JRE
Environmental Consulting

Purcellsinch Business Park,
Carlow Road,
Kilkenny

Tel. 056 7712836
Web: www.jrel.ie

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

MILTOWN COMPOSTING SYSTEMS LTD. PROPOSED INCREASE IN TONNAGE THROUGHPUT AND RECONSTRUCTION OF OLD AGRICULTURAL SHEDS AS MATURATION SHEDS AT THE COMPOSTING FACILITY LOCATED AT MILTOWNMORE, FETHARD, CO. TIPPERARY

Prepared For:

Miltown Composting Systems Ltd.,
Miltownmore,
Fethard,
Co. Tipperary

Prepared By:

JRE Ltd.,
Purcellsinch Business Park,
Carlow Road,
Kilkenny

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NON TECHNICAL SUMMARY

Introduction

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 with the capacity to accept and process a broad range of compostable organic materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal wastewater sludges and organic fines generated in the physical treatment of mixed municipal waste (MMW). The proposal is to increase the tonnage throughput in the plant from 50,000 tonnes per annum to up to 75,000 tonnes per annum. Due to the relatively short time period that the organic material spends in the composting bays during the process phase in Shed 1 and the waste reception shed it is considered that the existing process facility bays will be capable of processing the increased throughput. However, the capacity to mature the material following processing will require an increase in maturation area at the facility. It is proposed that the old agricultural sheds located to the west of the compost reception shed will be reconstructed as maturation sheds 2B and 3B and fitted with an under floor forced air system to allow for the maturation of organic material in static piles as an extension of the maturation process completed in Sheds 2 and 3.

As part of the proposed development it is proposed that two reconstructed agricultural sheds to the west of the reception shed (i.e., maturation sheds 2B and 3B) occupying a floor area of 3,560m^2 would be used for extended maturation capacity for sheds 2 and 3 to allow for the proposed increase in throughput. 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 existing biofilters south of Shed 1 and north of shed 3 will not change but there is a proposed third biofilter that would treat extracted air from maturation sheds 2B and 3B from the maturation of organic material. That biofilter would be located to the south of maturation shed 2B.

A site layout drawing of 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.2.

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 increased its capacity to a maximum of 50,000 tonnes/year in 2017 and is now, due to industry pressures requesting an increase in throughput to 75,000 tonnes/year. The company has seven staff members managing and operating the facility and this would increase to nine if the proposed development is approved.

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 7 staff 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 5 Lapps Quay, Cork, Co. Cork. A copy of the company certificate of incorporation is provided in Attachment A.3.

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 local access road off the Rosegreen to Fethard L1409. The site encompasses approximately 3.94 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, 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 facility 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 initial screening to remove contaminants, blending with bulking agents, composting in separate process bays, maturation in windrows 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 regular temperature monitoring, oxygen levels are monitored periodically 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. If required, to avoid cross contamination different loaders and buckets can be 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 240 tonnes per day (not exceeding 75,000 tonnes per annum) and to apply to the Environmental Protection Agency for a review of their Industrial Emissions Licence. The future licenced area will be the same as the current waste licence (Ref. W0270-02) for the site but with the 2 additional maturation sheds 2B and 3B included. The reception area for organic material is a building located west of Shed 1 where delivery trucks back in and deposit their loads. The reception building provides additional control over potential impacts to surface water quality from runoff from the deposited feedstock material and 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 Chapters 7 & 8).

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 Industrial Emission Licence are between 07:00 and 19:00 Monday to Saturday (with the exception of Bank Holidays), with the current operational hours at the facility between 06:00 to 19:00 Monday to Saturday. This will not change as part of the proposed development.

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 800m 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).

The proposal is to increase the tonnage throughput in the plant from 50,000 tonnes per annum to up to 75,000 tonnes per annum. Due to the relatively short time period that the organic material spends in the composting bays during the process phase in Shed 1 and the waste reception shed it is considered that the existing process facility bays will be capable of processing the increased throughput. However, the capacity to mature the material following processing will require an increase in maturation area at the facility. It is proposed that the old agricultural sheds located to the west of the compost reception shed will be reconstructed as maturation sheds 2B and 3B and fitted with an under floor forced air system to allow for the maturation of organic material in static piles as an extension of the maturation process completed in Sheds 2 and 3.

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 will continue 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 continue to 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. Two planning applications were granted in 2018 to increase the tonnage throughput at the site to 50,000 tonnes and to construct an additional biofilter at shed 3. In 2019 planning was granted for the re-construction of 1 agricultural shed to the west of the reception building. The full planning history of the site can be seen in Table 1-2 of the main EIAR document.

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 EIAR document.

The existing estimated shortfall 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 the additional tonnages of organic material 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.6.

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.5.

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 800m 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 and also potential noise and dust from construction activities.

Noise and dust impacts from construction works will be mitigated by working within appropriate daytime hours only and limiting the number of deliveries of construction on any one day. Any exposed soils and unbound internal road surfaces will be dampened during dry periods to reduce dust production.

The existing aspiration and biofilter system for the existing facility will be maintained and a specific air management system, including an additional biofilter for maturation sheds 2B and 3B will be installed to remove and treat potentially odorous air from those sheds. 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 proposed air management system and biofilter for the new sheds will be designed to provide up to 2.5 air changes per hour in maturation sheds 2B and 3B. The proposed ducting system for the air removal and treatment system is shown on the Drawing included in Attachment C.4.

The maturation system in proposed maturation shed 2B will consist of a forced air system into the floor of 5 maturation bays and the maturation beds in shed 3B will be more open plan. The fans and motors associated with the air input to the bays and maturation beds will be located inside the building structure to ensure that any noise impacts associated with air input are mitigated by enclosing them within the

building. Air extraction fans for maturation sheds 2B and 3B will be located to the south of shed 2B to use the site buildings as noise mitigation barriers and ensure that the closest noise sensitive receptors to the northwest are not negatively impacted.

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 "Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA, 2003) and Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2017)

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 28th January, 2022 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 800m to the northwest 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. The Table below outlines the population of North and South Tipperary in the last two censuses, 2011 and 2016.

Table 1-1 Employment Changes in Tipperary County between the 2011 and 2016 Censuses

Location	2011 Unemployment Rate (%)	2016 Unemployment Rate (%)	% Change between 2011 and 2016 Census
South Tipperary	19.4%	14.6%	-4.8%
North Tipperary	21.6%		-7.0%

In 2016 the administrative area of Tipperary North and South were combined and reported as Tipperary only. The rate of unemployment in the area decreased significantly between 2011 and 2016 with a pickup in the economy following the national economic downturn.

The development will result in the continuation of existing activity at the site buildings with some maturation in the reconstructed old agricultural sheds 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 following mitigation measures should be put in place to ensure continued protection of local human receptors:

Construction Phase

The reconstruction of the maturation sheds 2B and 3B will have a number of potential impacts that will require mitigation during construction, these are outlined below.

- Control measures to mitigate dust generation and other air pollutants from construction works will be employed. These are outlined in Section 10.6 of this EIAR.
- Control measures to mitigate noise impacts on surrounding noise sensitive receptors from construction works will be put in place. These are outlined in Section 9.5 of this EIAR.
- Appropriate health and safety measures in line with regulatory standards will be employed by contractors on site during construction works.

Operational Phase

During the operational phase of the proposed development there

- Continuation of a traffic management system that will continue to 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 localroad accessing the facility. The system includes for trucks travelling to the site to 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 local road network.

- As outlined in the existing Industrial Emissions Licence for the site, no truck movements will be completed along the approach local road 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.

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 EIAR in December 2020 and a copy of the Appropriate Assessment Screening report is included in Attachment F.1.

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 1-2 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

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.3) which outlines the extent of all habitat types present within the environs of the facility.

Table 2: Habitats Recorded in Vicinity of Miltown Composting 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.
Buildings and Artificial Surfaces (BL3)	The facility itself and the areas to the south, east and north
Other Artificial Lakes and Ponds (FL8)	Integrated Constructed wetlands (ICW) for the treatment of surface water run-off from the site are located in the southwest area of the site.
Immature Woodland (WS2)	Lands to the southeast of the site consist of a deciduous tree stand consisting of sycamore and beach. There is also sparse stand of planted beach and oak in the northern area of the Miltown site.
Wet Grassland (GS4)	The area to the west of the proposed maturation sheds and north of the ICW ponds contained mainly grasses that are found in unimproved areas.

*- Based on Fossitt, 2000.

The results of the assessment and Appropriate Assessment Stage 1 Screening was that the site is located a significant distance from the closest SAC and the potential for impacts on protected habitats and/or the qualifying interests of Natura 2000 sites is negligible. The assessment also concluded that the development of the proposed maturation sheds on the footprint of former agricultural sheds and existing yard area would not negatively impact any significant habitat on the Miltown site.

Water

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

- 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)
- Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2017)
  - Current EPA on-line database -Envision water quality monitoring data for watercourses in the area; and,
  - River Basin District (ERBD) Management Plan;
  - The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
  - Office of Public Works (OPW) flood mapping data (www.floodmaps.ie);
  - DoEHLG & OPW (2009) Flood Risk Management Guidelines for Planning Authorities;
  - 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
  - "Guidelines on protection of fisheries during construction works in and adjacent to waters" Inland Fisheries Ireland (2016); and

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 EPA Online Geoportal website.

Surface Water

Stormwater from the site building roofs and open yard surface water that has been treated in the on-site oil/water separator is directed to the onsite integrated construction wetland (ICW) before discharge to an open drainage ditch at the southwest corner of the site. The site lies within the catchment of the River Moyle, which is approximately 2 km to the southwest of the site. Stillimity Stream, a tributary of the Moyle, is located approximately 1 km southwest of the site and is the closest surface water course to the site discharge point from the ICW on the Miltown Composting site at SW1a. Another small stream called Milltown Beg is located approximately 350m northwest of the site boundary but is not hydraulically linked to the Milltown Composting site. As part of the proposed development, clean stormwater from the roofs of maturation sheds 2B and 3B will also be directed to the ICW system.

In February 2022 the condition and effectiveness of the ICW to treat surface water from the site was completed by VESI Environmental Ltd. The works included assessing the physical condition of the ponds and the capacity of the ICW to treat stormwater runoff based on surface water ammonia results either

the discharge at SW1a or, if there was no discharge, samples from final treatment pond. A copy of the report completed by VESI on the ICW is provided in Attachment G.3.

The results for surface water sampling discharge at SW1a in 2021 (i.e., 95%ile ammonia concentration of 0.14 mg/l) and in samples collected from the final treatment pond in February 2022 indicated that the quality of surface water from the ICW system will not negatively impact surface water quality in the Moyle River catchment area.

The conclusion of the assessment was that the existing ICW has capacity to treat the incoming roof runoff both from the existing and from the proposed development (i.e., Sheds 2B and 3B). The ICW appears to be in good condition but does require some maintenance to be carried out (e.g., strimming vegetation on banks) to ensure function and performance is maintained. The conclusion also indicated that the ICW provides sustainable and effective management of surface waters from the site.

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.

To assess the potential for discharge from the ICW toimpact the Moyle River, two surface water samples were collected immediately downgradient of the Miltown ICW discharge point SW1a in February 2022. Sample location M1 was from the surface water drain that receives water from SW1a and M3 was located in Stillimity Stream approximately 100 m upstream of the confluence with the Moyle River. The analysis results indicated that surface water in the drainage ditch and in the Stillimity Stream immediately downgradient from the surface water outlet from the ICW at the Miltown Site (i.e., SW1a) was of good quality. The COD concentrations were less than the Surface Water Guideline limit of 40 mg/l and BOD in surface water prior to flowing to the Moyle River (i.e., M3) was less than the 2009 Surface Water Regulation limit of 2.6 mg/l. Ammonia concentrations were also less than the limit of 0.14 mg/l outlined in the 2009 Surface Water Regulation. The sampling results from the surface drain and Stillimity Stream located downgradient of SW1a indicated that concentrations of parameters that would indicated potential nutrient impacts on the receiving Moyle River were less than the Regulatory Limits and indicated that discharged surface water from the Miltown ICW at SW1a would not have any impact on water quality in the Moyle River.

The assessments completed as part of the EIA indicated that the mitigation measures in place at the existing composting site are affective at treating surface water runoff from the site through biological treatment in the ICW system. The conclusion of the ICW assessment completed in February 2022 was that the ICW also has the capacity to accept and treat storm water from the proposed development maturation

sheds and as such the additional processing as part of the proposed development will not have a negative impact on surface water quality in the area. 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 240 tonnes per day but not exceeding 75,000 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 re-circulation system for water from the reception building floor and reception ramp where the water is stored and used on the compost process bays in Shed 1).

Mitigation measures for construction works will include appropriate bunded storage of fuels or chemicals associated with the construction works and as a result surface waters will be protected during the construction phase of the proposed development.

Groundwater

Groundwater is considered a receptor when it is being used or can be used for either public or private water supply and where it may potentially be having an impact, through hydraulic connectivity, on surface water receptors in the area. The groundwater assessment is divided into two groups: existing and potential abstractions and potential impacts on surface water receptors in the area (i.e., River Moyle).

There is no municipal mains water supply in the Miltownmore area and is not in the vicinity of any Source Protection Areas. The Composting facility and private residences in the area obtain potable water from individual groundwater wells and a search on the Geological Survey of Ireland (GSI) public Spatial Resources Database identified eight (8) domestic wells within a 2.5km radius of the Miltown Composting Facility site. The wells identified are listed below.

Groundwater Wells on GSI Spatial Resources System within 2.5km of Miltown Composting

GSI Ref.	Townland	Well Type	Depth to Rock	Well Yield
2013SEW001	Colman – SE of Site	Domestic - BH	15m	Moderate
2013SEW024	Colman – SE of Site	Domestic - BH	No Depth Recorded	Poor
2013SEW002	Barretstown – NE of Site	Domestic - BH	18m	Moderate
2013SEW003	Barretstown – NE of Site	Domestic - BH	4m	Moderate
2013SEW006	Barretstown – NE of Site	Domestic - BH	2.5m	Moderate
2013SEW010	Tullamaine – N of Site	Domestic - Spring	No Depth Recorded	Good
2013SEW011	Fethard – N of Site	Domestic - BH	No Depth Recorded	Good
2013SEW012	Fethard – N of Site	Domestic - BH	4.9m	Good

To assess if there is any potential for impact on domestic borehole wells or surface water receptors in the area the groundwater Risk and ground waterbody WFD status was reviewed on the GSI online Groundwater Spatial Resource. The review indicated that the Groundwater Region reference at Miltownmore is IE_SE_G_040 and that the Groundwater Risk for IE_SE_G_040 is "Under Review". Ground Waterbody WFD Status 2013-2018 for IE_SE_G_040 is "Good", which would indicate that the groundwater is considered to be of good quality and not a significant source of impact to domestic users in the area or to surface water receptors in the area.

Historically there were some instances of elevated ammonia found in groundwater samples collected on site. The elevated ammonia concentrations may have been due to runoff from the exposed reception yard area that historically existed at the Miltown site. Because the yard area was uncovered there was some potential for runoff to ground surface and potential for ammonia impacts. However, in August 2015 planning permission was granted (Ref. 14600521) to construct a covered structure over the reception yard to mitigate against runoff from the facility and potential impacts on soils and groundwater. The shed, and the leachate recirculation system was constructed in 2016/2017 to provide mitigation against potential impacts to soil and groundwater from potential migration of leachate from the reception area.

The analysis results for ammonia in the three on-site wells since the site Licence Review in 2019 show that the mitigation measure put in place is effective as no sample result since 2019 has exceeded the drinking water limit for ammonia.

Additional groundwater sampling for ammonia concentrations in all three wells was also completed in January and February 2022 to assess the concentration of that parameter in groundwater at the site. The samples were analysed for ammonia because it was considered a potential contaminant of concern related to the composting of organic material. The results for ammonia sampling show that all samples analysed from the wells between 2020 and 2022 contained ammonia concentrations less than the groundwater protection and drinking water limits.

All areas of the existing composting facility and all areas of the proposed development are/will be 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 within the process sheds where mitigation measures are in place to ensure the protection of groundwater. These are outlined below.

Construction Phase

It is not anticipated that there will be large stockpiles of fill soil or large areas of exposed fill soil from construction works that would result in run-off water containing silt.

- Surface water runoff in the area of the proposed construction works is directed towards the first pond of the ICW and as a control measure the input to Pond 1 will be visually monitored to ensure that the pond is not silting up. If required, silt settlement traps and or silt fences consisting of straw bales could be installed to mitigated silt migration from the construction area.
- A buffer distance with no storage of soils will be maintained along field ditches and close to the ICW. Due to the site location there will be no storage of soils near streams and this would negate any requirement to comply with fisheries guidelines "*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*" (IFI, 2016).
- Any temporary storage of excavated fill soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the storm water drainage.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water features will be maintained.

- Designation of a bunded refuelling areas on the site;
- Provision of a spill kit at the construction area;
- All machines will be refuelled in a hardstanding surface area connected to the on-site oil/water separator.
- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded areas;

- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they should be done so secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.
- All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility offsite only.

Operational Phase

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 soils, groundwater and the geological environment:

Existing Mitigation Measures

- As part of the compost site development a Containment Tank (47.54 m^3) was installed as part of the recirculation system at the southwest corner of Shed 1. This tank is used for the storage and recirculation of potentially contaminated surface water runoff from the ramped intake area of the reception shed to ensure that any runoff is directed in a controlled manner to the on-site contaminated water/leachate recirculation system. The impacted water is used as part of the composting process (dampening the pre-composting bays in Shed 1).
- The on-site leachate collection system located in the reception shed area collects impacted water and directs it initially to a pump/sump tank located south of the amendment storage area, from where it is pumped to the recirculation tank for recirculation into the process.
- The provision of an impermeable surface at the turn table area for vehicles delivering organic material to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which is directed to the dedicated contaminant/recirculation system.
- To manage any possible spillage risk on the turntable area Miltown will continue to operate their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure. The on-site 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

- A kerb exists around the footprint of the reception building and connects 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 leachate/impacted surface water collection system, collected water is directed initially to a 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 is 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 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.
- All areas of the compost handling and processing facility are roofed and have impermeable concrete floors to 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 reception building are 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 from the existing site yard is diverted to the oil/water interceptor and released from there to the surface water drain and then to the Integrated Constructed Wetlands (ICW) onsite. All stormwater from the existing compost facility shed roofs (which is considered clean) is directed directly to the ICW. The ICW ponds provide treatment on the non-impacted water prior to discharge from site.

Proposed Additional Mitigation Measures

- The floor of the proposed maturation sheds 2B and 3B will consist of an impermeable concrete floor and will have a surrounding concrete wall. These features will contain any minor liquid migrating from the maturing organic material in the aerated static piles.
- The transfer of processed organic material from the end of shed 1 to the proposed maturation sheds 2B and 3B will take place using a front-end loader that will deposit the material over a low dividing wall between the reception shed and the proposed maturation shed. The provision of the low divider wall will allow for the division of the areas and no surface runoff from the reception area can enter maturation sheds 2B and 3B.
- The exit door for the proposed maturation sheds 2B and 3B will be ramped or sloped back towards the shed interior. This will ensure that there can be no migration of floor liquid from the building to the exterior yard.

- All non-impacted storm water from the proposed maturation sheds 2B and 3B roofs will be directed to the Integrated Constructed Wetlands (ICW) onsite, See Drawing P2-A in Attachment C.3. The ICW ponds provide treatment on the non-impacted water to ensure that there are no emissions from the facility.
- All surface water from the concrete surfaces at the entrance, and other external areas around the new proposed maturation sheds (i.e., 2B and 3B) will be directed to a dedicated full retention oil water separator prior to discharge to the ICW system as outlined in the drawing P-2A included in Attachment C.3.

It is not considered that the existing facility operations are negatively impacting on the underlying site soils, geology or hydrogeology, the implementation of the existing mitigation measures are ensuring that potential for the migration of contaminants from the facility buildings into the underlying soils and geology are negligible. Similarly, the implementation of the mitigation measures related to the proposed maturation sheds 2B and 3B will ensure that potential impacts to soils, geology or hydrogeology are contained and controlled and remain negligible.

The proposed development includes measures to protect against any accidental discharges to ground (e.g., adequate containment measures for oil storage, control of any runoff from composting areas, use of hardstand in loading areas and drainage through oil interceptors). As such it is considered that the cumulative impact of the proposed development will be neutral and imperceptible in relation to soil and groundwater

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.

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 side area of the old agriculture sheds where the proposed maturation sheds would be constructed is exposed and the profile of the soils beneath the area of the old agricultural buildings could be assessed without the requirement to dig beneath the material for assessment. The soil profile beneath the old agricultural sheds consist of Soil Fill mainly made up of clayey subsoil, medium plasticity and some fine to coarse angular shale rock. The depth of the soil profile beneath the old shed structure is approximately 1.8m. A soil log outlining the soil profile at the assessment area is provided in Attachment H.8.

The fill soils beneath the area of the old agricultural shed is illustrated below.

The old agricultural sheds contained four (4) underfloor concrete slurry storage tanks (see Section Drawing in Drawing P3-A provided in Attachment C.2) and it is proposed that any excavation related to footings for the new sheds would not extend beneath the elevation of the old tank bases. The section also shows the proposed depth of footings in relation to original ground level. This would reduce any potential impact on underlying native soils or geology.

Some limited excavation of the fill material beneath the existing old agricultural sheds footprint to accommodate the construction of the proposed maturation sheds 2B and 3B will be required. Contractors should prepare and adhere to a method statement indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

As part of the method statement the contractor must include for assessing when excavation of fill material has been reached and natural ground has been encountered. There should be no excavation into natural soils as part of the construction works.

Any excavated fill material produced during construction will be stored and reused on site. Soil stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil excavation and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction.

The mitigation measures employed for the protection of groundwater (above) will also serve to protect soils and geology in the area.

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.

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 no exceedances of the ELV's set in

the site Industrial Emissions Licence. The main sources of noise were mainly from animals associated with agricultural lands in the area and traffic both associated with surrounding farmland and the composting facility.

Potential noise sources during the construction phase of the maturation sheds 2B and 3B would be:

- Machines used for excavation and building works
- Use of electrical and hand tools associated with building works
- Traffic associated with workers travelling to and from site
- Traffic associated with the delivery of construction materials.

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

- A maximum of 16 additional vehicles (i.e., 8 cars/vans and 8 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 increased throughput would also require the use of maturation sheds 2B and 3B and would include some additional air handling, management and mitigation through the use of extraction fans. The mitigation measures to mitigate noise impacts associated with construction and the revised operations of the site are outlined below.

Construction Phase

With regard to construction activities, reference has been made to BS5228 Parts 1 and 2, which offer detailed guidance on the control of noise and vibration from demolition and construction activities. Various mitigation measures will be considered and applied during the construction of the proposed maturation sheds 2B and 3B. As an example, the following measures may be implemented on site:

- limiting the hours during which site activities likely to create high levels of noise are permitted;
- establishing channels of communication between the contractor/developer, Local Authority and residents;
- appointing a site representative responsible for matters relating to noise; and
- limit the number of deliveries to the construction site in any one day.

Furthermore, a variety of practicable noise control measures should be employed, such as:

- selection of plant with low inherent potential for generation of noise;

- erection of barriers as necessary around items such as generators or high duty compressors;
- situate any noisy plant as far away from sensitive properties as permitted by site constraints.

Operational Phase

- According to the traffic assessment, as outlined in Chapter 12 of this report, there will be an increase of approximately 8 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
- Any new fans and motors for air input to the maturation bays and beds in sheds 2B and 3B would be situated within the fabric of the building to mitigate potential noise from the fan/motor operations. The metal cladding structure of the building coupled with the distance from the proposed sheds to the nearest noise sensitive receptor will ensure that noise impacts related to the air intake fans is negligible.
- The two proposed air extraction fans installed at maturation sheds 2B and 3B for the removal and treatment of exhausted air from within the building will be located at the south of the shed close to the proposed new biofilter. Based on the noise output from the fans and the distance from the fans to the nearest noise sensitive receptor to the northwest, the air extraction fans have been calculated to have a negligible impact on the noise climate of the area.
- 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 local access road 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

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 8 additional truck movements per day to the site during the operational phase which is not considered significant over a 12 hour working day. If the mitigation measures are implemented during the construction and operational phases it is not considered that the proposed development would have a significant impact on noise sensitive receptors in the area.

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 maturation areas in sheds 2 and 3 include underfloor forced aeration of static stockpiles of composted material, this allows for the continuous aeration of the maturing static piles without the need to turn the material. The composting and maturation sheds also have extraction fans to remove air from inside the existing composting facility buildings, with air from shed 1 and the reception shed removed and treated in biofilter 1 located to the south of shed 1 and air from sheds 2, 3 and 4 removed and treated in biofilter 2 located to the north of shed 3. The inlets and outlets of the biofilters are regularly monitored as part of the site's Industrial Emissions licence compliance criteria.

Odour monitoring carried out in accordance with Schedule C of the site Industrial Emissions Licence indicated that the site has no odour impact on the surrounding environment. Monitoring results, as seen in Chapter 10 of the EIAR, 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 the Industrial Emissions 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.

As part of the proposed development the increase in tonnage throughput would not require additional composting infrastructure but would require additional maturation capacity. Proposed maturation sheds 2B and 3B would have forced air bays and beds for an extension of the maturation operations currently completed in sheds 2 and 3. The proposed sheds would also have an air extraction system that would be directed to a dedicated new biofilter located to the south of proposed shed 2B. Air Emissions from the proposed development will be from the additional air extracted and treated from maturation sheds 2B and 3B at the Miltown facility. The proposed development processes as described in Chapter 3 of this EIAR will result in ambient odour emissions from the entrance / exit roller doors and the air extract fans in maturation sheds 2B and 3B. Also, there will be engine combustion emissions from the increased traffic associated with the proposed development. The mitigation measures for the construction and operational phases of the proposed development are outlined below.

Construction Phase Mitigation Measures

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good work practices and effective control strategies.

The movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions and to suppress dust sources, see below.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Hardstanding surfaces and roads will be swept to remove mud and aggregate materials from their surface.
- Vehicles delivering or collecting material with potential for dust emissions should be covered with tarpaulin to restrict the escape of dust.

Operational Phase Mitigation Measures

The results for air monitoring completed between 2018 and 2020 indicated that the existing composting facility does not have a negative impact in terms of odour or air emissions associated with the composting process (i.e., ammonia, H_2S or mercaptans). The proposed new maturation sheds 2B and 3B would be designed and built with air input for the maturation process and with an air extraction and treatment system that would be exhausted through a dedicated biofilter system. 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 maturation sheds 2B and 3B at a maximum of 2.5 air changes per hour, this will require the additional air to be treated in the biofilter as calculated in Chapter 10.

It is proposed to utilize the existing air management system to continue to collect and treat air from the existing process sheds. Based on the sampling results the residence time for treatment in the biofilters is adequate to appropriately treat the exhausted air from the sheds. The motor on the fans are fitted with variable speed controllers to control the air volume extracted from the buildings.

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 material;
- Control of moisture content;
- Control of air diffusion through the organic material – through the automatic control system;
- Control of temperature – through the automatic control system;
- The control or aeration of material to ensure that anaerobic conditions to not take place in composting bays or in maturing static piles.

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 at the facility and the re-construction of two old agricultural sheds as maturation sheds 2B and 3B to the west of the existing compost reception shed.

The proposed new maturation sheds will be largely located on the footprint of the old agricultural buildings but the roof apex will be higher than the old agricultural sheds. The construction and appearance of the new maturation sheds will be similar to the existing site shed structures, and the old agricultural sheds that they will replace, and will blend into the existing agricultural shed appearance of existing sheds at the site. The sheds will be constructed of similar materials as the existing sheds and the old agricultural sheds and so would fit in the existing site structures and would not be expected to have a significant impact on the landscape.

Mitigation Measures

The purpose of mitigation is to avoid, reduce and potentially remedy any significant negative effects arising from the development. Because the maturation sheds will replace old agricultural sheds, will be constructed of similar materials as the existing site sheds and will be a similar colour (e.g., green), 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 reconstructed shed buildings.

Traffic

In April 2021, 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 Assessment Report (EIAR) 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) and construction works 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

Network Impact – Construction Phase

The projected HGV and cars / LGV traffic generation during the worst case construction programme are shown in the Table below.

Predicted 'Worst Case' Construction Traffic Generation

Time Period	HGV	Cars / LGV	Total (Vehicles)
Daily	18	16	34
Peak AM	2	2	4
Peak PM	2	2	4

Based on the predicted additional vehicle trips on the local road network during the worst case peak hour period, the resultant peak hour (short term) construction impact at the R688 / L1409 priority controlled junction and the aforementioned ATC locations A and B have been calculated and summarised in the Table below, and are included in the TTA Report in Attachment L.1.

Network Impact – Construction Stage

Junction / Link	AM Peak	PM Peak
R688 / L1409 Junction	0.8%	0.8%
L1409 Link – Location A	9.5%	7.2%
L1409 Link – Location B	8.5%	7.4%

The analysis demonstrated that the proposed development will, in the adopted worst case scenario (i.e. during the pouring of the base slabs where construction traffic is envisioned to be at its highest) 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 TII's TTA thresholds for normal (i.e. non-congested) networks. Furthermore, whilst the impact upon the L1409 is found to be well below the 10% threshold on non-congested networks

Network Impact – 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 2022 Opening Year scenario. The predictions are included in the Table below.

Network Impact – Operational Stage

	2022 Opening Year		2037 Future Design Year	
Junction / Link	AM Peak	PM Peak	AM Peak	PM Peak
R688 / L1409 Junction	0.4%	0.4%	0.3%	0.4%
L1409 Link – Location A	4.8%	3.6%	4.4%	3.3%
L1409 Link – Location B	4.2%	3.7%	3.9%	3.5%

The analysis demonstrates that the subject proposals will, in the adopted worst case scenario (i.e. peak November 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 TII's TTA thresholds for normal (i.e. non-congested) networks. Furthermore, the impact upon the L1409 link is very modest (i.e. Only 4 additional vehicle movements) with the resulting impact distorted by the extremely low baseline traffic flows along this corridor (i.e. AADT of only approximately 350).

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 few years there has been a notable increase in dual trips (approximately 30%). As dual trips benefit both the supplier of materials and the exporter, this trend is expected to continue with the potential to represent 50% of all HGV trips in the next 5 years. Nevertheless, with the objective of providing a robust appraisal DBFL have assumed that L_{in}-L_{out} trips will increase to represent only 40% of all

HGV trips in the future design year scenarios. Accordingly, DBFL assumed that the number of dual trips will increase by 10% above the existing quantum

A comparison of the existing on-site operations vehicle trips and the proposed development's post development generated vehicle trips are summarised in the Table below for the 'average' daily Peak Month (i.e., November) scenario. This is further discussed in section 5.3 of Attachment L.1.

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	15	23
Outbound	1	1	5	7	15	23
Two Way	6	8	6	8	30	46

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 16 additional vehicles, eight of which are attributed to the additional staff movements (i.e., cars and vans) and eight (8) attributable to HGV movements.

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.

Existing Traffic Mitigation

Miltown Composting Systems has implemented a number of mitigation measures over the last number of years following a previous application for increased throughput at the site (Pl. Ref. 17600372) which includes both operational and infrastructure enhancements including;

- A booking system has been implemented which provides notice of impending inbound HGV's to the site from suppliers who's arrival rates are spread across the day
- A dedicated pass-by area has been provided immediately inside the site access allowing two HGV vehicles to pass each other at this location thereby minimising the instances of HGV's meeting each other on the access road between the Rosegreen-Fethard Road and the subject site access;
- Lands in the vicinity of the Rosegreen-Fethard Road / local road (leading to site access) junction have recently been purchased by the applicant and localised widening is proposed to be introduced to enhance the junction layout thereby allowing HGV's to pass each other when turning off Rosegreen-Fethard Road even if a vehicle is waiting to exit the local access road onto Rosegreen-Fethard Road

Proposed Traffic 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 management (M) and Infrastructure (I) mitigation measures are planned as part of the subject proposals

- **M1 – Management Regime**: As part of the existing booking system, which at current levels of operation works efficiently, all 'inbound' material loads sent to the subject Milltownmore facility by suppliers generally arrives with at least one day's prior notification given in regard to the day of arrival at the subject site. Whilst this current arrangement gives advance notice to Miltown Composting of the materials delivery day and approximate time. A new management regime is to be implemented to complement the existing regime thereby helping mitigate potential impacts arising from the subject proposals and minimising the potential for HGV traffic travelling in opposite directions to meet each other between Rosegreen and the composting facility. This potential new regime would require the supplier (or their transport operator) to pre-book a 'delivery window' (i.e. specific prearranged time based window of arrival on-site) 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 would enable the composting facility to further manage the arrival of material on-site through the implementation of a fixed number of delivery windows over the entire working day. In addition to assisting the operation of the composting facility this measure will give additional control to the operator resulting in an even more controlled distribution of HGV's over both (i) the entire day, and (ii) days of week. The potential for a dedicated app is to be investigated that could allow suppliers book their proposed delivery within available delivery windows' through the dedicated app which in turn can be managed by Miltown Composting.
- **M2 – Management Regime**: 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 0830 and 0930) it is proposed that a delivery window for this specific period each weekday is not issued to suppliers. To accommodate this initiative, it is proposed to allow 'inbound' vehicles enter the subject site during an initial delivery window of 0700-0830. This could be facilitated via the aforementioned app where this 'peak hour' window would not be made available for deliveries to the facility.
- **M3 – Management Regime**: It has previously been investigated as to the potential for an improved 'notification and hold' management measure to be implemented. 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' following the implementation of the subject proposals, an improved 'notification and hold' management measure is proposed incorporating the following management regime;

a) All 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 8 km 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 along the L1409 'haul' route).

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.

- **M4 – Management Regime**: 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 recycled compost. Whilst such practices have been relatively infrequent in the past they now account for over 30% (on average) of all HGV movements to/from the subject site (based upon 2020 data) which is an increase of 6% compared to 2015 data. It is reported that this trend has continued to increase 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 the assessments 2022 and 2037 design years we have assumed a 'reverse load' average of only 40% (i.e., 2020 level of 30% plus 10%).
- **I1 – Infrastructure:** The findings of both the site audit and the traffic surveys reveals that the opposing (i.e. vehicles travelling 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 manoeuvre 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 encroach 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 (i.e., Pass-by facilities). A number of potential sites are identified in Figure 6.2 of Attachment L.1 which, subject to discussions with the local roads authority, 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 350) and the other mitigation measures being implemented as part of the subject proposals; it was recommended that new pass-by facilities incorporating local carriageway widening works are implemented at identified potential formal pass-by areas (see Figure 6.2 in Attachment L.1) with the objective of further mitigating the impact of the subject development works and associated operational traffic movements.

Conclusion

Based upon the information and analysis detailed within the TTA in 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, the busiest section of the L1409 haul route has an AADT value in the region of less than 350 vehicles.
- The proposals will result, when operating at full capacity, in an additional 16 two-way vehicle movements on average per day of which 8 are HGV movements.
- The construction stage of the proposals is predicted to generate an additional 4 no. two-way vehicle movements during the AM and PM peak hours and a total of 34 daily two-way vehicle movements during the peak construction period which will be short-term (i.e., approximately 10 working days).

The analysis demonstrates 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.

- A package of both management (M) and Infrastructure (I) mitigation measures have been identified to manage the impact arising from this modest increase in vehicle numbers across the local road network.
- 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 proposals) 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 2037 post development scenario.

- The assessment of the seasonal peak development traffic flow periods (i.e., November - December) 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.

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 pass-by areas on the local road network 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.

The TAA completed by DBFL concluded that the impact on the surrounding road network, as a result of the proposed intensification of use at the Miltown Composting facility and implementation of the proposed mitigation measures will be modest 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.

Potential Impacts Based on 2022 Site Assessment

The site assessment completed in 2022 shows that the proposed development involves the reconstruction and extension of an existing agricultural storage structure for use as an organic material maturation facility and an extension to existing storage. This proposed development will be focussed on the old cattle sheds / slatted units built here in the 1970s and later changed to store dry feed in 2001 (Ref: PA. 01357). The southern shed was demolished in 2019.

The site of the proposed development lies southeast of the location of the RMP site TS069-059 – Ringfort/rath. While the development is quite close to the site of the ringfort it does not encroach on the area where buried remains of the monument might survive.

The location of the current proposed development should be considered as being of low risk. The formation level of the proposed structure is c.3.00m below the original ground level which corresponds to the floor level of the Composting Facility abutting the development site to the east (Area 1, Ó'Droma, 2015). Ó'Droma identified and excavated potential archaeological features in Area 1, all of which were located at a level c. 3.00m above the floor level of the slurry tanks defining the proposed formation level of within the footprint of the development. A well-established haul road/farm track leads south from the main access road between the development site and the disused lagoon/pond on the western boundary. This road passes through the location of the reed beds and allows access to the fields to the south and east. The archaeological landscape has also been impacted on by the creation of these reed beds to the south and southwest, the lagoon/pond on the western boundary and the haul road/track that leads to the southern fields.
Because the proposed development is largely sited within the footprint of the 1970s cattle sheds/slatted units and later dry storage units dramatically reduces the archaeological risk as the location of the sheds was dug out to accommodate the tanks beneath the cattle sheds. If buried archaeological remains were present on this site, they would have been directly impacted on at that time. The final footprint of the proposed extension will extend beyond the footprint of the cattle sheds by to accommodate a biofilter. This extension will encroach on the area of the reed beds but would not be considered to impact on the RMP site or zone of notification.

The placement of a new concrete apron extending to the west and northwest of the proposed structure will encroach into the zone of notification for the site of the RMP site TS069-059 with the probability of impacting on the site of the ringfort itself (although the ringfort is no longer intact). As this apron will consist of a screed of concrete it is likely to be contained within the area which was impacted during the initial developments on the site in 2008 and granted retention in the same year (PA. 08/834).

The historic agricultural and current composting activity on this site has directly affected the archaeological landscape that existed on this ridge in the past. The current proposed development does not present any major risk to the surviving archaeological landscape in this location.

Remedial & Mitigation Measures

The test pit excavation in the raised fill material on which maturation shed 2B and 3B are proposed indicated that the material is fill material to a depth of at least 2m in that area. As a mitigation measure,

the groundworks of the proposed development of sheds 2B and 3B would not extend beneath a depth of 2m and so would not impact on natural grounds or any potential archaeological features that could exist at deeper soil depth.

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.

Section of the 2022 Archaeological Assessment completed by RedArc outlines a number of mitigation measures that should be implemented during the construction phase of the proposed development, in particular related to the concrete apron to be constructed to the west of the proposed buildings. The mitigation measures proposed include;

- The developer should consider retaining the services of an archaeological consultant to advise on the proposed development throughout the construction phase
- Where the proposed development extends into the zone of notification for the RMP site that a suitably qualified archaeologist is present on site to monitor groundworks in those locations
- During construction the area defined as the zone of notification for the RMP site should not be used for any purpose relating to the development (including material stockpiles, storage, parking, plant, heavy vehicular trafficking, or construction compounds).
- Any proposed temporary works associated with the proposed development should be discussed with an archaeological consultant to avoid potential impacts
- A traffic management plan should be created for the construction phase of the development in discussion with the archaeological consultant to ensure that the RMP site is not trafficked by heavy plant and that avoidance of impacts is ensured.

Predicted Impacts of the Proposed Development

Because the proposed construction works for sheds 2B and 3B are on existing raised fill material (as outlined in Section 6 of the Archaeological Assessment Report in Attachment M.1) and not natural ground.

The proposed development is largely contained within the footprint of the 1970s cattle sheds and slurry tanks. These structures would have had a major impact on the archaeological landscape given that to construct the slurry tanks required a major excavation to reduce the ground level by up to c.3.00m. This bulk excavation in the 1970s de-risks most of the proposed development footprint.

The proposed development site is located in good agricultural land within a rich cultural heritage landscape but should be considered to be largely of low archaeological risk. Any potential risk related to the construction of the 'new concrete apron' to the west of the proposed structure (i.e., within the zone of notification for the RMP) would be mitigated against through the control measures outlined in section 13.5 above.

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.

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

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 800m to the northwest along the local access road. 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.

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.

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.

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.

TABLE OF CONTENTS

ATTACHMENTS

Attachment H.6	WFD Groundwater Classification
Attachment H.7	Laboratory Reports for Groundwater Sampling
Attachment H.8	Agricultural Sheds Soil Log
Attachment I.1	Miltown Environmental Noise Measurement Results
Attachment I.2	Acoustic Performance of Pre-finished Steel Cladding System
Attachment I.3	Fan Capacity Noise Output Data Sheet
Attachment J.1	Biofilter Monitoring Reports 2020 & 2021
Attachment J.2	Bioaerosol Report 2020
Attachment J.3	Odour Report 2020
Attachment J.4	Dust Deposition Report 2021
Attachment K.1	Viewpoints of Facility
Attachment L.1	Traffic and Transportation Assessment
Attachment M.1	2015 Archaeological Impact Assessment
Attachment M.2	2022 Archaeological Impact Assessment
Attachment N	**Blank**
Attachment O	**Blank**

1.0 INTRODUCTION

This Environmental Impact Assessment report (EIAR) 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 facility has experienced increasing requests from waste companies to accept and process increasing tonnages of organic waste that are a result of increased source separated food waste collections and increased physical processing of municipal solid waste that produces organic fines material in the Southern Waste Region. The proposed development is for an increased throughput of organic waste for processing at the facility from 50,000 tonnes per year to 75,000 tonnes per year to meet this demand. The facility structures will consist of the reception of organic material (organic fines and/or source separated organic waste) at the compost reception shed, the continued aerobic digestion of organic waste within Shed 1 and the maturation and storage of final product in the sheds to the east of shed 1 (i.e., Sheds 2, 3 and 4) and the proposed extension of maturation in new maturation sheds 2B and 3B located to the west of the compost reception shed The proposed development will include the reconstruction of sheds (i.e., maturation sheds 2B and 3B) mainly on the footprint of old agricultural sheds and all proposed process activities will be completed within existing and proposed building structures with appropriate control measures included to mitigate potential environmental impacts. 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 that originally operated under Environmental Protection Agency (EPA) Waste Licence W0270-01, issued on the 9th of September 2010. In 2018 planning was granted by Tipperary County Council for an increase in tonnage throughput up to 50,000 tonnes and the site then applied to the EPA for a review of the original licence to allow for the operation to take place. The reviewed licence (W0270-02) was issued in September 2019. 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.2.

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 from a maximum of 50,000 tonnes/year to a maximum of 75,000 tonnes/year. The increased throughput would increase the staff number from seven to nine at 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 7 staff 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 5 Lapps Quay, Cork, Co. Cork. A copy of the company certificate of incorporation is provided in Attachment A.3.

1.2 Facility Overview

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 local access road off the Rosegreen to Fethard L1409. The site encompasses approximately 3.94 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 waste reception building, the main compost process building (i.e., Shed 1) and enclosed compost maturation 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 to the west of the waste reception building. 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 that accepts and biologically treats clean surface water from the site, 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 initial screening to remove contaminants, blending with bulking agents, composting in separate enclosed tunnels and open bays, maturation in windrows 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 shed to the west of the canteen, 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 maturation sheds (i.e., Shed 2 & 3) and covered yard to the east of Shed 1 (i.e., Shed 4) all have an impermeable concrete surface. The reception and turning circle to the north of the waste reception shed are paved with concrete and any surface water from this area is directed to the surface water treatment system in the waste reception shed. The site has two (2) biofilters, one 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 second is located to the north of Shed 2 and is accessible by an access road that runs around the east of sheds 3 and 2. The site layout can be seen in Attachment A.1

Miltown propose to increase the throughput of material at the composting facility to 240 tonnes per day (not exceeding 75,000 tonnes per annum) and to apply to the Environmental Protection Agency for a review of the existing Industrial Emissions Licence (i.e., Reg. W270-02) 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 proposed development includes to increase the throughput of material at the composting facility to approximately 240 tonnes per day (not exceeding 75,000 tonnes per annum) and include for the reconstruction of two old agricultural sheds (i.e., maturation sheds 2B and 3B) as additional maturation capacity (i.e., extensions of maturation capacity in existing sheds 2 and 3) for the proposed increased throughput. Miltown Composting will to apply to the Environmental Protection Agency for a review of the current Industrial Emissions Licence to include for the proposed development. The future licenced area will be the same as the current waste licence (Ref. W0270-02) for the site. Composting will continue

to take place in shed 1 and the reception area for organic material will continue to be in the existing reception shed where delivery trucks back in and deposit their loads to the reception area.

1.3 Composting Procedure

Waste reception, blending and in-vessel composting is carried out in the waste reception shed (i.e., covered yard area to the west of Shed 1) and Shed No. 1, which occupies an area of approximately 1,700 square meters (m^2). Maturation is carried out in Sheds to the east, which combined occupy a floor area of approximately 2,840 m^2 In the reception area the organic 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.

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 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.

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 batch piles in Sheds 2 and 3 for maturation. Depending on the source of the waste materials it may be blended with wood chip to improve porosity. The batch piles are formed on an underfloor forced air system that allows for the batch piles to be aerated without the need for regular turning of the material. Temperature, oxygen and moisture content are regularly monitored and the moisture and the aeration regime revised as required to ensure optimum conditions. The mesophilic stage can take up to 5 weeks to complete and the finished compost may,

depending on the nature of the source material, need to be screened to remove contaminants. These contaminants are stored on-site, in Shed 4, pending consignment to off-site disposal/treatment facilities.

Miltown propose to increase the throughput of material at the composting facility to approximately 240 tonnes per day (not exceeding 75,000 tonnes per annum) and to apply to the Environmental Protection Agency for the review of the current Industrial Emissions Licence continue to regulate the facility. The future licenced area will be the same as the current waste licence (Ref. W0270-02) for the site. The reception area for organic material will continue to be in the existing reception shed where delivery trucks back in and deposit their loads to the reception area. The enclosed reception area provides additional controls over potential impacts to surface water quality from the yard surface. The roofed waste reception shed allows for the 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 proposed development will also include for the reconstruction of two old agricultural sheds (i.e., maturation sheds 2B and 3B) as additional maturation capacity for the proposed increased throughput in the composting bays.

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 Industrial Emission Licence are between 07:00 and 19:00 Monday to Saturday (with the exception of Bank Holidays), with the current operational hours at the facility between 06:00 to 19:00 Monday to Saturday. Under the proposed development Miltown Composting do not propose to change the hours for accepting material or the operational hours. Any increased traffic related to the delivery and removal of organic material would be spread out 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 (waste reception shed) 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. In 2017 a planning application was submitted for increasing the throughput of material at the facility to 50,000 tonnes per year and permission was granted in March 2018. In 2018 permission was also granted for the construction of the second biofilter to the north of shed 2 and in 2019 permission was granted for the reconstruction of one of the agriculture sheds to the west of the reception shed. The full planning history of the site can be seen in the following Table 1-2 and Attachment A.4.

Table 1-1 Milltown Composting Planning History

File Number	Application Status	Decision Due Date	Decision Date	Decision Code	Received Date	Development Description	Local Authority Name
04141	Incomplete Application				02/06/2004	change of use from agricutural stores to commercial for the composting of organic waste. A waste permit has been applied for to South Tipperary County Council	Tipperary County Council
04188	Application Finalised	16/05/2004	13/05/2004	Conditional	13/02/2004	a change of use from agricultural stores to commercial for the composting of organic waste	
8466	Incomplete Application				22/04/2008	Demountable office, toilet and canteen, 2 No. over ground water tanks, 1 underground tank, transformer...	
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 overgrow...	

File Number	Application Status	Decision Due Date	Decision Date	Decision Code	Received Date	Development Description	Local Authority Name
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	Tipperary County Council
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	
17600372	Application Finalised		01/03/2018	Conditional	04/11/2017	an increased throughput of organic waste material at the existing Miltown Composting Ltd. facility. The proposed planning consists of an increased throughput which will also require a review of the facility's EPA Waste Licence (Reg. No. W0270-01).	
18600472	Application Finalised	12/06/2018	07/06/2018	Conditional	18/04/2018	Biofilter and associated extract and input fans to compost maturation shed with embankment screen. Roof watering harvesting storage tank.	
19600690	Application Finalised		15/08/2019	Conditional	21/06/2019	reconstruction of and extension to existing agricultural storage building and all necessary site works and services	

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 240 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 EIAR has been prepared as part of the planning application to allow for the proposed increase in tonnage throughput whereby a licence review of the existing 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 EIAR 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 EIAR 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 Assessment Report (EIAR). The function of the EIAR 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.5

The Environmental Impact Assessment process and results are outlined in an Environmental Impact Assessment Report (EIAR) 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 EIAR 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 Assessment Report has been based on the following Guidance publications;

- "European Union, Guidance on the preparation of the Environmental Impact Assessment Reports (2017)
- EPA Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2015);
- "Environmental Protection Agency (EPA) (2017) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - Draft

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

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

A breakdown of the EIAR sections is outlined in Table 1.3.

Table 1-2 EIAR Document Outline

EIAR Section	Description
Volume I – Non-Technical Summary	This document provides an overview and summary of the main EIAR using non-technical terminology. It is a means for non-professionals to review the information included in the main EIAR 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 EIAR 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, EIAR consultation and scoping the layout of the EIAR.

EIAR Section	Description
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	Hydrology
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

JRE, in consultation with Miltown, also undertook a process of consultations with interested parties in the area of the composting facility. In accordance with Environmental Protection Agency (EPA) (2017) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft', 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 Assessment Report for the proposed development.

1.8 Study Team & Contributors

The Applicant has considered that each of the experts involved in the preparation of this EIAR is competent, having regard to the task he or she has performed, taking account of the scope of the study for which he or she undertook the work, the person/s possess sufficient training, experience and knowledge appropriate to the nature of the work.

Specialist consultancies have also been employed to complete assessments and provide technical information critical to some of the EIAR Chapters. All contributors are degree qualified in their respective specialist fields and have developed their competence through both experience on the job and through training. Each team member has developed the following:

- Sufficient knowledge of the specific tasks to be undertaken and the risks which may arise; and
- Sufficient experience and ability to carry out their duties in relation to the project and to take appropriate actions required under the EIA Directive

Specialist consultancies have also been employed to complete assessments and provide technical information critical to some of the EIAR Chapters. The competency of persons involved in providing information related to specific Chapters of the EIAR are outlined in Table 1-4 below.

Table 1-4: Study Team

Chapter	Parts	Main Chapter Author	Significant Operational & Technical Contributors to Chapter
1	Introduction	John Rea – JRE Ltd.	David Ronan Neil Barry
2	Existing Facility	John Rea – JRE Ltd	David Ronan Neil Barry
3	Proposed Development	John Rea – JRE Ltd	David Ronan Ed Walsh
4	Alternatives	John Rea – JRE Ltd	David Ronan Ed Walsh
5	Human Beings	John Rea – JRE Ltd	N/A
6	Flora & Fauna	John Rea – JRE Ltd	N/A
7	Hydrology	John Rea – JRE Ltd	Craig Mallinson, Matrix Environmental, Aila Carty & Caolan Harrington - VESI Environmental
8	Soils, Geology & Hydrogeology	John Rea – JRE Ltd	Craig Mallinson, Matrix Environmental
9	Noise	John Rea – JRE Ltd	Craig Mallinson - Matrix Environmental, Panford Ltd.
10	Air Quality	John Rea – JRE Ltd	Craig Mallinson, Matrix Environmental, Panford Ltd.
11	Landscape & Visual Impact	John Rea – JRE Ltd	N/A
12	Traffic	John Rea – JRE Ltd	Thomas Jennings, Mark McKenna DBFL
13	Archaeology	John Rea – JRE Ltd	
14	Material Assets	John Rea – JRE Ltd	N/A
15	Interaction of Foregoing	John Rea – JRE Ltd	N/A

The personnel named for preparing each chapter have been the lead assessors for the chapters. They have been responsible for writing the chapter based on input and data from other personnel who made significant contributions and completed technical fieldwork or have significant knowledge of the site operations or the operations of site abatement equipment. The persons that provided significant contribution to each chapter are also listed in the Table above.

Lead Author

John Rea is a director of JRE Ltd. with over 28 years experience as a multi-disciplinary environmental consulting professional. He has undertaken consultancy in all aspects of waste management,

environmental monitoring and groundwater and surface water quality assessment and has been involved in contributing to and project managing numerous Environmental Impact Assessment submissions throughout his career. He spent the initial part of his career working almost exclusively as a consultant in the Waste Management Sector and holds a Pg.Cert in Waste Management from De Monfort University. He was also involved in presenting modules of the FAS/EPA Waste Management Course provide for training waste management professionals in Competency. He worked in British Columbia, Canada for a number of years and was involved in a number of waste management projects including legacy landfill investigations and on the design of a private landfill site for a large industrial development on the western coast of BC. He has project managed, coordinated and prepared specialist inputs including the Waste Management Chapters, Operational and Waste Management Plans for numerous EIAs.

He has extensive experience of soils assessment and contaminated land assessment and while working as an environmental project manager in Canada he managed environmental drilling and groundwater assessment projects in the upstream oil and gas, wood milling and paper milling sectors as well as overseeing a number of mining and landfill remediation projects in western British Columbia. In the last number of years he has also completed a number of groundwater screening assessments in Ireland to assess compliance with the Water Framework Directive at industrial and landfill facilities in Ireland on behalf of private and Local Authority clients. He is also currently involved in a number of groundwater and surface monitoring and assessment projects on behalf of a number of Local Authorities.

John also has over 20 years experience of completing environmental noise assessments and has significant experience completing noise assessment works to a wide range of public and private sector clients. Throughout his career he has been involved in completing a number of noise assessment projects and contributing to chapters of Environmental Impact Assessments for industrial developments. He holds a Certificate of Competence in Environmental Noise Measurement (CCEM) from the Institute of Acoustics (IOA).

During his career John has completed and submitted over 20 Appropriate Screening Assessments as part of planning and Environmental Impact Assessment submissions and is a member of the British Trust for Ornithology and has completed a number of courses with the trust.

Technical Contributors to Chapters

Air, Surface Water, Groundwater & Noise

Craig Mallinson, Matrix Environmental - Environmental monitoring completed for the Miltown Site Industrial Emissions licence and used in the various chapters of the EIAR (air, noise, surface water, groundwater) was completed by Mr. Craig Mallinson of Matrix Environmental Ltd., Newbridge, Co. Kildare. Craig has a BSc in Environmental Science and Technology from Sligo IT and has over 20 years experience working within the environmental monitoring and consultancy services field. Over the past 15 years Craig has been heavily involved in the Environmental Management of compost facilities and completes a range of monitoring services related to air quality, water quality and noise assessment for waste and industrial emissions licences.

Air Handling & Noise

Fergus O'Brien, Panford Ltd. – Fergus is a Senior Design Engineer with Panford Ltd. He holds a B.A. (hons) degree in physics from Trinity College Dublin and has 30 years of experience in mechanical engineering, specifically in industrial fan systems, grain handling equipment and dust, fume and odour control systems. High analytical and problem-solving skills, developing solutions to practical applications. He specialises in the design of full turnkey systems, for odour, fume and dust control systems for industrial applications, such as industrial composting plants. All of these systems are tailored specifically to each client's needs. Panford have been involved in the design and fitout of the air handling system within the Miltown Composting facility and Fergus has significant technical knowledge of the system operations.

Liam O'Brien, Panford Ltd. – Liam has over 55 years of experience in mechanical engineering, specifically in industrial fan systems, grain handling equipment and dust, fume and odour control systems. Self-employed from an early age he has formed and developed companies, designing and manufacturing original systems for these industries. High analytical and problem-solving skills, developing solutions to practical applications. He has very strong leadership and technical skills from his extensive experience in in the air handling engineering sector. Panford have been involved in the design and fitout of the air handling system within the Miltown Composting facility and Liam has significant technical knowledge of the system operations.

Surface Water

Aila Carty and Caolan Harrington, VESI Environmental Ltd – The report on the Integrated Constructed Wetland (ICW) was prepared by Aila Carty (BSc) and Caolan Harrington (PhD, BSc). Aila Carty is director of VESI and has over 20 year's experience in the design and application of ICWs. Experience includes engineering, biological, commercial and social aspects of functional wetlands. There are over 130 ICW systems in use in Ireland, most of which VESI Environmental Ltd. have been involved, in their design, construction, landscaping and monitoring. Over the past 20+ years Aila has also focused on landscape design, management and operations, for functional, aesthetic and biodiversity application. I have designed, consulted, supervised, managed, and delivered over 100 successful ICW systems.

Caolan Harrington - Senior Environmental Engineer. Caolan harrington is responsible for development of Integrated Constructed Wetlands for wastewater treatment throughout Ireland. Role includes document drafting, site investigation and consultation with clients, scientific monitoring, Drone-based photogrammetry, development of technologies within scope of works. Lead developer of several research studies with international clients, examining Acid Mine Drainage waters. Developed a highly replicated research test bed for examination of experimental wetland applications. Responsible for the integration of Remote Piloted Aircraft Systems (RPAS) within the workflow of VESI.

Traffic

Thomas Jennings & Mark McKenna, DBFL Consulting Engineers Ltd.- The traffic assessment section was prepared by Thomas Jennings BEng (Hons) MSc MIEI CMILT MIHT and Mark Mckenna BEng (Hons) MSc MIEI of DBFL Consulting Engineers Limited. Thomas is a Director with DBFL Consulting Engineers with 24

years' experience as a traffic engineer and transport planner with particular expertise in network management and design. Thomas currently leads the Transportation section within DBFL. Mark McKenna is a Transportation Engineer with over 9 years' experience in the design and planning of traffic & transportation projects. Mark has been involved in leading the traffic and transport deliverables of development planning applications including the generation of Traffic & Transport Assessments, Mobility Management Plans and Traffic & Transport input into Environmental Impact Assessment Reports.

Archaeology

Redmond Tobin, RedArc Consulting Ltd. - Red Tobin is a cultural heritage professional for over thirty-five years and has been a licensed Archaeologist since 1994. Red has widespread experience in landscape survey, building survey, industrial survey, impact assessment, scoping studies, project assessment, compliance audits and archaeological excavation (where required). He currently operates as RedArc Consulting Ltd which was established in 2016.

Operational and Design Contributors to Chapters

Introduction, Existing Facility Proposed Development and Alternatives

David Ronan, Owner Miltown Composting - Mr. Ronan has over 35 years in a wide range of projects solely and in partnership with others in Ireland. These projects include commercial, waste management, meat & bone rendering, residential, industrial, technological and other enterprises. He has extensive experience in the composting sector that extends from 2003 to date. His composting facility started at 3000 to 4000 tonnes p.a. of green waste and has developed to a 50,000 tonnes per annum facility and oversaw the development and extension of the facility. He was also involved in overseeing the review of the site EPA Industrial Emissions licence submission. Mr. Ronan is a member of the Composting and Anaerobic Digestion Association of Ireland (Cre) and plays an active role in the day to day running of the Miltown Composting facility and has extensive knowledge of the site operations and the waste sector as a whole.

Neil Barry, Facility Manager, Miltown Composting – Neil has over 20 years experience working in the composting industry. He started his composting career as an assistant facility manager at a green waste composting site for Dublin County Council and was also involved in setting up a straw composting project at a horse stud farm. He is currently the facility manager at Miltown Composting where he has worked for the past 17 years. As well as significant experience gained through working in the industry Neil has completed a number of courses on composting and site management, including; FETAC Certificate Course in Waste Facility Operations, Level 5 and the Cre Certificate in Composting operation. Neil has significant experience in the management and day to day operation of composting facilities and has experience in liaising with regulators including the Local Authority and the EPA.

Ed Walsh, Walsh & Walsh Architects Ltd. - Walsh, B.Arch FRIAI. Managing Director of Walsh and Walsh Architects Ltd. Mr Walsh qualifying from UCD in the early 80's and has over 40 years' experience working in the construction industry as a qualified architect. Ed is a registered Architect for nearly 30 years and was awarded a Fellowship of the Royal Institute of Architects of Ireland. He has worked on a range of

projects over this time from one off private dwellings, multi housing schemes, large commercial developments and educational projects. He has extensive knowledge of the planning system and consults on a range of facets of the building industry

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 (as varied), the Southern Region Waste Management Plan and National Waste Policy and Regulations.

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.

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.
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 extended South Tipperary County Development Plan 2009 (as varied) contains many policies and objectives aimed at protecting the natural environment, these include:

- **Policy LH5**: Biodiversity, Trees and Habitats It is the policy of the Council to conserve, protect and enhance the county's bio-diversity, including trees and hedgerows, in accordance with the County Biodiversity Plan (and any review thereof) and the standards set out in this Plan (as varied).
- **Policy LH6**: Natura 2000 Sites and Protected Species It is the policy of the Council to ensure the protection, integrity and conservation of existing and candidate Natura 2000 sites and Annex I and II species listed in EU Directives. Where it is determined that a development may independently, or cumulatively, impact on the conservation values of existing or proposed Natura 2000 sites, the Council will require planning applications to be accompanied by a Natura Impact Statement in accordance with 'Appropriate Assessment of Plans and Projects, Guidelines for Planning Authorities', (DEHLG 2009) or any amendment thereof.
- **Policy LH7**: Natural Heritage Areas It is the policy of the Council to ensure the conservation and protection of existing or proposed NHAs, and to require that developments proposed within or in close proximity to an existing or proposed NHA would not have a significant adverse impact on the ecological status of the site.
- **Policy LH8**: Inland Waters and Riparian Zones It is the policy of the Council to protect the ecological status and quality of watercourses. In order to maintain the natural function of existing ecosystems associated with water courses and their riparian zones and to encourage sustainable public access to waterbodies, the Council will require an undisturbed edge or buffer zone to be maintained, where appropriate, between new developments and riparian zones of water bodies.

- **Policy LH10:** Peatlands It is the policy of the Council to have regard to the National Peatlands Strategy 2015 and to ensure the conservation of peatlands which are designated sites as set out in Appendix 4. The Council will support agricultural diversification, renewable energy development and the development of tourism and community recreational facilities in peatland areas, where appropriate, and where it is demonstrated that such developments would not significantly or adversely impact on the ecological and environmental sustainability of such sites.
- **Policy LH12:** Water Framework Directive and River Basin Management Plans It is the policy of the Council to protect and improve the county's water resources and support an integrated and collaborative approach to local catchment management in order to ensure the successful implementation of the River Basin Management Plans (or any review thereof).

Under section 9.7 of the Development Plan the Council commit to adhering to the policies of the Southern Region Waste Management Plan 2015-2021.

Policy TI10: Southern Region Waste Management Plan: It is the policy of the Council, to implement the policies outlined in the Southern Region Waste Management Plan 2015-2021 (or any amendment thereof) and to ensure that waste disposal facilities are in compliance with all appropriate waste management legislative requirements.

SO9-5 - It is an objective of the Council, to implement the recommendations of the Southern Region Waste Management Plan, 2015-2021 (or any amendment thereof).

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 2.9.4.

The closest local area plan to the site is the Fethard Local Area Plan (LAP), 2011. In 2017 a Settlement Plan for Fethard was also published. The 2017 Settlement Plan and 2011 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
- Ensuring environmental protections are part of development projects (i.e., sustainable development) that are part of sustainable communities.

- 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 and Settlement Plan are 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 or Settlement Plan.

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 countryside). 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.

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.

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. However, the site was excavated and any subterranean features of interest were recorded and logged, see 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 southwest. However, the well has since been filled or removed as part of drainage works in the area. The remaining locations seen in Attachment M.1 are not of any significance.

1.10 Waste Management Strategy & 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 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.

The most recent Waste Policy Statement "Waste Action Plan for a Circular Economy" introduced in 2020. Within the policy it is acknowledged that composting will be important in terms of waste policy going forward, as outlined below

- *We want to realise the Anaerobic Digestion (AD) and composting potential of the food waste resource. AD and composting provide opportunities for regional development with benefits for communities through sales of locally generated energy and compost.*
- *The EPA has estimated that correct use of the three household bins could reduce the volume of the general waste bin by a third, and that municipal recycling (including organic waste for composting and anaerobic digestion through the organic bin) rate could increase by 50% (from 40%).*

A key objective of the policy is to drive further segregation of wastes and to support indigenous recycling and recovery enterprises.

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.

Under section 9.7 of the South Tipperary Development Plan 2009 – 2015 the Council commit to the objectives included in the Southern Region Waste Management Plan 2015-2021. The main objectives outlined in the Southern Region Waste Management Plan include

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.

The ESRI also predict that the volume of biowaste will increase by an average 28,000 tonnes per annum up to 2030. There will need to be capacity within the sector for the treatment of these biowastes.

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 1-5.

Table 1-5: Licensed and Permitted Compost Facilities Operating in Southern Waste Region

Facility Name	Permit/ Licence Ref.	Authorized Annual Tonnage
Starrus Eco Holdings Ltd.	W0249-01	45,000
Custom Compost	W0123-01	43,750
McGill Environmental	W0180-01	20,800
Molaisin Compost Ltd.	W0245-01	20,000
O'Toole Composting	W0284-01	40,000
Waddock Composting	WFP-CW-13-001-01	24,999
Cremins Farm Compost Ltd	WFP/L/2019/23A/R10	10,000
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 that the Licence at the Waterford City Council facility ceased on February 6th 2020 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 an additional 25,000 tonnes of the 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 made pre-treatment more cost effective - particularly in respect of biodegradable municipal waste (BMW).

Miltown's decision to increase the tonnage throughput at their existing facility is based on the need to meet increased 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.

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.5.

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 800m 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 stabilized, 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.

The targets outlined in the SRWMP look to increase the capacity for biological treatment of bio waste in the region. The increase in requirements for waste contractors to provide increased facilities for the collection of kerbside source separated bio-waste will exponentially increase the requirement for treatment facilities. Also, the production of organic fines from the processing of municipal waste has continued to create an organic waste fraction that requires processing and stabilization. Even in areas that have a three bin system the 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 on-going 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 EIAR are referenced where they contain more detailed descriptions or evaluations of impacts or control measures.

2.2 The Applicant

The Miltown Composting Ltd. (Miltown) in-vessel composting facility at Milltownmore, Fethard, County Tipperary operated under an original Environmental Protection Agency (EPA) Waste Licence (Ref. W0270-01) issued on the 9th of September 2010. In 2018 a licence review process was completed and the throughput of the facility was increased to a maximum of 50,000 tonnes per year and Industrial Emissions licence W0270-02 was issued on September 13th, 2019. 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.2.

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. In the past 2- years there has been a significant increase in source segregated household and commercial organic waste and organic fines material in the Southern Region. This has resulted in a significant increase in 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 from 50,000 tonnes/year to a maximum of 75,000 tonnes/year.

The roll out of source segregated collection of household and commercial organic waste in the Southern Region has increased 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 240 tonnes/day, with a maximum of 75,000 tonnes/year. The company has seven staff 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 5 Lapps Quay, Cork, Co. Cork. A copy of the company certificate of incorporation is provided in Attachment A.3.

2.3 Current Facility Overview

The current facility is an aerobic composting plant that can accept a broad range of compostable materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal wastewater sludges and organic fines generated in the physical treatment of mixed municipal solid waste (MSW). The treatment process, depending on the nature of the source material, can involve initial screening to remove contaminants, blending with bulking agents, composting in separate enclosed bays, maturation in windrows 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.

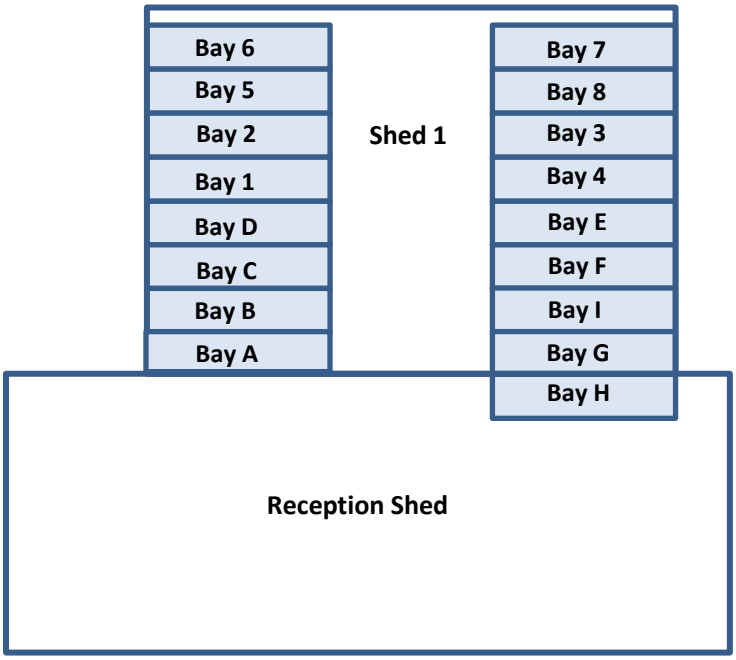
The organic waste feedstock material is received in the reception shed located immediately to the west of Shed 1, which occupies an approximate area of 1,700 square meters (m^2). The organic waste material is processed in the composting bays located in Shed 1 and the bay located in the waste reception shed. Maturation 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 (i.e., Shed 4) and the waste reception building to the west of Shed 1 are paved with impermeable concrete. One biofilter is located on the southern side of process Shed 1 for the treatment of air from inside the process shed. A second biofilter for the removal and treatment of air from maturation Sheds 2 and 3 and from Shed 4 is located to the north of Shed 3. Both biofilters can be accessed by an unpaved road running along the southern and eastern sides of Sheds 1, 2 and 3.

The materials are transferred from the reception area to the forced air process vessels (i.e., bay in waste reception shed and bays in Shed 1) using the telescopic loaders. The layout of the Process Bays is provided in Figure 2-1 below.

The waste reception shed allows for feedstock mixing and also includes one 250 tonne bay (Bay H) that is used 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., Bays A to H) of Shed 1, there are also 8 pasteurisation bays at the back end (i.e., Bays 1 to 8) of Shed 1. If Type 8 processing (i.e., organic fines stabilisation) is being completed in the facility then all bays (i.e., process bays and pasteurization bays) can be used for composting and biostabilization. Two (2) bays in Shed 1 (i.e., bays D and E) are double sized and have the capacity to hold 300 tonnes each, all other composting bays in Shed 1 have the capacity to hold 150 tonnes

of feedstock and so at any one time Shed 1 can biostabilize 2,700 tonnes of organic fines, and an additional 250 tonnes in the additional bay in the reception shed (i.e., 2,950 tonnes total).

Figure 2-1: Composting Process Bay Layout



Incoming organic material is mixed with woodchip/paper in the waste reception shed as required for bulking agent. Material is then transferred to aeration bays A-H for 6 to 7 days. The material is then moved to the bays 1 to 8 for a further 7 days and fully aerated and monitored. This frees up bays A to H to receive more material for processing on a weekly basis.

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 in each process bay 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 regularly using a hand held probe.

After the material is processed in the numbered bays the material is moved across to shed 2 and shed 3 for maturation. Shed 2 has a full underfloor forced aeration system that allows for the maturation of the material in aerated static piles (i.e., removes the need for turning the material to prevent anaerobic conditions in the material). Shed 3 has one quarter of the floor converted to an underfloor forced aeration system that allows for the maturation of the material in aerated static piles in that section of the shed.

At present all material processed at the Miltown compost facility is organic fines material. However, the facility has the flexibility to switch to processing source segregated brown bin waste for compost production should that scenario be present. The stages for each process scenario are outlined below.

Scenario 1: Organic Fines Stabilisation

Over the past few years the site has experienced a high demand for processing organic fines at the facility and Miltown have adhered to the Type 8 processing standard which negates the requirement for pasteurisation because the material would still be considered waste and could only be used at licensed waste facilities as landfill cover. The Type 8 process allows for an efficient composting and biostabilization regimen which results in full maturation of the material in approximately 6 weeks.

Incoming organic fines material is mixed with woodchip/paper in the waste reception shed as required for bulking agent. Material is then transferred to aeration bays A-H for 6 to 7 days. The material is then moved to the bays 1 to 8 for a further 7 days and fully aerated and monitored. This frees up bays A to H to receive more material for processing on a weekly basis.

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 in each process bay before sheeting is placed over the top of the vessel. Miltown endeavour to keep the composting batches in the optimum composting range of 50^{o}C -55°C with an oxygen percentage of 13%. 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 regularly using a hand held probe.

After the material is processed in the numbered bays the material is moved across to shed 2 and shed 3 for maturation. Shed 2 has a full underfloor forced aeration system that allows for the maturation of the material in aerated static piles (i.e., removes the need for turning the material to prevent anaerobic conditions in the material). Shed 3 has one quarter of the floor converted to an underfloor forced aeration system that allows for the maturation of the material in aerated static piles in that section of the shed. Each maturing aerated static pile consists of material from six (6) of the numbered bays (i.e., Bays 1-8) and there are four (4) aerated static piles maturing in Shed 2 and one (1) aerated static pile maturing in Shed 3 at any time. The material is constantly aerated and allowed to mature for 4-5 weeks until it has been fully biologically processed and is stabilized.

When material is deemed to be fully stabilized it is moved to shed 4 for testing. Samples of the matured material are collected and sent to a laboratory for AT4 testing. The test measures the microbiological respiration rate in the material and is a measure of how biologically stable the material is. Once the material meets the Waste Licence Criteria (i.e., 7 mg O_2/g) it can be dispatched to a licensed facility for use as landfill cover.

Scenario 2: Source Separated Brown Bin Composting

In the event that the site was to complete composting of source separated brown bin waste for the production of compost material then the process would be changed to accommodate that, following full clean-down and disinfection of the bays and maturation areas being used to meet the Department of Agriculture requirements under the Animal Byproducts Regulations. The brown bin material would be accepted at a designated area of the waste reception shed and shredded down to an appropriate process size (i.e., <40 mm diameter).

Once the process area was appropriately cleaned and disinfected the moisture level of the feedstock would be assessed either visually or using a hand held moisture meter when it is loaded to the initial process bays (i.e., bays A-H). In order to comply with the Animal By-Products Regulations a 'two barriers' system would be 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. Large items would be manually removed and reused back in the process as bulking agents for future compost batches. Once a compost batch has been processed at 60°C for 48hrs on two consecutive occasions in the compost bays (i.e., Bays A to H) it is deemed to be treated in terms of the animal by-products regulations (ABPR). It is then moved to the east end of Shed 1, which is separated from the west end by a wall to ensure that mixing of loads at different stages of processing does not occur.

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 (i.e., Bays 1 to 8 in Figure 2-1). 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.

When the material has completed the thermophilic stage it can be removed from the Vessel Barrier 2 and transferred to Sheds 2 and 3 for maturation (i.e., mesophilic phase). Shed 2 has a full underfloor forced aeration system that allows for the maturation of the material in aerated static piles (i.e., removes the need for turning the material to prevent anaerobic conditions in the material). Shed 3 has one quarter of the floor converted to an underfloor forced aeration system that allows for the maturation of the material in aerated static piles in that section of the shed.

Each maturing aerated static pile typically consists of material from six (6) of the numbered bays (i.e., Bays 1-8) and there is capacity for four (4) aerated static piles of compost to mature in Shed 2 and one (1) aerated static pile of compost to mature in Shed 3 at any time. The material would be constantly aerated and temperature, oxygen and moisture content would be regularly monitored and the air inputs amended as required to ensure optimum conditions. The mesophilic stage can take up to 4-5 weeks to complete until it has been fully biologically processed and is stabilized. When complete the compost would be

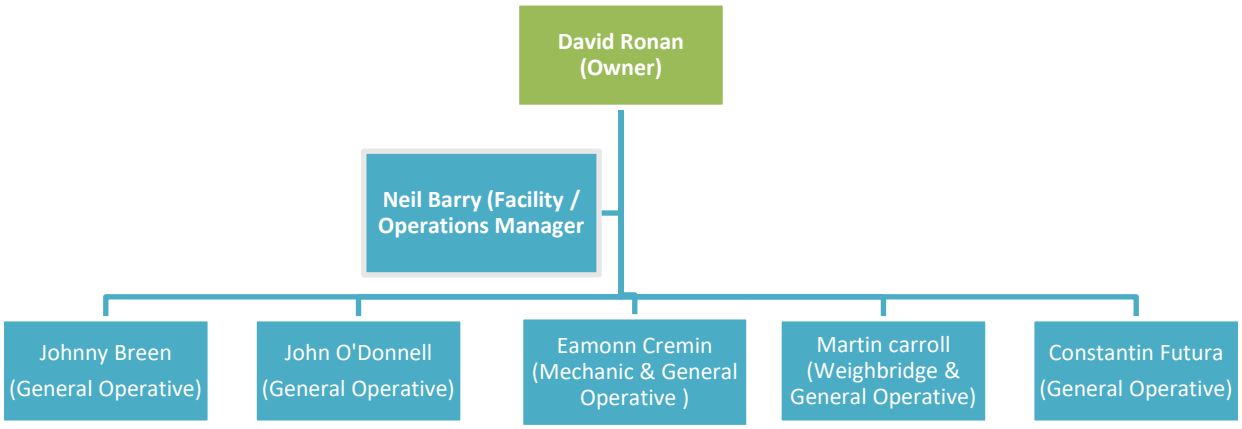
screened to remove oversized contaminants. Depending on the nature of the screened material they may be stored on-site in Shed 4 pending consignment to off-site disposal/treatment facilities or recycled back into another compost batch.

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.

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 800m to the north along the access road. There are three more residences within 1km of the site to the north, northeast and southeast 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.

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

Figure 2-2: Milltown Composting Management Structure



Facility Manager

The facility manager, Neil Barry has experience in the Waste Management Industry and has been the site manager at Miltown Composting Systems for three years. Previous to this Neil was the operations manager at the facility since 2004. Neil 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 five permanent operators

- Eamonn Cremin – seven years experience
- John O'Donnell – four years experience
- John Breen – four years experience
- Martin Carroll – four years' experience
- Constantin Futura – Three years' experience

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

Miltown operational hours are set in Condition 1.9 of the site Industrial Emission Licence and allows the acceptance of 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 at the facility are 06:00 - 19:00 Monday to Saturday (with the exception of bank holidays).

The existing waste licence for the Miltown facility (W0270-02) has a maximum annual acceptable tonnage of 50,000 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 that can be 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

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.
The delivery vehicle operator is directed to the covered 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 2-3.

From being tipped in the waste reception area, the load is split between the composting bays/tunnel in the reception shed and the eight (8) composting bays/tunnels at the western end of Shed. Six (6) of the bays/tunnels in Shed 1 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 would be kept separate and processed separately from other wastes to prevent cross contamination.

Following blending the materials are placed to a height of approx. 1.8 – 3m high within the selected bay/tunnel. The floor of each process bay/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 each process bay/tunnel.

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 movement of static pile material for maturation following the composting process and the loading of matured materials for transfer offsite.
- 1 Vibrating Screen,
- Power Washer.

The site equipment provides 100% duty and 50% standby for compost processing up to 50,000 tonnes annually and could also be used for processing the proposed increased throughput. If there is a break

Figure 2-3 – Miltown Composting Process Outline

Material Intake Ramp

Dispatch

Shed 2

Processed Material Storage

Reception Building

Shed 1

Waste Acceptance and Pre-Treatment

Pre-Composting

ABP Pasteurisation

Processed Material Storage

Feedstock Preparation

Shed 3

down, additional plant may be hired for use on-site for short periods to augment standby capability and ensure continued site operations.

The site is accessed by a local access road 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 area which consists of a covered yard area 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 10 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 local access road. There is room to queue approximately 4-5 trucks and trailer between the two gates (i.e., on the Miltown owned section of the local access road and not impact other local access road users.

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 in the north west corner of the waste reception shed. 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.

All areas within the sheds and reception areas consist of paved concrete. The surface water drainage system completed as part of the reception area ensures that all surface water runoff from the ramped intake 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 Drawing 3201-03 in Attachment B.5.

As part of the site mitigation measures the surface water drainage connection has been installed to connect the ramped waste reception shed to the leachate circulation system. The drainage system ensures that all surface runoff from the 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 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 contaminated runoff collection and drainage system ensures that any runoff from inside the 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.

The surface water drainage system for the turntable where trucks reverse into the waste reception shed has 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 drains to a grated silt trap gulley which is then directed via a 150mm PVC pipework beneath the reception area to the existing silt trap and oil interceptor to the south of the waste reception building. Once the surface water passes through the interceptor it passes through the diversion gulley and through the existing 150mm piping across the internal site roadway to the south and then in a westerly direction to the integrated constructed wetland (ICW) located in the southwest of the site. A diversion pipeline with a lockable valve has been installed at the access to the waste reception shed 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.

All roof and clean yard surface water runoff is directed to the to the integrated constructed wetland (ICW) located in the southwest of the site. The water passes through a series of treatment ponds before discharging to a surface water ditch to the southwest of the site.

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 to the south of Shed 1 and the Reception Shed (Attachment B.5). No wastewater from the compost process is discharged to the septic tank system. All wastewater/leachate is recirculated back through the process via a holding tank located south of Shed 1 **(**Attachment B.5)

The facility is designed to 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. 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 back into the composting process. The recirculation system can be seen on Drawing 3201-003 in Attachment B.5.

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. When the oil interceptor on the surface water drainage system is cleaned the contents would be removed off-site for disposal at an appropriately licensed waste treatment/disposal facility.

Milltown Composting only uses appropriately licensed or permitted waste disposal/recovery facilities for all wastes generated at the facility. Details of those currently used are included in the 2020 Annual Environmental Report submitted to the EPA and are outlined in Table 2-2 below.

Table 2-2 – Facilities that Stabilised Biowaste is Transferred to

Facility Name	Facility Permit / Licence Number
Ballynagran Landfill	W0165-02
Drehid landfill	W0201-03

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 Ballynagran and Drehid landfills as cover material.

2.3.14.1 Vermin

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.

2.3.14.2 Air Quality & Odour

To increase visibility within Sheds 1 and 3 and to treat odorous air produced during processing and maturation, air extraction fans remove air from the buildings and directs it into two separate woodchip biofilters. The biofilter for Shed 1 (Biofilter 1) is located to the south of Shed 1 and the biofilter for Shed 3 (Biofilter 3) is located to the north of Shed 3. The biofilters both consist of large concrete containment structure 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 biofilters are 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 biofilters.

To control odours within the facility buildings 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). The facility has two biofilter systems in place on site to treat extracted air from the facility sheds. Biofilter 1 is located to the south of Shed 1 and receives extracted air from Shed 1 and the waste reception shed. Biofilter 2 is located to the north of Shed 2 and treats extracted air from maturation sheds 2 and 3 and loading shed 4. The design of the biofilters was based on Section 4.1.33 of Reference Document on Best Available Techniques in the Slaughterhouses and Animal By-products industries that 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. Based on these criteria it was assessed that the residence time for extracted air to the biofilters should be a minimum of 30 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 to 2.0 air change volumes per hour from the facility buildings has been effective in controlling odour emissions. Details of the biofilters are outlined below.

Biofilter 1

Process Shed 1 and the waste reception shed have an internal air extraction ducting system that are connected to a biofilter located to the south of Shed 1. 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

In 2018 the waste reception building was added to the air extraction system for process Shed 1 and resulted in the air from the waste reception building being exhausted through biofilter 1. 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 Shed 1 and the waste reception building is exhausted at 2 Air Changes per hour. The design criteria for the volume of air treated in biofilter 1 is outlined in Tables 2.3 and 2-4.

Table 2-3 Size and Capacity of Biofilter 1 for Shed 1 & Waste Reception Area

Building Volume		Volume (m^3)
Shed 1		12,935.32
Waste Reception Shed		4,773.00
TOTAL		**17,708.32**
Air Volume to be Treated in Biofilter	2 x Air changes per hour	**35,416.64**

Table 2-4 Residence Time Calculation for Biofilter 1

Residence Time Calculations		
Air volume arriving at the biofilter	35,416.64	m^3/hr
	9.838	m^3/s
Biofilter surface area	520	m^2
Calculated Speed of Air through Filter	0.0189	m/s
Media Depth	0.85	m
Residence time in media	44.97	seconds

The increased air volume requiring treatment resulted in a requirement to increase the treatment media (wood chip) volume within the Biofilter by placing 200mm of additional media on top of the old filter bed and extending the height of the perimeter walls to 850mm. To maintain the aspiration rate in the waste reception shed an additional loading of approximately 30% additional air volume is required to pass through the biofilter, the odour loading from the waste 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. The air extraction ducting system is shown on Drawing No 32.02.03 (Attachment B.7). The ducting system in Shed 1 is 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 extraction control within the waste reception shed is by way of an extension of the Shed 1 ducting to the west side and has 2 extraction grills on the extended section. The ducting system is balanced by inlet grills on each of the air inlets. One air extraction fan is used to extract the full air load capacity. The motor on the 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 can be adapted to meet any additional requirements.

Biofilter 2

In 2018 Miltown received planning permission (Ref. 18600472) to construct a second biofilter (Biofilter 2) system to the north of Shed 3. The biofilter was constructed to treat extracted air from the maturation sheds (i.e., Shed 2 and Shed 3) and from the covered yard area between Shed 1 and Sheds 2 and 3 used for storage and loading (i.e., Shed 4). Shed 2 contains an aerated static pile maturation process and is considered to have the highest potential for odourous air due to the positive air pressure being forced through the piles. The air in the final maturation/storage areas (Sheds 3 and 4) are considered to have a lower potential for odourous air. Because of this, Biofilter 2 was designed and constructed to treat 2.5 air changes per hour (ac/hr) from Shed 2 and 2 air changes per hour from Sheds 3 and 4.

Table 2-5 Size and Capacity of Biofilter 2 for Sheds 2, 3 and 4

Building	Building Volume (m^3)	Air Change Volume per Hour (m^3)
Shed 2	12,530	(2.5 x Air changes per hour) 31,325
Shed 3	12,530	(2.0 x Air changes per hour) 25,060
Shed 4	12,240	(2.0 x Air changes per hour) 24,480
TOTAL	**37,300**	
Air Volume Treated in Biofilter 2		**80,865 m^3**

The aspiration system for Shed 2, Shed 3 and Shed 4 is provided to maintain negative air, the system uses two separate exhaust fan's, one larger fan can exhaust air from Shed 2 (i.e., 2.5 ac/hr) and can also exhaust 70% of shed 4 (2 ac/hr). A second, smaller exhaust fan can exhaust 100% of air from Shed 3 (2 ac/hr) and 30% of shed 4 (2 ac/hr).

To aspirate the full load capacity, the motor on the fans are fitted with variable speed controller's which controls the air volume extracted from the buildings, the fans are adequately sized to accommodate the air loading.

The extraction system has capacity for 2.5 air changes per hour in Shed 2 and 2 air changes per hour in Shed 4 and also 2 air changes per hour in Shed 3, at a gas loading rate of <100m^3/h-m^3 of filter media and a gas residence time of 30 – 60 seconds as per Waste Treatment Industries EU BREF 2006

Biofilter 2 has a surface area of 484.98m^2 (L - 35.4m and W – 13.7m) with a filter media depth of 1.67m. This results in a biofilter volume of 809.91 m^3. The residence time in the bofilter (based on the maximum air flow exhausted from the sheds) is outlined in Table 2-6. The layout of the air extraction system for biofilter 2 is provided in Attachment B.8

Table 2-6 Residence Time Calculation for Biofilter 2

Residence Time Calculations		
Air volume arriving at the biofilter	80,865	m^3/hr
	22.46	m^3/s
Biofilter surface area	485	m^2
Calculated Speed of Air through Filter	0.0463	m/s
Media Depth	1.67	m
Residence time in media	36.07	seconds

Miltown personnel are pro-active in completing daily checks around the facility**.** 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.

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.

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.9) and an emergency procedure for the site (Attachment B.10).

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 proposed use of the new agricultural shed located to the west of the waste reception area for maturation of processed organic material 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 Construction Phase

The proposed development will include for the construction of maturation sheds 2B and 3B on the footprint of old agricultural sheds located immediately west of the compost reception building. The constructed maturation buildings will be for the final maturation of composted material processed in the main composting facility in shed 1 and will an extension of the existing maturation areas in Sheds 2 and 3, see site plan in Attachment C.1.

Proposed maturation sheds 2B and 3B will have a combined floor area of 3,560 m^2 and will consist of a steel portal frame design featuring 5m high reinforced concrete walls at the building base and painted galvanised steel purlins and dark green steel cladding. The apex of the roof in the proposed shed will be approximately 9.5m above ground level. The proposed maturation sheds will be constructed mainly on the footprint of old agricultural sheds with an extended area included to the west of the old shed footprint area. The area for proposed maturation sheds 2B and 3B is on an area of made ground and sections of this fill material will be excavated to accommodate footings for the shed structure and foundations for the shed walls. Any excavation will be completed within the fill material only and will not extend into natural ground to ensure that there is no impact on potential archaeological features that may exist beneath the fill material in that area.

The proposed maturation sheds 2B will have five underfloor forced air bays for the maturation of organic material in static piles similar to the process currently completed in Sheds 2 and 3 of the existing compost facility. The forced air bays will each be served by two 12-15kw fans (i.e., 10 fans in total). The underfloor

forced air beds in shed 3B will be in open plan shed area will be served by 4-5 air fans with 12-15kw capacity. All fans providing air to the forced air bays/beds will be located within the sheds structure. Potentially odorous air produced within the proposed maturation sheds 2B and 3B during maturation of organic material will be extracted via an air extraction system served by two air extraction fans that will be located to the south of the proposed shed structure and will direct extracted air to a dedicated biofilter also located at the southern end of the proposed shed 2B structure. The floor layout is included in Drawing P-3A in Attachment C.2.

It is intended to reuse some of the waste air stream from the maturation bay/beds, by installing 400mm galvanized ducting which will recirculate extracted air from 2m above the maturation bays/beds down to the intake of the intake aeration fans, this waste gas stream can be balanced with fresh air if required by a butterfly valve, thereby only increasing the biofilter loading by the amount of fresh air intake, which is expected to be approximately 30%. This is similar to the system currently used to mature organic material in Shed 2. The exhaust ductwork system would be suspended from the structural steel at the apex of maturation sheds 2B and 3B. The ductwork would run separately to externally located fans to the south of maturation shed 2B, the exhaust from the fans will pass through individual chambers (i.e., completely separated in the phlenum to prevent back pressures to the fans) in the biofilter.

3.4 Proposed Development Operational Phase

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 with the capacity to accept and process a broad range of compostable organic materials including source segregated household kitchen waste; catering wastes; non-hazardous industrial and municipal wastewater sludges and organic fines generated in the physical treatment of mixed municipal waste (MMW).

The proposal is to increase the tonnage throughput in the plant from 50,000 tonnes per annum to up to 75,000 tonnes per annum. Due to the relatively short time period that the organic material spends in the composting bays during the process phase in Shed 1 and the waste reception shed it is considered that the existing process facility bays will be capable of processing the increased throughput. However, the capacity to mature the material following processing will require an increase in maturation area at the facility. It is proposed that the old agricultural sheds located to the west of the compost reception shed will be reconstructed as maturation sheds 2B and 3B and fitted with an under floor forced air system to allow for the maturation of organic material in static piles as an extension of the maturation process completed in Sheds 2 and 3.

The proposed development will continue to process organic fines and/or brown bin waste 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, maturation in forced air static piles and post treatment to remove impurities). Due to the modular lay-out, the composting tunnels/bays could be operated

independently, which would provide flexibility in processing different organic waste streams, if required. The finished product can, depending on quality, either be used for horticultural and agricultural purposes, or as landfill cover.

Based on the current processing regime at the Miltown facility the retention time in the process bays in Shed 1 during the intensive composting process would be approximately 2 weeks. Bays D and E are double bays and can hold 300 tonnes of composting material each, the bay in the reception shed (bay H) has the capacity to process 250 tonnes and the remaining composting bays in shed 1 have the capacity to process 150 tonnes each. This results in a maximum process capacity of 2,950 tonnes of material at the facility every 2 weeks. Based on the calculated throughput capacities of the composting bays the facility would have the capacity to process up to 75,000 tonnes per year of organic material through Shed 1. However, with a composting process time frame in Shed 1 of 2 to 3 weeks it would result in a higher volume of stabilised organic fines material or compost being produced and, based on the floor area available in Sheds 2 and 3 would result in a shortfall of floor area for maturation of the processed organic material.

Organic material reception and blending will continue in the reception building and maturation will continue to be carried out in Sheds 2 and 3 to the east of Shed 1, which combined occupy an area of approximately 2,840 m^2. As part of the proposed development it is proposed that two reconstructed agricultural sheds to the west of the reception shed (i.e., maturation sheds 2B and 3B) occupying a floor area of 3,560m^2 would be used for extended maturation capacity for sheds 2 and 3 to allow for the proposed increase in throughput. 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 existing biofilters south of Shed 1 and north of shed 3 will not change but there is a proposed third biofilter that would treat extracted air from maturation sheds 2B and 3B from the maturation of organic material. That biofilter would be located to the south of maturation shed 2B.

The underfloor aeration system for the maturation of static piles in the proposed maturation bays in Shed 2B and the aeration beds in Shed 3B is outlined in Attachment C.2 and would be similar to the existing system employed in Shed 2. Shed 2B will have 5 bays for maturation and air would be supplied to the underfloor system by 10 fans (i.e., 2 fans per bay located within the shed structure. Each bay would be physically separated by a barrier to ensure that batches of maturing organic material are not cross contaminated. Shed 3B would have more open aeration beds with underfloor aeration provided by 4-5 fans located within the shed structure. Ducting would be provided which would enable the system to recirculate air from the shed and supplement that recirculated air with fresh air by means of a butterfly damper. The fans would be automatically controlled by temperature or manually controlled.

The inclusion of the maturation sheds 2B and 3B will also provide Miltown with the flexibility to operate a split site in the event that they are processing organic fines material and source separated brown bin organic material in the process bays in Shed 1. The provision of the new maturation shed would allow both forms of organic materials to be separated following processing in their separate dedicated bays to avoid any cross contamination of material between organic fines and brown bin compost. In the event that the site was to process brown bin compost on site the maturation sheds 2B and 3B could be

completely cleaned and sterilised to Department of Agriculture requirements under ABP Regulations and would then be a dedicated compost maturation building for that material only. Any organic fines material processed on site at that time could be matured in their dedicated bays and matured in Sheds 2 and 3 to the east, separate from any brown bin compost material. 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 3.4.1.

To increase material throughput and to be able to process up to 75.000 tonnes per annum Miltown will have a flexible system whereby they can continue to biostabilize organic fines material or process source segregated brown bin organic material 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 inclusion of the maturation sheds 2B and 3B for increased maturation capacity will also provide the site with an option to have split maturation areas for organic fines and source separated brown bin waste if that is a requirement in the future. The processes involved in each scenario 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 could only be used at licensed waste facilities. The Type 8 process allows for an efficient composting and biostabilization regimen which results 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, maturation in forced air static piles and post treatment to remove impurities). Due to the modular lay-out, the composting tunnels/bays could be operated independently, which would provide flexibility in processing different organic material streams, if required. The finished product can, depending on quality, either be used for horticultural and agricultural purposes, or as landfill cover.

Incoming organic fines material will continue to be mixed with woodchip/paper in the reception shed as required for bulking agent. Material is then transferred to aeration bays A-H for 6 to 7 days. The material will then be moved to bays 1 to 8 for a further 7 days and fully aerated and monitored. This will free up bays A to H to receive more material for processing on a weekly basis.

The material placed in each of the vessels will be 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 will be placed within the composting material mass in each process bay before sheeting is placed over the top of the vessel. Miltown will endeavour to keep the composting

batches in the optimum composting range of 50°C -55°C with an oxygen percentage of 13%. 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 regularly using a hand held probe.

After the material is processed in the numbered bays the material will be moved across to shed 2 and shed 3 for maturation. Material will also be transferred to the new maturation sheds 2B and 3B. It is proposed that a retaining wall will be maintained between shed 2B and the waste reception shed and that processed organic material will be removed from the numbered process bays in shed 1 and tipped over the retaining wall into shed 2B. This will prevent any waste handling equipment from the main composting facility from entering shed 2B. It is proposed that a dedicated front-end loader will be situated for the movement of organic waste in Sheds 2B and 3B during the maturation stage. All material transfer will take place inside the facility buildings to ensure that it takes place under controlled conditions (i.e., concrete floor and under roof cover with dedicated air extraction and treatment). Shed 2 has a full underfloor forced aeration system that allows for the maturation of the material in aerated static piles (i.e., removes the need for turning the material to prevent anaerobic conditions in the material). Shed 3 has one quarter of the floor converted to an underfloor forced aeration system that allows for the maturation of the material in aerated static piles in that section of the shed. The proposed maturation sheds 2B and 3B would also have a full underfloor forced aeration system that allows for the maturation of the additional material in aerated static piles (i.e., removes the need for turning the material to prevent anaerobic conditions in the material).

Each maturing aerated static pile will consist of material from six (6) of the numbered bays (i.e., Bays 1-8) from process Shed 1 and consist of approximately 900 tonnes of material each. There is capacity for four (4) aerated static piles to mature in Shed 2 and one (1) aerated static pile can mature in Shed 3 at any time. This means that every 5 weeks the site has the capacity to process approximately 7,350 tonnes of organic material in Shed 1 (i.e., 250 tonnes in Bay H, 300 tonnes each in double bays D and E and 150 tonnes each in all other bays every 2 weeks) but only has the capacity to mature 4,500 tonnes in Sheds 2 and 3 over the same period. To facilitate the increased throughput it would be necessary to create additional maturation capacity in the proposed maturation sheds 2B and 3B to deal with the approximate additional 22,500 tonnes of maturation volume that would be required if the process in Shed 1 were at full capacity. The material would be constantly aerated and allowed to mature for 4-5 weeks until it has been fully biologically processed and is stabilized.

When material is deemed to be fully stabilized it will be moved from Sheds 2 and 3 to shed 4 for testing. Similarly, matured material in the maturation sheds 2B and 3B would also be transferred to a dedicated area within the shed, away from the air beds to allow for sampling and analysis of batches. Samples of the matured material will be collected and sent to a laboratory for AT4 testing. The test measures the microbiological respiration rate in the material and is a measure of how biologically stable the material is. Once the material meets the Waste Licence Criteria (i.e., 7 mg O_2/g) it can be dispatched to a licensed facility for use as landfill cover.

Material reception and blending will continue in the reception building and maturation will continue to be carried out in the covered yard area to the east of Shed 1 and in Sheds to the east, which combined occupy an area of approximately 2,840 m^2. It would also be proposed that maturation sheds 2B and 3B to the west of the reception shed occupying a floor area of 3,560m^2 would be used for additional material maturation to allow for the proposed increase in throughput. 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 existing biofilters south of Shed 1 and north of shed 3 will not change but there is a third biofilter proposed to be located to the south of maturation shed 2B for the treatment of exhausted air from the maturation of organic material, see Attachment C.2.

The reception building allows for feedstock mixing 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 is used 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 6 single size (i.e., 150 tonne capacity each) and 2 double size (i.e., 300 tonne capacity each) 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. Bays D & E are double bays and can hold 300 tonnes of composting material each. All other process bays in Shed 1 have the capacity to hold 150 tonnes of feedstock each and so at any one time Shed 1 can biostabilize 2,700 tonnes of organic fines, and an additional 250 tonnes in the additional bay in the reception shed (i.e., 2,950 tonnes total).

Based on the current processing regimen at the Miltown facility the retention time in the process bays in Shed 1 during the intensive composting process would be approximately 2 weeks allowing for 2,950 tonnes of material to be processed at the facility every 2 weeks. Based on the calculated throughput, the facility would have the capacity to process up to 75,000 tonnes per year through the existing compost process bays.

Scenario 2: Brown Bin Compost Production

In the event of a change in the market and the supply of brown bin organic material 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 (i.e., Bays D & E). 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.

As with the Type 8 process, the material reception and blending for composting will also take place in the reception building and maturation will continue to be carried out in sheds 2 and 3 to the east of Shed 1,

which combined occupy an area of approximately 2,840 m^2. It would also be proposed that maturation sheds 2B and 3B to the west of the reception shed occupying a floor area of 3,560m^2 would be used for additional material maturation to allow for the proposed increase in throughput. 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 existing biofilters south of Shed 1 and north of shed 3 will not change but there is a third biofilter proposed to be located to the south of maturation shed 2B for the treatment of exhausted air from the maturation of organic material.

The reception building allows for feedstock mixing 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 is used 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 6 single size (i.e., 150 tonne capacity each) and 2 double size (i.e., 300 tonne capacity each) pasteurisation bays at the back end (i.e., east) of Shed 1. The addition of maturation sheds 2B and 3B would provide flexibility for the compost site as it would allow for a change over from Type 8 composting to brown bin composting without a complete shutdown of operations to complete cleaning and sanitisation works of maturation areas. The full cleaning and sanitisation of maturation Sheds 2B and 3B to ABPR requirements in preparation for a change over to a brown bin composting scenario can be completed while also allowing for continued operation in maturation sheds 2 and 3 at the opposite side of the process shed. Once the process bays were cleaned and sanitised then the processing of brown bin compost in shed 1 and maturation of that material in Sheds 2B and Shed 3B could commence relatively quickly and reduce impacts on the site operations.

Miltown propose to increase the throughput of material at the composting facility to 240 tonnes per day (not exceeding 75,000 tonnes per annum) and to apply to the Environmental Protection Agency for a review of their Industrial Emissions Licence to regulate the facility. The future licenced area will remain the same as the current Industrial Emissions Licence area but with the inclusion of the proposed maturation sheds. The facility will continue to accept similar organic material types to those already handled and processed at the site. The composting process will not be changed if the proposed increased throughput occurs.

There will be no additional services supplied to the existing facility buildings. There will be an additional electricity requirement for maturation sheds 2B and 3B to run the fans for the underfloor aeration system and the air extraction system from the sheds 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 there are no extended operational times there will be no requirement for additional power for lighting inside the buildings.

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

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 keep the same operational hours as set in Condition 1.9 of the site Industrial Emission Licence and 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 and that operational hours at the facility will continue to be 06:00 - 19:00 Monday to Saturday(with the exception of bank holidays).

The increase in throughput tonnage at the proposed development will be for processing of approximately 240 tonnes of waste per day up to a maximum of 75,000 tonnes per year. The anticipated waste types that will be accepted are similar to those currently accepted at the site and are outlined in Table 3-1 and 3-2:

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).	240	75,000

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 Industrial Emissions Licence, as outlined in Table 3-2 above.

Miltown already have a documented waste acceptance procedure (see Attachment B.3) for the current operations on site. Because the nature of the materials being accepted at the proposed development will not differ to the current material 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.

Because the nature of the materials being accepted at the proposed development are not different to the current waste streams at the facility the handling procedures will the same as those currently used in the existing process. Material accepted at the facility will be received and blended in the 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 organic fines 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 and this could be achieved through the use of the maturation sheds 2B and 3B for the maturation of compost material. The current waste handling procedures are provided in Attachment B.3.

The equipment in the main compost facility will be the same as that currently 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. The proposed maturation sheds 2B and 3B will have a dedicated front-end loader that will handle material maturation in that building only. The details of the plant can be seen in Section 2.3.8.

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 organic material accepted and transferred from the site. Vehicles delivering organic materials to the facility will be mainly enclosed trailer units with some staff vehicles also moving into and out of the facility. Vehicles delivering organic materials to the facility will be enclosed trailer units. Delivery trucks will first cross the weighbridge before unloading any material onsite at the reception shed. There will be a continuation of the existing traffic management plan implemented 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 low when compared to traffic movements on the surrounding road network. This is discussed further in Chapter 12 and in Attachment L.1.

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 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.

The existing surface water drainage and contaminated water management system has a number of controls in place to effectively prevent environmental impacts. A surface water drainage connection has been installed that connects the ramped compost reception area to the leachate circulation system. The drainage system ensures that all surface water runoff from the compost reception shed 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 runoff collection and drainage system ensures that any runoff from inside the compost 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.

The surface water drainage system for the turntable where trucks reverse into the compost reception area 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 drains to a grated silt trap gulley and is then directed via a 150mm PVC pipework beneath the new reception area to the existing silt trap and oil interceptor to the south of the compost reception building. Once the surface water passes through the interceptor it passes through the diversion gulley and through a 150mm pipe beneath the internal site roadway to the south and then to the on-site integrated constructed wetland (ICW). A diversion pipeline with a lockable valve has been installed at the access to the compost 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.

The new proposed maturation sheds 2B and 3B will also have the roof water directed to the ICW for treatment and polishing before discharge from the site. The water from the new yard surface to the west of sheds 2B and 3B will be directed to a full retention separator before being directed to the ICW, see Drawing P-2A in Attachment C.3. The forced air system proposed for the maturation sheds 2B and 3B would result in the majority of moisture within the material being consumed during the maturation process and very little runoff being produced. The internal floor will be an impermeable concrete construction and any minor runoff will be contained on the shed floor and removed to the leachate recirculation drain system in the compost reception shed adjacent.

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 3.4.12 above and will not be released to the surface water drainage or sewer system.

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.

The main perceived nuisance associated with the development may be odour and noise from increased volumes of organic material delivered to the facility. The existing aspiration system for the facility (i.e., Biofilter 1 located to the south of Shed 1 and Biofilter 2 located to the north of Shed 3) have been designed to provide treatment of exhausted air from the existing facility shed buildings. The proposed development includes for the use of the agricultural shed to the west of the reception building for additional organic material maturation. To treat exhausted air from the agricultural shed it is proposed that an air extraction system will be installed at the building and linked to a new biofilter structure.

The proposed new maturation shed will be exhausted through a new dedicated biofilter (i.e., Biofilter 3). 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 proposed new maturation building would be exhausted at 2.5 Air Changes per hour. The design criteria and air retention rate within the biofilter are outlined in Tables 3-3 and 3-4 below.

Table 3-3 Size and Capacity of Biofilter for Maturation Sheds 2B and 3B (New Maturation Sheds)

		Volume (m^3)
Maturation Sheds Volume		27,200
TOTAL		**27,200**
Air Volume to be Treated in Biofilter	2.5 x Air changes per hour	**68,000**

Table 3-4 Residence Time Calculation for the Biofilter for Maturation Sheds 2B and 3B (New Maturation Sheds)

Residence Time Calculations		
Air volume arriving at the biofilter	68,000	m^3/hr
	18.89	m^3/s
Biofilter surface area	485	m^2
Calculated Speed of Air through Filter	0.0389	m/s
Media Depth	1.8	m
Residence time in media	46.27	seconds

It is proposed that air extraction will take place in the proposed additional maturation building to the west of the reception shed through

It is intended to reuse some of the waste air stream from the maturation bay/beds, by installing 400mm galvanized ducting which will recirculate extracted air from 2m above the maturation bay/bed down to the intake of the intake aeration fan, this waste gas stream can be balanced with fresh air if required by a butterfly valve, thereby only increasing the biofilter loading by the amount of fresh air intake, which is expected to be approximately 30%. This is similar to the system currently used to mature organic material in Shed 2. The exhaust ductwork system would be suspended from the structural steel at the apex of maturation sheds 2B and 3B. The ductwork would run separately to externally located fans to the south of maturation shed 2B, the exhaust from the fans will pass through individual chambers in the biofilter (i.e., completely separated in the phlenum to prevent back pressures to the fans). The layout of the proposed air extraction and treatment system in Sheds 2B and 3B are outlined in Attachment C.4 and further detail around air supply to the maturation beds and the air extraction a system are also included in Attachment C.4.

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.

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.

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.9 and B.10).

4.0 ALTERNATIVES CONSIDERED

4.1 Introduction

This Chapter provides a description of the alternatives considered by Miltwon Composing Systems Ltd. (Miltown) in the design of the Proposed Development in terms of the extended maturation facilities for the existing composting facility. It considers the following:

- The 'Do Nothing Scenario'
- Alternative Locations
- Alternative Layouts
- Alternative processes for the Proposed Development

Alternatives were assessed having regard to commercial, construction, operational, technical, and key environmental constraints.

4.2 Development Brief

The purpose of the proposed development is to allow for the increase in compost maturation capacity at the existing composting facility. The maturation phase of the composting process comes after the initial in-vessel composting phase in the existing composting facility (i.e., Shed 1). Maturation allows for the stabilisation of the composted material and is the final stage of the composing process prior to the material being transferred off site. The existing Miltown composting facility has the capacity to process an increased volume of organic material in the main process building (i.e., shed 1), however, the site is constrained by the available floor space for the maturation of the composted material. The rationale is therefore to provide extended maturation capacity in close proximity to the composting facility to allow for optimum processing and to maximise efficiency and energy requirements. The design and location of the proposed extended maturation area must create a balance between protecting the environment and achieving optimum efficiencies in the process in terms of costs and proximity to the primary process.

The Development Brief is therefore to provide an extended maturation capacity design representing an optimum fit within the technical and environmental parameters of the Site, including maximising the use of existing infrastructure where possible.

4.3 Methodology

The following guidance has been reviewed as part of this assessment:

- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017);

- Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report (European Union, 2017);
- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems (DoHPCLG, 2017);
- Directive 2014/52/EU of the European Parliament and amendment to Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment;
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).
- 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)

'The Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report' (European Union, 2017) states that reasonable alternatives "must be relevant to the proposed project and its specific characteristics, and resources should only be spent on assessing these alternatives" and that "the selection of alternatives is limited in terms of feasibility. On the one hand, an alternative should not be ruled out simply because it would cause inconvenience or cost to the Developer. At the same time, if an alternative is very expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible alternative".

The Draft EPA Guidelines state that "It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account is deciding on the selected option."

4.4 Site Selection and Examination of Alternatives

Article 5(3)(d) of the EIA Directive 2014/52/EU requires the following:

"outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects".

Article 5(1) of the Revised EIA Directive 2014/52/EU requires:

Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer shall include at least: ...(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment";

Annex IV of the Revised EIA Directive (Information Referred to in Article 5(1) (Information for the Environmental Impact Assessment Report) states that:"... 2. A description of the reasonable alternatives

(for example in terms of project design, technology, location, size and scale) studies by the developer, which are relevant for the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of environmental effects".

The Revised EIA Directive Consultation states that transposition of these provisions are mandatory, and that: "Guidance will be developed on the requirement to study reasonable alternatives, including reference to the fact that some alternatives may already have been studied in relevant SEAs. The guidance will also deal with relevant considerations, including 'do nothing' alternative(s), alternative site(s), alternative design(s)/layout(s), alternative processes(s), alternative mitigation measure(s). Reference will also be made to the requirement that "reasonable alternatives ... relevant to the project and its specific characteristics" are required to be studied". The Environmental Protection Agency, in its guidance document on EIS preparation1 , stipulates the following:

"The presentation and consideration of the various alternatives investigated by the applicant is an important requirement of the EIA process .... and the alternatives can include:

- alternative locations;

- alternative designs; and

- alternative processes".

The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. There is limited European and national guidance on what constitutes a 'reasonable alternative'. It is noteworthy that the aforementioned EU Guidance Document (EU, 2017) states that reasonable alternatives "must be relevant to the proposed project and its specific characteristics, and resources should only be spent assessing these alternatives".

The following text provides information on the consideration of alternatives, including 'do nothing' alternative locations, alternative designs / layouts, alternative processes, alternative scale, and reasonable alternatives 'Do-nothing Scenario'. It is best practice in EIAs to consider the 'Do Nothing' scenario where no development occurs. Under a 'Do Nothing' alternative, The Development will not be constructed. The land upon which development would occur would remain unchanged. Consequently, the environmental impacts, identified in the EIAR, positive and negative, would not occur.

For the purposes of this Assessment, the alternatives assessed were:

1. Alternative Locations

2. Alternative Locations on Site

3. Alternative Processes

4.5 Alternative Locations

A site assessment process was carried out as part of the EIA. A total of four (4) potential sites for compost maturation were assessed as part of the EIA process. The options examined in addition to the proposed development site are show in Figures 4-1 to Figure 4-3 and covered the counties of Tipperary, Wexford and Cork. The assessment carried out for the determination of a suitable location for the proposed development was a two-stage process. The first stage comprised the identification of a number of candidate sites while the second phase comprised a site-specific assessment.

Miltown Composting conducted a site search across available sites to consider alternative locations for the development of the extended compost maturation facility. The search included other sites available to the facility owner with available lands, greenfield sites and existing buildings that were available.

A site assessment was carried out as part of the EIA process. A total of four potential sites for the development of the maturation buildings were assessed as part of the EIA process. The criteria examined in relation to the proposed development sites are show in Table 4-1 below and covered sites located in Tipperary, Wexford and Cork. The assessment carried out for the determination of a suitable location for the proposed development was completed over a two-stage process. The first stage comprised the identification of a number of candidate sites while the second phase comprised a site-specific assessment of each. The following constraints were applied to each alternative sites identified.

Table 4-1: Site Selection Criteria

Criteria	*Comment*
Proximity to environmentally sensitive areas and designated sites	Each of the candidate sites was assessed against the proximity to designated sites.
Landscape Sensitivity and Cumulative Impacts	Landscape Characterisation and scenic amenity were factors considered.
Residential Amenity	Set back from properties
Land Use and Existing Infrastructure	Site sensitivities and existing land use practices were assessed.

The locations of the alternative sites considered are provided below.

Figure 4-1 - Alternative Site 1 – Castleblake Co. Tipperary

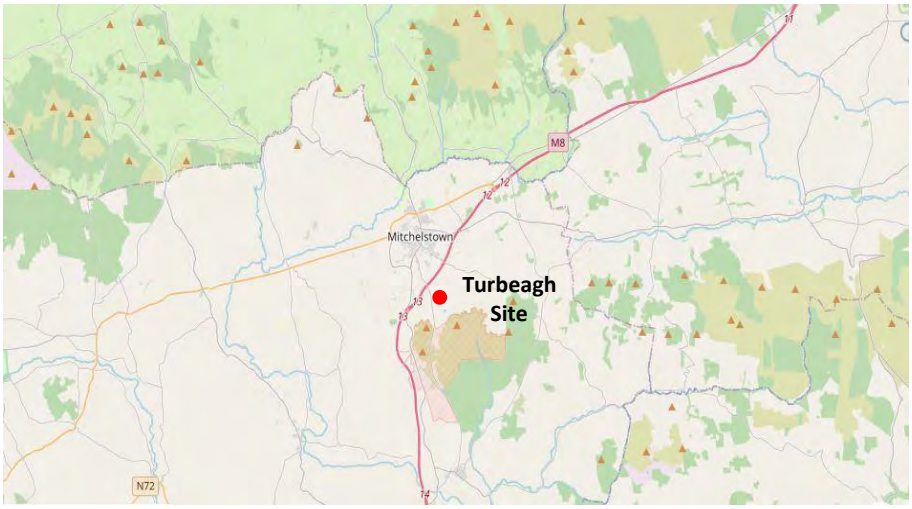


Figure 4-2 - Alternative Site 2 – Turbeagh Co. Cork

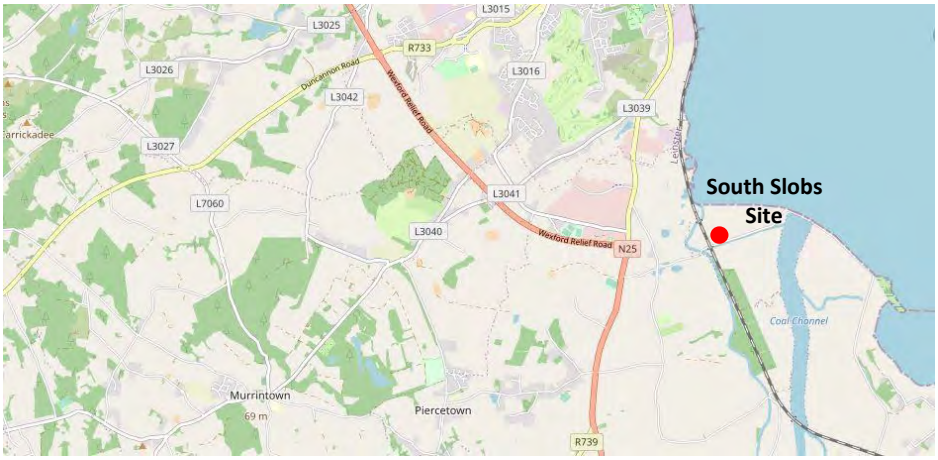


Figure 4-3 - Alternative Site 3 – South Slobbs Co. Wexford

4.5.1.1 Alternative Site 1 - Castleblake (Co. Tipperary)

Alternative Site location 1 is at an existing agricultural site owned by the applicant at Castleblake, Co. Tipperary. The area considered has a number of agricultural enterprises surrounding the proposed site that may not be compatible with the proposed development of the maturation sheds to mature increased composted material tonnages at the Miltown facility.

The Castleblake site is located approximately 2.2km due southwest of the Miltown facility and would be approximately 5.4km by road. The Castleblake site has a number of positive environmental attributes in that the site reviewed is highly modified to accommodate a number of agricultural enterprises and does not include habitats of significant conservation value and is not located in close proximity to any areas of Special Areas of Conservation (SACs) or Special Protection Areas (SPAs). However, there are concerns relating to the further development of a maturation enterprise in an area where there may be environmental issues related to:

- Proximity to dwellings and sensitive receptors
- Development of a greenfield site for the maturation building that would result in land loss
- Increased use of resources (i.e., fossil fuel) for the transfer of material from the Miltown Site to Castleblake.
- Increased fossil fuel usage for transfer of material would be contrary to Government Policy and targets set out in “Long-Term Strategy on Greenhouse Gas Emissions Reduction” published in 2019 whereby the Government set a Target of Net Zero by 2050.
- Transport in Ireland was responsible for over 20% of the Country’s Greenhouse Gas (GHG) emissions in 2018. Unnecessary transport of material would add to the GHG emissions from the process.
- No environmental abatement measures currently exist at the site that could be used as part of the proposed development.

The development of maturation sheds at the Castleblake site would result in significant double handling of material and require significant additional resources in the form of fuel for haulage from the existing licensed Miltown Composting site. Based on the proximity principle the lowest potential environmental impact would be to mature the composted material as close to the treatment facility as possible.

4.5.1.2 Alternative Site 2 - Turbeagh, Mitchellstown (Co. Cork)

The second alternative site assessed was an area in the townsland of Turbeagh, Mitchelstown, Co. Cork. The site is an agricultural yard located approximately 2.60 km south of the town of Mitchelstown, Co. Cork. and contains sheds and a yard area, approximately 10 acres in size. The Turbeagh site has a number of positive environmental attributes in that the site reviewed is an existing developed yard and has an existing integrated constructed wetland (ICW) at the site. The site is developed to a large extent and does not include habitats of significant conservation value and is not located in close proximity to any areas of

Special Areas of Conservation (SACs) or Special Protection Areas (SPAs), with the closest being the Blackwater River SAC located over 6km from the site. However, there are concerns relating to the further development of a maturation enterprise in an area where there may be environmental issues related to:

- Proximity to dwellings and sensitive receptors
- Potential visual impact on nearby dwellings with the construction of new sheds
- Significant increased use of resources (i.e., fossil fuel) for the transfer of material from the Miltown Site to Turbeagh.
- Increased fossil fuel usage for transfer of material would be contrary to Government Policy and targets set out in "Long-Term Strategy on Greenhouse Gas Emissions Reduction" published in 2019 whereby the Government set a Target of Net Zero by 2050.
- Transport in Ireland was responsible for over 20% of the Country's Greenhouse Gas (GHG) emissions in 2018. Unnecessary transport of material would add to the GHG emissions from the process.
- The site is located in an area of landscape identified in the Cork County Council SEA Baseline Landscape Character (2019) as an area consisting of "Fertile Plain with Moorland Ridge" and considered to be an area of High Landscape Character.

4.5.1.3 Alternative Site 3 – Sloblands, Wexford (Co. Wexford)

The third alternative site assessed was an area in the Slobblands area located approximately 3.6km south of Wexford Town. The site is an agricultural yard and contains sheds and a yard area, approximately 3 acres in size. The site itself is developed to a large extent and does not include habitats of significant conservation value within the site boundary. However, there are concerns relating to the further development of a maturation enterprise in an area where there may be environmental issues related to:

- Proximity to European Sites that are considered ecologically sensitive areas. The site is located in the Sloblands area and located within the Wexford Harbour and Slobs Special Protection Area (SPA Ref. 004076).
- Significant increased use of resources (i.e., fossil fuel) for the transfer of material from the Miltown Site to Slobs.
- Increased fossil fuel usage for transfer of material would be contrary to Government Policy and targets set out in "Long-Term Strategy on Greenhouse Gas Emissions Reduction" published in 2019 whereby the Government set a Target of Net Zero by 2050.
- Transport in Ireland was responsible for over 20% of the Country's Greenhouse Gas (GHG) emissions in 2018. Unnecessary transport of material would add to the GHG emissions from the process.

4.5.1.4 Preferred Option - Miltown Composting Site

The proposed development of the maturation sheds at the existing Miltown site would be on the footprint of existing old agricultural sheds in an area that had been previously developed.

The existing Miltown site is regulated under an EPA Industrial Emissions 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. The Miltown site was chosen due to its suitability in terms of the following; ·

- The site is removed from European Sites
- The development can be environmentally regulated, following review by the EPA, under the existing site Industrial Emissions Licence.
- The footprint of the development would be on an historic area where agricultural sheds existed and would not be considered an issue in terms of impacts on landscape.
- The proposed site is located immediately adjacent to the existing composting facility and would negate the need for transport of material off site for maturation (i.e., reduced fossil fuel requirement and reduced potential GHG emissions).
- The site currently has abatement processes in place that can be used as part of the proposed development (e.g., the existing ICW is capable of receiving stormwater from the proposed shed roofs and yard area).

4.5.1.5 Landscape Sensitivity and Cumulative Impacts

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 Composting 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.

The physical elements of the landscape will remain unchanged by an increased throughput at the existing site or the reconstruction and extension of the old agricultural sheds as maturation shed Based on the key included in the Draft Tipperary Landscape Character Assessment 2016 the facility is based in a Class One area which is of low sensitivity.

4.5.1.6 Proximity to Houses

Key consideration was given to the proximity of the proposed development in terms of residential amenity. The existing Miltown site is located approximately 800m from the closest residence to the northwest and is well removed in terms of potential environmental nuisance related to the site operations.

4.6 Reasonable Alternatives

If the Proposed Development is not carried out, the tonnage of organic waste material treated and stabilised prior to reuse as cover would be limited to the existing tonnage allowable under planning and licence conditions. The market pressure to provide treatment for increasing volumes of organic waste is at a high level inferring that there is a shortage of capacity within the existing waste management sector to complete this type of treatment. If the extension of tonnage throughput and increased maturation capacity is not carried out there may be a large portion of organic waste produced in the Southern Waste Region that would go untreated and would be contrary to Government Waste Policy.

The non-treatment of organic waste may also result in increased potential for the production of methane if that material is landfilled as mixed municipal waste and may further contribute to greenhouse gas and pollutant production and impede Ireland's commitment to meet its EU and national emissions targets and to strive towards sustainable development. The proposed development is intended to increase the potential for meeting targets set in Government policy "Waste Action Plan for a Circular Economy" in terms of waste management and reducing GHG production.

Miltown Composting examined alternative locations within the existing Miltown Composting site locations and layouts and for proposed maturation sheds 2B and 3B. Because the proposed development is for the maturation of composted organic material there is minimal scope for the consideration of alternative processes that are both reasonable and relevant. Based on the layout of the existing composting facility there is also minimal scope for alternative layouts for the proposed maturation sheds but the examination of alternatives does focus on consideration of potential on-site locations and layouts.

4.6.2.1 Site Layout

The Miltown site is a composting facility with some historical ancillary agricultural sheds in the yard that are not part of the composting facility. The composting facility configuration of buildings allows for the flow of material from reception to dispatch completely enclosed inside the facility buildings.

The existing Miltown site layout consists mainly of existing compost facility buildings and yard areas. The site was assessed in terms of the floor area that would be required to facilitate the maturation of the composted organic material. The main design criteria for the proposed new maturation sheds would be that all material would remain inside the facility buildings to ensure that odour and leachate controls would be maintained. The transfer of composted material from the process shed to the maturation area should avoid being transferred across external site yard surfaces to ensure potential environmental impacts that may occur from that activity are avoided. A number of alternative locations within the

Miltown site were considered in order to determine the best location for the proposed development of the maturation sheds. An assessment of the alternative areas identified was completed and the results are outlined below.

4.6.2.2 South & Southwest of Site

The existing site design would not allow for the development of the proposed maturation sheds in the southwest area of the site due to the existence of the Integrated Constructed Wetland used for the abatement of surface water runoff from the existing composting facility.

4.6.2.3 Northern Area of Site

The northern area of the site (north of the existing site road) could accommodate the floor area required for the development of the additional maturation capacity. However, construction in that area would result in a physical disconnect between the existing composting facility and the proposed development building. The construction in that area would result in composted material having to be transferred across the yard and across the site access road which could result in traffic issues if there are conflicts with trucks delivering organic material or dispatches of finished stabilised material from the site.

The transfer of material would also result in potential for environmental impacts in the form of odours and leachate from transferred material being moved across the yard surface from process Shed 1. The development of the maturation buildings in the northern area of the site was therefore not considered viable due to the lack of environmental controls that might result in impacts related to the transfer process.

4.6.2.4 Western Area of Site

The area of the site immediately to the west of the existing reception shed for the Composting facility was considered to be the best location on the site. The area is the location of two historical agricultural sheds that were damaged by storms. The development of that area would comprise mainly of the footprint of the historical agriculture sheds with a small extension to allow for the appropriate maturation capacity. Because the preferred location is immediately adjacent to the reception shed for the compost facility composted material from Shed 1 can be transferred to the new maturation sheds through the reception building and ensure that the material is kept inside the process buildings at all time.

The design of the new maturation sheds will include a low dividing wall between the maturation sheds and the reception shed to allow for the transfer process to take place. The preferred location and design of the maturation sheds will ensure that the process remains inside the facility buildings and potential environmental impacts can be appropriately controlled and abated where necessary.

4.7 Alternative Processes

The maturation of composted organic material is limited in the types of processes that can be applied. Because of this the alternative processes that can be applied are limited and would comprise mainly of the following:

- Manually turning of maturation piles
- Anaerobic Digestion
- Aerated Static Piles

The development of windrows within the maturation sheds coupled with mechanical turning for aeration was assessed. This technology requires significant mechanical and manual input to turn the material and may potentially result in hot spots or anaerobic areas within the windrows if they are not turned in the correct timeframe. The uniformity of stabilisation of the final material can be affected when using this method for the maturation of the material. This may affect the quality of the material and result in additional turning and management works. The environmental controls associated with this type of system would be similar to a forced air bed system and would include leachate control and recirculation and the collection and abatement of odourous air from inside the maturation building. Because the material is manually turned to maintain aerobic conditions, this type of system has the potential for creating anaerobic conditions within the material if the material is not turned regularly enough. This could result in the production of methane, a potent greenhouse gas. Any material process at the facility should maintain constant aerobic conditions to ensure that the potential for the production of greenhouse gases are minimised and because of this, manual turning of the material as part of the maturation process is not considered optimum.

Miltown representatives have visited the BEKON anaerobic digester biogas facilities in Germany (Munich and Kusel). The BEKON process is a single-step fermentation process that employs batch operation. The process involves degradation reactions (hydrolysis, acidification and methanisation) of organic waste materials in one process step. The process is a high technology-based system where material is filled to a fermenter and the vessel is heated to maintain constant temperature for the optimum environment for the degradation microorganisms for biogas production.

BEKON Munich Pilot Plant

BEKON Kusel on Farm Biogas Facility

The biogas pilot plant in Munich has been in operation since 2003 and processes up to 6,500 tonnes of source separated organics per annum to produce approximately 190kW of power per year. The Kusel facility has been in operation since 2007 and processes up to 7,500 tonnes of organic waste to produce approximately 330kW of power per year.

The use of anaerobic digestion for the maturation of composted material would not be a viable option as it would require a significant capital outlay and significant re-design and overhaul of the site in order to complete the final process of an existing composting process. If the anaerobic digestor option was

adopted, it would most probably result in the replacement of the existing composting process and this is not the option that Miltown require. The proposed development is for additional throughput and maturation capacity at the existing composting facility and the introduction of this type of process is considered outside the scope of the brief.

The benefits of the process would be the production of heat, potentially compressed gas fuel and power. However, the capital cost of construction and retrofitting the existing Miltown site was considered prohibitive at this time.

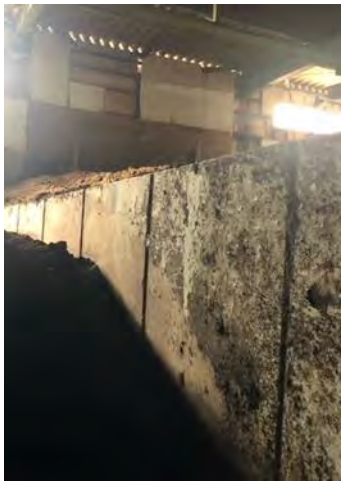
The development of a forced air bed system in the existing maturation sheds at the Miltown composting facility has allowed the company to determine that the use of forced air through maturing material in a static pile, results in an economical and environmentally controlled maturation process. The forced air system allows for the permeation of air throughout the entire maturing material and eliminates the potential for pockets of anaerobic activity that could result in increased odour and potential hot areas within the pile that may be experienced in the manually turned system discussed in section 4.7.1.

Miltown Composting have been working with Panford who have over 20 years of composting technology experience. The systems that they employ have been tested and proven by Miltown Composting in terms of their robustness (e.g., stainless steel) and efficiency in terms of energy inputs versus timelines for completing the maturation process. The proposed technology for the maturation sheds (i.e., Sheds 2B and 3B) was selected as it is already a technology that is in use at the existing maturation sheds (i.e., Sheds 2 & 3) at the Miltown Composting facility and results in efficient maturation of material and allows for controls of static pile composted material conditions through controlled air input. The proposed development is to include for the maturation of material that has already been composted in the composting bays in Shed 1. The design of the proposed maturation sheds allows of the separate maturation of compost batches in dedicated and separated bays to prevent cross contamination or mixing of compost batches. The forced air system allows for optimum aerobic conditions within the maturing piles to allow for the final maturation of the material. The controls within the proposed sheds are for the containment of any leachate from the maturing material which would be minimal due to the moisture consumption that takes place from the composting process (i.e., material leaving the site consists of approximately 90% dry matter). The sheds are designed with internal drains that would direct any potential liquids from the bays to shallow collection tanks located within the building fabric. The dedicated air management system designed by Panford is to collect and treat potentially odourous air as well as potential greenhouse and nutrition gases (e.g., ammonia and methane) in the dedicated biofilter system. The design of the proposed sheds and the process system is directed towards efficiency of processing coupled with environmental controls to protect air, soil and water quality.

In the past few years the owners of Miltown Composting representative have visited other composting facilities in Japan (Komasuya Company in Nagoya) to assess the technologies used and to determine the best and most efficient technologies that can be used in their composting and maturation processes. Both systems used a similar process to Miltown of forced air technology for the composting and maturation of

organic material with removal of air through a dedicated extraction system and treatment in biofiltration system, see photo at Komasuya facility below.

Under-floor Forced Air System



Compost batch system for monitoring & management of material

The proposed forced air system coupled with environmental controls and mitigation including air extraction and treatment for the new maturation sheds has been determined as best technology in the composting industry in terms of efficiency and environmental control of the process and product.

4.8 Conclusion

The above analysis clearly demonstrate that Miltown Composting have thoroughly looked at and considered all appropriate alternative options in order to determine the best site locations, site layout and process configuration for the proposed facility.

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 EIAR.

5.2 Methodology

Analysis of the effect of the proposed development on the human environment was completed in compliance with the requirements of "Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports" (EPA, 2017) 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 in 2020 to inform the EIAR 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.

The nearest residential property is approximately 800m to the northwest of the facility along the public local access road. There are three more residences within 1km of the site to the north, north east and 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 northwest.

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 2016 censuses, as well as some information from Quarterly National Household Surveys, all of which are compiled by the CSO.

5.3.3.1 Census Data

The most recent census was carried out in April 2016, and this information from the April 2016 and April 2011 censuses were used as a comparison to measure population changes within the County. 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.

5.3.3.2 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, 2011 and 2016.

Table 5-1 Population Changes in Tipperary County, between the 2011 and 2016 Censuses

Location	2011 Census Population	% Change since 2006 Census	2016 Census Population	% Change since 2011 Census
South Tipperary	88,432	+1.44%	89,051	+0.7%
North Tipperary)	70,322	+6.30%	71,025	+1.0%

5.3.3.3 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 4 (Q4) of 2020.

Main Results

In the State as a whole, there were 2,445,100 persons in employment and 138,900 unemployed in Q4, 2020 making up a labour force of 2,584,000. These need to be assessed with recognition of the increased unemployment and payment schemes in place as part of supports for the Covid-19 pandemic.

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 unemployment rate in Ireland was at 5.7% in Q4 2020 and has decreased by 2.7% since 2016.

5.3.3.4 Employment

The most recent data related to specific County levels of employment and unemployment were gathered from the 2011 and 2016 census information available through the Central Statistics Office (CSO). The data from 2011 and 2016 is presented in Table 5-2.

Table 5-2 Employment Changes in Tipperary County between the 2011 and 2016 Censuses

Location	2011 Unemployment Rate (%)	2016 Unemployment Rate (%)	% Change between 2011 and 2016 Census
South Tipperary	19.4%	14.6%	-4.8%
North Tipperary	21.6%		-7.0%

In 2016 the administrative area of Tipperary North and South were combined and reported as Tipperary only. The rate of unemployment in the area decreased significantly between 2011 and 2016 with a pickup in the economy following the national economic downturn.

5.4 Existing Environment

The health and safety of site personnel will continue to be proactively managed at the 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 EIAR.

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 organic material 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 EIAR (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.

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 EIAR to show the existing impact of the facility on these areas and no perceptible impacts have been found – refer to Chapter 11 of this EIAR.

5.5 Potential Impacts of the Proposed Development

The main potential impacts on population and human health from the proposed development are likely to comprise the potential for spills/leaks, air emissions, noise, visual, and traffic impacts. These aspects have been assessed in terms of the appropriate relevant standards within the corresponding chapters related to each potential environmental impact. A summary of the potential impacts of construction, and operation of the proposed development is presented below.
The location of the Proposed Development within an existing composting facility and yard surrounded by agricultural lands will have a minimal impact on the local landscape amenity. There will be no impact on the local parks.

Because the site is in a rural area and pre-existing, it is not anticipated that the development will have a significant negative impact on local tourism or shopping amenities.
The Proposed Development will require additional electrical power supply from the national grid to run the air fans associated with the maturation process in maturation sheds 2B and 3B, the requirements for this supply have been detailed in Chapter 14 (Material Assets).

The proposed development will require power supplied from the grid, and diesel fuel for mobile plant during operations. The power supply for the proposed development will be drawn directly from the national grid and there is no anticipated impact to local residential or business users.

There will be no impact to mineral resources in the area as a result of the and construction materials related to the reconstruction of the maturation sheds 2B and 3B. The majority of the shed consists of concrete floor slab and reinforced concrete walls to approximately 5m high with steel supports and metal cladding wall and roof panels. The majority of the proposed maturation sheds 2B and 3B will be constructed on the footprint of the two old agricultural sheds at the site and so there will be no loss of lands due to the shed construction.

The proposed development will not create a wastewater discharge which could have a potential impact on local amenities or the local population. This is further discussed in Chapter 9 (Land, Soils, Geology & Hydrogeology) and Chapter 8 (hydrology).

There are no groundwater source protection zones in the immediate vicinity of the site. In order to reduce impacts on the soils and geology environment a number of mitigation measures will be adopted to

prevent the potential contamination of groundwater during the construction and operational phase; as described in Chapter 9 (Land, Soils, Geology & Hydrogeology). No significant impact to Natural Resources or Material Assets is predicted, other than loss of a small portion of the fill area of the yard.
Likely significant impacts have been assessed for Human Being Receptors in the area of the proposed development during the operational phase. 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 and noise and odour from the use of the new maturation sheds 2B and 3B. The mitigation measures associated with noise and odour related to the use of the proposed maturation sheds 2B and 3B are outlined in chapters 9 and 10 of this EIAR.

The proposed development will directly employ approximately two (2) additional personnel in the short-term with an extension of operations. 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.

5.6 Mitigation Measures

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

The reconstruction of the maturation sheds 2B and 3B will have a number of potential impacts that will require mitigation during construction, these are outlined below.

- Control measures to mitigate dust generation and other air pollutants from construction works will be employed. These are outlined in Section 10.6 of this EIAR.
- Control measures to mitigate noise impacts on surrounding noise sensitive receptors from construction works will be put in place. These are outlined in Section 9.5 of this EIAR.
- Appropriate health and safety measures in line with regulatory standards will be employed by contractors on site during construction works.

During the operational phase of the proposed development there

- Continuation of a traffic management system that will continue to 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 local access road to the facility. The system includes for trucks travelling to the site to 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 local access road or local road network.

- As outlined in the existing Industrial Emissions Licence for the site, no truck movements will be completed along the approach local access road 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 Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments are discussed below.

It does not appear that construction of the proposed development (i.e., reconstruction of maturation sheds 2B and 3B) will proceed in tandem with other significant developments in the immediate area, a cumulative impact is unlikely.

The construction phase of the proposed development together with any/all relevant other planned or permitted developments will have a ***positive*** impact in terms of employment. The traffic assessment indicates that the proposed development is not likely to result in significant adverse impacts either alone or in combination with any likely future projects.

Other developments in the area will be subject to impact assessment as required by the planning authority and be required to manage any impacts on human health. The proposed construction works for the site will be temporary works and the limited time frame for construction works in the vicinity of a specific properties reduce the potential for cumulative impacts significantly.

The operation of the proposed development with increased throughput of materials and the use of sheds 2B and 3B as an extended organic material maturation area would be controlled by the requirement to adhere to conditions in the site Industrial Emissions Licence to ensure that there are no significant impacts on the environment or surrounding sensitive receptors. The operation of the proposed development would be restricted by the same binding limits for noise, dust, and emissions to water. It is considered that there would be no cumulative impact on human health.

Chapter 10 (Noise) concluded that there will be no significant noise emissions from the operation of the compost facility at an increased capacity and Chapter 11 (Air) concluded that the air emissions controls for the proposed facility would adequately mitigate any potential odour emissions from the site operations. Therefore there is no potential for cumulative effects and the overall cumulative impact is concluded as ***negative*** and ***not significant*** with respect to human health.

5.8 Residual Impacts

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

6.0 FLORA & FAUNA

6.1 Introduction

This Chapter of the EIAR 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 2020 and a copy of the Appropriate Assessment Screening report is included in Attachment F.1.

6.2 Methodology

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, as revised
- 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)
- Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2017)
- 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)

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

The existing site buildings and surrounding areas were surveyed in December 2020 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 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.

6.3 Ecological Evaluation & Impact Assessment

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).

The initial vegetation and mammal surveys were undertaken in December 2020 which was not the optimal time of year for vegetation surveys but was considered optimal for mammal surveys as they are best

conducted in winter when vegetation dieback affords unhindered views of field signs and potential breeding/resting places. 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 or what migratory birds may visit the area in the Summer months, this was reassessed in August 2021.

A supplementary site walkover and ecological survey was completed in August 2021 by JRE Ltd. to provide a more comprehensive assessment of the vegetation and habitats on site during Summer months.

6.4 Characteristics of the Proposed Development

The main characteristics of the proposed development are for the reconstruction of agricultural sheds (i.e., maturation sheds 2B and 3B) to the west of the reception shed of the Miltown Composting facility at Miltownmore, Co. Tipperary to provide increased maturation capacity for composted organic material. The proposed development would also include an increased throughput of organic material at the compost facility from 50,000 tonnes per year to 75,000 tonnes per year.

The proposed maturation sheds 2B and 3B will have a floor area of approximately 3,560 m^2 and will consist of a steel portal frame design featuring 5m high reinforced concrete walls at the building base and dark green galvanised steel purlins on a structural steel portal frame. The apex of the roof in the proposed shed will be approximately 9.5m above ground level. The proposed shed will be constructed mainly on the footprint of old agricultural sheds with an extended area included to the west of the old shed footprint area. The proposed maturation sheds 2B and 3B area is located on an area of made ground and sections of this fill material will be excavated to accommodate footings for the shed structure and foundations for the shed walls. Any excavation will be completed within the fill material only and will not extend into natural ground to ensure that there is no impact on potential archaeological features that may exist beneath the fill material in that area.

The proposed maturation sheds 2B and 3B will have underfloor forced air beds for the maturation of organic material in static piles similar to the process currently completed in Sheds 2 and 3 of the compost facility. The 5 maturation bays in shed 2B will be serviced by 10 fans that will be located inside the building

Similarly, the air beds in shed 3B will be serviced by fans located inside the building. The situation of the fans inside the buildings will reduce any potential noise impacts on fauna in the area. Potentially odorous air produced within the proposed maturation sheds 2B and 3B during maturation of organic material will be extracted via an air extraction system served by two air extraction fans that will be located to the south of the proposed shed structure and will direct extracted air to a dedicated biofilter also located at the southern end of shed 2B.

It is intended to reuse air from inside the buildings for use in the maturation bay/beds, by installing 400mm galvanized ducting which will recirculate extracted air from 2m above the maturation bays/beds down to the intake of the intake aeration fans, this waste gas stream can be balanced with fresh air if

required by a butterfly valve, thereby only increasing the biofilter loading by the amount of fresh air intake, which is expected to be approximately 30%. This is similar to the system currently used to mature organic material in Shed 2. The exhaust ductwork system would be suspended from the structural steel at the apex of maturation sheds 2B and 3B. The ductwork would run separately to externally located fans to the south of agricultural shed 2B, the exhaust from the fans will pass through individual chambers (i.e., completely separated in the phlenum to prevent back pressures to the fans) in the biofilter.

6.5 Description of Existing Environment

The facility is located in Miltownmore, an agricultural area southwest of Fethard. The site is accessed by a local access road off the Rosegreen to Fethard L1409. The site encompasses approximately 3.94 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, 2 bio filters and two agricultural sheds. The area surrounding the sheds is mainly developed yard consisting of concrete or gravel. A series of integrated constructed wetlands also exist to the southwest of the main composting buildings.

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

6.5.2.1 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 2021, 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

Table 6-2 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 coot, 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 6-2 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 6-3 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 6.3. 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 6-4 Protected Mollousc 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 directly affected by the Miltown Facility.

Table 6.5 outlines the Protected Species from Wildlife Act (Terrestrial mammals) and Bird Directive Annex II (Birds) within 2km of site

Table 6-5 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 6.5 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.

6.5.3.1 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.
Buildings and Artificial Surfaces (BL3)	The facility itself and the areas to the south, east and north
Other Artificial Lakes and Ponds (FL8)	Integrated Constructed wetlands (ICW) for the treatment of surface water run-off from the site are located in the southwest area of the site.
Immature Woodland (WS2)	Lands to the southeast of the site consist of a deciduous tree stand consisting of sycamore and beach. There is also sparse stand of planted beach and oak in the northern area of the Miltown site.
Wet Grassland (GS4)	The area to the west of the proposed maturation sheds and north of the ICW ponds contained mainly grasses that are found in unimproved areas.

*- Based on Fossitt, 2000.

Buildings and Artificial Surfaces (BL3)

This broad category incorporates areas of built land that do not fit elsewhere in the classification. It includes all buildings (domestic, agricultural, industrial and community) other than derelict stone buildings and ruins. The composting site consists of shed buildings and hard standing yard areas. The proposed re-construction of the old agricultural sheds as maturation sheds will be on the footprint of old agricultural sheds and the extended area will also be on gravel yard area and will not change the current habitat classification for that area. Photos of proposed re-construction area and examples of other areas of artificial surfaces are shown on Plates 6-1 & 6-2 below.

Plate 6-1: Old Agriculture Sheds

Plate 6-2: Yard Area south/southwest of weighbridge

Improved Grassland (GA1)

This category is used for intensively managed or highly modified agricultural grassland that has been reseeded and/or regularly fertilized, and is now heavily grazed and/or used for silage making. The fields surrounding the Miltown Composting site to the north, south, east and west had were grazing lands and the composting activities at the site will not affect the land use of these fields. This category is used for intensively managed or highly modified agricultural grassland that has been reseeded and/or regularly fertilised. It includes regularly-reseeded monoculture grasslands and rye-grass leys that are planted as part of an arable rotation. These differ significantly from areas of permanent grassland. Improved agricultural grassland is typically species-poor. Sward quality varies depending on soil type, fertility, drainage and management. Rye-grasses (*Lolium* spp.) are usually abundant and may entirely dominate the sward, often association with White Clover *(Trifolium repens)*. Other grasses that may be prominent include meadow-grasses (*Poa* spp.), Timothy *(Phleum pratense)*, Crested Dog's-tail *(Cynosurus cristatus)* and Yorkshire-fog *(Holcus lanatus)*. Among the more frequently occurring 'agricultural' herbs are Dandelion (*Taraxacum* spp.), Creeping Buttercup *(Ranunculus repens)*, plantains (*Plantago* spp.), Nettle *(Urtica dioica)*, thistles *(Cirsium arvense, C. vulgare)* and docks (*Rumex* spp.). Some reseeded but poorly-drained fields may support abundant rushes.

Plate 6-3: Grasslands to the South

Plate 6-4: Grasslands to the North

Hedgerow (WL1)

Linear strips of shrubs, often with occasional trees, that typically form field or property boundaries. Most hedgerows originate from planting and many occur on raised banks of earth that are derived from the excavation of associated drainage ditches. The site boundaries are mainly made up of planted hedgerow scrub and treelines consisting of oak, ash and beech, see examples in Plates 5 & 6. Within the hedgerows there area also scrub species including spinose plants such as Hawthorn *(Crataegus monogyna)*, Blackthorn *(Prunus spinosa)*, Gorse *(Ulex europaeus)*, Juniper *(Juniperus communis)*, Bramble (*Rubus fruticosus* agg.) and erect or scrambling roses (*Rosa* spp.).

Plate 6-5: Hedgerow at northwest of yard

Plate 6-6: Hedgerow at South of Site

Other Artificial Lakes and Ponds (FL8)

The Integrated Constructed Wetland (ICW) located in the southwest area of the site is used to receive and treat stormwater from the site yard and roofs prior to discharge from the site. The ICW was planted with rush species to act as a biological treatment for storm water. Many of the species in the area are similar to those in reed and large sedge swamps (FS1). This category includes species-poor stands of herbaceous vegetation that are dominated by reeds and other large grasses or large, tussock-forming sedges. The area is dominated by a small number of species, and includes Common Reed *(Phragmites australis)*, Common Club-rush *(Schoenoplectus lacustris)*, Reed Sweet-grass *(Glyceria maxima)*, Branched Bur-reed *(Sparganium erectum)*, Reed Canary-grass *(Phalaris arundinacea)*, Great Fen-sedge *(Cladium mariscus)*, Greater Tussock-sedge *(Carex paniculata)*, Bulrush *(Typha latifolia)* and Water Horsetail *(Equisetum fluviatile)*. The southwest area of the site is dominated by the ICW, see Plates 6-7 and 6-8.

Plate 6-7: Planted ICW Southwest Area

Plate 6-8: Planted ICW Southwest Area

Immature Woodland (WS2)

Immature woodland includes areas that are dominated by young or sapling trees that have not yet reached the threshold heights (5 m, or 4 m in the case of wetland areas). Two areas were identified, one (1) to the east of the site that is a young plantation of sycamore, beech and oak and one (1) on site that consists of sparse planting of ash, oak and beech with grasses and bramble, see Plates 6-9 and 6-10.

Plate 6-9: Immature Trees on Site

Plate 6-10: Immature Tree Stand to East of Site

Wet Grassland (GS4)

This type of grassland can be found on flat or sloping ground in upland and lowland areas. It occurs on wet or waterlogged mineral or organic soils that are poorly-drained or, in some cases, subjected to seasonal or periodic flooding. On sloping ground, wet grassland is mainly confined to clay-rich gleys and loams, or organic soils that are wet but not waterlogged. This category includes areas of poorly-drained farmland that have not recently been improved. The area to the west of the proposed maturation sheds and north of the ICW ponds contained mainly grass species and contains rushes *(Juncus effusus, J. acutiflorus, J. articulatus, J. inflexus)* and/or small sedges *(Carex flacca, C. hirta, C. ovalis)*, in addition to grasses such as Yorkshire-fog *(Holcus lanatus)*, Creeping Bent *(Agrostis stolonifera)*, Marsh Foxtail *(Alopecurus geniculatus)*, Rough Meadow-grass *(Poa trivialis)* and Tufted Hair-grass *(Deschampsia caespitosa)*. There were also some broadleaved herbs observed and included Creeping Buttercup *(Ranunculus repens)*, Marsh Thistle *(Cirsium palustre)*, Silverweed *(Potentilla anserina) and* Meadowsweet *(Filipendula ulmaria)*.

6.6 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.

An analysis of the potential impacts of the proposed development on the ecological environment during the continued operation at a higher throughput is outlined below. The implementation of the mitigation measures outlined in Section 6.7 below together with operational and traffic controls will ensure that impacts during the operational phase at a higher throughput are minimised.

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 will be

released from the facility building, it is not considered that the continued use of the facility with the new maturation sheds will have a high potential for impact.

The potential impacts that could affect ecological receptors during the construction of maturation sheds 2B and 3B would be the same as the potential impacts on air quality (section 11.5 of EIAR), noise sensitive receptors (section 10.4 of EIAR) and surface water receptors (section 8.4 of EIAR) from excavation works, storage of building materials and fuels/chemicals and operation of construction machines and tools. The proposed re-construction of the agricultural sheds as maturation sheds and the extension of same will be in locations classified as areas of buildings and artificial surfaces (BL3) and as such the re-construction works would not result in splitting or destroying any significant habitat area on site.

Due to the fact that the facility already exists and operates, is distanced from any identified sensitive receptor 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.

6.7 Mitigation Measures

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

With regard to construction activities, the following mitigation measures should be considered or implemented to protect the receiving environment.

- limiting the hours during which site activities likely to create high levels of noise are permitted;
- appointing a site representative responsible for matters relating to noise;
- limit the number of deliveries to the construction site in any one day.
- selection of plant with low inherent potential for generation of noise;
- erection of barriers as necessary around items such as generators or high duty compressors;
- situate any noisy plant as far away from sensitive receptors as permitted by site constraints.
- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Hardstanding surfaces and roads will be swept to remove mud and aggregate materials from their surface.
- Vehicles delivering or collecting material with potential for dust emissions should be covered with tarpaulin to restrict the escape of dust.

- Any excavated soils will be stored away from surface water drains to reduce potential sedimentation of surface water receptors.
- Construction fuels and chemicals will be stored in bunded areas only.
- Machinery will be re-fuelled on designated hardstanding areas connected to the site oil/water separator.
- 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 EIAR).
- 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.

6.8 Cumulative Impacts

Impacts to ecological receptors during proposed construction at the maturation sheds 2B and 3B are associated with spillage and leakage of oils and fuels and potential silt deposition in watercourses, noise and dust due to disturbance of land. With standard mitigation in place (as outlined above) to manage run-off using stockpiling of soil away from open water, and management of accidental discharges, control of noise and dust there is a low potential for construction at the proposed development to impact on ecological receptors. It does not appear that construction of the proposed development will proceed in tandem with other significant developments in the immediate area, a cumulative impact is unlikely. Regardless, all other developments will be required, during construction, to protect ecological receptors in compliance with legislative standards. The re-construction will take place in an area of artificial surface (BL3) so there will be no removal of habitat associated with the works.

The proposed increased throughput of organic material would be completed largely in the existing compost facility sheds and the existing controls will continue to be in place for the composting facility. The use of maturation sheds 2B and 3B to provide increased maturation capacity following the composting

process would not be considered to pose any impact to ecological receptors if all mitigation measures are implemented. Storm water from the proposed shed roof will be directed to the ICW for polishing before discharge from the site. Air fans will be situated. Also, air from the proposed maturation sheds will be directed through a biofilter system to mitigate odour and associated parameters and the air fans will be located to the south of Shed 2B to mitigate potential noise impact. As such the cumulative impact of the proposed development is considered to be of ***low*** significance with a ***neutral*** impact on ecology.

6.9 Residual Impacts

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

7.0 HYDROLOGY

7.1 Introduction

JRE have prepared this section of the EIAR, which assesses the potential impact of the Miltown composting facility on the water environment due to the proposed increased throughput at the composting facility and construction and use of maturation sheds 2B and 3B for the maturation of composted organic material. The current surface water flow from the shed roofs is directed to the on-site Integrated Constructed Wetland (ICW) which consists of 8 main treatment ponds. Water flows through the wetland treatment system before exiting at SW1a at the southwest of the site, see Figure 7-1. Surface water discharge from the ICW is directed to a surface water drainage ditch that flows in a south westerly direction for approximately 1km where it meets the Stillimity Stream. The Stillimity Stream then flows for approximately 1 additional kilometre before discharging to the Moyle River. Therefore, any surface water from the Miltown site must travel for approximately 2km through agricultural lands before meeting the River Moyle, see Figure 7-1.

7.2 Methodology

The assessment follows the relevant guidelines set out below to assess and evaluate hydrology within the context of the proposed development. This assessment includes a review of the existing environment, the potential impacts of the proposed development and mitigation measures.

In assessing likely potential and predicted impacts, account has been taken of both the importance of the attributes and the predicted scale and duration of the likely impacts. Where an impact is identified, planned mitigation measures are identified and assessed

This chapter describes the existing water environment at the Milltown Composting facility and the potential impacts resulting from the proposed development (i.e., construction of Sheds 2B and 3B and increased material throughput). It also outlines the potential surface water and hydrogeological impacts from the proposed 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:

- Environment Protection Agency (EPA), Guidelines on the Information to be Contained in Environmental Impact Assessment Reports Draft (2017)
- European Union, Guidance on the preparation of the Environmental Impact Assessment Reports (2017)
- EPA Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2015);

The principal attributes (and impacts) to be assessed include the following:

- Surface watercourses near the site and potential impact on surface water quality arising from the proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any).

The collection of baseline regional data was undertaken by reviewing the following sources:

- Current EPA on-line database -Envision water quality monitoring data for watercourses in the area; and,
- River Basin District (ERBD) Management Plan;
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie);
- DoEHLG & OPW (2009) Flood Risk Management Guidelines for Planning Authorities;
- 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
- "Guidelines on protection of fisheries during construction works in and adjacent to waters" Inland Fisheries Ireland (2016); and

Site specific data was derived from monitoring and sampling completed by Matrix Environmental who complete surface water sampling at the site as part of the Industrial Emissions Licence compliance requirements.

7.3 Description of Existing Environment

The site is located in the townland of Miltownmore, approximately 5 km to the southwest of Fethard and 10.5 km to the southeast of Cashel. The site is accessed by a local access road off the L1409 Rosegreen to Fethard third class road. The site encompasses approximately 3.94 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 four main buildings, and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, two biofilters and two agricultural sheds. The area surrounding the site is undeveloped and formerly used for animal grazing. A series of integrated constructed wetland ponds exist on the site to the southwest of the main composting buildings and receives stormwater from the site yard and the facility building roofs.

The site EPA Industrial Emissions Licence was reviewed in 2019 and following approval from the EPA, in 2020 Miltown Composting completed the groundworks to link all surface water from the facility buildings and open yard to the ICW system and decommission the old surface water drainage system.

Up to 2021 surface water sampling was completed at SW1 which was part of the old drainage system. Prior to 2021, surface water was still discharged via the old surface water drainage system and were

analysed for the parameters outlined in the facility's EPA Industrial Emissions Licence (i.e., BOD, suspended solids and ammonia).

The historic results of the sampling programme at the Miltown Composting facility between 2018 and 2020 (prior to storm water being directed to the ICW) can be seen in Tables 7-1 through 7-3 and Figures 7-1 through 7-3. The laboratory analysis reports are provided in Attachment G.1.

Table 7-1 - BOD Bi-Annual Results for SW1

Location	Month & Year	BOD Concentration mg/l O_2	Regulatory Value mg/l O_2
SW1	Round 1 - 2018	1	5
	Round 2 - 2018	3	5
	Round 1 - 2019	3	5
	Round 2 - 2019	4	5
	Round 1 - 2020	2	5
	Round 2 - 2020	3	5

Figure 7-1 - Graph of BOD Concentrations SW1

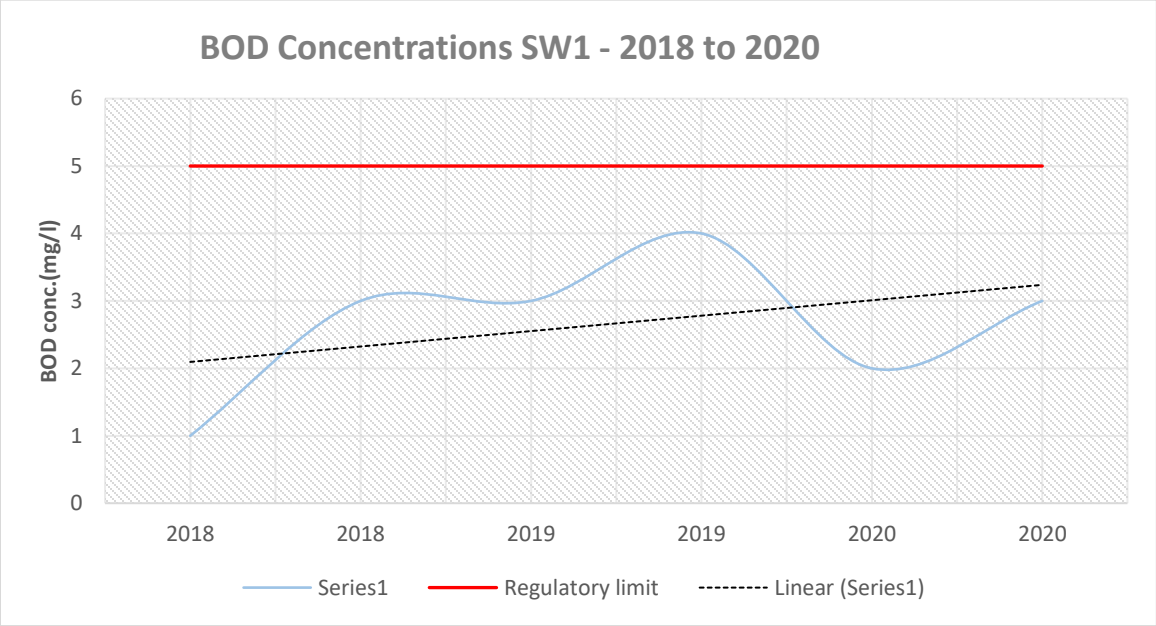


Table 7-2 Ammonia Bi-Annual Results for SW1

Location	Month & Year	Ammonia Concentration mg/l	Regulatory Value mg/l
SW1	Round 1 - 2018	0.42	0.14
	Round 2 - 2018	0.49	0.14
	Round 1 - 2019	0.29	0.14
	Round 2 - 2019	0.37	0.14
	Round 1 - 2020	0.55	0.14

	Round 2 - 2020	0.05	0.14

Figure 7-2 - Ammonia Concentrations at SW1

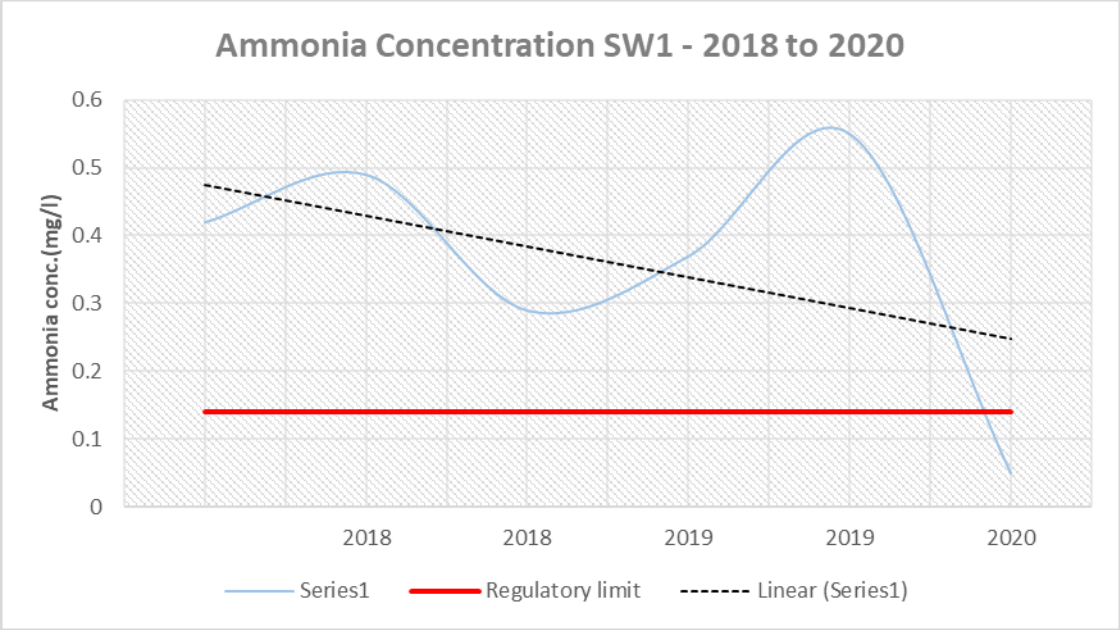
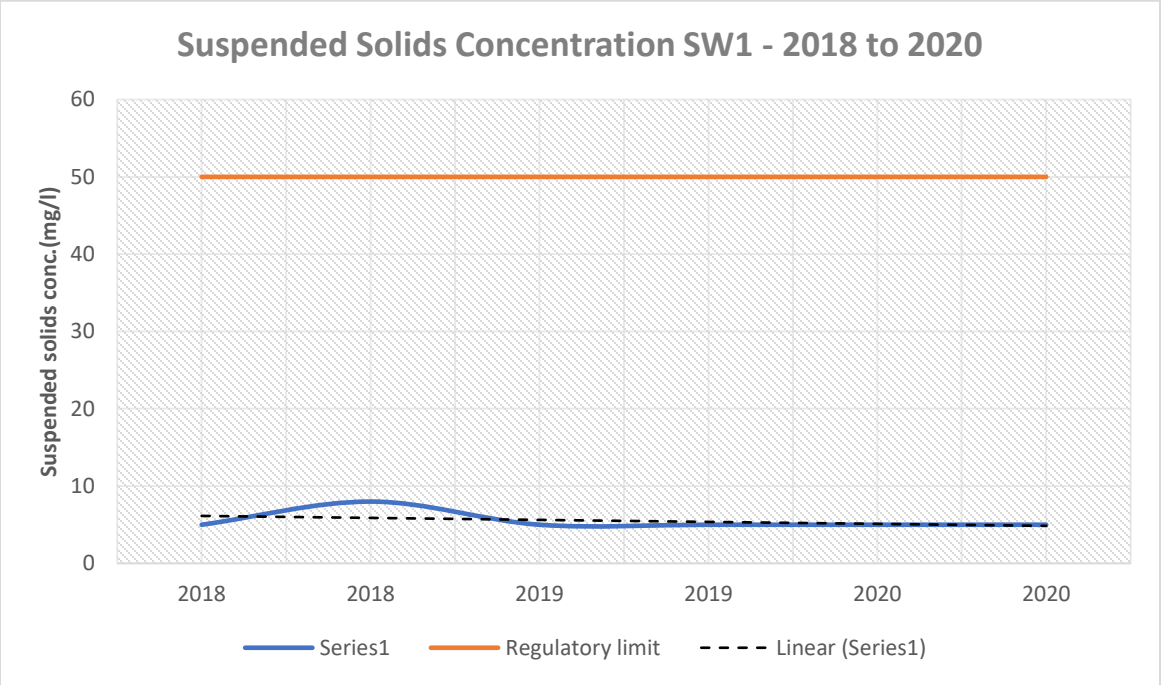


Table 7-3 Suspended Solids Bi-Annual Results for SW1

Location	Month & Year	Suspended Solids Concentration mg/l	Regulatory Value mg/l
SW1	Round 1 - 2018	5	50
	Round 2 - 2018	8	50
	Round 1 - 2019	5	50
	Round 2 - 2019	5	50
	Round 1 - 2020	5	50
	Round 2 - 2020	5	50

Figure 7-3 - Suspended Solids Concentrations at SW1



The elevated ammonia concentrations in surface water discharged in the old surface water drainage system was investigated in 2019 to determine the main source of ammonia at SW1 and it was determined that the main historical source of ammonia was related to steam released from maturing compost material condensing on the inside of the roofs of sheds 2 and 3. Some of that condensate was migrating along the roof inner surface and entering the stormwater gutter system through minute spaces and impacting stormwater ammonia concentrations at SW1. The mitigation measures put in place as part of the investigation are discussed further in section 7.3.3 below.

Since early 2021 all storm water from the Miltown facility open yards and roofs has been directed to the site ICW for treatment prior to discharge and any storm water from future developments would also be directed to the ICW. The function and mitigation effectiveness of the ICW is discussed below.

Historically, there were instances of elevated ammonia in surface water from the site and following an investigation by the operator it was determined that the main historical source of ammonia was related to steam released from maturing compost material condensing on the inside of the roofs of sheds 2 and 3. Some of that condensate was migrating along the roof inner surface and entering the stormwater gutter system through minute spaces and impacting stormwater ammonia concentration in roof water. In responses to the investigation a number of mitigation measures were put in place, these are outlined below.

1. A second skin roof was overlain on the original roofs on sheds 2 and 3 and the gap between the roofs was sealed to prevent condensate release to the outer roof. The gutter system on the original (inner) roof was rerouted back inside the sheds so that any condensate collected in the

gutters of the original (inner) roof is routed back inside the sheds for recirculation onto the compost. In addition, shed 4 was also sheeted and insulated to prevent further potential ammonia from inside the building entering the guttering vis condensed steam. These works ensured that rainwater falling on the outer roof is not impacted by steam condensate from the facility sheds migrating to the external stormwater gutter system.

2. An air extraction and treatment system for sheds 2 and 3 was installed in 2019 to remove steam and odour from the sheds and transfers them through a dedicated biofilter treatment system. This has significantly reduced the volume of steam (and consequently potential condensate) produced from the sheds.

3. Groundworks were completed in late 2020 to link the surface water drain that previously discharged from the site at SW1 to the site Integrated Constructed Wetland (ICW) to provide further natural treatment of surface waters from the site prior to discharge. The surface water discharge at SW1 was decommissioned and the new surface water discharge point for the site was SW1a located at the southwest corner of the final pond in the ICW.

Historically, surface water from the site was discharged directly from the site via a surface water drainage pipe along the southern boundary that then linked to the surface water drain at the southwest corner of the site. The storm water drainage and abatement system was upgraded in 2021 when all storm water runoff from the facility roofs and clean yard areas were directed to the on-site ICW system. The ICW on the Miltown site comprises of 8 main interlinked vegetated ponds that are used for the treatment of storm water from the site prior to discharge to a surface ditch at the southwest of the site at SW1a, see Figure 7-1.

In August 2021 two (2) surface water samples were collected from the ICW to assess the ammonia concentrations in surface water discharged from the site and to assess the effectiveness of the ICW to reduce ammonia concentrations in surface water. One sample (sample 1) was collected from the ICW discharge at SW1a (i.e., discharge from pond 8) and contained an ammonia concentration of 0.03 mg/l. The second sample (sample 2) was collected from the inlet to pond 6 and contained an ammonia concentration of 0.16 mg/l. The analysis results indicated that the ICW was providing appropriate treatment of the surface water prior to discharge. Monitoring of surface water discharge will continue as part of the site Industrial Emissions Licence compliance requirements. The analysis results for the samples collected from the ICW in August 2021 is included in Attachment G.2. In February 2022 further assessment of the ICW was completed to determine its capacity to effectively treat surface water from the site and ensure that surface water discharged from the site is not negatively impacting on the Moyle River which is the main surface water receptor in the area. The assessment completed on the ICW is discussed in section 7.3.3.1 below.

7.3.3.1 ICW Assessment

In February 2022 the condition and effectiveness of the ICW to treat surface water from the site was completed by VESI Environmental Ltd. The works included assessing the physical condition of the ponds

and the capacity of the ICW to treat stormwater runoff based on surface water ammonia results either the discharge at SW1a or, if there was no discharge, samples from final treatment pond. A copy of the report completed by VESI on the ICW is provided in Attachment G.3.

The results of sampling completed at SW1a in 2021 and four samples from the final treatment pond in February 2022 (due to no discharge at SW1a) to assess the effectiveness of the ICW are outlined in Table 7-4 below.

Table 7-4: Analysis Results for Water Samples from ICW

Year	Sample Location	Parameter	Result (mg/l)
August 2021	SW1a	Suspended Solids	19
		BOD	4
		Ammonia	0.03
February 2022	Pond 8	Ammonia	0.03
		Ammonia	0.15
		Ammonia	0.07
		Ammonia	0.12

The results for discharge at SW1a in 2021 (i.e., 95%ile ammonia concentration of 0.14 mg/l) in samples collected from the final treatment pond in February 2022 indicated that the quality of surface water from the ICW system will not negatively impact surface water quality in the Moyle River catchment area.

The conclusion of the assessment was that the existing ICW has capacity to treat the incoming roof runoff both from the existing and from the proposed development (i.e., Sheds 2B and 3B). The ICW appears to be in good condition but does require some maintenance to be carried out (e.g., strimming vegetation on banks) to ensure function and performance is maintained. The conclusion also indicated that the ICW provides sustainable and effective management of surface waters from the site.

7.3.3.2 Surface Water Sampling Down Gradient of ICW Discharge

The site lies within the catchment of the River Moyle, which is located approximately 1.6 km to the west of the site. The Stillimity Stream, a tributary of the Moyle, is located approximately 1 km southwest of the site and is the closest surface water course to the site discharge point from the ICW on the Miltown Composting site located at the southwest corner of the final treatment pond in the ICW system, see Figure 7-4. Another small stream called Milltown Beg is located approximately 350m northwest of the site boundary but is not hydraulically linked to the Milltown Composting site.

To further assess the surface water quality from the site and assess the potential for it to impact surface water receptors further downstream sampling was completed in February 2022. The sample locations down gradient of the site are outlined in Figure 7-4. The sample analysis results are provided in Table 7-5 and the laboratory report is provided in Attachment G.4.

Figure 7-4: Surface Water Features at Miltown Composting Site

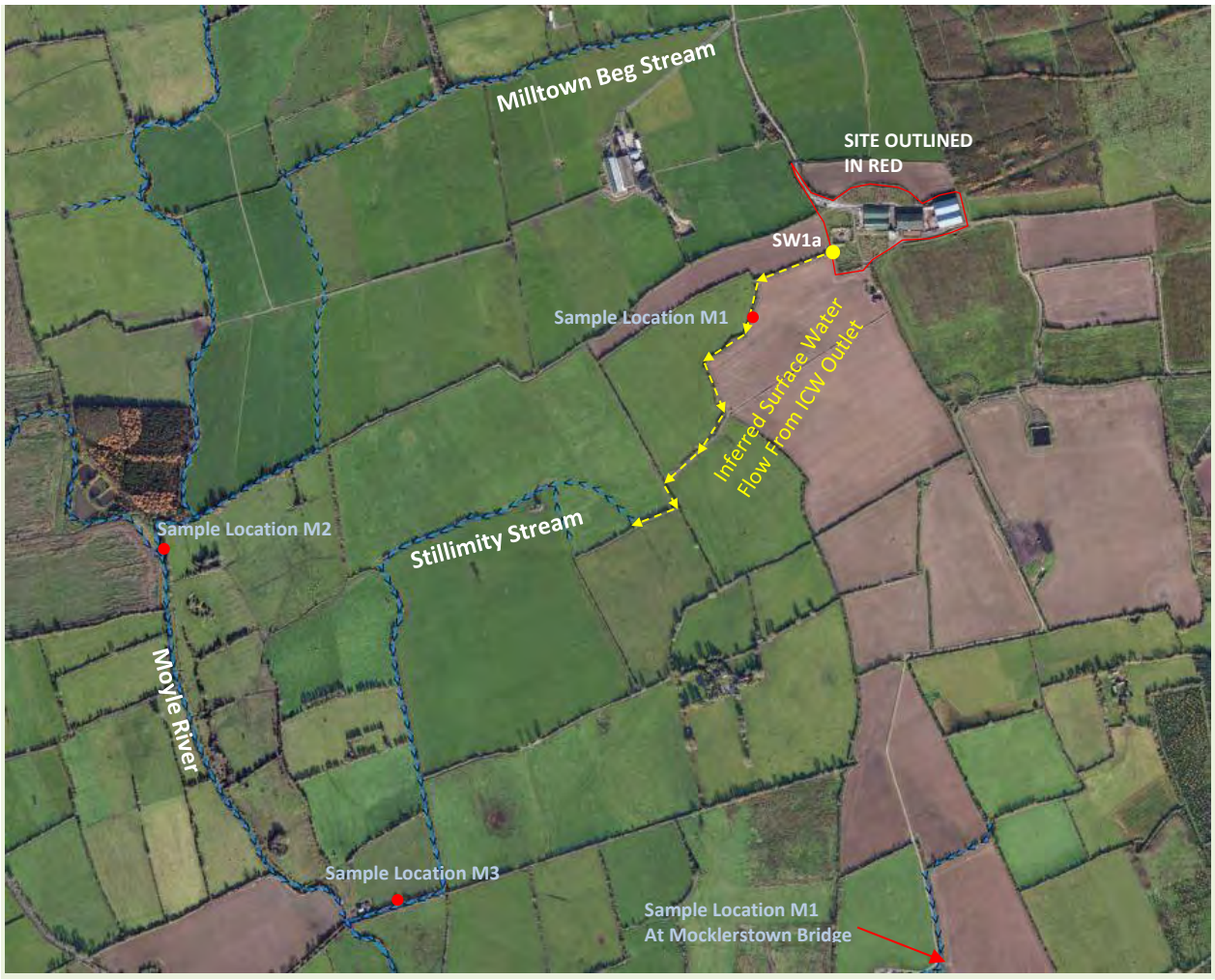


Table 7-5: Surface Water Analysis Results Downgradient from Site

Sample Location	Parameter	Result (mg/l)
M1 – Surface Drainage Ditch Down Gradient from SW1a	COD	23
	BOD	3.0
	pH	7.0
	Ammonia	0.12
M2 – Moyle River Upstream of Site (Castleblake)	COD	9
	BOD	<2
	pH	
	Ammonia	0.16

Sample Location	Parameter	Result (mg/l)
M3 – Stillimity Stream before flowing to Moyle	COD	12
	BOD	2.0
	pH	8.0
	Ammonia	0.13
M4 – Moyle River – Mocklerstown Bridge	COD	9
	BOD	<2
	pH	7.9
	Ammonia	0.19

Surface Drain & Stillimity Stream

Two surface water samples were collected immediately downgradient of the Miltown ICW discharge point SW1a. Sample location M1 was from the surface water drain that receives water from SW1a and M3 was located in Stillimity Stream approximately 100 m upstream of the confluence with the Moyle River. The analysis results indicated that surface water in the drainage ditch and in the Stillimity Stream immediately downgradient from the surface water outlet from the ICW at the Miltown Site (i.e., SW1a) was of good quality. The COD concentrations were less than the Surface Water Guideline limit of 40 mg/l and BOD in surface water prior to flowing to the Moyle River (i.e., M3) was less than the 2009 Surface Water Regulation limit of 2.6 mg/l. Ammonia concentrations were also less than the limit of 0.14 mg/l outlined in the 2009 Surface Water Regulation. The sampling results from the surface drain and Stillimity Stream located downgradient of SW1a indicated that concentrations of parameters that would indicated potential nutrient impacts on the receiving Moyle River were less than the Regulatory Limits and indicated that discharged surface water from the Miltown ICW at SW1a would not have any impact on water quality in the Moyle River.

Moyle River

As part of the surface water sampling programme completed in February 2022 two (2) surface water samples were also collected from the Moyle River. Sample location M2 was at Castleblake and approximately 1km upstream of the confluence of the Moyle River and Stillimity Stream and M4 was located in the Moyle River at Mocklerstown Bridge approximately 2km downstream of the confluence from the Stillimity Stream. The analysis results indicated that the upstream sample contained COD and BOD concentrations less than the Regulatory and Guideline limits but had slightly elevated ammonia concentrations (i.e., 0.16 mg/l) but generally the surface water quality was satisfactory. The surface water sample collected at Mocklerstown bridge and downstream of the site also contained COD and BOD concentrations less than the Regulatory and Guideline limits but had more elevated ammonia concentration than any of the other samples collected (i.e., 0.19 mg/l). The slightly elevated ammonia concentrations found in the Moyle River as part of the sampling programme are thought to be from non-point sources and mainly from agricultural sources and would not be attributable to surface water discharge from the Miltown 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 reception building and Shed 1 is directed to the dedicated leachate recirculation drainage system where it is recovered and reused back in the composting process in Shed 1 and not allowed to migrate from the facility buildings. The storm water from the existing open yard and facility building roofs are, since 2021, directed towards the integrated constructed wetland (ICW) located in the southwest of the site for treatment before discharge from the site.

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 was set to meet good status by 2021 and the River is still listed as Poor Quality (EPA Geoportal, 2021). The Waters Matters Report for the Moyle River is provided in Attachment G.5

7.3.4.1 Moyle River Biological Status

The River Moyle has experienced impacts in recent history which were caused mainly by diffuse agricultural, or point source pollution from wastewater treatment plants, septic tanks and industry. In 2001 a report from the south eastern river basin district indicated that the river Moyle was found to have two locations that were moderately polluted at times and seriously polluted at times. In 2009 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 2008, see Table 7-6.

Table 7-6: River Moyle Biological Quality Ratings 1981-2008

River and Code : MOYLE 16/M/01	Tributary of: 16A02 ANNER OS Catchment No: 182 OS Grid Ref of Confluence: S 248 275 Date(s) Surveyed: 29/7/2008											
Station No.	Location	1981	1983	1986	1988	1992	1994	1996	1999	2002	2005	2008
0025	Tullamain Bridge	-	-	4	3-4	3-4	-	-	-	-	-	-
0050	Br NW of Mocklerstown	3-4	2	2	1	1	1	2-3	2	3	-	3
0100	Moyle Br	2	2	-	1	1	1	-	-	-	-	-
0200	Ballinavoher Br	-	-	-	1	3	-	3	-	3	-	Dry
0250	Albert Br	-	3-4	3-4	2-3	3	-	-	-	-	-	-
0270	Baptistgrange Br	-	-	-	-	-	-	3	3	3	3	-

River and Code : MOYLE 16/M/01	Tributary of: 16A02 ANNER OS Catchment No: 182 OS Grid Ref of Confluence: S 248 275 Date(s) Surveyed: 29/7/2008											
0300	Br W of Annsfort	4-5	4	4	3	3-4	-	-	-	-	-	-
0400	Br u/s Anner R confl	4-5	4	4	3-4	3-4	-	3-4	3	3-4	3	3

Source: Interim Report on the Biological Survey of River Quality, Results of the 2008 Investigations, EPA 2009.

Three further reports were published on river quality in South Tipperary from 2011 – 2013. Monitoring was completed at two (2) locations (i.e., Mocklerstown Bridge and the bridge upstream of the Moyle and Anner River confluence. Each report stated that the River Moyle had been historically impacted by an industrial source but was improving, a copy of the 2013 report is provided in Attachment G.6.

The reports found that

- In 2011 it was found that four monitoring locations were moderately polluted at times. There were indications of eutrophication at the Moyle and 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. There had been no significant change since 2012.

A review of the EPA geoportal website (EPA, 2021) indicated that the most recent Q-Value assessment of the Moyle River (2017) at the bridge northwest of Mocklerstown, which is the only Q-Value assessment location in the area was Q3 (Poor Status), see Attachment G.7.

7.3.4.2 Moyle River Chemical Status

In addition to the Q-Value assessment data, a rereview was also completed of the available surface water chemistry data available for the Moyle River on publicly accessible databases (i.e., EPA Geoportal). Analysis results for two sample locations (i.e., Moyle Bridge and Ballinahover Bridge) were available for review. Because the main contaminant of concern in surface water from the composting activity was considered to be ammonia this was the parameter that was assessed from the available data. The mean ammonia concentration at both locations was calculated for samples collected between 2017 and 2022 and are outlined in Table 7.7.

Table 7-7: Mean Ammonia Concentrations at Moyle Bridge & Ballinahover Bridge

Year	Mean Ammonia Concentration at Moyle Bridge (mg/l)		Mean Ammonia Concentration at Ballinahover Bridge (mg/l)	
	Mean (mg/l)	95%ile Concentration	Mean (mg/l)	95%ile Concentration
2017	0.050	0.0848	0.029	0.0515
2018	0.089	0.119	0.051	0.069
2019	0.106	0.230	0.082	0.175
2020	0.203	0.502	0.188	0.324
2021	0.171	0.292	0.073	0.131
2022	0.023	0.023	0.089	0.089

Based on the criteria included in European Communities Environmental Objectives (Surface waters) Regulations 2009 for a water to achieve Good Status for ammonia it must have a 95%ile concentration of 0.14 mg/l. The results from the EPA Geoportal indicated the following:

- Three (3) of the six 95%ile ammonia concentrations at Moyle Bridge (including the most recent result for 2022) were less than the Good Status concentration of 0.14 mg/l.
- Three (3) of the six 95%ile ammonia concentrations Ballinahover Bridge (including the most recent result for 2022) were less than the Good Status concentration of 0.14 mg/l.

Although the baseline monitoring data reviewed indicated some ammonia concentrations in the Moyle that were greater than the Good Status criteria the results from the discharge from the Mitown ICW system would indicate that any stormwater that makes its way to the Moyle River will not have a negative ammonia impact on the water quality of the river.

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.

There are no proposed Special Areas of Conservation (pSAC), Special Protection Areas (SPAs) or Natural Heritage area (NHA) within the study area boundary. The closest SAC to the Milltown facility site 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, see Table 7-8.

Table 7-8 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

7.4 Potential Impacts of the Proposed Development

The potential impacts of the construction and operational phases of the proposed development in terms of stormwater and surface water are outlined below.

7.4.1.1 Increased Run-off and Sediment Loading

Surface water run-off from site preparation, levelling, and limited excavations during the construction phase for the maturation sheds 2B and 3B may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silt water can arise from excavations, exposed ground, stockpiles, and access roads.

During the construction phase there is potential for an increase in run-off due to the construction of impermeable surfaces (i.e., shed roofs). This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off from the proposed maturation shed structures. The potential impact of this is a possible increase in surface water run-off and potential sediment loading which could potentially impact local drainage.

There is a possible direct pathway from the limited excavations works area to the on-site surface water drainage system which would be directed to the ICW system on site. Mitigation measures highlighted in section 7.5 will be employed to remove the risk to siltation of the ICW system and potential impacts on surface water drainage ditches and potentially to the Stillimity Stream and the Moyle River further to the southwest.

7.4.1.2 Uncontrolled Discharges, Fuel and Other Accidental Spills

During the construction phase, there is a risk of accidental pollution incidences from the following:

- Spillage or leakage of fuels (and oils) stored on site.
- Spillage or leakage of fuels (and oils) from construction machinery or site vehicles.
- Spillage of oil or fuel from refuelling machinery on site.
- The use of concrete and cement.

Machinery activities on site during the construction phase will be limited but could potentially result in contamination of surface water runoff. Potential impacts could arise from accidental spillage of fuels, oils, paints etc. which could impact surface water if allowed to runoff into surface water systems and/or receiving watercourses.

Concreting operations carried out near surface water drainage points during construction activities have the potential to lead to discharges to a watercourse. Concrete (specifically, the cement component) is highly alkaline and any spillage to a local watercourse would be detrimental to water quality and local fauna and flora.

The implementation of the mitigation measures detailed in Section 7.5 will ensure that any impacts related to construction works will be mitigated.

The increase of throughput from 160 tonnes per day to 240 tonnes per day will have a negligible impact on surface waters if the mitigation measures at the facility are employed along with continuing environmental monitoring of surface waters.

7.4.2.1 Surface Water

Current rainwater runoff from the impermeable areas of the site (i.e., shed roofs and yard areas not directly associated with the compost area are directed to the existing ICW system where it is treated and polished before discharge from site. Any water runoff produced inside the existing composting buildings and at the turntable area at the entrance to the reception building are contained within the facility buildings and/or directed to the internal leachate re-circulation system where the leachate is collected from within the sheds and reused in the compost process in shed 1.

The new proposed maturation sheds 2B and 3B will also have the roof water directed to the ICW for treatment and polishing before discharge from the site. The conclusions of the ICW assessment completed by VESI, see Attachment G.3, states that the ICW has the capacity to receive and appropriately treat stormwater inputs from both the existing and proposed maturation sheds. The forced air system proposed for the maturation sheds 2B and 3B would result in the majority of moisture within the material being consumed during the maturation process and very little runoff being produced. The internal floor will be an impermeable concrete construction and any minor runoff from process bays will be directed to drains along the shed floor that will collect any small volumes of leachate and direct it to a dedicated concrete containment sump in the southern area of shed 2B, see Drawing P3-A. Collected leachate in the sump can be collected by suction tanker and transferred internally to the leachate re-circulation system in the reception shed where it can be reused back on the process bays in shed 1. The control measures in the existing composting facility and the design of the new maturation sheds will ensure that there is no leachate migration to surface water.

7.4.2.2 Uncontrolled Discharges, Fuel and Other Accidental Spills

There is a potential for leaks and spillages of the fuel and oil during storage and transport. In addition to this there is a potential for localised leaks and spillages from vehicles along access roads and in parking areas. Any accidental emissions of oil, petrol or diesel could cause contamination if the emissions enter the water environment unmitigated.

There is no direct pathway to surface water from this site, however mitigation measures mentioned above and below in section 7.5 will avoid potential impact on offsite and onsite surface water receptors.

7.5 Remedial & 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 construction works and increased throughput operation of the proposed development

does not result in a negative impact on the hydrological environment surrounding the Miltown facility. The mitigation measures are described below.

7.5.1.1 Surface Water Run-off

It is not anticipated that there will be large stockpiles of fill soil or large areas of exposed fill soil from construction works that would result in run-off water containing silt. Surface water runoff in the area of the proposed construction works is directed towards the first pond of the ICW and as a control measure the input to Pond 1 will be visually monitored to ensure that the pond is not silting up. If required, silt settlement traps and or silt fences consisting of straw bales could be installed to mitigated silt migration from the construction area.

A buffer distance with no storage of soils will be maintained along field ditches and close to the ICW. Due to the site location there will be no storage of soils near streams and this would negate any requirement to comply with fisheries guidelines "*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*" (IFI, 2016).

Any temporary storage of excavated fill soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the storm water drainage. Movement of material will be minimised to reduce the degradation of the fill soil structure in the area of the construction works and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Any fill soil from excavation works at the old agricultural sheds footprints will be stored away from existing drainage features to remove any potential impact, and silt fencing will be used around soil storage areas, if required. Any removed fill soil will be reused on site for landscaping.

Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water features will be maintained.

7.5.1.2 Fuel and Chemical Handling

The following mitigation measures will be taken at the construction stage in order to prevent any spillages of fuels and prevent any resulting impacts to surface water systems;

- Designation of a bunded refuelling areas on the site;
- Provision of a spill kit at the construction area;
- All machines will be refuelled in a hardstanding surface area connected to the on-site oil/water separator.
- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded areas;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;

- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they should be done so secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.

All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility offsite only.

- As part of the existing development, a Containment Tank (47.54 m^3) was installed as part of the leachate recirculation system at the southwest corner of Shed 1. This tank is used for the storage and recirculation of potentially contaminated surface water runoff from the ramped intake area and the reception building floor to ensure that any surface water runoff is directed in a controlled manner to the on-site contaminated water/leachate recirculation system. The impacted water is used as part of the composting process (dampening the pre-composting bays in Shed 1).
- As part of the leachate/impacted surface water collection system, collected water is 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 is 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.
- The provision of an impermeable surface for the existing turn table area for vehicles delivering organic material to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which is directed to the dedicated contaminant/recirculation system.
- To manage any possible spillage risk on the turntable area Miltown have updated their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure. These SOPs 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 Industrial Emissions License conditions.
- A 0.7m high kerb exists around the base of the compost 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 compost 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.

- All non-impacted surface water at the existing compost facility is diverted to the oil/water interceptor and released from there to the surface water drain and to the Integrated Constructed Wetlands (ICW) located in the southwest corner of the site. The ICW ponds provide biological treatment of stormwater prior to discharge from the site.
- The existing ICW has the capacity to receive storm water from the roofs of the proposed maturation sheds (i.e., 2B and 3B) for treatment prior to discharge.
- The provision of an impermeable surface for the maturation sheds 2B and 3B floor and ramped or sloped access door for vehicles collecting matured organic material for transfer off site. This will provide appropriate management of potentially contaminated surface water runoff from this area, which will be held inside the buildings and, if required, will be collected and added to the dedicated contaminant/recirculation system in the adjacent reception shed.
- The exit door for the proposed maturation sheds 2B and 3B will be ramped or sloped back towards the shed interior. This will ensure that there can be no migration of floor liquid from the building to the exterior yard.
- All surface water from the concrete surfaces at the entrance, and other external areas around the new proposed maturation sheds (i.e., 2B and 3B) will be directed to a dedicated full retention oil water separator prior to discharge to the ICW system as outlined in the drawing P-2A included in Attachment C.3.

7.6 Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments are discussed below.

Impacts to water during proposed construction at the maturation sheds 2B and 3B are associated with spillage and leakage of oils and fuels and potential silt deposition in watercourses due to disturbance of land. With standard mitigation in place (as outlined above) to manage run-off using stockpiling of soil away from open water, and management of accidental discharges, there is a low potential for construction at the proposed development to impact on receiving waters. The proposed development has incorporated suitable containment measures for proposed oil storage, incorporated interceptors in areas of potential accidental spills/leaks and provided sufficient attenuation to manage run-off rates. It does not appear that construction of the proposed development will proceed in tandem with other significant developments in the immediate area, a cumulative impact is unlikely. Regardless, all other developments will be required, during construction, to protect water quality in compliance with legislative standards for receiving water quality.

The proposed increased throughput of organic material would be completed largely in the existing compost facility sheds and the existing surface water controls will continue to be in place for the

Composting facility. The use of maturation sheds 2B and 3B to provide increased maturation capacity following the composting process would not be considered to pose any impact to surface water receptors if all mitigation measures are implemented. Storm water from the proposed shed roof will be directed to the ICW for polishing before discharge from the site and surface water related to the new sheds will be directed to a dedicated oil/water separator prior to discharge to the ICW system. The discharge from the ICW is also a considerable distance from the nearest surface water receptor (i.e., lack of hydraulic connectivity) and as such the cumulative impact of the proposed development is considered to be of ***low*** significance with a ***neutral*** impact on water.

7.7 Residual Impacts

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

The assessment completed at the ICW system and the analysis results for discharged surface water from the site in February 2022 indicate that the surface water treatment measures in place are affective and that storm water discharged from the site is not impacting on the Moyle River and has an ammonia concentration that would be Good Status. The ICW assessment also concluded that the ICW has the capacity to receive and treat the additional stormwater from the proposed development which would ensure that future surface water discharges from the proposed development would also meet regulatory limits.

With the design and mitigation measures in place, the proposed development will not have a long-term impact on the water or hydrological environment (in terms of level, flow and quality). Accordingly, the residual impact is considered to be ***low*** and ***neutral.***

8.0 SOILS, GEOLOGY & HYDROGEOLOGY

8.1 Introduction

This chapter describes the existing soils, geology and hydrogeology in the vicinity of Milltown Composting and the impacts resulting from composting activities on site. The subsoil at the site comprises 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. There are three on-site groundwater monitoring 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 current composting activities. GW-3 is 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 3201-01 (Attachment B.5). The groundwater gradient is inferred to flow in a southwest direction towards the River Moyle.

8.2 Methodology

The assessment follows the Procedures set out in the Institute of Geologists of Ireland (IGI) *Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements* (2013) and other relevant guidelines to assess and evaluates land, soils, geology and hydrogeology within the context of the proposed development. This assessment includes a review of the existing environment, the potential impacts of the proposed development, mitigation measures, and the potential impacts.

In the EIA assessment, consideration is given to both the importance of an attribute and the magnitude of the potential environmental impacts of the proposed activities on that attribute.
The Assessment has been carried out generally in accordance with the following guidelines:

- Environment Protection Agency, Guidelines on the Information to be Contained in Environmental Impact Assessment Reports Draft (2017)
- European Union, Guidance on the preparation of the Environmental Impact Assessment Reports (2017), and
- Institute of Geologists of Ireland (IGI) Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements (2013).

Desk-based geological information on the underlying geology of the site was obtained through accessing national databases and site archives. The collection of baseline regional data was undertaken by reviewing the following;

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping;
- Teagasc soil and subsoil database;

- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – Geportal website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register.

8.3 Receiving Environment

The site is located in the townland of Miltownmore, approximately 5 km to the southwest of Fethard and 10.5 km to the southeast of Cashel. The site is accessed by a local access road off the Rosegreen to Fethard L1409. The site is approximately 3.94 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 main composting building, two maturation sheds, a covered reception area and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, two biofilters and the footprint of former cattle sheds. The area surrounding the site is undeveloped and used for animal grazing. A series of integrated constructed wetlands exist to the southwest of the main composting buildings. These receive storm water from the site external to the process (e.g., roof water) and biologically treats the water before discharge from the site at the southwest corner of the site to a surface drainage ditch at SW1a.

The surrounding land is agricultural in nature and a review of the Ordnance Survey Ireland (OSI) online historical mapping indicated that the site has been historically used for agricultural activity. As part of the proposed development there is a requirement for the construction of maturation sheds 2B and 3B on the footprint of former agricultural sheds located immediately west of the existing composting facility. The proposed construction works would require limited excavation of the fill soil material that exists beneath the concrete pads that marked the old agricultural sheds area. The soil immediately beneath the old sheds is not considered to be native soil and is made ground, see plates 8-1 and 8-2. The area appears to have been previously raised by pushing subsoil in to allow for the construction of the old agricultural sheds.

Plate 8-1: Soils Beneath the Old Shed to North

Plate 8-2: Soil Profile beneath Old Shed to North

The side area of the old sheds is exposed and the profile of the soils beneath the area of the old agricultural buildings could be assessed without the requirement to dig beneath the material for assessment. The soil profile beneath the old agricultural shed to the north mainly consist of Soil Fill consisting of clayey subsoil, medium plasticity and some fine to coarse angular shale rock. The depth of the soil profile beneath the old shed structure is approximately 1.8m. There are some sections of the old sheds where underfloor slurry tanks were previously located (see Plate 8-1). A soil log outlining the soil profile at the assessment area is provided in Attachment H.8.

The soils beneath the area of the old agricultural shed that was to the south is illustrated in Plate 8-3.

Plate 8-3: Soils Beneath Old Shed to South

The soils beneath the old agricultural shed to the south also mainly consist of Soil Fill containing clayey subsoil, medium plasticity and some fine to coarse angular shale rock but with some concrete mixed in. The depth of the soil profile beneath the old agricultural shed area to the south is similar to that beneath the old shed to the north and is approximately 1.8m.

The old agricultural sheds contained four (4) underfloor concrete slurry storage tanks (see Section Drawing in Drawing P3-A provided in Attachment C.2) and it is proposed that any excavation related to footings for the new sheds would not extend beneath the elevation of the old tank bases. The section also shows the proposed depth of footings in relation to original ground level. This would reduce any potential impact on underlying native soils or geology and also protect any potential archaeological features that may exist in native soils beneath the fill material that underlies the old agricultural sheds. Any excavation of soils for the concrete apron area to the west of the proposed sheds may require to be overseen by a licensed archaeologist to ensure any potential archaeological features that may exist are recorded and preserved, as outlined in Section 13.5.

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.

The GSI (2021) on-line mapping was reviewed to identify sites of geological heritage for the site and surrounding area. There are no recorded sites within the boundary of the Miltown Composting site, or sites which could be considered suitable for protection in the immediate area around the site.

The Geological Survey of Ireland (GSI) Bedrock Map for Miltownmore indicates that the underlying bedrock is comprised of a Namurian Shales formation, see Attachment H.1.

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.
A search of the Geological Survey of Ireland (GSI) online database indicated that there were no karst features identified on the Miltown site, see Attachment H.2.

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.3). The parent materials are shale and sandstone till which derive chiefly from Naumarian rocks.
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 Poor Aquifer' which is generally unproductive except for local zones. Approximately 1 km further to the south, west and north the aquifer changes to a Regionally Important Aquifer in productive fissured bedrock. The underlying ground conditions are described by the GSI as till overlain by poorly drained (gley) soils where the groundwater vulnerability is classified as extreme.

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 H.4.

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. According to the GSI, the groundwater

vulnerability beneath the site is classified as extreme and the GSI area mapping also identifies some areas where there may be potential bedrock outcroppings to the southwest, west and northwest of the site buildings. Although these potential outcroppings were identified on the GSI mapping there were none visible during site walkover completed on August 6th, 2021. The Groundwater vulnerability map can be seen in Attachment H.5.

Groundwater is considered a receptor when it is being used or can be used for either public or private water supply and where it may potentially be having an impact, through hydraulic connectivity, on surface water receptors in the area. This assessment is divided into two groups: existing and potential abstractions and potential impacts on surface water receptors in the area (i.e., River Moyle).

8.3.8.1 Groundwater Drinking Water Resource

There is no municipal mains water supply in the Miltownmore area and the Composting facility and private residences in the area obtain potable water from individual groundwater 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).

A search was also completed on the Geological Survey of Ireland (GSI) public Spatial Resources Database and eight (8) domestic wells were identified within a 2.5km radius of the Miltown Composting Facility site. The wells identified are listed in Table 8-1.

Table 8-1: Groundwater Wells on GSI Spatial Resources System within 2.5km of Miltown Composting

GSI Ref.	Townland	Well Type	Depth to Rock	Well Yield

2013SEW001	Colman – SE of Site	Domestic - BH	15m	Moderate
2013SEW024	Colman – SE of Site	Domestic - BH	No Depth Recorded	Poor
2013SEW002	Barretstown – NE of Site	Domestic - BH	18m	Moderate
2013SEW003	Barretstown – NE of Site	Domestic - BH	4m	Moderate
2013SEW006	Barretstown – NE of Site	Domestic - BH	2.5m	Moderate
2013SEW010	Tullamaine – N of Site	Domestic - Spring	No Depth Recorded	Good
2013SEW011	Fethard – N of Site	Domestic - BH	No Depth Recorded	Good
2013SEW012	Fethard – N of Site	Domestic - BH	4.9m	Good

To assess if there is any potential for impact on domestic borehole wells in the area the groundwater Risk and ground waterbody WFD status was reviewed on the GSI online Groundwater Spatial Resource. The review indicated that the Groundwater Region reference at Miltownmore is IE_SE_G_040 and that the Groundwater Risk for IE_SE_G_040 is "Under Review". Ground Waterbody WFD Status 2013-2018 for IE_SE_G_040 is "Good", which would indicate that the groundwater is considered to be of good quality and not a significant source of impact to domestic users in the area. The map showing the WFD Groundwater Status is provided in Attachment H.6.

8.3.8.2 Groundwater and Surface Water Quality

A search of the GSI Database found no traced underground connections but due to the shallow nature of bedrock in the area and the inferred groundwater flow to the west and southwest towards the Moyle River it is expected that there is some potential for hydraulic connectivity between groundwater and surface water features in the area.

A review of the GSI online Groundwater Spatial Resource found that the effective annual rainfall for the area is approximately 536.9 mm. The underlying ground conditions are described as till overlain by poorly drained (gley) soils and estimates the aquifer recharge to be 100mm/year.

To assess if there is any potential for impact on surface water receptors (i.e., Moyle River) from connectivity with the local aquifer a review of the groundwater Risk and ground waterbody WFD status was reviewed on the GSI online Groundwater Spatial Resource. The review indicated that the Groundwater Region reference at Miltownmore is IE_SE_G_040 and that the Groundwater Risk for IE_SE_G_040 is "Under Review". Ground Waterbody WFD Status 2013-2018 for IE_SE_G_040 is "Good", which would indicate that any groundwater entering local surface water receptors (e.g., Moyle River) is considered to be of good quality and would not be considered a significant source of impact to surface water receptors in the area. The map showing the WFD Groundwater Status is provided in Attachment H.6.

Groundwater monitoring was also completed at the Miltown Composting site to assess groundwater quality and if there was potential for impacts on groundwater from the site activities. The results of the site groundwater monitoring are outlined in section 8.3.9.
Groundwater is sampled on an annual basis at three monitoring wells located on the Miltown Composting site. Monitoring well GW3 is located upgradient of the composting buildings, GW2 is located cross

gradient and downgradient of facility buildings and well GW1 is located downgradient of the facility buildings. To assess the current groundwater quality at the Miltown Site the results for groundwater samples collected since the Site Industrial Emissions Licence was Reviewed in 2019. It was considered that assessing the analyses between 2019 to 2021 would provide a clear indication of existing groundwater quality at the site. The locations of GW1, GW2 and GW3 are outlined in Drawing 3201-01 and in Attachment B.5. As part of the licence compliance the parameters analysed in each monitoring well are:

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

The results of the groundwater monitoring programme for the facility for the past three years are outlined in Tables 8-1 through Table 8-8. In addition to the groundwater sampling completed as part of the site Industrial Emissions licence compliance monitoring. Analysis results from when the site received its latest licence in 2019 up to 2021 / 2022 are provided in Tables 8-1 to 8-6 and the laboratory analysis reports for the sampling events are provided in Attachment H.7:

8.3.9.1 Regulatory Framework

The regulatory standards used to assess groundwater water quality reflect relevant standards that are in place in Ireland and the European Union (EU) and are contained in the following Regulations:

- European Communities Environmental Objectives (Groundwater) (Amendment) Regulations, 2016 – S.I. No. 366 of 2016
- European Union (Drinking Water) Regulations 2014 – S.I No. 122 of 2014

Where regulatory standards did not exist for a particular chemical parameter the analysis results were compared to EPA guidelines to assess the sample quality. The guidelines used for comparison when regulatory standards could not be applied included:

- Towards Setting Guideline Values for the Protection of Groundwater in Ireland - Interim Report, Environmental Protection Agency, 2003.

8.3.9.2 Groundwater Sampling Results

As outlined above, groundwater sampling results for the period from the Licence review in 2019 up to the most recent sampling event have been tabulated and compared to relevant regulatory standards in Tables 8-1 to 8-4.

Nitrate

Table 8-1 Nitrate Concentrations in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	DW Limit (mg/l)**
Nitrate	2019	2.2	0.79	7.2	50
	2020	1.6	0.094	4.5	50
	2021	2.9	<1	8.8	50

****- Limit set in** S.I No. 122 of 2014

The nitrate concentrations in all samples collected between 2019 and 2021 were less than the drinking water quality limits. The results indicate no nitrate impact on groundwater quality at the Miltown site.

pH

Table 8-2 pH Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1	GW2	GW3	GW Limit (µS/cm)*	Drinking Water Limit (µS/cm)**
pH	2019	6.9	6.5	6.5	**≥6.5 - ≤9.5**	**≥6.5 - ≤9.5**
	2020	6.6	6.5	6.5	**≥6.5 - ≤9.5**	**≥6.5 - ≤9.5**
	2021	6.5	6.5	6.5	**≥6.5 - ≤9.5**	**≥6.5 - ≤9.5**

*- Limit set in S.I No. 366 of 2016
**- Limit set in S.I No. 122 of 2014

The pH of all samples collected between 2019 and 2021 were within the range for groundwater protection and drinking water quality.

Electrical Conductivity

Table 8-3 Conductivity Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (µS/cm)	GW2 (µS/cm)	GW3 (µS/cm)	GW Limit (µS/cm)*	Drinking Water Limit (µS/cm)**
Conductivity	2019	562	854	331	**1,875**	**2,500**
	2020	544	828	261	**1,875**	**2,500**
	2021	663	906	331	**1,875**	**2,500**

*- Limit set in S.I No. 366 of 2016
**- Limit set in S.I No. 122 of 2014

The conductivity readings in all samples collected between 2019 and 2021 were less than the Regulatory Limits for groundwater protection and drinking water quality.

Ammonia

Table 8-4 Ammonia Results in Monitoring Wells GW1, GW2 and GW3

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	GW Regs ELV (mg/l)*	Drinking Water Limit (mg/l)**
Ammonia	2019	0.269	0.14	0.06	**0.175**	**0.3**
	2020	0.113	0.121	0.01	**0.175**	**0.3**
	2021	0.058	0.17	<0.05	**0.175**	**0.3**
	January 21, 2022	0.14	0.14	<0.02	**0.175**	**0.3**
	January 28, 2022	0.10	0.06	<0.02	**0.175**	**0.3**
	February 04, 2022	0.07	0.08	<0.02	**0.175**	**0.3**
	February 11, 2022	0.13	0.05	<0.02	**0.175**	**0.3**

*- Limit set in S.I No. 366 of 2016
**- Limit set in S.I No. 122 of 2014

Historically there were some instances of elevated ammonia found in groundwater samples collected on site. The elevated ammonia concentrations may have been due to runoff from the exposed reception yard area that historically existed at the Miltown site. Because the yard area was uncovered there was some potential for runoff to ground surface and potential for ammonia impacts. However, in August 2015 planning permission was granted (Ref. 14600521) to construct a covered structure over the reception yard to mitigate against runoff from the facility and potential impacts on soils and groundwater. The shed, and the leachate recirculation system was constructed in 2016/2017 to provide mitigation against potential impacts to soil and groundwater from potential migration of leachate from the reception area.

The analysis results for ammonia in the three on-site wells since the site Licence Review in 2019 show that the mitigation measure put in place is effective as no sample result since 2019 has exceeded the drinking water limit for ammonia.

Additional groundwater sampling for ammonia concentrations in all three wells was also completed in January and February 2022 to assess the concentration of that parameter in groundwater at the site. The samples were analysed for ammonia because it was considered a potential contaminant of concern related to the composting of organic material. The results for ammonia sampling outlined in Table 8-4 show that all samples analysed from the wells between 2020 and 2022 contained ammonia concentrations less than the groundwater protection and drinking water limits.

Chloride

Table 8-5 Chloride Monitoring Results

Parameter	Year	GW1 (mg/l)	GW2 (mg/l)	GW3 (mg/l)	GW Regs ELV (mg/l)*	Drinking Water Limit (mg/l)**
Chloride	2019	52	120	35	**187.5**	**250**
	2020	65	130	36	**187.5**	**250**
	2021	75	115.6	44.02	**187.5**	**250**

*- Limit set in S.I No. 366 of 2016
**- Limit set in S.I No. 122 of 2014

The chloride concentration in all groundwater samples analysed on site since the site Licence Review in 2019 were less than the Groundwater protection limit of 187.5 mg/l and less than the Drinking Water limit of 250 mg/l.

BTEX

Table 8-6 BTEX Monitoring Results for Groundwater 2019 - 2021

Parameter	GW1			GW2			GW3			GW Regs ELV (µg /l)*	Drinking Water Limit (µg/l)**
	2019	**2020**	**2021**	**2019**	**2020**	**2021**	**2019**	**2020**	**2021**		
Benzene	<0.1	<0.1	<1	<0.1	<0.1	<1	<0.1	<0.1	<1	**0.75**	**1**
Toluene	<0.5	<0.5	<1	<0.5	<0.5	<1	<0.5	<0.5	<1	**525**	**N/A**
Ethyl Benzene	<0.5	<0.5	<1	<0.5	<0.5	<1	<0.5	<0.5	<1	**N/A**	**N/A**

Xylene	<0.1	<0.1	<1	<0.1	<0.1	<1	<0.1	<0.1	<1	**N/A**	**N/A**

*- Limit set in S.I No. 366 of 2016
**- Limit set in S.I No. 122 of 2014

The VOC concentrations in all groundwater samples analysed on site between 2019 and 2021 (i.e., since the site Licence Review in 2019) were less than the laboratory detection limit and less than the applicable Groundwater Protection and Drinking Water limits.

8.3.9.3 Groundwater Sampling Conclusions

The groundwater analysis results from 2019 to 2021 the groundwater quality at the Miltown Composting site is considered to be satisfactory and in compliance with applicable groundwater and drinking water regulatory limits. There is no evidence of impacts on water quality from the existing composting facility and the quality of the groundwater would indicate that all mitigation measures implemented in the past 4 to 5 years at the site (e.g., covering the reception area and constructing a leachate recirculation system) have been effective and continue to protect soil and groundwater quality. The results also indicated that the existing composting facility is not having an impact on potential groundwater receptors (i.e., domestic wells and Moyle River).

8.4 Potential Impacts of the Proposed Development

The proposed development is to increase the throughput of material at the composting facility from 160 tonnes per day to 240 tonnes per day (not exceeding 75,000 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 then Miltown will apply to the Environmental Protection Agency for an Industrial Emissions Licence to regulate the facility. The potential impacts on soils, geology and hydrogeology identified for the proposed development during construction and operational phases are outlined below.

The potential for impact on land, soils and groundwater during construction of maturation sheds 2B and 3B primarily arises from accidental leaks and spills to ground, dewatering, or from the movement of fill material beneath the existing sheds footprint where the reconstruction works will take place.

The proposed development does not require dewatering and with standard mitigation in place (as outlined in Section 8.5) for management of accidental discharges and soil movement, the effect due to construction in this area is considered to be a ***neutral*** on quality and an ***imperceptible*** significance.

There will be no anticipated increased water usage and so no increased groundwater abstraction from the aquifer for the operation of the proposed development with increased throughput. The composting process does not typically require water addition and the maturation process does not include for any water to be added to the material and so would not result in any additional water requirements. The construction of the proposed maturation sheds 2B and 3B will not have a local impact on recharge patterns because the new shed will be replacing two old agricultural sheds that occupied that area. Based on the overall size of the underlying aquifer and measures to protect soil and water quality there will be no overall change on the groundwater body status.

8.4.2.1 Leachate Production & Management

Due to the significant consumption of moisture during the composting process (i.e., the moisture content in pre-processed material could be between 55% to 65% and in post composted material could be as low as 35%-45%. This would result in material being matured having a significantly lower moisture content and this would reduce even further during the maturation process where the forced air system and residual microbial action in static piles would further reduce the moisture content by a further 10% to 15%. Between the intake and output of the composted material there would be expected to be a moisture loss of approximately 30%. Therefore, it is not expected that a significant volume of waste liquid leachate will be produced within sheds 2B and 3B and no more than $5m^3$ per annum is expected to be collected in the floor drains and leachate sumps.

The controls within the proposed sheds are for the containment of any leachate from the maturing material which would be minimal due to the moisture consumption that takes place from the composting process. Composted material leaving the site have AT4 analysis completed to assess microbial activity and as part of the analysis dry matter analysis is also completed. On average the approximate dry matter content of composted mater is 90%.

The Miltown Composting site has been operational for 20 years and in that time there has not been any occasion when excess contaminated water has been produced that could not be accommodated in the leachate collection and recirculation system. Leachate is recirculated back into the composting bays to ensure that the moisture lost in the initial stages of the composting process is replaced to ensure that microbial activity is maintained.

Runoff from the organic material within the existing compost facility and the proposed maturation sheds 2B and 3B could have potential impacts to soils and groundwater if it is allowed to migrate from the compost facility buildings. The control of runoff within the existing compost buildings is already in place and the proposed maturation maturation sheds 2B and 3B would have similar controls in place to ensure that there is no migration from the building to the surrounding soils and groundwater.

Any internal contaminated water from the maturing material will be directed to the floor drains located along the front and back of the maturation bays, see Floor Plan Drawing P3-A in Attachment 3 of this Addendum Document. The floor drains are connected to shallow leachate collection tanks in the corners of the buildings as outlined in floor plan drawing. These leachate collection tanks will be emptied using the on-site tanker and the contents transferred to the leachate recirculation system in the reception shed. The tanker can park at the compost intake area on the eastern side of the proposed maturation shed (i.e., at wall between maturation sheds and reception shed) and the outlet pipe can be directed to the leachate recirculation pipework in the reception shed. This way the tanker will not have to leave the maturation shed in order to transfer the leachate to the recirculation system.

Given the poor aquifer and extreme vulnerability category for groundwater the main risk to groundwater quality would be an increase in ammonia concentrations. The continued implementation of mitigation

measures and management systems at the facility under the site licence conditions will ensure that there are increased controls in place to minimise impacts on groundwater quality from onsite activities.

It is not anticipated that any impacts will arise following the implementation of the mitigation measures discussed in Section 8.5. As such the impact is considered to have a ***long term***, ***imperceptible*** and ***neutral.***

8.5 Remedial & Mitigation Measures

The site currently has the concrete footprint of two old agricultural sheds located to the west of the existing compost facility reception shed. The proposed development will include the construction of maturation sheds 2B and 3B to cover the area currently covered by the old shed footprints and to extend further to the west. The sheds would be for the maturation of organic material that has completed the composting process in Shed 1 of the existing compost facility. The proposal is to construct concrete walls surrounding the new building outline to a height of approximately 5 metres and to construct the remainder of the building in materials similar to those used for the other sheds on the site (i.e., metal cladded walls and roof). The contamination of soils, groundwater and soils will be negligible due to the proposed mitigation measures for the construction phase of the proposed development outlined below.

8.5.1.1 Construction Environment Management Plan

In advance of work starting on construction of the maturation sheds 2B and 3B the works contractor would complete a Construction Methodology document taking into account their approach and any additional requirements of the Planning Regulator.

This is an active document which is continuously updated to manage risk during the construction programme. This CEMP should cover potentially polluting activities to ensure effective soil and water management during construction and include an emergency response procedure.

8.5.1.2 Soil Excavation, Removal and Infill

Some limited excavation of the fill material beneath the existing old agricultural sheds footprint to accommodate the construction of the proposed maturation sheds 2B and 3B will be required. Contractors should prepare and adhere to a method statement indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

As part of the method statement the contractor must include for assessing when excavation of fill material has been reached and natural ground has been encountered. There should be no excavation into natural soils as part of the construction works.

Any excavated fill material produced during construction will be stored and reused on site. Soil stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil excavation and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction.

Dust suppression measures (e.g., damping down during dry periods), road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads. These are all measures that are already in place on the composting site and will be included as part of any construction works also.

8.5.1.3 Fuel and Chemical Handling

The following mitigation measures will be taken at the construction stage in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts:

- Designation of a bunded refuelling area on the site if refuelling cannot be undertaken off site;
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsers are used the following measures will be taken:
  - Any fuel pipe, tap or valve will be fitted with a lock and will be secured when not in use;
  - All bowsers to carry a spill kit
  - Operatives must have spill response training; and
  - Drip trays used on any required mobile fuel units.

In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they will be secured and on spill pallets; and
- Drums must be loaded and unloaded by competent and trained personnel using appropriate equipment.

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 soils, groundwater and the geological environment:

Existing Mitigation Measures

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

- The on-site leachate collection system located in the reception shed area collects impacted water and directs it initially to a pump/sump tank located south of the amendment storage area, from where it is pumped to the recirculation tank for recirculation into the process.
- The provision of an impermeable surface at the turn table area for vehicles delivering organic material to the facility. This also includes the appropriate management of potentially contaminated surface water runoff from this area, which is directed to the dedicated contaminant/recirculation system.
- To manage any possible spillage risk on the turntable area Miltown will continue to operate their Waste Acceptance Procedure (SOP MC01), the Cleaning and Hygiene Procedure (SOP MC 03) and the site Emergency Response Procedure. The on-site 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
- A kerb exists around the footprint of the reception building and connects 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 leachate/impacted surface water collection system, collected water is directed initially to a 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 is 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 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.
- All areas of the compost handling and processing facility are roofed and have impermeable concrete floors to 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 reception building are 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 from the existing site yard is diverted to the oil/water interceptor and released from there to the surface water drain and then to the Integrated Constructed Wetlands (ICW) onsite. All stormwater from the existing compost facility shed roofs (which is considered clean) is directed directly to the ICW. The ICW ponds provide treatment on the non-impacted water prior to discharge from site.

Proposed Additional Mitigation Measures

- The floor of the proposed maturation sheds 2B and 3B will consist of an impermeable concrete floor and will have a surrounding concrete wall. These features will contain any minor liquid migrating from the maturing organic material in the aerated static piles.
- The transfer of processed organic material from the end of shed 1 to the proposed maturation sheds 2B and 3B will take place using a front-end loader that will deposit the material over a low dividing wall between the reception shed and the proposed maturation shed. The provision of the low divider wall will allow for the division of the areas and no surface runoff from the reception area can enter maturation sheds 2B and 3B.
- The exit door for the proposed maturation sheds 2B and 3B will be ramped or sloped back towards the shed interior. This will ensure that there can be no migration of floor liquid from the building to the exterior yard.
- All non-impacted storm water from the proposed maturation sheds 2B and 3B roofs will be directed to the Integrated Constructed Wetlands (ICW) onsite, See Drawing P2-A in Attachment C.3. The ICW ponds provide treatment on the non-impacted water to ensure that there are no emissions from the facility.
- All surface water from the concrete surfaces at the entrance, and other external areas around the new proposed maturation sheds (i.e., 2B and 3B) will be directed to a dedicated full retention oil water separator prior to discharge to the ICW system as outlined in the drawing P-2A included in Attachment C.3.

It is not considered that the existing facility operations are negatively impacting on the underlying site soils, geology or hydrogeology, the implementation of the existing mitigation measures are ensuring that potential for the migration of contaminants from the facility buildings into the underlying soils and geology are negligible. Similarly, the implementation of the mitigation measures related to the proposed maturation sheds 2B and 3B will ensure that potential impacts to soils, geology or hydrogeology are contained and controlled and remain negligible.

8.6 Cumulative Impacts

The potential for impact on land, soils and groundwater during construction of the maturation sheds 2B and 3B and the continued operation of the compost facility at a higher throughput including use of maturation sheds 2B and 3B for increased maturation capacity arises from accidental leaks and spills to ground.

There will be no change in recharge in the area due to the existing hard standing surfaces of the old agricultural sheds being replaced by the new maturation sheds 2B and 3B. There will be no requirement for additional water abstraction for the facility even with increased throughput so there will be no additional draw on the underlying aquifer.

It does not appear that construction of the proposed maturation sheds 2B and 3B will take place at the same time as other significant developments in the immediate area and a cumulative impact is considered unlikely. Regardless, all other developments will be required by planning controls, during construction and operations, to protect soil and groundwater quality in compliance with legislative standards.

The proposed development includes measures to protect against any accidental discharges to ground (e.g., adequate containment measures for oil storage, control of any runoff from composting areas, use of hardstand in loading areas and drainage through oil interceptors). As such it is considered that the cumulative impact of the proposed development will be ***neutral*** and ***imperceptible*** in relation to soil and groundwater

8.7 Residual Impacts

If the mitigation measures are adhered to there are no anticipated residual impacts as a result of the proposed development. Ongoing site monitoring has not found a significant impact on water quality related to the compost facility and it is considered that there will be no negative impact (either short term, long term, direct or indirect) as a result of this proposed development on the surrounding land, soils, geology and hydrogeology environment.

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 Industrial Emissions 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 receptor NSL1 between 2020 and 2021. Additional limited monitoring was also completed at a second property located to the east of the site (O'Donnells) as part of the Environmental Impact Assessment study in February 2022 to assess the potential for noise impacts from the existing facility operations on properties to the east. Details of the noise monitoring results are provided in Attachment I.1. The noise impacts from the delivery of waste material, the operation of the pre-treatment facility within the main composting shed (i.e., equipment and air fans) and the air handling system (i.e., fans) for maturation Sheds 2 and 3 are the main identified potential noise sources associated with the existing 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 the proposed increases in throughput, operation of additional air handling systems 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 construction and operation of the site and proposed development are described.

At this stage in the proposed development project design, there are no details on the specific construction activities or timetable of works that are planned for the proposed development of Maturation Sheds 2B and 3B. Therefore, noise predictions at identified noise sensitive receptors are qualitative in nature using the guidance in British Standard BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites'. This assessment focusses on the likely noisy construction activities and the application of best practicable means

Section E.3.2 of BS5228 outlines the 'ABC' method to determine applicable construction noise criteria. Using this method, the construction noise limit for the proposed development can be determined by rounding the ambient noise level at NSLs to the nearest 5 dB and then comparing this level to the Category A, B and C values given in BS5228. The threshold limit values outlined in the guidance document are outlined in Table 9-1. If the threshold values are not exceeded, then construction noise effects are not considered to be significant.

Table 9-1: BS5228 ABC Categories and Thresholds

Assessment Category and Threshold Value Period	Threshold Value LAeq,T dB (Free Field)		
	Category A(a)	Category B(b)	Category (c)
Night-time (23:00 – 07:00)	45	50	55
Evenings and weekends (d)	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
NOTE 1: A potential significant effect is indicated if the LAeq,T noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level. **NOTE 2** If the ambient noise level exceeds the Category C threshold values given in the table (i.e., the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total LAeq,T noise level for the period increases by more than 3 dB due to site noise. **NOTE 3**: Applies to residential receptors only.			
(a) Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values. (b) Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as Category A values (c) Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than Category A values. (d) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays, 07:00 – 23:00 Sundays.			

Construction traffic noise impacts due to increases in traffic flows on surrounding roads have been estimated based on the Calculation of Road Traffic Noise (CRTN) methodology for the calculation of the Basic Noise Level (BNL) at a reference distance of 10m from the nearside carriageway. The criteria for the assessment of changes in road traffic noise levels have been taken from Table 3.1 of DMRB and are provided in Table 9-2 below.

Table 9-2 - Classification of Magnitude of Traffic Noise Impacts

Noise Change	Magnitude of Impact
0 dB(A)	No change
0.1 – 0.9 dB(A)	Negligible
1 – 2.9 dB(A)	Minor adverse
3 – 4.9 dB(A)	Moderate adverse
5 dB(A) or more	Major adverse

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 9.3.2) was undertaken in accordance with EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4). The baseline results outlined in section 9.3.2.1 are for the past two (2) years (i.e., 2020 and 2021) when the site has been operating at a throughput of 50,000 tonnes.
- Additionally, baseline monitoring was also completed in February 2022 at an identified residence located approximately 800m east of the existing site (O'Donnells) to determine the noise contribution at that location during Miltown Composting site operations. The results for that monitoring are outlined in section 9.3.2.2

A copy of the 2020 and 2021 baseline monitoring reports completed as part of the site Industrial Emissions licence and the results for the additional monitoring completed in February 2022 to the east of the site are provided in Attachment I.1. The noise monitoring locations are illustrated on Figure 9-1 below.

9.3 Receiving Environment

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 9-3 below.

Table 9-3 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"

Milltown Composting contracted Matrix Environmental to carry out offsite noise monitoring in 2020 and 2021 as part of the site Industrial Emissions Licence compliance requirements. A Copy of the 2020 and

2021 environmental noise assessments completed by Matrix Environmental Ltd. are provided in Attachment I.1. The noise monitoring used for this EIAR assessment was data from the monitoring completed by Matrix for site compliance with the site Industrial Emissions Licence (Ref. W270-02). Industrial Emissions Licence monitoring in 2020 and 2021 was completed at NSL1 at the driveway entrance to the closest noise sensitive receptor located approximately 600m northwest of the Miltown site buildings (i.e., Old Agricultural Sheds). The residence associated with the monitoring location is situated approximately 200m further to the west of NSL1 and so impacts from the facility would be expected to be even less. Additional monitoring was completed by Matrix Environmental in February 2022 at a second potential noise sensitive receptor (O'Donnells) located approximately 900m to the east of the site as part of this Environmental Impact Assessment. Monitoring at this location is not required under the site licence monitoring but was completed to assess if there was any impact on that property from the existing site operations. Both measurement locations are outlined in Figure 9-1 below.

Figure 9-1: Location of NSL1 and O'Donnells

The results of the baseline noise monitoring which has taken place at NSL1 northwest of the Miltown Composting site in 2020 and 2021 can be seen in Tables 9-4 and 9-5. Monitoring was completed at noise sensitive receptor NSL1 located on the entrance road and northwest of the site as required by the site Industrial Emissions Licence (Ref. W0270-02).

Table 9-4 Environmental Noise Results for NSL1 - 2020

2020 Daytime Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**

NSL1 Daytime Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	55	43	36	84	55
NSL1 Daytime Monitoring Result 2	On entrance road into facility approximately 600m northwest of site buildings	52	45	36	81	55
NSL1 Daytime Monitoring Result 3	On entrance road into facility approximately 600m northwest of site buildings	44	41	35	69	55
2020 Evening- Time Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL1 Evening Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	42	45	34	64	50
2020 Night- Time Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
NSL1 Night time Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	41	42	34	58	45
NSL1 Night time Monitoring Result 2	On entrance road into facility approximately 600m northwest of site buildings	37	40	34	46	45

Night-time monitoring was carried out at the site during the 2020 survey to assess baseline night-time noise levels at the noise sensitive locations although the site was not audible

Table 9-5 Environmental Noise Results for NSL1 - 2021

2021 Daytime Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV (L_{Aeq})**
NSL1 Daytime Monitoring Result 1	On entrance road into facility approximately 600m northwest of site buildings	51	51	37	75	55
NSL1 Daytime Monitoring Result 2	On entrance road into facility approximately 600m northwest of site buildings	55	50	41	85	55
NSL1 Daytime Monitoring Result 3	On entrance road into facility approximately 600m northwest of site buildings	49	49	41	77	55

The results of the baseline noise monitoring completed in February 2022 at the O'Donnell residence to the east of the Miltown Composting site are provided in Table 9-6

Table 9-6 Environmental Noise Results at O'Donnells Property to the East

Daytime Noise Results						
Monitoring ID	**Location Description**	**L_{Aeq}**	**L_{10}**	**L_{90}**	**L_{max}**	**ELV**
Daytime Monitoring Result 1	At Property Located approximately 900m east of the site	44	46	36	63	55
Daytime Monitoring Result 2		41	44	36	50	55

Reading 1 completed when fans intake fans at Sheds 2 and 3 were operating at 100% capacity

Reading 2 completed when fans intake fans at Sheds 2 and 3 were operating at 30% capacity

The results of broadband measurements completed at NSL1 in 2020 and 2021 and the broadband measurements completed at O'Donnells in February 2022 when the site had a throughput of 50,000 indicated the following;

- Daytime noise readings at NSL1 in 2020 ranged between 44 dB $L_{Aeq(30\ mins}$ and 55 dB $L_{Aeq\ (30\ mins)}$ and noise readings at NSL1 in 2021 ranged between 49 dB $L_{Aeq(30\ mins}$ and 55 dB $L_{Aeq\ (30\ mins)}$. All daytime measurements at NSL1 in 2020 and 2021 were less than the EPA license limit of 55 dB L_{Aeq}.
- All L_{A90} readings for daytime measurements at NSL1 in 2020 and 2021 which is a measure of the prevailing noise climate (with one-off events like traffic removed) were less than 45dB and significantly less than the 55 dB L_{Aeq} limit.
- The evening noise reading at NSL1 in 2020 was 42 $L_{Aeq(30\ mins)}$ and was less than the 50 dB L_{Aeq} evening licence limit.
- Night-time noise readings at NSL1 in 2020 ranged between 37 dB $L_{Aeq(15\ mins)}$ and 41dB $L_{Aeq(15\ mins)}$ and were less than the 45 dB L_{Aeq} night-time licence limit .
- All L_{A90} readings for night-time measurements at NSL1 were less than 35 dB and were the significantly less than the 45 dB L_{Aeq} limit.
- No tonal noise was recorded from the facility during the day, evening and night-time readings in 2020 or 2021.
- Daytime noise readings completed at O'Donnells in February 2022, when aeration fans were operating at 100% capacity, was 44 dB L_{Aeq} and when the fan capacity was reduced to 30% the noise level reduced to 41 dB L_{Aeq}. and were significantly less than the limit of 55 dB L_{Aeq}
- The L_{A90} readings at O'Donnells in February 2022 (which is a measure of the prevailing noise climate with one-off events like traffic removed) were both 36dB and significantly less than the 55 dB L_{Aeq} limit and is also less than the night time limit of 45 dB L_{Aeq}.

9.4 Potential Impacts of the Proposed Development

It is predicted that the construction programme will create typical construction activity related noise on site. During the construction phase of the proposed maturation sheds 2B and 3B, a variety of items of plant will be in use, such as excavators, lifting equipment, dumper trucks, compressors and generators.

It is proposed that any construction works on maturation sheds 2B and 3B would generally take place during the compost site operational hours (i.e., 07:00 to 19:00hrs, Monday to Saturday, excluding bank holidays. Evening activities will be reduced as much as possible in order to manage any associated noise impacts in an appropriate manner.

Due to the works completed on a construction site there is potential for generation of elevated levels of noise for short periods (e.g., excavation works, steel erection and banging and movement of on-site equipment). The movement of vehicular traffic to and from a construction site is also a potential source of elevated noise levels. The potential for noise at neighbouring sensitive locations during construction is typically limited to excavation works and lorry movements on uneven road surfaces. However, the closest

sensitive receptors are located approximately 800m from the site and so the potential for noise impacts on sensitive receptors during the construction works may not be significant. There may be potential for impacts from traffic movements on the local access road past noise sensitive receptors.

No construction programme has been established and so it is difficult to calculate the magnitude of noise emissions to the local environment during construction. However, it is possible to predict typical noise levels using guidance set out in BS 5228-1. Table 9.7 outlines typical plant items and associated noise levels that are anticipated for various phases of the construction programme.

For the purposes of the assessment it has been assumed that standard good practice measures for the control of noise from construction sites will be implemented. These issues are commented upon in further detail in the mitigation section.

Table 9-7 - Typical Noise Levels associated with Construction Plant Items (BS5228-1)

Construction Phase	Item of Plant (BS 5228-1 Ref.)	Construction Noise Level at 10m Distance (dB LAeq,1hr)
Site Preparation	Pneumatic breaker	95
	Loader Lorry	74
	Track Excavator	72
	Dump Truck	78
Foundations	Track Excavator	74
	Concrete Pump	78
	Compressor	75
Steel Erection	Crane	76
	Articulated Truck	77
General Construction	Hand Tools	81
	Hand-held Circular Saw	75

The additional construction traffic on local roads that will be generated as a result of the proposed development is estimated to be approximately 34 truck movements over the initial 10 days of construction (i.e., 3.4 truck movements per day) when concrete pours are taking place and will add to overall noise levels by approximately 1dB over a typical work day. It is not considered that traffic movements related to the construction of maturation sheds 2B and 3B will result in a significant noise impact.

In terms of noise associated with the proposed construction activities the potential effect is considered to be ***negative, moderate*** and ***short-term***.
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:

- Increased traffic related to the transport of material to and from site
- Additional fifteen (15) air intake fans located inside the building structures of Sheds 2B and 3B for the aeration of the maturation beds.
- The inclusion of two (2) additional extraction fans for the removal of air from the proposed maturation sheds 2B and 3B to the air treatment system.

The baseline noise assessments completed at NSL1 in 2020 and 2021 as part of the EPA Industrial Emissions Licence compliance requirements and the additional monitoring completed at O'Donnells in February 2022 indicated that the current operations are not having a negative impact on noise sensitive receptors in the area.

The inclusion of maturation sheds 2B and 3B as part of the extended maturation area for processed organic material would have some operations associated with it that could have potential noise impacts on noise sensitive receptors to the northwest of the site. The proposed extended maturation operation would require an additional 15 air intake fans (located inside the building structure) for the supply of air to the underfloor aeration bed system and would also require 2 air extraction fans for the removal of air from the building and directing it to the biofilter to the south of the proposed building.

Aeration and extraction fans would be operational on a 24 hour, 365 days per year basis except during maintenance and repair periods.

9.4.2.1 Noise Impact Prediction at Sensitive Receptors

The Guidelines for Noise Impact Assessment' produced by the Institute of Acoustics / Institute of Environmental Management and Assessment Working Party have been referenced in relation to the potential impact of changes in the ambient noise levels at the site for the operational phase of the proposed development.

The Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment, Version 1.2 published in November 2014 categorises the significant of a change in noise level, this is summarised as follows and is taken from Table 7-14 of the guidance:

IEMA Impact from the Change in Sound Levels (Table 7-14)

Long-term impact classification	Short-term impact classification	Sound Level Change LpT
Negligible	Negligible	> 0 dB and < 1 dB
	Minor	> 1 dB and < 3 dB
Minor	Moderate	> 3 dB and < 5 dB
Moderate	Major	> 5 dB and < 10 dB
Major		> 10 dB

The criteria above reflect the key benchmarks that relate to human perception of sound. A change of 3 dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the

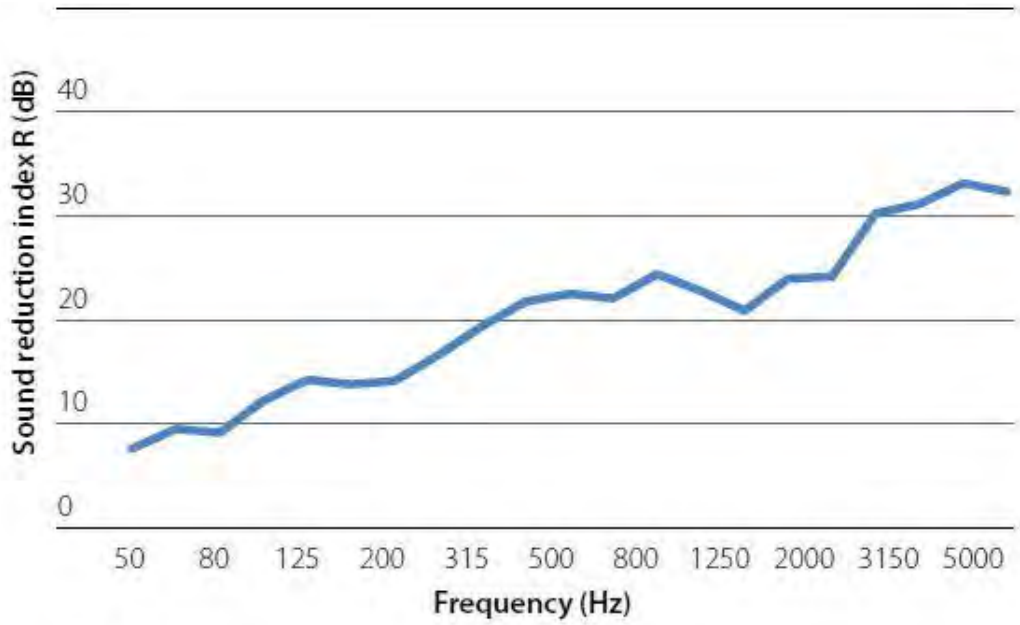
human ear. A 10 dB(A) change in noise represents a doubling or halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level. It is considered that the criteria specified in the Table above from the IEMA provides a good indication as to the likely significance of changes on noise levels in this case, and as such, they have been used to assess the potential impact of noise on the closest noise sensitive receptor from the operation of the air fans associated with the proposed maturation sheds.

Sound Reduction Based on Building Construction & Fan Speed Management

Building Construction Material Sound Mitigation for Proposed Development

The aeration fans for the delivery of air to the beds in the proposed maturation sheds 2B and 3B will be housed inside the building structure which will consist of a single skinned profiled metal clad wall and roof. A single skin construction has a relatively low mass and there will be relatively low noise absorption and the majority of the sound reduction will be due to sound reflection back into the building. Although the sound reduction index of a material varies over the noise spectrum, a typical 0.7mm single skin profile wall or roof would have a single figure rating (Rw) of 24 dB, see page 12 of the TATA Steel Technical Paper "Acoustic Performance of pre-finished steel cladding systems" provided in Attachment I.2, and Figure 9-2 below.

Figure 9-2 – Acoustic Performance of Steel Clad Building Material



Key

Key	Construction	Single figure rating Rw
	0.7 mm single skin 32/1000 profile	24 dB

Reference: TATA Steel Technical Paper "Acoustic Performance of pre-finished steel cladding systems"

The use of single skin metal cladding on the proposed development construction has the potential to provide a single figure rating (Rw) of 24 dB and would reduce the predicted noise impact from the aeration fans located inside the Maturation sheds significantly. This is outlined further in Table 9-9 below.

Fans Management for Control of Noise from Proposed Development

The proposed maturation sheds would have 2 main types of fans in operation on a 24 hours per day, seven days per week basis at the proposed development. The aeration fans (i.e., fans providing air to the maturation beds) are 5.5 kw fans and will be located inside the proposed shed structure. It is proposed that there would be 15 aeration fans in total inside the building. The proposed development will also have two 37 kw air extraction fans to remove air from the sheds and direct it to the biofilter bed.

The suppliers of the air extraction and air input fans (Panford) provided a noise specification for the fans that would be used at the proposed maturation sheds. The specification sheets in Attachment I.3 outlines the decibel level for fans operating at full speed and at reduced speeds (i.e., 100%, 75% and 50% speeds) that could be used at the proposed facility at a distance of 3m. The noise output at varying fan speeds based on the information received from Panford are outlined in Table 9-8 below.

Table 9-8 – Fan Motor Noise Reduction with Reduction of Fan Speeds

	Aeration Fans – 5.5 kw	Extraction Fans – 37 kw
	dB(A) at 3 m Distance	dB(A) at 3 m Distance
100% Capacity Speed	83	71
75% Capacity Speed	77	66
50% Capacity Speed	72	62

The data from the fan suppliers shows a significant reduction in noise output with a reduction of fan speeds.

Aeration (Input) Fans

- If the 15 aeration fans were operating at full capacity at the same time within the building it would be predicted that the noise climate within the shed building would be

$L= 10\ Log_{10}[10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}+10^{8.3}]$

Based on the calculation above the worst-case scenario with all 15 fans operational the noise level at 3m distance would be 94.8 dBA. With a single figure rating of 24dB related to the single skin building walls and roof the noise at 3m distance from the shed would be estimated to be 70.8 dBA, see Table 9-9.

Using the same calculations as above and allowing for a reduction in fan speeds and the noise reduction related to the shed building structures, the predicted noise output from the maturation sheds, based on fan speeds, are outlined in Table 9-9 below.

Table 9-9 – Reduction in Noise Levels from the Internal Aeration Fans at Proposed Development

	Predicted Noise Level from all fans operating (dB)	Noise Reduction related to Building Structure Single Figure Rating (Rw)	Predicted Noise Level from Internal Aeration Fans at 3m from Maturation Sheds
100% Capacity Speed	94.8	24 dB	**70.8**
75% Capacity Speed	88.8	24 dB	**64.8**
50% Capacity Speed	83.8	24 dB	**59.8**

Air Extraction Fans

The proposed development would also consist of two 37kw fans that would be operational outside the shed building at the southern end of shed 2B. Based on the specification sheet received from Panford on the noise output from the 37kw fans would be 71dB each, see Attachment I.3. Based on these criteria, the noise output, if both fans were operating concurrently at varying speeds, are outlined in Table 9-10 below.

Table 9-10 - Reduction in Noise Levels from the Air Extraction Fans at Proposed Development

	Predicted Noise Level at 3m Distance - Both Air Extraction Fans Operating (dB)
100% Capacity Speed	74
75% Capacity Speed	69
50% Capacity Speed	65

The closest noise sensitive receptor to the proposed development is approximately 800m to the northwest. Based on the Sound Propagation and Distance Inverse Square Law, a doubling of distance from the source would result in the noise level reducing by 6dB using the following formula;

$Lp(R2) = Lp(R1) - 20 \cdot Log_{10}(R2/R1$

Where:

Lp(R1) = Sound Pressure Level at the Initial Location (i.e., $L_{Aeq,T}$)

Lp(R2) = Sound Pressure Level at the new Location

R1 = Distance from the noise source to the initial location (3m from fan)

R2 = Distance from the noise source to the new location (Receptor)

The potential noise output from the aeration and extraction fans at the proposed maturation sheds 2B and 3B during the operational phase, the predicted noise impact on NSL1 from the aeration fans is outlined in Table 9-11 and the potential impact of the extraction fans on the existing noise climate at NSL1 is outlined in Table 9-12.

Table 9-11 – Predicted Noise levels at Distance Based on Input Aeration Fan Operational Capacity

Aeration Fans Operating Capacity	Predicted Noise Level at Stated Distance from the Edge of Maturation Shed (dB LAeq,1hr)							
	6m	12m	24m	48m	96m	192m	384m	768m
100% Capacity	70.8	64.8	58.8	52.8	46.8	40.8	34.8	28.8
75% Capacity	64.8	58.8	52.8	46.8	40.8	34.8	28.8	22.8
50% Capacity	59.8	53.8	47.8	41.8	35.8	29.8	23.8	17.8

Table 9-12 – Predicted Noise levels at Distance Based on Extraction Fan Operational Capacity

Extraction Fans Operating Capacity	Predicted Noise Level at Stated Distance from the Edge of Maturation Shed (dB LAeq,1hr)							
	6m	12m	24m	48m	96m	192m	384m	768m
100% Capacity	74	68	62	56	50	44	38	32
75% Capacity	69	63	57	51	45	39	33	27
50% Capacity	65	59	53	47	41	35	29	23

When added to the existing noise levels at NSL1 the impact from the fans related to the operation of the proposed development are outline in Table 9-13.

Table 9-13 Predicted Noise Impact on NSL1 from Proposed Development Operations

Equipment	Predicted Maximum Cumulative Noise Level at NSL (dB LAeq,1hr)				
	Noise Level from Fans at NSL1	Average Daytime Baseline Noise Leve at NSL1 (2020)	Predicated Daytime Cumulative Noise Level at NSL 1	Average Nighttime Baseline Noise Leve at NSL1 (2020)	Predicated Nighttime Cumulative Noise Level at NSL 1
Aeration Fans	**28.8**	52.2	52.2	37.7	**38.1**
Extraction fans	**32**	52.2	52.2	37.7	**38.6**

The predicted increase in decibel levels at the closest noise sensitive receptor (NSL1) during daytime and night-time periods with fans operating at maximum capacity are predicted to be less than 1dB which would be considered a negligible impact when compared to Table 7-4 of The Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment, 2014 outlined in section 9.4.2.1. The predicted noise levels will be less than the daytime limit (55 dBA) and night-time limit (45 dBA) with the inclusion of the fans for Sheds 2B and 3B.

Also, the additional traffic on local roads that will be generated as a result of the increased material throughput at the proposed development is estimated to be an increase of approximately 8 truck movements per day and add overall noise levels by approximately 1dB over a typical work day. It is not considered that the increased traffic associated with the increased throughput of organic material at the Miltown Compost facility will result in a significant noise impact. In terms of noise associated with the proposed increased throughput activities the potential effect is considered to be ***negative, low*** and ***long-term***.

9.5 Remedial & 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 and the proposed construction of maturation sheds 2B and 3B for extended maturation capacity, the mitigation measures to ensure that there are no significant impacts on noise sensitive receptors will be updated and these mitigation measures are outlined below.

With regard to construction activities, reference has been made to BS5228 Parts 1 and 2, which offer detailed guidance on the control of noise and vibration from demolition and construction activities. Various mitigation measures will be considered and applied during the construction of the proposed maturation sheds 2B and 3B. As an example, the following measures may be implemented on site:

- limiting the hours during which site activities likely to create high levels of noise are permitted;

- establishing channels of communication between the contractor/developer, Local Authority and residents;
- appointing a site representative responsible for matters relating to noise; and
- limit the number of deliveries to the construction site in any one day.

Furthermore, a variety of practicable noise control measures should be employed, such as:

- selection of plant with low inherent potential for generation of noise;
- erection of barriers as necessary around items such as generators or high duty compressors;
- situate any noisy plant as far away from sensitive properties as permitted by site constraints.

- According to the traffic assessment, as outlined in Chapter 12 of the EIAR, there will be an increase of approximately eight 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
- Any new fans and motors for air input to the maturation bays in sheds 2B and 3B would be situated within the fabric of the building to mitigate potential noise from the fan/motor operations. Metal cladded walls in both sheds has the capacity to reduce noise migration from the fans located within the building by up to 24dB.
- Although it is not anticipated that the operation of the air intake fans inside buildings 2B and 3B will result in noise nuisance from the site, the fans will be fitted with an automation system whereby, if required, fan speeds can be reduced (particularly at night) to reduce potential noise impacts on sensitive receptors in the area.
- Any air extraction fans installed at maturation sheds 2B and 3B for the removal and treatment of exhausted air within the building will be located at the south of the shed close to the proposed new biofilter. Although it is not anticipated that the operation of the air extraction fans at the south of Building 2B will result in noise nuisance from the site, the fans will be fitted with an automation system whereby, if required, fan speeds can be reduced (particularly at night) to reduce potential noise impacts on sensitive receptors in the area.
- 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 local access road 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 Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments (including the existing compost facility) are discussed in Section 9.6.1 and 9.6.2 below for construction and operational phases.

The baseline environmental noise survey results outlined in 9.3.2 takes account of noise emissions from the existing compost facility operation. It was noted that the existing ambient noise levels in the area were dominated primarily by road traffic on the surrounding road network and agricultural sources, particularly during daytime hours.

Table 9-7 outlines the noise levels associated with typical construction noise sources assessed in this instance along with typical sound pressure levels and spectra from *BS 5228 – 1: 2009+A1:2014* at various distances from these works. The closest noise sensitive receptor to the proposed development construction area is NSL1, approximately 800m from the site and this has been taken into consideration in the impact prediction in Table 9-14.

To predict the potential sound level at the closest noise sensitive receptor based on the L_{Aeq} readings from the construction plant at 10m from source, the inverse square law (i.e., that the sound intensity from a point source will reduce by approximately 6dB with each doubling of distance) was applied. The predicted noise impact from the construction equipment on the closest noise sensitive receptor was calculated using a distance of 800m from the proposed construction site to the closest noise sensitive receptor and the results are outlined in Table 9-14 below.

Table 9-14: Predicted Noise Levels at the Closest Noise Sensitive Receptor

Item of Plant (BS 5228-1 Ref.)	Predicted Noise Level at Stated Distance from the Edge of Works Area (dB LAeq,1hr)						
	20m	40m	80m	160m	320m	640m	800m
Pneumatic breaker	89	83	77	71	65	59	58
Loader Lorry	68	62	56	50	44	38	37
Track Excavator	66	60	54	48	42	36	35
Dump Truck	72	66	60	54	48	42	41
Concrete Pump	72	66	60	54	48	42	41
Compressor	69	63	57	51	45	39	38

Item of Plant (BS 5228-1 Ref.)	Predicted Noise Level at Stated Distance from the Edge of Works Area (dB LAeq,1hr)						
	20m	40m	80m	160m	320m	640m	800m
Crane	70	64	58	52	46	40	39
Articulated Truck	71	65	59	53	47	41	40
Hand Tools	75	69	63	57	51	45	44
Hand-held Circular Saw	69	63	57	51	45	39	38

Considering the distance from proposed construction works at maturation sheds 2B and 3B to noise sensitive locations to the northwest and the limited times that construction works would take place, it is expected day, evening and night-time noise criteria for construction noise would be satisfied. Based on the predicted noise levels associated with construction works at the site, in conjunction with the existing compost facility operations it is not considered that the construction works would have a significant impact. In terms of noise associated with the construction activities the associated effect is expected to be ***negative, slight and Short-term***.

The noise levels monitored at the closest noise sensitive receptor (NSL1) as part of the existing compost facility licence indicated that all noise readings were in compliance with the limits set in the site Industrial Emissions Licence. The noise level at NSL1 ranged between 44dB L_{Aeq} (when no vehicles passed the monitoring location) and 55dB L_{Aeq} (when a vehicle passed the location during the monitoring period). The increase in traffic associated with the proposed development would be approximately 16 vehicle movements (8 for workers at the facility and 8 truck movements). Worker vehicles would be mainly during morning and evenings only and the truck movements would be spread over the working day. The spread of traffic over the working day would result in a negligible increase in noise impact on the closest noise sensitive receptor.

The L_{A90} (i.e., when 1 off noise events such as a vehicle passing are removed) daytime background noise readings at NSL1 in 2020 and 2021 ranged between 36 dBA and 41 dBA. Similar L_{A90} levels were measured at NSL1 for evening and night-time periods (i.e., 34 dBA) in 2020. The February 2022 L_{A90} readings at O'Donnells, located to the east of the site, was 36 dBA and similar to NSL1. The L_{A90} readings are a measure of the consistent noise climate in the area surrounding the Miltown Compost facility. The results indicated that the existing compost facility is not a significant noise impact on noise sensitive receptors.

To assess the potential cumulative effect of the proposed development on noise sensitive receptors (NSL1 and O'Donnells), the potential noise output from the aeration and air extraction fans for the proposed maturation operations were combined with the noise levels measured at those locations as part of the baseline monitoring works. The predicted cumulative noise impact at NSL1 and O'Donnells are outlined in Tables 9-15 and 9-16 below.

Table 9-15 Cumulative Noise Levels at NSL1 When including Existing Operations and Proposed Operations.

Equipment	Predicted Maximum Cumulative Noise Level at NSL (dB LAeq,1hr)				
	Maximum Noise Level from Fans at NSL1	Average Daytime Baseline Noise Leve at NSL1 (2020)	Predicated Daytime Cumulative Noise Level at NSL 1	Average Nighttime Baseline Noise Leve at NSL1 (2020)	Predicated Nighttime Cumulative Noise Level at NSL 1
Aeration Fans	**28.8**	52.2	**52.2**	37.7	**38.1**
Extraction fans	**32**	52.2	**52.2**	37.7	**38.6**

Table 9-16 Cumulative Noise Levels at O'Donnells When including Existing Operations and Proposed Operations.

Equipment	Predicted Maximum Cumulative Noise Level at NSL (dB LAeq,1hr)		
	Maximum Noise Level from Fans at O'Donnells	**Daytime L_{A90} Noise Leve at O'Donnells (2022)**	**Predicated Daytime and Night time L_{A90} Cumulative Noise Level at O'Donnells**
Aeration Fans	**28.8**	36	**36.6**
Extraction fans	**32**	36	**37.5**

The predicted increase in noise levels at NSL1 and O'Donnells when fans related to the proposed development are operational would be less than 1dB which would be considered a negligible impact when compared to Table 7-4 of The Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment, 2014. The predicted results also indicate that the noise limits of 55dBA during daytime and 45dBA during night-time hours would not be exceeded as a result of the proposed development. In terms of noise associated with the operational phase of the proposed development the associated effect is expected to be ***negative, negligible and long-term***.

9.7 Residual Impacts

If the mitigation measures are adhered to there are no anticipated residual impacts as a result of the proposed development. Ongoing site monitoring has not found a significant impact on noise impacts related to the operation of the existing compost facility and it is considered that there will be no negative noise impact as a result of this proposed development.

9.8 References

- EPA Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIA Reports) (2017) and draft revised Guidelines on information to be contained in Environmental Impact Statements; and Advice Notes for preparing EIS (2015).
- IEMA Guidelines for Environmental Noise Impact Assessment, 2014.

- British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise.
- BS 4142:2014: Methods for rating and assessing industrial and commercial sound.
- Environmental Protection Agencies Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (January 2016).
- ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels.

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 Industrial Emissions 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 organic 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.

10.3 Methodology

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 Industrial Emissions 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.

10.4 Receiving 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;

Miltown have odour control measures in place at the facility, which they intend to continue using as part of the proposed development. The existing Miltown facility has two (2) biofilter units, 1 located at the south of Shed 1 for the treatment and mitigation of extracted air from the reception and process sheds (Biofilter 1) and 1 located to the north of Shed 2 for the treatment of extracted air from maturation shed 2, shed 3 and Shed 4 (Biofilter 2). Currently, the existing exhaust ductwork system is suspended from the structural steel at the apex of the buildings. The apex ductwork for each biofilter runs to externally located fans and the exhaust from the fan passes through each biofilter. The calculations below show the design capacity of each biofilter on the site to achieve 2.5 air changes per hour (the volume of air changes as set down by the Waste Treatments Industry EU BREF 2006). 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. Tables 10-1 and 10-2 provide the calculated retention time within each existing biofilter

Table 10-1 Biofilter 1 Size and Capacity and Exhaust Air Retention Time

Building Volume			Volume (m^3)
Shed 1 Volume			12,935.32
Reception Shed Volume			4,773.00
TOTAL			**17,708.32**
Air Volume to be Treated in Biofilter	2.5 x Air changes per hour in Shed 1 and 2 air changes per hour in Reception Shed		**41,884.30**
Air volume arriving at the biofilter	41,884.30	m^3/hr	
	11.634	m^3/s	
Biofilter surface area	520	m^2	
Calculated Speed of Air through Filter	0.0223	m/s	
Media Depth	0.85	m	
Residence time in media	38.11	seconds	

Table 10-2 Biofilter 2 Size and Capacity and Exhaust Air Retention Time

Building Volume			Volume (m^3)
Shed 2 Volume	2.5 Air Changes per Hour		12,530
Shed 3 Volume			12,530
Shed 4 Volume			12,240
TOTAL			**37,300**
Air Volume to be Treated in Biofilter	2.5 x Air changes per hour in Shed 2 and 2 air changes per hour in Sheds 3 & 4		**80,865**
Air volume arriving at the biofilter	80,865	m^3/hr	
	22.46	m^3/s	
Biofilter surface area	485	m^2	
Calculated Speed of Air through Filter	0.0463	m/s	
Media Depth	1.67	m	
Residence time in media	36.07	seconds	

The aspiration system for Shed 2, Shed 3 and Shed 4 is provided to maintain negative air, the system uses two separate exhaust fan's, one larger fan can exhaust air from Shed 2 (i.e., 2.5 ac/hr) and can also exhaust 70% of shed 4 (2 ac/hr). A second, smaller exhaust fan can exhaust 100% of air from Shed 3 (2 ac/hr) and 30% of shed 4 (2 ac/hr).

To aspirate the full load capacity, the motor on the fans are fitted with variable speed controller's which controls the air volume extracted from the buildings, the fans are adequately sized to accommodate the air loading.

The extraction system has capacity for 2.5 air changes per hour in Shed 2 and 2 air changes per hour in Shed 4 and also 2 air changes per hour in Shed 3, at a gas loading rate of <100m^3/h-m^3 of filter media and a gas residence time of 30 – 60 seconds as per Waste Treatment Industries EU BREF 2006

Biofilter 2 has a surface area of 484.98m^2 (L - 35.4m and W – 13.7m) with a filter media depth of 1.67m. This results in a biofilter volume of 809.91 m^3. The residence time in the bofilter (based on the maximum air flow exhausted from the sheds) is outlined in Table 10-2.

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 per hour has been effective in controlling odour emissions and allows for a longer residence time for exhausted air in the biofilter media.

The Miltown facility has two (2) biofilter units, 1 located at the south of Shed 1 for the treatment and mitigation of extracted air from the reception and process sheds (Biofilter 1) and 1 located to the north of Shed 2 for the treatment of extracted air from maturation shed 2 (Biofilter 2). The inlets and outlets of the bio filters are monitored as part of compliance with the facility's EPA Industrial Emissions Licence. The data in this section has been taken from air quality & monitoring reports for the past 4 years and the 2020 and 2021 reports are provided in Attachment J.1

10.4.2.1 Biofilter Emission Sampling

Concentrations of identified air emissions from the process were determined colorimetrically 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 million (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 each of the biofilter beds. To assess the efficiency of the biofilter system, a sample is also collected and analysed from each biofilter bed surface. As part of the site Industrial Emissions Licence review the frequency of sampling was increased to monthly from bi-annually and this can be seen in the 2020 and 2021 results for air sampling completed at biofilter 1 and biofilter 2.

10.4.2.1.1 Ammonia

As part of the existing Industrial Emissions Licence regulated by the EPA regular sampling is completed at the inlets to, and on the surface of biofilter 1 and biofilter 2 to assess the efficiency of the biofilter and to determine the air emissions from the composting facility via the biofilter. Concentrations of ammonia were all below the emission limit value of 50 ppm (v/v) for all sample events between 2020 and 2021 are outlined in Tables 10-3 and 10-4.

Table 10-3 Results of Ammonia Monitoring at Biofilter 1 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 1	Jan-2020*	10	20	<5	50
	Feb – 2020	10	15	<5	50
	Mar -2020*	15	15	<5	50
	Apr-2020*	10	25	<5	50
	May-2020*	10	20	<5	50
	Jul-2020*	10	25	<5	50
	Aug-2020*	15	10	<5	50
	Sep – 2020	15	15	<5	50
	Oct – 2020*	15	10	<5	50
	Nov-2020*	10	15	<5	50
	Dec-2020*	20	20	<5	50
	Feb -2021*	10	15	<5	50
	Apr – 2021*	10	20	<5	50
	Oct – 2021*	10	20	<5	50
	Dec – 2021*	10	15	<5	50

*- Sampling completed on site by Miltown personnel. All other sampling was completed by Matrix Environmental

Table 10-4 Results of Ammonia Monitoring at Biofilter 2 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 2	Jan-2020*	40	15	<5	50
	Feb – 2020	35	30	<5	50
	Mar -2020*	40	20	<5	50
	Apr-2020*	40	25	<5	50
	May-2020*	35	15	<5	50
	Jul-2020*	20	10	<5	50
	Aug-2020*	35	25	<5	50
	Sep – 2020	20	35	<5	50
	Oct – 2020*	35	25	<5	50
	Nov-2020*	40	20	<5	50
	Dec-2020*	30	35	<5	50
	Feb -2021*	25	35	<5	50
	Apr – 2021*	35	15	<5	50
	Oct – 2021*	35	15	<5	50
	Dec – 2021*	40	20	<5	50

*- Sampling completed on site by Miltown personnel. All other sampling was completed by Matrix Environmental

10.4.2.1.2Hydrogen Sulphide

As part of the existing Industrial Emissions Licence regulated by the EPA sampling is completed on a regular basis at the inlets to, and on the surface of biofilter 1 and biofilter 2 to determine the air emissions from the composting facility via the biofilter. All concentrations of H_2S were below the analysis method detection limit and less than the Industrial Emissions licence emission limit value of 5 ppm for the Inlet pipes and Outlet (biofilter bed surfaces) of both Biofilters.

Table 10-5 Results of Hydrogen Sulphide Monitoring at Biofilter 1 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 1	Jan-2020*	<0.2	<0.2	<0.2	5
	Feb – 2020	<0.2	<0.2	<0.2	5
	Mar -2020*	<0.2	<0.2	<0.2	5
	Apr-2020*	<0.2	<0.2	<0.2	5
	May-2020*	<0.2	<0.2	<0.2	5
	Jul-2020*	<0.2	<0.2	<0.2	5
	Aug-2020*	<0.2	<0.2	<0.2	5
	Sep – 2020	<0.2	<0.2	<0.2	5
	Oct – 2020*	<0.2	<0.2	<0.2	5
	Nov-2020*	<0.2	<0.2	<0.2	5
	Dec-2020*	<0.2	<0.2	<0.2	5
	Feb -2021*	<0.2	<0.2	<0.2	5
	Apr – 2021*	<0.2	<0.2	<0.2	5
	Oct – 2021*	<0.2	<0.2	<0.2	5
	Dec – 2021*	<0.2	<0.2	<0.2	5

*- Sampling completed on site by Miltown personnel. All other sampling was completed by Matrix Environmental

Table 10-6 Results of Hydrogen Sulphide Monitoring at Biofilter 2 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 2	Jan-2020*	<0.2	<0.2	<0.2	5
	Feb – 2020	<0.2	<0.2	<0.2	5
	Mar -2020*	<0.2	<0.2	<0.2	5
	Apr-2020*	<0.2	<0.2	<0.2	5
	May-2020*	<0.2	<0.2	<0.2	5
	Jul-2020*	<0.2	<0.2	<0.2	5
	Aug-2020*	<0.2	<0.2	<0.2	5
	Sep – 2020	<0.2	<0.2	<0.2	5
	Oct – 2020*	<0.2	<0.2	<0.2	5
	Nov-2020*	<0.2	<0.2	<0.2	5
	Dec-2020*	<0.2	<0.2	<0.2	5
	Feb -2021*	<0.2	<0.2	<0.2	5
	Apr – 2021*	<0.2	<0.2	<0.2	5
	Oct – 2021*	<0.2	<0.2	<0.2	5
	Dec – 2021*	<0.2	<0.2	<0.2	5

*- Sampling completed on site by Miltown personnel. All other sampling was completed by Matrix Environmental

10.4.2.1.3 Mercaptans

As part of the existing Industrial Emissions Licence regulated by the EPA regular sampling was completed at the inlets to, and on the surface of biofilter 1 and biofilter 2 to assess the efficiency of the biofilter and to determine the air emissions from the composting facility via the biofilter. All concentrations of mercaptans were less than the colorimetric detection method limit at both biofilter outlets at the biofilter surfaces between 2020and 2021.

Table 10-7 Results of Mercaptans Monitoring at Biofilter 1 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 1	Jan-2020*	<0.5	<0.5	<0.5	5
	Feb – 2020	0.5	<0.5	<0.5	5
	Mar -2020*	<0.5	<0.5	<0.5	5
	Apr-2020*	<0.5	<0.5	<0.5	5
	May-2020*	<0.5	<0.5	<0.5	5
	Jul-2020*	<0.5	<0.5	<0.5	5
	Aug-2020*	<0.5	<0.5	<0.5	5
	Sep – 2020	0.5	<0.5	<0.5	5
	Oct – 2020*	<0.5	<0.5	<0.5	5
	Nov-2020*	<0.5	<0.5	<0.5	5
	Dec-2020*	<0.5	<0.5	<0.5	5
	Feb -2021*	<0.5	<0.5	<0.5	5
	Apr – 2021*	<0.5	<0.5	<0.5	5
	Oct – 2021*	<0.5	<0.5	<0.5	5
	Dec – 2021*	<0.5	<0.5	<0.5	5

*- Sampling completed on site by Miltown personnel. All other sampling was completed by Matrix Environmental

Table 10-8 Results of Mercaptans Monitoring at Biofilter 2 from 2020 to 2021

Location	Month & Year	Inlet 1 Results (ppm)	Inlet 2 Results (ppm)	Outlet Results (ppm)	Typical Biofilter ELV (ppm)
Biofilter 2	Jan-2020*	<0.5	<0.5	<0.5	5
	Feb – 2020	0.5	<0.5	<0.5	5
	Mar -2020*	<0.5	<0.5	<0.5	5
	Apr-2020*	<0.5	<0.5	<0.5	5
	May-2020*	<0.5	<0.5	<0.5	5
	Jul-2020*	<0.5	<0.5	<0.5	5
	Aug-2020*	<0.5	<0.5	<0.5	5
	Sep – 2020	0.5	<0.5	<0.5	5
	Oct – 2020*	<0.5	<0.5	<0.5	5
	Nov-2020*	<0.5	<0.5	<0.5	5
	Dec-2020*	<0.5	<0.5	<0.5	5
	Feb -2021*	<0.5	<0.5	<0.5	5
	Apr – 2021*	<0.5	<0.5	<0.5	5
	Oct – 2021*	<0.5	<0.5	<0.5	5
	Dec – 2021*	<0.5	<0.5	<0.5	5

*- Sampling completed on site by Miltown personnel. All other sampling was completed by Matrix Environmental

Bioaersols are monitored at the facility to assess the total fungi/bacteria and aspergillus fumigatus concentrations in air at upwind and downwind sample locations from the biofilters. 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 results presented in the tables are for the past 3 years and the latest monitoring report for 2020 is provided in Attachment J.2

10.4.3.1 Sampling & Methodology

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 2018 and 2021 are provided in Tables 10-9 through 10-11.

Table 10-9 Results of Bacteria/Fungi & Aspergillus Fumigatus Monitoring at Sensitive Receptor 2018 to 2020

Location	Parameter	Month & Year	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value (CFU/m³)*
Sensitive Receptor (R1)	Bacteria/Fungi	2018	76	147	1,000
	Bacteria/Fungi	2019	107	71	1,000
	Bacteria/Fungi	2020 (Q1)	69	63	1,000
	Bacteria/Fungi	2020 (Q3)	>214	133	1,000
	Bacteria/Fungi	2020 (Q4)	37	51	1,000
	Bacteria/Fungi	2021 (Q1)	15	21	1,000
	Bacteria/Fungi	2021 (Q4)	>150	>214	1,000
	Aspergillus	2018	0	0	5,000
	Aspergillus	2019	0	0	5,000
	Aspergillus	2020 (Q1)	0	0	5,000
	Aspergillus	2020 (Q3)	0	0	5,000
	Aspergillus	2020 (Q4)	0	0	5,000
	Aspergillus	2021 (Q1)	0	0	5,000
	Aspergillus	2021 (Q4)	0	0	5,000

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

Table 10-10 Results of Bacteria/Fungi & Aspergillus Fumigatus Monitoring at Upwind Sample Location 2018 to 2020

Location	Parameter	Month & Year	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value (CFU/m³)*
Upwind Location (UW1)	Bacteria/Fungi	2018	161	133	1,000
	Bacteria/Fungi	2019	142	88	1,000
	Bacteria/Fungi	2020 (Q1)	39	17	1,000

	Bacteria/Fungi	2020 (Q3)	79	157	1,000
	Bacteria/Fungi	2020 (Q4)	70	46	1,000
	Bacteria/Fungi	2021 (Q1)	>150	>214	1,000
	Bacteria/Fungi	2021 (Q4)	100	143	1,000
	Aspergillus	2018	0	0	5,000
	Aspergillus	2019	0	0	5,000
	Aspergillus	2020 (Q1)	0	0	5,000
	Aspergillus	2020 (Q3)	0	0	5,000
	Aspergillus	2020 (Q4)	0	0	5,000
	Aspergillus	2021 (Q1)	0	0	5,000
	Aspergillus	2021 (Q4)	0	0	5,000

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

** Typically the Upwind location is located equal-distant from the site boundary as the downwind sample location.

Table 10-11 Results of Bacteria/Fungi & Aspergillus Fumigatus Monitoring at Downwind Sample Location 2018 to 2020

Location	Parameter	Month & Year	CFU/m³ 1st Sample	CFU/m³ 2nd Sample	Threshold Value (CFU/m³)*
Downwind Location (DW1)	Bacteria/Fungi	2018	214	107	1,000
	Bacteria/Fungi	2019	117	107	1,000
	Bacteria/Fungi	2020 (Q1)	104	63	1,000
	Bacteria/Fungi	2020 (Q3)	80	86	1,000
	Bacteria/Fungi	2020 (Q4)	64	57	1,000
	Bacteria/Fungi	2021 (Q1)	>150	>214	1,000
	Bacteria/Fungi	2021 (Q4)	>150	>214	1,000
	Aspergillus	2018	0	0	5,000
	Aspergillus	2019	0	0	5,000
	Aspergillus	2020 (Q1)	0	0	5,000
	Aspergillus	2020 (Q3)	0	0	5,000
	Aspergillus	2020 (Q4)	1	0	5,000
	Aspergillus	2021 (Q1)	0	0	5,000
	Aspergillus	2021 (Q4)	0	0	5,000

*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 and the nearest sensitive receptor.

The results of bioaerosol sampling completed at the Miltown Composting facility over the past three years has indicated no elevated bioaerosol concentrations at downwind and sensitive receptors in the area. Upwind concentrations, which would be a good indicator of background natural bioaerosol concentrations, show that the potential for impacts from the existing Composting facility are low.

Miltown 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 biannual basis up to the end of 2019 when the frequency was adjusted to quarterly in compliance with Schedule C of the site's EPA Industrial Emissions Licence. The methodology and the results of the odour assessment are provided in the following sections of this document.

10.4.4.1 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'.

10.4.4.2 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 (ou_E/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).

10.4.4.3 Odour Results

Odour monitoring in 2018 was at the corner of Biofilter 1 (OD1) and at a location approximately 500m downwind and south of the facility (OD2). frequency was changed to bi-annually. The results of the olfactory panel assessment on the collected air samples for 2018 and 2019 are outlined in Tables 10-12 below.

Table 10-12 Results of Odour Monitoring at Biofilters and Downwind Locations 2018 and 2019

Parameter	Month & Year	ou_E/m^3 (OD01)	ou_E/m^3 (OD02)	Licence ELV (ou_E/m^3)
Odour	May 2018	168	57	750
Odour	October 2018	391	81	750
Odour	February 2019	121	42	750
Odour	December 2019	94	84	750

The site EPA licence was reviewed and in September 2019 the locations and frequency of the monitoring changed to quarterly and included monitoring at the downwind corner of both biofilters (i.e., emission points A 2-1 [Biofilter1] and A2-2 [Biofilter 2]). The results of the quarterly monitoring completed in 2020 and 2021 is outlined in Table 10-13. The most recent Odour monitoring report for 2020 is provided in Attachment J.3

Table 10-13 Results of Odour Monitoring at Biofilters and Downwind Locations 2020

Parameter		Month & Year	ou_E/m^3 (A2-1 – Biofilter 1)	ou_E/m^3 (A2-2 – Biofilter 2)	Licence ELV (ou_E/m^3)
Odour		March 2020	133	78	750
Odour		June 2020	228	114	750
Odour		September 2020	195	125	750
Odour		October 2020	266	228	750
Odour		January 2021	246	228	750
Odour		September 2021	106	124	750

The odour monitoring completed in 2018, 2019, 2020 and 2021 indicated that the odour levels in and around the existing compost facility biofilters were well below the licence limit for the site of 750 ou_E/m^3.

As part of the site Industrial Emissions Licence Conditions 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. The dust deposition sample locations for 2021 can be seen in Attachment J.4, and the results of the sampling for 2018 through 2021 can be seen in Table 10-14 and the 2021 dust deposition report is provided in Attachment J.4.

Table 10.14: Results for Dust Deposition

Parameter	Month & Year	D1 -Opposite Office	D2* – Southeast Boundary	D3 – Northeast Boundary	Licence Limit ($mg/m^2/day$)
Dust Deposition	May 2018	205	264	59	350
Dust Deposition	August 2018	249	126	305	350
Dust Deposition	September 2018	75	176	50	350
Dust Deposition	June 2019	118	40	65	350
Dust Deposition	September 2019	51	39	175	350
Dust Deposition	December 2019	25	40	176	350
Dust Deposition	March 2020	6	22	47	350
Dust Deposition	June 2020	52	152	25	350
Dust Deposition	September 2020	NS	182	307	350
Dust Deposition	June 2021	20	35	110	350
Dust Deposition	September 2021	99	55	150	350
Dust Deposition	December 2021	125	151	184	350

*- Location D2 changed to area close to weighbridge on northwest of site in 2020

The dust deposition results for samples collected between 2018 and 2021 indicated that concentrations were generally well below the guidance limit of 350 $mg/m^2/day$ and that there were no ambient dust issues related to the composting operations at the site.

10.5 Potential Impacts of the Proposed Development

Air Emissions from the proposed development will be from the extended operation of the existing activities at the Miltown facility and from construction of maturation sheds 2B and 3B. Emissions from the operation of the facility will be on-going as long as the facility is accepting and processing organic material. The proposed development processes as described in Chapter 3 of this EIAR will result in ambient odour emissions from the exit roller doors and the air extraction fans from the new maturation sheds. Also, there will be engine combustion emissions from the increased traffic associated with the proposed development and from the operation of construction machines and delivery vehicles. These emissions from the proposed development are discussed below;

Construction traffic would be expected to be a minor source of greenhouse gas emissions as a result of the proposed development. Construction vehicles and machinery will give rise to CO_2 and N_2O emissions during construction of the proposed development. 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 require the re-construction and extension of old agricultural sheds as maturation sheds and the proposed increase in traffic during the construction phase of the proposals is predicted to generate an additional 4 no. two-way vehicle movements during the AM and PM peak hours and a total of 34 daily two-way vehicle movements during the peak construction period This peak construction period is predicted to last for a period of approximately 2 weeks (10 working days) during the pouring of the base slabs for the maturation sheds. The limited increase in traffic in the area would not be considered to impact air quality in the area.

The greatest potential impact on air quality during the construction phase of the proposed development would be from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 200m of a construction site, the majority of the deposition takes place within the first 50m. The potential for dust deposition depends on local meteorological factors such as rainfall, wind speed and wind direction.

The potential impacts associated with the construction phase of the proposed development would be short-term in nature. When the dust minimisation measures detailed in the mitigation section (see Section 10.5) are implemented, fugitive emissions of dust from the site will not be significant and will pose no nuisance at nearby receptors. Due to the duration and nature of the construction activities, CO_2 and N_2O emissions from construction vehicles and machinery will have a short-term and imperceptible impact on climate

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 increase in traffic during the operational phase of the proposed development, when operating at full capacity, is predicted to have an additional 16 two-way vehicle movements on average per day of which only 8 are HGV and the

remainder are cars and vans related to on-site workers travelling to work. The limited increase in traffic in the area would not be considered to impact air quality in the area.

10.5.2.1 Odour Emissions

The existing material reception, compost processing and odour management system at Miltown (i.e., biofilters 1 and 2) is already designed to mitigate odours in ambient air removed from all existing Sheds at the composting facility (i.e., Sheds 1 to 4 and the reception shed). This would continue to be the case for the proposed development as processing and maturation of approximately 2/3 of composted material will continue to take place in those buildings. As part of the future operations at the facility, approximately 1/3 of composted material processed in Shed 1 would be transferred to the proposed new maturation sheds (i.e., maturation sheds 2B and 3B). To control any potential odours from this area it is proposed that a dedicated air extraction system and biofilter would be installed as part of the proposed maturation sheds development. The size of the proposed third biofilter is based on 2.5 air changes per hour within the maturation shed 2b (where forced air maturation of static piles would be completed) and maturation shed 3B (where material would be screened and stored for sampling and off-site transfer) to meet the minimum residence time within the biofilter media for extracted air.

Table 10-15: Biofilter 3 Proposed Size and Capacity and Exhaust Air Retention Time for Biofilter 3

Building Volume			Volume (m^3)
Maturation Sheds 2B and 3B Volume			32,640
TOTAL			**32,640**
Air Volume to be Treated in Biofilter	2.5 x Air changes per hour in Maturation Shed 2B and 2 air changes per hour in Maturation Shed 3B		**81,600**
Air volume arriving at the biofilter	81,600	m^3/hr	
	22.67	m^3/s	
Biofilter surface area	485	m^2	
Calculated Speed of Air through Filter	0.046735	m/s	
Media Depth	1.90	m	
Residence time in media	42.79	seconds	

With the installation of the proposed air control and treatment system for maturation sheds 2B and 3B the impacts on air quality from the proposed development would be expected to continue to be low.

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.

10.6 Remedial & Mitigation Measures

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good work practices and effective control strategies.

The movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions and to suppress dust sources, see below.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Hardstanding surfaces and roads will be swept to remove mud and aggregate materials from their surface.
- Vehicles delivering or collecting material with potential for dust emissions should be covered with tarpaulin to restrict the escape of dust.

The results for air monitoring completed between 2018 and 2020 indicated that the existing composting facility does not have a negative impact in terms of odour or air emissions associated with the composting process (i.e., ammonia, H_2S or mercaptans). The proposed new maturation sheds 2B and 3B would be designed and built with air input for the maturation process and with an air extraction and treatment system that would be exhausted through a dedicated biofilter system. 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 maturation sheds 2B and 3B at a maximum of 2.5 air changes per hour, this will require the additional air to be treated in the biofilter as calculated in Table 10-12 in section 10.4.2.

It is proposed to utilize the existing air management system to continue to collect and treat air from the existing process sheds. Based on the sampling results the residence time for treatment in the biofilters is adequate to appropriately treat the exhausted air from the sheds. The motor on the fans are fitted with variable speed controllers to control the air volume extracted from the buildings.

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 material;
- Control of moisture content;
- Control of air diffusion through the organic material – through the automatic control system;
- Control of temperature – through the automatic control system;

- The control or aeration of material to ensure that anaerobic conditions to not take place in composting bays or in maturing static piles.

10.7 Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments (including the existing compost facility) are discussed below for construction and operational phases.

The baseline air quality results outlined in section 10.3 takes account of air emissions from the existing compost facility development. It was noted that the existing ambient air quality in the area was complaint with all limits set in the site Industrial Emissions Licence.

It does not appear that construction and operation of the proposed development will take place at the same time as other significant developments in the immediate area and a cumulative impact is considered unlikely. Regardless, all other developments will be required by planning controls, during construction and operations, to protect air quality in compliance with legislative standards.

The proposed development includes measures to control and mitigate air emissions from the existing composting facility and the proposed maturation Sheds 2B and 3B to meet the limits set in the existing, and any future revised, Industrial Emissions Licence. As such it is considered that the cumulative impact of the proposed development will be ***neutral*** and ***low*** in relation to air quality.

10.8 Residual Impacts

If the mitigation measures outlined in Section 10.5 are implemented, there will be no residual impacts of significance on air quality or climate from the construction or operational phases of the proposed development. 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 References

- BRE (2003) Controlling Particles, Vapours & Noise Pollution From Construction Sites
- DEHLG (2007) Update and Revision of the National Programme for Ireland under Article 6 of Directive 2001/81/EC for the Progressive Reduction of National Emissions of Transboundary Pollutants by 2010
- Department of Communications, Climate Action and Environment (DCCAE) (2017) National Mitigation Plan
- Environmental Protection Agency (2019b) GHG Emissions Projections Report - Ireland's Greenhouse Gas Emissions Projections 2018 - 2040
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- Environmental Protection Agency (2020a) Ireland's Air Pollutant Emissions 1990 – 2030
- Environmental Protection Agency (2020b) EPA website Available at: http://www.epa.ie/whatwedo/monitoring/air/
- Environmental Protection Agency (EPA) (2015) Advice Notes for Preparing Environmental Impact Statements – Draft
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- German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft
- Government of Ireland (2015) Climate Action and Low Carbon Development Act
- Government of Ireland (2019) Climate Action Plan 2019
- IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction
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- SEAI (2019) Energy-Related CO_2 Emissions in Ireland 2005 - 2018
- UN Framework Convention on Climate Change (2012) Doha Amendment To The Kyoto Protocol

11.0 LANDSCAPE & VISUAL IMPACT

11.1 Introduction

This chapter examines the visual impact of the Mlltown Composting facility located at Miltownmore, 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 3.94 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 local access road to the facility and at the junction of the access road with the Rosegreen to Fethard Road (L1409).

11.3 Existing Environment

The site is located in a rural area used predominately for agriculture purposes, mainly grassland and tillage. A farm yard, approximately 700 meters (m) to the west, is the closest property to the site. The nearest residential property is approximately 800m to the northwest along the local access road. There are three more residences within 1km of the site to the north, northwest and east of the facility.

The facility is a composting facility that can accept 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). The reception and blending of organic material takes place in the 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). Maturation is carried out in the sheds the east, which occupy a floor area of approximately 2,840 m^2. The biofilter for the process shed 1 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 biofilter for the maturation shed 2 is located to the north of Shed 3.

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.

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 240 tonnes while not exceeding 75,000 tonnes per annum. The proposed development also includes for the construction of maturation sheds 2B and 3B as extend maturation capacity for the facility to accommodate increased composting throughput in Shed 1. The Proposed maturation sheds 2B and 3B will have a combined floor area of 3,560 m^2 and will consist of a steel portal frame design featuring 5m high reinforced concrete walls at the building base and galvanised steel purlins and green metal outer cladding. The apex of the roof in the proposed shed will be approximately 9.5m above ground level. The proposed maturation sheds will be constructed mainly on the footprint of old agricultural sheds with an extended area included to the west of the old shed footprint area. The proposed maturation sheds 2B and 3B will be of agricultural shed appearance and will be a similar height to the existing adjacent reception building at the site.

The proposed maturation sheds 2B and 3B will have underfloor forced air beds for the maturation of organic material in maturation bays and static piles similar to the process currently completed in Sheds 2 and 3 of the existing compost facility. The air beds will be served by ten fans (two fan per bed) in shed 2B and four to five fans in shed 3B and these fans will be located within the shed structure. Potentially odorous air produced within the proposed maturation sheds 2B and 3B during maturation of organic material will be extracted via an air extraction system served by two air extraction fans that will be located to the south of the proposed shed 2B structure and will direct extracted air to a dedicated biofilter also located at the southern end of the proposed shed 2B structure.

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. The Miltown site is located in A1.4 The Suir Central Plain. The area is not one of distinctive LCA value.

The physical elements of the landscape will remain unchanged by an increased throughput at the existing site or the reconstruction and extension of the old agricultural sheds as maturation sheds.

The public view points for the facility are from the surrounding areas, however the proposed increase throughput and the reconstruction and extension of the old agricultural sheds as maturation sheds will not affect these views as the proposed development is largely the replacement of old agricultural sheds that previously existed at the site and will not be taller than the existing shed structures at the site.

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 Potential Impacts of the Proposed Development

The proposed development comprises of the increased throughput of tonnage at the facility and the re-construction of two old agricultural sheds as maturation sheds 2B and 3B, see Figure 11-1.

Figure 11-1 – outline of Old Agricultural Sheds where Maturation Sheds 2B and 3B Sheds will be Located

The proposed sheds will be largely located on the footprint of the old buildings but will have an increased roof apex height of the old sheds but will be similar to the existing site shed structures. The sheds will be constructed of similar materials as the existing sheds and the old agricultural sheds and so would fit in the existing site structures and would not be expected to have a significant impact on the landscape.

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

11.7 Remedial & Mitigation Measures

The purpose of mitigation is to avoid, reduce and potentially remedy any significant negative effects arising from the development. Because the maturation sheds will replace old agricultural sheds, will be constructed of similar materials as the existing site sheds will be lower than the adjacent shed structures and will be a similar colour (e.g., green) the structures will be 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 reconstructed shed buildings.

11.8 Predicted Impacts of the Proposed Development

Due to the location of the site and that it is largely not visible from the public road, that the proposed maturation sheds are replacing existing agricultural sheds and that the facility is located in an area with low visual amenity value it is not considered that there will be visual impact from the proposed development.

11.9 Cumulative Impacts

The construction and operation of the proposed development will not take place at the same time as other significant developments in the immediate area and a cumulative impact is considered unlikely. Regardless, all other developments will be required by planning controls, during construction and operations, to protect visual amenity. As such it is considered that the cumulative impact of the proposed development will be ***neutral*** and ***low*** in relation to visual impact.

11.10 Residual Impacts

Due to the scale and location of the proposed maturation sheds it is not considered that there will be residual impacts of significance related to visual amenity.

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12.0 TRAFFIC

12.1 Introduction

In 2021 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 Assessment Report (EIAR) for the proposed development at Miltown, Co. Tipperary. An update to this report was completed in 2022 to include for upgrades to the transport infrastructure proposed and completed in the past 12 months. In this chapter, an updated version of a previous assessment was completed to determine the potential effect of traffic on the local road network due to the proposed development and to establish the potential impact that construction and increased operations traffic may have on the surrounding road network. The full updated DBFL traffic report is provided in Attachment L.1.

12.2 Objectives

The objective of this section of the EIAR is to assess the potential traffic impacts related to the proposed construction of maturation sheds 2B and 3B and the increased throughput of organic material at the Miltown Composting facility. This section calculates the expected volume of traffic that will be generated by the proposed construction works and increased throughput of material and assess the impact that this traffic could 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 undertaken in 2016 were used to predict potential traffic volumes and complete analysis 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 Receiving Environment

The proposed development is located on the site of the existing composting facility and 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.

The site is located in the town land of Miltownmore, approximately 6 km to the east of Fethard and 10 km southwest of Cashel. The site is accessed by a private road off the Rosegreen to Fethard L1409. The current site development encompasses approximately 3.94 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 four main Buildings – the reception shed, Sheds 1, 2 and 3 - a covered yard (shed 4), and paved open yards; weighbridge, office; canteen/changing room; storage shed; wetlands, two bio filters and former agricultural sheds. The composting facility currently can accept up to 50,000 tonnes of organic material for composting per annum. However, market forces have added pressure to increase the potential tonnage throughput for the site. The land use surrounding the composting site is agricultural.

The existing composting facility is currently licensed to process 50,000 tonnes (inbound) per annum. With the objective of establishing the volume of traffic the current operations generate across the local approach roads leading to the subject site a number of data sources have been analysed. ATC surveys were undertaken between Wednesday 13th January 2016 and 19th January 2016 at three locations along the existing composting facility's HGV haul route (between R688 corridor and the composting site) as part of a previous submission for the site.

These ATC surveys were supplemented with a survey of all vehicle movements entering and exiting the site over a typical 7 day period in 2020 (Monday 29th June to Saturday 4th July). By cross referencing these two data sources it has been possible to quantify both (i) baseline traffic characteristics and (ii) the volume of the site generated vehicles (composting facility) travelling along the HGV Haul route and through each of the three off-site ATC survey locations. 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 2020.

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 trip (full load truck in / full load truck out) proportions have traditionally been quite low however over the past number of years a notable increase in dual trips to approximately 30% of all trips has been observed in the 2020 HGV movement data compared to 24.2% in 2015. As dual trips benefit both the supplier of materials and the exporter, this trend is expected to continue with the potential to represent 50% of all HGV trips in the next 5 years. Nevertheless, with the objective of providing a robust appraisal DBFL have assumed that Lin-Lout trips will increase to represent only 40% of all HGV trips in the future design year scenarios. Accordingly it was assumed that the number of dual trips will increase by 10% above the existing quantum.

Table 12.1 – Existing Estimated Current Vehicle Trip Generation Traffic Volume

	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	51965	33551	697	697	1394	30.3%	1086	1086	2172	47.2%	518	518	1036	22.5%	4602
Per Month (average)	4330	2796	58	58	116	30.3%	91	91	181	47.2%	43	43	86	22.5%	384
Per Day (average)	172	111	2	2	5	30.3%	4	4	7	47.2%	2	2	3	22.5%	15
Per Month (Worst case-Nov)	8082	2766	63	63	126	28.6%	118	118	236	53.6%	39	39	78	17.7%	440
Per Day (Worst Case-Nov)	198	121	2	2	5	28.6%	5	5	9	53.6%	2	2	3	17.7%	17
Per Month (Quietest - Feb)	3761	2486	56	56	112	35.7%	71	71	142	45.2%	30	30	60	19.1%	314
Per Day (Quietest - Feb)	149	98	2	2	4	35.7%	3	3	6	45.2%	1	1	2	19.1%	12

Staff (currently 6 no.) based on-site can currently utilise a number of potential vehicle routes when travelling to / from the Miltown Composting site. However, all HGV vehicles travelling to / from the site travel via the R688 and the defined L1409 'haul route.

The facility's existing materials import / export practices result in variations in HGV trip generation by day of week and by month of the year. Data related to the number of two-way HGV trips generated by the existing facility each weekday for a typical week between Monday 29th June 2020 and Saturday 4th July 2020 indicated the fluctuating nature of existing current import / export practices. It is revealed that the volume of HGV's generated by the subject site is significantly lower on Friday and Saturday when compared to Monday, Tuesday, Wednesday and Thursday trips. There are also seasonal peaks generated demonstrating that November / December is the peak period with January, February, April and August generating significantly lower HGV movements, see Figures 3.2 and 3.3 in Attachment L.1.
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 road 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 road 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 road can be seen in Appendix A of Attachment L.1.

12.5 Characteristics of the Proposed Development

The proposed development is to increase the tonnage throughput in the composting facility from the existing 50,000 tonnes per annum to up to 75,000 tonnes per annum. Due to the relatively short time period that the organic material spends in the composting bays during the process phase in Shed 1 and the waste reception shed it is considered that the existing process facility bays will be capable of processing the increased throughput. However, the capacity to mature the material following processing will require an increase in maturation area at the facility. It is proposed that the old agricultural shed located to the west of the existing compost reception shed will be reconstructed as maturation sheds 2B

and 3B and fitted with an under floor forced air system to allow for the maturation of organic material in static piles as an extension of the maturation process completed in Sheds 2 and 3.

The proposed maturation shed 2B will have five underfloor forced air bays for the maturation of organic material in static piles similar to the process currently completed in Sheds 2 and 3 of the existing compost facility. Each of the 5 forced air bays in Shed 2B will be served by two 12-15kw fans (i.e., 10 fans in total). The underfloor forced air beds in shed 3B will be in open plan shed area will be served by 4-5 air fans with 12-15kw capacity. All fans providing air to the forced air bays/beds will be located within the sheds structure. Potentially odorous air produced within the proposed maturation sheds 2B and 3B during maturation of organic material will be extracted via an air extraction system served by two air extraction fans that will be located to the south of the proposed shed structure and will direct extracted air to a dedicated biofilter also located at the southern end of the proposed shed 2B structure.

12.6 Potential Impacts of the Proposed Development

The potential traffic impacts were assessed in relation to the existing and proposed traffic volumes that would service the site during the proposed construction and operational phases of the proposed development.

The subject proposals include for the construction of maturation sheds 2B and 3B on the footprint of old agricultural sheds located immediately west of the compost reception building. The constructed maturation buildings will be for the final maturation of composted material processed in the main composting facility in shed 1 and will include an extension of the existing maturation areas in Sheds 2 and 3.

It is predicted that the highest level of construction stage traffic will occur during the pouring of the concrete bases. The proposed maturation sheds 2B and 3B will have a combined floor area of 3,560 m^2 and will consist of a steel portal frame design featuring 5m high reinforced concrete walls at the building base and galvanised steel purlins on a structural steel portal frame.

Assuming a 150mm base depth, this equates to 510 cubic metres of concrete required for the 2 no. bases combined. Assuming each concrete truck can accommodate 6 cubic metres of concrete, this equates to a total of 85 no. truckloads. Accordingly, assuming the concrete base in each building are poured over separate 5 day periods, this equates to approximately 9 no. additional HGV's travelling to / from the subject composting facility per day over a period of 10 days.

During all phases, it is anticipated that the generation of HGV movements during the build period would be evenly spread throughout the day. HGV movements are not expected to exceed 3 two-way vehicle trips per hour during the busiest period of the construction 'build' works.

On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic and generally depart after 16:00. Based upon the experience of similar developments, a development of this type and modest scale would at a maximum necessitate approximately 8 construction staff on site at any one time, subsequently generating no more than 8 two-way vehicle trips during the peak AM and PM

periods over the period of the construction works. However, for the purposes of providing a robust assessment it has been assumed that a small number of employees would arrive/depart during the peak hours.

The projected HGV and cars / LGV traffic generation during the worst case construction programme are shown in Table 12.2.

Table 12.2 – Predicted 'Worst Case' Construction Traffic Generation

Time Period	HGV	Cars / LGV	Total (Vehicles)
Daily	18	16	34
Peak AM	2	2	4
Peak PM	2	2	4

Based on the predicted additional vehicle trips on the local road network during the worst case peak hour period, the resultant peak hour (short term) construction impact at the R688 / L1409 priority controlled junction and the aforementioned ATC locations A and B have been calculated and summarised in Table 12.3 below, and are included in the TTA Report in Attachment L.1.

Table 12.3 – Network Impact – Construction Stage

Junction / Link	AM Peak	PM Peak
R688 / L1409 Junction	0.8%	0.8%
L1409 Link – Location A	9.5%	7.2%
L1409 Link – Location B	8.5%	7.4%

The analysis demonstrated that the proposed development will, in the adopted worst case scenario (i.e. during the pouring of the base slabs where construction traffic is envisioned to be at its highest) 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 TII's TTA thresholds for normal (i.e. non-congested) networks. Furthermore, whilst the impact upon the L1409 is found to be well below the 10% threshold on non-congested networks

In accordance with the TII guidelines an assessment was undertaken 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 the analysis was based upon the 2022 Opening Year and 2037 Future Design Year scenarios. The analysis has demonstrated that the proposed development will generate the following impacts during the AM and PM peak hours in the 2022 and 2037 Do- Something scenario.

12.6.2.1 Junction Impacts

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 2022 Opening Year scenario. The predictions are included in Table 12.4

12.4 Network Impact – Operational Stage

	2022 Opening Year		2037 Future Design Year	
Junction / Link	AM Peak	PM Peak	AM Peak	PM Peak
R688 / L1409 Junction	0.4%	0.4%	0.3%	0.4%
L1409 Link – Location A	4.8%	3.6%	4.4%	3.3%
L1409 Link – Location B	4.2%	3.7%	3.9%	3.5%

The analysis demonstrates that the subject proposals will, in the adopted worst case scenario (i.e. peak November 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 TII's TTA thresholds for normal (i.e. non-congested) networks. Furthermore, the impact upon the L1409 link is very modest (i.e. Only 4 additional vehicle movements) with the resulting impact distorted by the extremely low baseline traffic flows along this corridor (i.e. AADT of only approximately 350).

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 few years there has been a notable increase in dual trips (approximately 30%). As dual trips benefit both the supplier of materials and the exporter, this trend is expected to continue with the potential to represent 50% of all HGV trips in the next 5 years. Nevertheless, with the objective of providing a robust appraisal DBFL have assumed that L_{in}-L_{out} trips will increase to represent only 40% of all HGV trips in the future design year scenarios. Accordingly, DBFL assumed that the number of dual trips will increase by 10% above the existing quantum. The predicted traffic volumes related to the proposed development operations are outlined in Table 12.5.

12.5 – Estimate of Predicted HGV Trip Generation (Assuming Maximum Production)

	Materials		Traffic Movements												
	Tons (In)	Tons (Out)	Lin-Lout				Lin-Eout				Ein-Lout				Total
			In	Out	2-way	%	In	Out	2-way	%	In	Out	2-way	%	2-way
Per Year	75000	48423	1338	1338	2676	40.3%	1343	1343	2685	40.4%	640	640	1281	19.3%	6642
Per Month (average)	6250	4035	112	112	223	40.3%	112	112	224	40.4%	53	53	107	19.3%	553
Per Day (average)	248	160	4	4	9	40.3%	4	4	9	40.4%	2	2	4	19.3%	22
Per Month (Worst case-Nov	11665	3992	123	123	245	38.6%	146	146	293	46.1%	48	48	97	15.2%	635
Per Day (Worst Case-Nov)	462	158	5	5	10	38.6%	6	6	12	46.1%	2	2	4	15.2%	25
Per Month (Quietest - Feb)	5428	3588	103	103	207	45.7%	87	87	173	38.2%	37	37	73	16.1%	453
Per Day (Quietest - Feb)	215	142	4	4	8	45.7%	3	3	7	38.2%	1	1	3	16.1%	18

A comparison of the existing on-site operations vehicle trips and the proposed development's post development generated vehicle trips are summarised in Table 12.6 below for the 'average' daily Peak Month (i.e., November) scenario. This is further discussed in section 5.3 of Attachment L.1.

Table 12.6– 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	15	23
Outbound	1	1	5	7	15	23
Two Way	6	8	6	8	30	46

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 16 additional vehicles, eight of which are attributed to the additional staff movements (i.e., cars and vans) and eight (8) attributable to HGV movements.

12.7 Remedial & Mitigation Measures

To control and reduce the potential impact on receptors from traffic related to the proposed development a number of mitigation measures are proposed and these area outlined below.

- The surrounding road network will be signed to define the access and egress HGV routes to / from the composting facility.
- All works will be adequately signposted and enclosed to ensure the safety of all existing staff / visitors and construction personnel.
- All employees / visitors and construction staff vehicle parking demands will be accommodated on-site.
- A programme of street cleaning on the unnamed local road leading to the subject site will be implemented.

- All construction activities will be controlled by a Construction Traffic Management Plan compiled by the appointed contractor, and
- All construction traffic will comply with the speed limits for the local access road and the on-site speed limits.

12.7.2.1 Existing Traffic Mitigation

Miltown Composting Systems has implemented a number of mitigation measures over the last number of years following a previous application for increased throughput at the site (Pl. Ref. 17600372) which includes both operational and infrastructure enhancements including;

- A booking system has been implemented which provides notice of impending inbound HGV's to the site from suppliers who's arrival rates are spread across the day
- A dedicated pass-by area has been provided immediately inside the site access allowing two HGV vehicles to pass each other at this location thereby minimising the instances of HGV's meeting each other on the local access between the Rosegreen-Fethard Road and the subject site access;

- Lands in the vicinity of the Rosegreen-Fethard Road / local road (leading to site access) junction have recently been purchased by the applicant and localised widening is proposed to be introduced to enhance the junction layout thereby allowing HGV's to pass each other when turning off Rosegreen-Fethard Road even if a vehicle is waiting to exit the local road onto Rosegreen-Fethard Road.

- During Q1 2022 it was noted that significant improvement works have been undertaken by Tipperary County Council (TCC) along the majority of the facilities HGV haul route along the L1409 corridor between Rosegreen and the L1409 / Local Lane junction as indicatively illustrated in Figure 2.12 in Attachment L.1. These works were undertaken as part of a maintenance regime included the removal of grass / vegetation encroachment along the road carriageway edge, in places road edge / verge maintenance / cut-back improvements, and maintenance of roadside drainage facilities. These works have resulted in the widening of the available carriageway width

to motorised vehicles subsequently improving the ability of the corridor to safely accommodate two-way vehicle movements.

12.7.2.2 Proposed Traffic 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 management (M) and Infrastructure (I) mitigation measures are planned as part of the subject proposals

- **M1 – Management Regime**: **M1 –**As part of the existing booking system, which at current levels of operation works efficiently, all 'inbound' material loads sent to the subject Milltownmore facility by suppliers generally arrives with at least one day's prior notification given in regard to the day of arrival at the subject site. Whilst this current arrangement gives advance notice to Miltown Composting of the materials delivery day and approximate time. A new management regime is to be implemented to complement the existing regime thereby helping mitigate potential impacts arising from the subject proposals and minimising the potential for HGV traffic travelling in opposite directions to meet each other between Rosegreen and the composting facility. This potential new regime would require the supplier (or their transport operator) to pre-book a 'delivery window' (i.e. specific prearranged time based window of arrival on-site) 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 would enable the composting facility to further manage the arrival of material on-site through the implementation of a fixed number of delivery windows over the entire working day. In addition to assisting the operation of the composting facility this measure will give additional control to the operator resulting in an even more controlled distribution of HGV's over both (i) the entire day, and (ii) days of week. The potential for a dedicated app is to be investigated that could allow suppliers book their proposed delivery within available 'delivery windows' through the dedicated app which in turn can be managed by Miltown Composting
- **M2 – Management Regime**: 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 0830 and 0930) it is proposed that a delivery window for this specific period each weekday is not issued to suppliers. To accommodate this initiative, it is proposed to allow 'inbound' vehicles enter the subject site during an initial delivery window of 0700-0830. This could be facilitated via the aforementioned app where this 'peak hour' window would not be made available for deliveries to the facility.
- **M3 – Management Regime**: It has previously been investigated as to the potential for an improved 'notification and hold' management measure to be implemented. 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' following the implementation of the subject proposals, an improved 'notification and hold' management measure is proposed incorporating the following management regime;

a) All 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 8 km 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 along the L1409 'haul' route).

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.

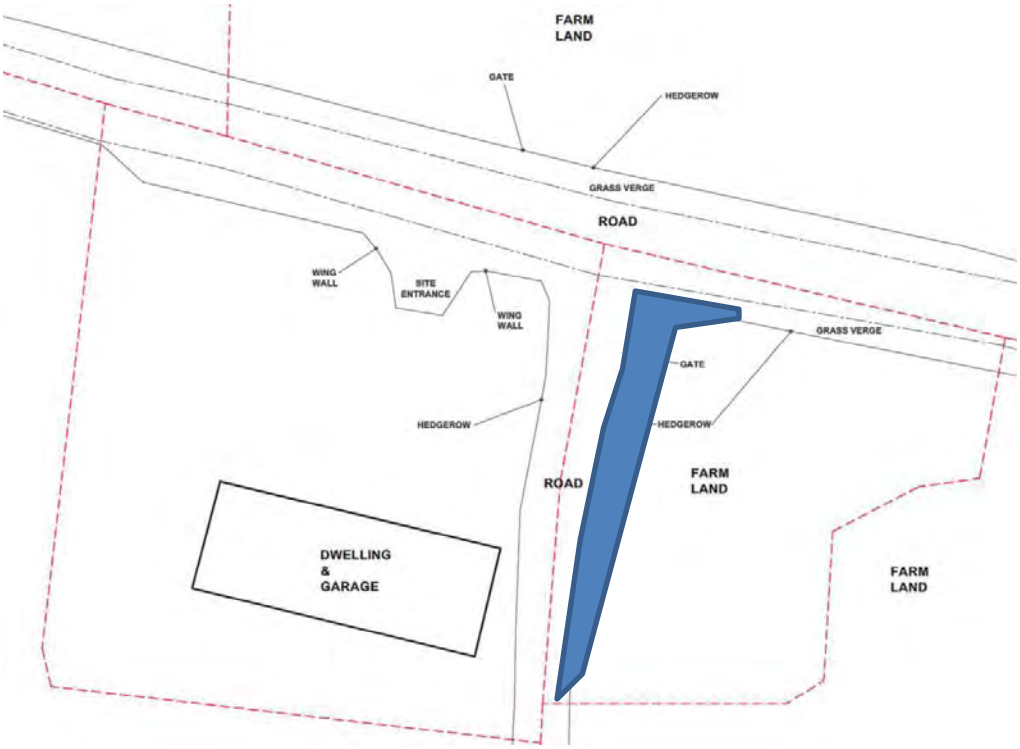
- **M4 – Management Regime**: Over the last number of years' transport operators have increased the number of 'reverse load' HGV trips due to the operational and financial benefits such practices offer to the supplier / haulage operator. The practice considers the delivery of a full load of waste material followed by the same vehicle (now empty) being loaded with recycled compost. Whilst such practices have been relatively infrequent in the past they now account for over 30% (on average) of all HGV movements to/from the subject site (based upon 2020 data) which is an increase of 6% compared to 2015 data. It is reported that this trend has continued to increase 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 the assessments 2022 and 2037 design years we have assumed a 'reverse load' average of only 40% (i.e., 2020 level of 30% plus 10%).
- **I1 – Infrastructure:** The findings of both the site audit and the traffic surveys reveals that the opposing (i.e. vehicles travelling 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 manoeuvre 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 encroach 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 (i.e., Pass-by facilities). A number of potential sites are identified in Figure 6.2 of Attachment L.1 which, subject to discussions with the local roads authority, 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 350) and the other mitigation measures being implemented as part of the subject proposals; it was recommended that new pass-by facilities incorporating local carriageway widening works are implemented at 4 identified potential formal pass-by areas (see Figure 6.2 in Attachment L.1) with the objective of further mitigating the impact of the subject development works and associated operational traffic movements, these are;

- Areas 1 & 2 are both located on the L1409 between Rosegreen the junction with the unnamed Fethard Road and could be accommodated
- Area 3 is located at the L1409 / unnamed Fethard Road junction and is split into 3A and 3B. 3A could be accommodated by utilising the existing grass verge on the L1409 approach to this junction allowing for sufficient road width for HGV traffic to turn into the L1409 even if a vehicle is positioned at the stop line. Similarly, 3B could be accommodated by utilising the existing grass verge (and/or lands controlled by Tipperary County Council) on the eastern approach to this junction. Enhancements here could include the either 3A or 3B or alternatively could include both enhancements.
- Area 4 relates to Lands in the vicinity of the Rosegreen-Fethard Road / local lane (leading to site access) junction which, as introduced previously, have recently been purchased by the applicant and localised widening is proposed to be introduced to enhance the junction layout thereby allowing two-way HGV's to turn off Rosegreen-Fethard Road even if a vehicle is waiting to exit the local lane onto Rosegreen-Fethard Road.

In the context of the low level of vehicle flows travelling along the L1409 haul route (e.g. AADT of 350) 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 these 4 potential formal pass-by areas (Area 1, Area 2, Area 3 and Area 4) with the objective of mitigating the impact of the subject development works and associated operational traffic movements by utilising the existing carriageway edge / grass verge areas at these locations

The extent of the proposed mitigation works (junction enhancements) proposed to be undertaken by the applicant at the existing junction between the L1409 corridor and the Local Lane is indicatively illustrated in Figure 6.3 of Attachment L.1 and below, subject to the requirements of the local roads authority



The cumulative benefit of implementing the above management initiatives will ensure that HGV's travelling to (inbound) and from (outbound) the Milltown facility WILL NOT actually meet one another anymore whilst travelling along the L1409 corridor between Rosegreen (R688 Corridor) and the subject Composting Facility. The removal of potential HGV's meeting other HGV's travelling in opposite directions actively influences the demand and subsequent the level of provision (number) of any potential new formal HGV pass-by facilities along the L1409 corridor. Following the removal of HGV (as generated by the Composting Facility) vehicle conflicts along the L1409 (as facilitated by the above management initiatives) the requirement for the provision of new HGV vehicle pass-by infrastructure works is reduced. Accordingly, the recommended mitigation strategy (incorporating the four management initiatives) recommends the provision of 4 number new formal vehicle by-pass facilities. These new additional vehicle pass-by facilities (located in Areas 1, 2, 3 & 4 as illustrated in Figure 6.2 of Attachment L1) in parallel with the identified management initiatives will ensure that HGV movements travelling to / from the proposed enlarged facility will not result in an adverse impact upon the efficiency of the local road network

12.8 Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments (including the existing compost facility) are discussed below for construction and operational phases.

The baseline traffic assessment in Attachment L.1 takes account of traffic movements related to baseline traffic volumes on the existing road network and the traffic related to the existing compost facility. It was noted that the existing traffic volumes and management are working with no conflicts with HGV trucks meeting each other on the local road network.

It does not appear that construction and operation of the proposed development will take place at the same time as other significant developments in the immediate area and a cumulative impact is considered unlikely. Regardless, all other developments will be required by planning controls, during construction and operations, to manage traffic movements and minimize impacts on other traffic on the local road network.

The proposed development includes measures to control and mitigate traffic from the proposed development similar to those in place for the current composting facility. If the proposed mitigation measures are implemented it is considered that the cumulative impact of the proposed development will be ***neutral*** and ***low*** in relation to traffic.

The cumulative benefit of implementing the mitigation measures outlined in section 12.7 indicates that management initiatives will ensure that HGV's travelling to (inbound) and from (outbound) the Milltown facility should not meet one another whilst travelling along the L1409 corridor between Rosegreen (R688 Corridor) and the subject Composting Facility. The removal of potential conflicts actively influences the demand and subsequent the level of provision (number) of any potential new formal HGV passby facilities along the L1409 corridor. Following the removal of HGV (as generated by the Composting Facility) vehicle conflicts along the L1409 (as facilitated by the above management initiatives) the requirement for the provision of new HGV vehicle pass-by infrastructure works is reduced. Accordingly, the recommended mitigation strategy recommends the provision of some additional formal vehicle by-pass facilities. These new additional vehicle passby facilities (located in Areas 1 and 2 as illustrated in Figure 6.1 of Attachment L.1) in parallel with the identified management initiatives will ensure that HGV movements travelling to / from the proposed enlarged facility will not result in an adverse impact upon the efficiency of the local road network.

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.

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 section of the local access road and disruption to other traffic using the local road approach to the facility.
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.

12.9 Residual Impacts

Based upon the information and analysis detailed within this TTA 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, the busiest section of the L1409 haul route has an AADT value in the region of less than 350 vehicles.
- The proposals will result, when operating at full capacity, in an additional 16 two-way vehicle movements on average per day of which 8 are HGV movements.
- The construction stage of the proposals is predicted to generate an additional 4 no. two-way vehicle movements during the AM and PM peak hours and a total of 34 daily two-way vehicle movements during the peak construction period which will be short-term (i.e., approximately 10 working days).

The analysis demonstrates 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.

- A package of both management (M) and Infrastructure (I) mitigation measures have been identified to manage the impact arising from this modest increase in vehicle numbers across the local road network.
- 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 proposals) 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 2037 post development scenario.
- The assessment of the seasonal peak development traffic flow periods (i.e., November - December) 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.

It is considered that the residual impact on the surrounding road network, as a result of the proposed increased use at the Miltown Composting facility and implementation of the proposed mitigation

measures will be modest compared to the existing on-site operations. This is based on the anticipated levels of traffic generated by the proposed development.

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 pass-by areas on the local road network 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.

The TAA completed by DBFL concluded that the impact on the surrounding road network, as a result of the proposed intensification of use at the Miltown Composting facility and implementation of the proposed mitigation measures will be modest 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.

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.

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 excavation was conducted under excavation licence (15E124).

An additional archaeological assessment was completed in 2022 by RedArc Consulting Ltd. to assess the potential impact on archaeological features from the proposed development. This chapter was prepared by JRE Ltd. and draws significantly on the archaeological assessment works completed for the site in 2015 and 2022 and the reports relating to those assessments are provided in Attachments M.1 and M.2.

13.2 Methodology

Archaeological testing works carried out by Wolfhound under licence 15E0124 in 2015 had revealed the presence of sub-surface archaeological remains within the footprint of the groundworks required for the reception shed construction and under advisement of the NMS two trenches corresponding with the footprint of the reception building structure were excavated down to the level of the features identified in the testing and in consultation with the NMS preservation by record of all features identified was deemed to be the appropriate mitigation strategy.

As part of the archaeological assessment a number of other areas throughout the site (including the area of made ground at the location of the old agricultural sheds where the proposed maturation sheds 2B and 3B would be located) were also investigated to determine if subsoil archaeological features existed in areas where ground disturbance may take place. Determination of the depth of the overburden was achieved through hand dug test slots. Removal of overburden was carried out by mechanical excavator with a grading bucket under archaeological supervision. All archaeological features were manually cleaned and excavated using the MOLAS guidelines and with a methodology approved by the NMS. Details of the methodology are outlined in the archaeological report included in Attachment M.1.
The 2022 report forms an assessment of the proposed development site which is organised under a number of headings relevant to the research and fieldwork undertaken. The assessment report was compiled with data accumulated from several sources:

- Archaeological Survey of Ireland
- 1st and 2nd edition Ordnance Survey historic mapping
- Aerial photographs available from the Ordnance Survey (www.osi.ie)
- The National Inventory of Architectural Heritage (www.buildingsofireland.ie)
- Archaeological excavations bulletin (www.excavations.ie)

- Unpublished archaeological reports
- Secondary sources (bibliography)
- Planning review of earlier development phases

The report was prepared in accordance with relevant guideline documents, as follows:

- 'Framework & Principles for the Protection of the Archaeological Heritage' (DAHGI – 1999)
- 'Architectural Heritage Protection – Guidelines for Local Authorities' (DAHG – 2011)

13.3 Receiving 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.

In 2015 an archaeological assessment of the site was completed by Wolfhound Archaeology. The works completed included excavation of trenches and test pits 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.

13.4 Potential Impacts of the Proposed Development

The proposed increase in material throughput on site will not have a negative impact on the heritage and archaeological elements on site. Construction of proposed maturation sheds 2B and 3B would require groundworks that could disturb archaeological features buried in the area.

Archaeological test pit works completed at the site in 2015 included some investigation of the raised ground area where the old agricultural sheds (i.e., proposed location of maturation sheds 2B and 3B) are located and found no archaeological features in that area. The details of the test pit findings (i.e., Test Pit 1) are included on page 32 of the archaeological assessment report in Attachment M.1.

The test pit investigation result for that area concluded that "Test Pit 1 was located at the east of the wetland and in an area of extensive modern disturbance (Plate 1). Made ground comprising of alternating and interleaved layers of topsoil, stone, clays and construction rubble measuring at least 2 m below modern ground level were revealed. The original ground level or subsoil was not identified". No archaeological features or deposits were identified in this pit. The groundworks of the proposed development of sheds 2B and 3B would not extend beneath a depth of 2m and so would not impact on natural grounds or any potential archaeological features that could exist at deeper soil depth.

The site assessment completed in 2022 shows that the proposed development involves the reconstruction and extension of an existing agricultural storage structure for use as an organic material maturation facility and an extension to existing storage. This proposed development will be focussed on the old cattle sheds / slatted units built here in the 1970s and later changed to store dry feed in 2001 (Ref: PA. 01357). The southern shed was demolished in 2019.

The site of the proposed development lies southeast of the location of the RMP site TS069-059 – Ringfort/rath. While the development is quite close to the site of the ringfort it does not encroach on the area where buried remains of the monument might survive.

The location of the current proposed development should be considered as being of low risk. The formation level of the proposed structure is c.3.00m below the original ground level which corresponds to the floor level of the Composting Facility abutting the development site to the east (Area 1, Ó'Droma, 2015). Ó'Droma identified and excavated potential archaeological features in Area 1, all of which were located at a level c. 3.00m above the floor level of the slurry tanks defining the proposed formation level of within the footprint of the development. A well-established haul road/farm track leads south from the main access road between the development site and the disused lagoon/pond on the western boundary. This road passes through the location of the reed beds and allows access to the fields to the south and east. The archaeological landscape has also been impacted on by the creation of these reed beds to the south and southwest, the lagoon/pond on the western boundary and the haul road/track that leads to the southern fields.
Because the proposed development is largely sited within the footprint of the 1970s cattle sheds/slatted units and later dry storage units dramatically reduces the archaeological risk as the location of the sheds was dug out to accommodate the tanks beneath the cattle sheds. If buried archaeological remains were present on this site, they would have been directly impacted on at that time. The final footprint of the proposed extension will extend beyond the footprint of the cattle sheds by to accommodate a biofilter. This extension will encroach on the area of the reed beds but would not be considered to impact on the RMP site or zone of notification.

The placement of a new concrete apron extending to the west and northwest of the proposed structure will encroach into the zone of notification for the site of the RMP site TS069-059 with the probability of

impacting on the site of the ringfort itself (although the ringfort is no longer intact). As this apron will consist of a screed of concrete it is likely to be contained within the area which was impacted during the initial developments on the site in 2008 and granted retention in the same year (PA. 08/834).

The historic agricultural and current composting activity on this site has directly affected the archaeological landscape that existed on this ridge in the past. The current proposed development does not present any major risk to the surviving archaeological landscape in this location.

13.5 Remedial & Mitigation Measures

The test pit excavation in the raised fill material on which maturation shed 2B and 3B are proposed indicated that the material is fill material to a depth of at least 2m in that area. As a mitigation measure, the groundworks of the proposed development of sheds 2B and 3B would not extend beneath a depth of 2m and so would not impact on natural grounds or any potential archaeological features that could exist at deeper soil depth.

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.

Section of the 2022 Archaeological Assessment completed by RedArc outlines a number of mitigation measures that should be implemented during the construction phase of the proposed development, in particular related to the concrete apron to be constructed to the west of the proposed buildings. The mitigation measures proposed include;

- The developer should consider retaining the services of an archaeological consultant to advise on the proposed development throughout the construction phase
- Where the proposed development extends into the zone of notification for the RMP site that a suitably qualified archaeologist is present on site to monitor groundworks in those locations
- During construction the area defined as the zone of notification for the RMP site should not be used for any purpose relating to the development (including material stockpiles, storage, parking, plant, heavy vehicular trafficking, or construction compounds).
- Any proposed temporary works associated with the proposed development should be discussed with an archaeological consultant to avoid potential impacts
- A traffic management plan should be created for the construction phase of the development in discussion with the archaeological consultant to ensure that the RMP site is not trafficked by heavy plant and that avoidance of impacts is ensured.

13.6 Predicted Impacts of the Proposed Development

Because the proposed construction works for sheds 2B and 3B are on existing raised fill material (as outlined in Section 6 of the Archaeological Assessment Report in Attachment M.1) and not natural ground.

The proposed development is largely contained within the footprint of the 1970s cattle sheds and slurry tanks. These structures would have had a major impact on the archaeological landscape given that to construct the slurry tanks required a major excavation to reduce the ground level by up to c.3.00m. This bulk excavation in the 1970s de-risks most of the proposed development footprint.

The proposed development site is located in good agricultural land within a rich cultural heritage landscape but should be considered to be largely of low archaeological risk. Any potential risk related to the construction of the 'new concrete apron' to the west of the proposed structure (i.e., within the zone of notification for the RMP) would be mitigated against through the control measures outlined in section 13.5 above.

13.7 Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments (including the existing compost facility) are discussed below for construction and operational phases. The archaeological assessment completed in 2015 identified areas where archaeological features of interest existed and areas on site that did not contain any archaeological features (including the raised fill area where the old agricultural sheds were located and where it is proposed to construct maturation sheds 2B and 3B). The 2022 assessment also concluded that the majority of the proposed development area is of low archaeological risk.

It does not appear that construction and operation of the proposed development will take place at the same time as other significant developments in the immediate area and a cumulative impact is considered unlikely. Regardless, all other developments will be required by planning controls, during construction and operations, to protect archaeological features in compliance with legislative standards.

The proposed development includes measures to control and mitigate groundworks at the proposed construction area of maturation sheds 2B and 3B to less than 2m depth within the made ground beneath the old agricultural sheds. This, in association with groundworks controls and monitoring to be employed during the construction of the concrete apron area to the west of the proposed sheds would result in the cumulative impact of the proposed development as ***neutral*** and ***low*** in relation to archaeology.

13.8 Residual Impacts

If the mitigation measures outlined in Section 13.5 are implemented, there will be no residual impacts of significance on archaeological features from the construction or operational phases of the proposed development.

14.0 MATERIAL ASSETS

14.1 Introduction

This chapter describes the material assets associated with the proposed increase in throughput at the site and the reconstruction of the two old agricultural sheds as maturation sheds 2B and 3B. The development was considered while 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. However, the reconstruction of the sheds would require concrete, steel and other construction materials and there may be impacts on the local roads network, these are assessed in Chapter 12, while the socio-economic impacts are assessed in Chapter 5.

The facility is owned by the client (Miltown Composting Systems 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 800m to the north along the local access road. 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 organic material accepted at the proposed development and the proposed re-construction of the agricultural sheds 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., 8 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 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

front end loaders 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. There will be an increase in electricity usage at the site if maturation sheds 2B and 3B are operational. Increased electricity will be required to operate the air fans delivering ai to the underfloor aeration system in the aeration bays and beds in the sheds and the air extraction sheds removing air from inside the sheds and delivering it to the biofilters system proposed for the sheds.

14.5 Impacts

The proposed development will have no impact on the existing land ownership or land use.

The proposed development will have no impact on the existing land settlement pattern.
The proposed development will result in a limited increase in traffic volumes on local roads (8 trucks and 8 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.

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 maturation bays and beds, and the air extraction system for Sheds 2B and 3B.

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 re-construction of the maturation sheds will be on fill material that contains no archaeological features of interest and 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 noise and odour can be seen in Chapters 9 and Chapter 10, 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 extended for any extended maturation facilities 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 require minimal additional land as construction of maturation sheds 2B and 3B will be on top of the footprints of old agricultural sheds at the site. The existing buildings are not clearly visible from the public road and that will still be the case if the proposed maturation sheds are constructed. The additional sheds will be similar in construction to the existing buildings on site (i.e., agricultural in nature) so 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 6 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 related to the main composting sheds. The construction of a second outer roof structure over shed 3 was completed to reduce the potential for condensate from the compost sheds to impact rainwater in the gutters. Also, the construction of an air extraction and treatment system for sheds 2 and 3 removes moist air and has significantly reduced condensate build up in the sheds. Surface water not associated directly with the process (i.e., yard and roof) will is directed to an existing integrated wetland system that physically and biologically treats the surface water through a series of reed bed ponds prior to discharge. This acts 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 at the facility an increase in throughput, when appropriate mitigation measures are employed, will not have a negative impact on the ecology of the surrounding area in in relation to air quality.

15.7 Traffic / Ecology / Water

The development of 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 locations would be located on road verges and not 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 Industrial Emissions 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 in relation to construction and operation, construction activities and the operation of additional air extraction fans at the proposed maturation sheds 2B and 3B. The measurements at the existing facility indicated no exceedances of the day-time limit of 55dB L_{Aeq} or night time limit of 45dB L_{Aeq} in the past 2 years monitoring. Construction works and an increase in production at the facility would increase the traffic and noise sources which in turn could have a negative impact on noise sensitive locations. However, due to the distance to the closest noise sensitive receptor and the mitigation measures outlined in Chapter 9 the predicted noise levels from site activities would not have a negative impact on noise sensitive receptors.

15.9 Cumulative Effects

The assessment of impacts took into consideration the existing facility and the proposed increase in material 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.