, air, or mechanical movement. Plants, soil, water, and animals (including humans) all serve as sources of bioaersols, and bioaersols are subsequently present in most places where any of these sources live. Bioaersols have a direct effect on our world on a daily basis, causing many health and welfare effects. The health hazards associated with bioaersols can range from more mild reactions such as allergies to much more severe reactions, such as death caused by airborne pathogens.
- Mercaptans are an any of a class of organic compounds containing the group -SH bonded to a carbon atom. The volatile low-molecular-weight mercaptans have disagreeable odours. Mercaptans are found in crude petroleum, and methyl mercaptan is produced as a decay product of animal and vegetable matter. T-butyl mercaptan blends are often added to the odourless natural gas used for cooking and serve to warn of gas leaks. Mercaptans take part in a wide variety of chemical reactions. Their principal uses are in jet fuels, pharmaceuticals, and livestock-feed additives.
- Hydrogen sulphide (H_2S) is a colourless gas, soluble in various liquids including water and alcohol. It can be formed under conditions of deficient oxygen, in the presence of organic material and sulphate. Hydrogen sulphide has an obnoxious odour at low concentrations. Hydrogen sulphide (H_2S) is a toxic gas and the health hazard depends upon both the duration of exposure and the concentration. The gas is an irritant of the lungs and at low concentrations irritates the eyes and the respiratory tract. Exposure may result in headache, fatigue, dizziness, staggering gait, and diarrhoea.
- The main potential air emission impact from the facility will be odours from waste material received at the site and feedstock and maturing material in the composting process. How an odour is perceived and its subjective, the human perception of odour is governed by complex relationships, and its properties need to be considered when assessing potential odour effects. This means that if the concentration of an odour increases 10-fold, the perceived increase in intensity will be by a much smaller amount.

10.2 Air Quality Legislation

Air Quality Standards for the protection of human health and the environment have been developed at European level and implemented into Irish legislation for a number of air emissions. Air Quality Standards

(AQSs) set limit values for Ground Level Concentrations (GLCs) of certain emissions for both the short term (hourly, daily) and long term (annual averages). Limit values are often expressed as percentiles (e.g. 98%ile of mean hourly values).

Based on the existing National and European regulatory regime, the following Air Quality Legislation is considered applicable for air quality assessment in Ireland:

- EU Directive 2000/76/EC on the incineration of waste. The Directive sets emission limit values and monitoring requirements for pollutants to air such as dust, nitrogen oxides (NOx), sulphur dioxide (SO_2), hydrogen chloride (HCl), hydrogen fluoride (HF), heavy metals and dioxins/furans.
- EU Directive 2008/50/EC ambient air quality and cleaner air for Europe which merges most of the existing legislation (i.e., Directives 96/62/EC, 1999/30/EC, 2000/69/EC and 2002/3/EC) into a single directive with no change to existing air quality objectives. However, the Directive does set out new air quality objectives for $PM_{2.5}$
- Statutory Instrument No. 58 2009 Arsenic, Cadmium, Mercury, Nickel, and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009. This statutory instrument brings into force the EU Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. It sets the target values to be attained, from 31 December 2012, for concentrations of arsenic, cadmium, nickel and benzo(a)pyrene and also specifies monitoring requirements for mercury and other polycyclic aromatic hydrocarbons.
- Air Quality Standards Regulations, 2011 (S.I. 180 of 2011) implements Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe and introduces fine particulate matter targets limits and the requirements for ambient air quality management.

As part of the existing Milltown Composting waste licence, the EPA have outlined emission limit values with respect to the air quality. These emission limits are outlined below;

- **Ammonia** – must not exceed ammonia concentrations of 50 ppm (v/v)
- **Hydrogen Sulphide** –must not exceed a Hydrogen Sulphide concertation of 5 ppm (v/v)
- **Mercaptans** – All bio filters must not exceed a Mercaptan concertation of 5 ppm (v/v)
- **Dust** – Dust deposition monitoring points are seen in Attachment A.1 and the results must not exceed 350 mg/m^2/day. This limits consist of a 30-day composite sample.
- **Odour** - Odour measurements shall be by olfactometric measurement and analysis for mercaptans, hydrogen sulphide, ammonia, and amines.

10.3 Existing Environment

The EU Air Framework Directive requires Member States to identify 'Zones' and 'Agglomerations' for air quality assessment purposes. In Ireland, four main zones (A, B, C and D) are defined in the Air Quality Standards (AQS) Regulations, 2011 (SI No. 180 of 2011) and are outlined below;

- Zone A – Dublin Conurbation
- Zone B – Cork Conurbation
- Zone C – Large Towns with a Population of 15,000
- Zone D – Remaining Area of Ireland

The Milltown Composting site is located in a rural area and the closest town is Fethard, which has a population of 1,541. This assigns the composting facility to zone D. In order to meet national air quality standards and prevent pollution the following parameters are monitored at the facility;

- Ammonia (NH_3)
- Hydrogen Sulphide (H_2S)
- Mercaptans
- Dust Deposition
- Particulate Matter (PM)
- Bioaersols (Total Fungi/Bacteria and Aspergillus fumigatus)
- Amines (Ammonia Derivatives)

The results for the relevant parameters outlined above are outlined in the following paragraphs;

Air Extraction

Miltown have odour control measures in place at the facility, which they intend to update and continue using as part of the proposed development. Currently, the existing exhaust ductwork system is suspended from the structural steel at the apex of the reception building. The apex ductwork runs to an externally located fan centrally on the southern side of the reception building, the exhaust from the fan passes through a biofilter. The Miltown Composting biofilter is located alongside Shed 1. The calculations below show the design capacity of the Biofilter, the volume of Shed 1 (including the roof) and the volume of air that needs to pass through the ducting and biofilter to achieve 2.5 air changes per hour (the volume of air changes as set down by the Waste Treatments Industry EU BREF 2006);

Table 10-1 Current Biofilter Size and Capacity

	Width	Length	Depth	Volume
Biofilter Dimensions	13	40	0.6	312 m^3
Shed 1 Building volume (including roof)	31.8	54.2	7.505	12935.32 m^3
To Achieve 2.5 air changes per hour in Shed 1		32338.3 m^3/hour		

Section 4.1.33 of Reference Document on Best Available Techniques in the Slaughterhouses and Animal By-products industries states that the residence time required to effectively abate an odour depends on the odour strength and which pollutants are present in the gas. For low intensity odours a residence time of at least 30 seconds should be aimed for, rising to up to 60 seconds for very strong odours. Table 2 provides the calculated retention time within the biofilter

Table 10-2 Calculation of residence time in bio filter

Residence Time Calculations	
Air volume arriving at the biofilter	32,338.2 m^3/hr
	8.982833 m^3/sec
Biofilter surface area	520 m^2
Calculated Speed of Air through Filter Media	0.01127 m/s
Media Depth	0.6 m
Residence time in media	34.7328 seconds

Operational experience of the facility has found that it has not been necessary to continuously operate at maximum capacity, and an air change rate of lper hour has been effective in controlling odour emissions.

Biofilter

The inlets and outlets of the bio filter are monitored as part of compliance with the facility's EPA Waste Licence. The data seen in this section has been taken from air quality & monitoring reports seen in Attachment J.1

10.3.1.1 Biofilter Emission Sampling

Concentrations of identified air emissions from the process were determined calorimetrically using an appropriate Draeger tube and pump sampling system. Each analysis was carried out by placing the tube into the pump and pulling a known volume of air through the tube. The appearance of a discoloration indicates the presence of the chemical species of interest. The results are expressed in Parts Per Millions (ppm). The results for Amines are described as positive or negative, Milltown Compost site personnel confirmed that the biofilter was operating as normal on the days when sampling was conducted.
Concentrations of chemical species of interest were collected at the two Inlet pipes to the biofilter bed. To assess the efficiency of the biofilter system, a sample is also collected and analysed from the biofilter from the biofilter bed surface. The results of the air sampling program completed at the biofilter between 2011 and 2016 are outlined below;

10.3.1.1.1 Ammonia

Concentrations of ammonia were all below the emission limit value of ppm (v/v). The results for ammonia concentrations measured are included in the following tables.

Table 10-3 Results of Bi-Annual Monitoring of Ammonia Inlet Gas 1

Location	Month & Year	Ammonia Concentration (ppm)	ELV
Inlet Pipe 1	Mar-11	20	50
	Nov-11	15	50
	Mar-12	15	50
	Dec-12	15	50
	Mar-13	20	50
	Sep-13	10	50
	Mar-14	15	50
	Sep-14	25	50
	Mar-15	20	50
	Sep-15	15	50
	Mar -16	17.39	50
	Sep - 16	15	50

Table 10-4 Results of Bi-Annual Monitoring of Ammonia Inlet Gas 2

Location	Month & Year	Ammonia Concentrations (ppm)	ELV
Inlet Pipe 2	Mar-11	17	50
	Nov-11	10	50
	Mar-12	15	50
	Dec-12	15	50
	Mar-13	15	50
	Sep-13	20	50
	Mar-14	15	50
	Sep-14	10	50
	Mar-15	10	50
	Sep-15	20	50
	Sep– 16	10	50

Table 10-5 Results of Bi-Annual Monitoring of Ammonia of Outlet Gas

Location	Month & Year	Ammonia Concentration (ppm)	ELV
Outlet Pipe	Mar-11	<5	50
	Nov-11	<5	50
	Mar-12	<5	50
	Dec-12	<5	50
	Mar-13	<5	50
	Sep-13	<5	50
	Mar-14	<5	50
	Sep-14	<5	50
	Mar-15	<5	50
	Sep-15	<5	50
	Sep -16	<5	50

10.3.1.1.2 Hydrogen Sulphide

All Concentrations of H_2S were all below the analysis method detection limit. Therefore, the concentrations were all below the emission limit value of 5 ppm for the Inlet Pipes to the biofilter and on the Biofilter bed surface.

Table 10-6 Results for Hydrogen Sulphide Concentration at Inlet Pipe 1 – 2011 - 2016

Location	Month & Year	Hydrogen Sulphide Concentration	ELV
Inlet Pipe 1	Mar-11	<0.2	5
	Nov-11	<0.2	5
	Mar-12	<0.2	5
	Dec-12	<0.2	5
	Mar-13	<0.2	5
	Sep-13	<0.2	5
	Mar-14	<0.2	5
	Sep-14	<0.2	5
	Mar-15	<0.2	5
	Sep-15	<0.2	5
	Mar-16	<0.2	5
	Sep-16	<0.2	5

Table 10-7 Results for Hydrogen Sulphide Concentration at Inlet 2

Location	Month & Year	Hydrogen Sulphide Concentration	ELV
Inlet Pipe 2	Mar-11	<0.2	5
	Nov-11	<0.2	5
	Mar-12	<0.2	5
	Dec-12	<0.2	5
	Mar-13	<0.2	5
	Sep-13	<0.2	5
	Mar-14	<0.2	5
	Sep-14	<0.2	5
	Mar-15	<0.2	5
	Sep -15	<0.2	5
	Sep–16	<0.2	5

Table 10-8 Results for Hydrogen Sulphide Concentration at Outlet

Location	Month & Year	Hydrogen Sulphide Concentration	ELV
Outlet Pipe	Mar-11	<0.2	5
	Nov-11	<0.2	5
	Mar-12	<0.2	5
	Dec-12	<0.2	5
	Mar-13	<0.2	5
	Sep-13	<0.2	5
	Mar-14	<0.2	5
	Sep-14	<0.2	5
	Mar-15	<0.2	5
	Sep -15	<0.2	5
	Mar-16	<0.2	5
	Sep-16	<0.2	5

10.3.1.1.3 Mercaptans

All concentrations of mercaptans were less than the analysis method detection limit. Therefore, all of the concertations were below the emission limit value of 5ppm at the inlets to the biofilter and on the Biofilter Bed surface between 2011 and 2016.

Table 10-9 Results for Mercaptan Concentrations at Inlet Pipe 1 - 2011 - 2016

Location	Month & Year	Mercaptan Concentration (ppm)	ELV (ppm)
Inlet Pipe 1	Mar-11	<0.5	5
	Nov-11	<0.5	5
	Mar-12	<0.5	5
	Dec-12	<0.5	5
	Mar-13	<0.5	5
	Sep-13	<0.5	5
	Mar-14	<0.5	5
	Sep-14	<0.5	5
	Mar-15	<0.5	5
	Sep-15	<0.5	5
	Mar-16	0.5	5
	Sep-16	0.5	5

Table 10-10 Results for Mercaptan Concentrations at Inlet Pipe 2- 2011 - 2016

Location	Month & Year	Mercaptan Concentration (ppm)	ELV
Inlet Pipe 2	Mar-11	<0.5	5
	Nov-11	<0.5	5
	Mar-12	<0.5	5
	Dec-12	<0.5	5
	Mar-13	<0.5	5
	Sep-13	<0.5	5
	Mar-14	<0.5	5
	Sep-14	<0.5	5
	Mar-15	<0.5	5
	Sep -15	<0.5	5
	Mar-16	<0.5	5
	Sep-16	<0.5	5

Table 10-11 Results for Mercaptan Concentration at Biofilter Bed - 2011 - 2016

Location	Month & Year	Mercaptan Concentration (ppm)	ELV
Biofilter Bed Surface	Mar-11	<0.5	5
	Nov-11	<0.5	5
	Mar-12	<0.5	5
	Dec-12	<0.5	5
	Mar-13	<0.5	5
	Sep-13	<0.5	5
	Mar-14	<0.5	5
	Sep-14	<0.5	5
	Mar-15	<0.5	5
	Sep -15	<0.5	5
	Mar-16	<0.5	5
	Sep-16	<0.5	5

Dust Deposition

10.3.1.2 Dust sampling Methodology

Dust monitoring was conducted using dust gauges conforming to the Standard Method VD12119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method)

German Engineering Institute). Each dust-sampling bottle was securely capped after the recommended exposure period of between 28 and 31 days. The samples were then returned to the laboratory for gravimetric analysis. The collected sample material is rinsed into a pre weighed evaporating dish and evaporated down to dryness. The total dry residue, which comprises both insoluble and soluble dust, is then determined. Results are expressed in mg/m^2/day.

Dust monitoring was carried out at three on site locations which can be seen in Attachment J.2, and the results of the sampling can be seen in Table 10-10 through Table 10-12;

Table 10-12 Results for Dust Deposition at Location D-1

Location	Date	Dust Deposition mg/m^2/Day	ELV
On ditch south of the main processing area.	Sep-11	100	350
	Oct-11	159	350
	Nov-11	47	350
	Dec-11	24	350
	Jan-12	176	350
	Jul-12	129	350
	Jun-13	88	350
	Sep-13	88	350
	Dec-13	29	350
	Jun-14	123	350
	Sep-14	41	350
	Dec-14	53	350
	Sep -15	30	350
	Apr - 16	91	350
	Jul – 16	188	350

Table 10-13 Results for Dust Deposition at Location D-2

Location	Date	Dust Deposition mg/m^2/Day	ELV
Opposite site offices	Sep-11	112	350
	Oct-11	76	350
	Nov-11	88	350
	Dec-11	30	350
	Jan-12	59	350
	Jul-12	82	350
	Jun-13	84	350
	Sep-13	71	350
	Dec-13	59	350
	Jun-14	270	350
	Sep-14	66	350
	Dec-14	41	350
	Sep -15	40	350
	Apr - 16	80	350
	Jul - 16	299	350

Table 10-14 Results for Dust Deposition at Location D-3

Location	Date	Dust Deposition mg/m^2/Day	ELV
On north-eastern boundary of site	Sep-11	35	350
	Oct-11	593	350
	Nov-11	65	350
	Dec-11	77	350
	Jan-12	35	350

	Jul-12	170	350
	Jun-13	24	350
	Sep-13	71	350
	Dec-13	76	350
	Jun-14	59	350
	Sep-14	41	350
	Dec-14	47	350
	Sep -15	70	350
	Apr - 16	24	350
	Jul – 16	123	350

10.3.1.3 Dust Deposition Results

All dust deposition concentrations were below the emission limit value of 350 mg/m^2/Day, except for one monitoring event in October 2011 when sample D3 was contaminated by bird droppings. The most recent dust monitoring report (2016) can be seen in Attachment J.3.

Particulate Matter

10.3.1.4 Particulate Matter Sampling & Methodology

Airborne particulate matter with an aerodynamic diameter equal or less than 10µm was monitored using an Omni Air Sampler. This sampler draws a measured volume of air through a chamber containing pre-conditioned and pre-weighed filters meeting the European Standard prEN12341, 1998 for PM10 sampling. Sample air was drawn in from all directions onto a pre-conditioned and pre-weighed filter at a flow rate of 5 L/min. Monitoring was carried out over a 24 hour. The filter was then re-weighed and the weight gain determined. The result is expressed in ug/m^3. The monitoring reports can be seen in Attachment J.4.
All PM_{10} concentrations were below the air quality standards 2002.

Table 10-15 Results for Bi-Annual PM_{10} Monitoring

Location	Month & Year	PM_{10} Concentration (µg/m^3)	Regulatory Limit (µg/m^3)
Adjacent to bio filter unit entrance	Jan-11	0.1	50
	Nov-11	0.1	50
	Jun-12	0.1	50
	Dec-12	0.1	50
	Jun-13	0.1	50
	Dec-13	0.1	50
	Jun-14	0.1	50
	Dec-14	0.1	50
	Jun-15	0.83	50
	Dec -15	0.1	50
	Jun - 16	<0.1	50

Bioaersols

Bioaersols are monitored at the facility to assess the total fungi/bacteria and aspergillus fumigatus. Currently there is no specific methodology defined by the Environmental Protection Agency in Ireland for the sampling and analysis of Bioaersols. In the absence of a specific methodology, UK Composting Association's – *Standardized Protocol for the Sampling and Enumeration of Airborne Micro-organisms at*

Composting Facilities was used when completing bioaersols sampling. The monitoring locations and report are provided in Attachment J.5

10.3.1.5 Sampling Procedure

Two samplers were erected at each of the three sampling locations (i.e., sensitive receptor, upwind of the facility and downwind of the facility). Following cleaning of samplers using ethanol swabs, the agar plates were inserted into the Bio stage sampler. Vacuum pumps were started in parallel and ran for the specified time period. Throughout the sampling period climatic data was recorded at 5 minute intervals. Following the completion of the specified time period, the pumps were turned off and the plates removed from the Biostage samplers and stored in sealed plastic bags prior to transportation to laboratory. This process was repeated at each location giving a total of 4 samples from each location. (2 for Aspergillus fumigatus and 2 for Total Bacterial Count). The sample flow rate for all samples was 28.3 l/min. A total of 3 blanks are required per monitoring event. Blanks 1 and 2 are plates, which remain in a sealed bag throughout the day. Blank 3 is placed in the switched off sampling equipment for a period of 25 minutes at the downwind location.

All Concentrations of bacteria/fungi and aspergillus fumigatus were below the observed threshold values. As there are no limits or threshold values for these parameters in Ireland the threshold values were taken from a report published by The Composting Association and Health and Safety Laboratory for the Health and Safety Executive 2003. The results of the bioaersol sampling at the Miltown Composting facility between 2011 and 2016 are provided in Tables 10-16 through 10-21;

Table 10-16 Total Bacteria/Fungi Results at Sensitive Receptor

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value*
SR1	2011	90 -100	100	45	1000
	2012	90-100	339	384	1000
	2013	65-75	74	79	1000
	2014	70-80	104	162	1000
	2015	73-88	126	92	1000

*threshold value from Occupational and environmental exposure to bioaersols from composts and potential health effects 2003.

Table 10-17 Total Bacteria/Fungi at Upwind Location

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value*
UW1	2011	90 -100	86	76	1000
	2012	90-100	324	314	1000
	2013	65-75	205	218	1000
	2014	70-80	252	51	1000
	2015	73-88	109	61	1000

*threshold value from Occupational and environmental exposure to bioaersols from composts and potential health effects 2003.

Table 10-18 Total Bacteria/Fungi Results at Downwind Location

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value
DW1	2011	90 -100	66	37	1000
	2012	90-100	599	724	1000
	2013	65-75	93	40	1000
	2014	70-80	137	97	1000
	2015	73-88	124	148	1000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003.

**Typically the downwind location is located equal-distant from the site boundary, as the nearest sensitive receptor is.

Table 10-19 Total Aspergillus Fumigatus Concentration at Sensitive Receptor

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value
SR1	2011	90 -100	0	0	5000
	2012	90-100	0	0	5000
	2013	65-75	0	0	5000
	2014	70-80	1	1	5000
	2015	73-88	0	0	5000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003.

Table 10-20 Total Aspergillus Fumigatus Concentration at Upwind Location

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value
UW1	2011	90 -100	0	0	5000
	2012	90-100	0	0	5000
	2013	65-75	0	0	5000
	2014	70-80	0	0	5000
	2015	73-88	0	0	5000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003.

Table 10-21 Total Aspergillus Fumigatus Concentration at Downwind Location

Location	Year	Relative Humidity %	CFU/m^3 1st Sample	CFU/m^3 2nd Sample	Threshold Value
DW1	2011	90 -100	1	1	5000
	2012	90-100	0	0	5000
	2013	65-75	0	0	5000
	2014	70-80	3	4	5000
	2015	73-88	0	0	5000

*threshold value from Occupational and environmental exposure to bioaerosols from composts and potential health effects 2003.

** Typically the downwind location is located equal-distant from the site boundary, as the nearest sensitive receptor is.

10.4 Odour Assessment

Milltown have been completing odour assessments at their facility as part of their EPA licence compliance activates since 2011. These measurements were carried out at two locations on a quarterly basis, up to

the 31st of January 2014, when the EPA agreed to amend the frequency of the monitoring events to bi-annually. However, on the 31st January 2014 the EPA agreed to amend the frequency of the monitoring events to bi-annually. The methodology and the results of the odour assessment are provided in the following sections of this document;

Odour Monitoring

10.4.1.1 Odour Sampling

Air samples of approximately 60 litres were collected via Teflon tubing into Nalophane® gas sampling bags by means of the "lung principle" method. Using this method, the sample bag is housed in a sealed car buoy that is evacuated using a small air pump. The volume of air removed from the carbuoy is replaced by sample gas entering the bag, thus avoiding contamination of sample by pumps or meters. Sampling was completed in accordance with the standard I. S. EN 13725:2003 entitled 'Air Quality – Determination of Odour Concentration by Dynamic Olfactometry'.

10.4.1.2 Dynamic Olfactory

The samples were analysed by Dynamic Olfactometry. The instrument used was an Olfactomat-e Olfactometer (Project Research Amsterdam) and the analytical procedures were in accordance with I. S. EN 13725:2003 using a trained panel of assessors. The odour concentration of the sample is expressed in odour units per cubic metre of gas (ouE/m^3). These values, sometimes referred to as "dilutions to threshold" are equivalent to the number of times the sample gas required dilution with odour free air to reach the panels odour threshold (i.e. the concentration at which there is a 50% probability of the panellists detecting the odour).

10.4.1.3 Odour Results

Quarterly odour samples were collected at the Milltown facility from 2011 until 2014 when the monitoring frequency was changed to bi-annually. The results of the olfactory panel assessment on the collected air samples are outlined in Tables 10.22 through 10-24 below. The most recent Odour monitoring report is provided in Attachment J.6

Table 10-22 Odour Results at Sensitive Receptor

Sample Ref.	Location	Year	Quarter	Wind Direction	Odour	Comment
OD1	At Sensitive Receptor	2011	Q1	SE	67	No Distinct Odour from Composting Activity
			Q2	SW	288	No Distinct Odour from Composting Activity
			Q3	SE	124	No Distinct Odour from Composting Activity
			Q4	W	109	No Distinct Odour from Composting Activity
		2012	Q1	S	144	No Distinct Odour from Composting Activity
			Q2	NNE	64	No Distinct Odour from Composting Activity
			Q3	W	75	No Distinct Odour from Composting Activity
			Q4	SE	57	No Distinct Odour from Composting Activity
		2013	Q1	E	52	No Distinct Odour from Composting Activity
			Q2	W	45	No Distinct Odour
			Q3	SE	391	Slightly Sweet Odour
			Q4	S	425	Slightly Sweet Odour
		2014	Rd.1	S	57	No Distinct Odour
			Rd.2	W	49	No Distinct Odour
		2015	Rd.1	S	57	No Distinct Odour
			Rd.2	SE	52	No Distinct Odour
		2016	Rd.1	E	55	No Distinct Odour

Table 10-23 Odour Results at Position Downwind of Site

Sample Ref	Location	Year	Quarter	Wind Direction	Odour	Comment
OD2	Downwind of Compost Yard	2011	Q1	SE	61	No Distinct Odour from Composting Activity
			Q2	SW	133	No Distinct Odour from Composting Activity
			Q3	SE	782	Distinct Odour
			Q4	W	91	Downwind and No Distinct Odour from Composting
		2012	Q1	S	81	No Distinct Odour from Composting Activity
			Q2	NNE	45	No Distinct Odour from Composting Activity
			Q3	W	80	No Distinct Odour from Composting Activity
			Q4	SE	40	No Distinct Odour from Composting Activity
		2013	Q1	E	57	No Distinct Odour from Composting Activity
			Q2	W	144	No Distinct Odour from Composting Activity
			Q3	W	91	No Distinct Odour from Composting Activity
			Q4	S	425	Slight Compost Odour
		2014	Rd.1	SE	62	No Distinct Odour from Composting Activity
			Rd.2	W	168	No Distinct Odour from Composting Activity
		2015	Rd.1	S	53	No Distinct Odour from Composting Activity
			Rd.2	SW	45	No Distinct Odour from Composting Activity
		2016	Rd.1	E	42	No Distinct Odour from Composting Activity

Table 10-24 Odour Results at Bio-Filter

Sample Ref	Location	Year	Quarter	Wind Direction	Odour	Comment
OD1	Biofilter Unit	2013	Q3	W	391	Slight Compost Odour
			Q4	S	85	No Distinct Odour from Composting Activity
		2014	Q2	SE	49	Slight Compost Odour at Biofilter
			Q4	W	49	Compost odour detected
		2015	Q2	S	57	Slight Compost Odour at Biofilter
			Q4	SW	69	No Distinct Odour from Composting Activity
		2016	Q2	E	55	No Distinct Odour from Composting Activity

10.5 Air Emissions from Proposed Development

Air Emissions from the proposed development will be from the extended operation of the existing activates at the Miltown facility. Emissions from the operation of the facility will be on-going as long as the facility is accepting and processing waste material. The proposed development processes as described in Chapter 3 of this EIS will result in ambient odour emissions from the entrance / exit roller doors and the air extract fan. Also, there will be engine combustion emissions from the increased traffic associated with the proposed development. These emissions from the proposed development are discussed below;

Traffic Emissions

Pollutant emissions from road traffic has the potential to cause impacts at both the local and national level. The National Roads Authority has produced a set of *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes,* 2011. The proposed development at Miltown Composting will not require any construction works (i.e., roads), and the proposed increase in traffic during the operational phase of the proposed development (i.e., from 20 movements per day to approximately 38 movements per day). This increased traffic at the proposed development will include 5 additional truck movements per day and 4 additional employee vehicles. The limited increase in traffic in the area would not be considered to impact air quality in the area.

Odour Emissions

The existing odour management system at Miltown is already designed to mitigate odours ambient air removed from Shed 1. This would continue to be the case for the proposed development as processing will continue to take place in that building. As part of the future operations at the facility, material accepted at the site will be unloaded in the new reception building. To control any potential odours from this area the air extraction system in Shed 1 has been extended to include the new reception building.

The proposed development will have the potential to emit ambient odours during future operations. However, the proposed development will consist of extending the existing odour management system which will then be adequate to mitigate potential odours emitted from the increased throughput at the Miltown facility.

10.6 Climatic Impacts

EPA Guidance states that a development may have an influence on global climate where it represents “a significant proportion of the national contribution to greenhouse gases”. Based on the nature and size of the proposed development, greenhouse gas emissions will not be significant in terms of the national CO_2 emissions and Ireland’s agreed limit under the Kyoto Protocol. Thus the impact of the proposed development on climate is predicted to be negligible.

10.7 Mitigation Measures

The odour monitoring results indicate that the composting facility does not have a negative impact in terms of odour. However, with the new enclosed reception building, adjustments to the air collection and the biofilter system will be made to cater for the potentially odorous air removed from the new reception building to the biofilter. The new reception building has been added to the existing extraction system and exhausted through the existing increased biofilter. In order to meet the requirements of the current 'Draft BAT Conclusions Specific to Indoor Composting for Vessel or Enclosed Building Design'- air extraction should be designed and maintained to move and handle the volume of air to provide a clear working environment. It is intended to aspirate the proposed reception yard at two air changes per hour, this will require the additional air to be treated in the biofilter as calculated in Table 10-25;

Table 10-25 Size and Capacity of Biofilter for the Addition of Reception Yard

		Volume (m^3)
Shed 1 volume		12,935.32
New Reception Area		4,773.00
TOTAL		**17,708.32**
Air Volume to be Treated in Biofilter	2.5 x Air changes per hour	**44,270.80**

Table 10-26 Residence Time Calculation for the Inclusion of the New Reception Area

Residence Time Calculations		
Air volume arriving at the biofilter	44,270.32	m^3/hr
	12.30	m^3/s
Biofilter surface area	520	m^2
Calculated Speed of Air through Filter	0.0278	m/s
Media Depth	0.85	m
Residence time in media	35.93	seconds

The increase of the media (i.e., wood chip) volume within the existing biofilter was achieved by placing 200mm of additional material on top of the existing filter and extending the height of the perimeter walls by 225mm to contain the additional media.

To treat the aspiration rate from the new reception area will result in an additional loading of approximately 30% to the biofilter, the odour loading in the additional air from the reception area will be significantly less than the odour loading from the air extracted from Shed 1, where air is forced through the composting media in the processing bays and exhausted through the extraction ductwork.

The existing ducting system is shown on Drawing No 32.02.003 (Attachment C.1). The existing extraction duct system is arranged with two 900 mm ducts, linked to the fan at the biofilter. These run to the centre of the roof of Shed 1 with one duct branching off to the east of the shed with 9 inlets running along the ducting. The second duct branches to the west of the shed, with 6 inlets running along the duct. The proposed aeration of the new reception building will be achieved by extending the west side duct into the reception building area and fitting 2 additional extraction inlets on the extended section.

It is proposed to utilize the existing fan to aspirate the full load capacity. The motor on this fan is fitted with variable speed controller which controls the air volume extracted from the building the fan is adequately sized to accommodate the additional load.

The odour management plan for the site will be reviewed to ensure that odours are minimised, including;

- Control of waste input characteristics (e.g. C: N ratio, particle size) - This is controlled by the addition of wood chips to the waste;
- Control of moisture content;
- Control of air diffusion through the waste – through the automatic control system;
- Control of temperature – through the automatic control system.

10.8 Residual Impacts

As there are no significant impacts predicted for the proposed development above those currently at the site, there are no predicted significant residual impacts to air quality as a result of the proposed development.

10.9 Conclusions

After analysis of the compliance monitoring data, Milltown composting has a negligible impact on air quality. The parameters measured were all below the emission limit values, regulatory values or threshold values. Emission monitoring of the biofilter bed surface where process air is emitted indicated hydrogen sulphide, mercaptan and amine concentrations below the method detection limits. Ammonia concentrations at the Inlets to the biofilter and biofilter surface ranged between 15 ppm(v/v) and 20 ppm(v/v), which were well below the limit value of 50 ppm(v/v).

The dust deposition monitoring events completed at the Miltown facility indicated that concentrations were below the ELV of 350 mg/m^2/Day. Particulate matter monitoring indicated concentrations well below the regulation limit for PM_{10} of 50 µg/m^3. All concentration's measured were below the method detection limit of 0.1 µg/m^3 with the exception of June 2015 when a concentration of 0.83 µg/m^3 was measured.

Under Schedule C of the Waste Licence monitoring of emissions from the bio filter are to include bio aerosols (total bacteria/ aspergillus fumigatus). These parameters were measured at the sensitive receptor and upwind and downwind from the site. There are no ELVs or regulatory values for these parameters in Ireland. A guidance threshold value from the UK was sourced from Occupational and environmental exposure to bioaersols from composts and potential health effects 2003 and all concentrations were significantly less than the threshold values for total bacteria (1,000 cfu/m^3) and aspergillus fumigatus (5,000 cfu/m^3).

The main potential impact for air quality from the proposed development is odour. The highest odour units recorded were at the bio filter unit and at locations downwind from the compost yard. One measurement was carried out directly downwind from the site which produced an odour unit of 728 Ou_E/m^3 and produced a distinct compost smell. However, the second highest reading of 425 Ou_E/m^3 only had a slight compost smell located 250m downwind of the compost yard. Odour results at the bio filter

indicated that there were slight compost odours at the filters. The results at the sensitive receptors indicated that there was no odour associated with the composting activities at the location and that any elevated odour concentration was a result of agricultural activities.

It is anticipated that the proposed development with the increased biofilter volume to treat air removed from the new reception building as well as Shed 1 would result in no additional odours being emitted from the proposed development than are currently experienced.

11.0 LANDSCAPE & VISUAL IMPACT

11.1 Introduction

This chapter examines the visual impact of the Milltown Composting facility located at Miltown, Fethard, South Tipperary. The assessment includes a map indicating the location of existing public views of the facility, as well as photo sheets to illustrate these views. The site encompasses approximately 5.9 hectares. It is situated at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the northeast. Key measures to ameliorate any identified visual impacts related to the facility buildings and aid the integration of the buildings into the existing surroundings are assessed, where identified.

11.2 Methodology

The assessment on landscape and visual impact of the facility was completed with reference to the guidelines included in the document entitled 'Landscape and Landscape Assessment, Consultation Draft of Guidelines for Planning Authorities' published by the Department of the Environment and Local Government in June 2000. Terminology used in the assessment for the description of the quality of visual impacts are outlined below:

- **Landscape Effects –** The likely nature and scale of changes to landscape elements and characteristics and the effect on the landscape character and quality resulting from the development; and
- **Visual Effects –** The change in the character of the views resulting from the development and the change in the visual amenity of its receptors (i.e., those viewing the area).

In considering the significance of the visual and landscape changes due to the development the following elements were also considered;

- The sensitivity of the view, taking into account the public accessibility of the land where views are possible and the likely sensitivity of that view given the distance, intervening vegetation and land use;
- The quality and value of the existing landscape at Visual Reference Points;
- The degree to which the proposal will be visible within the surrounding area; and
- Any other changes in the existing landscape

The study area was determined based on the visibility of the facility and analysis of public view points. Because the facility is already constructed it was possible to achieve a real-time assessment of the impact of existing structures on the landscape and views from public viewpoints including the laneway to the facility and at the junction of the laneway with the Rosegreen to Fethard Road (L1409).

11.3 Existing Environment

Surrounding Land Use

The site is located in a rural area used predominately for agriculture purposes, mainly grassland and tillage. A farm yard, approximately 600 meters (m) to the west, is the closest property to the site. The nearest residential property is approximately 900m to the northwest along the access laneway. There are three more residences within 1km of the site to the north, northeast and southeast of the facility.

Existing Facility

The facility is a composting facility that accepts a broad range of compostable materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal waste water sludges and organic fines generated from the physical treatment of mixed municipal solid waste (MSW). Waste reception and blending takes place in the new reception building which has a floor area of m^2 and in-vessel composting is carried out in Shed No 1, which occupies an area of 1,700 square meters (m^2). Storage is carried out in the sheds 2 and 3 to the east, which occupy a floor area of approximately 2,840 m^2. The biofilter is located on the southern side of Shed 1 and is accessed by an unpaved road running along the southern side of Shed 1.

A small canteen/changing room is located to the northwest of Shed 1. There is an open fronted shed to the west of the canteen, which is used for the storage of wood chip bulking materials.

Proposed Development

The proposed development is an increase in the volume of organic material accepted and treated at the facility. The proposal is for the facility to increase daily tonnage to 160 tonnes while not exceeding 50,000 tonnes per annum.

11.4 Landscape Character

Landscape Character Types (LCTs) are distinct types of landscape that are relatively homogeneous in character. There are four Architypes within Tipperary, according to Tipperary Landscape Character Assessment 2016;

- Class A – The Plains
- Class B – The Lakelands
- Class C – The Foothills
- Class D – The Uplands

The Milltown facility is located in a rural location, located in a Class A area, these are working landscapes containing most settlements and services as well as large continuous areas used for pasture, tillage and peat harvesting. This landscape also contains major rivers and many historic sites.

Within the architypes outlined above, there are Landscape Character Areas (LCAs) are areas of the landscape that are geographically specific and have their own character. Each has its own distinct character

based on patterns of geology, landform, land use, culture, history and ecology. Miltown is located in A1.4 The Suir Central Plain. The area is not one of distinctive LCA value.

Physical Elements

The physical Elements of the landscape will remain unchanged by an increased throughput at the existing site.

Public View Points

The public view points for the facility are from the surrounding areas, however the proposed increase throughput will not affect these views as there is no new construction taking place on the site as part of the proposed development.

Potential Visual Impacts

The proposed development comprises of the increased throughput of tonnage in the existing process shed units for waste acceptance, pre-processing and temporary storage of compostable materials and therefore there are no increased potential visual impacts on the landscape of the surrounding area.

Mitigation Measures

The purpose of mitigation is to avoid, reduce and potentially remedy any significant negative effects arising from the development. As the facility buildings are already constructed and the change to the operations will be an increased throughput, it is not considered that any mitigation measures are required to offset visual impact from the facility.

Conclusion

As the facilities for the proposed increase in throughput are already in place at the site there will be no change to the character of the landscape at the site, and in the surrounding areas. The physical elements and the visual characteristics will remain unaffected by this development.

11.5 Landscape Sensitivity

The landscape factors for each of the Landscape Character Units helps to identify the landscape sensitivity and development absorption capacity of landscapes. In terms of development, the sensitivity of a landscape is determined by its resilience to sustain its character when under the pressure of change. Within the Draft Tipperary Landscape Character Assessment 2016, landscape sensitivity has been categorised using a Sensitivity Zoning Key as outlined below:

Key	Description
Class Zero	Could be improved by change
Class One:	Low sensitivity to change
Class Two:	Moderate sensitivity to change
Class Three:	High sensitivity to change
Class Four	Special Landscape – Very low capacity for change
Class Five	Unique Landscape - Change would alter the character to the landscape

*- Reference from Draft Tipperary Landscape Character Assessment 2016

Based on the key included in the Draft Tipperary Landscape Character Assessment 2016 the facility is based in an area of low sensitivity which is Class One.

11.6 Public View Points

The only public view points for the facility are from the Rosegreen to Fethard Road (L1409) and from the access laneway to the facility. Views of the existing facility are shown in Attachment K.1.

11.7 Potential Visual Impacts

The proposed development comprises of the increased throughput of tonnage in the existing process shed units for waste acceptance, pre-processing and temporary storage of compostable materials and therefore there are no increased potential visual impacts on the landscape of the surrounding area.

11.8 Mitigation Measures

The purpose of mitigation is to avoid, reduce and potentially remedy any significant negative effects arising from the development. Because the facility buildings are already constructed and are consistent with similar agricultural units in the immediate area, and the facility is located in an area with low visual amenity value, it is not considered that any mitigation measures are required to offset visual impact from the facility.

11.9 Conclusion

The facility is located in an area designated as Robust, meaning it is an area of existing development and infrastructure and new development reinforces existing desirable land use patterns. The facility buildings are already constructed and are located in a series of buildings of similar, size construction and colour. Public views of the facility are limited to the access laneway and the Rosegreen to Cashel Road, as outlined in Attachment K.1. The impact on visual amenity for residential dwellings to the northwest of the facility is considered negligible. Overall, the proposed development will result in a negligible impact on the existing landscape character and visual amenity.

12.0 TRAFFIC

12.1 Introduction

In January 2016, DBFL Consulting engineers and Transportation Planners (DBFL) completed a traffic and transport assessment report for the Miltown Composting Facility as part of the requirements of the Environmental Impact Statement (EIS) for the proposed development at Miltown, Co. Tipperary. In this chapter, the effect of traffic on the local road network due to the proposed development is assessed, to establish the potential impact that increased operations traffic may have on the surrounding road network. The full DBFL traffic report is provided in Attachment L.1.

12.2 Objectives

The objective of this section of the EIS is to assess the impact that the increased throughput of waste material (and the subsequent increase in traffic volumes) at the Miltown Composting facility will have with respect to traffic considerations. This section calculates the expected volume of traffic that will be generated by the proposed increase throughput of material and assess the impact that this traffic will have on the operational capacity of the road network in the vicinity of the development. Road safety conditions are also considered as part of this section.

12.3 Methodology

DBFL's approach to the study accords with policy and guidance both at a national and local level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, exemplified by a series of publications all of which advocate this method of analysis. Key publications consulted include;

- 'Traffic and Transport Assessment Guidelines' (May 2014) National Road Authority
- 'Traffic Management Guidelines' Dublin Transportation Office & Department of the Environment and Local Government (May 2003)
- 'Guidelines for Traffic Impact Assessments 'The Institution of Highways and Transportation.

DFBL's methodology incorporated a number of key inter-related stages, including;

- **Site Audit**: A site audit was undertaken to quantify existing road network issues and identify local infrastructure characteristics. An inventory of the local road network was also developed during this stage of the assessment.
- **Traffic Counts**: Junction turning counts were undertaken and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed development.
- **Trip Generation**: A trip generation exercise was carried out to establish the potential level of vehicle trips generated by proposed extension to the existing operations.

- **Trip Distribution:** Based upon existing traffic characteristics and the network layout in addition to the spatial / land use configuration and acknowledging existing (composting facility) planning conditions, a distribution exercise was undertaken to assign site generated vehicle trips across the local road network.
- **Network Impact:** Ascertain the specific level of influence generated by the proposed development upon the local road network and subsequently identify which junctions need to be assessed in greater detail in accordance with the Institute of Highways and Transportation; Traffic Impact Assessment guidelines.
- **Network Assessment**: Drawing upon the findings of the previous stages, an operational assessment of the local road network was undertaken to evaluate the performance of key junctions following the implementation of the proposed development.

12.4 Site Location

The position of the proposed development, located on the site of the existing composting facility, lies in a rural location with minimal development or population in close proximity. This existing facility is located approximately 10km southeast of Cashel and approximately 15km north of Clonmel.

Description of Existing and Proposed Development

The site is located in the town land of Miltownmore, approximately 6 km to the east of Fethard and 10 km south west of Cashel. The site is accessed by a private road off the Rosegreen to Fethard L1409. The site encompasses approximately 5.9 hectares. It is at an elevation of approximately 139m Ordnance Datum (OD) and slopes gently to the west from a high point in the east. It is occupied by the three main Buildings - Sheds 1, 2 and 3 - a covered yard, and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, bio filter and former cattle sheds. The area to the north of the shed is undeveloped and formerly used for animal grazing. The rest is a series of constructed wetlands in the south west of the site.

Miltown propose to increase the throughput of material at the composting facility to 160 tonnes per day (not exceeding 50,000 tonnes per annum) and to apply to, subsequent to planning approval, the Environmental Protection Agency for an Industrial Emissions Licence to regulate the facility. The future licenced area will remain the same as the current waste licence area and no additional construction works will be associated with the proposed development. The facility will continue to accept similar waste types to those already handled and processed at the site.

Existing Road Network

DBFL visited the subject site with the objective of quantifying existing local traffic and infrastructure characteristics. Following the extensive site audit, it was established that the approach roads are subject to a default 80kph speed regulation. However due to the geometry of these rural roads vehicle speeds are generally much lower.

The existing road width, verge type / width and boundary treatment were recorded every 25m over the entire 5,250m length of the existing facility's HGV haul route between the subject site and the R688 corridor. Appendix A of the DBFL Report (Attachment L.1) presents the aforementioned recorded carriageway geometry.

The site of the existing composting facility is located at the southern terminus of an unnamed local road which extends in a southerly direction from the L1409 Rosegreen-Fethard Road for approximately 650m in length.

Travelling in a westerly direction along the L1409 (from its junction with the above unnamed local road that serves the existing composting facility) access can be gained to the regional classified R688 corridor which in turn leads to the strategic destinations of Cashel (to the north) and Clonmel (to the south). Travelling eastwards along the L1409 local road access to Fethard in addition to the regional classified R689, R692 and R706 corridors can be gained.

The R688 corridor links Clonmel (to the south) with Cashel (to the north). Travelling initially southwards along the R688 and then turning left onto the L1409, the route between the subject composting facility site and Cashel Town centre is 12.3km in total. Furthermore, the strategic M8 motorway is accessible via this same route with the nearest access point (Junction 8) located approximately 10.7km from the subject site.

The R688 corridor along which all HGV vehicular traffic travels on route to / from the existing on-site composting facility benefits from good quality infrastructure that provide high levels of accessibility and accommodate two-way traffic movements.

The geometry of the L1409 corridor between Rosegreen and the priority junction with the local lane leading to the subject site ranges from a minimum approximate carriageway width of 4.1m to a maximum approximate width of 6.4m. The average carriageway width along this section of road is approximately 4.9m. The vast majority of this section facilitates two-way car movements however the presence of HGV's requires give way practices to take place.

The existing width of the local lane leading to the subject site access ranges from 2.9m to 4.5m resulting in one-way traffic movements along the majority of this corridor. The geometry as recorded every 25m along the L1409 and the local access lane can be seen in Appendix A of Attachment L.1

12.5 Existing and Proposed Traffic Conditions

A traffic assessment was completed by DBFL in January 2016 for the Miltown facility.

Table 12.1 presents the recorded HGV trip movements associated with the existing operation for (i) average, (ii) peak, and (iii) quiet periods. The average trips to/from the existing facility are based on data received from Miltown Composting for the 2015 year.

Table 12.1 – Current Traffic Volumes – January 2016

	Materials		Traffic Movements												
			Lin-Lout				Lin-Eout				Ein-Lout				Total
	Tons (In)	Tons (Out)	In	Out	2-way	%	In	Out	2-way	%	In	Out	2-way	%	2-way
Per Year	23880	21012	330	330	660	24.2%	560	560	1120	41.1%	471	471	942	34.6%	2722
Per Month (average)	1990	1751	28	28	56	24.2%	47	47	94	41.1%	39	39	78	34.6%	228
Per Day (average)	79	69	1	1	2	24.2%	2	2	4	41.1%	2	2	4	34.6%	10
Per Month (Worst case-Jan)	2844	2148	57	57	114	46.7%	44	44	88	36.1%	21	21	42	17.2%	244
Per Day (Worst Case-Jan)	113	85	2	2	4	46.7%	2	2	4	36.1%	1	1	2	17.2%	10
Per Month (Quietest - Nov)	1297	1298	16	16	32	18.6%	36	36	72	41.9%	34	34	68	39.5%	172
Per Day (Quietest - Nov)	51	51	1	1	2	18.6%	1	1	2	41.9%	1	1	2	39.5%	6

Three potential HGV arrival/departure scenarios have been observed including;

- Full load truck in / Full load truck out (Dual Trips) – Lin-Lout
- Full load truck in / Empty load truck out - Lin-Eout
- Empty load truck in / Full truck load out – Ein-Lout

Influenced by a number of parameters, dual trips proportions have traditionally been quiet low. However, over the past 24 months there has been a notable increase in dual trips (approximately 24%). As dual trips benefit both the supplier of materials and the exporter, this trend is expected to continue and therefore it is assumed that the number of dual trips will increase by 15% above the existing quantum.

Due to the existing material transfer system, the proportion of dual trips is generally relatively low and therefore in the proposed development trip generation process it has been assumed that an additional 15% of material transferred to / from the subject site will be dual trips due to the proposed structured delivery program to be introduced as part of the proposals.

Table 12.2 – Predicted Traffic Levels

	Materials		Traffic Movements												
			Lin-Lout				Lin-Eout				Ein-Lout				Total
	Tons (In)	Tons (Out)	In	Out	2-way	%	In	Out	2-way	%	In	Out	2-way	%	2-way
Per Year	50000	43995	1035	1035	2071	39.2%	888	888	1776	33.6%	459	459	917	27.1%	4764
Per Month (average)	4167	3666	86	86	173	39.2%	74	74	148	33.6%	38	38	76	27.1%	397
Per Day (average)	165	145	3.4	3.4	6.8	39.2%	3	3	6	33.6%	2	2	4	27.1%	16
Per Month (Worst case-Jan)	5955	4497	157	157	313	61.7%	72.5	72.5	145	28.6%	17	17	34	9.7%	492
Per Day (Worst Case-Jan)	236	178	6	6	12	61.7%	3	3	6	28.6%	3	3	6	9.7%	19
Per Month (Quietest - Nov)	2716	2718	52	52	104	33.6%	53	53	106	34.4%	33	33	67	32.0%	276
Per Day (Quietest - Nov)	108	108	2	2	4	33.6%	2	2	4	34.4%	1	1	2	32.0%	11

A comparison of the existing on-site operations vehicle trips and the proposed development's post development generated vehicle trips are summarised in Table 12.3 below for the 'average' daily January scenario.

Table 12.3 – Average Peak Hour Traffic Movements- Existing and Proposed Development

Period / Vehicle Trip	AM Peak Hour (08:30-09:30)		PM Peak Hour (17:00-18:00)		Daily	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Inbound	5	7	1	1	10	19
Outbound	1	1	5	7	10	19
Two Way	6	8	6	8	20	38

The analysis reveals that the proposed development results in a modest increase in all vehicles during peak hour movements however due to the proposed new materials transfer structure there is not expected to be an increase in HGV trips during peak hours. The daily average increase in two-way vehicle trips has been estimated at 18 additional vehicles, eight of which are attributed to the additional staff movements (i.e. cars and vans) and ten HGV movements (i.e., five trucks in and five trucks out). However, the ten truck movements would be considered to be only on days when the maximum volume of material is transported to the site.

Proposed Network Improvements

It is considered that the impact on the surrounding road network, as a result of the proposed increased use at the Miltown Composting facility will be negligible compared to the existing on-site operations, and for this reason there are no road network improvements proposed.

12.6 Proposed Development Operational Phase

The Institution of Highways and Transportation document 'Guidelines for Traffic Impact Assessments' states that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks respectively. When such levels of impact are generated a more detailed assessment should be undertaken to ascertain the specific impact upon the networks operational performance. These same thresholds are reproduced in the NRA document entitled "Traffic and Transport Assessment Guidelines".

In accordance with the IHT and NRA guidelines DBFL undertook an assessment to establish the potential level of impact upon the key junctions and links of the local road network. To enable this calculation to be undertaken they based the analysis upon the 2017 Opening Year scenario. The analysis demonstrated that the proposed development will generate the following impacts during the AM and PM peak hours in the 2017 Do-Something scenario.

Figure 12.A – Network Impact (2017) Assessment Locations

Table 12.4: Network Impact (2017)

Junction / Link	AM Peak	PM Peak
R688 / L1409	0.3%	0.9%
L1409 Link– Location A	8.5%	7.7%
L1409 Link– Location B	7.8%	6.9%

The analysis demonstrates that the subject proposed development will in the adopted worst case scenario (i.e. peak January traffic levels) generate an impact of less than 1% at the R688 / L1409 junction during both the AM and PM peak hours. This level of impact is significantly below the IHT's and NRA's TTA thresholds for normal (i.e. non-congested) networks. Furthermore, whilst the impact upon the L1409 link may seem relatively large in reality it is very modest (e.g. Only 2 additional vehicles) with the resulting impact distorted by the extremely low baseline traffic flows along this corridor (e.g. AADT of only 300).

The assessment of the impact upon the operational performance of the key R688/L1409 junctions demonstrates that the proposed development will not generate a material impact at this junction. The PICADY analysis reveals that the modest increase in vehicle flows (as generated by proposed development) will have a minimal influence upon the junction's performance (RFC, queue lengths etc.).

12.7 Road Safety, Parking & Queueing

There is signage displayed throughout the site to direct the drivers to the correct areas for deliveries and collections.

Parking

Adequate parking is provided within the facility yard and at the entrance to accommodate the expected number of employees, visitors and trucks. All staff will park at the existing car park area at the facility office to ensure a clear entry and exit for trucks delivering to the facility.

Traffic Queueing

The internal facility roadway leading from the entrance to the facility is approximately 175m long. Although it is not anticipated that the traffic volume at the facility will be such that queuing of trucks will be required there will be adequate space for queuing up to four 40ft trailer trucks at any one time should it be necessary. This will avoid any queuing on the public laneway and disruption to other traffic using the laneway approach to the facility.

Pedestrian & Cyclist Facilities

There are no pedestrian facilities in place on the road network in the vicinity of the facility. As it is not expected that there will be any pedestrian activity to and from or within the facility, no pedestrian facilities are considered to be required.

There are currently no cycle facilities in place on the road network. Due to the nature and location of the facility, cycle lanes are not considered to be necessary.

12.8 Mitigation Measures

With the objective of reducing the scale, frequency and severity of the potential impacts generated by the subject proposals in addition to improving the operational efficiency of the on-site composting activities a number of mitigation measures are planned as part of the subject proposals.

- Currently all 'inbound' material loads sent to the subject Milltown facility by suppliers generally arrives with little to no prior notification given in regard to the day or time of arrival at the subject site. This current arrangement is particularly insufficient from an operational perspective for the compost facility management. As a result, a new management regime is proposed which requires the supplier (or their transport operator) to pre-book a 'delivery slot' (e.g. specific prearranged time based window of arrival) at the composting facility. This practice will be similar to the concept operated at national / regional distribution centres in the retail sector. This new system will enable the composting facility to actively manage the arrival of material on-site through the implementation of a fixed number of delivery slots (e.g. 30 to 60-minute duration or similar) over the entire working day. In addition to assisting the operation of the composting facility this measure will ensure that existing peak arrival rates of 'inbound' HGV's at the site no longer arise resulting in a more even distribution of HGV's over both (i) the entire day, and (ii) days of week.
- With the objective of minimising the number of HGV's traveling across the local L1409 'haul route' during the networks peak hour period (e.g. AM between 08:30 and 09:30) it is proposed that a delivery slot for this specific period each weekday is not issued to suppliers during these hours. To accommodate this initiative, it is proposed to allow 'inbound' vehicles enter the subject site during an initial delivery slot of 07:00-08:00, so that they have delivered and left the facility before the peak traffic hour.

With the objective of minimising the occurrence of site generated HGV traffic meeting one another when travelling in opposite directions) along the L1409 'haul route' a new 'notification and hold' management measure is proposed and is outlined below.

(b) All inbound HGV vehicle drivers traveling inbound to the composting facility will be required to contact (via hands free telephone) the plants office to inform the onsite operatives that they are approaching one of the 'strategic notification locations' detailed below and request permission to proceed straight to site via the R688 corridor and the L1409 'haul route'. The strategic 'notification' points have been identified as follows;

- M8 Southbound approach – Junction 7 which lies approximately 10.5 km from Rosegreen (R688 / L1409 junction).
- M8 Northbound approach – prior to departing motorway slip road at Junction 8 which lies approximately 8 km from Rosegreen (R688 / L1409 junction).
- N74 (Tipperary) / R505 (Dundrum) Eastbound approach – Cashel Rd Roundabout junction (N74 / R639) which lies approximately 8.5 km from Rosegreen (R688 / L1409 junction).
- R688 Northbound approach – prior to reaching Ballyclerahan which lies approximately 8km from Rosegreen (R688 / L1409 junction).

(b) In the potential situation where a HGV is about to leave the Miltown facility the outbound vehicle will be held on-site (until the inbound vehicle arrives) with the inbound vehicle driver instructed to proceed straight to site.

(c) In the potential situation where a HGV has just left the Milltown site the inbound vehicle driver will be instructed to proceed to the site. This instruction is considered appropriate as the outbound vehicle will have already cleared Rosegreen (and entered the R488 corridor) prior to the arrival of the inbound vehicle at Rosegreen due to the additional journey time it will take the inbound HGV vehicle to travel from each of the identified strategic notification points, compared to the shorter journey time that the outbound HGV require (to reach Rosegreen).

d) In any potential emergency where the on-site operative considers that it is inappropriate to instruct the inbound vehicle driver to proceed straight from the adopted strategic notification point into the Milltown facility via Rosegreen, the operative will instruct the inbound vehicle driver to proceed to the HGV lorry parking area (and await further instructions) as located at the Motorway Service Area (Topaz) at Junction 8 of M8. As illustrated in the photograph below this dedicated HGV parking area is now (due to recent enhancements) completely segregated from the service area.

This new arrangement will remove the need for inbound HGV lorry drivers to pull-in off the regional road carriageway whilst waiting for an instruction to proceed inbound to the Milltown facility thereby removing any road safety concerns relating to vehicles pulling in on the side of the road. Should a HGV be ready to leave the compost site within the next ten minutes; the outbound HGV will be 'held' on-site until such time that the 'inbound' vehicle has arrived on-site within the compost facility compound.

Over the last number of years' transport operators have increased the number of 'reverse load' HGV trips due to the operational and financial benefits such practices offer to the supplier / haulage operator. The practice considers the delivery of a full load of waste material followed by the same vehicle (now empty)

being loaded with stage 6 compost. Whilst such practices have been relatively infrequent in the past they now account for over 24% (on average) of all HGV movements to/from the subject site (based upon 2015 data). It is reported that this trend has continued to increase during 2016 with such 'reverse load' practices now predicted to increase to levels where it has the potential to account for approximately 50% of all HGV traffic movements in the future. Nevertheless, for the purpose of this assessments 2017 and 2032 design years we have assumed a 'reverse load' average of only 39% (e.g. 2015 level of 24% plus 15%).

- The findings of both the site audit and the traffic surveys reveals that the opposing (e.g. vehicles traveling in opposite directions) vehicle movements along the L1409 'haul route' predominately consist of (i) car with car; (ii) Car with Van, and (iii) Car with HGV / Agricultural Vehicle. In the majority of such instances these opposing vehicle movements can generally safely maneuver past one another with not too much difficultly. Nevertheless, the analysis reveals that on rare occasions when HGV's meet either other HGV's or large agricultural vehicles one or both vehicles may (i) need to encourage onto the adjoining verge, or (ii) yield right of way to the other large vehicle; thereby ensuring that they can pass one another when traveling along the L1409 haul route. Notwithstanding the above mitigation measures (the implementation of which will actively reduce the occurrence of such opposing vehicle movements) a number of areas along the L1409 haul route have been identified which through the provision of localised road carriageway widening works will provide additional opportunities for opposing large HGV's and agricultural vehicles to safely pass one another (Pass-by facilities). Figures 2.5 and 2.6 of the Traffic and Transportation Assessment in Attachment L.1 indicates 3 potential sites are which could readily accommodate such localised carriageway enhancements. In the context of the low level of vehicle flows travelling along the L1409 haul route (e.g. AADT of 300) and the other mitigation measures being implemented as part of the subject proposals; it is recommended that new pass-by facilities incorporating local carriageway widening works are implemented in Area 2, Area 3 and Area 5 with the objective of mitigating the impact of the subject development works.

12.9 Residual Impacts

If the mitigation measures are adhered to, there are no anticipated traffic impacts as a result of the proposed development. However, the potential development of three pass-by areas on the local road network (Figures 2.5 and 2.6 in Attachment L.1) may result in residual impacts as a result of the proposed development. Based on the works required for the development of the pass-by areas there may be impacts associated with development and construction works.

Water - The main impacts would be related to potential siltation of surface drains and streams from sediment runoff from base material or excavated soils. There may also be potential impacts to ground and surface water receptors from fuel spills from machinery used in development works. Silt barriers consisting of straw bales could be employed to reduce silt run-off from the pass-by areas during development. In addition, limited fuelling of machines at the work area would reduce potential for drips or spills. The use of a spill kit on-site should be mandatory to contain and clean up any spills or leaks associated with machines.

Ecology – The development of pass-by areas would require the development of road verge areas which would result in potential loss of areas used by plants and animals. The pass-by development areas are not considered to be areas of high ecological value and would not result in loss of hedgerow or other potential areas of diversified flora or fauna. The areas are not located within or immediately adjacent to any SAC or SPA and the areas of development are limited. The development of the pass-by areas will be limited to the road verge to ensure minimal impact on flora and fauna in the area.

Air Quality – The use of excavation equipment and trucks for the pass-by areas development would result in localised and temporary increase in vehicle emissions in each of the three proposed areas during the development works. However, based on the limited time period and equipment associated with the development works the impact on air quality in the area would not be negatively impacted due to the location of the developments (i.e., at roadside) and the rural nature of the area.

Noise - The use of excavation equipment and trucks for the pass-by areas development may result in localised and temporary nuisance noise to noise sensitive receptors in the area of the three proposed pass-by areas during the development works. However, based on the limited time period associated with the development works the noise impact in the area would not be considered persistent or significant. Limitations on the times when works can be completed would control any nuisance noise associated with the works.

12.10 Conclusions

Based upon the information and analysis detailed within the TTA (Attachment L.1) it has been demonstrated that;

- The analysis of the traffic survey data reveals that the L1409 'haul' route is lightly trafficked even considering the existing on-site operations currently direct all HGV traffic along this access route. In reference to the survey data in Appendix B of Attachment L.1, the busiest section of the L1409 haul route has an AADT value in the region of less than 300 vehicles.
- The proposed increased throughput from the existing 24,500 tonnes per year to up to 50,000 tonnes per year can be accommodated within the existing onsite facilities and plant. Accordingly, no additional construction activities are proposed onsite.
- The proposals will result, when operating at full capacity, in an additional 10 to 18 two-way vehicle movements on average per day.
- A package of mitigation measures (Reference Section 5.9 of Attachment L.1) have been identified to manage the impact arising from this modest increase in vehicle numbers across the local road network.
- The analysis of the adopted worst case scenario (e.g. month of January) demonstrated the specific impact of these additional vehicle movements upon the local road network as being sub-threshold in terms of TII and IHT 'material' thresholds.
- The assessment of the impact upon the operational performance of the key R688/L1409 junctions demonstrates that the proposed development will not generate a material impact at this junction. The PICADY analysis revealed that the modest increase in vehicle flows (as generated by proposed

development) will have an insignificant influence upon the junction's performance (RFC, queue lengths etc.) with a significant level of reserve capacity remaining at this key junction in the 2032 post development scenario.

- The assessment of the seasonal peak development traffic flow periods (i.e. December-January) for the proposed development do not coincide with the local areas peak agricultural periods (i.e. August – September). Accordingly, the potential for such traffic to occur along the L1409 'haul' route is minimised.
- The DBFL site audit noted the presence of a number of informal vehicle passing opportunities (of sufficient size to enable HGV's and large agricultural vehicles to pass one another travelling in opposite directions) along the L1409 and the local lane leading to the subject site. These are presented in Figures 2.5 and 2.6 of Attachment L.1. There are existing pass-by locations that currently facilitate 77the low number of opposing vehicles (maximum of 14 to 16 during the peak hour periods) to conveniently and safely pass one another. These existing informal passing opportunities come in the form of local road widenings located;
    - along frontages of dwellings / farmyards,
    - at junctions with rural lanes / private accesses, and
    - a small number of localised wider road sections.
- Also, during the site audit, a total of three potential new pass-by areas were identified, the location of both the existing and potential pass-by areas are presented in Figures 2.5 and 2.6 of Attachment L.1.
- The proposed development of three pass-by areas will be completed under a road opening licence that will allow for temporary and localized works to develop the pass-by areas at identified suitable locations on the local road network. Due to the localized and temporary nature of the works the potential impacts associated with the developments are not considered significant. If the environmental controls outlined in section 12.9 are implemented, along with any controls required by Tipperary County Council under the road opening licence, then the potential environmental impacts will be mitigated further and be considered negligible.

In conclusion, it is considered that the impact on the surrounding road network, as a result of the proposed increased throughput at the Miltown Composting facility will be negligible compared to the existing on-site operations. This is based on the anticipated levels of traffic generated by the proposed development, and the information and analysis summarised in the above 'worst case' assessment.

13.0 ARCHAEOLOGY & CULTURAL HERITAGE

13.1 Introduction

As part of the Milltown's planning applications for an extension to cover the reception yard (Planning ref: 14/600521) and the retention of planning for a constructed wetland (Planning ref: 15/6000089) an Archaeological Impact Assessment was conducted 08/01/2015. The Archaeological Impact Assessment was completed by Wolfhound Archaeology, located in Duncormick County Wexford and can be seen in Attachment M1. As part of the impact assessment an archaeological exaction was conducted under excavation licence (15E124).

The proposed development will not require construction works to be completed and no excavation will be required. However, because the proposed development includes the use of the existing facility the potential impact on archaeological and cultural heritage artefacts in the area.

13.2 Existing Environment

The site of the proposed development is located in the Townland of Milltown More (Baile an Mhuilinn Mór), Civil Parish of Mora (Baile na Móna), Barony of Middlethird (An Trian Meánach) in the county of Tipperary (Tiobraid Árainn). Milltown More townland is located 4.5 km southeast of Rosegreen and 5 km southwest of Fethard. The centre of the proposed development is situated at National Grid XY co-ordinates 615612/633471, latitude/ longitude co-ordinates 52º27'08''/07º46'13'' and is situated at c. 135 m OD. The townland name Milltown More is an anglicised rendering of the original Irish place name meaning "The settlement/ homestead of the big Mill". Milltown More as a place name is recorded as early as 1308-1309 on the Calendar of Ormond Deeds. Milltown is first depicted on the Down Survey map of 1656-1658.

The site is situated in an agriculturally productive, undulating landscape with several small hills interspersed with flat agriculturally productive lowland in the south east of county Tipperary. Overall the landscape in the vicinity of the proposed development site has moderate surface water resources as well as widely occurring agriculturally useful soil deposits. The proposed development site is situated near the crest of a low ridge. The landscape falls away to form a shallow valley to the west and south of the proposed development. The elevated site of the proposed development provides views of the surrounding countryside in all directions. The Galtees, Slievenamon and the Kill Hills are within the visual territory of the site.

13.3 Site Visit

The site visit was completed on December 21st 2015. The objective of the site walkover was to walk the study area and inspect the area for previously unrecorded visible archaeological monuments and features. It is noted that at the time of the walkover that the study site and the lands to the south north and east were already developed and had either building structures or concrete surfacing in place. The only area

bounding the site that could be inspected was the field directly west of the site buildings. It was also noted that an in-depth archaeological excavation was being completed at the site during the site walkover.

13.4 Impacts from the Proposed Development

The proposed increase in waste acceptance on site and cover over the reception yard will not have a negative impact on the heritage and archaeological elements on site. The proposed does not require any excavation works, in which will not impact the archaeological remains as depicted in Section 6 of the excavation report as seen in Attachment M.1. Secondly, as the increase in production onsite will not require any additional buildings or developments, it will not require excavation work and will not impact the heritage and areas of archaeological importance on site.

13.5 Mitigation Measures

Section 9 of the excavation report in Attachment M.1 recommends that all archaeological remains that would have been impacted by the proposed development have been fully resolved through excavation (preservation by record) and no further mitigation measures are deemed necessary in relation to planning application (14/600521). Because the proposed development does not further impact on archaeological artefacts, it is not considered that further mitigation measures are required.

13.6 Conclusion

As previously mentioned Section 9 (Recommendations) of the excavation report of Attachment M.1 states that all archaeological remains that would have been impacted by the proposed development have been fully resolved through excavation (preservation by record) and no further mitigation measures are deemed necessary.

In the opinion of the archaeological assessment, all archaeological features that will be effected by the proposed development have been fully excavated (preservation by record) from a previous development at site. The proposed development will not require any additional excavation works and such would not impact on archaeological items identified on site. Due to the unobtrusive nature of the proposed development it is considered that there would be no impact on archaeological or heritage features.

14.0 MATERIAL ASSETS

14.1 Introduction

This chapter describes the material assets associated with the proposed increase in throughput at the site including; archaeological, cultural heritage and architecture. Based on the available information on the site history and the existing site conditions the assessment was confined to archaeological reports and the South Tipperary County Development Plan. Projections of resource use for the proposed development with regards to increased production are considered minimal on site as the existing facility can cater for the proposed increase in tonnage. Impacts on the local roads network are assessed in Chapter 12, while the socio-economic impacts are assessed in Chapter 5.

The facility is owned by the client (Milltown Composting ltd) and has been in operation at this location since 2004.

14.2 Local Settlement Patterns

The land use in the immediate area of the site is agricultural and the site itself is located in a rural area used predominately for agriculture purposes, mainly grassland and tillage. A farm yard, approximately 600 meters (m) to the southwest, is the closest property to the site. The nearest residential property is approximately 900m to the north along the access laneway. There are three more residences within 1km of the site to the north, north east and south east of the facility. Neither the facility or its immediate environs have a significant leisure or amenity value.

14.3 Local Infrastructure & Utilities

The increase in tonnage of waste accepted at the proposed development will result in a limited increase in traffic movements to and from the site. The traffic impact is addressed in Chapter 12, and Attachment L.1, and has established that the increase in traffic in comparison to existing traffic volumes will be low and that the existing road network has a significant capacity to accommodate that traffic volume increase (i.e. 5 additional truck movements per day). Following a Traffic and Transport Assessment carried out by DBFL, it was concluded that the impact on the surrounding road network, as a result of the proposed increased throughput at the Miltown Composting facility will be negligible compared to the traffic associated with increased throughput operations.

14.4 Resource Consumption

The increase in the amount of organic waste material accepted at the site will result in additional diesel and electricity usage for the process and may require additional transporting and turning equipment such as JCBs etc. The proposed development will also require an increase in diesel usage used by delivery trucks bringing material to the facility and for increased use of facility equipment.

14.5 Impacts

Land Use and Ownership

The proposed development will have no impact on the existing land ownership or land use.

Land Settlement

The proposed development will have no impact on the existing land settlement pattern.

Local Infrastructure

The proposed development will result in a limited increase in traffic volumes on local roads (5 trucks and 4 car/van movements per day) and it is considered that the impact on the surrounding road network, as a result of the proposed increased throughput at the Miltown Composting facility will be negligible compared to the traffic volumes associated with the existing composting operations.

Resource Consumption

The increased tonnage throughput at the proposed development will increase energy consumption by the fixed and mobile equipment. This will include electricity for the operation of the air delivery system to the compost bays and the air extraction system for Shed 1 and the new reception area.

Archaeological, Cultural Heritage and Architectural

Multi-period archaeological and cultural heritage remains are well represented in the immediate vicinity (c. 1.5 km) of the proposed development. This is perhaps explained by the widespread occurrence of land suitable for arable farming in the immediate area of the proposed development. Several archaeological sites are present within the wider vicinity of the proposed development site and include medieval settlement, burial and industrial sites, enclosures that may represent the remains of ringforts, medieval sites including moated sites and a medieval church and post-medieval sites including a windmill. The nature of the proposed development is such that there will be no impact on archaeological or cultural heritage.

14.6 Mitigation

On-going reviews of energy resource consumption will be completed by Miltown to monitor resource usage with a view to potentially minimising resource usage at the facility.

Mitigation measures with regards to traffic can be seen in Chapter 12, measures with regards to odour and noise can be seen in Chapter 10 and Chapter 9, respectively.

14.7 Assessment of Impact

The proposed development will have no impact on local amenity value and have a negligible impact on the local road network. There will be an associated resource usage increase with the proposed development to operate air delivery system and the air/odour mitigation system and increased usage of the fixed and mobile equipment and the increased truck movements (i.e., increase in diesel usage used by delivery trucks bringing material to the facility). The proposed development will have no impact on the archaeology, architecture or cultural heritage in the vicinity of the proposed development.

15.0 INTERACTION OF THE FOREGOING

15.1 Introduction

Earlier chapters have described the existing facility and site characteristics, the environmental impacts associated with the proposed development and mitigation measures to minimise impacts to sensitive receptors. This chapter discusses the significance of the actual and potential direct, indirect and cumulative effects of the proposed development based on interaction between receptors. Only those receptors between which there is an identifiable existing or potential relationship are addressed.

15.2 Human Beings / Air

Composting activities have the potential to impact on human beings from odours, dust and air emissions from vehicle emissions. Effective mitigation measures are in place at the facility and will be sufficient in mitigating any potential emission from onsite activities. There will be a limited increase in exhaust gases from the additional vehicle movements. Given the location of the facility in relation to the closest residence and the surrounding land use in the area, the main source of odours is from agricultural activities outside of the facility. Based on on-going ambient air quality and emission monitoring results completed of the site as part of their licence compliance (Chapter 10), the site does not have a negative impact on human beings and the surrounding environment in terms of air quality.

15.3 Human Beings / Traffic

The proposed increase in tonnage at the facility will result in increased traffic at the facility. The existing road network has the design capacity to handle the traffic related to the facility and the increase in traffic will have a negligible impact on residents or the public according to the Traffic and Transportation Assessment carried out by DBFL Consulting Engineers and Transportation Planners. Mitigation measures have been outlined in Chapter 12 to ensure minimum impact on neighbours of the facility.

15.4 Human Beings / Landscape

The proposed increase in tonnage at the site will not require any additional land or construction. The existing buildings are not clearly visible from the public road and the overall impact of the proposed development on the landscape is considered negligible due to its location and the surrounding area.

15.5 Ecology / Water

The location of the facility is not in close proximity to any SAC or SPA. The closest SAC is the Lower Suir which is approximately 7 km to the east of the site, outside Fethard. The closest water body to the facility is the River Moyle, which was a poor Q value as mentioned in Chapter 7 of this report. The Habitats Directive and Bird Directive do not apply to this water body according to water framework Ireland. The only concern for ecology and water quality is the ammonia (NH_4N) concentrations at SW1 seen in Table 7.2. The elevated concentrations main source is from condensate and surface water runoff from the main

composting sheds. The construction of an enclosure over the reception yard and a new recovery system have been developed to mitigate the potential discharge of ammonia to surface waters. There is also a proposal to direct surface water runoff not associated directly with the process (i.e., yard and roof) to an existing wetland system on site prior to discharge. This would act as a further mitigation measure against potential impacts to surface water from the site.

15.6 Ecology / Air

As seen in Section 10 on the existing air quality the facility will not have a negative impact on the ecology of the surrounding area in in relation to air quality.

increase throughput.

15.7 Traffic / Ecology / Water

The development of three pass-by areas on the local road network may have the potential during construction to cause nuisance or impact to the local ecology, receiving waters or residents. The main impact to ecology would be disturbance of birds or mammals living in the immediate area. However, because the three locations are no located in protected areas or contain any known protected species the potential impact is considered minimal. Similarly, impacts from the development and construction of the pass-by areas may have potential for impacts to surface water receptors from run-off (e.g., sedimentation or fuel impacted water). Control measures put in place during construction (e.g., no re-fuelling at the construction location and silt barriers to control sediment run-off) would protect the receptors during the pass-by construction phase.

15.8 Noise / Ecology / Human Beings

Chapter 9 of this report details the environmental noise monitoring results as required by the facility's Waste Licence. The main potential noise of noise pollution and impacts on the noise sensitive locations are from the movement of vehicles to and from the site. There have been occasional exceedances of the day time elv of 55 dB(A) seen in Table 9.2, which has been attributed to facility operations and outside sources elevating the L_{af}MAX readings. However, an increase in production at the facility will increase the traffic which will in turn have a negative impact on noise sensitive locations if the mitigation measures outlined in Chapter 9 are not followed.

15.9 Cumulative Effects

The assessment of impacts took into consideration the existing facility and the proposed increase in waste throughput at the facility. With the completion of the enclosure of the reception yard and recirculating system the main potential impact on the environment is related to traffic increase and the associated impact on the road network and noise impacts on neighbours.

However, the traffic review indicated that the increase in traffic associate with the facility would have a negligible impact on the local road network and the air quality assessment indicated that air emissions from increased exhaust output would be negligible.